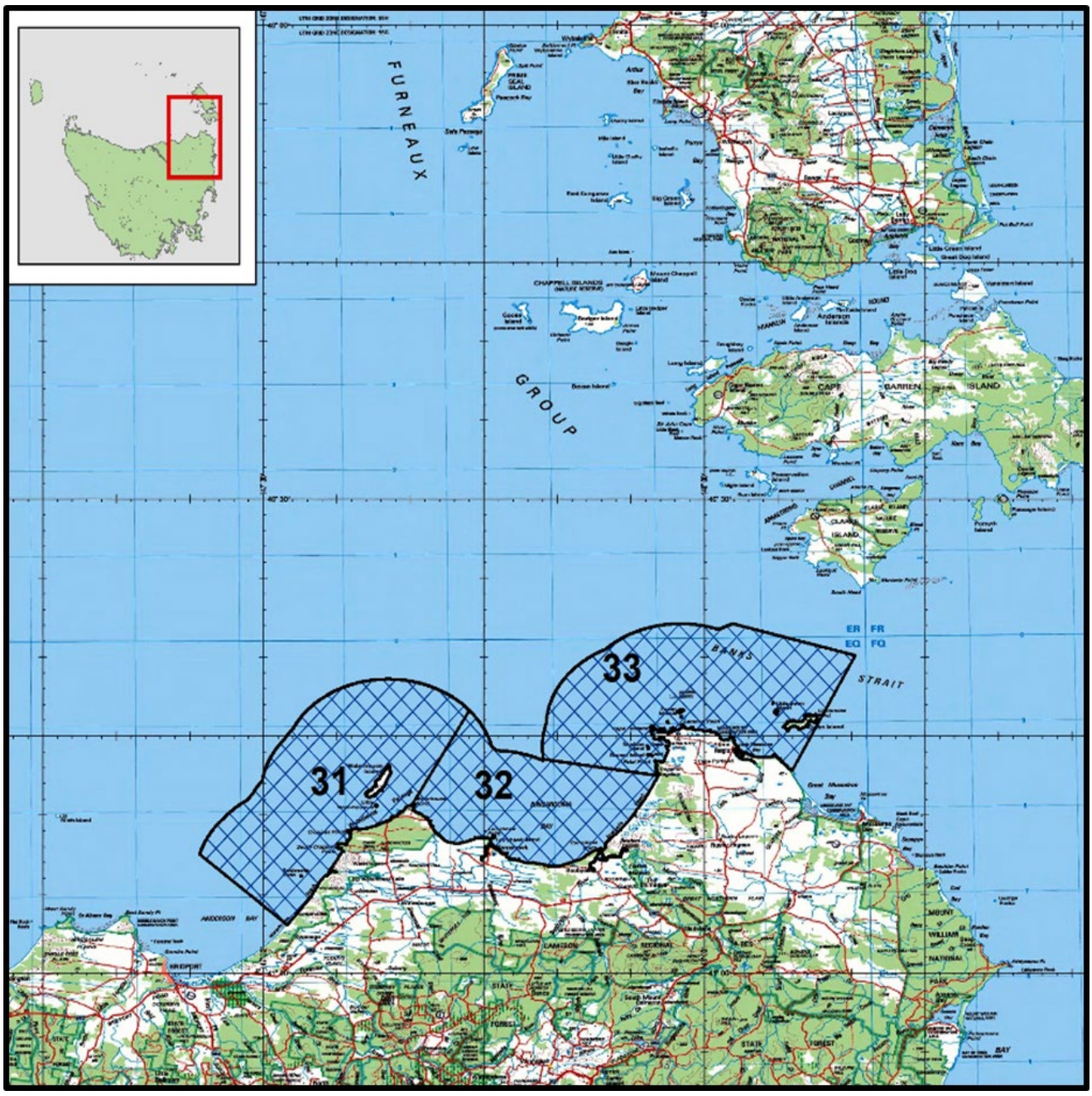
First Strike Plan Ringarooma

EPA Coastal Segments 31, 32 & 33

February 2023

EPA TASMANIA

ENVIRONMENT PROTECTION AUTHORITY



Overview of segments 31,32 & 33 Ringarooma

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i. Authorisation

This plan has been endorsed by the State Marine Pollution Committee as per the committee functions outlined in section 43 (6) b of the *Marine-related Incidents (MARPOL Implementation) Act 2020*.

ii. Document control

A printed version of this document is an uncontrolled document and may not be an up-to-date version.

This document is available in electronic format on the EPA website:

https://epa.tas.gov.au

iii. Distribution

Number	Issued to	Organisation	Position	Date

iv. Revisions/Amendments

The following revisions/amendments have been applied to this Plan.

Number	Detail	Date
1	Approved by State Marine Pollution Committee (SMPC)	4 Mar 2020
2	L.Lamb amendments for alternative text, new EPA layout and updates in accordance with new legislation (MIA), and departmental name changes.	22 Mar 2022
3	D. Probert, further alternative text, departmental name changes	5 Dec 2022
4	Approved by State Marine Pollution Committee (SMPC)	22 Feb 2023

Proposals to amend or revise this plan should be forwarded to –

Executive Officer
State Marine Pollution Committee
Environment Protection Authority
GPO Box 1550
Hobart TAS 7001

1. Context

1.1 Purpose

This Plan is an appendix to the Tasmanian Marine Oil Spill Contingency Plan (TASPLAN).

The Plan is to be utilised when a marine oil spill occurs in waters within the defined area of this Plan, or from a spill in adjacent waters, where an impact may occur in this Plan's defined area.

A marine oil spill is defined, for the purposes of this Plan, as an actual spill, or the potential spill, of oil or derivatives.

1.2 Objectives

The aim of this Plan is to provide the Responders to an oil spill incident, with information that will enable them to respond using the most appropriate response option, to the areas of highest sensitivity and risk.

This Plan is NOT designed to provide exclusive or overly prescriptive response actions. The suggested response options are based upon scenarios that are deemed more common in the response area, and to the potential types of spilled product, generally encountered in these areas.

1.3 Authority and Responsibility

The Environment Protection Authority (EPA) is the designated Jurisdictional Authority.

The EPA and TasPorts are designated Control agencies.

1.4 Plan Activation

This Plan is a First Strike plan and is to be used as the initial response plan, in the event of a spill, in or potentially effecting, the defined area of operation.

A Deed of Agreement exists between the Crown and TasPorts, which directs TasPorts to provide first strike response capability, in all Port Waters.

2. Plan Scope

2.1 Area of Operation

The area that this Plan applies to is indicated at map 1 at Appendix A.

2.2 Who responds?

The initial response to a marine oil spill within the waters designated within this plan is as follows:

- Designated port waters – there are no designated port waters within this plan's areas.
- All other State waters (generally out to 3nm) – EPA.

3. Preparedness

3.1 Incident Control structure

The initial control of a response to a marine oil spill is the responsibility of a designated Incident Controller. The Incident Controller is appointed by the Control Agency (combat agency).

The EPA is the designated Jurisdictional Authority and the Control Agency for all areas within this Plan.

In the event of an escalation beyond First Strike, the Response Escalation requirements will come into effect (see Section 6.1).

3.2 Risk Identification

3.2.1 Location of Sensitive Resources

The attached maps 2, 3, 4, 5, 6, 7 and 8 at Appendix A indicate the location of the sensitive resources. The risk rating of those sensitive resources is noted at tables 2 to 4 at Section 5.2.

3.2.2 Potential Spill Sources

The locations and operations with the potential highest risk of spills are listed below in table 1.

The greater risks of spills within the Ringarooma Plan segments are from ships transiting the area, or from smaller commercial vessels operating in the areas (eg; fishing vessels).

Commercial shipping movements in this area are limited to those vessels transiting to New Zealand and South America from South and West Australian ports and eastern Australian ports and from the Middle East, Southeast Asia and North Asia.

The usual route would be through Banks Straight, which is only about 10nm wide between Clarke and Swan Islands.

The potential for the discharge of oil will be from accidental or illegal deliberate discharges of tank washings of crude oil or oily bilge waste, or diesel spills from smaller vessel groundings on the coastline.

A potential also exists for a ship breakdown, and an uncontrolled drift, resulting in a grounding and potential loss of oil.

An accident between two or more vessels, and single vessel accidents, where a collision or grounding occurs, has the potential to breach fuel/oil tanks and create a spill. Volumes would normally be of a smaller scale, but the larger the vessel, the larger the potential spill volume.

The likelihood of an occurrence of any of these risks is low due to the low volumes of shipping.

Off-shore oil industry operations occur in waters to the west and north of this area. There are currently operations to the west which include the permanent Yolla platform operation, and facilities west of Cape Otway.

There are more than 20 platforms and over 600 kms of pipeline in operation in the Gippsland Basin area of eastern Bass Strait. These assets primarily produce crude oil and gas.

The nearest platform to this area is approximately 100nm away - Yolla platform (gas only) and 140nm to the Gippsland Basin assets.

Exploration has and is occurring in the Otway Basin in waters west of Victoria. The majority of the fields to the west of Ringarooma produce gas, but condensate is a by-product, and there is the potential for future crude oil discoveries.

Table 1 Identified potential spill sources

Ref #	Risk	Product	Likely volumes (l)
1	Transiting ships. Deliberate or accidental discharges of cargo slops, fuel or bilge waste.	Crude oil Bilge waste HFO/IFO	1 - 100,000 1 - 5,000 1 – 5,000
2	Ship groundings or collisions.	HFO/IFO Diesel	1 - 1,000,000 1 - 100,000
3	Off-shore Oil Industry exploration and operations	Condensate Crude	Uncontrolled releases of unknown volumes
4	Fishing/recreational vessel groundings or collisions.	Diesel/ULP	1 - 5,000

3.3 Probable Fate of Spilled Oil

3.3.1 Factors affecting

Spilled oil will travel in a direction on water that is driven by the full effect of the current (100% current speed) and about 3% of the wind speed. The final direction will be a combination of these effects.

The tides around this area tend to flow toward the west on the flood tide, and in an easterly direction on the ebb tide. There will be exceptions to this, particularly around Islands where local eddy effects will override the tidal effects, and the tidal flows into and out of river systems.

The general wind pattern of west to southwest winds occurs generally in the colder months, with a more easterly flow in the summer months.

3.3.2 Spilled Products

Heavy Fuel Oil (HFO) and Intermediate Fuel Oil (IFO) – will generally float in all conditions, with emulsification occurring after 24 - 48 hours. Very little evaporation or dissolution will occur.

Diesel – the majority will float, with a small percentage dissolving into the upper layers of the water column. Diesel will tend to evaporate in 24 - 72 hours depending on air and water temperatures, and the amount of sunlight and wind action it is exposed to.

Unleaded Petrol (ULP) and Premium Unleaded Petrol (PULP) - will rapidly evaporate with very little dissolution. Normally it evaporates within 4 - 8 hours, but that is weather dependent. It can produce flammable atmospheres in high concentrations in sheltered areas.

Hydraulic oil – the majority of hydraulic oils tend to be more persistent, although less toxic and with little to no volatiles.

All products, in concentrated amounts, can produce flammable (flash point of < 60oC) and dangerous atmospheres, and should be approached with caution.

Operations in spills of ULP, PULP, Avgas, and Jet A1, should only occur once the atmosphere is tested by a qualified operator, for Lower and Upper Explosive Limits and Safe Oxygen levels. Expert advice is to be sought from the Tasmanian Fire Service – Hazmat or other Fire Service Agencies.

HFO/IFO, diesel, hydraulic oil and weathered lighter product spills may produce flammable atmospheres, but it is less likely, unless concentrated in confined spaces, noting that the vapours can still exclude oxygen.

The effect of the wind will dissipate these atmospheres. Work from up-wind when these situations occur.

It is highly unlikely that booming operations will ever be undertaken to contain freshly spilled PULP or ULP in the immediate area. Booms can be utilised to protect or deflect these products away from sensitive resources, well downstream of the spill, ensuring that there are NO flammable vapours anywhere near the area in which booming is being undertaken. The 'light ends' of these products tend to evaporate rapidly once spilt.

* Australian Dangerous Goods Code 2015

4. Spill Response Strategies

The intent of the spill response is to capture and remove the oil from the surface of the water, as soon as possible. This reduces the possibility of direct contact; dissolution and dispersion into the water column; and reduces the potential effects on flora and fauna, infrastructure, and amenity.

4.1 Response Strategies

The response strategies available to responders, are as listed below. TasPlan section 4.1 outlines the overarching State response strategies and priorities.

- Monitor and Evaluate

- Contain & Recover – containment booming & sweep operations (5.3.1)
- Protect & Deflect – exclusion or deflection booming (5.3.2)
- Vessel propeller wash flushing (5.3.4)
- Damming or blocking of waterways (5.3.5)
- Shoreline Clean-up
- Waste Management
- Wildlife Response (5.3.6 & 5.3.7)

The nearest dedicated substantial stockpile of equipment is located at Devonport Tasmania. The road distance to Tomahawk from Devonport is a minimum of 2.5 hours by road and 80nm by sea. Smaller stockpiles are maintained by TasPorts and EPA at Bell Bay, Burnie and Hobart.

There is a primarily sealed road that runs from Bridport to Gladstone, with most roads onto shorelines dirt at best and sandy 4WD tracks in the main. Suitable transport will be required dependent on the area to be accessed.

There are also substantial stockpiles at AMOSC in Geelong Victoria and AMSA in Melbourne Victoria. Access to these latter stockpiles will take a minimum of 24 hours through the need to transport to the Tasmania.

Where time permits before shoreline impact, a recovery at sea strategy is a first strike action that should be considered early. Containing the source of the spill or recovering free floating oil before sensitivity impact will work with the appropriate resources and adequate time. Deflection of oil away from sensitivities will also be part of first strike actions.

A wildlife response to remove or haze fauna from potentially impacted areas (these response strategies are explained in more detail at section 5.3.5 of this Plan) is likely to be a response strategy that can be implemented in the early stages of a response due to the remoteness of some shorelines and off-shore islands and rocks.

The use of the above response actions will require marine assets to support the operations.

4.2 Communications

An initial report of an oil spill is to be made to EPA's hotline on 1800 005 171.

This information is responded to by the State Oil Pollution Control Officer (SOPCO) who will notify the State Marine Pollution Controller, who maintains overall control of the spill.

The Marine Conservation Program (MCP, NRE Tas) Wildlife Co-ordinator should be contacted in the event of an oil spill of any size via the 24-hour "Whale" Hotline on 0427 942 597 (0427 WHALES).

5. Response Operations

A response to a marine oil spill is affected by numerous factors, including the type of product spilled, the amount spilled, the prevailing and predicted weather, the response resources available to the responders, and the ability to protect the area.

5.1 Initial Response Priorities

The initial priorities for any spill event, in order of action, are -

- Determine what the product is
- Determine location of spill source
- Determine whether the product is still leaking
- Determine the direction of movement of the oil
- Determine the volume of the spill if possible
- Determine local tide times and thus predicted tidal flow direction/speed
- Determine local wind speed and direction

- Identify nearest sensitivities at risk
- Determine areas to be protected
- Undertake notifications as required.

5.2 Determining Protection Priorities

The following table lists the identified sensitivities at risk within this Plan's segments, with their sensitivity rating recorded against each of them.

In general terms, most shorelines of these segments are significantly exposed to the weather elements at most times of the year. Most coastlines are exposed to high energy wind and swell conditions primarily from the west.

Access to Waterhouse Island is possible by light aircraft, using an existing runway. Other smaller islands and remote rocky shoreline may be accessed via helicopter.

In calmer weather and sea conditions, the use of booms or dedicated sweep systems operating from vessels in a sweeping mode may be possible where resources are available. This will reduce the volume of spilled oil that could impact the shoreline.

The use of booms off a shoreline to protect estuaries and wildlife habitats, including breeding habitats of little penguins and seabirds, as well as deflecting spilled oil away from sensitive resources may be possible, particularly on the more sheltered eastern coastlines.

There are additional specific response strategies at section 5.3 of this Plan.

Responders need to be aware that there are potentially additional small inlets and shorelines that include wildlife sensitivities (e.g., bird habitats, nesting sites and other flora sites) within this Plan's areas that are not listed in Tables 2 – 4 and that may be able to be protected.

If more than one sensitivity in tables 2 - 4 is under threat from a marine oil spill concurrently, then the sensitivity with the highest risk rating should normally be considered for the initial protection action. If there is more than one sensitivity with the same risk rating, then the first to be potentially impacted is normally prioritised for protection.

All identified resident flying birds and Little Penguins, exist in all tidal zones – supra, inter and sub tidal.

Table 2 Segment 31 Sensitivities Waterhouse

Ref #	Location (South to North)	Tidal Zone	Risk Rating
1	Waterhouse segment Entire coastline is a Conservation Area		
2	Andersen Bay Due east of East Sandy Point on Waterhouse Beach to Waterhouse Point. Conservation Area	Sub-tidal Inter-tidal Supra-tidal	High
3	Waterhouse Beach Conservation Area • Resident Flying Birds breeding habitat of the endangered Little Tern • Resident Flying Bird habitat of the threatened or high conservation Black-faced Cormorant, Pacific Gull, Hooded Plover and the Pied Oystercatcher • Shorebird nesting sites	Sub-tidal Inter-tidal Supra-tidal	High
4	Lake Creek Empties to the sea although is supra-tidal. With significant rain the opening could allow oil to enter on high tides and strong onshore winds.	Supra tidal	Mod
5	Little Waterhouse Lake creek Can empty to the sea with rain. Oil could enter on high tides and strong onshore winds.	Supra tidal	Low
6	South Croppies Point to Croppies Point • Shorebird nesting sites	Inter-tidal Supra-tidal	High
7	Croppies Point to Waterhouse Point • Shorebird nesting sites • Seagrass beds from One Tree Hill to Waterhouse Point • Threatened flora – Wilsonia rotundifolia at One Tree Hill area around Blizzards and Herbies Landings.	Inter-tidal Supra-tidal Sub-tidal Supra-tidal	High Mod Mod
8	Waterhouse Island • Sea-bird colony • Little Penguin colony • Shorebird nesting sites • Seagrass beds	Sub-tidal Inter-tidal Supra-tidal	High Mod High Mod
9	Little Waterhouse Island Important Bird Area • Sea-bird colony • Little Penguin colony	Sub-tidal Inter-tidal Supra-tidal	High Mod

Table 3 Segment 32 Sensitivities Ringarooma Bay

Ref #	Location (South to North)	Tidal Zone	Risk Rating
1	Waterhouse Point to 1800m south of Petal Point Entire coastline is a Conservation Area		Very High
2	Waterhouse Point to Tomahawk Point • Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle • Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher • Shorebird nesting sites • Seagrass beds	Sub-tidal Inter-tidal Supra-tidal Sub-tidal	High Mod
3	Tomahawk township • Tomahawk River • Saltmarsh upstream (> 450m) of the river entrance	Sub-tidal Inter-tidal Supra-tidal	Mod
4	Tomahawk Point to Ringarooma River • Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle • Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher • Shorebird nesting sites • Seagrass beds • RAMSAR wetland ○ The eastern end of Murdochs Beach for 2000m before the entrance to the River.	Sub-tidal Inter-tidal Supra-tidal Sub-tidal Supra-tidal	High Mod Very High
5	Ringarooma River system The river system is open to the sea but very shallow at low water. • The entire Ringarooma river lower flood plain is a RAMSAR wetland. This includes about 1000m up stream of the Boobyalla River from the entrance. • Saltmarsh is located upstream of the Boobyalla river for about 2000m, and from opposite Campbells Point east 1500m. • Shorebird nesting sites • CFEV Integrated Conservation value	Sub-tidal Inter-tidal Supra-tidal Sub-tidal Sub-tidal Inter-tidal Supra-tidal	Very High Mod High Very High
6	Ringarooma River to Petal Point (1800m south) • Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle • Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher • Shorebird nesting sites • RAMSAR wetland ○ The shoreline on the eastern end of Murdochs Beach for 2 klms before the entrance to the River.	Sub-tidal Inter-tidal Supra-tidal Sub-tidal Inter-tidal Supra-tidal	High Very High

Table 4 Segment 33 Sensitivities Cape Portland – Swan Island

Ref #	Location (South to North)	Tidal Zone	Risk Rating
1	Petal Point to 2400m southeast of Tree Point in Great Musselroe Bay, including Baynes Island, MacLean Island, Foster Islands, Cygnet Island, Little Swan Island and Swan Island.		High
2	Petal Point (1800m south) to Cape Portland • Conservation area from 1800m south of Petal Point to Petal Point • Shorebird nesting sites • Threatened flora – Wilsonia rotundifolia around Home Beach in Foster Inlet, and Tiny Arrowgrass around Petal Point and 1000m south and around Cape Portland • Seagrass beds	Supra-tidal Sub-tidal Inter-tidal Supra-tidal Supra-tidal Sub-tidal	High Mod Mod Mod
3	Baynes Island, Mack Rock and MacLean Island in Foster Inlet • Resident Flying Bird habitat of the threatened or high conservation Hooded Plover • Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle • Breeding habitat of the Little Penguin	Sub-tidal Inter-tidal Supra-tidal	Mod
4	Cape Portland to Lyme Regis • Shorebird nesting sites • Threatened flora – Tiny Arrowgrass around Cape Portland and along with Wilsonia rotundifolia, in the wetlands between Tebrakunna Bay and 3000m east of Lanoma Point.	Sub-tidal Inter-tidal Supra-tidal	Mod
5	Foster Islands • Resident Flying Bird habitat of the threatened or high conservation Hooded Plover • Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle • Breeding habitat of the Little Penguin • Seagrass beds	Sub-tidal Inter-tidal Supra-tidal	Mod
6	Lyme Regis estuary The estuary system is open to the sea but very shallow at low water. • Shorebird nesting sites • CFEV Integrated Conservation value • Wetland unnamed – Directory of Important Wetlands	Sub-tidal Inter-tidal Supra-tidal	Mod Mod High

Ref #	Location (South to North)	Tidal Zone	Risk Rating
7	Lyme Regis to 2400m southeast of Tree Point • Shorebird nesting sites • Seagrass beds	Sub-tidal Inter-tidal Supra-tidal	Mod
8	Swan Island, Little Swan Island and Cygnet Island • Resident Flying Bird habitat of the threatened or high conservation Hooded Plover • Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle • Breeding habitat of the Little Penguin • Shorebird nesting sites	Sub-tidal Inter-tidal Supra-tidal	Mod

Responders should be aware that there are sensitivities at risk in adjacent segments, not listed in this Plan.

In the event of a spill potentially spreading from this Plan's areas into another Plan's area, then advice should be sought immediately from the State Environmental Scientific Coordinator (ESC) as to the location and type of the other sensitivities.

In general terms, sensitivities occurring in the inter-tidal zone will be prioritised for initial protection. There may be a need to protect resources above the tidal zone where higher tides and onshore winds occur, by protecting the marine area surrounding these assets through exclusion booming.

A sensitivity that is sub-surface is normally not capable of being protected once the oil is dissolved or physically dispersed into the water column. To protect sub-surface sensitivities, the removal of floating oil as early as possible is paramount.

5.3 Response Implementation

Prior to commencing any on-water response to a spill, the priority is to determine what the product is.

ULP and PULP are commonly used as fuels for recreational and small commercial vessels. These are all flammable hydrocarbons with low flash points. In concentrated quantities, flammable atmospheres may be produced, and combustion may occur. Stay up-wind at all times.

In addition, there could be exposure risks with some products. Access to Safety Data Sheets is to be obtained when the product is known.

If the product is unknown, the characteristics must be determined, prior to operating in the immediate area of the spill. This may require spill sampling and testing.

Once the location and movement of the oil has been determined, there is a need to ascertain if there is sufficient time to contain the oil, at or near the source of the spill.

Due to a lack of response equipment and personnel in this Plan's immediate areas, the prioritisation of response strategies will be informed by the time required to acquire and deploy response assets.

The strategies of estuary protection, wildlife hazing and pre-emptive capture, could also be effective first strike actions.

The collection of free-floating oil prior to impact on the shoreline of the mainland and the Islands is also a possibility dependent on weather, the availability of resources and the time to impact.

5.3.1 Source booming

The priority is containment. Recovery of the oil is secondary.

The most effective response is to contain the oil at the source.

The containment of ULP or PULP at the source of the spill, is not to be attempted on freshly spilled product, without atmospheric testing being undertaken.

Utilisation of vessels, booms and anchors (depending on the depth of water) to capture the oil where spilt, will prevent the spread of oil.

The intent is to start at the down-current/wind extremity of the slick, utilising two vessels with boom between them. The boom should be slowly pulled back toward the source, until such time as it can be joined in a circle arrangement around the source.

If the source is from a larger vessel or ship, then the boom may be deployed from the bow & stern of the ship rather than encircling it (using the side of the vessel as a barrier to the oil) and anchored off. The same applies if the source is from a drain or pipe, then the boom should be deployed from the shore, either side of the outlet, encircling it, and anchored off.

Once in position, the boom will need to be anchored/secured so that the spill source is contained within the boomed area.

The other opportunity is with the same boom or a dedicated sweep system, and two vessels, to run ahead of the spill, and utilise the boom or sweep system to capture or slow down the rate of spread. This is called boom sweeping operations.

Diagram 1 Off-shore boom used as a sweep system

Caution should be used with vessels speeds when pulling boom with oil in the arc of boom. Any speeds greater than one (1) knot will tend to release oil underneath the boom. Sweep systems may be towed at speeds up to 4 knots.

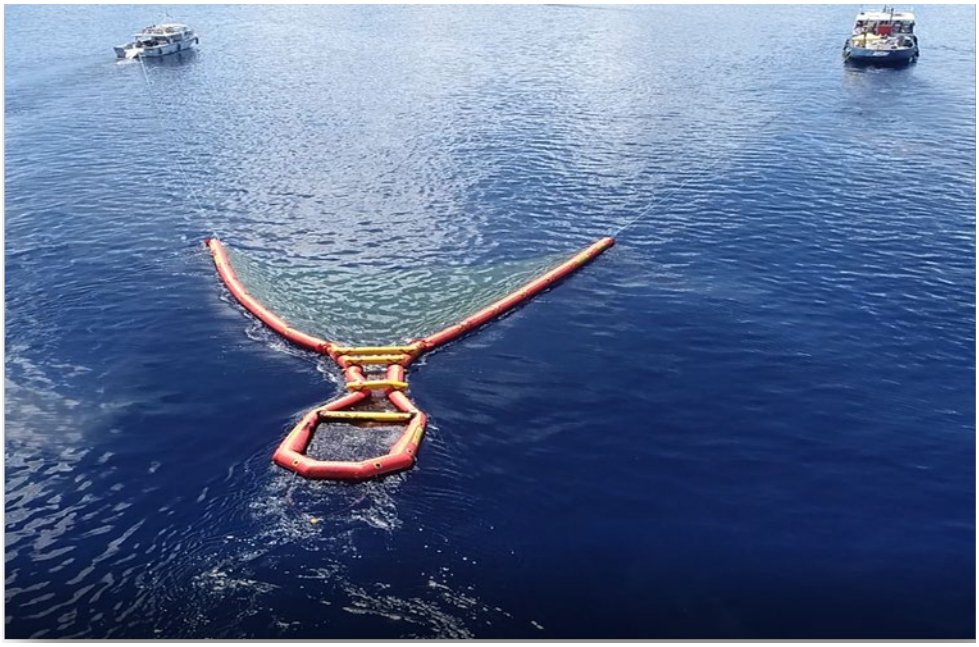


Diagram 2 NOFI Current Buster sweep system

The specific equipment required for this task is listed below. Reference should be made to the equipment list at Appendix D, to ascertain its storage location, and whether more suitable equipment is available.

Table 5 Resources suitable and available for this task

Equipment	Quantity and type
AMSA stockpile Devonport AMSA Stockpile Melbourne AMOSC Stockpile Geelong Tas EPA + TasPorts	Various off-shore capable booms, Nofi sweep systems, waste storage, anchors and skimmers are available at all stockpiles

Vessels and crew may be available in nearby ports including Bridport and Bell Bay although they are some distance from these areas. Waterhouse Island to Bell Bay is about 50 nautical miles. Bridport is about 15 nm to Waterhouse Island although the port is tidal. There could be vessels of opportunity, including commercial fishing vessels and recreational vessels available on an ad-hoc basis in the area.

Smaller trailerable vessels can be launched from multiple boat ramps and sites including Blizzards Landing, Waterhouse Point (E), Ransons Beach, Tomahawk, Boobyalla River, & Lyme Regis.

5.3.2 Exclusion and Deflection Booming

Where the opportunity does not exist for containment booming at the source of a spill, then consider the use of booms to protect sensitivities; or use to deflect/direct the oil away from the sensitivities, to another location, where it can be collected.

The use of booms in a chevron arrangement is a useful strategy to protect sensitivities that are surrounded by water. Using sufficient lengths of solid buoyancy/inflatable booms to protect the width of the sensitivity, with the mid-point anchored toward the direction the oil flow is coming from, and the two trailing ends anchored either side of the sensitivity, the oil is deflected to either side of the sensitivity.

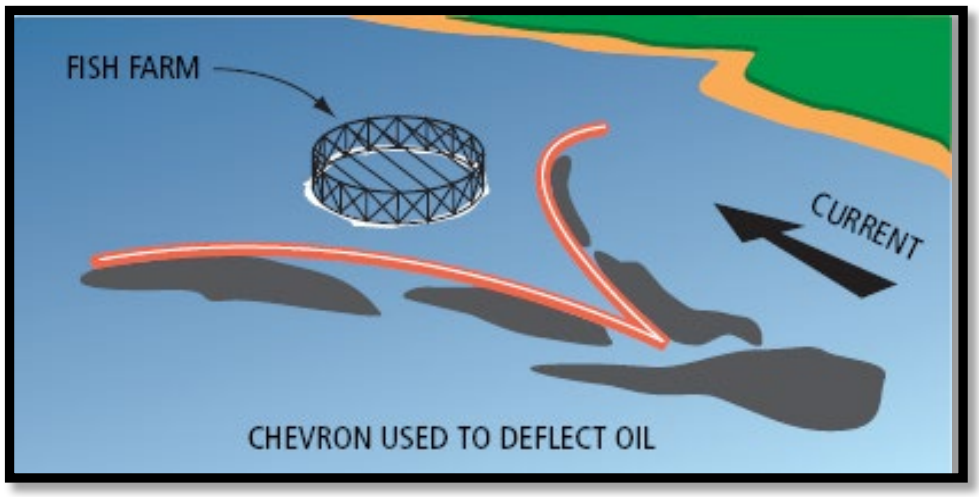


Diagram 3 Chevron boom protection method

The protection of small, individual sensitivities, like rivers/streams/inlets that enter into inter-tidal shorelines, may be successful with the use of protection booms to exclude the oil from impacting the sensitivity. The use of shoreline and solid buoyancy/inflatable booms, anchors, lines and a vessel to deploy to encapsulate the sensitivity, can be effective.

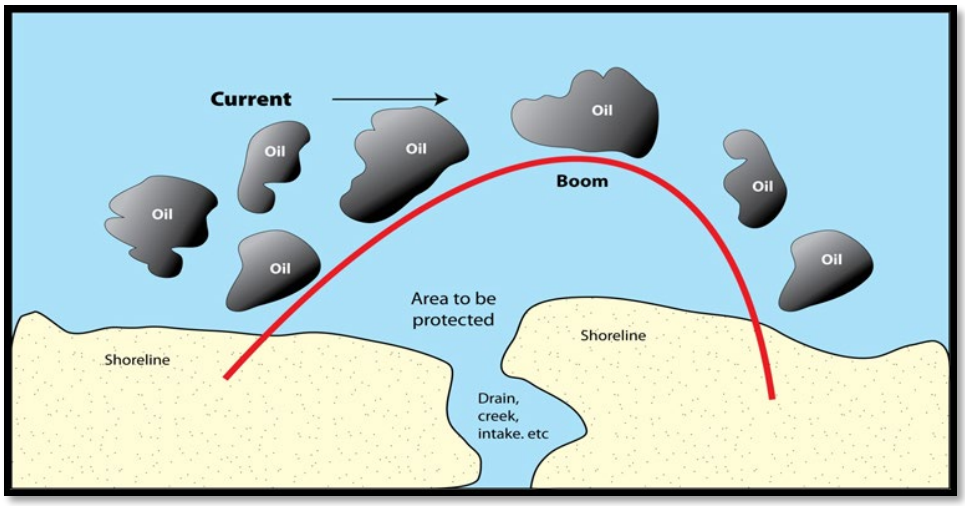


Diagram 4 Exclusion booming method

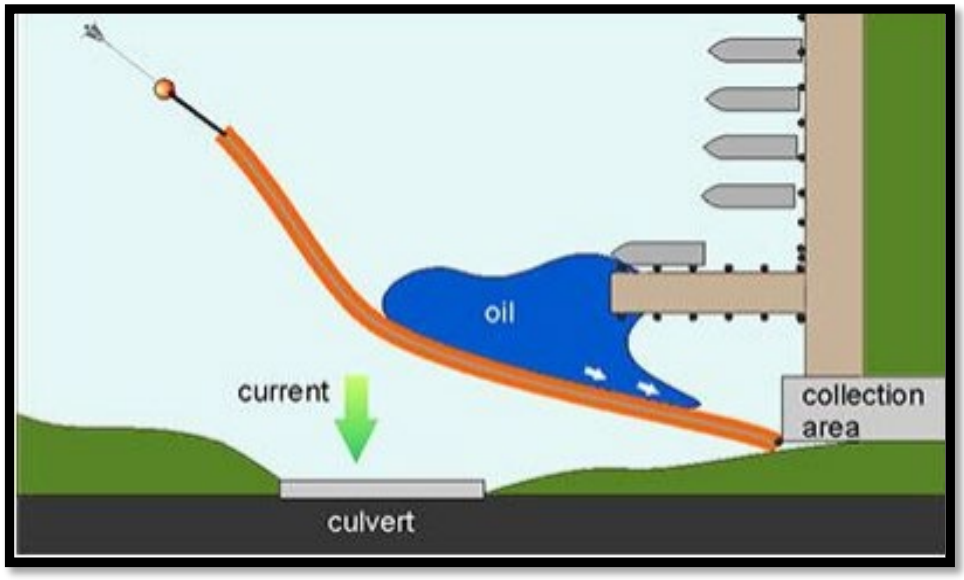


Diagram 5 Collection booming method

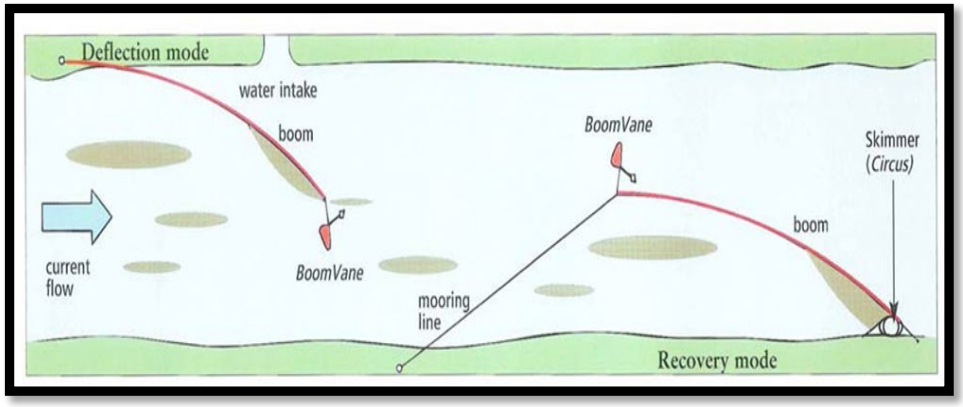


Diagram 6 Alternative collection booming method

Another effective booming strategy is the use of the shoreline and/or solid buoyancy/inflatable booms, run at angles of >110° (with the flow of the prevailing water movement) from a suitable shoreline to deflect the oil away from the sensitivity. This strategy requires continuous review, as water/oil flow direction can change.

This strategy can be used ahead of the spilled oil, to protect the potential impacted sensitivity, and/or direct the oil to a more sheltered area where product recovery is easier. Also the oil can be directed onto a shoreline, where the effects of the oil on that substrate has a lower impact (eg a hard sandy beach) and is easier to clean up.

5.3.3 Product Removal

Once the oil is contained, the next priority is to remove it from the surface of the water.

The use of sorbent materials is a possibility for very small spills where the product spilt is of a lighter nature (eg; ULP, PULP, Avgas, and Diesel). CAUTION to be exercised around the low flash point products in concentrated amounts.

A skimming system is the best method of removing oil from the surface of the water.

The equipment options suitable for this task are:

- Skimmers – TasPorts has several skimmers at the ports of Hobart, Bell Bay, Devonport and Burnie;
- Disc skimmer Vikoma Komara Mk2 – EPA Hobart;
- There are numerous other types – weir, disc and brush in the National Plan stockpiles in Devonport and Melbourne, as well as at the AMOSC stockpile in Geelong.

If the spilled oil is contained in a boom offshore, then the use of vessels to deliver and operate the skimming gear at the site of the contained oil is required. Additionally, portable tanks will be required to hold the recovered product.

5.3.4 Vessel propeller wash flushing

The propeller wash from a vessel may be utilised to direct the surface flow of spilled products away from sensitive areas, and/or into boomed areas for collection, by the gentle use of the wash.

DO NOT UTILISE PROP WASH TO AGITATE THE OIL SO THAT IT MIXES INTO THE WATER COLUMN.

5.3.5 Damming or blocking of waterways

Where booms are not immediately available, and mechanical assistance is, the use of machinery to close off the entrances to creeks/streams/rivers, may be a permissible first strike response.

Prior to an oil impact, machinery could be utilised to move sand or soil into the mouth of a small stream or creek to prevent oil entering at higher states of the tide.

Once the oil threat has passed, or the tide has dropped to a level where oil access from seaward is not possible, the dam or blockage should be removed to allow water movement.

This response strategy is a temporary one, as outflows and potentially wave action, can knock down the dam, and allow oil in. The other critical issue is that if the stream or creek is tidal, then sea water flushing is required on a tide cyclical basis to allow the ecology to function normally.

The material used to block or dam the stream or creek should be the same or similar to the surrounding area.

Councils and private contractors have assets that could undertake this strategy.

5.3.6 Oiled Wildlife Response

Where the potential or actual impacts on wildlife are predicted or has occurred, a coordinated response is required as a priority. Oiled Wildlife Response rescue operations should determine the best combination of pre-emptive capture, hazing and the collection and management of oiled animals based on resources available.

All oil spill response strategies involving the management of wildlife needs to be planned and undertaken by experienced personnel. This role within Tasmania is the responsibility of the Environment Business Unit of NRE Tas under the leadership of the Marine Conservation Program (MCP; Wildlife, Health and Marine (WHAM) section). The MCP Wildlife Co-ordinator should be contacted in the event of an oil spill of any size via the 24-hour "Whale" Hotline on 0427 942 597 (0427 WHALES).

The Tasmanian Oiled Wildlife Response Plan ("WildPlan") sets out the minimum standard required for an Oiled Wildlife Response in Tasmania within State waters.

If oiled wildlife (e.g. penguins, shorebirds) are identified at risk of being impacted, a safe, rapid, and effective oiled wildlife recovery and confinement will be required.

Any activities with wildlife during response activities, including deterrence/hazing/pre-emptive capture activities (5.3.6) will be under the direction of the wildlife co-ordinator within the IMT.

The Environment Business Unit (NRE Tas) will enable rapid access to relevant department licences and approvals to undertake approved activities in the event of Oiled Wildlife Response

5.3.7 Deterrence, Hazing and Pre-emptive Capture of Wildlife

The strategy to move wildlife away from free-floating oil and potentially oiled areas, is a relevant strategy for spill responders where the area cannot be protected with physical equipment or dams or off-shore recovery is not effective. Care must be taken to ensure that deterrence or hazing efforts do not make the situation worse by inadvertently moving animals into the oiled area or causing oiled animals to scatter. The effectiveness of deterrence and hazing is likely to depend on the types of animals involved (e.g. likely to be more effective for some bird species and less effective for some marine mammals).

Deterrence/Hazing

Hazing is the scaring of un-oiled wildlife away from oiled habitats/areas. Hazing requires an effective deterrent system, and the availability of satisfactory alternative sites for animals deterred from at-risk sites. Deterrent methods can be auditory, visual or both. Continuous disturbance over time may be required.

Personnel will need to have knowledge of species behaviour, the geographical area, the spill situation and familiarisation with the relevant hazing techniques. The operational tasks to consider include:

- Determining potential species at risk - numbers, geographic extent, behaviour (eg: feeding, breeding), location (on water, on shore);
- Conducting site assessment – accessibility, prioritisation of locations (e.g. consideration of tide, weather);
- Determining likely effective hazing techniques – consider prioritisation of species, permitting/authorisation requirements, availability of skilled personnel;
- Ensuring appropriate authorisation is obtained;
- Implementing appropriate hazing technique;

- Assessing and recording data on hazing operation – numbers and species of animals, assessment of success/failure;
- Adjusting techniques and the prioritisation of areas as necessary.

There are a variety of techniques available, with the effectiveness dependent on the species concerned and the environmental conditions at the time. Methods may also have to be changed regularly as animals become accustomed to one method.

The initiation of any hazing action needs to be immediately before an oil impact, and is likely to involve a variety of methods to prevent habituation, and may need to occur regularly over extended periods of time. Access to sites can be problematic, particularly when the areas are isolated coastal areas, like islands, with exposed shorelines.

Hazing examples

- Visual: e.g. lights, balloons, lasers, effigies (scarecrows), Mylar tape;
- Auditory devices: e.g. pyrotechnics, propane cannons, crackers.
- The use of aircraft, vehicles and vessels may also be effective hazing tools.

Note that the decision to use pyrotechnics, or other potentially flammable devices, should be carefully considered and controlled due to the risk of flammability.

Exclusions, such as fencing, may also be considered to keep animals from entering an area.

The equipment needed for a hazing operation includes PPE, transport, maps, GPS, notebooks/data forms, communication devices, species identification guide, binoculars, camera, hazing tools/devices.

Pre-emptive capturing

This strategy is the capture of healthy, un-oiled animals from an area that is likely to become affected by the oil. The identification of seasonal behaviours, such as breeding activity and dependant young, needs to be performed prior to implementation to assess suitability of this action. An important consideration before beginning pre-emptive capture is where the captured animals will be held, and for how long, before they can be released in an alternative, safe habitat within their natural and seasonal range. The capture and subsequent stay in captivity will be a stressful experience for the individual animal and a potential threat to that animal's welfare and survival.

Personnel involved in the capture of wildlife will need to be skilled and authorised to use the relative capture technique for each at-risk species (e.g. hand-netting, mist-netting, canon-netting). Consideration of nest/egg relocation may also need to be considered.

Pre-emptive capture of birds and other animals/mammals requires substantial personnel resources, numerous vessels suitable for landing on shorelines, and potentially a mother vessel to transport them back to port.

The staging or captivity areas are purpose constructed to house different fauna and species, and require substantial logistics support. Power, fuel, water, lighting, food, shelter, washing facilities, PPE and personnel accommodation are amongst those requirements.

5.3.8 Concurrent operations

The above listed response strategies may be undertaken concurrently to reduce the time the oil remains of the surface of the water, dependent on resources available.

5.4 Equipment available

Appendix C contains lists of available equipment in this region for first strike operations. Refer to TasPorts, EPA, AMSA and AMOSC for further details.

Appendix C also references the access arrangements for State and National Oiled Wildlife equipment.

Additional equipment is available State-wide. Refer to the EPA and TasPorts for lists of that equipment.

5.5 Support

EPA will provide the coordination of first strike personnel for the majority of oil spill incidents.

EPA, PWS and MCP will provide the coordination of the initial Wildlife responders to any spills in this region.

As an incident escalates, additional personnel may be sourced from other State and National resources.

6 Post – First Strike Requirements

6.1 Response Escalation – Handover

With a spill that escalates beyond a level 1 response (that is, a first strike response), additional arrangements need to be put in place to manage the response.

An assessment of the time and resources required to effectively manage the spill, should be made by the first strike responders, as early as possible.

When the decision has been made that the incident is beyond the capability of the First Strike teams to effectively manage, the initial Incident Controller (see Section 3.1) will communicate with the Tasmanian Marine Pollution Controller (CEO of the EPA) to arrange the handover of control of the incident.

This communication is to include a documented time of handover; who the responsible parties are; and an update of the incident and the response to it. This should include actions undertaken to date, and what is planned for the next operational period.

The first strike team(s) may continue to support the response to the incident.

6.2 Termination

An incident will normally terminate once the accessible spilled product is removed from the environment, but at times, this will not be possible.

When this is not possible, an agreed position needs to be established, and criteria developed and agreed upon before response operations cease.

TasPlan section 4.12 outlines this process in more detail.

6.3 Incident Review

An incident review will be undertaken by the EPA when deemed necessary.

This review will attempt to determine the reasons for the spill, the effectiveness of the response operations, and if necessary develop actions or procedures to enhance future responses.

APPENDICES

APPENDIX A - Map of Coastal Segments 31, 32 & 33 – Response areas

Segment 1 Waterhouse

The area of response is an area from a point due east of East Sandy Point on Waterhouse Beach to Waterhouse Point (approximately 20klms in length). It includes Waterhouse Island and Little Waterhouse Island.

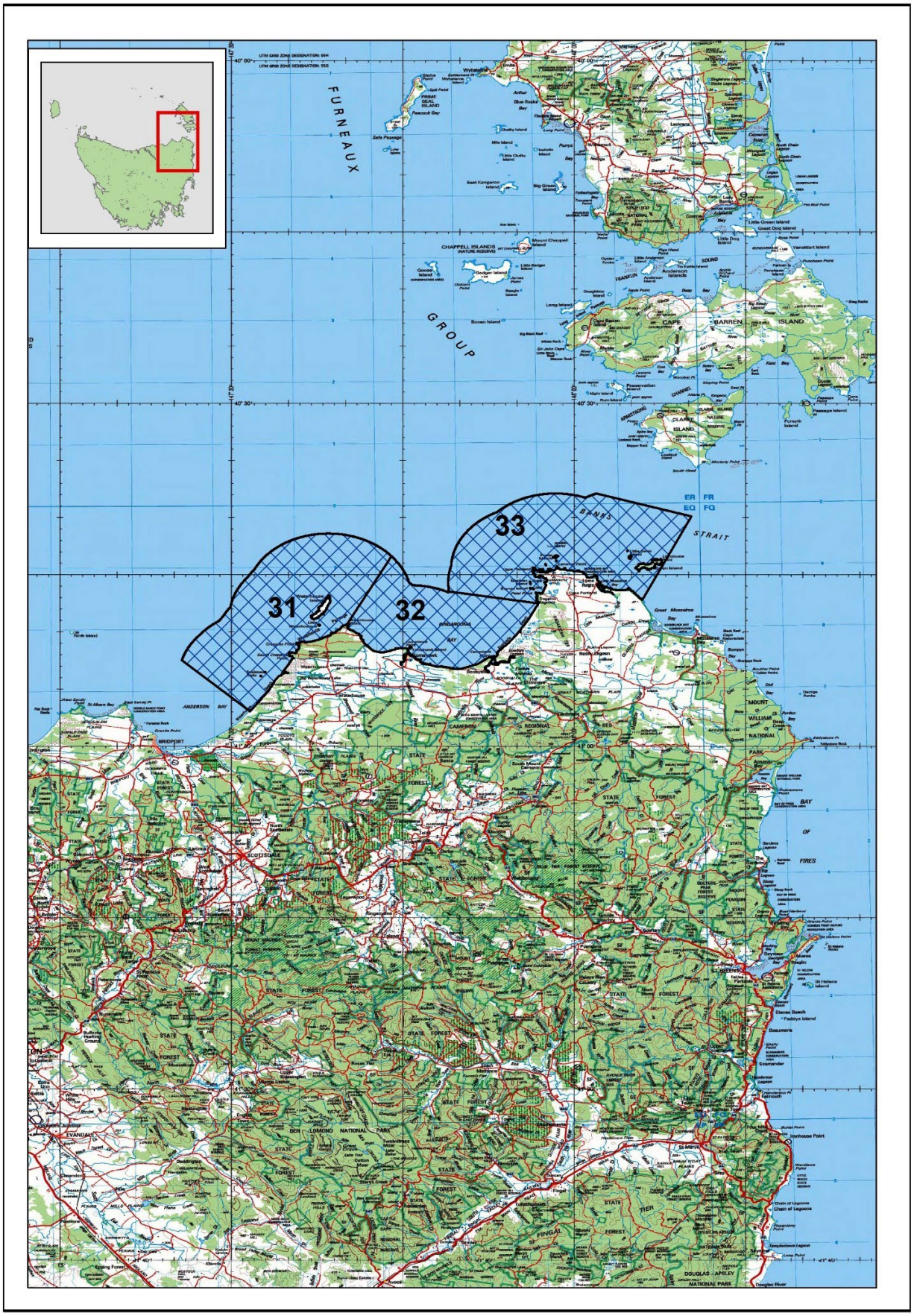
Segment 32 Ringarooma Bay

The area of response is the area from Waterhouse Point to 1800m south of Petal Point, and includes Tomahawk River and Boobyalla Inlet.

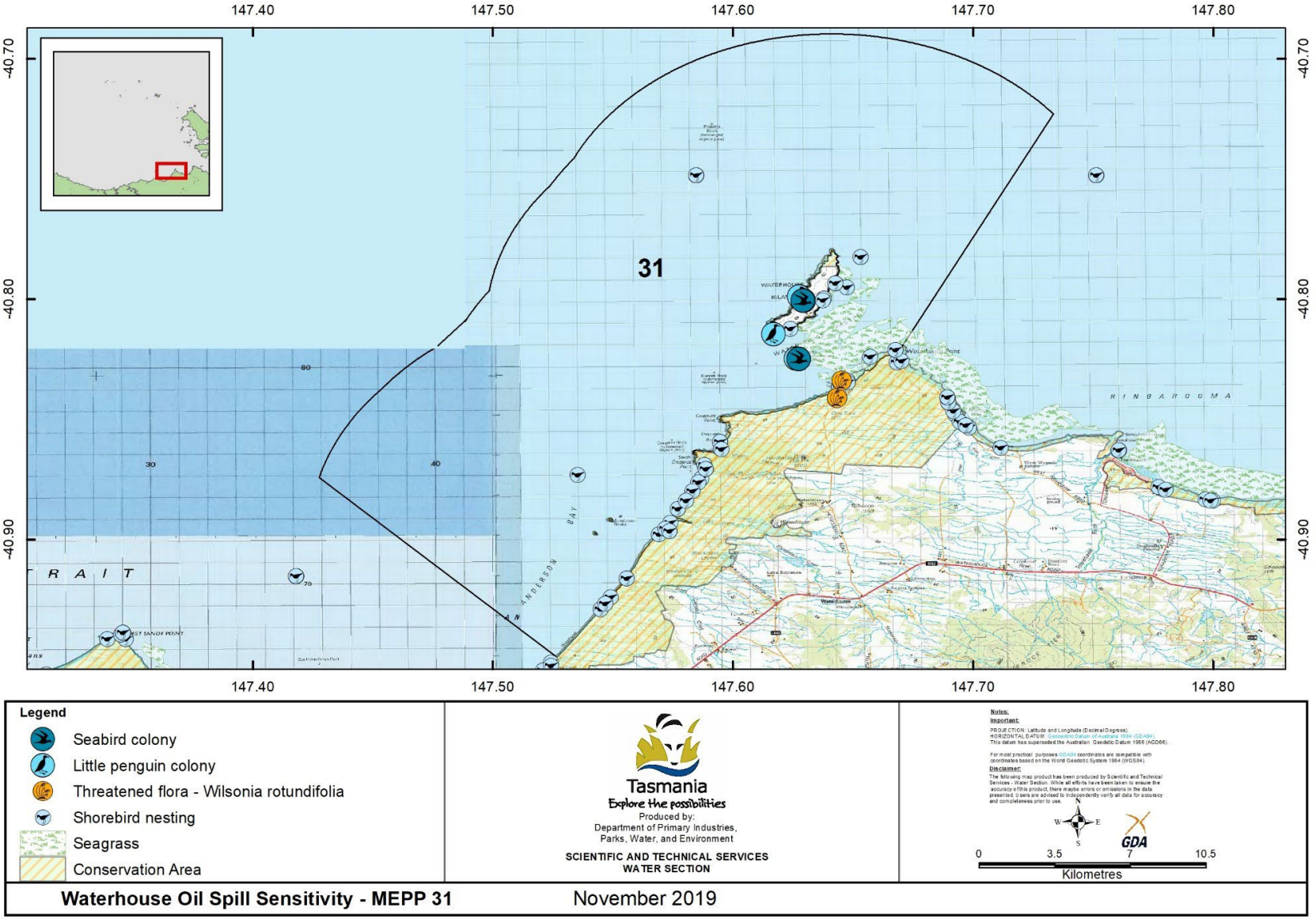
Segment 33 Cape Portland- Swan Island

The area of response is an area from Petal Point to 2400m southeast of Tree Point in Great Musselroe Bay, including Baynes Island, MacLean Island, Foster Islands, Cygnet Island, Little Swan Island and Swan Island.The area of response is from the western tip of Whistler Point, in a line drawn toward 260° to seaward, north to Cape Wickham. It includes both New Year and Christmas Islands and surrounding waters.

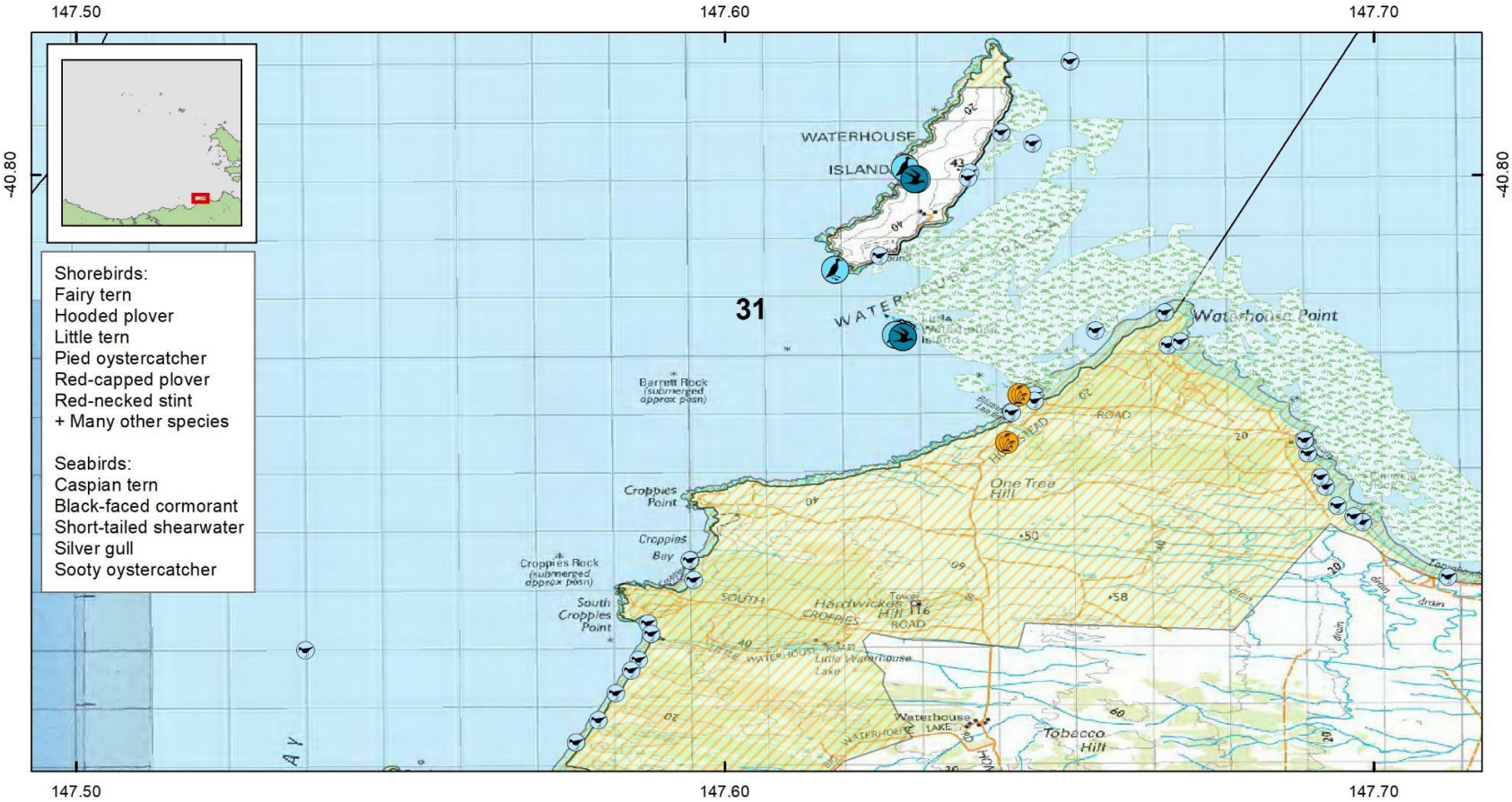
Map 1 Coastal Segments – Response Area



Map 2 Sensitive Resources - Segment 31



Map 3 Sensitive Resources - Segment 31



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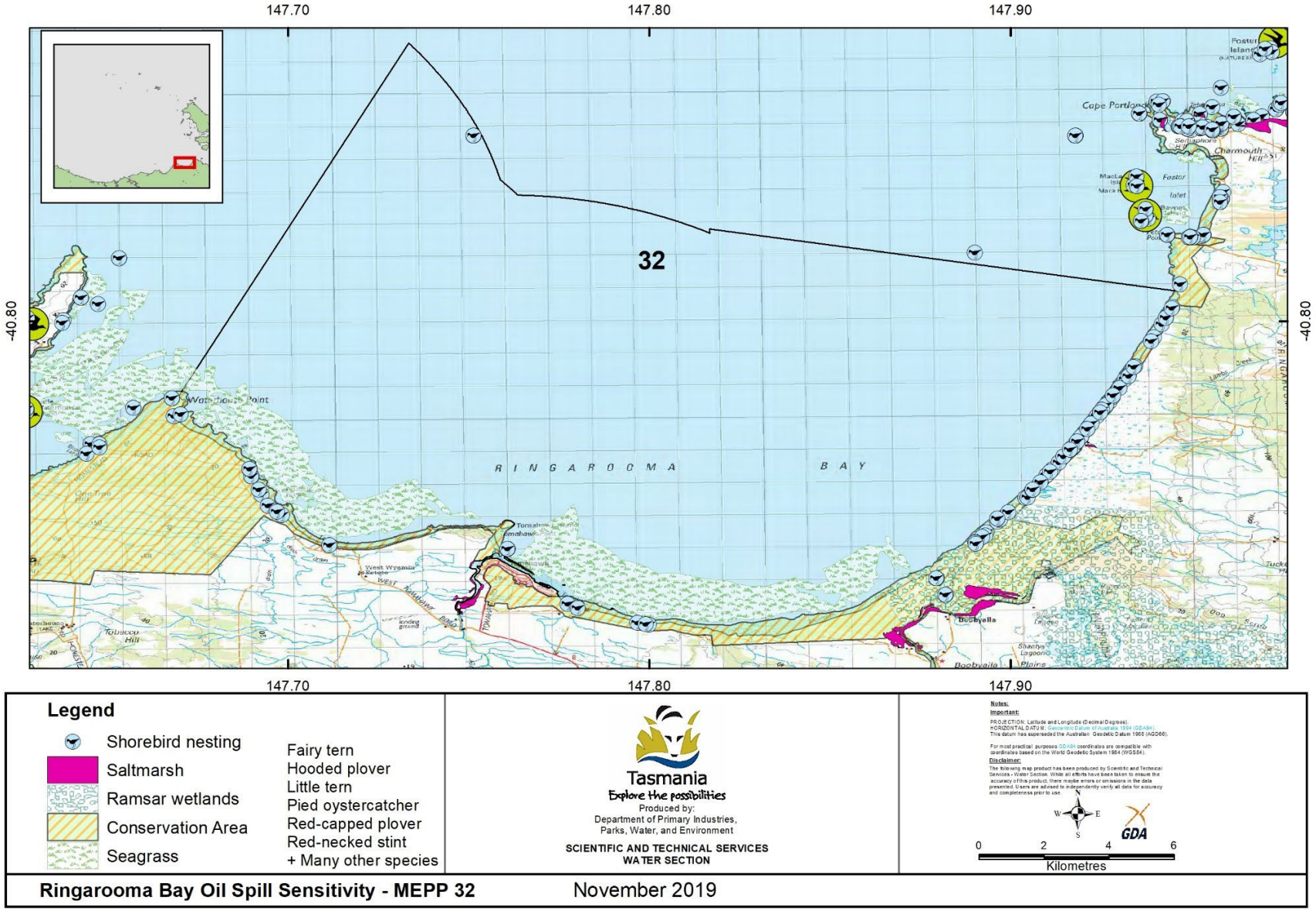
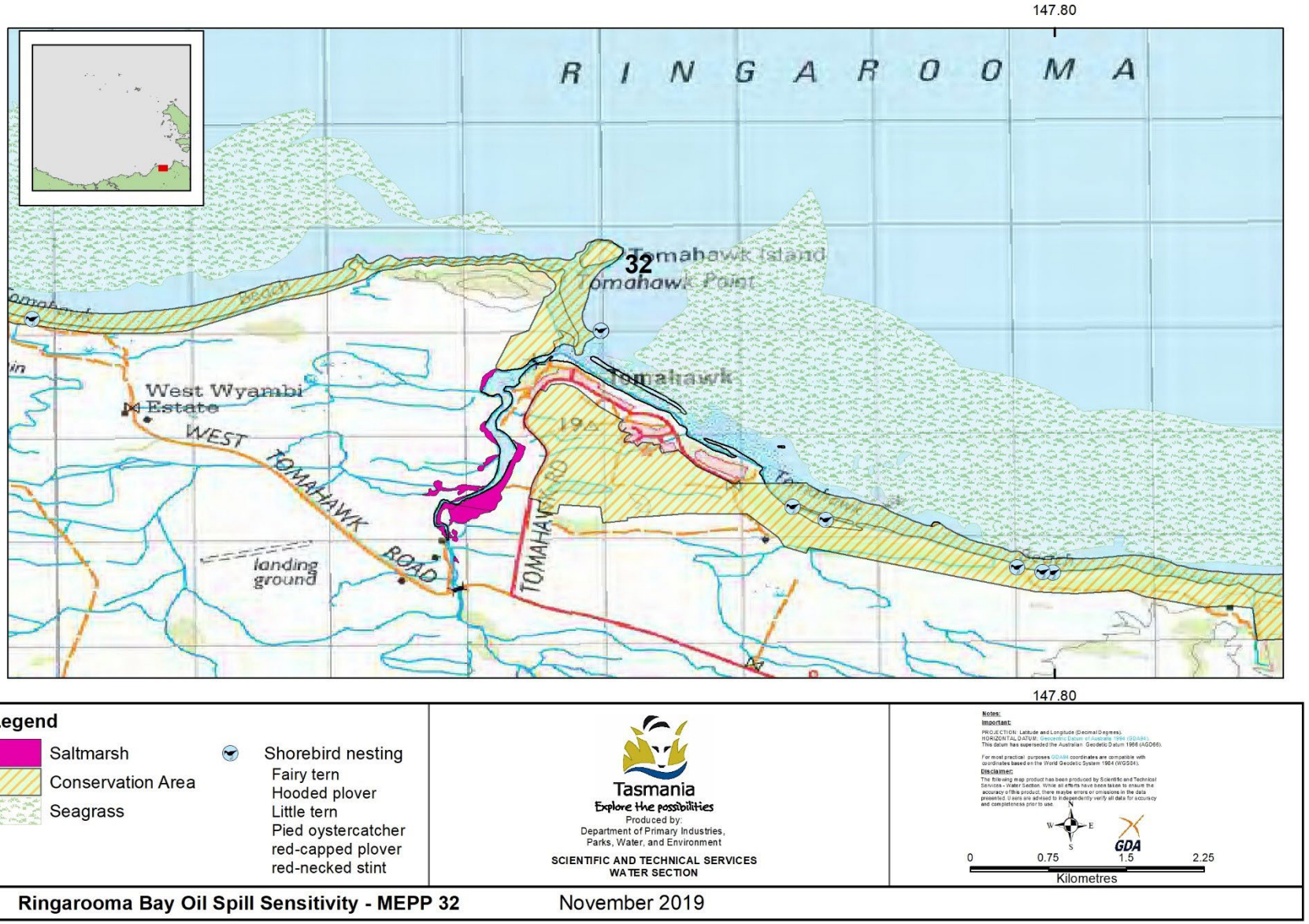
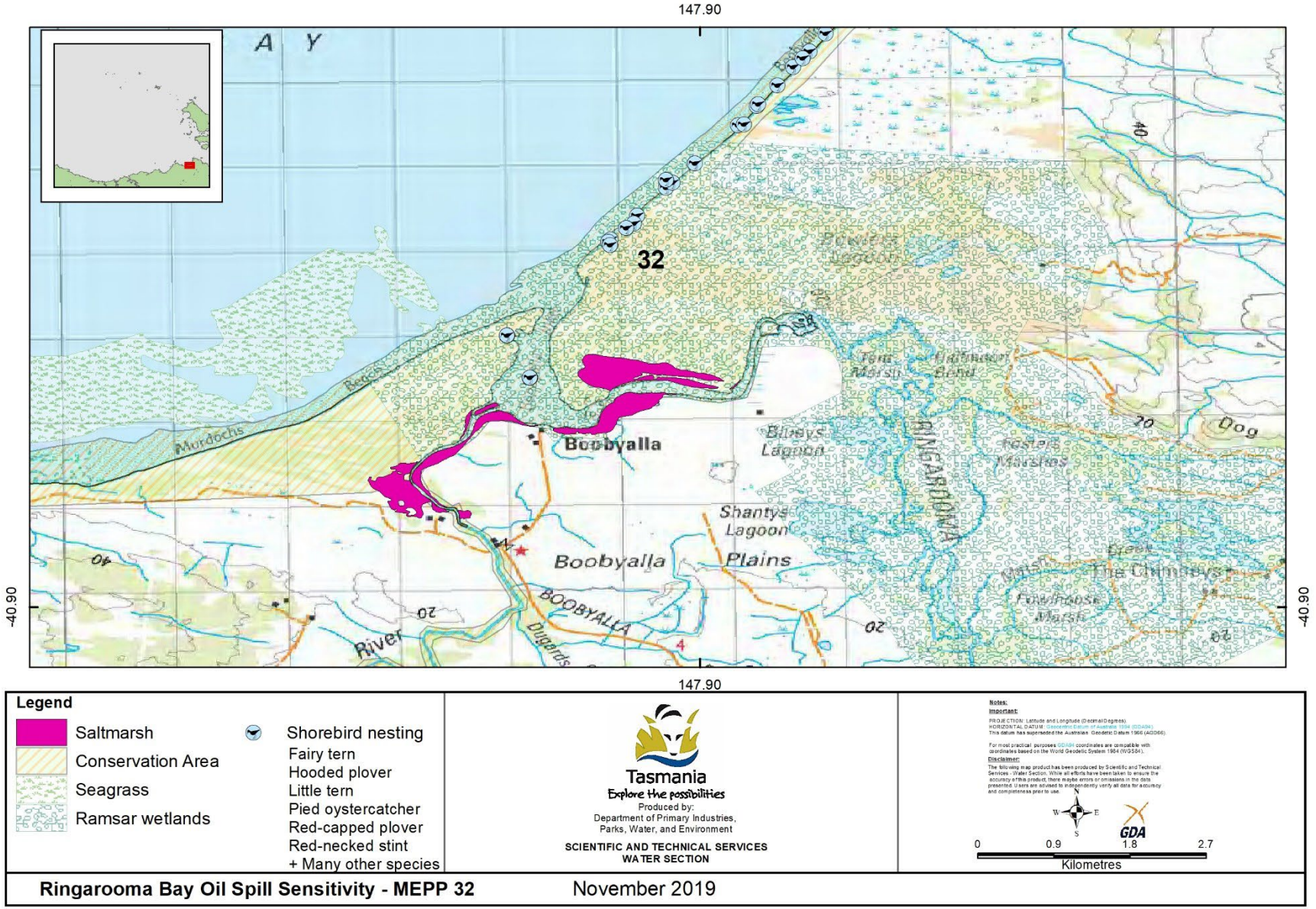


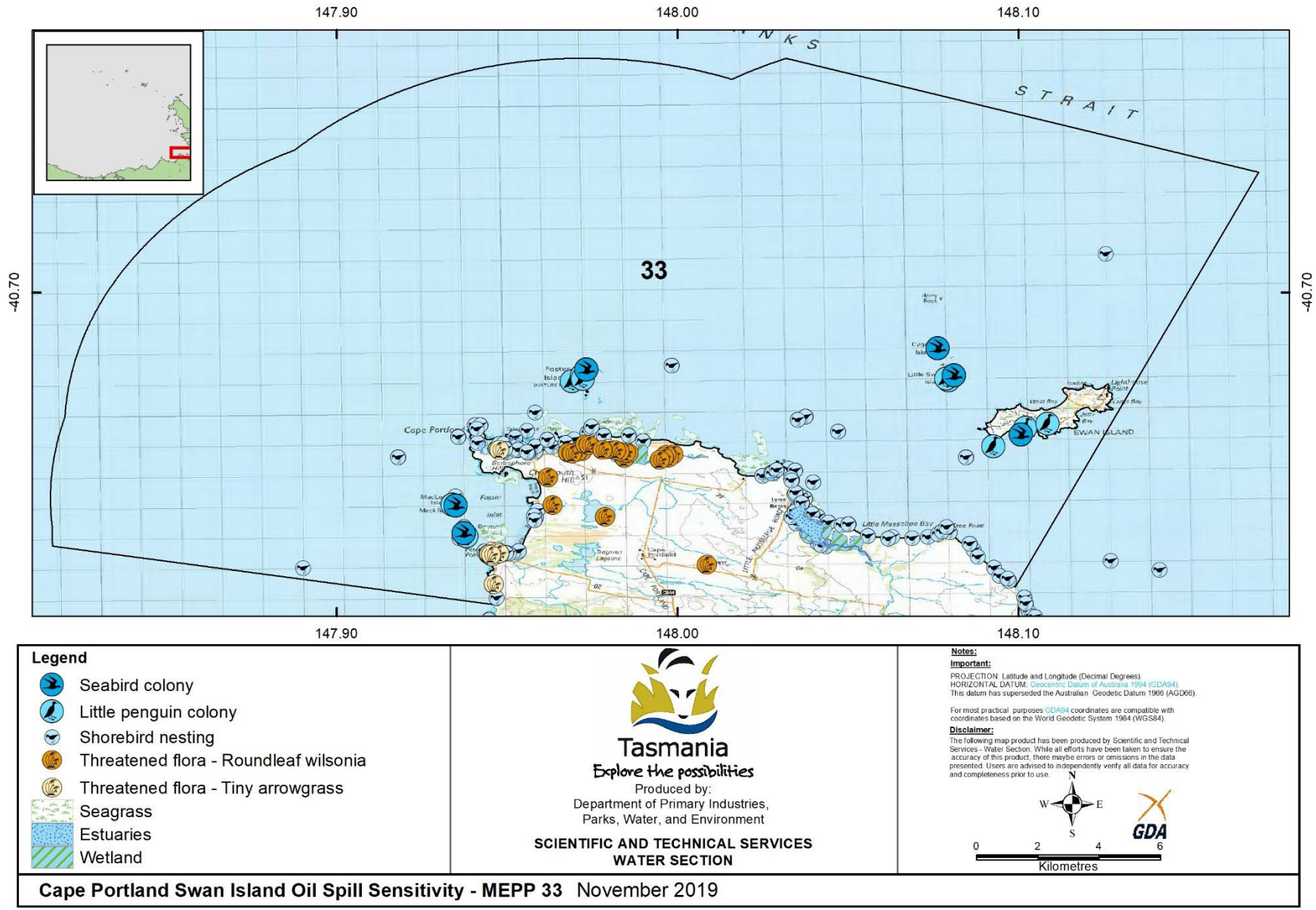
Map 5 Sensitive Resources - Segment 32



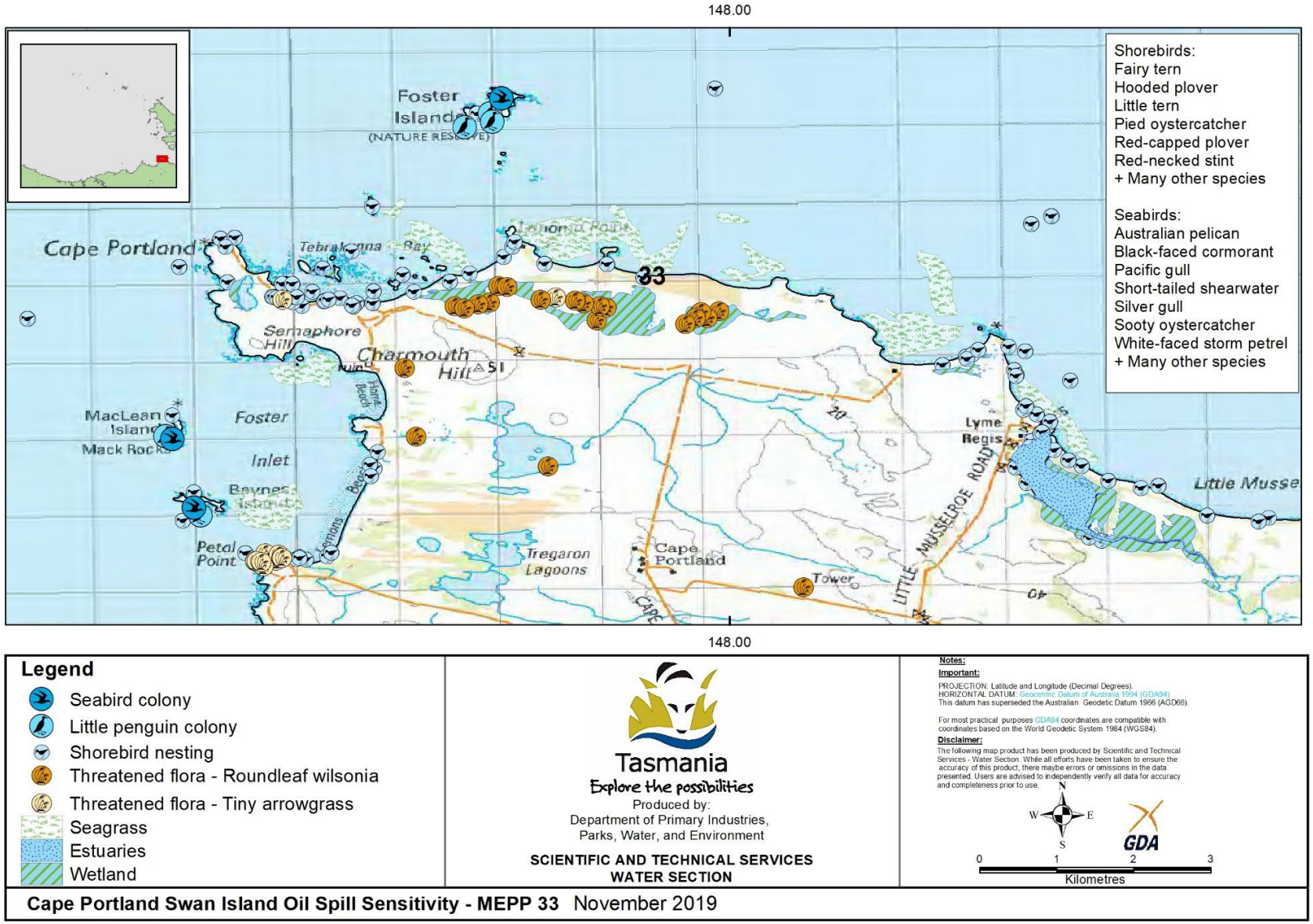
Map 6 Sensitive Resources - Segment 32



Map 7 Sensitive Resources - Segment 33



Map 8 Sensitive Resources – Segment 33



APPENDIX B – First Strike Response Options

The following potential First Strike Options is guidance for responders and does not direct a responder to take action in any particular way. The use of local knowledge and actual conditions, will best inform an effective response.

Tidal streams and river flows are weather dependent and will be best informed by the use of local knowledge.

The majority of this Plans coastline is exposed to the weather and will require careful planning and local knowledge of the area.

A great deal of the coastline and the islands off-shore, will require vessels or helicopters to access and move personnel and equipment.

There is no dedicated response equipment in this Plan immediate area, thus first strike equipment must be transported from the nearest available stockpile.

Wildlife response

The wildlife response techniques included in Tables 6 - 8 are based on simple response strategies utilising current equipment stockpiles in mainland Tasmania and Victoria.

The utilisation of wildlife deterrence, hazing and pre-emptive capture, needs to be considered as the primary response strategy early on in the planning phase of a response. Reference section 5.3.6 and 5.3.7 above for more specific information.

The acquisition of trained personnel, vessels of opportunity in the first instance, equipment to haze and capture and contain birds (including penguins), transport and the identification of an oiled wildlife facility(s), is a primary initial response consideration.

Wildlife responses are typically resource intensive, requiring a significant number of trained personnel, housing for wildlife, fresh water supply, waste water storage, fresh food availability, cages and transport.

Booming response

The listed **booming** Options included in Tables 6 – 8 are based on simple booming strategies utilising current equipment stockpiles in mainland Tasmania and Victoria.

The intent is to exclude or deflect oil from the areas at risk. Actions are dependent on favourable winds and currents.

The response strategy - **sweeping operations** – is an option for all areas, and should be considered initially, and as a concurrent operation if resources allow.

Booming from a shoreline, should utilise Shoreline boom on the shoreline (sandy beach preferred) to create the tidal seal. This boom should be connected to fence, self-inflating, or solid flotation booms, and run at an angle to the shoreline, and thus the current flow (the greater the current speed, the greater the angle across the current. The spilled oil can be deflected away (indicated in Diagram 7 below) or directed toward a sandy beach for collection.

All booming operations from a shoreline will require a solid securing arrangement on-shore. The use of trees, solid man-made structures, large rocks and star picket arrangements, is required.

Anchoring arrangements require suitable numbers and types of anchors for the weather/tide/current conditions, correct anchor line lengths (3-5 x depth of water), and tripping lines.

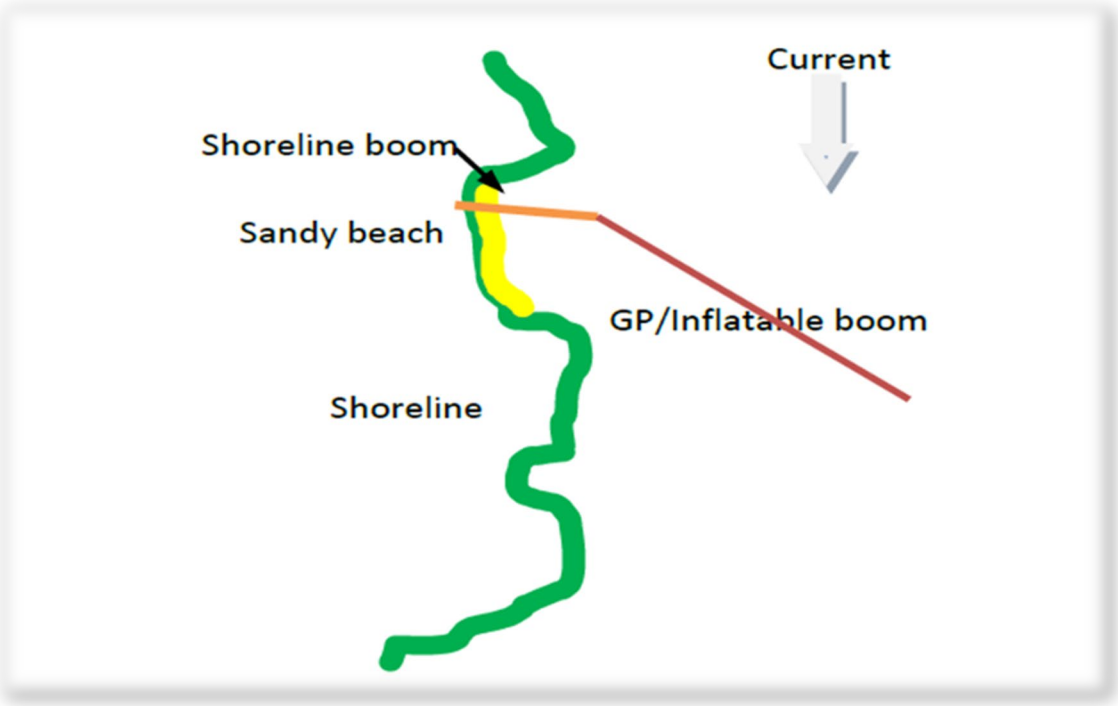


Diagram 7 Deflection booming

The above depicts the deflection of oil away from the shoreline. This configuration can also be used to collect oil on the beach if the current was moving in the opposite direction (from the bottom of the diagram upward).

The use of **vessel prop wash** to move oil from sensitive areas, or to direct the oil on the surface into boomed areas, is an option that can be utilised.

DO NOT utilise prop wash to agitate the oil so that it mixes into the water column.

Table 6 Segment 31 Sensitivities First Strike Options

Ref	Location	Potential First Strike Options
1	Waterhouse segment Entire coastline is a Conservation Area	The entire coastline is exposed to weather and sea conditions, particularly from the west, through north around to the southeast. Any operation needs to take into account actual and predicted weather conditions.
2	Andersen Bay Due east of East Sandy Point on Waterhouse Beach to Waterhouse Point. Conservation Area Resident Flying Birds breeding habitat of the endangered Little Tern Resident Flying Bird habitat of the threatened or high conservation Black-faced Cormorant, Pacific Gull, Hooded Plover and the Pied Oystercatcher Shorebird nesting sites	Mobile sweep booms or sweep systems can be used to protect the coastline by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. The tactic of deflecting oil away from more sensitive areas to less sensitive areas can reduce the impact, but requires significant logistical support including vessels and experienced personnel. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Ref	Location	Potential First Strike Options
3	Lake Creek Empties to the sea although is supra-tidal. With significant rain the opening could allow oil to enter on high tides and strong onshore winds. Conservation Area	Shoreline booms are to be used at the mouth of the Creek, to prevent oil entering the waterway, in order to protect the wetlands. The shoreline boom (minimum 80m) should be deployed along the beach above the high-water mark, in the vicinity of the creeks mouth. Additional shoreline boom (40m) should be deployed inside the mouth of the creek (vicinity of the start of the dune vegetation), as a secondary containment boom. Anchoring arrangements will be required on the shoreline for the ends of the boom. Where boom is not available, a sand dam or berm should be constructed by dozing sand across the mouth of the creek. If the outward flow from the creek is significant, the dam will require constant tender to ensure integrity. Removal of the sand barrier is required at times to allow water egress from the creek system. The water movement will normally be an outward flow following high rainfall. Higher tides and onshore winds could push seawater back into the creek.
5	Little Waterhouse Lake creek Can empty to the sea with rain. Oil could enter on high tides and strong onshore winds, although highly unlikely. Conservation Area	Shoreline booms are to be used at the mouth of the Creek, to prevent oil entering the waterway, in order to protect the wetlands. The shoreline boom (minimum 20m) should be deployed inland from the beach near the creeks mouth. Additional shoreline boom (20m) could be deployed inside the mouth of the creek as a secondary containment boom. Anchoring arrangements will be required on the shoreline for the ends of the boom. Where boom is not available, a sand dam or berm should be constructed by dozing sand across the mouth of the creek. If the outward flow from the creek is significant, the dam will require constant tender to ensure integrity. Removal of this sand barrier is required at times to allow water egress from the creek system. The water movement will normally be an outward flow following high rainfall. Higher tides and onshore winds could push seawater back into the creek.
6	South Croppies Point to Croppies Point. Several small beaches and rocky headlands. Conservation Area Shorebird nesting sites	Mobile sweep booms or sweep systems can be used to protect the coastline by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. Croppies Beach and the rocky headland immediately to its north are identified shorebird nesting sites. The tactic of deflecting oil away from more sensitive areas to less sensitive areas can reduce the impact, but requires significant logistical support including vessels and experienced personnel. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Ref	Location	Potential First Strike Options
7	Croppies Point to Waterhouse Point Rocky shoreline to where Homestead Road heads due east, then sandy beaches to Waterhouse Point. Conservation Area Shorebird nesting sites (between Blizzards Landing and Herbies Landing) and around Waterhouse Point. Seagrass beds from One Tree Hill to Waterhouse Point and out to Waterhouse Island. Threatened flora – Wilsonia rotundifolia at One Tree Hill area around Blizzards (170m southwest) and Herbies Landings (170m north).	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting and threatened flora sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. The tactic of deflecting oil away from more sensitive areas to less sensitive areas can reduce the impact, but requires significant logistical support including vessels and experienced personnel. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
8	Waterhouse Island Entire coastline is rocky except a small sandy area around the homestead on the eastern side. Sea-bird colony and Little Penguin colony (south-eastern part of the Island south of the homestead). Shorebird nesting sites (along the eastern side of the Island) Seagrass beds from One Tree Hill to Waterhouse Point and out to Waterhouse Island.	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting and colonies, and penguin colonies) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
9	Little Waterhouse Island Important Bird Area Sea-bird colony Little Penguin colony	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting and colonies, and penguin colonies) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Table 7 Segment 32 Sensitivities First Strike Options

Ref	Location	Potential First Strike Options
1	Waterhouse Point to 1800m south of Petal Point – Ringarooma Bay. The entire coastline from Waterhouse Point to Ringarooma River is a Conservation Area	The entire coastline is exposed to weather and sea conditions, particularly from the northwest around to the northeast. Any operation needs to take into account actual and predicted weather conditions.
2	Waterhouse Point to Tomahawk Point Almost entirely sandy beaches apart from several rocky headlands including Tomahawk Point and Tomahawk Island. Conservation area. Shorebird nesting sites (particularly around Waterhouse Point and Ransoms Beach Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher Seagrass beds	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
3	Tomahawk township Conservation area. Shorebird nesting sites Tomahawk River system Saltmarsh upstream (> 450m) of the river entrance	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. Tomahawk River system is a priority for protection. The use of 80m of Shoreline boom at the river entrance run from above the high-water mark will be effective. A secondary boom of 60m using shoreline and solid flotation boom at the footbridge will provide additional protection. The River system is tidal with large areas of sandbanks and mudflats exposed at low water, with local knowledge required for vessel operations on the river, and particularly around the entrance. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Ref	Location	Potential First Strike Options
4	Tomahawk Point to Ringarooma River Almost entirely sandy beaches apart from several rocky outcrops at the eastern end of Tomahawk Beach. Shorebird nesting sites Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher Seagrass beds RAMSAR wetland The eastern end of Murdochs Beach for 2000m before the entrance to the River.	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
5	Ringarooma River system The river system is open to the sea but very shallow at low water. The entire Ringarooma river lower flood plain is a RAMSAR wetland. This runs for a distance of about 1000m up stream of the Boobyalla River from the entrance, and about 2000m each side of the river entrance on the ocean side Saltmarsh is located upstream of the Boobyalla river for about 2000m, and from opposite Campbells Point east 1500m. Shorebird nesting sites CFEV Integrated Conservation value	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. The Ringarooma River system is a priority for protection. The use of 80m of Shoreline boom and 200m of solid/air inflated boom used at the river entrance, run from above the high-water mark could be effective. The success will be determined by the wind and swell conditions at the river mouth as well as tidal flow out of the river. A secondary boom of 40m of shoreline 100m of solid flotation boom at the narrows east of Campbells Point will provide additional proetection. Th entrance to Boobyalla River (inside the entrance to the Ringarooma River) will require protection using 60m of shoreline boom just inside the river entrance. Small vessel transport will be required to run booms in this area. The River system is tidal with large areas of sandbanks and mudflats exposed at low water, with local knowledge required for vessel operations on the river, and particularly around the entrance. The sand banks and flats are mobile, thus any booming operation needs to be monitored at all times. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds. Note that descriptions of habitat and species within the RAMSAR wetland area are in the "Flood Plain Lower Rinagarooma River Ramsar Site Ecological Character Description" (Newell and Lloyd 2012) http://www.environment.gov.au/water/wetlands/publications/flood-plain-lower-ringarooma-river-ramsar-site-ecd

Ref	Location	Potential First Strike Options
6	Ringarooma River to Petal Point area (1800m south) Entirely sandy beach. Shorebird nesting sites (concentrated between the Ringarooma River and Petal Point) Resident Flying Birds breeding habitat of the vulnerable Fairy Tern and White-bellied Sea-eagle Resident Flying Bird habitat of the threatened or high conservation Little Tern, Hooded Plover and the Pied Oystercatcher RAMSAR wetland The shoreline on the western end of Boobyalla Beach for 2000m after the entrance to the River.	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Table 8 Segment 33 Sensitivities First Strike Options

Ref	Location	Potential First Strike Options
1	Petal Point to 2400m southeast of Tree Point in Great Musselroe Bay, including Baynes Island, MacLean Island, Foster Islands, Cygnet Island, Little Swan Island and Swan Island.	The entire coastline is exposed to weather and sea conditions, particularly from the southwest around to the southeast. Any operation needs to take into account actual and predicted weather conditions.
2	Petal Point (1800m south) to Cape Portland Sandy beaches and rocky headlands. Conservation area from 1800m south of Petal Point to Petal Point. Shorebird nesting sites Resident Flying Bird habitat of the threatened or high conservation Hooded Plover Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle Threatened flora – Wilsonia rotundifolia around Home Beach in Foster Inlet, and Tiny Arrowgrass around Petal Point and 1000m south and around Cape Portland Seagrass beds (areas north of Petal Point and south of Semaphore Hill	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.

Ref	Location	Potential First Strike Options
3	Baynes Island, Mack Rock and MacLean Island in Foster Inlet Entirely rocky islands. Shorebird nesting sites Resident Flying Bird habitat of the threatened or high conservation Hooded Plover Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle Breeding habitat of the Little Penguin	Mobile sweep booms or sweep systems can be used to protect the coastline by undertaking sweeping operations off-shore prior to oil impact. The use of off-shore inflatable booms, with vessel support, to create chevron deflection boom arrangements, may be possible around these islands in favourable sea conditions, to protect foreshores (shorebird nesting sites). The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect the penguin colonies as oil approaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
4	Cape Portland to Lyme Regis Primarily sandy beaches with a number of rocky headlands including Lanoma Point. There are numerous small rocky outcrops and islands in Tebrakuma Bay. Shorebird nesting sites Threatened flora – Tiny Arrowgrass around Cape Portland and along with Wilsonia rotundifolia, in the wetlands between Tebrakunna Bay and 3000m east of Lanoma Point.	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
5	Foster Islands Rocky islands with a small sandy beach on the north eastern side. Shorebird nesting sites Resident Flying Bird habitat of the threatened or high conservation Hooded Plover Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle Breeding habitat of the Little Penguin. Breeding colonies of short-tailed shearwaters and white-faced storm petrels. Australian pelican have been recorded breeding in the past. Seagrass beds – entire coast	Mobile sweep booms or sweep systems can be used to protect the coastline by undertaking sweeping operations off-shore prior to oil impact. The use of off-shore inflatable booms, with vessel support, to create chevron deflection boom arrangements, may be possible around these islands in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect the penguin colonies as oil approaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
6	Lyme Regis estuary - Little	Mobile sweep booms or sweep systems can be used to protect the

Ref	Location	Potential First Strike Options
	Musselroe River The estuary system is open to the sea but very shallow at low water. Shorebird nesting sites CFEV Integrated Conservation value Wetland unnamed – Directory of Important Wetlands	coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. Little Musselroe River system is a priority for protection. The use of 60m of Shoreline boom at the river entrance run from above the high-water mark across to the sandspit will be effective. Large seas may open up this entrance much wider thus conditions at the time will determine boom amounts. A secondary boom of 80m of shoreline boom 1250m south of the entrance to the river may be required if the entrance is unable to be boomed. The river system is tidal with large areas of sandbanks and mudflats exposed at low water, with local knowledge required for vessel operations on the river, and particularly around the entrance. Where boom is not available, a sand dam or berm should be constructed by dozing sand across the mouth of the creek. If the outward flow from the creek is significant, the dam will require constant tender to ensure integrity. Removal of this sand barrier is required at times to allow water egress from the creek system. The water movement will normally be an outward flow following high rainfall. Higher tides and onshore winds could push seawater back into the creek. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
7	Lyme Regis to 2400m southeast of Tree Point Primarily sandy beaches with a several rocky headlands Shorebird nesting sites Seagrass beds – small patch off Lyme Regis	Mobile sweep booms or sweep systems can be used to protect the coastline and the areas of seagrass beds, by undertaking sweeping operations off-shore prior to impact. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively capture at-risk birds, and to capture, triage and clean oiled birds.
8	Swan Island, Little Swan Island and Cygnet Island Shorebird nesting sites (eg. Caspian tern and crested tern, pied and sooty oystercatchers on Swan Island). Resident Flying Bird habitat of the threatened or high conservation Hooded Plover Resident Flying Birds breeding habitat of the vulnerable White-bellied Sea-eagle Breeding habitat of the Little	Mobile sweep booms or sweep systems can be used to protect the coastline by undertaking sweeping operations off-shore prior to oil impact. The use of off-shore inflatable booms, with vessel support, to create chevron deflection boom arrangements, may be possible around some of these islands in favourable sea conditions, to protect foreshores (shorebird nesting sites) as oil approaches. The use of solid flotation, self-inflating or inflatable booms, as well as shoreline booms, may be possible along this coastline in favourable sea conditions, to protect foreshores (seabird, shorebird and penguin habitats) as oil approaches, or to direct the oil onto more easily cleaned and accessible beaches. An effective wildlife strategy may be to haze or to pre-emptively

Ref	Location	Potential First Strike Options
	Penguin (Swan Island and Little Swan Island). Breeding colonies of short-tailed shearwater (Swan Is, Little Swan Is), white-faced storm-petrel (Little Swan Island), common diving-petrel (Little Swan Island), black-faced cormorant (Cygnet Is, Australian pelican (Little Swan Island). Cygnet Island is a rocky islet. Resident seabird colony Little Swan Island is a rocky island with a small sandpit on the southern tip. Resident seabird, shorebird and Little Penguin colonies are present. Swan Island is a rocky island with a numerous sandy beaches around the island. Resident seabird, shorebird and Little Penguin colonies are present particularly either side of Telegraph Bay on the southern coast.	capture at-risk birds, and to capture, triage and clean oiled birds.

APPENDIX D - Equipment lists

The following equipment is available to respond to a spill within this Plan's segments.

All the listed equipment needs to be transported from the stockpiles at Devonport, Bell Bay, Hobart, Melbourne or Geelong to the response areas.

Any equipment that requires transport by sea from mainland Tasmania or Victoria, will take a minimum of 24 hours to be transported to Devonport, Burnie or Bell Bay, if a vessel is immediately available to transport.

Oiled Wildlife

First strike response equipment will be sourced from Tasmania through MCP and EPA. However, depending on the location of the spill in Bass Strait waters, MCP and EPA may source equipment from Victoria through resource sharing agreements within the National Oiled Wildlife Working Group.

For the north of Tasmania, Oiled Wildlife Response gear is held at the NRE Tas Mt Pleasant laboratories, Launceston. A dedicated wildlife container is available in the Tasmanian National Plan Stockpile at Devonport and requests for these resources should be made through AMSA. For first strike, local resources may be available through the PWS field centres at King Island and Flinders Island.

Refer to WildPlan for a complete list of available equipment and location, and/or identified suppliers for capture, hazing and cleaning equipment.

Table 9 Equipment and Wildlife kits

Equipment description	Location	Quantity	Owner
Shoreline, small solid buoyancy and inflatable booms + anchors + skimmers in small quantities.	Bell Bay Burnie Devonport Hobart		TasPorts EPA
Sweep systems	Devonport	1	AMSA
	Melbourne	1	AMSA
	Geelong	1	AMOSC
Booms, anchors, skimmers	Devonport, Melbourne and Geelong	Major local stockpiles	AMSA AMOSC
Wildlife kits	Launceston Mt Pleasant	1	NRE Tas
Wildlife container	Devonport	1	AMSA
Wildlife container	Geelong	1	AMOSC

Table 10 Vessels

Equipment description	Size	Speed knots	Quantity
None identified – vessels of opportunity TasPorts have lines boats and tugs in Bell Bay, Devonport and Burnie. Vessels will need to be trailerable and shallow draft to operate in estuaries and rivers in this region. The Marine Conservation Program (NRE Tas) have vessels based near Hobart that are trailerable and available for Oiled Wildlife Response. PWS vessels are also listed in WildPlan.			

The bulk of first strike response equipment for a spill in this Plans area, will have to be shipped in from either Bell Bay or Devonport in the first instance. Planners need to be aware of the lead time required to prepare, transport and ship to the area. Road distances are from Bell Bay to Bridport 45 mins, Bell Bay to Lyme Regis 2 hrs, Devonport to Bridport 2 hrs and Devonport to Lyme Regis 3 hrs.

To access databases for EPA, TasPorts, AMSA and AMOSC owned equipment, contact the On-call Officer at the EPA through the Pollution Hotline.

APPENDIX D - Contacts list

Pollution Hotline	1800 005 171
Harbour Control	03 6222 6061
TasPorts Duty Officer	1300 664 007 or 1300 366 742
TasPorts KI	(03) 6461 1155
State Oil Pollution Control Officer	1800 005 171
Marine Conservation Program (NRE Tas)	0427 942 597 (24 hr hotline)
Tasmania Fire Service	000

ENVIRONMENT PROTECTION AUTHORITY