



## ATTENTION: For First Strike (initial 48hrs)

Response Actions see:

**Section 2.4 – ‘Regulatory Notifications’**

**Section 2.5 - ‘Action Sequence Checklists’**

## Purpose

To instruct the response to an unplanned release of hydrocarbons

## Scope

The OPEP provides response instructions for vessels and facilities including:

Otway Subsea Facilities: Casino, Henry, Netherby Development, Otway Exploration Drilling, Annie 2  
Development  
Gippsland Subsea Facilities: Basker Manta Gummy, Patricia Baleen, Sole

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## Health, Safety and Environment Policy



This policy describes our approach to managing Health, Safety and Environmental risks at Amplitude Energy

### Our Commitment

Amplitude Energy is committed to taking all reasonably practicable steps to protect the health and safety of our workers, contractors, partners, and the communities in the areas where we operate.

In addition, we will ensure our business is conducted in an environmentally responsible manner.

### Our Actions

We will:

- Integrate health, safety and environmental requirements into our daily work, our business planning and our decision making
- Comply with all relevant health, safety and environmental laws and regulations
- Provide resources and systems to enable delivery of our health, safety and environmental objectives
- Identify, control and monitor risks that have the potential to harm people and the environment to as low as reasonably practical
- Empower our people, regardless of position, to "Stop the Job" if they consider it necessary to prevent harm to themselves, others or the environment
- Consult, communicate and promote participation of our workforce to build and maintain a strong health, safety and environment culture
- Ensure all employees and contractors are trained, competent and suitably supervised so that works are undertaken in a safe and environmentally responsible manner
- Collaborate proactively with our stakeholders and the communities where we operate
- Investigate and learn from our incidents and from those in our industry
- Set, measure and monitor health, safety and environmental targets to drive continuous improvement in our performance
- Report publicly and transparently on our health, safety and environmental performance

### Governance

The [HSE Improvement Forum](#) has oversight of this policy. The Managing Director is accountable for communicating this Policy and for ensuring compliance with its undertakings. All [Executive Leadership Team](#) members and Managers shall ensure the effective implementation, management and monitoring of our HSE Management System and its subsequent outcomes.

All Staff are responsible for compliance with our policy, standards, and procedures.

This policy will be reviewed at appropriate intervals and revised as necessary to keep it current.

### Policy authorised by

Jane Norman

Managing Director & CEO

Date: 11 February 2025    Review Date: 13 July 2026



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## 1.0 Scope of OPEP

This Offshore Victoria Oil Pollution Emergency Plan (OPEP) (VIC-ER-EMP-0001) has been prepared to support Amplitude Energy's assets and activities in offshore Victorian waters.

The OPEP consolidates Amplitude Energy's response to all spill risks across the Gippsland field (Patricia-Baleen (PB) and Sole, P&A scope at Basker Manta Gummy (BMG)) assets (Figure 1-1) and the Otway field (Casino, Netherby and Henry (CHN), and Otway exploration and development) (Figure 1-2) assets, given the commonality of many of their oil spill risks and resources to respond. Where there are specific requirements for scenarios associated with assets or activities, these are described in this plan.

This OPEP has been prepared in accordance with Regulation 22(8) (9) (10) (11) (14) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (OPGGS(E)R) 2023 Commonwealth (Cth) and Regulation 17 of the Offshore Petroleum and Greenhouse Gas Storage Regulations (OPGGSR) 2021 Victoria (Vic).

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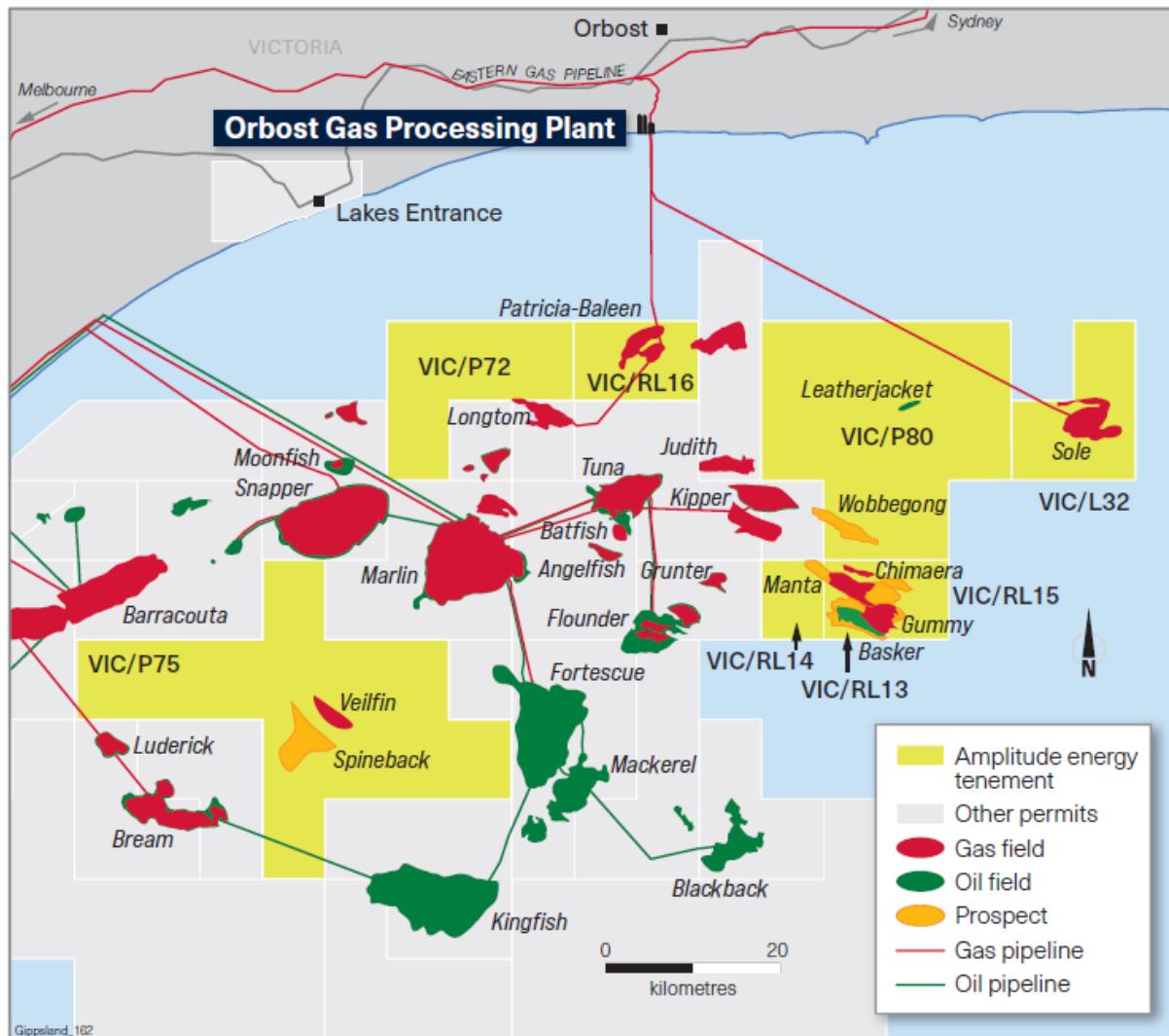


Figure 1-1 Amplitude Energy Offshore Gippsland Assets

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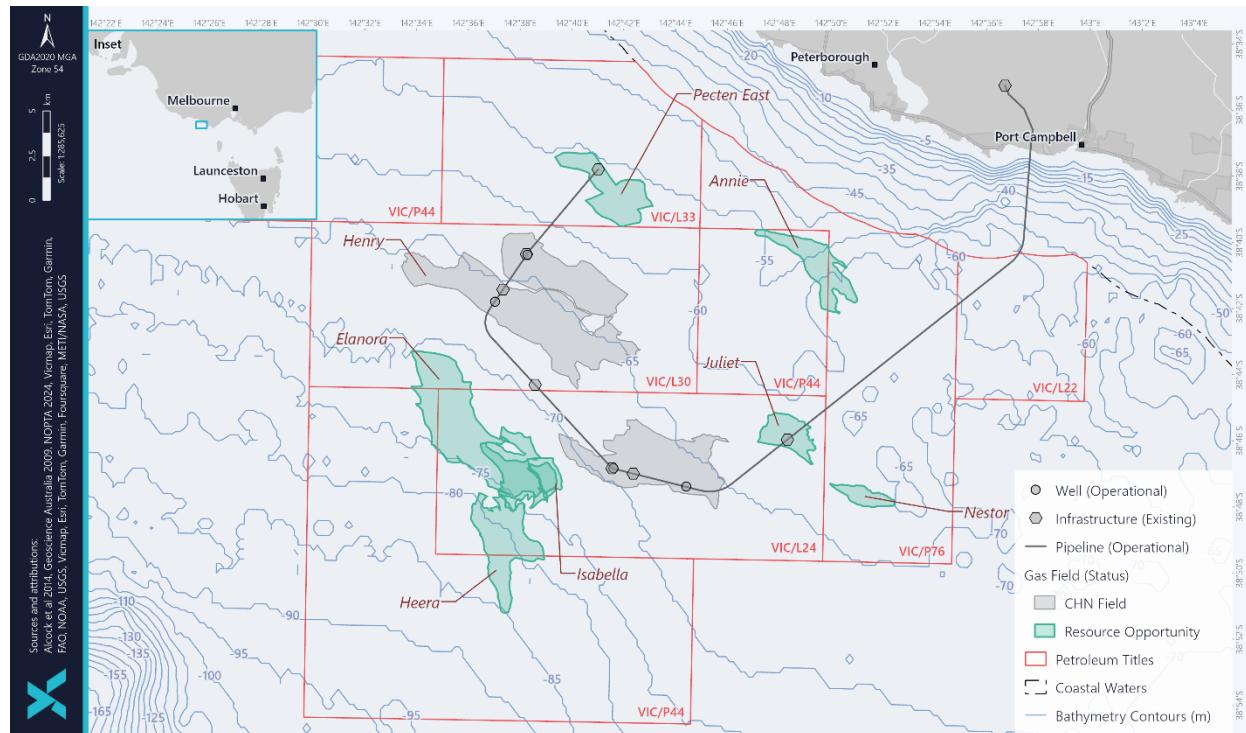


Figure 1-2: Amplitude Energy Offshore Otway Assets and resource opportunities

## 1.1 Facilities and Activities Relevant to the OPEP

The spill scenarios for the assets and activities described in Table 1-1 are identified in the corresponding Environment Plans (EP).

*Table 1-1: Facilities and Activities within the Scope of the Offshore Victoria OPEC*

Asset	Description	Activities	Fluid Types
<b>PB – Gippsland Basin</b>	Gas and condensate infrastructure (temporary suspended) located in petroleum titles VIC/RL16, VIC/PL31 and VIC/PL31(V) from the VIC/PL31 tie-in point to the Longtom Pipeline (VIC/PL38) to the Victorian shoreline (mean low water mark).	<p>PB: non-production phase activities which includes integrity management on the following offshore assets in Commonwealth and Victorian state waters:</p> <ul style="list-style-type: none"> <li>Two subsea production wells, Patricia -2 and Baleen-4 (currently shut-in) in 54 m water depth.</li> <li>One suspended well (Patricia-1) in 54 m water depth.</li> <li>24 km x 300 mm (ND) subsea pipeline from</li> </ul>	Gas and condensate Hydraulic fluid Nitrogen MEG Marine diesel oil (MDO)

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		<p>Patricia-2 and Baleen-4 wells to shore. The pipeline is non-operational and suspended. It contains nitrogen (4,550 m<sup>3</sup>), natural gas (2,700 m<sup>3</sup>), residual Longtom condensate (5 m<sup>3</sup>) and Mono-ethylene glycol (MEG) / water mixture (150 m<sup>3</sup> in a 40:60 ratio).</p> <ul style="list-style-type: none"> <li>• A subsea umbilical located 20 m to the west of the pipeline running from the gas plant to the subsea wells.</li> </ul>	
<b>Sole – Gippsland Basin</b>	An operating gas field located in petroleum title VIC/L32, ~32 km south of the Bemm River in Victoria. Includes Sole wells connected to the Orbost Gas Plant via Licensed Pipeline VIC/PL43 and VIC/PL006401(V), a 65 km subsea pipeline and umbilical cable.	<p>Sole operations activities which include integrity management of the following assets and activities in Commonwealth and Victorian state waters:</p> <ul style="list-style-type: none"> <li>• Two subsea producing wells (Sole-3 and Sole-4) in 124 m water depth.</li> <li>• One plugged and abandoned well (Sole-2) in 125 m water depth. Wellhead in place.</li> <li>• Operations of pipeline to the Orbost Gas Plant.</li> <li>• A subsea umbilical located 20 m to the west of the pipeline running from the gas plant to the subsea wells.</li> </ul>	Gas and condensate Hydraulic fluid MEG MDO
<b>BMG – Gippsland Basin</b>	The BMG facilities have been shut-in and made safe. They are located within the licence area VIC/RL13 located in Commonwealth waters ~ 50 km from the Victorian coastline.	<p>Planned activities include:</p> <ul style="list-style-type: none"> <li>- inspection and maintenance of subsea equipment</li> <li>- recovery of the remaining subsea equipment using a construction vessel.</li> </ul> <p>The loss of containment risk from the wells has been</p>	Oily water Hydraulic fluid MDO

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		<p>eliminated via the successful well plug and abandonment campaign in 2024. This risk was previously provided for under the BMG Closure Project (Phase 1) OPEP (BMG-ER-EMP-0004).</p> <ul style="list-style-type: none"> <li>There remains some oily water within the B6 flowline (approx. 1-2m<sup>3</sup> hydrocarbons within a 100m<sup>3</sup> volume of water. The B6 flowline is currently isolated.</li> </ul>	
<b>Otway stage I &amp; II – Otway Basin</b>	A gas and condensate infrastructure servicing subsea completions in the CHN fields located in petroleum titles VIC/L24 (Casino) and VIC/L30 (Henry and Netherby) and Licensed Pipelines VIC/PL37, VIC/L42 and Vic/PL37 (V) from the gas fields to the Victorian shoreline (shore crossing location).	<p>Operations and maintenance activities on the following facilities in Commonwealth and Victorian state waters:</p> <ul style="list-style-type: none"> <li>Subsea wells (Netherby-1, Casino-4, Casino-5 and Henry-2) in ~63-70 m water depth.</li> <li>32.6 km x 300 mm Nominal Diameter (ND) subsea pipeline (Casino-5 well to shore-crossing).</li> <li>22 km x 300 mm ND subsea pipeline (Casino-5 to Pecten east pipeline).</li> <li>31.2 km x 120 mm Electro-hydraulic umbilical (EHU) cable (Casino-5 to shore crossing).</li> <li>22 km x 135 mm EHU cable (Casino-5 to Netherby-1 well).</li> </ul>	Gas and condensate Hydraulic fluid MDO
<b>Otway Basin</b>	A proposed scope for the well exploration, construction and development in the petroleum titles VIC/L24, VIC/P44 and VIC/P76 in the Otway Basin in Commonwealth waters.	<p>Well construction activities for the following proposed well locations within Commonwealth waters:</p> <ul style="list-style-type: none"> <li>Subsea wells (Annie-2, Juliet-1, Nestor-1, and Elanora-1) in ~ 58-74 m.</li> </ul>	Gas and condensate Hydraulic fluid MDO



		<ul style="list-style-type: none"> <li>• One contingent subsea well (Elanora-1 ST1) in ~74 m water depths.</li> </ul>	
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## 1.2 Spill scenarios

Table 1-2 describes the spill scenarios for which this OPEP has been developed.

*Table 1-2: Spill scenarios for this OPEP*

Spill Risk*	Fluid type	Worst-Case Volume*	PB	Sole	BMG	Otway
Loss of Containment (LoC) minor spill (level 1)	MDO, hydraulic oil	Up to 50 m <sup>3</sup>	✓	✓	✓	✓
Vessel LoC (collision) (level 1/2)	MDO	250 m <sup>3</sup> surface release over 6 hours.				✓
		500 m <sup>3</sup> surface release over 6 hours.	✓	✓	✓	
Subsea LoC (pipeline or infrastructure leak) (level 1/2)	Gas / condensate / diesel	PB - Gippsland: 5 m <sup>3</sup> Longtom condensate, 2,700 m <sup>3</sup> gas Sole – Gippsland: 0.5 m <sup>3</sup> BMG – Gippsland: ~1-2 m <sup>3</sup> Otway: 50 m <sup>3</sup>	✓	✓	✓	✓
Loss of well control (LOWC**) (level 1)	Gas / condensate	PB - Gippsland: 24.4 MMscf/d gas (0.4 m <sup>3</sup> /d) Sole - Gippsland: 160 MMscf/d gas (1.6 m <sup>3</sup> /d) Otway: 41 MMScf/d (0.1 m <sup>3</sup> /d)	✓ (Cth)	✓ (Cth)	✗	✓ (Cth)
Loss of well control (LOWC) (level 2/3)**	Gas / condensate	Well Campaigns: Up to 16,740 m <sup>3</sup> subsea release over 102 days	✗	✗	✗	✓ (Cth)

\* Further details regarding worst-case discharge volumes, discharge locations, potential release durations and environmental impacts and risks are detailed within each relevant activity-specific EP.

\*\*These scenarios require unconstrained flow from the well, this is not considered credible during steady state operations (SOL-DC-WMP-0001, CHN-HS-SMP-0001).

### 1.2.1 Environment that May be Affected

The Environment that May be Affected (EMBA) by worst case scenario spills, as informed by stochastic modelling is shown below for the Otway Visiting Vessel MDO Spill (Figure 1-3), Otway Basin Drilling LOWC Spill (Figure 1-4), and Gippsland Facilities MDO Spill (Figure 1-5 to Figure 1-7).

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Note due to the low volumes of liquids produced with the gas in the Gippsland fields, stochastic spill modelling has been completed for an MDO spill only; a loss of containment from infrastructure would be expected to be much lower liquids volume and well within the MDO spill scenario EMBA.

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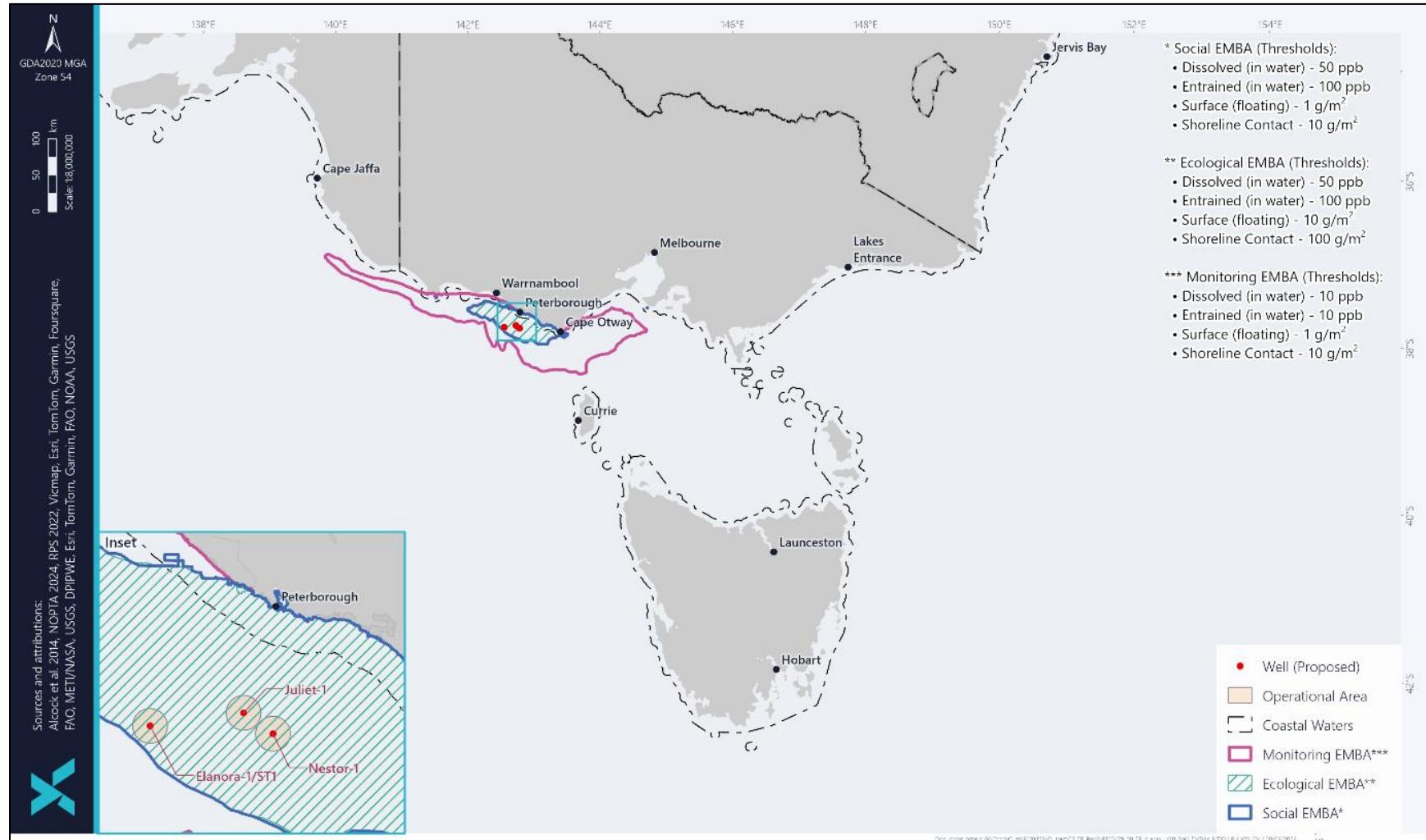


Figure 1-3: Combined oil EMBAs for (Visiting Vessel) MDO Spill Scenario- Otway Basin



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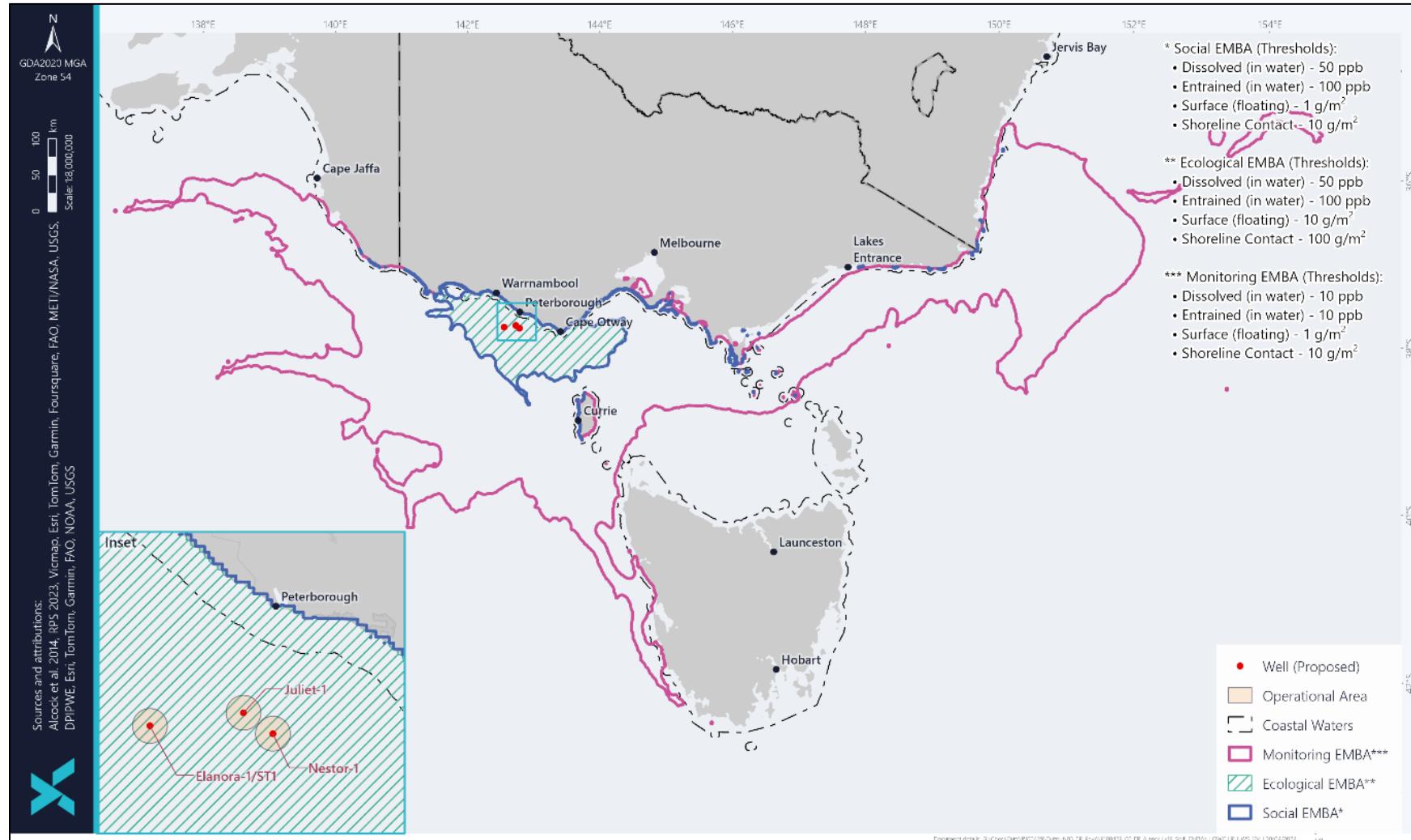


Figure 1-4: Combined condensate EMBAs for Drilling LOWC Spill Scenario – Otway Basin



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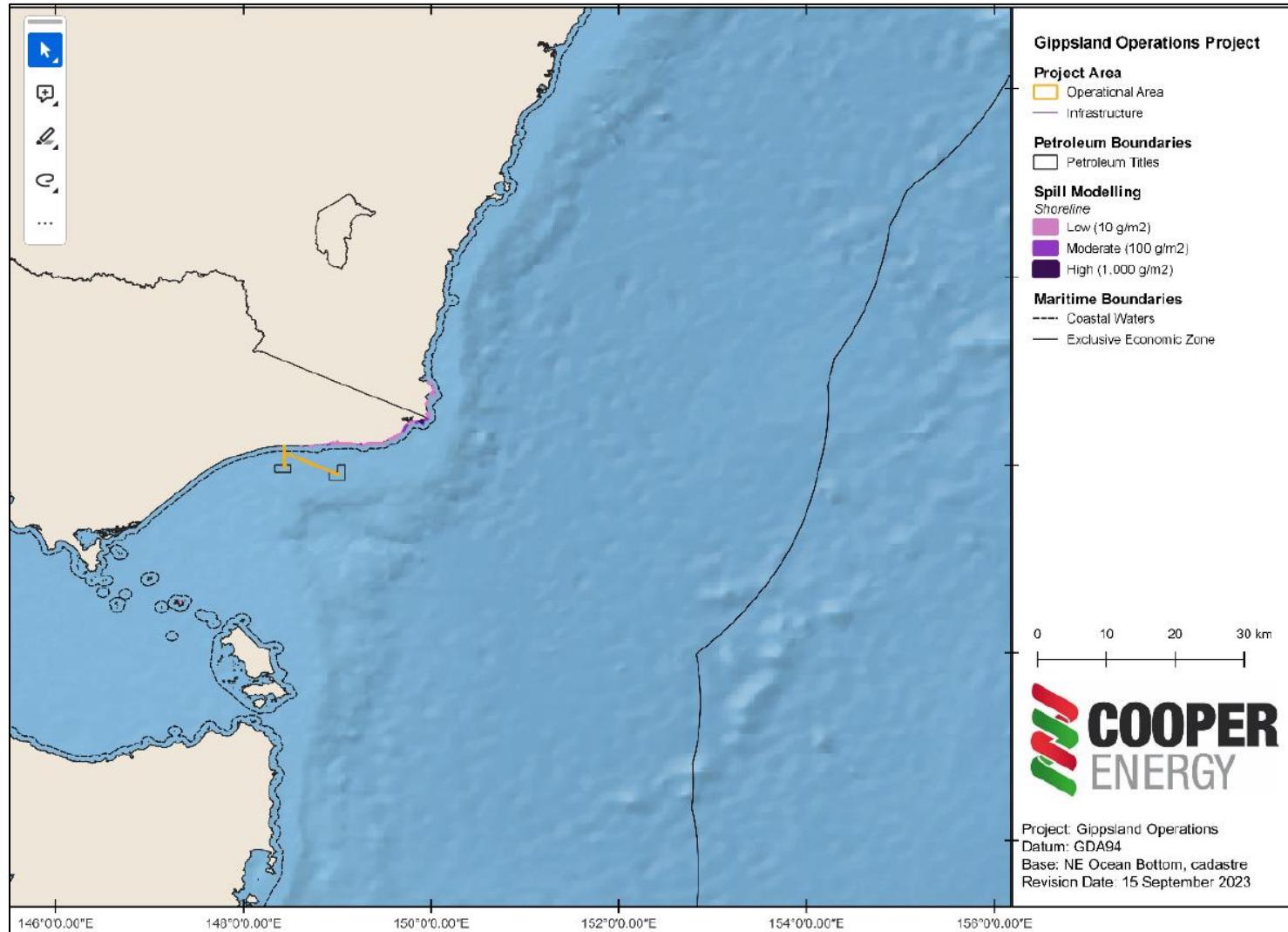


Figure 1-5: Shoreline oil EMBA for (Visiting Vessel) MDO Spill Scenario – Gippsland Basin



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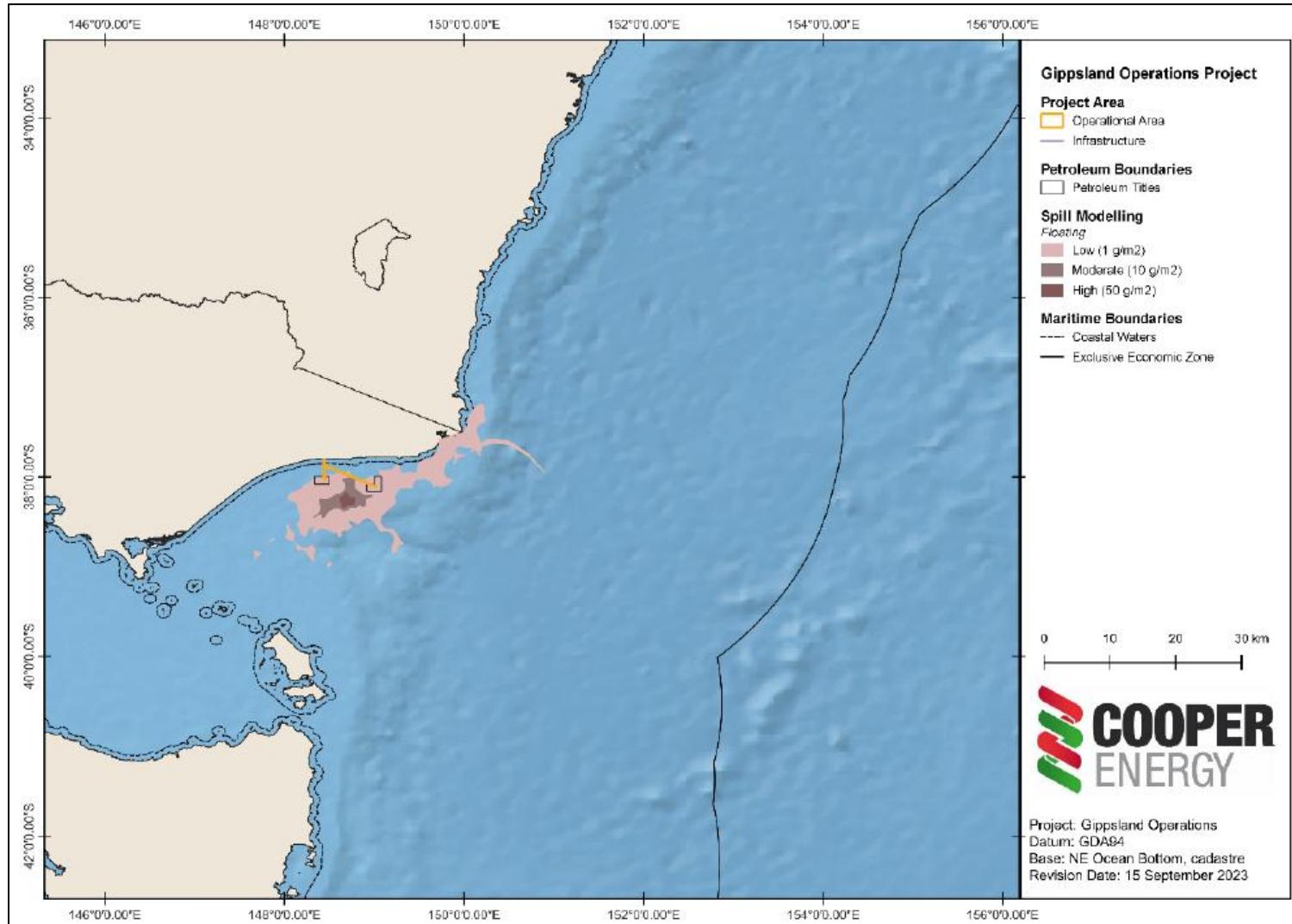


Figure 1-6: Surface oil EMBA for (Visiting Vessel) MDO Spill Scenario – Gippsland Basin



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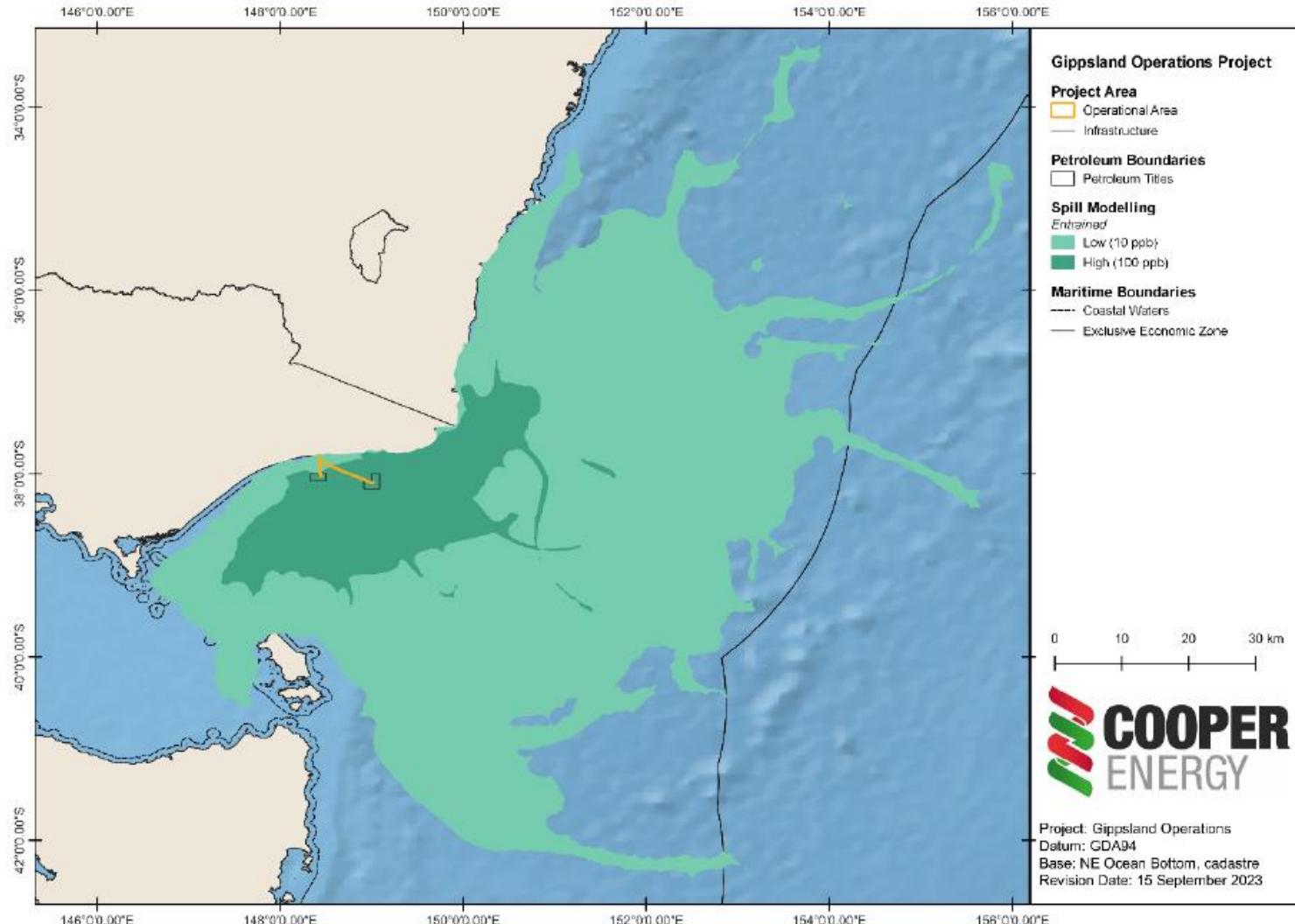


Figure 1-7: Entrained oil EMBAs for (Visiting Vessel) MDO Spill Scenario- Gippsland Basin



## 1.3 OPEP Exclusions

This OPEP does not include the following:

- The Longtom development (consisting of production wells, pipeline and associated subsea infrastructure) tied into the offshore PB assets, these are managed by the Longtom asset owner.
- Onshore spill scenarios including gas plants.
- Assets not defined in Section 1.1 of this OPEP.

## 1.4 Supporting documents

Amplitude Energy manages emergencies from the offshore operations and activities in accordance with the Amplitude Energy Incident Management Plan (IMP) (AEL-ER-ERP-0001). The purpose of the IMP is detailed in Section 2.1.

This OPEP is integrated with the IMP and related documentation and supports the in-force EPs for the offshore Victoria assets and activities. The OPEP should be read in conjunction with the respective EPs as well as the supporting documents:

- Amplitude Energy IMP (AEL-ER-ERP-0001)
- Amplitude Energy Crisis Management Plan (CMP) (AEL-ER-ERP-0003)
- Offshore Victoria Source Control Plan (VSCP) (VIC-DC-ERP-0001)
- Offshore Victoria Operational and Scientific Monitoring Plan (OSMP) (VIC-ER-EMP-0002)
- Tactical Response Plan – shoreline protection and clean up
- Tactical Response Plans (site-specific)
- Vessel shipboard marine pollution emergency plan (SMPEP) or equivalent and Emergency Response Plans (ERPs) for vessels undertaking activities on Amplitude Energy's behalf.

Offshore Chemical Environment Assessment Procedure (CMS-EN-PCD-0004). Additionally, this OPEP has been developed to integrate with the:

- Australian National Plan for Maritime Environmental Emergencies (NatPlan) (AMSA 2020)
- Victorian Maritime Emergencies (non-search and rescue [NSR]) Subplan (State of Victoria 2024)
- New South Wales (NSW) Coastal Waters Marine Pollution Subplan (NSW Government 2022)
- Tasmanian Marine Oil and Chemical Spill Contingency Plan (TasPlan) (EPA Tasmania 2022)
- South Australian Marine Spill Contingency Action Plan (SAMSCAP) (Government of South Australia 2022)
- Australian Marine Oil Spill Plan (AMOSPlan) (AMOSC 2025).

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Figure 1-8 details the relationship between this plan and other related documentation.

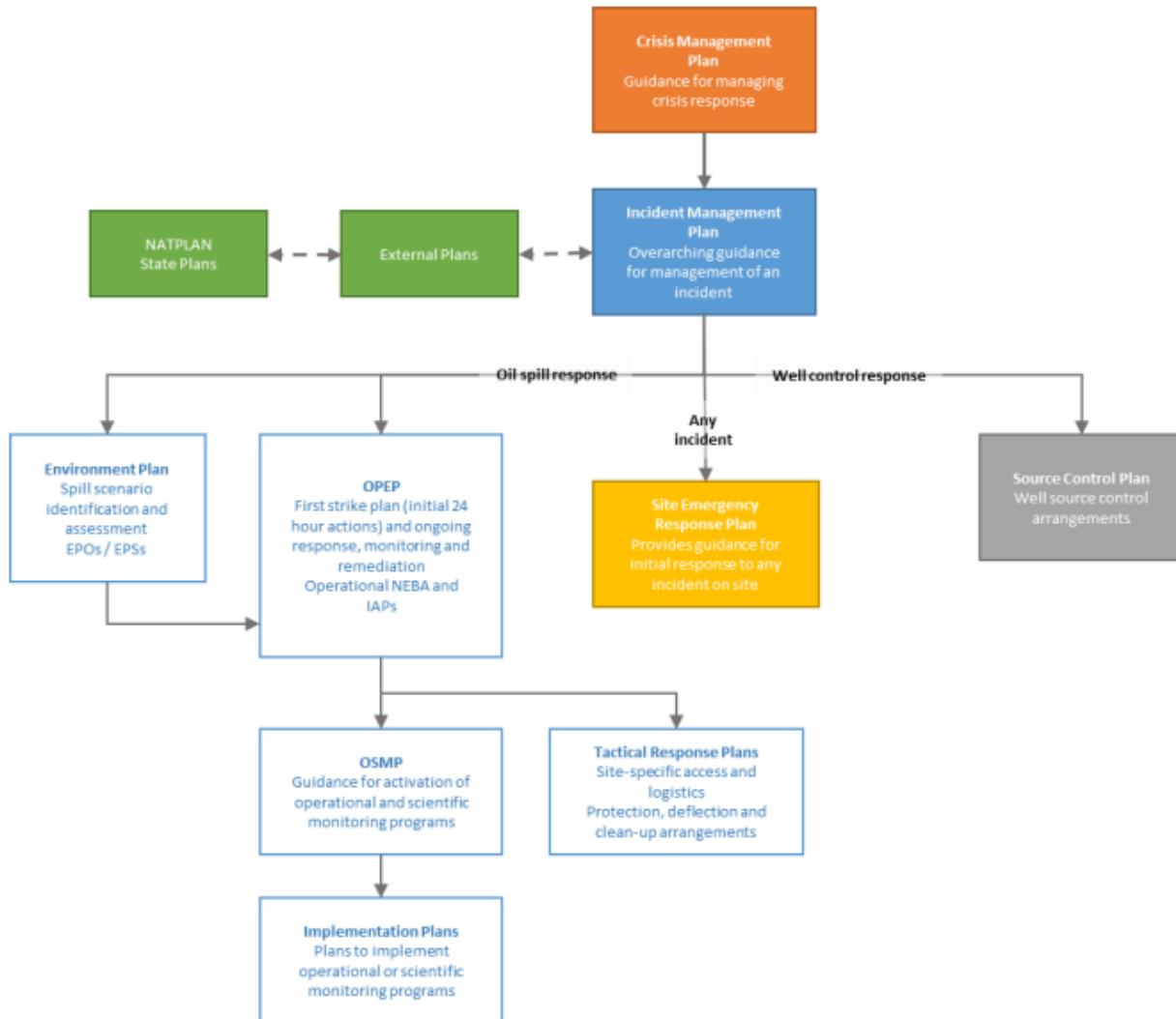


Figure 1-8: Relationship Between Amplitude Energy Emergency and Oil Response Plans

## 1.5 Review of OPEP

### Internal OPEP Reviews

The OPEP should be reviewed internally at least annually, in addition to the following circumstances:

- Prior to undertaking a new activity not currently provided for, and prior to the submission or re-submission of a new EP for activities, in accordance with the management of change (MoC) process.



- Following any exercises or other means of testing of the arrangements, as required, to capture learnings.
- Following activation, to capture lessons learned.

Changes to the OPEP or the OSMP resulting from exercise outcomes, altered contractual arrangements, corrective actions, routine information updates (i.e. contact details change), or other items will be managed as per the MoC process.

## State Government OPEP Review Arrangements

From the Victorian Joint Industry and State Oil Pollution Responses Guidance Note (DTP 2025):

*It is recognised that after an OPEP is accepted, titleholders may incorporate additional assets and update its OPEP during the 5-year lifespan before re-submission to NOPSEMA. In such circumstances, timely notification and consultation is required should these asset(s) alter or increase the likelihood or threat of pollution, and/or pose a significant difference to the spill scenario modelled in the original OPEP such as including a different product.*

*Any internal/organisational alterations to titleholder response arrangements detailed in their OPEPs such as emergency management structure amendments, do not necessitate further consultation. However, to promote an ongoing partnership and enhance collaborative engagement, amendments would be useful to share electronically between titleholder and Department of Transport and Planning (DTP).*

This process is relevant to New South Wales (NSW), Tasmania (Tas), and South Australia (SA) marine pollution agencies (where relevant), unless otherwise advised by those teams.

## 1.6 Training and Testing Arrangements

In accordance with Regulation 22(13b) (14) of the OPGGS(E)R, the response arrangements will be tested:

- when they are introduced
- when they are significantly amended
- not later than 12 months after the most recent test
- if a new location for the activity is added to the EP after the response arrangements have been tested, and before the next test is conducted – testing the response arrangement 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 conducted – testing the response arrangements in relation to the facility when it becomes operational.

The effectiveness of response arrangements will be measured by the Performance Standards detailed in Table 1-3 for each exercise type. At the completion of the exercise, the observers (where relevant to the test) and participants will hold a debrief session during which the exercise is reviewed, and lessons learned and areas for improvement are identified. All exercises will be documented, and corrective



actions/recommendations tracked to closure. For Amplitude Energy exercises, lessons learned, and actions will be captured via action tracking system (e.g. Synergi).

Training and testing arrangements appropriate to the nature and scale of Amplitude Energy's activities are included in Table 1-4. The arrangements detail those actions which will be undertaken by Amplitude Energy and response partners to maintain readiness for the oil spill response scenarios. Position specific training and competency provisions are detailed in Section 3.2. Response organisations such as Australian Marine Oil Spill Centre (AMOSC), State and National response teams also run testing and exercise regimes to maintain preparedness for credible spill events across a broader portfolio of areas and activities; these are outlined below but do not form part of Amplitude Energy's specific training and exercise plans for the activity.

*Table 1-3: OPEP Testing Performance Outcomes, Standards, and Measurement Criteria*

Environmental Performance Outcome	Control Measure	Environmental Performance Standards	Measurement Criteria
Response personnel are trained and prepared to respond to a worst-case spill scenario for the activity.  The OPEP is implemented and is effective in mitigating a spill event.	OPEP CM1: Response training	OPEP EPS1.1: Response personnel are trained according to schedule.	Training records.
	OPEP CM2: Response exercise and testing	OPEP EPS2.1: Exercise and testing are completed according to schedule.  OPEP EPS2.2: Lessons from exercises and testing are captured, actioned and integrated into the relevant part of the OPEP.	Exercise and testing plan progress tracked via Synergi.  <ul style="list-style-type: none"><li>Exercise report including observations and opportunities for improvement.</li><li>Actions are managed through Synergi.</li></ul>



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Table 1-4: OPEP Training and Testing Schedule and Objectives

Aspect	Who	Plan	Timing	Preparedness Activity Scope (Arrangements and Capabilities tested)	Training/Testing Objectives	Indicative duration	Evaluation / lessons learned
Training	Amplitude Energy	OPEP	5 years renewal.	International Maritime Organization (IMO) oil spill response training for Incident Management Team (IMT), Forward Operations Base (FOB) and Field Team Lead Roles.	Demonstrated competency to undertake lead role in an IMT.	3-5 days	Feedback during training.
Training	Amplitude Energy	OPEP	On joining the IMT, FOB or Field Team.	Offshore Victorian OPEP induction for: <ul style="list-style-type: none"> <li>• IMT</li> <li>• FOB</li> <li>• Field Team Lead</li> <li>• Support Roles.</li> </ul> OPEP induction covers aspects including titleholder obligations, Scenarios, hydrocarbon fate/behaviour, response documents, response organisation, response options, response termination and debrief.	Demonstrated understanding of OPEP responses, roles, and support services.	1.5 hours	Feedback during induction.
Training	AMOSC & AMOSC Core Group	AMOSC Plan	Every 2 years.	IMO oil spill response training for IMT, FOB and Field Team Lead Roles, and training of specialist roles such as aerial surveyor. Training provided in accordance with AMOSC core group agreement.	Demonstrated competency to undertake lead role in an IMT.	3-5 days	Feedback during training.
Training	Amplitude Energy	Source Control Emergency Response Plan (SCERP)	Valid during well activities.	Current well control training certificate for relevant Source Control Team Leads.	Demonstrated competency to undertake lead role in source control team task groups.	3-5 days	Feedback and testing during training.
Training	Amplitude Energy	OPEP	Annually.	Incident control system refresher training for IMT Incident Commander (IC) and Functional Leads.	Understanding of IMT incident control system.	1 hour	Feedback during training.



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Aspect	Who	Plan	Timing	Preparedness Activity Scope (Arrangements and Capabilities tested)	Training/Testing Objectives	Indicative duration	Evaluation / lessons learned
Exercise	Amplitude Energy & AMOSC	OPEP	Annually.	<p>OPEP drill (Desktop):</p> <ul style="list-style-type: none"> <li>IMT response teams form and initiate alert and call-out of response teams to respective incident control centres.</li> <li>Notifications to regulators undertaken within the regulatory timeframes (simulated).</li> <li>First-strike response operation activated monitoring and surveillance (simulated) within implementation timeframes.</li> <li>Contact external resources to confirm support first strike response.</li> <li>Common operating picture established.</li> <li>Incident Action Plan (IAP) generated for the next operational period integrating information from monitoring and surveillance and net environmental benefit assessment (NEBA) recommendations.</li> </ul>	<p>IMT Roles are provided for, and responsibilities are understood.</p> <p>IMT communications and systems support coordinated and efficient response.</p> <p>Capability to develop IAP for the next operational phase of a response.</p> <p>Response Option Initiation inside OPEP implementation timeframes.</p> <p>External resources are available to respond.</p>	1 day	<p>Observer for the duration of the drill.</p> <p>Evaluation against the planned scope and objectives.</p>
Exercise	Amplitude Energy & OSMP contractors	OSMP	Annually.	<p>OSMP Drill:</p> <ul style="list-style-type: none"> <li>Call out of external resources for at least two OSMP module simultaneously (nominally hydrocarbon weathering assessment and coastal shoreline assessment [simulated scenario]).</li> <li>Test of logistical arrangements to meet implementation timeframes from nominated modules.</li> <li>Confirm sufficient Principal Investigators for all OSMP Modules.</li> </ul>	<p>Response Options are initiated according to OPEP implementation timeframes.</p> <p>IMT-OSMP Contractor communications are established.</p> <p>External resources sufficient for a worst-case scenario for the activity are available to respond.</p>	½ day	<p>Evaluation against the planned scope and objectives.</p>
Exercise	Amplitude Energy	OPEP / Crisis Management Plan	Prior to well activities.	<p>Crisis Management Team (CMT) will be notified during a level 2/3 incident and may need to provide support to the IMT:</p> <ul style="list-style-type: none"> <li>CMT forms and establishes communications with the IMT IC.</li> <li>CMT obtain situational awareness.</li> </ul>	<p>CMT Roles are provided for, and responsibilities are understood.</p> <p>CMT-IMT Communication protocols are understood.</p>	2 hours	<p>Observer for the duration of the drill.</p> <p>Evaluation against the</p>



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Aspect	Who	Plan	Timing	Preparedness Activity Scope (Arrangements and Capabilities tested)	Training/Testing Objectives	Indicative duration	Evaluation / lessons learned
				<ul style="list-style-type: none"> <li>External notifications are issued (simulated) including media release.</li> </ul>	Notifications developed efficiently.		planned scope and objectives.
Exercise	AMOSC, National and State response personnel	AMOSC Plan / NatPlan	Ongoing testing and exercise regime.	<p>IMT Desktop and Operational exercises spanning all potential response strategies both nearshore and offshore including:</p> <ul style="list-style-type: none"> <li>monitoring and evaluation</li> <li>containment and recovery</li> <li>chemical dispersant application</li> <li>protection and deflection</li> <li>shoreline response</li> <li>wildlife response.</li> </ul> <p>These exercises involve field responders and use of response equipment.</p>	In accordance with AMOSC Plan, National Plan and State Response Plan Testing and Exercise priorities.	5-10 days	Evaluation against the planned scope and objectives.
Exercise	Amplitude Energy	SCERP	Undertake SCERP exercise within the 12-months prior to drilling/ P&A, at least 30 days prior to either of these well activities.	<p>SCERP Exercise:</p> <ul style="list-style-type: none"> <li>SCERP Leads availability to implement selected source control options is verified.</li> <li>Communications between leads are established.</li> <li>Vessel and Mobile Offshore Drilling Unit (MODU) availability and mobilisation times are verified.</li> <li>Equipment (relief well long leads) availability and mobilisation times are verified.</li> </ul>	<p>SCERP source control response times verified.</p> <p>Source control response logistics confirmed.</p> <p>Actions from the SCERP exercise that are required to maintain source control capability are closed out prior to drilling or P&amp;A (As applicable)</p>	½ day	Evaluation against the planned scope and objectives.
Exercise	Amplitude Energy and Response Contractors	OPEP / OSMP / SCERP	Annually May be undertaken with other	Callout response contact details and personnel availability verification: <ul style="list-style-type: none"> <li>OPEP contractors</li> <li>OSMP contractors</li> </ul>	Personnel required to implement OPEP, OSMP and SCERP are available to respond.	½ day	Evaluation against the planned scope and objectives.



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Aspect	Who	Plan	Timing	Preparedness Activity Scope (Arrangements and Capabilities tested)	Training/Testing Objectives	Indicative duration	Evaluation / lessons learned
			exercises or separately.	<ul style="list-style-type: none"><li>SCERP contractors.</li></ul>			
Exercise	Amplitude Energy Vessel Service Partners	OPEP	During mobilisation or transit to site.	Communications check between vessel and shore-based response personnel.	Incident notification channels are established.	30 minutes	Improvements are identified, logged and resolved.
Exercise	Vessel Service Partners	SMPEP or equivalent	Prior to and during offshore campaign according to vessel schedule.	Vessel SMPEP drills.	Personnel are familiar in their role and equipment available for SMPEP strategies.	2 hours	Evaluation against the planned scope and objectives.



## 1.7 Regulatory Responsibilities

This plan recognises that under existing Commonwealth and State Intergovernmental Agreements, authorities have been nominated with statutory and control responsibility for spills within harbours, State waters and Commonwealth waters around Australia.

Based on the spill modelling for the Amplitude Energy Assets and activities; hydrocarbon exposure above the actionable contact thresholds for surface and shoreline hydrocarbons were only predicted to impact Victorian State waters and coastlines (Table 1-5). Therefore, it is likely Victorian Statutory and Control Agencies are considered to be the more likely to be involved in the immediate term. In the event that a spill has the potential to impact other State waters, the respective agencies listed below will be notified (Table 1-6).

*Table 1-5: Summary of Potential Hydrocarbon Exposure from the Stochastic Modelling Results of the Worst-Case Scenario by State Jurisdiction*

Hydrocarbon Modelling Results		State			
		Vic	Tas	NSW	SA
<b>Distance from Project</b>		~10	>100	>500	>150
<b>Floating</b>	Is there potential for oil to reach state waters?	Yes	Yes	Yes	Yes
	What is the probability of floating oil in state waters above Low threshold (1g/m <sup>2</sup> )?	100%	-	-	-
	What is the probability of floating oil in state waters above Moderate threshold (50 g/m <sup>2</sup> )?	-	-	-	-
<b>Entrained</b>	What is the worst potential level of entrained oil in state waters (ppb)?	641	<50	<50	<50
<b>Shoreline</b>	Is there potential for oil to reach state coastline?	Yes	Yes	Yes	Yes
	Probability oil would reach shoreline (%)?	100%	29%	31%	7%
	What is the minimum time for oil to reach the coast (days)?	0.96	17.8	33	22
	What is the peak oil load on the coastline? (g/m <sup>2</sup> )*	1,845	74	58	25
	What is the peak volume of oil that could arrive on the coast (m <sup>3</sup> )?	312.1	8.9	4.1	6
	How much of the shoreline could be affected (km) above the Low threshold (10g/m <sup>2</sup> )?	268.1	21	7.3	9.1
- : No contact at the relevant thresholds.					
*Note: Shoreline clean-up is typically only actionable when shoreline hydrocarbon contact threshold levels are >100 g/m <sup>2</sup> .					

While Amplitude Energy remains accountable for spills relating to its petroleum activities, the Control Agency (CA) will vary depending on source, size and location of the spill. Table 1-6 provides a summary of Statutory Agency and CA scenarios in the event of a spill within Victorian waters.

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The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) has the regulatory responsibility for any activities in Commonwealth waters covered in this OPEP.

Although Victoria have conferred functions for the regulation of health and safety and structural integrity to NOPSEMA for petroleum activities occurring in State waters, State Authorities (as relevant) retain the regulatory responsibility for any spill response activities in State waters covered in the OPEP. The Department of Transport and Planning (DTP) is the CA for a spill response in Victorian waters. The Department of Energy, Environment, and Climate Action (DEECA) is the lead agency for responding to wildlife impacted by marine pollution in Victorian waters or along the coastline.

The Tasmanian Environmental Protection Authority (EPA) is the CA for marine pollution incidents within Tasmania, and the Department of Natural Resources and Environment Tasmania (NRE Tas) (formerly DPPIPWE) will resume responsibility for wildlife impacted by pollution within Tasmanian waters.

Transport for NSW (or relevant Port Authority) is the CA for a spill response within New South Wales (NSW) waters and the NSW Environment Protection Authority (EPA) is the agency responsible for the oiled wildlife response in NSW waters.

For South Australia, the Department for Infrastructure and Transport (DIT) is the CA for a spill response in South Australian waters and the Department for Environment and Water (DEW) is the agency responsible for the administration and implementation of the wildlife response plan.

*Table 1-6: Summary of Regulatory Responsibilities (Statutory and Control Agencies)*

Spill Source	Spill Level	State Waters (<3 nm from coast baseline)	Commonwealth Waters (>3 nm from coast baseline)	Statutory Agency	Control Agency
Subsea LoC or LOWC	1	✓		State CA	Amplitude Energy
			✓	NOPSEMA	Amplitude Energy
	2/3	✓		State CA	State CA
			✓	NOPSEMA	Amplitude Energy
Vessel Collision	1	✓		State CA	Vessel owner / Operator
			✓	Australian Maritime Safety Authority (AMSA)	Vessel owner / Operator
	2/3	✓		State CA	State CA / relevant Port Authority
			✓	AMSA*	AMSA
Wildlife	1	✓		State CA	-
			N/A**	-	-
	2/3	✓		State CA	-
			N/A**	-	-

\* Within 500 m petroleum safety zone the statutory agency will be NOPSEMA



*\*\* Where wildlife is captured in Commonwealth waters and bought to shore for assessment and treatment, they will fall under the responsibility of the Lead Agency for Wildlife impacted by marine and freshwater pollution (e.g. DEECA for Victoria) and all relevant state-based legislation.*

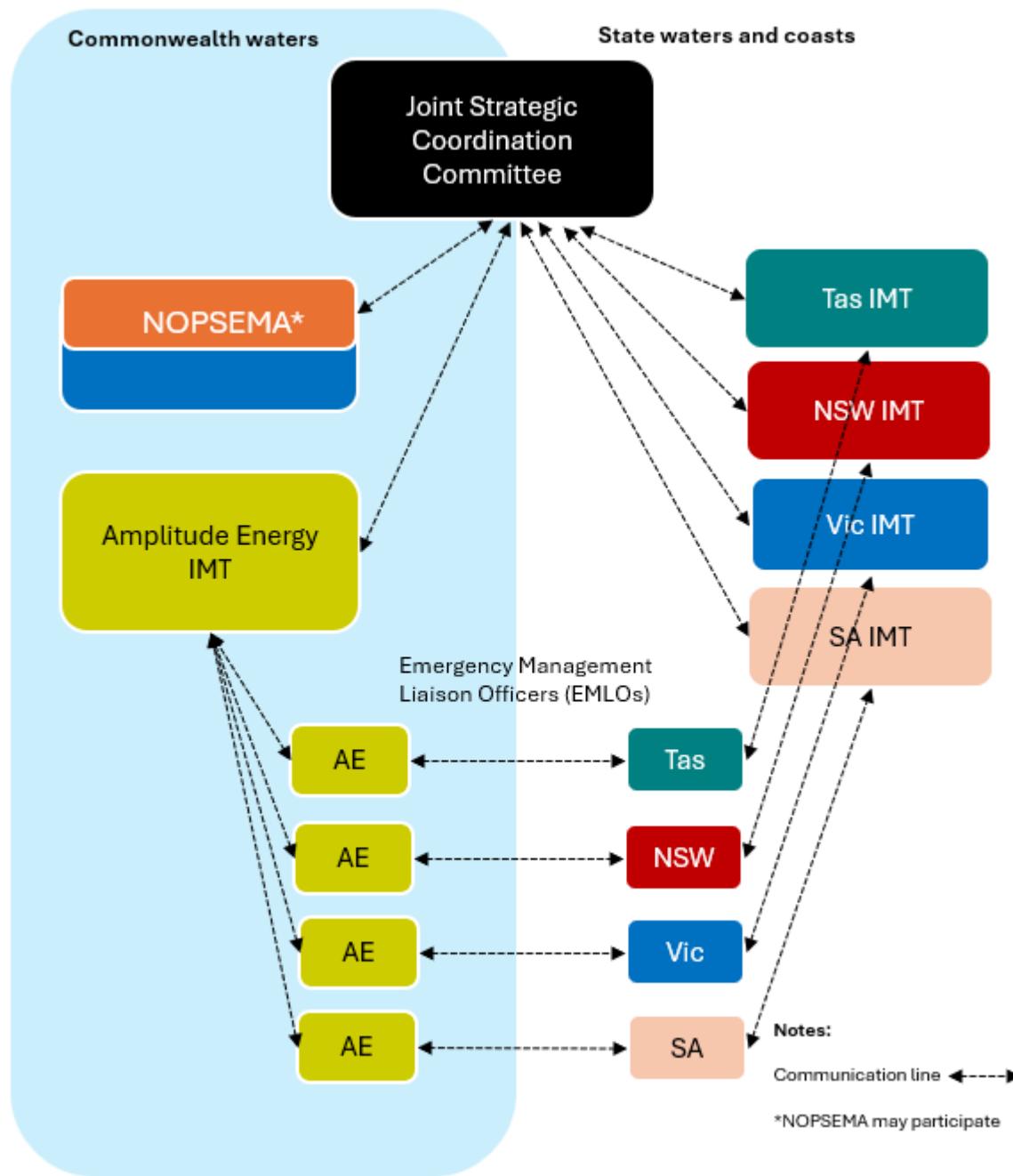
## **1.7.1 Joint Strategic Coordination Committee (Amplitude Energy Interface with State Governments)**

Figure 1-8 shows the control and coordination arrangements for cross-jurisdictional maritime emergencies. Transboundary arrangements from state to state is covered by the NatPlan. Where State and Commonwealth waters are impacted by cross-jurisdictional marine pollution incidents, a Joint Strategic Coordination Committee (JSCC) will be established. The role of the JSCC is to facilitate effective coordination between Amplitude Energy and the State CA IMTs.

**Initiation:** Initially, the JSCC would be administered by DTP (or the relevant State agency) and convened by the State Controller Maritime Emergencies (SCME).

**Organisation:** The JSCC will be jointly chaired by the SCME and Amplitude Energy Senior Representative. The JSCC will ensure a coordinated response across the multiple control agencies.

The worst-case scenarios presented within this OPEP demonstrate that it is unlikely that an incident will impact multiple states.



Adapted from DTP Joint Industry and State Oil Pollution Response Guidance Note (2025)

Figure 1-9: Example Cross-jurisdictional Control and Coordination Structure

## 2.0 Response Activation

### 2.1 Amplitude Energy Incident Management Plan and OPEP Activation



Amplitude Energy manages emergencies from its offshore activities in accordance with the Amplitude Energy IMP. The purpose of the IMP is to provide the IMT with the necessary information to respond to an emergency. The IMP:

- describes the emergency management process
- details the response process
- lists the roles and responsibilities for the IMT members
- includes duty cards for the IMT Members.

All spill events under the scope of this OPEP will be reported to the Amplitude Energy Duty IC by the site team (e.g. onboard the MODU, Vessel, or at the Gas Plant). It is also possible that a spill may be reported to Amplitude Energy by a third party, such as AMSA. The Amplitude Energy Duty IC will make an initial assessment of the response level based on the following information:

- the source of the spill and the location
- the type of hydrocarbon released
- how much material has been released (e.g. estimated size based on a 'known' hydrocarbon inventory, estimates based on flowrates, or an estimate based upon the appearance and area of oil on the sea surface [refer to Section 7.0])
- whether the source been contained or whether the spill is continuing
- worst-case scenario
- weather conditions – wind speed and direction, swell and current speed and direction (if available).

Based on the information made available, the Duty IC is responsible for:

- assessing the initial situation and activating the Amplitude Energy IMT
- fulfilling the initial IC responsibilities until the IC is in place
- providing the above information to the appointed IC

The IC is responsible for:

- identifying the CA (Section 1.7 provides description of regulator responsibilities)
- determining the response level
- implementing the OPEP.

## 2.2 Control Agency

The CA is determined based on the source of the spill and whether the spill takes place in Commonwealth or State waters. Control agencies for the spill scenarios within the scope of this OPEP are detailed in Table 1-6.

AMSA is the designated CA for oil spills from vessels within the Commonwealth jurisdiction. Upon notification of an incident involving a vessel, AMSA will assume control of the incident and respond in



accordance with AMSA's Marine Pollution Response Plan. Co-ordination of resources under NatPlan will occur through formal request of the appointed IC.

Where a spill originates in Commonwealth waters but has the potential to impact State waters or lands, the State CA will establish an IMT and may assume control of response activities within State jurisdiction. Where response activities are implemented in Commonwealth jurisdiction, the CA remains either AMSA for vessel spills or Amplitude Energy for spills relating to petroleum activities.

## 2.3 Response Level

The level of spill response depends on the nature and scale of the spill, whether on-site resources can manage the response or additional support resources are required, and the environmental sensitivities at risk.

The IC must make an initial assessment of the spill level based upon the initial information provided and NatPlan criteria. Table 2-1 provides NatPlan criteria for spill level classification together with guidance on possible level classifications for credible maximum spill scenarios applicable for to this OPEP.

Throughout the response, the Amplitude Energy IC must continue to assess the response level in accordance with the NatPlan criteria, considering factors which may lead to escalation of the response level. Within State boundaries, the State CA will determine the response level.

*Table 2-1: NatPlan Guidance on Spill Level Classification*

Criteria	Level 1	Level 2	Level 3
<b>Management</b>			
<b>Jurisdiction</b>	Single jurisdiction	Multiple jurisdiction	Multiple jurisdictions including international
<b>Number of Agencies</b>	First Response Agency	Routine multi-agency response	Agencies from across government and industry
<b>Incident Action Plan</b>	Simple/Outline	Outline	Detailed
<b>Resources</b>	Onsite resources required only	Requires intra-state resources	Requires national or international resources
<b>Type of Incident</b>			
<b>Type of response</b>	First Strike	Escalated	Campaign
<b>Duration</b>	Single shift	Multiple shifts Days to weeks	Extended response Weeks to months
<b>Hazard</b>	Single Hazard	Single Hazard	Multiple Hazards
<b>Resources at Risk</b>			
<b>Human</b>	Potential for serious injuries	Potential for loss of life	Potential for multiple loss of life
<b>Environment (Habitat)</b>	Isolated impacts with natural recovery in a few weeks	Significant impacts and recovery may take months. Remediation required.	Significant area and recovery may take months or years. Remediation required.

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Criteria	Level 1	Level 2	Level 3
<b>Wildlife</b>	Individual fauna	Groups of fauna or threatened fauna	Large numbers of fauna
<b>Economy</b>	Business level disruption	Business failure	Disruption to a sector
<b>Social</b>	Reduced services	Ongoing reduced services	Reduced quality of life
<b>Infrastructure</b>	Short term failure	Medium term failure	Severe impairment
<b>Public Affairs</b>	Local and regional media coverage	National media coverage	International media coverage
<b>Amplitude Energy Assets – Spill Scenarios – Notional Level Classification</b>			
<b>Offshore Victoria Operations</b>	Vessel LoC Subsea LoC	Vessel LoC Subsea LoC Subsea LOWC	Subsea LOWC

## 2.4 Notification and Ongoing Consultation Requirements

Table 2-2 describes what, who, when, why and how initial and ongoing consultation will be undertaken when the OPEP is activated.

*Table 2-2: Initial and Ongoing Consultation Arrangements*

What	Who	Why	When	How	Contacts Source
<b>Primary Notifications Information: Incident Details and Actions underway.</b>	Internal, Regulators and CAs and associated support Agencies.	Has jurisdiction for an aspect of the response.	As defined in the OPEP.	Targeted communications. <i>Calls, Email, Remote and face to face meetings.</i>	OPEP. Emergency Contacts Register.
<b>Secondary Notifications Information: Incident Details and Actions underway.</b>	Relevant Persons including those newly identified during an incident.	May be impacted by the spill or the response.	As soon as practicable if within the predicted spill impact zone.	Broad communications (media and dynamic website or as directed by CA). <i>Direct contact via agreed / available contact details, and / or as directed by the CA.</i>	Emergency Contacts Register. Relevant persons database.
<b>Ongoing Consultation Incident Details Actions Underway and Completed</b>	Internal, Regulators and CAs and associated support Agencies.	Has jurisdiction for an aspect of the response.	As defined in the OPEP or as agreed for the next operational period.	Targeted communications. <i>Calls, Email, Remote and face to face meetings.</i>	OPEP. Emergency Contacts Register.

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What	Who	Why	When	How	Contacts Source
<b>Ongoing Consultation</b>	Relevant Persons including those newly identified during an incident.	May be impacted by the spill or the response.	Regular or otherwise as agreed with CAs depending on nature/scale of the incident.  When there is a significant change in the spill impact zone.	Broad communications (media and dynamic website or as directed by CA).  <i>Direct contact via agreed / available contact details, and / or as directed by the CA.</i>	Emergency Contacts Register. Relevant persons database.

Internal and regulatory notifications must be made in accordance with requirements outlined in Table 2-3 for vessel spills, Table 2-4 for spills from loss of infrastructure integrity.

It is important that information generated during an initial response is accurately recorded, transmitted, acted upon and ultimately stored for future use. The information is to include:

- incident details – where, what, when, how, why (where possible)
- extent of spill
- immediate actions taken.

Copies of forms referenced in these tables and Appendix 1 - can be found on the Amplitude Energy SharePoint system: Regulatory Management System:

<https://cooperenergy.sharepoint.com/sites/HSEC2/Emergency/Forms/Documents.aspx?web=1>

Table 2-5 also provides additional external notifications (excluding response resources) which may be required depending on the nature and scale of the spill incident (specified scenarios). These notifications will be made by the IC or delegate.

Table 2-6 provides the performance outcomes, standards and measurement criteria for regulatory notification.



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Table 2-3: Notification Requirements for a Vessel spill (Level 1 / 2 / 3)

Vessel Spill Notifications				
From	To	Type	Timing	Supporting Information
<b>Vessel Master</b>	Amplitude Energy Duty IC	Verbal	Immediately	Contact details provided within campaign emergency response bridging document. Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
	AMSA – All spills to sea Australian Hydrographic Service	Verbal	Immediately (no later than 2 hours after incident)	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
		Written notification	As soon as possible (ASAP)	Complete a marine pollution report (POLREP) online available at: <b><a href="https://amsa-forms.nogginoca.com/public/polrep.html">https://amsa-forms.nogginoca.com/public/polrep.html</a></b>
		Written updates	As requested, or every 24 hours	Complete and issue a situation report (SITREP)/POLREP and IAP SITREP/POLREP available at: <b><a href="https://amsa-forms.nogginoca.com/public/polrep.html">https://amsa-forms.nogginoca.com/public/polrep.html</a></b>
<b>Amplitude Energy Duty IC</b>	Amplitude Energy IMT Amplitude Energy CMT	Verbal	As required	Duty Incident Controller Roster and IMT role callout lists CMT role callout lists <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
<b>Amplitude Energy Duty IC/IC (or delegate)</b>	NOPSEMA (and copy to the National Offshore Petroleum Titles Administrator [NOPTA]) Dangerous occurrences at or near facilities must be reported to NOPSEMA under the applicable safety case. Occurrences include: <ul style="list-style-type: none"><li>any hydrocarbon spill &gt;80 L</li><li>spill has caused, or has the potential to cause, moderate to significant environmental damage.</li></ul> (Refer to activity-specific EP spill risk assessment)	Verbal	As soon as practicable and no later than 2 hours	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
		Written notification	As soon as practicable after oral notification	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020 <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
		Written report	As soon as practicable, but	Complete and issue written report: NOPSEMA Form N-03000-FM0831 <b><a href="#">A543965</a></b>



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Vessel Spill Notifications				
			within 3 days of incident	
<b>Vessel Master or Amplitude Energy Duty IC/ IC (or delegate) as relevant</b>	<p>State and Port Authorities <u>Level 1 / 2 / 3 Vessel spills (threatening State waters)</u></p> <p>As relevant to Port (Port Master) and/or State Waters (State Duty Officer). Authorities include:</p> <p><b>Victorian State Waters</b></p> <p>Port of Portland</p> <p>Gippsland Ports</p> <p>For level 2/3 spills notify the DTP State Duty Officer</p> <p><b>South Australia</b></p> <p>Department for Infrastructure and Transport</p> <p>State Controller, Marine Pollution (coastal)</p> <p><b>NSW State Waters</b></p> <p>Maritime emergency (24 hours)</p> <p>Transport for NSW</p> <p><b>NSW Port (phone diverted for out-of-hours response)</b></p> <p>Port of Eden</p> <p>Port of Kembla</p> <p>Port of Sydney</p> <p>Port of Newcastle</p> <p>Port of Yamba</p> <p><b>Tasmanian State Waters</b></p> <p>Environmental Protection Agency (EPA) Tasmania</p>	Telephone	ASAP (no later than 2 hours after risk identification)	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020 <b>Emergency Roster and Emergency Contacts Directory</b>



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Vessel Spill Notifications				
	Radio: Transports Vessel Traffic Services VHF radio channel 16/14/12 Call sign “relevant port name VTS			
<b>Amplitude Energy Duty IC/ IC (or delegate)</b>	Relevant State Agency – State Waters (<3 nm) <ul style="list-style-type: none"> <li>• level 2/3 spill threatening State waters</li> <li>• spill has caused, or has the potential to cause, moderate to significant environmental damage in State waters.</li> </ul> (Refer to activity-specific EP spill risk assessment)	Verbal	As soon as practicable and no later than 2 hours	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
		Written notification	As soon as practicable after oral notification	POLREP available at: <b><a href="https://amsa-forms.nogginoca.com/public/polrep.html">https://amsa-forms.nogginoca.com/public/polrep.html</a></b> Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
		Email	As soon as practicable after oral notification	
<b>Amplitude Energy IC (or delegate)</b>	Resources/Contractors	Telephone	As directed	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
<b>Amplitude Energy IC (or delegate)</b>	Director of National Parks Spill with potential to impact Australian Marine Park(s) or impact matters of national environmental significance (including potential for oiled wildlife)	Verbal	As soon as practicable	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>
<b>Amplitude Energy IC (or delegate)</b>	Relevant Persons (fishers, adjacent titleholders, Traditional Owners, etc.)	Telephone	As soon as practicable	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b>

Table 2-4: Notification Requirements for Loss of Infrastructure Integrity (Subsea LoC or LOWC – condensate)



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Subsea LoC Notifications				
From	To	Type	Timing	Supporting Information
<b>Amplitude Energy Duty IC</b>	Amplitude Energy IMT Amplitude Energy CMT	Verbal	As required	Duty Incident Controller Roster and IMT role callout lists CMT role callout lists <b>Emergency Roster and Emergency Contacts Directory</b>
<b>Amplitude Energy Duty IC/IC (or delegate)</b>	NOPSEMA Commonwealth Waters (>3 nm) <ul style="list-style-type: none"> <li>spill has caused, or has the potential to cause, moderate to significant environmental damage.</li> </ul> (Refer to activity-specific EP spill risk assessment)	Verbal	As soon as practicable and no later than 2 hours	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b>Emergency Roster and Emergency Contacts Directory</b>
		Written notification	As soon as practicable after oral notification	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b>Emergency Roster and Emergency Contacts Directory</b>
		Written report	As soon as practicable, but within 3 days of incident	Complete and issue written report: <b>NOPSEMA Form N-03300-FM0831 A159980</b>
<b>Amplitude Energy Duty IC/IC (or delegate)</b>	AMSA Australian Hydrographic Service	Verbal	As soon as practical and no later than 2 hours	Any marine pollution incident must be reported to AMSA including where NatPlan resources are required. Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b>Emergency Roster and Emergency Contacts Directory</b>
<b>Amplitude Energy Duty IC/IC (or delegate)</b>	Relevant State Agency – State Waters (<3 nm) <ul style="list-style-type: none"> <li>level 2/3 spills (threatening State waters)</li> <li>spill has caused, or has the potential to cause, moderate to significant environmental damage.</li> </ul> (Refer to activity-specific EP spill risk assessment)	Verbal	As soon as practicable and no later than 2 hours	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <b>Emergency Roster and Emergency Contacts Directory</b>
		Written notification	As soon as practicable after oral notification	POLREP available at: <a href="https://amsa-forms.nogginoca.com/public/polrep.html">https://amsa-forms.nogginoca.com/public/polrep.html</a> Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020 <b>Emergency Roster and Emergency Contacts Directory</b>
<b>Amplitude Energy IC (or delegate)</b>	State and Port Authorities	Telephone	ASAP	Port of Portland: (03) 5525 0999



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Subsea LoC Notifications				
	<p><u>Level 1 / 2 / 3 (threatening State waters)</u></p> <p>As relevant to Port (Port Master) and/or State Waters (State Duty Officer). Authorities include:</p> <p><b>Victorian State Waters</b></p> <p>Port of Portland</p> <p>Gippsland Ports</p> <p>For Level 2-3 spills notify the DTP State Duty Officer</p>			<p>Gippsland Ports: (03) 5150 0500</p> <p>Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020:</p> <p><b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b></p>
<b>Amplitude Energy IC (or delegate)</b>	Resources/Contractors	Telephone	As directed	<p>Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020:</p> <p><b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b></p>
<b>Amplitude Energy IC (or delegate)</b>	Relevant Persons (fishers, adjacent titleholders, Traditional Owners, etc.)	Telephone	As soon as practicable	<p>Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020:</p> <p><b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b></p>

*Table 2-5: Additional External Notifications*

Stakeholder	Issue	Spill Level	Timeframe	References
<b>Australian Hydrographic Service</b>	Protection of mariners from safety and environmental impacts of spill	2, 3	2 hours	<p>Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020:</p> <p><b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b></p>
<b>Vic – DEECA</b>	Oiled Wildlife in respective state jurisdictions	1, 2, 3	Immediately, or whenever wildlife in Victoria's jurisdiction is expected to be impacted.	<p>Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020:</p> <p><b><a href="#">Emergency Roster and Emergency Contacts Directory</a></b></p>



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Stakeholder	Issue	Spill Level	Timeframe	References
SA – Department of Environment and Water (DEW)			Immediately, or whenever wildlife in South Australia's jurisdiction is expected to be impacted.	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <a href="#">Emergency Roster and Emergency Contacts Directory</a>
Tas – EPA			Immediately, or whenever wildlife in Tasmania's jurisdiction is expected to be impacted.	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <a href="#">Emergency Roster and Emergency Contacts Directory</a>
NSW – EPA			Immediately, or whenever wildlife in NSW jurisdiction is expected to be impacted.	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <a href="#">Emergency Roster and Emergency Contacts Directory</a>
Department of Climate Change, Energy, the Environment and Water	Damage to wildlife of national environmental significance (NES)	1, 2, 3	As soon as practicable following the discovery of impact to wildlife of NES (but not longer than 7 days) and/or under the direction of relevant State authority.	Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-ER-EMP-0020: <a href="#">Emergency Roster and Emergency Contacts Directory</a>



Table 2-6 : Spill Notification Performance Outcome

Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Measurement Criteria
Notification and reporting to regulators and other relevant persons occur in a timely manner.	OPEC CM3: Response Communications	OPEC EPS3.1: Notifications and written reporting to be undertaken in accordance with the relevant content and timeframes specified in Table 2-3 to Table 2-5.	Incident log verifies this action has been undertaken in the required timeframe.

## 2.5 Action Sequence Checklists

The sequence of actions following alerting the IMT and activating this OPEC will be determined based on the spill scenario and level. Specific action sequence checklists are provided in this section for the following scenarios:

- Vessel collision resulting in a MDO spill (level 1/2) (Table 2-7).
- Subsea LoC or LOWC of Condensate (level 1/2/3) (Table 2-8).

Table 2-7 : Spill Response Action List –MDO Spill

Vessel LoC – MDO Spill – Response Actions			
Action	Responsible Party	Timing / Additional Information	
On discovery of the spill notify the Vessel Master.	Spill Observer	ASAP	
Manage the safety of all personnel.	Vessel Master	ASAP	
Secure sources of ignition and alert all personnel (appropriate to the level of the spill).			
If safe, stop the spill through source control actions. Assess incident and prevent further spillage. Estimate the quantity of oil released and provide initial incident information. In the event of a significant (level 2/3) spill, deploy the oil spill tracking buoy (if available) following the deployment instructions.	Vessel Master	ASAP	
Notify the Amplitude Energy IC of the spill, providing information available from preliminary spill assessment. Including:  <ul style="list-style-type: none"> <li>• <b>what is it – oil type / group / properties?</b></li> <li>• <b>where is it – latitude/longitude?</b></li> <li>• <b>how big is it – area/volume?</b></li> <li>• <b>where is it going – weather conditions / currents / tides?</b></li> <li>• <b>what is in the way – resources at risk?</b></li> <li>• <b>when will it get there – weather conditions / currents / tides?</b></li> <li>• <b>what is happening to it – weathering processes predicted.</b></li> </ul>	Vessel Master	ASAP	

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Vessel LoC – MDO Spill – Response Actions		
Based on the preliminary spill assessment and operational monitoring from the Vessel Master approximate the spill level.  Assess response required.  Response commensurate to the size and level of risk.	Amplitude Energy IC	ASAP
Undertake regulatory notifications and other stakeholder notifications (as required). Refer to Section 2.4.	Amplitude Energy IC	ASAP
Assemble Amplitude Energy IMT (as required). Number of, and team members selected, will be based upon the nature and scale of response required.  The IC is responsible for: <ul style="list-style-type: none"><li>• <b>identifying the CA</b></li><li>• <b>determining the response level</b></li><li>• <b>activate the Amplitude Energy IMT (either where Cooper is the CA or is directed by CA)</b></li><li>• <b>implementing this first strike plan and the OPEP (where relevant).</b></li></ul> <b>NOTE: Amplitude Energy is in a support role for this scenario as AMSA (Commonwealth waters) or designated State CA (state waters).</b>	Amplitude Energy IC	ASAP
Activate AMOSC Member Agreement to support the response if required. Amplitude Energy Authorising Officer to activate via the AMOSC Duty Officer <ul style="list-style-type: none"><li>• Level 1 spill for remote advice.</li><li>• Level 2 for on-site support (e.g. aerial observers, shoreline assessment and clean-up team (SCAT), oil spill trajectory modelling (OSTM), shoreline clean-up coordinators, boom equipment).</li></ul> See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for <b>AMOSC call-our authority personnel</b> .	IC or Delegate	Amplitude Energy Offshore Victoria OPEP: Section 3.1
Login to AMOSC Website for the latest equipment and personnel information.  See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for log in details (username and password). <a href="http://www.amosc.com.au">http://www.amosc.com.au</a>	Planning Officer or delegate	
Determine spill trajectory – weather conditions and perform initial vector analysis.  See <a href="#">Spill Response Tools on IMT SharePoint for Trajectory Estimator</a>	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.1.3</b>
Identify protection priorities at risk and confirm response strategies via NEBA.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 4.0</b>

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<b>Vessel LoC – MDO Spill – Response Actions</b>		
Based on operational monitoring and in consultation with CA, where applicable activate the relevant Tactical Response Plan (TRP).	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 4.4.2</b>
Support IAP (as required) in consultation with AMOSC and CA (AMSA or State CA).	IC or Delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
Allocate responsibilities to support implementation of IAP (as required).	IC or Delegate	
In collaboration with CA undertake consultation with appropriate land managers for any shoreline activities (as required).	IC or Delegate	
As directed by CA, implement response strategies and monitor effectiveness.	IC or Delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
As directed by CA, continue until termination criteria is met.	IC or Delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
<b>Monitor and Evaluate – if required (NOTE: Amplitude Energy is in a support role for this scenario)</b>		
Obtain weather data via of the Bureau of Meteorology ( <a href="http://www.bom.gov.au/">http://www.bom.gov.au/</a> ) for the spill location.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.0</b>
Use vectoring to identify predicted spill trajectory or initiate modelling (as required) via AMOSC Duty Officer. Determine Spill Trajectory – weather conditions and vectoring and/or modelling via AMOSC Duty Officer.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.0</b>
<ul style="list-style-type: none"><li>AMOSC Duty Officer: <a href="#">Emergency Roster and Emergency Contacts Directory</a></li></ul> <p>See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for AMOSC and RPS contact.</p>		
Undertake automated data inquiry for oil spills (ADIOS) modelling using hydrocarbon characteristics in Section 4.2. <a href="https://gnome.orr.noaa.gov/">https://gnome.orr.noaa.gov/</a> <a href="https://adios.orr.noaa.gov/oils">https://adios.orr.noaa.gov/oils</a>	Planning Officer (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Sections 4.0 and 7.0</b>
As directed by CA, mobilise aerial observation (if level 2) See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for Aerial Services Provider. Confirm the 'opening status' of estuaries identified as areas for priority protection. Preliminary information may be obtained via: <a href="http://www.estuarywatch.org.au/">http://www.estuarywatch.org.au/</a>	Logistics Officer (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.0</b>

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<b>Vessel LoC – MDO Spill – Response Actions</b>		
Access oil spill tracking buoy live feed data if a buoy has been deployed from the vessel. Contact AMOSC (or alternate equipment supplier for online login).  See <a href="#">Spill Response Tools on IMT SharePoint</a> for username and password for tracking buoy data.	Logistics Officer (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.0</b>
<b>Shoreline assessment and clean-up - if required (NOTE: Amplitude Energy is in a support role for this scenario)</b>		
As directed by CA (as relevant to State) and in consultation with AMOSC identify SCAT.	IC (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
In consultation with CA (as relevant to State) identify SCAT locations.	Planning Officer (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
As directed by CA (as relevant to State) initiate SCAT surveys.	Operations Officer/OSMP Support Contractors	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
Undertake NEBA for shoreline clean-up as required.	Planning Officer (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
<b>Protection and deflection – if required (NOTE: Amplitude Energy is in a support role for this scenario)</b>		
Assess deployment location with AMOSC, CA (as relevant to State) and relevant waterway manager.	Operations Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 8.0</b>
As directed by CA (as relevant to State), mobilise equipment and people to location.	Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 8.0</b>
In consultation with EPA, and as directed by CA (as relevant to State), mobilise waste management contractor.	Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 11.0</b>
<b>Oiled Wildlife Response (OWR) – if required (NOTE: Amplitude Energy is in a support role for this scenario)</b>		
Notify relevant State Authority if any oiled wildlife is identified or have the potential to be impacted and provide support services as directed.  Refer to Amplitude Energy Contacts directory on the Amplitude Energy Intranet VIC-EREMP-0020: <a href="#">Emergency Roster and Emergency Contacts Directory</a>	IC (or delegate)	Amplitude Energy Offshore Victoria OPEP: <b>Section 10.0</b>
In consultation with State lead agency for wildlife response, and as directed by CA (as relevant to State), mobilise waste management contractor.	Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 10.0</b>
<b>Scientific monitoring – if required (NOTE: Amplitude Energy is in a support role for this scenario)</b>		
Consult with government environmental department (as relevant), and State Statutory Authority on the scope of the scientific monitoring if required.	Planning Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>

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Vessel LoC – MDO Spill – Response Actions			
Initiate scientific monitoring contractor. 24/7 Emergency Response Hotline: <a href="#">Emergency Roster and Emergency Contacts Directory</a>	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>	
As directed by CA (as relevant to State) define monitoring and control sites. CA may consult with AMOSC to define monitoring and control sites.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>	
Continue with scientific monitoring until termination criteria are met.	Planning Officer or delegate	Refer OSMP	

Table 2-8: Spill Response Action List – Subsea LoC or LOWC – Condensate

Subsea LoC or LOWC - Condensate – Response Actions		
Action	Responsible Party	Timing/ Additional Information
On discovery of the spill: <ul style="list-style-type: none"> <li><b>initiate source control to prevent further spillage</b></li> <li><b>notify the Duty Incident Manager providing initial incident information</b></li> <li><b>in the event of a significant (level 2/3) spill, deploy the oil spill tracking buoy (if available and safe to do so) following the deployment instructions.</b></li> </ul>	Service Partner MODU Service Partner Vessel Gas Plant	ASAP
Undertake spill assessment. <ul style="list-style-type: none"> <li><b>what is it - oil type / group / properties?</b></li> <li><b>where is it – latitude / longitude?</b></li> <li><b>how big is it -area / volume?</b></li> <li><b>where is it going - weather conditions / currents / tides?</b></li> <li><b>what is in the way - resources at risk?</b></li> <li><b>when will it get there - Weather conditions / currents / tides?</b></li> <li><b>what is happening to it - weathering processes predicted?</b></li> <li><b>assess response required</b></li> <li><b>response commensurate with the size and level of risk</b></li> <li><b>marine safety assessment undertaken.</b></li> </ul>	Amplitude Energy Duty IC	ASAP
Undertake regulatory notifications and other stakeholder notifications (as required). Refer to Section 2.4.	Amplitude Energy IC or delegate	ASAP



Subsea LoC or LOWC - Condensate – Response Actions		
<p>Assemble Amplitude Energy IMT (as required). Number of, and team members selected, will be based upon the nature and scale of response required.</p> <p>The Duty IC is responsible for:</p> <ul style="list-style-type: none"> <li>• <b>determining the initial response level</b></li> <li>• <b>activating the Amplitude Energy IMT</b></li> </ul> <p><b>The IC</b></p> <ul style="list-style-type: none"> <li>• <b>activating the Amplitude Energy IMT and Source Control Team (SCT)</b></li> <li>• <b>implementing the OPEP (where relevant).</b></li> </ul> <p>N.B. the Amplitude Energy SCT initiate the VSCP (VIC-DC-ERP-0001)</p>	Amplitude Energy Duty IC	ASAP
<p>Activate AMOSC Member Agreement to support the response. Amplitude Energy Authorising Officer to activate via the AMOSC Duty Officer.</p> <ul style="list-style-type: none"> <li>• <b>AMOSC (level 2/3 for advice/support) (e.g. aerial observers, SCAT, OSTM)</b></li> <li>• <b>AMOSC Duty Officer: Emergency Roster and Emergency Contacts Directory</b></li> </ul> <p><b>See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for call-out authority personnel.</b></p>	Amplitude Energy Authorising Officer	
<p>Login to AMOSC Website for the latest equipment and personnel information:</p> <p><b>See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for website login (username and password).</b></p> <p><a href="http://www.amosc.com.au">http://www.amosc.com.au</a></p>	Planning Officer or delegate	
<p>Contact AMSA (level 2/3 for support) as per <b>Table 2-4: Emergency Roster and Emergency Contacts Directory</b></p>	Amplitude Energy IC	
<p>Determine Spill Trajectory – weather conditions and vectoring and/or RPS modelling via AMOSC Duty Officer.</p> <ul style="list-style-type: none"> <li>• <b>AMOSC Duty Officer: Emergency Roster and Emergency Contacts Directory</b></li> </ul>	Planning Officer or delegate Officer	

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Subsea LoC or LOWC - Condensate – Response Actions		
See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <b>Emergency Roster and Emergency Contacts Directory for AMOSC and RPS contact.</b>		
Identify protection priorities at risk and confirm response strategies via NEBA in consultation with CA for State waters where state waters may be impacted.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
Based on operational monitoring and in consultation with the relevant State CA activate the relevant TRP, where applicable.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 4.0</b>
Develop IAP in consultation with Well Control Specialists (where relevant), AMOSC and the relevant State CA (where State water may be impacted) and implement.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
In collaboration with relevant State agency undertake consultation with appropriate land managers for any shoreline activities.	IC or delegate	
Implement response strategies and monitor effectiveness.	Operations Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
Response Termination – continue until termination criteria met.	IC or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0</b>
Monitor & Evaluate		
Obtain weather data via of the Bureau of Meteorology ( <a href="http://www.bom.gov.au/">http://www.bom.gov.au/</a> ) for the spill location.	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.00</b>
Use manual vectoring to identify predicted spill trajectory.  <b>Spill Response Tools on IMT SharePoint for Trajectory Estimator</b>	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.00</b>
Initiate RPS modelling using Form in Section 4.0 and via AMOSC Duty Officer: <ul style="list-style-type: none"><li>• <b>AMOSC Duty Officer: Emergency Roster and Emergency Contacts Directory</b></li></ul>		
Undertake ADIOS modelling using hydrocarbon characteristics in Section 4.2. - <a href="https://response.restoration.noaa.gov/adios">https://response.restoration.noaa.gov/adios</a> <a href="https://gnome.orr.noaa.gov/">https://gnome.orr.noaa.gov/</a> <a href="https://adios.orr.noaa.gov/oils">https://adios.orr.noaa.gov/oils</a>	Planning Officer or delegate	Amplitude Energy Offshore Victoria OPEP: <b>Sections 4.0 and 7.0</b>

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<b>Subsea LoC or LOWC - Condensate – Response Actions</b>		
<p><b>As directed by CA, mobilise aerial observation (if level 2/3) to commence operations in daylight hours.</b></p> <p><b>See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for aerial services provider.</b></p> <p><b>Confirm the 'opening status' of estuaries identified as areas for priority protection.</b></p> <p>Preliminary information may be obtained via: <a href="http://www.estuarywatch.org.au/">http://www.estuarywatch.org.au/</a></p>	Operations and Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 7.00</b>
<b>Protection and Deflection – if required</b>		
Assess deployment location with AMOSC, the relevant State CA and relevant waterway manager.	Operations Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 8.0</b>
<b>Shoreline Assessment and Clean-up - if required</b>		
As directed by the relevant State CA <b>and</b> in consultation with AMOSC identify SCAT.	Operations Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
In consultation with the relevant State CA and AMOSC to identify SCAT locations.	Planning Officer / State CA	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
As directed by the relevant State CA initiate SCAT surveys.	Operations Officer / OSMP Support Contractors	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>

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<b>Subsea LoC or LOWC - Condensate – Response Actions</b>		
Undertake NEBA (Appendix 1 - ) for shoreline clean-up as required.	Planning Officer / State CA	Amplitude Energy Offshore Victoria OPEP: <b>Section 5.0 and Appendix 2 -</b>
Initiate shoreline clean-up (as required).	Operations and Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 9.0</b>
Mobilise waste management contractor. See Amplitude Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): <a href="#">Emergency Roster and Emergency Contacts Directory</a> for waste contractor contact.	Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 11.0</b>
<b>OWR – if required</b>		
Notify DEECA if any oiled wildlife is identified or has the potential to be impacted and provide support services as directed.	Amplitude Energy IMT	Amplitude Energy Offshore Victoria OPEP: <b>Section 10.0</b>
In consultation with EPA, state lead agency for oiled wildlife, and as directed by the relevant State CA, mobilise waste management contractor.	Logistics Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 11.0</b>
<b>Scientific Monitoring – if required</b>		
Consult with EPA, state lead agency for oiled wildlife, and the relevant State CA on the scope of the scientific monitoring if required.	Planning Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>
Initiate scientific monitoring contractor 24/7 Emergency Response Hotline: <a href="#">Emergency Roster and Emergency Contacts Directory</a> .	Planning Officer	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>
As directed by the relevant State CA define monitoring and control sites. DTP may consult with AMOSC to define monitoring and control sites.	Planning Officer / State CA	Amplitude Energy Offshore Victoria OPEP: <b>Section 12.0</b>
Continue with scientific monitoring until termination criteria are met.	Amplitude Energy IMT	Refer to OSMP
<b>Planning beyond First Strike Period</b>		
Create an IAP for ongoing operational period using the IAP template in Appendix 1 -	Amplitude Energy Planning / Information Officer	Amplitude Energy Offshore Victoria OPEP: Appendix 1 -

## 2.6 Safety Exclusion Zones



On activation of the OPEP, the Amplitude Energy Operations Officer will establish a safety exclusion zone for all level 2/3 spill incidents. The extent of the exclusion zone will be determined based on the risks associated with the incident and may be informed by modelling to predict areas where safety thresholds are exceeded.

All aircraft and vessels will observe the exclusion zone around infrastructure to prevent personnel exposure to safety hazards. All vessels and aircraft are to remain up wind and up-current from the source of the spill.

The following additional notifications will be made to protect the health and safety of third-party marine stakeholders:

- Exclusion zones will be established on-water around the source and slick area by requesting a Notice to Mariners via the Australian Hydrographic Service (refer to Table 2-9) and via the AMSA rescue coordination centre who will issue an AusCoast warning.
- Amplitude Energy to notify adjacent petroleum titleholders and relevant persons to advise of the spill conditions and any exclusion requirements (refer to Table 2-9).

Safety exclusion zones are maintained until the hydrocarbon release is terminated and the Amplitude Energy Spill IC has determined there is no hazard to personnel, contractors or third-party marine users. The establishment of safety exclusion zones is captured as an enforceable environment performance outcome in the event of a spill and is described along with the corresponding performance standards and measurement criteria in Table 2-9.

*Table 2-9: Safety Exclusion Zones*

Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Measurement Criteria
<b>Establish and implement safety exclusion zones.</b>	OPEP CM4: Exclusion Zones.	EPS4.1: IAP documents the need for, and if required, refines throughout the incident safety exclusion areas to prevent exposure of Amplitude Energy contractors and third parties to hazardous conditions.	IAP reflects these constraints have been identified and communicated to user groups.

## 3.0 Emergency Response Organisation

Amplitude Energy's emergency management structure is scalable according to the level of incident. In general, incident response is managed by the Amplitude Energy response teams listed in Table 3-1. The relationship between these groups is provided in Figure 3-1.

Incidents that are extremely large, complex, or protracted, may be managed more effectively by splitting the management of that incident between two or more response teams (i.e. source control and oil spill response). An incident could be split geographically or functionally depending on the circumstances. Amplitude Energy's incident control system provides for remote access and integration of IMT personnel.

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Table 3-1: Emergency Response Groups

Parameter	CMT	IMT and Field Teams	Well SCT
<b>Role</b>	Manages corporate strategic issues (i.e. wider spill implications) and provides support in terms of finance, insurance, legal, external affairs, media, Joint Venture (JV) partner liaison, Australian Securities Exchange (ASX) releases and Government Department liaison.	Supports tactical response for the oil spill and supports site-based Emergency Response Team (ERT).  Interface between local relevant persons, external spill response and support agencies.	Responsible for planning and recovery from source control and well incidents.
<b>Leader</b>	CMT Leader	IC	SCT Leader
<b>Plan</b>	Amplitude Energy CMP	Amplitude Energy IMP Amplitude Energy OPEP Amplitude Energy TRP	Amplitude Energy Offshore VSCP Activity SCERP
<b>Nominal Location</b>	CMT Room  Level 11, 55 Currie St, Adelaide, SA	Incident Control Centre  Level 11, 55 Currie St, Adelaide, South Australia (SA).  Note, the IMT may move to another nominated location such as AMOSC in Geelong or as nominated by Vic DTP or other relevant State agency.  FOB and Field Teams will be directed by the IMT to locations identified through the IAP cycle.	Perth Office  Level 6, 77 St Georges Terrace, Perth, Western Australia (WA)
<b>Interface with regulator/industry response plans and resources</b>	-	NatPlan Victorian Maritime Emergencies NSR subplan NSW Coastal Waters Marine Pollution Plan TasPlan South Australian Marine Spill Contingency Action Plan (SAMSCAP) AMOSPlan	Memorandum of understanding (MoU) between Titleholders
<b>External Liaison Positions within Team</b>	AMOSC Industry Intergovernmental Advisor.	Liaison Officers (AMOSC, AMSA, State CA, State government Lead Agencies) (as required).  <b>Note – Amplitude Energy Liaisons should be prepared to deploy to Government Agency Location (e.g. Melbourne or Canberra).</b>	-

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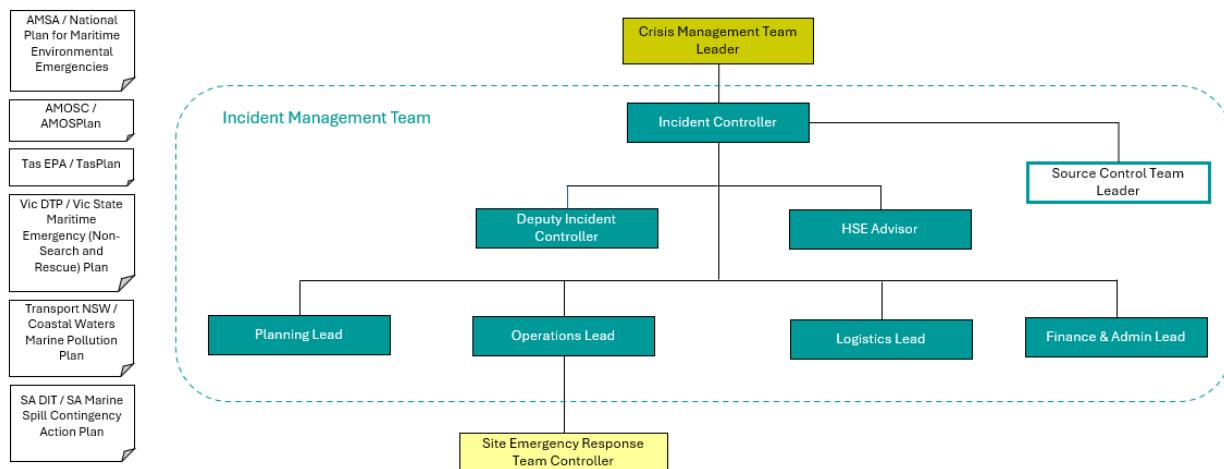


Figure 3-1: Amplitude Energy Oil Spill Response Structure

### 3.1 Spill Management Team – Level Structures

Figure 3-1 and Table 3-2 provides the Amplitude Energy emergency response structure, which is scalable, according to the emergency or oil spill level.

This structure is consistent with the Australasian Inter-service Incident Management System structure adopted by NatPlan and Victorian Maritime Emergencies NSR subplan where the IC holds overall management responsibility for activities to control the incident. Use of this structure provides consistency in role definition between Amplitude Energy and regulator/industry plans and allows external trained resources to fit seamlessly into the Amplitude Energy IMT structure in a surge capacity.

Table 3-2: Amplitude Energy Emergency Response Structure

<b>Level 1 Spill Management Structure</b>
A level 1 spill is within the response capabilities of Amplitude Energy site or the vessel operator's resources. The response structure is site-based with notification to the Amplitude Energy Duty IC.
The Amplitude Energy IMT or CMT may be mobilised if there is a possibility that the spill incident could escalate.
<b>Level 2 Spill Management Structure</b>
A level 2 spill incident, where Amplitude Energy is the control agency for the spill, will likely activate the Amplitude Energy IMT to support oil spill response. The IC will nominate the positions which need to be filled and allocate subordinate functions as required.
In a level 2 spill event the Duty IC must notify the CMT Leader who will determine if the spill response requires support from CMT resources. Additional resources (i.e. media) may be mobilised as required. The mobilisation and composition of the CMT are detailed in the IMP.
For level 2 spills where Amplitude Energy is not the control agency (i.e. significant vessel spills), the Amplitude Energy IMT will support the CA (either AMSA or relevant State Authority). An Amplitude Energy liaison officer may be deployed to the AMSA or State Authority incident team to facilitate support activities (i.e. equipment and personnel).
<b>Level 3 Spill Management Structure</b>



A level 3 spill incident requires resources which exceed the capacity of Amplitude Energy. Amplitude Energy will request additional personnel from external agencies such as AMOSC and industry mutual aid (core group) assistance through AMOSPlan (via AMOSC) to act as surge resources for the Amplitude Energy IMT in an on-going large-scale response.

Additional resources may be available through AMSA's National Response Team (NRT) as per the National Plan upon request (if required). Australian Maritime Safety Authority can use its resources to respond to any oil spills in Australian Waters. AMSA works in cooperation with state and territory agencies, as well as industry stakeholders, to manage and mitigate pollution incidents, including oil spills. AMSA's capability includes specialised equipment that is strategically located, and personnel (National Response Team) made up of specialists from state and territory agencies. In relation to Titleholder oil spill pollution response AMSA have advised:

***'...AMSA will continue to fulfil all of its support obligations under the National Plan for non-ship sourced pollution incidents on the formal request of your respective Incident Controller'*** (advice received September 2021).

The IMT would be expected to mobilise for a level 3 spill event when notified by the Duty IC. If the level 3 spill event is well-related, the SCT will also be activated to initiate source control. The IC will interface with the SCT Leader.

## 3.2 Roles and Responsibilities

### 3.2.1 Incident Management Team

Figure 3-2 provides details of a level 3 oil spill support organisation. Each unit within the Planning, Operations, Logistics and Finance/Administration functional area is headed by a coordinator who reports to their relevant functional officer.

The initial Amplitude Energy IMT resourcing strategy, and responsibilities for these key roles is provided in Table 3-3. Surge capacity resources are also nominated together with the role competency requirements.

In the event of a prolonged large-scale oil spill event, additional resources would be sourced from external agencies to fulfil the necessary roles.

Individual Oil Spill Response Officer Position Checklists are provided in Appendix 3 - of this OPEP. Maximum IMT resourcing requirements for the worst credible discharge have been evaluated in consultation with AMOSC. Appendix 5 - provides further information on where IMT personnel will be sourced from to match the response requirements identified in the OPEP.

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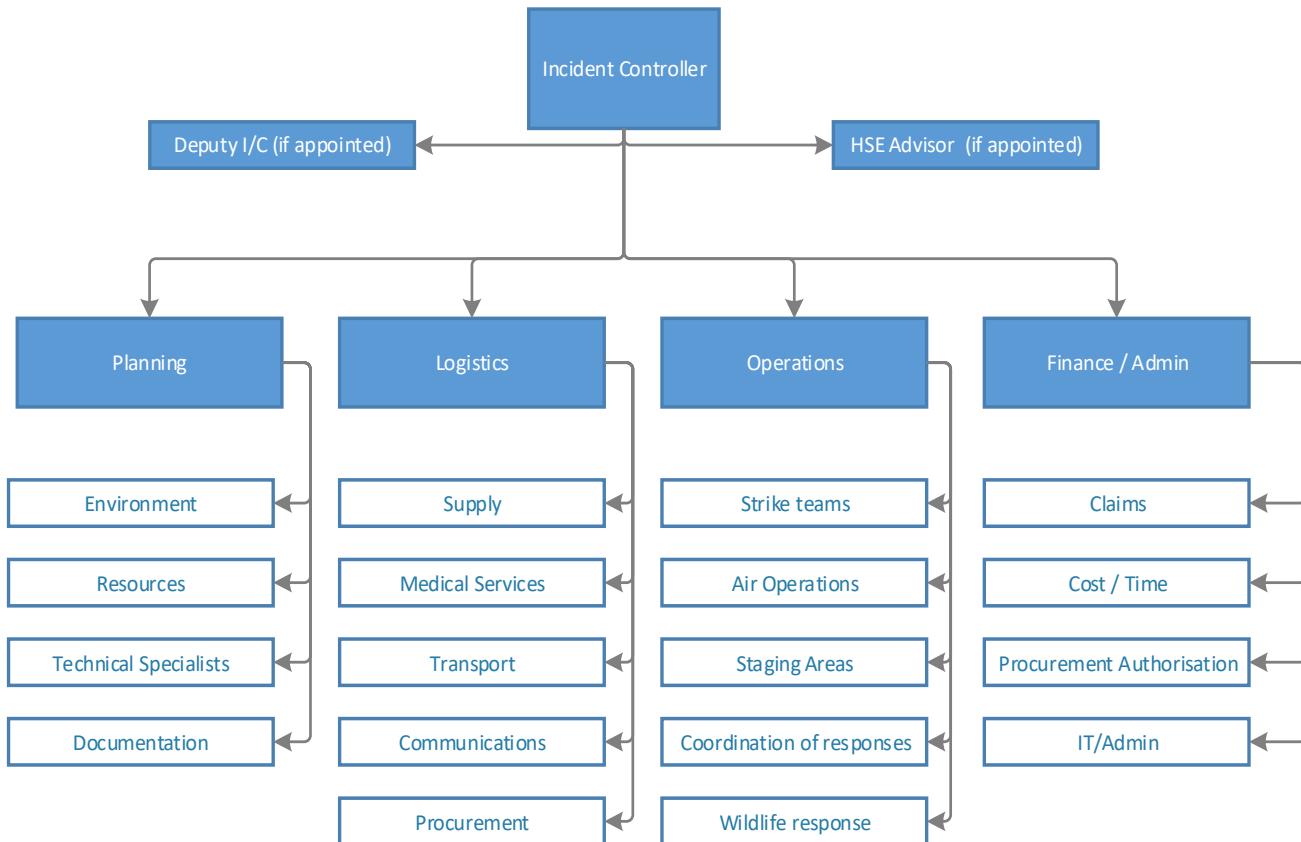


Figure 3-2: Spill Level 2/3 Support Organisation (Indicative)

Table 3-3: IMT Lead Roles, Responsibilities, Competencies and Provision

Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>Duty Incident Controller</b>	Answering the initial call, initial mobilisation of the IMT and briefing the CMT Leader.	Timely initiation of response activity.	IMO2 or equivalent OPEP induction	Amplitude Energy
<b>Incident Controller</b>	Management of all activities necessary for the resolution of an incident.	Safe and efficient response structure and organisation.	IMO3 or equivalent OPEP Induction	Amplitude Energy / AMOSC Core Group CA Emergency Management Liaison Officer (or equivalent)
<b>Health &amp; Safety Officer</b>	Oversees the health and safety of the response operations.	Health and Safety Plans, control measures and evaluation.	Industry Health Safety & Environment	Amplitude Energy

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Initial Responder	Responsibilities	Output	Responder Competency/ Training	Sourced from
			(HSE) role >5 years OPEP induction	
<b>Liaison Officers</b>	Relaying critical information to key stakeholders (government, community). Feeding back stakeholder concerns to the IC for resolution.	External / public/ stakeholder affairs are managed.	Industry or communications role >3 years OPEP Induction	Amplitude Energy / AMOSC Core group
<b>Planning Section Lead</b>	Collection, analysis and dissemination of information and development of plans for the resolution of an incident.	Drive the planning process that develops the IAP. Tracking resources. COP – situational assessment (intelligence).	IMO2 or equivalent Internal competencies* OPEP Induction	Amplitude Energy / AMOSC Core Group /
<b>Environment Unit Lead</b>	Reports to Planning Officer. Collects and analyse environmental information for areas that are or may be impacted by the incident. Undertakes NEBA. Works with experts to provide concise and accurate environmental advice to the IC.	OPEP strategies are tactically implemented consistent with good global practice, accounting for the net. environmental benefit of each strategy. Assessment of environmental risks.	Internal competencies* OPEP Induction	Amplitude Energy / Environmental Consultancy or AMOSC Core Group. (External interface: State Environmental Officers)
<b>Operations Section Lead</b>	Tasking and application of resources to achieve resolution of an incident.	Run the operations in the field. Provide technical input to the production of the next operational period IAP. Draft the daily operational orders for each field team. Provide tech input to the safety plans.	IMO2 or equivalent Internal competencies* OPEP Induction	AMOSC Core Group
<b>Logistics Section Lead</b>	Acquisition and provision of human and physical resources, facilities, services, and materials to support achievement of incident objectives.	Acquire resources and materials that match the operations. Ensure resources are serviced and maintained to required specifications.	IMO2 or equivalent Internal competencies* OPEP Induction	AMOSC Core Group
<b>Finance and Administrator Lead</b>	Management of all financial and administrative activities to enable and record the incident.	Tracks all costs and provides financial oversight consistent with the CA requirements.	Internal competencies* OPEP Induction	Amplitude Energy

Notes: \*Defined for role and maintained as part of the Amplitude Energy training and competence matrix.



## 3.2.2 Forward Operating Base and Field Teams

The IMT will provide support to the Field Team Forward Operating Base (FOB) Leads (Table 3-4). The FOB(s) will be located near to response activities to manage and provide for the daily operations of the field response. All roles may not be necessary for the entire response.

*Table 3-4: FOB and Field Team Lead Roles, Responsibilities, Competencies and Provisions*

Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>FOB Lead</b>	Set-up and management of the forward operating base, IT systems, personnel, materials, and equipment.	Functional FOB for response.	IMO2 or equivalent OPEP Induction	Amplitude Energy / AMOSC
<b>Safety Officer</b>	Coordinate welfare requirements for all field response personnel.	Implementation of health and safety plan measures.	Industry HSE role >5 years OPEP induction	Amplitude Energy
<b>Aerial Operations Manager</b>	Coordination of aerial response operations.	Aerial response operations are implemented in line with the IAP.	IMO2 or equivalent OPEP Induction Functional specific training/workshop	AMOSC
<b>Aerial Observer</b>	Plotting and recording of oil spill.	Observer reports outlining location, extent and thickness of oil.	Functional specific training/workshop - Aerial Surveillance Course or equivalent	AMOSC
<b>Marine Operations Manager</b>	Coordination of marine response operations.	Marine response operations are implemented in line with the IAP.	IMO1 or equivalent OPEP Induction	AMOSC
<b>Shoreline Operations Manager</b>	Coordination of shoreline response operations.	Shoreline response operations are implemented in line with the IAP.	IMO1 or equivalent OPEP Induction Functional specific training/workshop	AMOSC
<b>SCAT Team Leads</b>	Coordinate day to day SCAT at respective field location.	SCAT operations are implemented in line with the IAP.	IMO1 or equivalent Functional specific training/workshop	AMOSC and AMOSC Core Group
<b>Shoreline Response Team Leads</b>	Coordinate day to day shoreline response at respective field location.	Shoreline response operations are implemented in line with the IAP.	OPEP Induction Functional specific training/workshop	AMOSC Core Group

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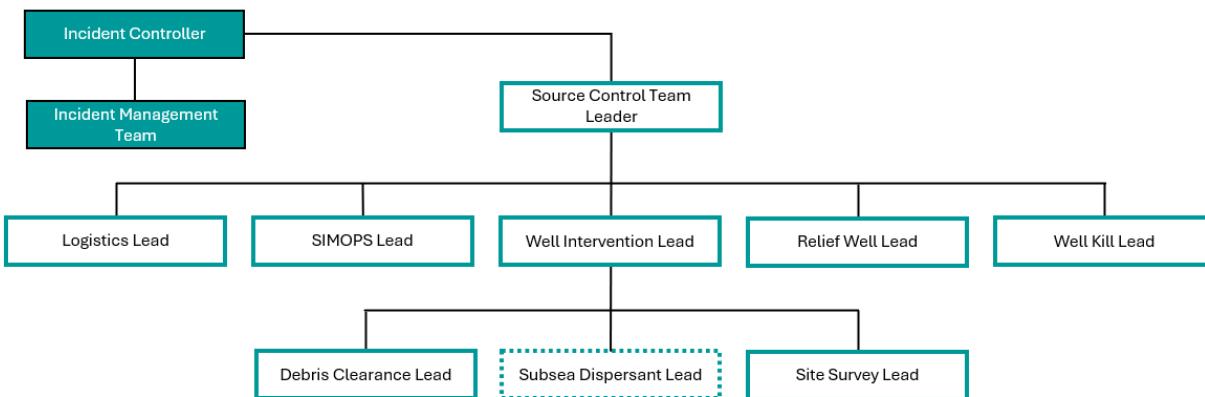
Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>TRP Team Leads</b>	Coordinate tactical response at respective tactical response site.	Response operations are implemented in line with TRPs/IAP.	IMO1 or equivalent Functional specific training/workshop	AMOSC Core Group
<b>Oiled Wildlife Coordinator</b>	Coordinate OWR.	OWR is implemented in line with TRPs/IAP.	Functional specific training/workshop - OWR management OPEP Induction	AMOSC Core Group
<b>Oiled Wildlife Rehabilitation Manager</b>	Coordinate rehabilitation of oiled wildlife rescued during the response.	Process implemented for the rehabilitation of oiled wildlife.	Functional specific training - OWR management	Philip Island Nature Park
<b>OSMP Coordinator</b>	Coordinate implementation of monitoring studies depending on the initiation triggers.	Monitoring studies are implemented in line with the OSMP.	As per the OSMP	Stantec is engaged as the OSMP provider

### 3.2.3 Source Control Team (Well Incident)

The Amplitude Energy Offshore Victoria Source Control Plan (VIC-DC-ERP-0001) provides details and guidance on emergency well control management for Amplitude Energy's offshore Victoria assets and activities. It covers the activities to be carried out to assess the well control and to plan and execute appropriate response measures to regain control of and secure the well.

The IC will interface with the SCT (Section 3.0, Figure 3-3). Figure 3-3 details the SCT structure and Table 3-5 roles, responsibilities, competencies, and where initial and surge personnel can be sourced. All roles may not be necessary for the entire response.

A detailed resourcing plan is developed as part of the drilling campaign SCERP.



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Figure 3-3: Source Control Team Structure

Table 3-5: Source Control Team Lead Roles, Responsibilities, Competencies and Provision

Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>SCT Lead</b>	The SCT Leader gathers all the information from the source control subgroups to manage and report on the progress of the various source control methods being pursued.	Approve and authorise the implementation of a Source Control Action Plan.	IMO3, International Well Control Forum (IWCF) Subsea Supervisor Well Control or equivalent	Amplitude Energy Labour Agency Service Partners
<b>Well Intervention Team Lead</b>	The Well Intervention Team Leader reports to the SCT Leader and supports activities related to site surveys, debris removal, subsea dispersant and well intervention of the incident well.	Approve and authorise the implementation of a: <ul style="list-style-type: none"> <li>• site survey plan</li> <li>• well intervention plan</li> <li>• debris removal plan.</li> </ul>	IMO2, IWCF Subsea Supervisor Well Control	Amplitude Energy Labour Agency Service Partners
<b>Site Survey Team Lead</b>	The Site Survey Team Leader is responsible for the management and coordination of surveying the site subsea.	Provides data for all other source control efforts to assist in the development of the operational plans and procedures.	Experience offshore subsea survey lead role	Amplitude Energy Labour Agency Service Partners
<b>Debris Removal Team Lead</b>	The Debris Removal Team Leader is responsible for the management and coordination of subsea debris removal operations.	Coordinate the development of operational plans and procedures, secure resources, and manage debris removal operations to ensure clear access for the relief well.	Experience offshore subsea operations lead role	Amplitude Energy Labour Agency Service Partners
<b>Subsea Dispersants Team Lead</b>	The Dispersant Team Leader is responsible for the management and coordination of subsea dispersant operations at or near the source (if they are required).	Coordinate the development of the subsea dispersant application and monitoring plans and procedures, secure resources, and manage subsea dispersant operations. Prepare procedures and plans for submission to be approved by the local governmental authority and coordinated through the SIMOPS Team.	Experience offshore subsea operations lead role	Amplitude Energy AMOSC WWC Oceaneering Service Rep. – Dispersant Vessel

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Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>Simultaneous Operations (SIMOPS) Team Lead</b>	The SIMOPS Leader reports to the SCT Leader and supports activities related to SIMOPS plans and activities of the incident well.	Approve and coordinate activities at the incident site. Coordinate and schedule all activities within the SIMOPS area. Coordinate with other groups for the transport of all well control materials to the site.  Create and maintain SIMOPS plan detailing organization and process flow. Establish On-Site SIMOPS Control/Coordination Centre.	Experience SIMOPS lead role	Amplitude Energy Labour Agency Service Partner
<b>Relief Well Team Lead</b>	The Relief Well Leader reports to the SCT Leader and supports activities related to planning and operations for drilling the relief well and well kill modelling, planning and operations associated with well kill from the relief well to the incident well.	Determine if impacted rig may be used for relief rig.  Determine number of relief wells to be drilled. Obtain and assess information on reservoir and wellbore geometry. Source rigs to drill the well(s). Identify available resources (i.e. rig, oil country tubular goods, pumping fluids). Identify surface location and develop relief well plan. Submit permit(s) and receive approval. Finalize well design drill relief well.	Experience offshore well construction lead role. IWCF Subsea Supervisor Well Control or equivalent	Amplitude Energy Labour Agency Service Partners
<b>Well Kill Team Lead</b>	Well Kill Team Leader is responsible for the management and coordination of well kill operations.	Coordinate the development (and approval) of the well kill plans and procedures, secure resources, and manage well kill operations via a relief well or capping stack, concurrently with all other source control efforts until the well is dead.	Experience offshore drilling lead role	Amplitude Energy Labour Agency Service Partner
<b>Logistics Team Lead</b>	The Logistics Team Leader will support the SCT during a subsea well containment incident. The Logistics Team will coordinate internal and external to the SCT to ensure that all necessary resources and services for	Approve and authorise the implementation of SCERP logistics strategy, manage vessel support, materials support, facility support, and communications support for source control operations.	Experience logistics lead role	Amplitude Energy Labour Agency Service Partner



Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
	source control operations are procured.			

## 3.2.4 Crisis Management Team

The Amplitude Energy CMT typically comprises senior executives representing the major areas of the Amplitude Energy business (Table 3-6). The CMT Leader will activate support as required to assist with legal and media issues.

The focus of the CMT includes:

- Supporting the IMT to contain an incident.
- Communicating with all relevant stakeholders and managing the demand for information.
- Strategic planning of control and recovery processes.

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Table 3-6: Crisis Management Team Roles, Responsibilities, Competencies and Provision

Initial Responder	Responsibilities	Output	Responder Competency/Training	Sourced from
<b>CMT Lead</b>	Overall responsibility for management of the CMT including overall responsibility for internal and external communications to the Board, JV partners, ASX and other stakeholders.	Supports the IC to provide Safe and efficient response structure and organisation.	Chief Officer (or delegate)	Amplitude Energy
<b>External Affairs / Stakeholder relations</b>	Advise on development of internal and external affairs and communications strategy. Brief company spokesperson.	Provision of information to external parties in timely manner.	Manager (or delegate)	Amplitude Energy
<b>Legal</b>	Assist in the development of a positive legal direction.	Legal implications of the response are assessed and communicated to the CMT lead.	General council, Manager (or delegate)	Amplitude Energy
<b>Finance</b>	Financial notifications, provision of adequate funds, advice on financial impacts.	Response is adequately funded to implement the IAP.	Chief Officer (or delegate)	Amplitude Energy
<b>Human Resources</b>	Source relief and specialist personnel.	Response is adequately resourced to implement the IAP.	Manager (or delegate)	Amplitude Energy

## 4.0 Pre-Operational Response Options

Spill response options will be based on the general conditions, oil type and the response priorities. This section describes pre-operational spill response options based on known scenarios, fate and trajectory predictions and an assessment of impacts.

The response taken in an actual event may draw on this information initially but must be appropriate to the conditions of the spill at the time. Approaches to support the live operational response are provided in Section 5.0.

### 4.1 General Environmental Conditions of the Bass Strait

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Victoria's climate can be characterised as cool temperate, with cool wet winters and cool summers. Water temperatures in Bass Strait are between 12.6°C and 18.4°C (average 15°C).

## 4.1.1 Wind

The Gippsland Basin lies within the eastern portion of the Bass Strait, which is a sea straight separating Tasmania from the southern Australian mainland. Hindcast modelled wind data from the National Centres for Environmental Predictions Climate Forecast System Reanalysis for the period 2008 to 2017 (inclusive), showed winds were typically from the southwest during the summer months and west-southwest during the winter months, with average monthly wind speeds under 16 knots, winds can at times blow over 52 knots at the release location (RPS 2021).

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 2010 to 2019 (inclusive), showed wind direction were typically from the southeast in summer through the westerly sectors to the northwest for winter, with average monthly wind speeds ranging from 10 knots during summer to 13 knots during winter (RPS 2024).

Figure 4-1 shows the average wind data in both Gippsland and Otway basin.

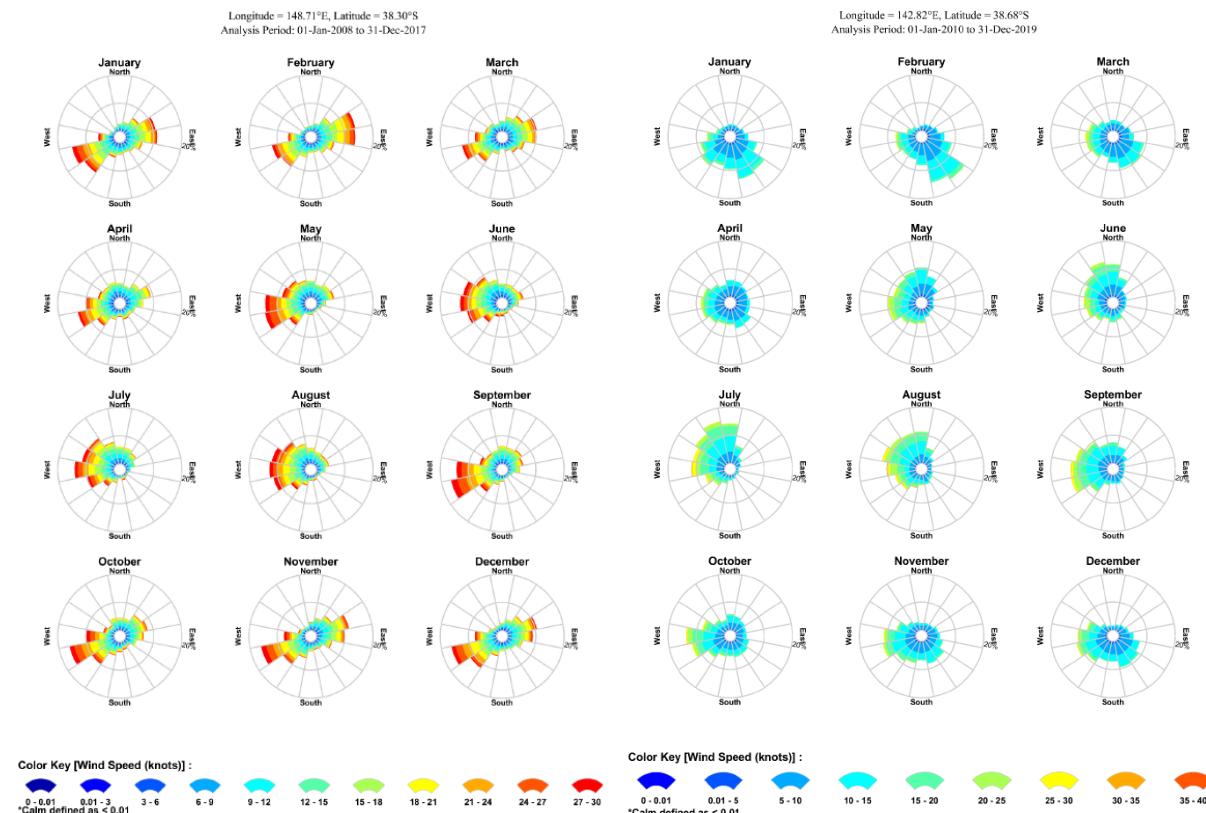


Figure 4-1: Modelled Monthly Wind Data Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2024))



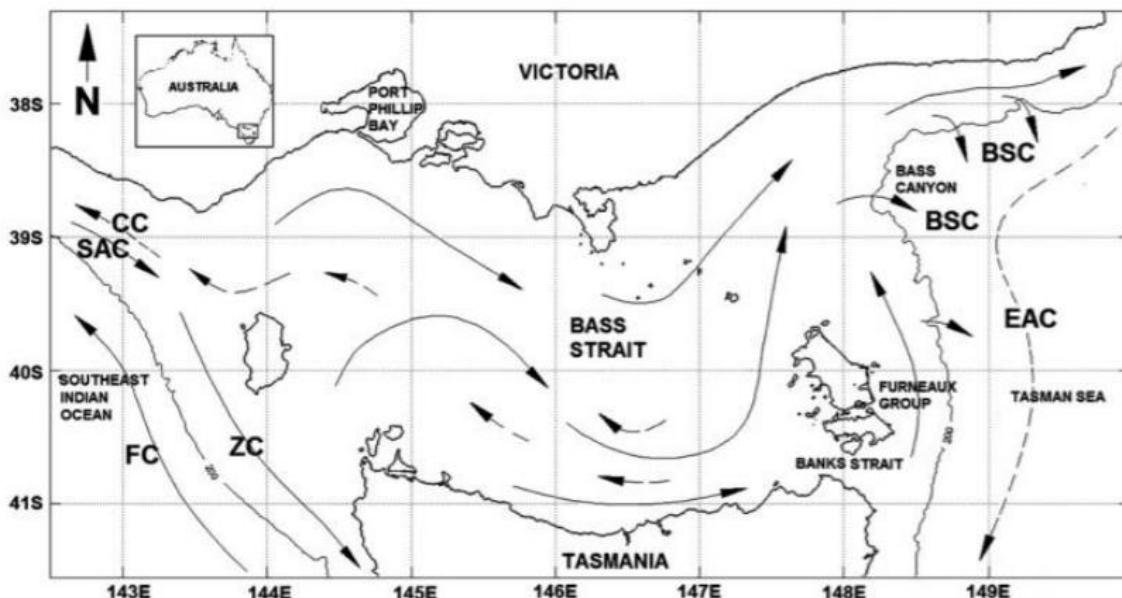
## 4.1.2 Surface Currents

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. 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 (Baines and Fandry 1983, Middleton and Black 1994).

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 and Bye 2007). 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 through the Bass Strait, and another forming the Zeehan Current off western Tasmania (Sandery and Kanpf 2007). During summer, water flow reverses off Tasmania, King Island and the Otway Basin travelling westward, as the coastal current develops due to south-easterly winds (Figure 4-2). Surface currents flow with different intensities within the Gippsland Basin and Bass Strait depending on the time of year.

The current speed in the Gippsland Basin ranged between 0.18 m/s (July and October) to 0.24 m/s (May) while maximum current speeds ranged between 0.59 m/s (December) and 0.96 m/s (March) (RPS 2021). Figure 4-3 illustrates the monthly current rose distributions based on 10-year dataset for the period 2008 to 2017 (inclusive).

The current speed in the Bass Strait ranged between 0.15 m/s (April) to 0.24 m/s (July) while maximum current speeds ranged between 0.72 m/s (February) and 1.10 m/s (September) (RPS 2024). Figure 4-3 illustrates the monthly current rose distributions based on 10-year dataset for the period 2010 to 2019 (inclusive).



Source: (Sandery and Kanpf 2007)

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Figure 4-2: Schematic Representation of Currents in the Region. Dashed Arrows Denote Summer Currents. Shelf Break Depth (200 m isobath) is Indicated

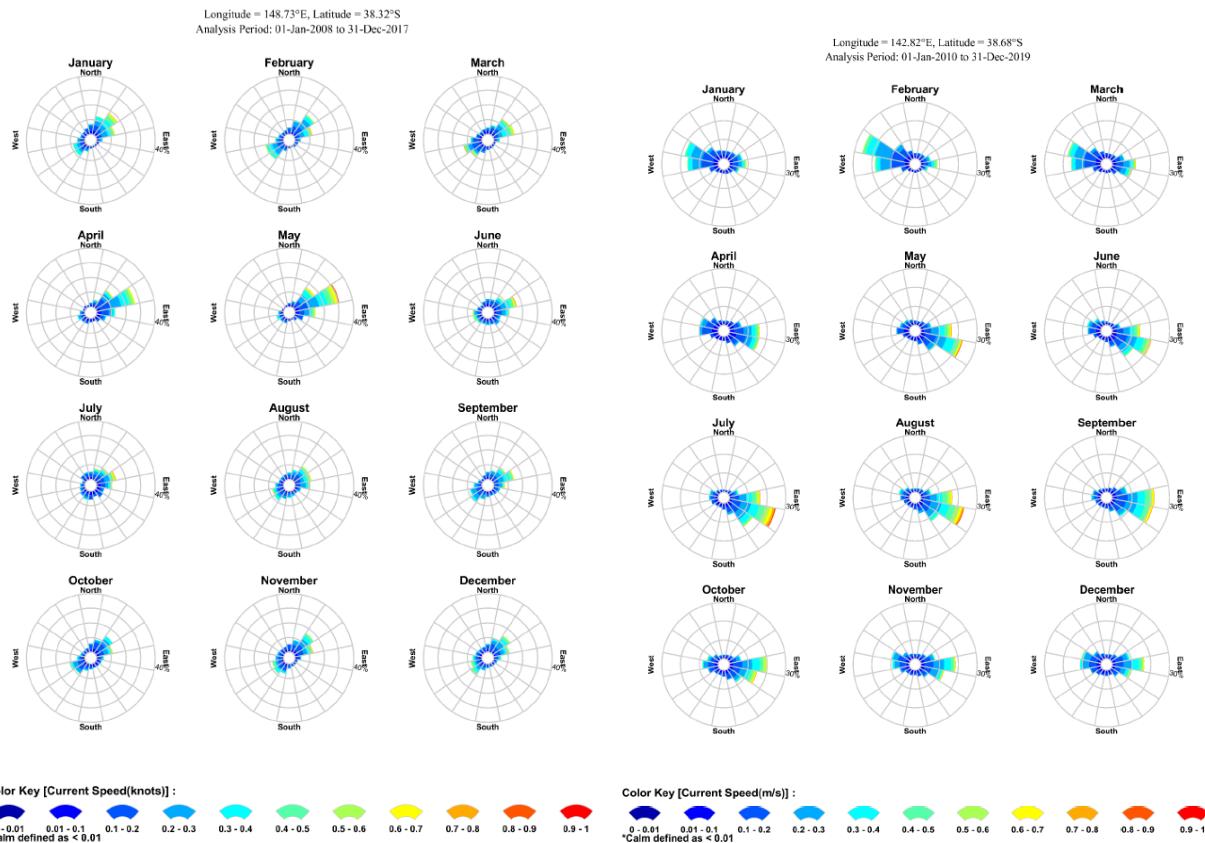


Figure 4-3: Modelled Monthly Surface Current Data Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2024))

## 4.1.3 Water Temperature and Salinity

Monthly average sea surface temperatures in the Gippsland Basin range from 14.1°C (September) to 20.5°C (March) (RPS 2021), while in the Bass Strait range from 13.4°C (September) to 18.2°C (March) (RPS 2024). Salinity tends to remain consistent throughout the year, between 35.4-35.6 psu (RPS 2021, RPS 2024).

Figure 4-4 shows the monthly temperature and salinity profiles throughout the water column in both the Gippsland and Otway Basin.

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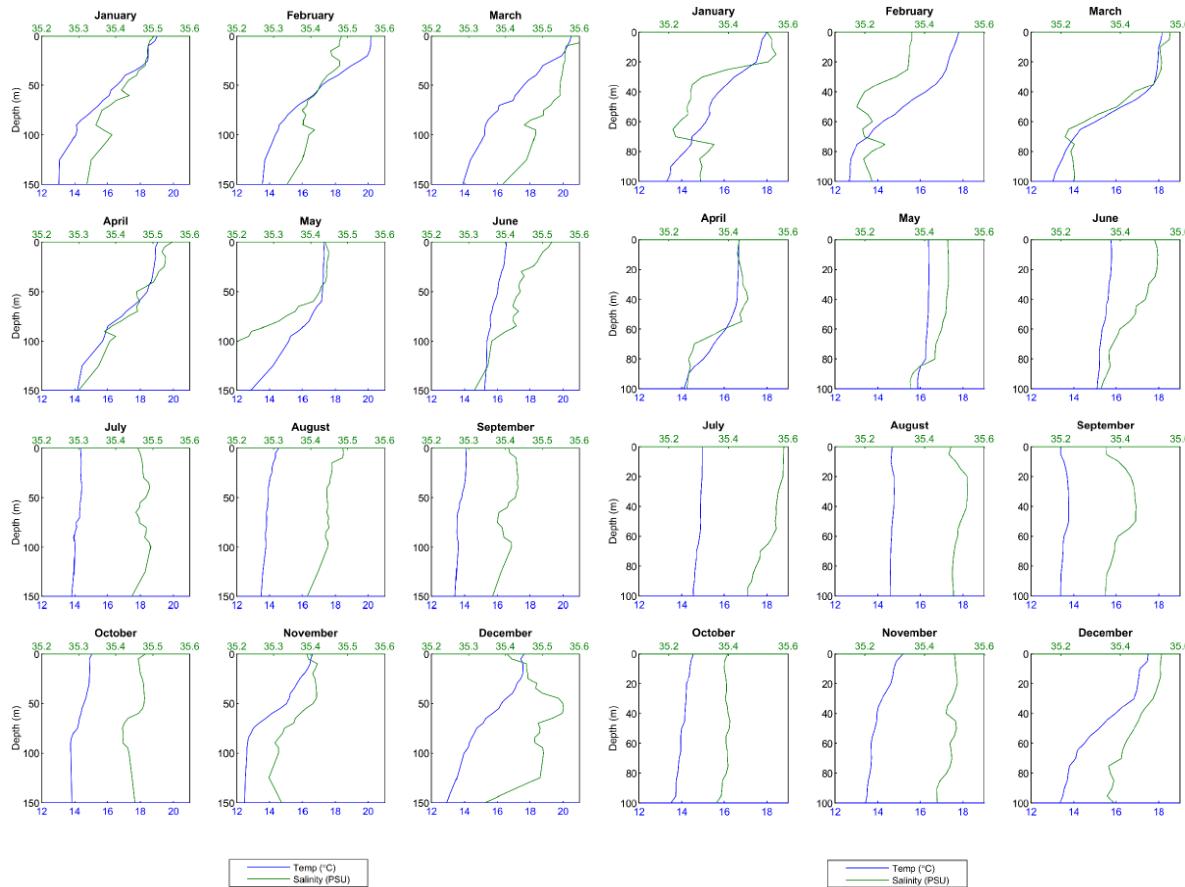


Figure 4-4: Monthly Temperature and Salinity Profiles Throughout the Water Column Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2024))

## 4.2 Hydrocarbon Characteristics

### 4.2.1 Marine Diesel Oil

Vessels engaged will use MDO which is a mixture of both volatile and persistent hydrocarbons and is classified as Group II oil (light-persistent) based on categorisation and classification derived from AMSA (2015) guidelines. The classification is based on the specific gravity of hydrocarbons in combination with relevant boiling point ranges. Under constant wind speed, MDO has the following behaviour at sea:

- The hydrocarbon spreads very rapidly to thin thicknesses elongated in the direction of the wind and current.
- Evaporation is the dominant process contributing to the removal of spilled MDO from the sea surface (depending upon wind conditions, sea state and sea temperature).
- MDO residues usually consist of heavy components which may persist for longer and tend to disperse as oil droplets in the upper layers of the water column in the presence of waves but can re-float to the surface if wave energies abate.

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Table 4-1 provides the physical properties of MDO used with the relevant modelling report.

Note: The proxy properties modelled by RPS for MDO have changed since the BMG spill modelling in 2020 (RPS 2020) and the Annie-2 spill modelling completed in 2023 (RPS 2023); hence the different MDO characteristics shown in Table 4-1. However, both MDO analogues have been categorised as Group II (light-persistent) based on categorisation and classification derived from AMSA (2015) guidelines as stated above.

Table 4-1: MDO Properties and Behaviour

Properties	MDO	
	PB, Sole, and Otway*	BMG*
American Petroleum Institute (API) Gravity	24	37.6
Density@25°C g/ml	0.89	0.83
Dynamic Viscosity @ 25°C (cP)	14.0	4.0
Pour Point (°C)	-9	-14
Boiling Point Curve (% mass)	Volatiles (<180°C)	4.0
	Semi-volatile (180-265°C)	32.0
	Low Volatility (265-380°C)	54.0
	Residual (>380°C)	10.0
Group	II	II

Source: Oil Spill Modelling - Annie-2 (RPS 2023) and BMG (RPS 2020)

## 4.2.2 Patricia and Baleen

The PB reservoirs are dry gas as provided in Table 4-2. The reservoirs are now substantially depleted although Baleen has been observed to be pressure recharging over time.

Approximately 5 m<sup>3</sup> of Longtom condensate remains in the offshore PB pipeline in its current non-operations phase. The physical characteristics of the Longtom are provided in Table 4-3.

Table 4-2: PB Reservoir Conditions

Properties	Patricia-1	Patricia-2	Baleen-4
Maximum Pressure at Reservoir Depth	541 psia	541 psia	700 psia
Maximum temperature	49°C	49°C	49°C
Gas Specific Gravity	0.572	0.572	0.563
Condensate to Gas Oil Ratio (GOR)	~0.1 bbl/MMscf	~1 bbl/MMscf	~1 bbl/MMscf

Source: Well Operations Management Plan (WOMP) (Santos 2014), PB Asset SCERP (Cooper Energy 2022a)

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Table 4-3: Longtom Condensate Physical Properties

Properties	Longtom Condensate
API Gravity	51.2
Density@25°C g/ml	0.777
Dynamic Viscosity @ 20°C (cP)	1.081
GOR	10.85 stb/MMscf
Pour Point (°C)	-9 (when fresh)
Boiling Point Curve (% mass)	Volatiles (<180°C)
	Semi-volatile (180-265°C)
	Low Volatility (265-380°C)
	Residual (>380°C)
International Tanker Owners Pollution Federation (ITOPF) Group	I

Source: Pipeline Safety Case – Non-Operational Phase (*Santos 2015*)

## 4.2.3 Sole

The Sole reservoir is a dry gas reservoir with very limited condensate observed or recovered during the well tests on Sole-2, Sole-3 and Sole-4. Physical characteristics of the Sole gas and condensate are provided in Table 4-4 and Table 4-5 respectively.

Table 4-4: Physical Characteristics of Sole Gas

Properties	Sole
Maximum Pressure at Reservoir Depth	1,147 psi
Maximum temperature	43°C
Gas Specific Gravity	0.589
Condensate to Gas Ratio	<0.1 bbl/MMscf

Source: Basic Data Report (*Cooper Energy 2018*); Sole Asset SCERP (*Cooper Energy 2022b*)

Table 4-5: Sole Condensate Physical Properties (*Intertek 2021*)

Properties	Sole Condensate
API Gravity	36.6
Density@20°C g/ml	0.8414
Dynamic Viscosity @ 20°C (cSt)	1.709
Pour Point (°C)	<-36
Boiling Point Curve (% mass)	Volatiles (<180°C)
	Semi-volatile - Residual (>180°C)
ITOPF Group	II



Source: Sole condensate Assay (*Intertek 2021*)

## 4.2.4 BMG

The BMG development produced light crude oil. The BMG Wells were permanently sealed in 2024, eliminating the risk of a release of crude oil from the wells. The B6 flowline was isolated in 2024, and its contents will be managed as part of the future BMG Phase 2 decommissioning project which will recover the remaining equipment from the seabed (Figure 4-5).

The B6 flowline has a volume of  $\sim 100 \text{ m}^3$ ; the majority of its contents is water, but with some residual hydrocarbons. Records indicate these hydrocarbons to be  $\sim 2 \text{ m}^3$  of diesel which was used during the operational phase as a solvent to manage wax accumulated in the flowline. Refer to Section 4.2.1 for diesel properties and behaviour.

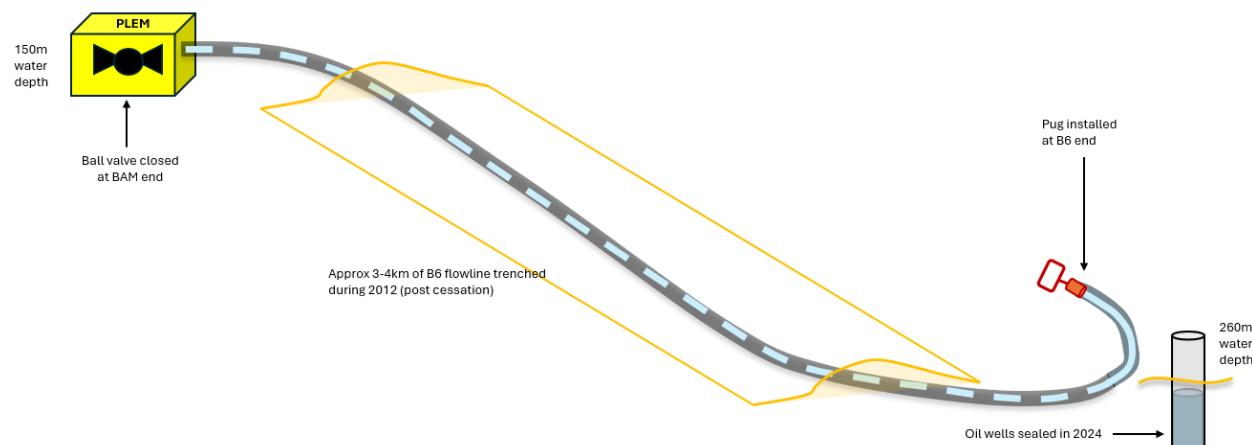


Figure 4-5: BMG - B6 flowline Status (as of May 2024)

## 4.2.5 Otway Facilities

The Otway reservoirs access the Waarre formation and are similar in nature. The CHN reservoirs have been producing for over a decade and hence are depleted relative to initial pressures. The Waarre Formation reservoirs are also the primary targets for the exploration drilling program.

The condensates of the Otway reservoirs are classified as a Group I oil (non-persistent). Table 4-6 provides the CHN and Annie reservoir conditions. The Annie-1 well was drilled and abandoned in 2019; it is located  $\sim 11 \text{ km}$  northeast of the Casino field and modelling for Annie-1 well has been used as a conservative proxy for response planning purposes<sup>1</sup> in lieu of CHN specific modelling. Table 4-7 details the physical characteristics of the Annie condensate.

<sup>1</sup> Refer to CHN-EN-EMP-001 for further information.

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Table 4-6: CHN and Annie Field Reservoir Conditions (Santos 2014)

Parameter	Casino Waarre C	Casino Waarre A	Henry	Netherby	Annie
<b>Pressure at Reservoir Depth (psia)</b>	Undepleted: 2850 Current: 515	Undepleted: 2830 Current: 880	Undepleted: 2670 Current: 880	Undepleted: 2550 Current: 505	Undepleted: 3280
<b>Temperature (°C)</b>	80	87	80	76	100
<b>Gas Specific Gravity</b>	0.59-0.65	0.59-0.65	0.59	0.58	0.66
<b>Condensate to GOR</b>	Undepleted: 1.1 bbls/MMscf Current: 0.3 bbls/MMscf				1.1 bbls/MMscf

Table 4-7: CHN and Annie Condensate Physical Properties

Properties	CHN Condensate	Annie-1 Condensate
<b>API Gravity</b>	51.2	41.0
<b>Density kg/m<sup>3</sup></b>	774.0 (@25°C)	820.0 (@16°C)
<b>Dynamic Viscosity (cP)</b>	0.14 (@25°C)	1.063 (@20°C)*
<b>Pour Point (°C)</b>	-54	-30*
	<b>Volatiles (&lt;180°C)</b>	8.0
<b>Boiling Point Curve (% mass)</b>	<b>Semi-volatile (180-265°C)</b>	46.5
	<b>Low Volatility (265-380°C)</b>	28.0
	<b>Residual (&gt;380°C)</b>	17.5
<b>ITOPF Group</b>	I	II

\*Note: data extracted from Minerva condensate assay.

## 4.3 Response Option Effectiveness

An assessment of the suitability and effectiveness of spill response options for the hydrocarbon types which could potentially be released from Amplitude Energy's activities was undertaken in preparation of the corresponding EPs.

Table 4-8 provides a summary of this assessment and lists the response options suitable for mitigating spill impacts according to hydrocarbon type which may be present on the CHN, PB, Sole and BMG assets.

Given the hydrocarbon types the primary response strategy will be to initiate source control and then monitor and evaluate the spill (natural weathering). Additional, secondary measures to protect specific environmental sensitivities within the spill response area where response activities may offer net benefit includes protection and deflection, shoreline monitoring and clean-up (on sandy beaches) and OWR.

Further information on each of the selected response strategies is provided in Section 6.0 to Section 11.0.

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Table 4-8: Response Option Summary for MDO, CHN, PB and Sole Hydrocarbons

Response Option (OPEP Section Reference)	Description		Hydrocarbons		
		MDO	PB and Sole*	BMG	Otway
<b>Source Control (OPEP Section 6.0)</b>	Limit flow of hydrocarbons to environment.	✓	✓	✓	✓
<b>Monitor &amp; Evaluate (OPEP Section 7.0)</b>	Direct observation-aerial or marine, vector calculations, OSTM, satellite tracking buoys. To maintain situational awareness, all monitor and evaluate options suitable.	✓	✓	✓	✓
<b>Dispersant Application (surface)</b>	Breakdown surface spill & draw droplets into upper layers of water column.  Increases biodegradation and weathering and provides benefit to sea-surface air breathing animals.	✗	✗	N/A***	✗**
<b>Contain and Recover</b>	Booms and skimmers to contain surface oil where there is a potential threat to environmental sensitivities.	✗	✗	N/A***	✗
<b>Protect &amp; Deflect (OPEP Section 8.0)</b>	Booms and skimmers deployed to protect environmental sensitivities.	✓	✓	N/A***	✓
<b>Shoreline Clean-up (OPEP Section 9.0)</b>	The selection and application of shoreline clean-up methods will take environmental sensitivities into account based on the NEBA.	✓	✓	N/A***	✓
<b>Oiled Wildlife Response (OPEP Section 10.0)</b>	Consists of capture, cleaning and rehabilitation of oiled wildlife. May include hazing or pre-spill captive management.	✓	✓	✓	✓

\*Minor condensate content.

\*\*Dispersant is retained as a remote contingency – in case it is necessary to reduce surface VOCs and lower explosive limits associated with surface condensate near the well, to provide safe access for well control activities.

\*\*\*Response options not applicable (N/A) based on the volume release being insufficient for the response to be feasible based on the worst-case credible scenario for the activities within the BMG field.

## 4.4 Priority Protection Areas

Predictive modelling has been used to identify the areas that may be exposed to hydrocarbons from hypothetical worst-case spill scenarios. To identify the primary response planning areas the oil exposures from NOPSEMA's Environment bulletin - Oil spill modelling (2019) were used:

- A sea surface oil exposure of 50 g/m<sup>2</sup> as this represents the practical limit for surface response options; below this loading, oil containment, recovery, and chemical treatment (dispersant) become ineffective.
- A shoreline contact exposure of 100 g/m<sup>2</sup> as this represents the minimum loading that is not likely to inhibit the potential for recovery; hydrocarbons below this loading may be best remediated by natural coastal processes alone.



The primary response planning areas were developed based on the modelling combination of the worst-case spill scenarios that covered the greatest area above the exposures previously stated for the PB and Sole and Otway assets.

Based on the modelling outputs, priority protection areas have been identified as have other areas where response strategies may be practically implemented. A timely and appropriate response for the identified areas for priority protection have been planned for in the EPs to ensure that the risks and impacts are ALARP and acceptable. A series of TRPs have been developed to assist in implementing a rapid response (Section 4.4.2).

## 4.4.1 Sensitivity Criteria

To support the identification of priority response areas, shoreline sensitivity analysis and mapping was undertaken guided by the International Petroleum Industry Environmental Conservation Association principles and informed by the regional description of the environment and understanding of receptor presence in the region. Coastal landform types, habitats and other receptors within the region have been ranked based upon sensitivity to hydrocarbon exposure in accordance with the criteria in Table 4-9.

*Table 4-9: Sensitivity Criteria*

Sensitivity	Code	Criteria
<b>Severe Impact</b>	S1	<p>Region of known sensitive habitat (e.g. mangrove, saltmarsh, wetlands) or landform type (e.g. sheltered tidal flats, sheltered rocky coasts), which if impacted may have significant impacts and long recovery periods.</p> <p>Known presence of feeding, breeding, or nesting behaviours of threatened species (e.g. biologically important areas [BIAs]).</p> <p>Other areas of ecological or social significance (e.g. marine protected areas, Ramsar wetlands, threatened ecological communities, Commonwealth heritage listed areas).</p>
<b>Medium Impact</b>	S2	<p>Region of known moderately sensitive habitats (e.g. seagrass) or landform type (e.g. exposed tidal flats) which have a medium recovery period (~2-5 years).</p> <p>Known presence of feeding, breeding, or nesting behaviours of non-threatened species (e.g. BIAs).</p> <p>Other areas of ecological or social significance (e.g. commercial fishing, tourist attractions, cultural heritage sites).</p>
<b>Low Impact</b>	S3	<p>Region of known low sensitivity habitat (e.g. subtidal rock) or landform type (e.g. sandy beaches, exposed rocky coasts) which have a rapid recovery period (~1 year).</p> <p>Other areas with expected minimal impact to marine life, commercial activities, public areas or cultural heritage sites.</p>

## 4.4.2 Tactical Response Plans for Priority Protection Areas

TRPs are developed for sensitive sites predicted to be exposed to a hydrocarbon spill where there is limited time to contact above response threshold of  $>100 \text{ g/m}^2$  (as determined by predictive modelling). It is estimated that it takes approximately five days to develop and ground truth a tactical response plan



and 24-48 hours to mobilise equipment and personnel to site; thus, those areas of high sensitivity within the priority response area with the potential to be exposed to hydrocarbons within 7 days were identified as the priority protection areas.

The primary response planning areas relevant to the PB and Sole assets and activities, are detailed in Table 4-10 along with the appropriate TRP. Table 4-11 includes the sites identified for the Otway activities with the appropriate TRP. Further TRPs to those identified in these tables will be developed to cover sites and sensitivities in additional locations in case it is required. This would be undertaken as a part of IAPs in the operational response.

In addition to site-specific TRPs, the following Response Plans have been developed:

- species response plans:
  - southern right whale
  - sperm whale
  - white-faced storm petrel
  - short-tailed shearwater
- TRP – shoreline protection & clean up. Developed in collaboration with ExxonMobil, the purpose of the TRP is to provide a plan outlining the strategy to be adopted and actions required to undertake safe and effective shoreline protection and clean-up along any shoreline type, in response to a release of hydrocarbons to the marine environment in the Gippsland region.
- Up to date TRP listings are available at: IMT SharePoint Site – Tactical Response Plans. TRPs have been developed for various projects over a number of years, hence there is a much larger catalogue of TRPs available for reference than meets the criteria for the current operational activities; these are also available on the IMT SharePoint Site – Tactical Response Plans. Figure 4-6 shows a map of the TRPs currently on file within Amplitude Energy and shared between relevant control agencies and operators.

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Table 4-10: Priority Response Planning Areas for Scenarios Identified for the Gippsland Assets and Activities

Location	Latitude	Longitude	Summary	TRP
<b>Benedore River</b>	-37.9	149.7	High coastal habitat sensitivity High biological sensitivity	Croajingolong National Park
<b>Betka river</b>	-37.57	149.75	High coastal habitat sensitivity	Betka River
<b>Cape Howe</b>	-37.52	149.94	High coastal habitat sensitivity High biological sensitivity	Cape Howe Marine National Park
<b>Easby Creek</b>	-37.8	149.6	High coastal habitat sensitivity High biological sensitivity	Croajingolong National Park
<b>Gabo Island</b>	-37.56	149.91	High coastal habitat sensitivity High biological sensitivity	Gabo Island
<b>Mallacoota</b>	-37.56	149.8	High coastal habitat sensitivity	Mallacoota
<b>Point Hicks</b>	-37.80	149.27	High biological sensitivity	Point Hicks
<b>Red River</b>	-37.8	149.6	High coastal habitat sensitivity High biological sensitivity	Croajingolong National Park
<b>Shipwreck Creek</b>	-37.64	149.70	High coastal habitat sensitivity High biological sensitivity	Shipwreck Creek
<b>Tamboon Inlet</b>	-37.78	149.14	High coastal habitat sensitivity High biological sensitivity	Tamboon Inlet
<b>Tullaburga Island</b>	-37.55	149.84	High biological sensitivity	Tullaburga Island
<b>Yeerung River</b>	-37.79	148.78	High coastal habitat sensitivity High biological sensitivity	Yeerung River

Table 4-11: Priority Response Planning Areas for Scenarios Identified for the Otway Assets and Activities

Location	Latitude	Longitude	Summary	TRP
<b>Curdies Inlet</b>	-38.60	142.87	State terrestrial protected area, International Union for Conservation of Nature (IUCN) Category III High coastal habitat sensitivity High biological sensitivity	Curdies Inlet
<b>Lower Aire River Inlet (and Aire River mouth)</b>	-38.81	143.46	State terrestrial protected area, IUCN Category II High coastal habitat sensitivity High biological sensitivity	Aire River Inlet
<b>Port Campbell</b>	-38.61	142.99	Coastal settlement	Port Campbell

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Location	Latitude	Longitude	Summary	TRP
			Amenity beach, tourism, camping, fishing High coastal habitat sensitivity High biological sensitivity	
<b>Princetown Wetlands (and Gellibrand River mouth)</b>	-38.70	143.16	Coastal settlement Main industries are tourism and fishing (including port for rock lobster fishery)	Princetown / Gellibrand River
<b>Warrnambool Bay (Hopkins River, Logans Beach)</b>	-38.4	142.5	Coastal Settlement Amenity Beaches, tourism, camping, fishing, whale watching, shorebird and seabird colonies, Gunditjmara Country, known Tangible cultural heritage (middens) at Hopkins River mouth High social and cultural sensitivity High biological sensitivity	Warrnambool

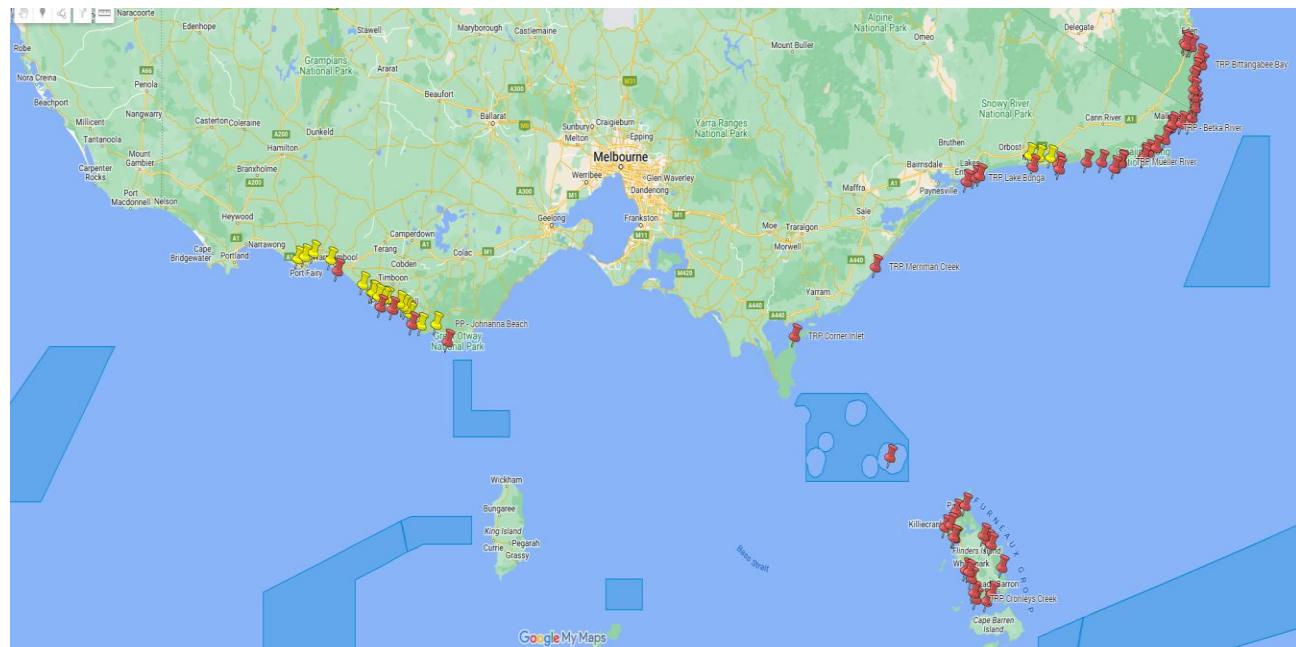


Figure 4-6: Map of TRP locations currently on file within Amplitude Energy. (File Location: [Tactical Response Plans](#))

## 4.4.3 Pre-spill Net Environmental Benefit Assessment

An assessment of effective spill mitigation techniques and the net benefit they offer to specific environmental sensitivities is provided in the following tables Table 4-12 and Table 4-13.

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NOTE: wildlife response activities will focus on addressing wildlife welfare as a result of the spill regardless of the NEBA. The NEBA is an important tool in decision making, but provided it is safe to do so, all accessible wildlife with welfare needs should be addressed.

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Table 4-12: Sensitivities within the Priority Response Planning Areas identified for the PB, Sole and BMG assets, Response Option Feasibility & Planning NEBA

Receptor	Classification		Priority Response Planning Area								Response Options						
			Betka River	Cape Howe	Gabo Island	Point Hicks	Shipwreck Creek	Tamboon Inlet	Tullaburga Island	Yeerung River	Response Option Effective?						
	Sensitivity	Marine	Betka River	Cape Howe Marine National Park (NP)	Gabo Island	Croajingolong NP Point Kicks Marine NP	Shipwreck Creek	Croajingolong NP	Tullaburga Island	Cape Conran Coastal Park	Oil Type	Source Control	Monitor and Evaluate	Dispersant Application	Contain and Recover	Protect and Deflect	Shoreline Clean-up
<b>Marine Ecology</b>																	
Cetaceans	S1	✓									↑	-			N/A	N/A	N/A
Pinnipeds	S2	✓		✓	✓				✓		↑	-			N/A	N/A	N/A
Turtles	S2	✓									↑	-			N/A	N/A	↑
Fish & Sharks	S2	✓	✓								↑	-			N/A	N/A	N/A
Seabirds	S1	✓		✓	✓	✓	✓		✓	✓	↑	-			N/A	N/A	↑
Shorebirds	S1		✓	✓	✓	✓	✓		✓	✓	↑	-			N/A	N/A	↑
Invertebrates	S3	✓							✓		↑	-			N/A	N/A	N/A
Plankton	S3	✓									↑	-			N/A	N/A	N/A
<b>Coastal Habitats</b>																	
Saltmarsh/Seagrass	S1					✓		✓		✓	↑	-			↑	↓	N/A
Mangroves	S1		✓								↑	-			↑	↓	N/A
Mudflats	S1		✓								↑	-			↑	↓	N/A
Kelp Habitats (inter-tidal)	S2										↑	-			N/A	N/A	N/A

<sup>2</sup> No shoreline contact or surface sheen above response concentration thresholds is expected for gas, or condensate spill; therefore, protection and detection, shoreline clean-up and oiled wildlife response are not applicable.

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Receptor	Classification	Priority Response Planning Area									Response Options						
		Betka River	Cape Howe	Gabo Island	Point Hicks	Shipwreck Creek	Tamboon Inlet	Tullaburga Island	Yeerung River	Response Option Effective?							
Sensitivity	Marine	Betka River	Cape Howe Marine National Park (NP)	Gabo Island	Croajingolong NP Point Hicks Marine NP	Shipwreck Creek	Croajingolong NP	Tullaburga Island	Cape Conran Coastal Park	Oil Type	Source Control	Monitor and Evaluate	Dispersant Application	Contain and Recover	Protect and Deflect	Shoreline Clean-up	OWR
Sand Beaches	S3	✓	✓	✓	✓	✓	✓	✓	✓	MDO	Yes	Yes	No	No	Yes	Yes	Yes
Sub-tidal Reef	S3									Condensate <sup>2</sup>	Yes	Yes	No	No	N/A	N/A	N/A
Inter-tidal Rocky Plat/Headland	S3	✓			✓	✓				Gas <sup>2</sup>	Yes	Yes	No	No	N/A	N/A	N/A
Wetlands	S1	✓					✓		✓		↑	-			N/A	↑	N/A
<b>Coastal Ecology</b>																	
Shoreline Birds	S1			✓	✓	✓			✓		↑	-			↑	↑	↑
Pinniped Haul-out Sites	S2			✓	✓			✓	✓		↑	-			N/A	N/A	↑
Penguin Colonies	S2			✓	✓			✓			↑	-			N/A	N/A	↑
Protected Area	S2	✓	✓				✓		✓		↑	-			N/A	N/A	↑
<b>Socio-economic</b>																	
Tourism	S2		✓	✓	✓	✓	✓		✓		↑	-			↑	↑	N/A
Amenity beach	S2	✓	✓	✓	✓		✓				↑	-			↑	↑	N/A
Ports, Harbours, Yacht Club	S3					✓					↑	-			↑	↑	N/A
Commercial Fishing / Aquaculture	S2	✓									↑	-			N/A	↑	N/A
Recreational Fishing/Diving	S3		✓			✓	✓	✓			↑	-			N/A	↑	N/A
Shipwrecks (submerged)	S3								✓		↑	-			N/A	N/A	N/A
Aboriginal Heritage/Cultural	S2		✓	✓	✓	✓	✓	✓	✓		↑	-			↑	↓	N/A



## Legend

Benefits Assessment:			Effectiveness Assessment:		
↑ Net Benefit Compared with only Monitor & Evaluate			Yes: Option suitable for oil type, few restrictions in implementing		
↓ Net Loss Compared with only Monitor and Evaluate			Possible: Option suitable for oil type, potential limitations on application		
- No net benefit or Loss			Not Recommended: Option not suitable for oil type		
NA: Option is not applicable to the Receptor given credible worst-case discharge potential					

Table 4-13: Sensitivities within the Priority Response Planning Areas identified for the Otway assets, Response Option Feasibility & Planning NEBA

Receptor	Classification		Priority Response Planning Area						Response Options						
			Curdies Inlet	Aire River Wetlands	Port Campbell	Princetown Wetlands	Warrnambool	Response Option Effective?							
	Sensitivity	Marine	Otway NP Aire River Beach Aire River	Otway NP Aire River Beach Aire River	Port Campbell Port Campbell Beach Port Campbell Inlet	Princetown Wetlands Gellibrand River	Pont Ritchie / Hopkins River Merri Marine Sanctuary Logans Beach	Oil Type	Source Control	Monitor and Evaluate	Dispersant Application	Contain and Recover	Protect and Deflect	Shoreline Clean-up	OWR
<b>Marine Ecology</b>															
Cetaceans	S1	✓					✓		↑	-		N/A	N/A	N/A	

<sup>3</sup> Dispersant is retained as a remote contingency – in case it is necessary to reduce surface VOCs and lower explosive limits associated with surface condensate near the well, to provide safe access for well control activities. There would be no application outside of Cwth waters or in Marine Parks.

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Receptor	Classification		Priority Response Planning Area						Response Options						
			Curdies Inlet	Aire River Wetlands	Port Campbell	Princetown Wetlands	Warrnambool	Response Option Effective?							
	Sensitivity	Marine	Otway NP Aire River Beach Aire River	Otway NP Aire River Beach Aire River	Port Campbell Port Campbell Beach Port Campbell Inlet	Princetown Wetlands Gellibrand River	Pont Ritchie / Hopkins River Merri Marine Sanctuary Logans Beach	Oil Type	Source Control	Monitor and Evaluate	Dispersant Application	Contain and Recover	Protect and Deflect	Shoreline Clean-up	OWR
Pinnipeds	S2	✓							↑	-			N/A	N/A	↑
Turtles	S2	✓							↑	-			N/A	N/A	↑
Fish & Sharks	S2	✓				✓			↑	-			N/A	N/A	N/A
Seabirds	S1	✓				✓			↑	-			N/A	N/A	↑
Shorebirds	S1					✓	✓		↑	-			N/A	N/A	↑
Invertebrates	S3	✓				✓			↑	-			N/A	N/A	N/A
Plankton	S3	✓				✓			↑	-			N/A	N/A	N/A
<b>Coastal Habitats</b>															
Saltmarsh/Seagrass	S1		✓	✓	✓	✓	✓		↑	-			↑	↓	N/A
Mangroves	S1								↑	-			↑	↓	N/A
Mudflats	S1								↑	-			↑	↓	N/A
Kelp Habitats (inter-tidal)	S2								↑	-			↑	N/A	N/A
Sand Beaches	S3		✓	✓	✓	✓	✓		↑	-			↑	↑	N/A
Sub-tidal Reef	S3					✓	✓		↑	-			↑	N/A	N/A
Inter-tidal Rocky Plat/Headland	S3		✓	✓	✓	✓	✓		↑	-			↑	↑	N/A
Wetlands	S1		✓	✓	✓	✓	✓		↑	-			↑	↓	N/A

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Receptor	Classification		Priority Response Planning Area						Response Options					
			Curdies Inlet	Aire River Wetlands	Port Campbell	Princetown Wetlands	Warrnambool	Response Option Effective?						
	Sensitivity	Marine	Otway NP Aire River Beach Aire River	Otway NP Aire River Beach Aire River	Port Campbell Port Campbell Beach Port Campbell Inlet	Princetown Wetlands Gellibrand River	Pont Ritchie / Hopkins River Merri Marine Sanctuary Logans Beach	Oil Type	Source Control	Monitor and Evaluate	Dispersant Application	Contain and Recover	Protect and Deflect	Shoreline Clean-up
<b>Coastal Ecology</b>														
Shoreline Birds	S1		✓	✓	✓	✓	✓	↑	-			↑	↑	↑
Pinniped Haul-out Sites	S2							↑	-			↑	N/A	↑
Penguin Colonies	S2		✓	✓		✓		↑	-			↑	N/A	↑
Protected areas	S2		✓	✓	✓	✓	✓	↑	-			N/A	N/A	↑
<b>Socio-economic</b>														
Tourism	S2		✓	✓	✓	✓	✓	↑	-			↑	↑	N/A
Amenity beach	S2		✓	✓	✓	✓	✓	↑	-			↑	↑	N/A
Ports, Harbours, Yacht Club	S3				✓		✓	↑	-			↑	↑	N/A
Commercial Fishing / Aquaculture	S2	✓			✓		✓	↑	-			↑	↑	N/A
Recreational Fishing/Diving	S3		✓	✓	✓	✓	✓	↑	-			↑	↑	N/A
Shipwrecks (submerged)	S3		✓		✓	✓	✓	↑	-			N/A	N/A	N/A
Aboriginal Heritage/Cultural	S2		✓		✓		✓	↑	-			↑	↓	N/A

## Legend:

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Benefits Assessment:	Effectiveness Assessment:
↑ Net Benefit Compared with only Monitor & Evaluate	Yes: Option suitable for oil type, few restrictions in implementing
↓ Net Loss Compared with only Monitor and Evaluate	Possible: Option suitable for oil type, potential limitations on application
- No net benefit or Loss	Not Recommended: Option not suitable for oil type
N/A: Option is not applicable to the Receptor given credible worst-case discharge potential	



## 5.0 Operational Response

Section 4.0 presents the predicted response options to a spill, however in the event of a spill, the proposed likely response strategies will be reviewed and verified prior to implementation to ensure that the assumptions made in the planning process are valid and the response strategy will be effective.

### 5.1 Verification of Response Strategy

The process for reviewing response strategies is illustrated in Figure 5-1. The purpose of including this process in the OPEP is to ensure effective and efficient decision making into selecting response strategies which are suitable to the conditions at the location at the time of the spill event. Outputs from this process are captured through the spill response NEBA process.

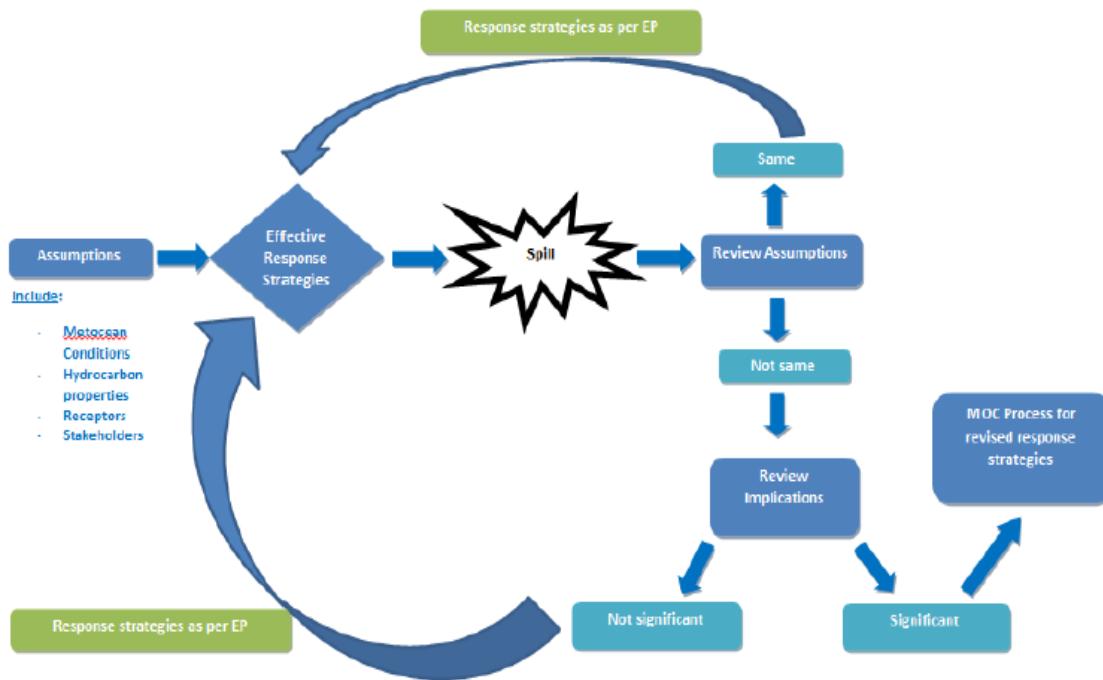


Figure 5-1: Process for Reviewing Response Strategy Effectiveness in the Event of a Spill

### 5.2 Spill Operational NEBA

A NEBA is used to compare the environmental and socio-economic benefits of implementing a response option against a 'do-nothing' (monitor and evaluate) strategy. The process considers the advantages and disadvantages of implementing a response to arrive at a response strategy for the location which results in the lowest overall environmental and socioeconomic impacts.

The NEBA process has been developed to help facilitate the selection of the most appropriate response options to effectively combat an oil spill.



Pre-spill (planning) NEBAs have been undertaken for locations within the respective asset response Environment that may be affected to identify response strategies which may offer a net benefit. In the event of a spill, an operational NEBA will be completed to confirm net benefits based upon the spill volume, spill type, spill location, weather conditions, weathering and trajectory predictions (including any aerial surveillance output), and the sensitivities requiring protection.

If impacts to state waters or shorelines are predicted, or have occurred, an operational NEBA will be undertaken in consultation with the relevant State CA, such as a DTP Liaison Officer or Victorian Environmental and Scientific Coordinator to confirm the net benefits for the strategy for spill occurring within Victorian waters.

To ensure consistency of approach between Amplitude Energy and the relevant State CA (DTP) for the spill scenarios identified for the Amplitude Energy Assets and activities (see Section 1.2) with respect to NEBAs, Amplitude Energy has adopted the Victorian NEBA protocol from Victorian Maritime Emergencies NSR subplan which is consistent with the pre-spill (planning) NEBA undertaken in Section 4.0. The Victorian Maritime Emergencies NSR subplan NEBA template is provided in Appendix 1 -

When the operational NEBA is finalised, the IC must endorse the assessment. The NEBA must be used to develop the IAP for the spill incident.

Provided it is safe to do so, all accessible wildlife with welfare needs should be addressed DEECA, supported by the Titleholder, regardless of the NEBA.

## 5.3 Incident Action Plan

An IAP will be prepared at the time of the spill, outlining the short-term operational objectives and activities for the response. It will detail the response mechanisms and priority areas for protection based on the actual circumstances of the event, considering the spill trajectory and weather conditions, but also importantly safety considerations. The IAP will provide details of the operational activities and objectives to be achieved over a specified, short-term period. Initially this may be for the subsequent few hours only, but once the operation is underway it is likely to address the activities required over each of the following 24-hour periods or longer.

The main steps in planning the response and preparing the IAP are:

- Setting the incident objectives – what are we trying to do or what are we trying to protect?
- Describing the strategies – for example, deployment of planes for aerial surveillance
- Developing the tactics – detail how we will undertake these strategies including responsibilities, logistics, etc.

An IAP is a critical step in the response strategy. It is the responsibility of the Planning Officer to prepare an IAP under the direction of the IC for his endorsement. The Amplitude Energy oil spill IMT will implement and monitor the effectiveness of the IAP ensuring regular updates to the plan are made as appropriate.



To ensure that the IAP is appropriate for the nature of the spill, Amplitude Energy will seek the advisory support of technical experts or liaison officers from the relevant State agencies/ relevant Control Agency, and/or AMOSC.

An IAP template is included in Appendix 1 - .

## 5.4 Effectiveness Monitoring

During the incident response, the effectiveness of the response will be assessed using the NEBA process. This assessment must utilise predictive modelling results, received monitoring data in the context of the affected environment, the environmental conditions and the level of hydrocarbons released.

Initially this will be undertaken every 24 hours (as minimum) or when relevant new information is received, until the termination criteria have been met. The NEBA, in consultation with the relevant State CA will be used to inform the decision to terminate the response (refer to Section 5.5).

Outcomes of the effectiveness monitoring will inform the IAP process.

## 5.5 Response Termination

Generally, the decision to stop the spill response will be made by the CA when response efforts are not returning any tangible benefit. This may include a gradual downsizing of response teams and resources or complete termination of the response. Amplitude Energy will undertake a NEBA with the relevant response team members / liaison officers to inform the decision to terminate the response in line with the NEBA format used in formulating the spill response strategy.

Decision factors will include:

- The efficacy and benefit of the response options implemented against natural cleaning.
- The significance of the environmental receptor impacted.
- Potential for environmental damage caused by further clean-up efforts weighed up against other factors such as response team risk in undertaking the activity.
- Any other requirements under national or state plans.

Table 5-1 provides indicative termination criteria which may be amended because of response team advice and/or the outcomes of relevant persons consultation during a spill event. Although indicative, it provides a guide for the purpose of capability planning.

For spill clean-up operations in Victorian waters, termination of response will be taken by the state IC.

The IC will ensure that all relevant organisations and personnel are notified to stand down once the termination criteria have been satisfied. Upon conclusion of the response, the IC must:

- Inform all personnel involved in the response.
- Advise all government authorities involved in the response.
- Provide an incident brief internally and to all government authorities involved in the response.



- Instigate an investigation into the cause of the spill.
- Prepare reports and collate all documents including statements concerning the incident.
- Undertake an inventory of all consumables and prepare accounts for dissemination.

*Table 5-1: Spill Response Termination Criteria*

Response Option	Termination Criteria
<b>Source Control (Vessel/subsea)</b>	<p>Termination criteria varies according to the incident and spill level:</p> <ul style="list-style-type: none"> <li>• For vessels: the spill source has been eliminated (e.g. fuel tank is secure [tank rupture]) or the leak has been contained and controlled on-board.</li> <li>• For pipeline: the pipeline is verified as isolated from feedstock.</li> <li>• For a subsea well leak incident: the hydrocarbon release has been contained and well control re-established.</li> </ul>
<b>Monitor and evaluate</b>	<p>Termination occurs when the following criteria is fulfilled:</p> <ul style="list-style-type: none"> <li>• The spill has ceased.</li> <li>• The spill is no longer visible to human observers. Specifically, a silver/grey sheen as defined by the Bonn Agreement Oil Appearance Code is not observable and 24 hours has elapsed since the last confirmed observation of surface hydrocarbons.</li> <li>• Modelling results (OM1) do not predict surface exposures at visible levels.</li> </ul> <p>Termination criteria to be agreed with the relevant State CA for a spill in state waters.</p>
<b>Chemical dispersion</b>	<p>Termination occurs when the following criteria is fulfilled:</p> <ul style="list-style-type: none"> <li>• When dispersant is not assisting in suppressing LELs; and / or,</li> <li>• If the risk associated with LELs is managed by other means; and/or</li> <li>• Agreement is reached with Statutory Agency to terminate the response.</li> </ul>
<b>Contain and recover</b>	N/A
<b>Protect and deflect</b>	<p>To be determined in consultation with State CA and aligned with the National Plan Response, Assessment and Termination Guidance (NP-GUI-025). Suggested termination criteria:</p> <ul style="list-style-type: none"> <li>• The spill is no longer observable to human observers and all oil has impacted shorelines and is unlikely to remobilise.</li> <li>• Slick thickness and characteristics mean that protection/deflection booms will not be effective as determined by the NEBA.</li> <li>• NEBA concludes that continued activity will not produce any net environmental benefit. NEBA has been signed off by State CA IC.</li> </ul>
<b>Shoreline assessment and clean-up</b>	<p>To be determined in consultation with State CA, and aligned with the National Plan Response, Assessment and Termination Guidance (NP-GUI-025). Suggested criteria:</p> <ul style="list-style-type: none"> <li>• The spill has ceased.</li> <li>• No additional response or clean-up of habitat is predicted.</li> <li>• Location areas predicted to be contacted by hydrocarbons have been contacted.</li> </ul>



Response Option	Termination Criteria
	<ul style="list-style-type: none"><li>Independent scientific advice indicates that hydrocarbon levels are below 100 g/m<sup>2</sup> or further clean-up activities are unlikely to materially decrease hydrocarbon impacts on environmental sensitivities.</li></ul>
OWR	To be determined in consultation with State CA and relevant State nominated oiled wildlife authority. Suggested criteria: <ul style="list-style-type: none"><li>OWR is discontinued when all affected/recovered animals are cleaned and rehabilitated to their natural habitat as advised by the Lead CA.</li></ul>

## 6.0 Source Control

### 6.1 Response Activities

#### 6.1.1 Vessel releases (level 1/2)

##### Level 1 Spill

Vessels engaged to undertake petroleum activities on Amplitude Energy assets operate under SMPEPs (or equivalent to class). In the event of a spill the relevant vessel SMPEP (or equivalent) will be implemented to limit the volume of hydrocarbon released to the environment.

##### Level 2 Spill

In the event of a spill such as a diesel release from a vessel, the vessel master will initiate actions to reduce the fuel to the marine environment as identified in the vessel SMPEP (or equivalent according to class).

While preserving the structural integrity and stability of the vessel, actions include reducing the affected tank inventory by pumping contents into an empty tank, possibly pumping water into the leaking tank to create a water cushion to prevent cargo loss or other measures as listed in the vessel's SMPEP (or equivalent). By immediately implementing these controls the amount of hydrocarbon released to the environment will be reduced.

#### 6.1.2 Subsea Loss of Containment – Infrastructure (level 1)

A subsea infrastructure LoC could occur because of dropped objects, corrosion and other damage, with a volume in the order of 1 m<sup>3</sup>.

On notification of an incident associated with a loss of containment resulting from loss of integrity or dropped object, the IC will assess damage and accessibility, and options to minimise the release; this may include plugging of release points.

#### 6.1.3 Subsea Loss of Containment - Pipeline Releases (level 1/2)

Operation of the Otway and PB and Sole facilities is monitored on a 24/7 basis by the respective onshore gas plants (Figure 1-1 and Figure 1-2). The pipelines contain gas and condensate and in the event of a



pipeline release due to an integrity breach a key strategy is the Facility Emergency Shutdown (ESD) system:

- Individual well shutdown is initiated by the Master Control System in the event of a low-low pressure downstream of the production choke valve. This shutdown is independent of the Gas Plant and the Facility ESD system.
- Pipeline is continuously monitored from the onshore plant to ensure it is operating within its predefined operating envelope. Initiation of the pipeline ESD system will shut down production and isolate hydrocarbon inventories in the pipeline if abnormal conditions outside the normal operating envelope are detected.
- Surface controlled subsurface safety valves meet the acceptable leak rates defined by API RP 14B and ESD valves according to API RP 14H.
- The ESD system is considered safety critical equipment under the respective Facility Safety Cases. Performance Standards developed for this equipment ensures it functions according to design standards.

#### 6.1.4 Subsea Loss of Containment – LOWC (level 3)

On notification of an incident associated with a loss of well control, the Amplitude Energy Duty IC will notify the IC of the incident. The IC will activate the relevant SCERP and notify the Amplitude Energy SCT Leader. Upon SCERP initiation, the SCT Leader will mobilise the Amplitude Energy SCT and Well Control Contractors and collectively these resources will assess and determine the appropriate source control option based upon the available surveillance/survey information.

Options to manage well control incidents (intervention and relief well installation) are to be considered as a means for source control during the operations phase, with vessel and MODU specifications required to implement these source control options identified within the SCERP.

Details of source control response feasibility and estimated response time are detailed in the respective EPs.

## 6.2 Response Resources

Response resources are estimated and provided for on the basis of the worst case LOWC event. Within the current suit of EPs covered under this OPEP, the worst case LOWC scenario's are represented by spill modelling for Elanora-1 ST1 and Annie-2. Elanora-1 ST1 has the highest flow rate, and is the basis for dispersant needs analysis, however being ~20km further from shore than Annie-2, Elanora-1 ST1 is not the worst case for shoreline contact. Annie-2 modelling results were used with 25% added to shoreline exposure volumes to ensure some buffer in the resource estimation. Annie-2 is similar in nature, scale and well design to Juliet-1 and Nestor-1 and the wells are expected to have similar flow characteristics. There are some key differences: Annie is expected to have a greater persistent fraction compared to the proposed ASP wells, and is closer to shore than any of the 3-wells, making it a conservative analogue to use for Juliet-1 and Nestor-1, and a proxy for worst case for shoreline contact for the ASP EP resource needs assessment.



## 6.2.1 Source Control

Amplitude Energy maintains contracts/agreements with specialist vendors to supply technical services and guidance for source control operations.

Well source control activities, including methodologies and resources to implement source control and limit the hydrocarbon released to the environment are detailed in a SCERP for the respective activity. Table 6-1 details the planned resource availability as applicable to a drilling activity. Further details on the personnel resources required for a spill response have been summarised within Appendix 5 - .

*Table 6-1: Source Control Resource Availability (Drilling)*

Resource	Resource Requirement	Resource Availability / Provider
<b>Survey, Debris Clearance, Intervention, Dispersant Application</b>		
<b>Engineering support</b>	Well and subsea engineering support services	Available throughout projects and operations.
<b>Vessels</b>	Installation support vessel with knuckle boom crane (nominal >50 tonnes for safe deployment of subsea equipment) and remotely operated vehicle (ROV) capacity (or ROV can be deployed from separate vessel).	Vessels of opportunity typically available either in the region or elsewhere within Australia and could be mobilised via Australian Petroleum Production & Exploration Association (APPEA) MoU or direct agreement.
<b>Offshore Personnel</b>	Vessel crew and response equipment technicians to install, run and monitor equipment.	Vessel crew provided through vessel operator. Equipment Technicians provided through response specialists. Equipment operator provided through source control contractor or separate offshore engineering contractor.
<b>ROVs and ROV crew</b>	Work Class ROV and crew 24 hours/day to install and operate subsea equipment.	Refer to 'Vessels'
<b>Equipment</b>	Survey and debris clearance equipment: <ul style="list-style-type: none"> <li>• camera inspection ROV operated</li> <li>• ROVs</li> <li>• grinders / super grinders</li> <li>• impact wrenches</li> <li>• multipurpose cleaning tools</li> <li>• remote control units</li> <li>• hydraulic cutters</li> <li>• chop saws</li> <li>• diamond wire cutters</li> <li>• hydraulic power units</li> <li>• ROV dredges</li> </ul>	Survey, debris clearance and dispersant application equipment could be mobilised from equipment providers such as AMOSC (subsea first response toolkit package within Australia), or Wild Well Control (international) subject to additional agreement for the particular package required at the time.

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Resource	Resource Requirement	Resource Availability / Provider
	<ul style="list-style-type: none"> <li>• torque tools</li> <li>• test jig</li> <li>• pressure control equipment intervention skid and operating equipment</li> <li>• linear valve override tools</li> <li>• manipulator knife</li> <li>• flying lead orientation tool</li> <li>• umbilicals.</li> </ul>	
<b>Dispersant application</b>	<ul style="list-style-type: none"> <li>• Dispersant IBCs (~170m<sup>3</sup>), approx. 1.6m<sup>3</sup> / day @ 1:100 (dispersant: oil) application ratio.</li> <li>• surface dispersant booms</li> <li>• distribution hose and manifolds</li> <li>• pumps</li> <li>• subsea dispersant wand for ROV</li> <li>• ROV bladder packs</li> <li>• in-water monitoring (refer to OSMP)</li> <li>• surface plume modelling</li> <li>• gas detection monitors (see additional resources below).</li> </ul>	<p>AMOSC have &gt;500m<sup>3</sup> Basic Slickgone (preferred product for condensate and subsea application) NS available. 75m<sup>3</sup> available at AMOSC in Geelong, less than 1-day sail to Otway Title Areas. Additional supply could be mobilised from Fremantle.</p> <p>Vessel application equipment (Ayles Fernie Even Drop Out (AFEDO) or similar) is available through AMOSC and could be fitted to response vessels involved in well intervention at the well site. Vessel crew / riggers provided through vessel operators.</p> <p>Subsea application equipment is available through AMOSC/Oceaneering Subsea First Response Toolkit, or through Wild Well Control.</p> <p>Similar to oil spill modelling, subsea plume modelling would be undertaken regularly during an incident to assist in understanding the nature/direction of the plume and associated LELs in the atmosphere surrounding the well site. Subsea plume modelling is undertaken by specialist modellers and is available through existing agreements.</p>
<b>Dispersant efficacy monitoring</b>	<p>This component comprises direct efficacy testing of dispersant and in-field monitoring of dispersant effectiveness to optimise treatment rates. Resource requirements are:</p> <ol style="list-style-type: none"> <li>1. Efficacy testing kit and instructions for use.</li> <li>2. Personnel to monitor Dispersant Product used, dispersant volumes used, and dispersant dilutions applied.</li> <li>3. Gas monitors to (at least 1 per vessel within the operational area) to</li> </ol>	<ol style="list-style-type: none"> <li>1. Amplitude Energy has a dispersant efficacy testing kit and instructions for use from AMSOC and will locate the kit on the MODU or support vessel. Application of the kit will be overseen by an Amplitude Energy representative.</li> <li>2. Personnel involved in the dispersant application will monitor use parameters and provide to the source control team in daily operations reports.</li> <li>3. Surface VOCs will be monitored by Amplitude Energy or contractor offshore safety representative and levels reported in daily operations reports to the source control team.</li> <li>4. The extent of surface and shoreline oiling will be assessed under the Operational Monitoring Module which provides for aerial survey</li> </ol>

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Resource	Resource Requirement	Resource Availability / Provider
	<p>measure surface VOCs (LELs) in vicinity of the well.</p> <p>4. Aerial survey capability and modelling to assess the extent of surface oil and volume and extent of shoreline oil.</p> <p>5. Results from OSMP Sc2 and Sc3 hydrocarbon monitoring modules.</p>	<p>capability and modelling; results will be provided daily to the IMT and source control team.</p> <p>5. Hydrocarbon monitoring is a task completed under the OSMP module, but the information collected also supports in-field dispersant efficacy monitoring. Refer to Section 12 for resourcing of the OSMP.</p>
<b>Relief Well</b>		
<b>Engineering Support</b>	Well and subsea engineering support services.	Available throughout projects and operations. For additional support, Amplitude Energy maintains several contracts and agreements with personnel agencies and engineering houses that can provide technical writer's and risk engineering services to support regulatory documentation workflows, submission, and review process.
<b>Relief Well MODU</b>	Technically suitable rig and support vessels (nominally 2 x anchor handling and tow support vessels).	Multiple suitable semi-submersible MODUs generally operate offshore Australia or are available internationally; moored rigs would already be operating with anchor handling tug supply vessels. MoU has been established between Australian operators (including Amplitude Energy) to expedite access to suitable MODUs for relief well drilling. If required Amplitude Energy can request the use of a MODU that may be under contract to another operator.
<b>Materials</b>	<p>Casing and Wellhead (standard specifications)</p> <p>Drilling fluids</p> <p>Moorings</p>	<p>Multiple materials suppliers to Australia, to enable mobilisation of relief well materials to site inside 50-days of an incident requiring response activation.</p> <p>Multiple providers of drilling fluids with plants either operational or can be set-up in the Southeast region.</p> <p>Mobile Offshore Unit moorings or rental moorings.</p>
<b>Offshore Personnel</b>	Vessel crew and response equipment technicians to install, run and monitor equipment.	<p>Vessel crew provided through vessel operator. Equipment Technicians provided through response specialists.</p> <p>Equipment operator provided through source control contractor or separate offshore engineering contractor.</p>
<b>ROVs and ROV crew</b>	Work Class ROV and crew 24 hours/day to install and operate subsea equipment.	Refer to 'Vessels'
<b>Amplitude Energy Relief</b>	The Amplitude Energy Relief Well Readiness Form is a live document and supports source control preparedness by documenting	The Amplitude Energy Relief Well Readiness Form is verified every 6-months during operations phase and every 2 months during drilling.



Resource	Resource Requirement	Resource Availability / Provider
<b>Well Readiness Form</b>	<p>current information on the availability and location of resources required to manage a LoC from a well, more specifically:</p> <ul style="list-style-type: none"> <li>• Available and suitable MODUs and contacts.</li> <li>• Available installation support vessel and contacts.</li> <li>• Available equipment* required to support a source control response and contacts.</li> </ul> <p>*Tracked equipment includes wellhead systems, conductor, surface and intermediate casing.</p>	
<b>Regulatory Approvals</b>		
<b>Safety Case</b>	Facility Safety Case Revision required for vessels undertaking well activities.	<p>Preferential selection of MODUs and vessels with existing Australian safety cases (monitored via the relief well readiness form).</p> <p>Safety case specialists available within Australia to enable expedition of Safety Case Revision preparation (technical limit to prepare estimated at three weeks + one week for prioritised regulatory approval).</p>
<b>Additional resources</b>		
<b>Gas monitors</b>	Existing vessel / rig gas monitoring; additional portable gas monitoring / portable gas monitoring as required.	Multiple providers within Victoria for portable gas monitors, available within 72 hours.

## 6.3 Environmental Risk Assessment (Source Control)

An assessment of possible environmental impact and risk associated with source control techniques is undertaken as part of the respective Environment Plans.

## 6.4 Environmental Performance Outcomes (Source Control)

Table 6-2 provides the performance outcomes, standards and measurement criteria for source control.

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*Table 6-2: Source Control Performance Outcomes and Standards*

Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
<b>Vessel release</b>				
Source control, isolation and containment prevent hydrocarbon release to the marine environment	OPEP CM5: Vessel SMPEP or equivalent	OPEP EPS5.1: In a level 1/2 spill, the vessel implements SMPEP (or equivalent) to prevent/limit discharge to the environment.	Vessel master	Vessel incident report verifies action taken.
<b>Subsea Loss of Containment</b>				
Amplitude Energy maintains capability to implement the Source Control Emergency Response	OPEP CM6: Source Control Emergency Response Planning	<p>EPS6.1: A SCERP aligned to the APPEA Source Control Guideline and International Oil and Gas Producers (IOGP) Report 594 - Subsea Well Source Control Emergency Response Planning Guide for Subsea Wells (Jan 2019) will be available and will include (or be supplemented by):</p> <ul style="list-style-type: none"> <li>Accepted WOMP and Field Safety Case which provide for source control activities.</li> <li>Pre-identified quadrant(s) suitable for relief well locations covering all well clusters.</li> <li>Nominal mooring analysis for drilling in field from moored MODU, where applicable.</li> </ul> <p><b>Timing:</b> SCERP is established at least 30 days prior to activity commencement and maintained throughout the activity (well production operations and well construction/maintenance activities).</p>	Chief Operating Officer	SCERP in place
	OPEP CM7: Source Control Emergency Response Personnel	OPEP EPS7.1: Amplitude Energy maintains:	Chief Operating Officer	Contracts/ agreements demonstrate preparedness.



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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		<ul style="list-style-type: none"><li>• Resourcing plan to enable the implementation of source control strategies defined within the SCERP relevant to the activity scope.</li><li>• Agreements or contractor pre-qualifications with specialist service providers to ensure the numbers and capability of personnel to implement the SCERP are available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists. Service provider agreements will be held with:<ul style="list-style-type: none"><li>– well control specialist (e.g. Wild Well Control) (during well construction activities)</li><li>– well engineering services providers</li><li>– Australian safety case specialists</li><li>– subsea engineering services</li><li>– ROV contractors.</li></ul></li></ul> <p><b>Timing:</b> Established at least 30 days prior to activity commencement and maintained throughout the activity (well production operations and well construction activities).</p>		
OPEP CM8: Source Control Emergency Response Equipment		OPEP EPS8.1: Amplitude Energy maintains agreements or contractor pre-qualifications with service providers in line with the strategies and equipment defined within the campaign SCERP, including: <ul style="list-style-type: none"><li>• survey equipment</li><li>• debris clearance equipment</li><li>• dispersant and application equipment (during well construction activities)</li></ul>	Chief Operating Officer	Contracts/ agreements demonstrate preparedness.



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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		<ul style="list-style-type: none"><li>intervention equipment</li><li>industry MoU for access to relief well resources including relief well MODU.</li></ul> <p><b>Timing:</b> Established at least 30 days prior to activity commencement and maintained throughout the activity (well production operations and well construction activities).</p>	Chief Operating Officer	Completed relief well readiness form (verified every 6-months during operations).  SCERP response time model (RTMs) (reviewed annually, accounting for information received through the relief well readiness form).  Plan for alternate source control response resources and materials if monitoring identifies a deficiency.
		<p>OPEP CM9: Source Control Response Resources Monitoring</p> <p>OPEP EPS9.1: Amplitude Energy monitors the location and availability of source control response resources and materials defined within the campaign SCERP, including:</p> <ul style="list-style-type: none"><li>Available and suitable MODUs and contacts.</li><li>Available construction support vessels and contacts.</li><li>Available equipment* required to support a source control response and contacts.</li></ul> <p><i>*Tracked equipment includes wellhead systems, conductor, surface and intermediate casing strings.</i></p> <p>In the event that monitoring indicates suitable source control response resources and materials are not available, Amplitude Energy will develop a plan to source alternate response resources and materials to meet campaign SCERP, prior to commencing drilling.</p> <p><b>Timing:</b> Established at least 30 days prior to activity commencement and maintained throughout activity (well production operations and well construction activities).</p>		
		<p>OPEP CM10: Source Control Response Logistics</p> <p>OPEP EPS10.1: Amplitude Energy maintains agreements or contractor pre-qualifications with the following specialists:</p> <ul style="list-style-type: none"><li>freight services provider.</li></ul>		



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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		<b>Timing:</b> <ul style="list-style-type: none"><li>Established prior to activity commencement and maintained throughout activity (well production operations and well construction activities).</li></ul>		
	OPEP CM11 Source Control Response Exercises	OPEP EPS11.1: Amplitude Energy conducts source control desktop exercise in accordance with the activity SCERP.  <b>Timing:</b> Prior to activity commencement of well construction operations.	Chief Operating Officer	Facilitated by third party with report issued in 30 days.
Implement Source Control Emergency Response Plan to regain control of the well and eliminate the release of hydrocarbons to the environment	OPEP CM12: Survey Capability	OPEP EPS12.1: ROV is mobilised from project vessel or MODU within 1-day (if safe and in field) to gain visual on the well leak and assist with planning. ROV and vessel mobilised within 1-week (if safe) if during production operations.  <b>Timing:</b> The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (OPEP CM9).	Amplitude Energy IC	Incident log verifies field mobilisation within this timeframe.
	OPEP CM13: Source Control Diagnostics	OPEP EPS13.1: Source control specialists are mobilised to support within 3 days to assist with the diagnosis of the well problem and develop remedial action options.  <b>Timing:</b> The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (OPEP CM9).	Amplitude Energy IC	Incident log verifies field mobilisation within this timeframe.



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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
	OPEP CM14: Debris Clearance and Intervention	<p>OPEP EPS14.1: Debris clearance and intervention activities commence within 8-days (if safe) from MODU or project vessel. Vessel with debris clearance and intervention capability mobilised within 3-weeks) if during production operations.</p> <p><b>Timing:</b> The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (OPEP CM9).</p>	Amplitude Energy IC	Incident log verifies field mobilisation within this timeframe according to SCERP response time models.
	OPEP CM15: Capping Solution	<p>OPEP EPS15.1: If considered a suitable option, capping equipment is deployed using project equipment and MODU/vessels within 35 days, or as soon as conditions allow. If project resources are unavailable, alternate vessel is mobilised to deploy capping stack. Capping stack deployment is unlikely to be suitable under any conditions for the Otway wells and is not applicable during production operations.</p> <p><b>Timing:</b> The activity will be completed by implementing suitable options with the shortest response time. This will be facilitated via update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (OPEP CM9).</p>	Amplitude Energy IC	Incident log verifies field mobilisation within this timeframe according to SCERP response time models.
	OPEP CM16: Relief Well	<p>OPEP EPS16.1: Relief well installation will be completed by implementing suitable options with the shortest response time as defined in the activity RTM and within 89 days of the commencement of a LOWC continuous hydrocarbon release. This will be facilitated via review and update of SCERP response time models adjusted according to Source Control Response Resource Monitoring (OPEP CM9).</p>	Amplitude Energy IC	Incident log verifies field mobilisation within this timeframe according to SCERP response time models.



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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
No unacceptable risk chemicals used for activities described	OPEP CM17: Chemical selection process	OPEP EPS17.1: All planned chemical discharges shall be assessed and deemed acceptable before use, in accordance with Amplitude Energy's Offshore Chemical Environment Assessment Procedure (CMS-EN-PCD-0004).	Amplitude Energy IC	Chemicals will meet the requirements of the Amplitude Energy Offshore Chemical Environment Assessment Procedure
Dispersant use provides net environmental benefit	OPEP CM18: Dispersant Optimisation	OPEP EPS18.1: Dispersant use is targeted at the flowing well.	Amplitude Energy IC	Daily field report shows where dispersant was applied.
		OPEP EPS18.2: During the response the following parameters will be monitored and compared at least daily: <ul style="list-style-type: none"><li>• dispersant product used</li><li>• dispersant volumes used</li><li>• dispersant dilutions applied</li><li>• surface VOCs (LELs) in vicinity of the well</li><li>• extent of surface oil</li><li>• volume and extent of shoreline oil</li><li>• results from OSMP Sc2 and Sc3 hydrocarbon monitoring modules.</li></ul>	Amplitude Energy IC	Daily field reports provide dispersant and LEL monitoring results for the day.
		OPEP EPS18.3: Dispersant use is terminated if any of the following criteria are met: <ul style="list-style-type: none"><li>• Well is controlled.</li><li>• NEBA indicates no net environmental benefit.</li></ul>	Amplitude Energy IC	Incident log verifies where criteria met for termination.



## 7.0 Monitor and Evaluate

Ongoing monitoring and evaluation of the oil spill is a key strategy and critical for maintaining situational awareness and to complement and support the success of other response activities. In some situations, monitoring and evaluation may be the primary response strategy where the spill volume/risk reduction through dispersion and weathering processes is considered the most appropriate response. Monitor and evaluate will apply to all marine spills identified. Higher levels of surveillance such as vessel/aerial surveillance, OSTM and deployment of satellite tracking drifter buoys will only be undertaken for level 2/3 spills given the nature and scale of the spill risk.

It is the responsibility of the CA to undertake monitoring and evaluation during the spill event to inform the response and assess the impacts.

### 7.1 Response Activities

Monitoring and evaluation will include the following:

- spill size estimation:
  - information regarding the incident (volumes, inventory etc.)
  - aerial and vessel observations.
- spill movement and behaviour:
  - aerial and vessel observations
  - utilisation of satellite tracking drifter buoys.
- spill trajectory prediction:
  - OSTM
  - vector analysis (manual calculation)
  - ADIOS (a spill weathering model).

Refer to activity-specific EPs for the evaluation of potential impacts and risk and as low as reasonably practicable (ALARP) evaluation associated monitoring and evaluation strategies.

#### 7.1.1 Spill Size Estimation

The spill size may be determined based on:

- The estimated amount of hydrocarbon released from a 'known' hydrocarbon inventory.
- An estimate of release rates from time of the commencement of the incident.
- An estimate of the appearance of oil on the sea surface observed during visual observations and based on the likely thickness and type of oil (refer to Table 7-1 and Figure 7-1).



Table 7-1: Guidelines for Estimating Spill Volume

Code	Description of Appearance	Approximate Thickness (µm)	Approximate litres per km <sup>2</sup>
1	Sheen	0.04 to 0.30	40-300
2	Rainbow	0.3 to 5.0	300-5,000
3	Metallic	5.0 to 50	5,000-50,000
4	Discontinuous true oil colour (heavy oil)	50 to 200	50,000 – 200,000
5	Continuous true colour (heavy oil)	>200	>200,000
Other	Mousse or Emulsion		

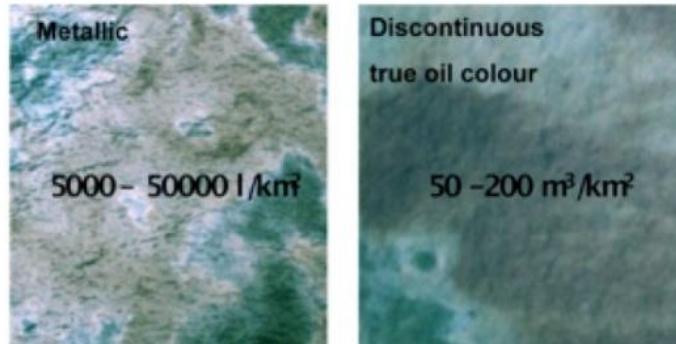
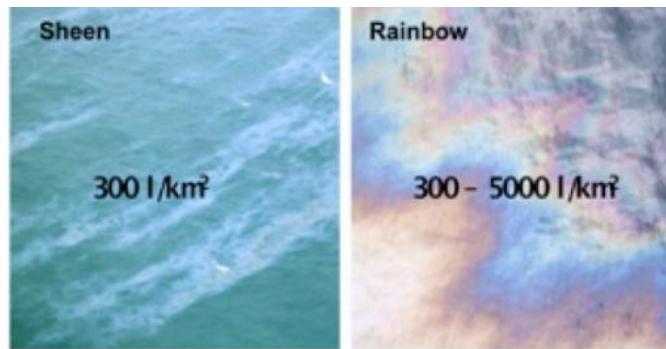


Figure 7-1: Bonn Agreement Oil Appearance Code (Examples)

## 7.1.2 Spill Movement and Behaviour Monitoring

The movement and behaviour of an oil slick may be monitored through several methods:

- aerial and/or vessel based visual observations
- tracking buoys.

The resources required for this strategy are summarised in Table 7-2 with the corresponding performance outcomes, standard and measurement criteria presented in Table 7-3.



### 7.1.2.1 Visual Observation - Aerial Surveillance

To gain situational awareness and inform the spill response, observation can be carried out via aerial surveillance.

Trained aerial observers are available and sourced through AMOSC (staff/core group members). The observers will undertake observations over the spill location and any predicted areas of shoreline contact.

From aerial observations, coarse estimates of spill volume can be made based on its appearance at sea, using the area covered and colour of spill (Table 7-1). Examples of appearance are provided in Figure 7-1. AMSA also provides guidance called 'Identification of Oil on Water – Aerial Observation and Identification Guide' which can be found at:

<https://www.amsa.gov.au/sites/default/files/2014-01-mp-amsa22-identification-oil-on-water.pdf>

Aerial surveillance observations can only be undertaken in weather conditions deemed safe by the IMT and in good visibility conditions (i.e. 150 ft above ground level (AGL) for the Ceiling & 5,000 m Visibility or 1,500 ft AGL Ceiling & 1,500 m Visibility during daylight hours).

Aerial observations should be documented in the Aerial Observer log contained in the Offshore Victoria OSMP Module Op2 – Hydrocarbon Spill Surveillance and Tracking (VIC-ER-EMP-0005).

### 7.1.2.2 Visual Monitoring – Vessel Surveillance

Monitoring and evaluation may involve visual monitoring from vessels of opportunity (as available) immediately following a spill incident. For level 2/3 spills, visual observations may also be undertaken from specially chartered vessels, proposed to be onsite within 24-48 hours.

Spill observers may include project team members, vessel crew and in the event of a level 2/3 spill, AMOSC staff and/or core group members.

Vessel-based observations are only effective if the sea-state conditions are calm.

### 7.1.2.3 Satellite Tracking Drifter Buoys

Vessels associated with Amplitude Energy's activities may carry a satellite tracking drifter buoy for deployment in the event of a significant spill. Instructions are provided for the deployment of the buoy to the vessel master.

At the time of a level 2/3 spill, the drifter buoy will be activated and deployed overboard to allow for real-time satellite tracking of the spill direction and speed. The location of the buoy will be monitored in real-time and through regular data downloads.

Satellite tracking buoys currently in use by Amplitude Energy have an operating life/endurance which is determined by the reporting frequency. The default endurance is 30 days based on 30-minute reporting frequency. However, this could be extended out to 365 days endurance for a reporting frequency of 24 hours.



## 7.1.3 Spill Trajectory Prediction

Spill trajectory can be predicted using either:

- vector calculations
- trajectory modelling
- fate predictions.

### 7.1.3.1 Vector Calculations

Manual calculations can commence as soon as the preliminary information on the spill is known. For spills in close proximity to shore and where oil spill tracking buoys are utilised, this method may provide the best option for predicting the likely spill trajectory and timeframes before receptors are impacted.

Prior to commencing the calculation, wind and current data is required. This can be obtained via:

- for currents, Oil Spill Tracking Buoy
- for winds, Bureau of Meteorology (BOM) Meteye (<http://www.bom.gov.au/australia/meteye>).

The calculation is based on the spill moving 100% of the current vector and 3% of the wind vector, as shown in Figure 7-2.

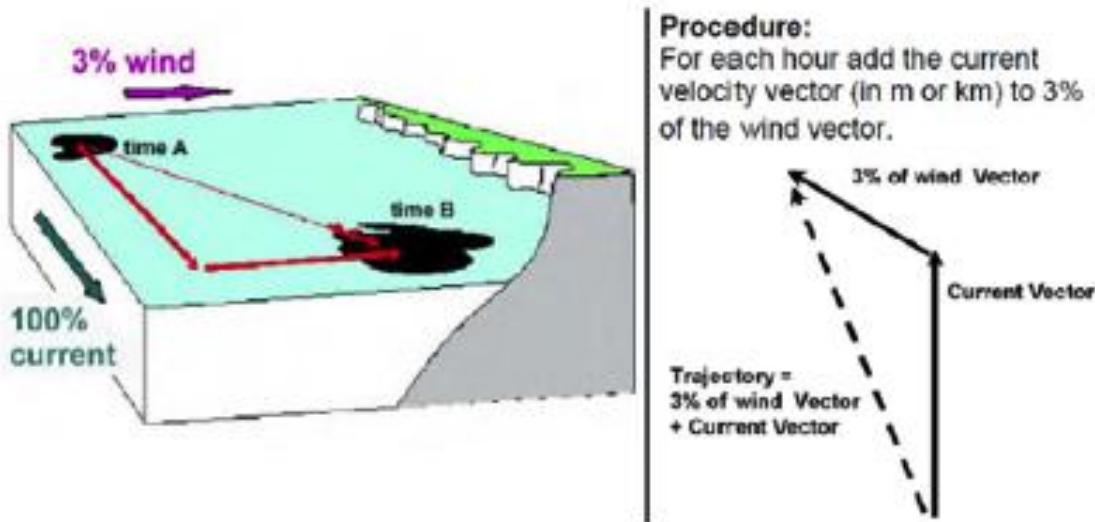


Figure 7-2: Spill Vectoring Overview (AMSA Oil Spill Monitoring Handbook)

### 7.1.3.2 Oil Spill Trajectory Modelling

The movement of a hydrocarbon slick can be estimated in real time using computerised OSTM available from RPS. Amplitude Energy can utilise an AMOSC agreement with RPS to provide real-time modelling of



an actual spill event. RPS have previously been utilised to undertake predictive modelling to support the preparation of the asset EPs and this OPEP.

To predict the early movement of larger spills, RPS will undertake real-time OSTM. Preliminary modelling results are generally available within 4 hours following notification of a spill event. RPS are contracted to AMOSC in a 24/7 emergency capability.

For smaller spills closer to shore Amplitude Energy may elect not to undertake trajectory modelling due to the limitations of using the model near shore with such small volumes. Satellite tracking drifter buoys together with aerial observations and shoreline assessment may be used to ground truth the spill location.

During the spill, RPS will utilise all available information from operational surveillance monitoring and from satellite imagery (as available) to validate hydrodynamic forecasts.

### 7.1.3.3 Spill Fate Prediction

The ADIOS oil database and WebGNOME oil spill modelling suite can be used to provide weathering predictions of hydrocarbon types for spill volumes at different wind speeds and water temperatures. This computer-based oil spill response tool is available from: <https://gnome.orr.noaa.gov/>

### 7.1.4 Oil Spill Operational Monitoring

Based on the outcomes of the monitoring of spill characteristics, trajectory and behaviour and prediction of likely trajectory and fate of the spill, operational monitoring will be undertaken as per the OSMP.

## 7.2 Response Resources

Table 7-2 details the resources required to undertake monitor and evaluate activities in accordance with the identified required resources above, their availability and hence Amplitude Energy's capability to support a 'monitor and evaluate' response. Further details on the personnel resources required for a spill response have been summarised within Appendix 5 - .

Table 7-2: Monitor and Evaluate Resource Capability

Resource	Resource Requirement	Provider	Resource Availability	Comments
<b>Satellite Tracking Buoys</b>	1 x Satellite Tracking Buoy offshore	Buoys available from AMOSC or Worley Parsons.	1 x Satellite Tracking Buoy offshore during vessel or MODU activities. Additional satellite tracking buoys can be accessed from AMOSC from the	Satellite Tracking Buoy will be located offshore and ready for deployment for the duration of the campaign. Operating instructions which accompany buoy rental will be provided to contracting vessel prior to mobilisation with instruction to deploy from

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Resource	Resource Requirement	Provider	Resource Availability	Comments
			Geelong and/or Fremantle stockpiles.	vessel in the event of a significant spill event.
<b>OSTM</b>	Access to RPS via contract to initiate callout on a 24/7 basis.	RPS	AMOSC contract with RPS for immediate call-out.	AMOSC membership allows access to RPS contract which provides for Oil Spill Model and Response System results to be provided within two hours and Spill Impact Mapping model system results within four hours of activation. <i>AMOSC Service Level Statement confirms access to RPS Trajectory Modelling within 60 minutes.</i>
<b>Manual Trajectory Calculation</b>	1 x IMT Member (IMO2)	IMT Planning Officer (or equivalent).	Refer to Appendix 5 -	Resources available within Amplitude Energy.
	Current and Wind Data	BOM "Meteye" Service.	N/A	Wind data available online. Current data obtained from satellite tracking buoy.
<b>Satellite Imagery</b>	Access to Kongsberg Satellite (KSAT) Satellite imagery via contract to initiate callout on a 24/7 basis.	AMOSC contract with KSAT Services for immediate call-out.	N/A	AMOSC membership allows access to Kongsberg contract which provides access to KSAT Satellite Imagery within 60 minutes of notification. <i>Imagery to be determined at the time of request will dictate supply timeframes depending on satellite availability.</i>
<b>Aerial/Vessel Surveillance</b>	1 x Pilot/Aircraft	Pre-qualification with Offshore Services Australasia (formerly Warrnambool Babcock).	1 x Pilot/Aircraft As per service provider agreement. Additional resources may be requested.	Supplier has identified that surplus aircraft are usually available and can be supplied within 24 hours. Mobilisation is weather dependent.
	1 x aerial observer	Trained observers via AMOSC.	Refer to Appendix 5 -	Available on site – best endeavours eight personnel within three hours and guaranteed terrestrially in 12 hours (AMOSC Service Level Agreement).

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Resource	Resource Requirement	Provider	Resource Availability	Comments
				<p>AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours.</p> <p><i>AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation.</i></p>
	1 x vessel	Service/Equipment agreement with vessel service provider.	<p>Multiple vessels available in Victoria including offshore support / survey vessel and coastal utility launch.</p> <p>As per service provider agreement.</p> <p>Additional resources may be requested.</p>	Amplitude Energy maintains an agreement with a vessel service provider to provide vessels and can be supplied within 24-48 hours. Mobilisation is weather dependent.

## 7.3 Environmental Risk Assessment (Monitor and Evaluate)

An assessment of possible environmental impact and risk associated with operational monitoring has been undertaken as part of the EPs for the Amplitude Energy assets.

## 7.4 Environmental Performance Outcomes (Monitor and Evaluate)

Table 7-3 identifies monitoring and evaluation strategy outcomes, performance standards and measurement criteria. Amplitude Energy oil spill IC (or delegate) will ensure the activity control measures identified below are implemented.

*Table 7-3: Monitor and Evaluate Performance Outcomes and Standards*

Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
Amplitude Energy maintains capability to implement operational monitoring in a level 2/3 spill event.	OPEP CM19: Service Agreements -Monitor & Evaluate	OPEP EPS19.1: Amplitude Energy maintains the following agreements (or contractor pre-qualifications) to maintain operational response capabilities	Chief Operating Officer	Contracts, memberships and pre-qualification records are current.

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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		<p>for the duration of the activities provided for under this OPEP:</p> <ul style="list-style-type: none"> <li>• AMOSC membership (Aerial Observers, RPS Contract, Kongsberg Contract)</li> <li>• aviation support (pre-qualification assessment)</li> <li>• marine support services.</li> </ul> <p>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists.</p>		
	OPEP CM20: Oil Spill Tracking Buoy	OPEP EPS20.1: An oil spill tracking buoy and instructions for deployment will be located offshore at all times during vessel / MODU-based campaigns.	Chief Operating Officer	Equipment manifest (or equivalent evidence) verifies tracking buoy is available on-board / offshore.
As requested by the relevant CA Amplitude Energy implements operational monitoring to inform spill response (level 2/3 spill only).	OPEP CM21: Response – Aerial Observation	<p>OPEP EPS21.1: 1 x Trained Aerial Observer (via AMOSC) available to be deployed within 24 hours.</p> <p>OPEP EPS21.2: Operational monitoring is initiated during daylight hours within 24 hours for aircraft observation.</p> <p>Observation to be undertaken in accordance with OSMP Op2 (Hydrocarbon Spill Surveillance and Tracking).</p>	Amplitude Energy IC	<p>Contracts, memberships and pre-qualification records are current.</p> <p>Spill response log notes that aircraft are deployed within 24 hours of spill (or nearest daylight hours immediately post 24 hours).</p> <p>Completed Aerial Observation Logs (as per OSMP Op2) emailed to Amplitude Energy IMT.</p>
	OPEP CM22: Response – Vessel Observation	<p>OPEP EPS22.1: Operational monitoring from campaign vessels already in-field is initiated immediately (within 2 hours).</p> <p>Observation to be undertaken in accordance with OSMP Op2</p>	Amplitude Energy IC	<p>Spill response log notes that in-field vessels are deployed within 2 hours of spill.</p> <p>Completed Observation Logs (as per OSMP Op2)</p>

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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		(Hydrocarbon Spill Surveillance and Tracking).		emailed to Amplitude Energy IMT.
	OPEP CM23: OSTM	OPEP EPS 23.1: RPS provides OSTM results within 4 hours of spill notification in accordance with OSMP Op1 (Operational Forecast Modelling).	Amplitude Energy IC	Incident records verify operational monitoring timeframes are met.
	OPEP CM24: Response – Oil Spill Vector Calculation	OPEP EPS24.1: Manual vector calculations identify spill impact areas within two hours of spill incident notification.	Amplitude Energy IC	Spill response log verifies manual trajectory calculation is provided within two hours of spill notification.
No injuries or death of megafauna resulting from vessel strike within operational area	OPEP CM25: Prevention of Marine Fauna Collision	OPEP EPS25.1: Vessel masters will be briefed on caution and 'no approach zones' and interaction management actions as defined in the EPBC Regulations 2000 – Part 8 Division 8.1 and Victorian Wildlife (Marine Mammals) Regulations 2019.  OPEP EPS25.2: A vessel master (or delegate) will be on duty at all times.	HSE Advisor  Vessel Master	Training records confirm vessel masters have been briefed.  Bridge watch records confirm vessel master (or delegate) on duty at all times.
		OPEP EPS25.3: Vessels adhere to the distances and vessel management practices of EPBC Regulations (Part 8) and Victorian Wildlife (Marine Mammals) Regulations 2019.	Vessel Master	Daily operations reports note when cetaceans were sighted in the caution zone and if actions were implemented.
		OPEP EPS25.4: All vessel crew have completed an environmental induction covering the requirements for marine mammal/vessel interaction consistent with EPBC Regulations 2000 (Chapter 8) and Victorian Wildlife (Marine Mammals) Regulations 2019. This includes a requirement to notify the bridge if marine mammals are sighted in the caution zone.	HSE Advisor	Induction records verify that all vessel crew have completed an environmental induction.

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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
		OPEP EPS25.5: Trained crew members on active duty will report observations of megafauna located within the cautionary zone (as defined in The Australian Guidelines for Whale and Dolphin Watching) to the vessel master (or their delegate), as soon as it is safe to do so.	Vessel Master	Daily vessel reports note when cetaceans were sighted in the caution zone and if interaction management actions were implemented.
		OPEP EPS25.6: Surveillance aircraft will ensure buffer distances of 500 m (helicopters) and 300 m (fixed wing) are maintained to whales and dolphins.		Pilots Flight reports detail when cetaceans sighted and if buffer distances breached.
Injury or death to listed megafauna from vessel strike will be reported	OPEP CM26: Incident reporting	OPEP EPS26.1: Any injury to, or mortality of, an EPBC Act Listed Threatened or Migratory Species (including those from a vessel strike) will be recorded on the National Ship Strike database within 72 hours.	Vessel Master	Submission date on the National Ship Strike Database reporting within 72 hours of the incident.
Appropriate Government Response units are involved and support the response operations.	OPEP CM27: Response Coordination with Government Agencies	OPEP EPS27.1: Consultation in the event of a spill will ensure that relevant government agencies support the relevant response strategies thus minimising potential impacts and risks to sensitivities.	Amplitude Energy IC	Incident records verify that relevant stakeholder notification timeframes are met.

## 8.0 Shoreline Response: Protect & Deflect

### 8.1 Response Activities

Booms and skimmers deployed to protect or deflect oil from environmental sensitivities. Noting that the effectiveness of boom operation is dependent on current, wave and wind conditions.

The methods to be used in the response have been proposed for the priority protection areas. These, where applicable, are detailed in the respective TRPs, but options may include:

- Installation of a boom system to collect surface oils on incoming tidal events.
- Placement of a temporary sand barrier/berm across the inlet mouth if the prevailing flow regime (channel width, depth, and flow) is suitable.



## 8.2 Response Resources

Response resources would be activated via AMOSC in the first instance, with equipment and resources selected on the basis of the TRP activation and subsequent IAPs. AMOSC has undertaken an assessment of response resource needs for this strategy and have determined how these needs will be met.

Protection and deflection equipment and personnel will be accessed from multiple locations, including:

- AMOSC Geelong equipment stockpile. A selection of boom/skimmer types will be mobilised with the equipment to be deployed at the location selected based upon the environmental conditions on the day.
- AMOSPlan Industry Mutual Aid stockpile (Esso Australia) located at Longford and Barry Beach Marine Terminal. This equipment may be deployed in addition to the AMOSC equipment due to its closer proximity.
- Gippsland Ports Authority (located at Lakes Entrance) also has boom available, to protect estuary systems. This is the property of DTP and Gippsland Ports, as port authority for the Snowy River would provide a first-strike response in the port. In the event of a rapid response to an oil spill threat, the IC (or delegate) would liaise with DTP and Gippsland Ports for deployment of this equipment.
- Port Authority of NSW maintains its own stockpile of level 2/3 equipment which is stored at its level 1 equipment locations in Sydney and Newcastle. Oil companies also own a quantity of oil spill response equipment which is stored on their individual premises.

Equipment details are provided in Table 8-1. The timing and resources required were identified based on the worst case spill scenario, representing the minimum time for shoreline concentration ( $>100 \text{ g/m}^2$ ) to occur within is  $\sim 24$  hours.

To ensure the resourcing estimates are conservative; +25% has been added to the hydrocarbon volume ashore calculated for the worst case deterministic model for the subsurface release of condensate over 104 days following a LOWC incident. Areas that could be affected by shoreline concentrations  $>100 \text{ g/m}^2$  would be prioritised under the protect and deflect strategy as concentrations above this threshold have the potential to cause harm to wildlife. There could be up to 60-70 km of shoreline impacted above this threshold.

This does not translate to 60-70 km of boom to protect the shoreline, as much of the shoreline along the Otway coast is not conducive to booming because it is rocky and exposed, or sand beach exposed to surf and strong currents, but there are inlets and bays that could benefit from booming, some are naturally closed off to the sea at certain times of year, though for resource analysis purposes it is assumed inlets are open. Protect and deflect resources have been accounted for through the process of TRP development and estimation of boom required to protect particular sensitivities in accessible areas.

Further details on the personnel resources required for a spill response have been summarised within Appendix 5 - .

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Table 8-1: Protection and Deflection Response Resource List

Resource	Resource Requirement	Provider	Resource Availability	Comments
<b>Trained oil spill response personnel</b>	2 x Trained TRP Team Leads	Trained personnel available from AMOSC / AMOSPlan CG	Refer to Appendix 5 -	As part of AMOSC's Service Level Agreement on a best endeavour's basis, 8 AMOSC personnel can be deployed to site within 12 hours. AMOSPlan Core Group are IMO trained for field deployment of spill equipment and are available on an 'as soon as practicable' basis. 25-30 personnel from this group would be available within 24-48 hours. These personnel are available through Amplitude Energy's membership with AMOSC.
	4-8 x Trained TRP Responders	Additional resources can be requested from the NRT as per the agreement under the National Response Plan		
	12-14 x General Responders	Third Party provider (general labour hire)	Refer to Appendix 5 -	Amplitude Energy will engage labour hire to support shoreline clean-up activities
	12-14 x TRP Response Equipment Operators	Third Party provider (general labour hire)	Refer to Appendix 5 -	Amplitude Energy will engage labour hire to support shoreline clean-up activities
<b>Waste Management Support Services</b>	2 x Waste Management Coordinators	Amplitude Energy has contract with	Refer to Appendix 5 -	Contractor is available on a 7-day basis to assist with emergency waste management issues.
	Waste Management Response Support 5-10 personnel (reflective of the response)	waste management provider in Victoria (Clean-away)	Refer to Appendix 5 -	
<b>Equipment</b>				
<b>Boom and ancillary equipment</b>	80 x 25 m zoom boom (near shore boom)	AMOSC Equipment Supply	51 x AMOSC zoom boom located in Geelong and additional in Fremantle (x23), Broome (x4) and Exmouth (x20). Additional resources may	Loading of equipment would be expected within 12-24 hours. Transit time to Peterborough or Lakes Entrance (for example) from Geelong is ~3 – 5 hours.

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Resource	Resource Requirement	Provider	Resource Availability	Comments
	16 x 25 m beach guardian boom (shore seal boom)	be available from AMSA as per the National Plan (upon formal request) and Mutual Aid (via AMOSC)	Additional zoom boom available through AMSA (x96), Mutual Aid via AMOSC (x87) and Esso Mutual Aid (x30)  181 x AMOSC beach guardian boom located in Geelong.	Boom deployment timeframes for a significant offshore MDO spill should meet the predicted shortest time to shore of 24- 48 hours, however it is unlikely that boom deployment could occur within short timeframes involved in instantaneous releases nearshore such as pipeline rupture. Such a scenario could result in relatively small volumes / sheens of low persistence condensate ashore before physical intervention is possible.
	Up to 80 x anchor kits (including ropes and floats)		30 x AMOSC anchor kits located in Geelong, and additional in Fremantle (x30), Broome (x1), Exmouth (1).  Additional anchor kits available through AMSA (x17) and Mutual Aid via AMOSC (x15).	
<b>Boom Deployment Vessel</b>	8 x utility task vessels (UTV) & Trailer	AMOSC Equipment supply / Mutual Aid Amplitude Energy Marine Services Provider	1 x AMOSC UTV located in Geelong and 10 x available from Mutual Aid (via AMOSC)	Contractor is available on a 7-day basis to assist with Boom Deployment Vessel.  As above resource availability is expected to meet boom deployment timeframes (24-48 hours).
<b>Skimmer and ancillary Equipment</b>	8 x shore-based skimming system (i.e. multi-head skimmer, powerpack, hose reel))	AMOSC Equipment Supply	8 x AMOSC nearshore skimming systems located in Geelong.	All equipment can be placed on the back of a Utility and can be carried by personnel. Does not need mechanical equipment to transfer.  Availability is expected to meet boom deployment timeframes (24-48 hours).
<b>Temporary Water Storage</b>	Temporary storage units (reflective of specific sector oiling)	AMOSC equipment Supplies.  Additional resources may be requested from Mutual Aid (via AMOSC) or AMSA as	4 x 5m <sup>3</sup> units (Geelong)  Additional 5 x 5m <sup>3</sup> units available (Fremantle, Broome, Exmouth)  Additional units (x34) available via Mutual Aid (accessed via AMOSC).	Contractor is available on a 7-day basis to assist with water storage.  Availability is expected to meet the predicted shortest time to shore of 24 hours but within 48h.



Resource	Resource Requirement	Provider	Resource Availability	Comments
		per the National Plan agreements.		
<b>Mechanical Equipment</b>	1 x Mini-Excavator & Driver	Third Party Equipment Hire (e.g. Coates Hire in Warrnambool) or local excavation Contractors.	As per service provider.	Equipment and operator available onsite within 5 hours. Coates Hire has 24/7 call-out and can supply a driver to Peterborough.

## 8.3 Environmental Risk Assessment (Protect & Deflect)

An assessment of possible environmental impact and risk associated with protect and deflect activities has been undertaken as part of the EPs preparation for the Amplitude Energy assets.

## 8.4 Environmental Performance Outcomes (Protect & Deflect)

Table 8-2 provides the performance outcomes, standards and measurement criteria for the “protect and deflect” response option. The IC (or delegate) will ensure the activity control measures identified below are implemented.

*Table 8-2: Protect and Deflect – Performance Outcomes and Standards*

Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
Tactical response planning undertaken for priority protection sites	OPEP CM28: TRPs	OPEP EPS28.1: TRPs exist for priority protection areas identified in Section 4.4.2 prior to undertaking activities that have the potential to impact these locations.	Chief Operating Officer	TRPs developed prior to petroleum activities that could impact priority protection areas identified in Section 4.4.2.
Amplitude Energy maintains capability to implement protect and deflect in a level 2 or 3 spill event.	OPEP CM29: Service Agreements - Protect & Deflect	OPEP EPS29.1: Amplitude Energy maintains the following agreements to maintain shoreline assessment/protect and deflect capabilities for the duration of the activities provided for in this OPEP: <ul style="list-style-type: none"> <li>AMOSC membership (equipment, personnel, CORE Group. Mutual aid)</li> </ul>	Chief Operating Officer	Agreements / memberships are current.

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Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
		<ul style="list-style-type: none"> <li>• AMOSPlan Industry Mutual aid (equipment)</li> <li>• scientific resource support agreement</li> <li>• marine support services</li> <li>• vessel of opportunity listing</li> <li>• waste management contract.</li> </ul> <p>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists.</p>		
Amplitude Energy implements or supplies resources for shoreline protection and deflection (level 2 or 3 spill), appropriate to the nature and scale of predicted shoreline impacts.	OPEP CM30 Shoreline Protect & Deflect – Resource Deployment	OPEP EPS30.1: 2 x Trained TRP Team Leads (via AMOSC) to be available onsite within 24-48 hours.	Amplitude Energy IC	Agreements / memberships are current.
		OPEP EPS30.2: TRP teams deployed and available onsite within 24-48 hours of spill event (daylight hours permitting) in consultation with the State CA.	Amplitude Energy IC	Incident management records verify that TRP teams are deployed to site within the designated timeframe.
		OPEP CM31: Operational NEBA	OPEP EPS31.1: An operational NEBA is undertaken to determine net benefits with State CA to confirm implementation of the response strategy.	Amplitude Energy IC
Impacts to cultural heritage and social values are prevented	OPEP CM32: Consultation with Traditional owners	OPEP EPS32.1: In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance.	Amplitude Energy IC	Incident records verify consultation has occurred and controls implemented.
		OPEP CM33: Land and Waterway	OPEP EPS33.1: In conjunction with State CA, consultation is undertaken with land and waterway manager prior to	Amplitude Energy IC

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Environmental Performance Outcome	Control	Environmental Performance standard	Responsible person	Measurement Criteria
	Manager Consultation	deployment of equipment to establish recreational user controls along affected coastline.		occurred and controls implemented.
Impacts to native vegetation and fauna are prevented.	OPEP CM34: Site survey for critical habitat	OPEP EPS34.1: Surveys are undertaken to identify, mark out and protect nesting and critical habitat.  Existing tracks and paths are used where possible to minimise disturbance footprint.	Amplitude Energy IC	Incident records verify surveys have occurred and controls implemented.
	OPEP CM35: Trained Fauna Handlers	OPEP EPS35.1: Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna.	Amplitude Energy IC (as directed by the Lead Agency)	Shoreline induction reinforces this constraint.  Induction records.
	OPEP CM36: Use of existing Tracks	OPEP EPS36.1: Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP.	Amplitude Energy IC / State Government IC	Shoreline induction reinforces this constraint.  Induction records.
Appropriate Government Response units are involved and support the response operations.	OPEP CM27: Response Coordination with Government Agencies	OPEP EPS27.1: Consultation in the event of a spill will ensure that relevant government agencies support the relevant response strategies thus minimising potential impacts and risks to sensitivities.	Amplitude Energy IC	Incident records verify that relevant stakeholder notification timeframes are met.

## 9.0 Shoreline Response: Clean-up

Shorelines in the Gippsland region are predominantly sand with rocky inter-tidal platforms and headlands. Shorelines associated with the Otway region are predominantly shore platforms backed by cliffs with small sections of interspersed sand beaches.

Based on stochastic modelling of the spill scenarios associated with the Amplitude Energy assets within the Otway Basin covered by this OPEP, the potential hydrocarbon exposure to shorelines from a hydrocarbon release is limited to less than 105 m<sup>3</sup> (peak volume ashore) for operations and up to 312.1 m<sup>3</sup> (peak volume ashore) for drilling activities.



The worst case deterministic run from the modelling has identified up to 263 m<sup>3</sup> on day 104 following a release as the peak volume ashore (during drilling activities).

As per Section 2.2, a State IMT would be established in response to a level 2/3 spill, actionable shoreline oil contact (>100 g/m<sup>2</sup>) is predicted to impact only Victorian coastline. As such, the CA would be DTP for managing shoreline response and/or at-sea response within State waters. Amplitude Energy will remain actively engaged in the response until stood down by the DTP IC and will place a Amplitude Energy liaison Coordinator within the state IMT. Amplitude Energy remains responsible for managing the origin of the spill outside Victorian coastal waters.

DTP will place a Liaison Officer within the IMT to act as the interface with other State government agencies and to ensure ongoing consultation and coordination of Maritime Emergencies resources.

## 9.1 Response Activities

### 9.1.1 Shoreline Assessment

Amplitude Energy will support shoreline assessment and/or clean-up activities as directed by DTP.

If spill residues are predicted to reach the shoreline or aerial observations show oil has reached the shoreline, an assessment of the area will be undertaken using SCAT.

SCAT execution is described in Appendix 4 - .

### 9.1.2 Shoreline Clean-up

If oil is observed on the shoreline a NEBA will be prepared in consultation with DTP to determine whether a clean-up response will be implemented.

Based upon predictions of hydrocarbons fate and behaviour for PB and Sole scenarios, clean-up response would involve the manual removal of minimal amounts of weathered MDO from exposed sandy shorelines. No mechanical removal would be required; however, mechanical washing may be a suitable option for diesel residues where machinery access to the beach is possible.

Based upon predictions of hydrocarbons fate and behaviour for Otway scenarios, clean-up response would involve the manual removal of actionable (>100 g/m<sup>2</sup>) and weathered condensate and MDO on shorelines. Mechanical washing may be a suitable option for hydrocarbon residues where machinery access to the beach is possible.

To understand the response equipment and personnel associated with shoreline clean-up response, Amplitude Energy identified the quantity and type of equipment and personnel required for a single response team (Table 9-1). This information is based upon the assumption that each manual clean-up team has the treatment capacity of 10 m<sup>3</sup> per day (based upon a single person collecting 1 m<sup>3</sup> per day); and each mechanical collection team had a treatment capacity of 2.4 m<sup>3</sup> per hour (based upon bucket size of 0.04 m<sup>3</sup> and a single excavation per minute).



Table 9-1: Single Shoreline Clean-up Team Equipment and Personnel Requirements

Equipment / Personnel	Requirements
<b>Manual clean-up</b>	
Support personnel	10
Team supervisor	1
Waste storage (per team)	10 m <sup>3</sup> per day
<b>Mechanical collection</b>	
Equipment (single excavator/machine)	1
Operator	1
Waste storage (per team)	25 m <sup>3</sup> per day

Amplitude Energy identified the estimated waste types associated with shoreline clean-up response techniques to provide a conservative indication as to the level of waste that may be required to be managed during a response. Based upon a bulking factor of 10 m<sup>3</sup> per day for each 'shoreline clean-up team', Amplitude Energy has estimated that the volume of waste that may need to be managed could be up to 3,121 m<sup>3</sup> based on spill modelling suggesting maximum volume of hydrocarbons ashore is less than 312.1 m<sup>3</sup> and volume of collected oil based on multiplying by a factor of ten (AMSA 2017). For conservatism, Amplitude Energy applied a 25% increase to these numbers for the purposes of resource estimation. The volumes described are considered highly conservative as they are based on the maximum total volume ashore at any threshold, from 200 different runs of an oil spill model over all seasonal conditions. It is therefore reasonable to assume that the actionable volume able to be manually removed (>100 g/m<sup>2</sup>) would be less. Appendix 5 - provides further information on the resources required to respond to a shoreline cleanup in the event of a LWC.

### 9.1.3 Laboratory Analysis

SCAT resources will obtain samples of any oil on shorelines and send to a National Association of Testing Authorities accredited laboratory for the analysis of hydrocarbon properties (including Benzene, Toluene, Ethyl-benzene, Xylene and Poly-aromatic hydrocarbons) and the physical properties of the oil (including wax content).

## 9.2 Response Resources

The number and tasks of personnel will vary according to the quantity of spill debris, its rate of delivery to the site and the disposal method chosen. Response resources would be activated via AMOSC in the first instance, with equipment and resources selected based on the TRP activation and subsequent IAPs. Table 9-2 details the resources required to undertake shoreline clean-up activities and their availability to support a 'shoreline clean-up' response. Further details on the resources required for a spill response have been summarised within Appendix 5 - .

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*Table 9-2: Shoreline Assessment and Clean-up Resource Requirements and Capability*

Resource	Resource Requirement	Provider	Resource Availability	Comments
<b>Shoreline Assessment</b>				
SCAT Team Leaders <b>Trained SCAT Crew</b>	Refer to Appendix 5 - for Personnel resourcing assessment.			<p>As part of AMOSC's Service Level Agreement on a best endeavour's basis, 8 AMOSC personnel can be deployed to site within 12 hours.</p> <p>AMOSPlan Core Group are IMO trained for field deployment of spill equipment and are available on an 'as soon as practicable' basis. 25-30 personnel from this group would be available within 24-48 hours.</p> <p>These personnel are available through Amplitude Energy's membership with AMOSC.</p> <p>Amplitude Energy contract for scientific specialists allows for deployment to field within 24 hours of notification.</p>
<b>Shoreline Clean-up</b>				
Shoreline Clean-up Team Leaders	Refer to Appendix 5 for Personnel resourcing assessment.			Resourcing as above for SCAT crew deployment.
Shoreline Clean-up Responders	Refer to Appendix 5 for Personnel resourcing assessment.			Amplitude Energy have agreements in place with labour hire providers to support shoreline clean-up activities
Shoreline Response Equipment Operators	Refer to Appendix 5 for Personnel resourcing assessment.			Amplitude Energy have agreements in place with labour hire providers to support shoreline clean-up activities
Waste Management Support Services	Refer to Appendix 5 for Personnel resourcing assessment.			Amplitude Energy waste contracts to support waste disposal from shoreline clean-up activities via specialist waste management company.
<b>Shoreline Response Equipment</b>				
Beach Clean-up Kit/Trailer	1 x Beach Clean-up Kit (Geelong)	AMOSC.	1 x Beach Clean-up Kit (Geelong and Fremantle)	AMOSC deployment and arrival at site expected within 12 hours.

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Resource	Resource Requirement	Provider	Resource Availability	Comments
	2 x Beach Clean-up Kits (Williamstown North) 1 x Beach Clean-up Kit (Port Fairy)	VIC DTP Port of Portland.	2 x Beach Clean-up Kits (Williamstown North) 1 x Beach Clean-up Kit (Port Fairy)	Access to equipment via VIC DTP and Port of Portland.
<b>Decontamination Kit</b>	1 x Decontamination Kit (Geelong)	AMOSC.	4 x Decontamination Kits (Geelong, Fremantle, Broome and Exmouth)	AMOSC deployment from Geelong and arrival at site expected within 12 hours.
	1 x Decontamination Kit (Williamstown North) 1 x Decontamination Kit (Portland)		1 x Decontamination Kit (Williamstown North) 1 x Decontamination Kit (Portland)	Access to equipment via VIC DTP and Port of Portland.
<b>Temporary Waste Units</b>	Temporary storage units (reflective of specific sector oiling)	AMOSC. Additional resources may be requested from Mutual Aid (via AMOSC) or AMSA as per the National Plan agreements.	4 x 5m <sup>3</sup> units (Geelong) Additional 5 x 5m <sup>3</sup> units available (Fremantle, Broome, Exmouth) Additional units (x34) available via Mutual Aid (accessed via AMOSC).	AMOSC deployment from Geelong and arrival at site expected within 12 hours.
<b>Mechanical Equipment (surf washing)</b>	Mini-excavators	Third Party Equipment Hire (e.g. Coates Hire) or local excavation Contractors.	As per service provider.	Availability of equipment within 5 hours.
General Shoreline Response Equipment	Shoreline manual removal equipment (e.g. sandbags, shovels, wheelbarrows)	AMOSC	Surplus equipment available from general hardware stores across Victoria	AMOSC deployment from Geelong or pick-up from hardware store local to shoreline response location, and arrival at site expected within 12 hours.



Resource	Resource Requirement	Provider	Resource Availability	Comments
	Site support equipment (e.g. PEE)			

## 9.3 Environmental Risk Assessment (Shoreline Clean-up)

An assessment of possible environmental impact and risk associated with shoreline assessment and clean-up activities has been undertaken as part of the EPs collation for the Amplitude Energy assets.

## 9.4 Environmental Performance Outcomes (Shoreline Clean-up)

Table 9-3 provides the performance outcomes, standards and measurement criteria for shoreline clean-up. The IC will ensure the control measures identified below are implemented.

*Table 9-3: Shoreline Response – Performance Outcomes and Standards*

Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
Amplitude Energy maintains capability to implement SCAT and shoreline clean-up in a level 2/3 spill event.	OPEP CM37: Service Agreements - Shoreline Clean-up	<p>OPEP EPS37.1: Amplitude Energy maintains the following agreements to maintain shoreline assessment/clean-up response capabilities for the duration of the activities provided for under this OPEP:</p> <ul style="list-style-type: none"> <li>• AMOSC membership (equipment, personnel, Core Group. Mutual aid)</li> <li>• AMOSPlan Industry Mutual aid (equipment)</li> <li>• scientific resource support agreement</li> <li>• waste management contract</li> <li>• labour hire provider.</li> </ul> <p>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists.</p>	Chief Operating Officer	Agreements / memberships are current.

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Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
Amplitude Energy implements or supplies resources for shoreline assessment and clean-up (level 2/3 spill), appropriate to the nature and scale of predicted shoreline impacts.	OPEP CM38: Shoreline Assessment and clean-up – Resource Deployment	<p>OPEP EPS38.1: 1 x Shoreline Operations Manager available (via AMOSC) within 24 hours.</p> <p>OPEP EPS38.2: 2 x Trained SCAT Team leads available onsite (via AMOSC) within 24 hours of the spill event (daylight hours permitting) in consultation with the State CA.</p> <p>OPEP EPS38.3: SCAT teams deployed and available onsite within 12 hours of spill event (daylight hours permitting) in consultation with the relevant State CA.</p> <p>Note: SCAT information will be provided to Planning function of the IMT for NEBA preparation, which will form part of the IAP.</p> <p>SCAT teams to be comprised of:</p> <ul style="list-style-type: none"> <li>• 3-6 trained personnel, including: <ul style="list-style-type: none"> <li>– 1 x wildlife SME</li> <li>– 1 x cultural SME.</li> </ul> </li> </ul>	Amplitude Energy IC	Agreements / memberships are current.
	OPEP CM31: Operational NEBA	OPEP EPS31.1: An operational NEBA is undertaken to determine net benefits with relevant State CA to confirm implementation of the response strategy.	Amplitude Energy IC	Operational NEBA is available, approved and was undertaken prior to shoreline clean-up.
Impacts to cultural heritage and social values are prevented	OPEP CM32: Consultation with Traditional owners	OPEP EPS 32.1: In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance.	Amplitude Energy IC	Incident records verify consultation has occurred and controls implemented.



Environmental Performance Outcome	Control Measure	Environmental Performance Standard	Responsible Person	Measurement Criteria
	OPEP CM33: Land and Waterway Manager Consultation	OPEP EPS33.1: In conjunction with relevant State CA consultation is undertaken with land and waterway manager prior to deployment of equipment to establish recreational user controls along affected coastline.	Amplitude Energy IC	Incident records verify consultation has occurred and controls implemented.
Impacts to native vegetation and fauna are prevented.	OPEP CM34: Site survey for critical habitat	OPEP EPS34.1: Surveys are undertaken to identify, mark out and protect nesting and critical habitat.  Existing tracks and paths are used where possible to minimise disturbance footprint.	Amplitude Energy IC	Incident records verify surveys have occurred and controls implemented.
	OPEP CM35: trained Fauna Handlers	OPEP EPS35.1: Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna.	Site Representative	Shoreline induction reinforces this constraint.  Induction records.
Appropriate Government Response units are involved and support the response operations.	OPEP CM27: Response Coordination with Government Agencies	OPEP EPS27.1: Consultation in the event of a spill will ensure that relevant government agencies support the relevant response strategies thus minimising potential impacts and risks to sensitivities.	Amplitude Energy IC	Incident records verify that relevant stakeholder notification timeframes are met.

## 10.0 Oiled Wildlife Response

### 10.1 Wildlife Sensitivities

Based upon the environmental sensitivities present in the NEBA assessment (Appendix 2 - ) and the asset EPs, fauna which may be affected by hydrocarbon residues include seabirds, shorebirds, pinnipeds and whales. The potential for hydrocarbon impact to these species is detailed in respective asset EPs.

### 10.2 Notification and Response Arrangements

Each State has a dedicated agency responsible for responding to wildlife affected by a marine pollution emergency in State waters. If a small incident which affects wildlife occurs in Commonwealth waters,



AMSA may request support from relevant State agency to assess and lead a response if required. State agency response to oiled wildlife is undertaken in accordance with the State specific Wildlife Response Plan (or equivalent).

Amplitude Energy will provide support for the response through the provision of resources. The equipment which Amplitude Energy can supply or coordinate through external assistance (such as AMOSC) includes:

- vessels for transport of wildlife and equipment
- oiled fauna kits
- wildlife intake and triage
- wildlife cleaning and rehabilitation kits.

Personnel may also be deployed under the direction of State CA to undertake wildlife response activities. Only trained resources may interact with oiled fauna species in accordance with the *Victorian Wildlife Act 1975*. Should OWR is required, follow the following steps:

- Notify the relevant State Duty Officer or State Agency Commander for wildlife within the jurisdiction immediately.
- Notify AMSA if the oil spill occurs in Commonwealth waters and wildlife is affected.
- Determine the exact location of the animal and provide accurate directions. Maintain observation until State agency can deploy staff to the site.
- Take response actions only as advised by State agency or AMSA:
  - Determine the exact location of the animal for accurate directions for appropriately trained wildlife response personnel. Maintain observation and keep people, dogs, and wildlife scavengers away until accredited wildlife teams have arrived.
  - Avoid handling or treating injured wildlife as this may cause further stress and injury and poses a safety risk to untrained handlers.

## 10.3 Response Activities

OWR can be broken down into three stages; primary, secondary and tertiary (refer to Table 10-1).

Table 10-1: OWR Phases

Response Phase	Response Activity Description
<b>Primary Response</b>	This response is associated with hydrocarbon recovery and removing the threat of oil to wildlife. For this OPEP this involves source control, deflection and protection and shoreline assessment and clean-up.
<b>Secondary Response</b>	This response uses hazing and pre-emptive capture techniques. Hazing techniques include systems to keep wildlife away from areas where impact is expected through a system of artificial threats (including noise and visual devices). The decision to undertake this within Victorian boundaries would be determined by DEECA as the Lead Agency for oiled wildlife.



Response Phase	Response Activity Description
	<p>Pre-emptive capture involves:</p> <ul style="list-style-type: none"><li>• The isolation and/or capture of wildlife from contaminated sites by either physical barriers preventing access or exclusion to contaminated sites.</li><li>• Transferring the wildlife well away from contaminated sites and releasing them.</li><li>• Holding the wildlife in short-term captivity, while the contamination threat is removed.</li></ul> <p>Secondary responses are unlikely to be required.</p>
Tertiary Response	<p>Tertiary response will be applied as required by oil spill trained and accredited teams deployed by the Lead Agency.</p> <p>Tertiary response includes capturing, cleaning, rehabilitation, transportation, and stabilisation of contaminated wildlife for release.</p>

## 10.4 Response Resources

### Oiled Wildlife Waste Management

The hydrocarbons associated with the Otway, PB and Sole activities are volatile, and either light or non-persistent. The ecological environment that may be affected associated with any single spill scenario is also limited. Whilst there is potential for oiled wildlife to occur, the numbers of individuals potentially impacted would likely be small.

Based on the WA Oiled Wildlife Response Plan (DBCA DoT 2022) impact rating guide (for resource estimation), the release scenarios in this OPEP is assessed as low-medium, accounting for a relatively low level of response over a protracted period.

Although high numbers of oiled wildlife would not be expected as a result of the scenarios covered in this OPEP, response resources would be activated. AMOSC would be activated in the first instance, in consultation with the relevant State agencies (DTP and DEECA in Victorian State waters), with equipment and resources selected on the basis of the TRP activation and subsequent IAPs.

Table 10-2 details the resources required to undertake an OWR. However, Amplitude Energy will not deploy any resources without first receiving a formal deployment request from relevant State agency. Further details on the resources required for a spill response have been summarised within Appendix 5 -

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Table 10-2: Oiled Wildlife Response Resource List

Resource	Resource Requirement	Provider	Resource Availability	Comments
<b>Oiled wildlife response personnel</b>	Refer to Appendix 5 - for Personnel resourcing assessment	Oiled wildlife response is led by the State government agency.	<ul style="list-style-type: none"> <li>Victoria: Within Victoria there is a response network comprising DEECA staff and contractors and Zoos Victoria Marine Response Unit - a dedicated marine wildlife welfare unit comprising wildlife specialists, vets and volunteers.</li> <li>NSW: NSW DPI is responsible for activating the Agriculture and Animal Services Functional Area (AASFA) Supporting Plan. The AASFA coordinates oil wildlife response and recovery in support of the Control Agency. NSW DPI has a MOU with multiple organisations that will provide animal services resources to assist in an emergency response under the coordination of NSW DPI.</li> <li>Tasmania: The Tasmanian Oiled Wildlife Response Plan (WildPlan) is administered by the Department of Natural Resources and Environment Tasmania (NRET) (formerly DPIPWE) and outlines priorities and procedures for the rescue and rehabilitation of oiled wildlife.</li> </ul> <p>Amplitude Energy and its service providers such as AMOSC provide supplementary resources and personnel as requested by the State Government Lead Agency for oiled wildlife. Amplitude Energy's OPEPs are reviewed by State Government Agencies during their development to ensure alignment of response expectations and resources.</p> <p>As part of AMOSC's Service Level Agreement on a best endeavour's basis, trained AMOSC personnel can be deployed to site within 12 hours. AMOSC have provided an estimate of the current number of personnel available for oiled wildlife response from their established network of OW and Fauna Care organisations, shown in the table below, indicating sufficient personnel to meet the potential resource needs of the project.</p>	
		Provider	Resource Available	Availability to Mobilise
		AMOSC Industry Personnel	<p>Minimum 2pax trained OWR personnel</p> <p>62 trained industry personnel – minimum introductory level:</p> <ul style="list-style-type: none"> <li>35 introductory trained personnel.</li> <li>24 completed Management course.</li> <li>16 completed Responder course.</li> </ul>	<p>1 x personnel within 12hrs</p> <p>~20 personnel within 24hrs</p>
		State and National	Precise numbers to be determined but indicate between 50-100 available through the National Plan.	Best endeavours - Conservatively anticipate 20 x

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Resource	Resource Requirement	Provider	Resource Availability	Comments
		Response Teams		personnel within 14-days.
		Dwyertech	2 personnel	2 x personnel within 24hrs
		Phillip Island Nature Park (PINP) - Victoria	<p>PINP staff:</p> <ul style="list-style-type: none"> <li>~ 50 x personnel – collection/facility ops/rehabilitation</li> <li>5 x personnel – IMT trained</li> <li>17 x personnel – Wildlife Team Leaders</li> <li>6 x personnel – wildlife emergency response (Including cetacean stranding / entanglement etc.).</li> <li>~20 x personnel – animal feeding.</li> </ul> <p>Volunteers:</p> <ul style="list-style-type: none"> <li>~ 45 personnel – collection/facility ops/rehabilitation</li> </ul>	Best endeavours- Conservatively anticipate 20 x personnel within 14-days.
		Zoos Victoria	<p>Marine Mammal Unit:</p> <ul style="list-style-type: none"> <li>4x personnel</li> </ul>	Best Endeavours - Conservatively anticipate 2 x personnel within ~7 days.
		Sea Alarm	2 x personnel for support	2 x personnel within ~7 days
		Global Oiled Wildlife Response System (GOWRS)	4 x personnel from the GOWRS network for advice in country	Remote advice
		Massey University	4-6 x OW Response personnel	Best endeavours - Conservatively anticipate 2 x personnel within ~14 days.
		In addition to this, Amplitude Energy can engage labour hire to support OWR activities as unspecialised responders (e.g. to assist with tasks such as materials movement and management., with induction and training provided by AMOSC specific to the duties with which they are engaged.		

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Resource	Resource Requirement	Provider	Resource Availability	Comments
<b>OWR Facility establishment and management</b>	1 x Facilities Establishment Group Refer to Appendix 5 - for Personnel resourcing assessment		Current call-off contract with AMOSC has service available within 24 hours of call-out.	
<b>OWR Equipment</b>				
<b>Oiled Wildlife Response Kits</b>	1 x OWR Kit (Geelong)	AMOSC	1 x OWR Kit (Geelong) 1 x OWR Kit (Fremantle)	Kits can process 50 units per day and Geelong kit available at site within 24 hours of call-out.
	Specific resourcing requirements will be based on the specific oiling and outcomes from the wildlife reconnaissance.	DEECA	1 x OWR Kit (Bairnsdale) 1 x OWR Kit (Colac) 1 x OWR Kit (Port Phillip) 1 x OWR Kit (Warrnambool) 1 x State-wide Trailer	Each kit can process approximately 50 units. To be provided by DEECA.
<b>Oiled Wildlife Response Containers</b>	1 x Container (Geelong)	AMOSC	1 x Container (Geelong) 1 x Container (Fremantle)	Each container can process approximately 100 units per day. Geelong container available onsite within 24 hours of call-out.  Additional resources may be available through AMSA as per agreements specified within the NatPlan upon a formal request. Equipment includes: <ul style="list-style-type: none"><li>• 1 x Container (Dampier)</li><li>• 1 x Container (Darwin)</li><li>• 1 x Container (Townsville)</li><li>• 1 x Container (Sydney) – from transport for NSW, accessed via AMSA.</li></ul> Equipment is not expected to be required. Deployment of such resources would be expected to take 48-72 hours (road travel) from time of request.
<b>Vessel Support</b>	1 x Vessel/Master	Vessel service provider Agreement	1 x Vessel/Master	Amplitude Energy maintains an agreement with a vessel service provider to provide vessel surveillance activities



Resource	Resource Requirement	Provider	Resource Availability	Comments
	Vessels of Opportunity	with Amplitude Energy		and can be supplied in 24 – 48 hours from call-out.
		Amplitude Energy Vessel Listing	Dependent on the number of Vessels of Opportunities available at the time of the incident.	Amplitude Energy maintains a list of vessels suitable for surveillance.
Waste Management Support Services	Waste Management Contractor	Amplitude Energy has contract with national and state-based (Victoria) waste management provider.	Refer to Appendix 5 -	Amplitude Energy waste contracts to manage waste handling and disposal. Availability on-site within 24 hours of call-out.

## 10.5 Environmental Risk Assessment

An assessment of possible environmental impact and risk associated with oiled wildlife response has been undertaken as part of the EPs which relate to these activities.

## 10.6 Environmental Performance Outcomes (Oiled Wildlife Management)

Table 10-3 provides the performance outcomes, standards, and measurement criteria for oiled wildlife management. The Amplitude Energy Operations Officer (or delegate) will ensure the control measures identified below are implemented.

*Table 10-3: Oiled Wildlife Response – Performance Outcomes and Standards*

Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
Amplitude Energy maintains capability to support oiled wildlife management in a level 2/3 spill event.	OPEP CM39: Service Agreements - Oiled Wildlife Response	OPEP EPS39.1: Amplitude Energy maintains the following agreements to maintain OWR response capabilities: <ul style="list-style-type: none"> <li>AMOSC membership (equipment, personnel)</li> <li>waste management contract</li> <li>agreement with vessel operator based in Victoria</li> </ul>	Executive Leadership Team Member	Contracts / memberships verify currency of membership.

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Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
		<ul style="list-style-type: none"> <li>Vessel of Opportunity listing.</li> </ul> <p>OPEP EPS39.2: 2 x Oiled Wildlife Coordinators (via AMOSC) to supervise the oiled wildlife operations who have completed an OPEP-specific induction.</p> <p>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists.</p>		
Amplitude Energy provides resources to support oiled wildlife response strategies as directed by State CA.	OPEP CM40: Notification to State CA or Oiled Wildlife	OPEP EPS40.1: Relevant state CA is notified as soon as possible after the sighting of oiled wildlife has occurred or if it is considered wildlife likely to be impacted.	Amplitude Energy IC	Incident management records verify that verbal and/or written notification was provided to relevant State agency as soon as possible after the sighting was noted.
	OPEP CM41: Oiled Wildlife Response Kits	OPEP EPS41.1: AMOSC OWR kits are deployed to site within timeframes as directed by State Agency.	Amplitude Energy IC	Incident records verify oiled wildlife response kits are deployed to site as directed by State Agency.
	OPEP CM42: Oiled Wildlife Resource Resourcing	OPEP EPS42.1: Amplitude Energy meets State Agency resourcing needs throughout the response, meeting IAP performance outcomes.	Amplitude Energy IC	Incident log verifies requested Amplitude Energy resources met required IAP outcomes for oiled wildlife response.
Wildlife is only approached or handled by State Agency trained oiled wildlife responders unless formal direction is received from the State Government IMT.	OPEP CM43: Oiled Wildlife Response Induction	OPEP EPS43.1: Amplitude Energy personnel are inducted into wildlife interaction restrictions.	Amplitude Energy IC State Government IC	Induction records. Incident records verify no interaction by Amplitude Energy personnel and wildlife without formal direction and induction by the State Government IMT.
Impacts to cultural heritage and social values are prevented	OPEP CM32: Consultation with	OPEP EPS32.1: In consultation with State CA, engage with Traditional Owners to facilitate site	Amplitude Energy IC	Incident records verify consultation has occurred and controls implemented.



Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
	Traditional owners	surveys and tagging out and protection of identified areas or importance.		
Impacts to native vegetation and fauna are prevented.	OPEP CM34: Site survey for critical habitat	OPEP EPS32.1: Surveys are undertaken to identify, mark out and protect nesting and critical habitat.  Existing tracks and paths are used where possible to minimise disturbance footprint.	Amplitude Energy IC	Incident records verify surveys have occurred and controls implemented.
	OPEP CM35: Trained Fauna Handlers	OPEP EPS35.1: Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna.	Amplitude Energy IC (as directed by the Lead Agency)	Shoreline induction reinforces this constraint. Induction records.

## 11.0 Decontamination and Waste Management

### 11.1 Waste types and volumes from a Spill Event

Waste types generated through spill response activities may include sand with oil residue, oily water, wash-waters from oiled wildlife clean-up and possible oiled carcase disposal (noting State agency will lead this aspect). It is noted that hydrocarbon residues reaching shorelines will still be relatively mobile residues and will penetrate shoreline sediments due to the low viscosity of the oil and will not be as visually obvious as other hydrocarbons (e.g. heavy fuel or crude oils).

Credible spill scenarios and associated hydrocarbon release volumes are described in Table 1-2. By taking the worst-case liquids volume released for each scenario, and the peak volume ashore from the stoachastic modelling, respective maximum waste volumes have been estimated (Table 11-1).



Table 11-1: Estimated Oil Waste Volumes

Asset	Worst Case Spill Scenario	Peak Hydrocarbon Shoreline Volume	Waste Type	Waste Volume**
Gippsland Basin – Sole / PB / BMG	Vessel Release	500 m <sup>3</sup> *	Oily water Sand with oil residue	5,000 m <sup>3</sup>
Gippsland Basin – Sole / PB	Subsea release	5 m <sup>3</sup> *	Oily water Sand with oil residue	50 m <sup>3</sup>
Otway Basin - CHN	Vessel release	250 m <sup>3</sup> *	Oily water Sand with oil residue	2,500 m <sup>3</sup>
Otway Basin - CHN	Pipeline release	50 m <sup>3</sup> *	Oily water Sand with oil residue	500 m <sup>3</sup>
Otway Basin – Wells (inc. exploration)	Subsea release	312.1 m <sup>3</sup>	Oily water Sand with oil residue	3,121 m <sup>3</sup>
General	Oiled Wildlife Waste	-	Wastewater	1 m <sup>3</sup> per unit (1 bird = 1 unit)
		-	Personal protective equipment (PPE)	5 kg per unit per day
	Decontamination stations	-	Wash-water	~1 m <sup>3</sup> /d
		-	PPE	

\*Assumes vessel or subsea release is very close to shore and weather pushes 100% spilled hydrocarbons ashore. It does not account for weathering. Considered to be conservative.

\*\*Assumes a 10-fold increase in volume of stranded oil due to additional volume of oily water and sand.

## 11.2 Waste Management

### 11.2.1 Decontamination

In the event that shoreline clean-up is activated, decontamination stations must be placed at control points to prevent the spread of oil residues. Hot and cold zones must be clearly identified at the decontamination station and all response personnel should be briefed on the decontamination procedures before entering the Hot Zone. The decontamination zone should be constantly attended and kept as neat as organised as possible.

Suppliers of decontamination kits are identified in Table 10-2.

### 11.2.2 Regulatory Requirements/Characterisation

Waste generated as part of shoreline clean-up activities will be handled by Amplitude Energy's Waste Management Contractor who will be activated in a level 2/3 event to collect and manage waste generated.



The waste management contractor must ensure:

- Suitable receptacles are provided for waste materials into ensure its correct segregation into appropriate regulatory classifications.
- Wastes are manifested to ensure they are sent to appropriately licensed treatment or disposal facilities.
- Transportation via correctly permitted vehicles to those locations in accordance with Victorian EPA requirements.

All waste manifests, to ensure recovered oil residues are tracked, must be sent by the Waste Contractor to the Logistics Officer as soon as possible.

### **11.2.3 Interim Storage & Segregation Requirements and Resources**

All requirements for interim storage arrangements must be discussed with Amplitude Energy's waste management contractor and a site waste management plan developed in consultation with the EPA, State CA and the appropriate land manager.

The site waste management plan must ensure that all interim storage and handling arrangements are fully bunded, isolated from the public and site activities supervised. All interim storages must have suitable spill kits available to limit spill residues.

Waste storage resources, in addition to Amplitude Energy's waste management contractor resources, can be found on the AMOSC and relevant State government websites.

### **11.3 Environmental Risk Assessment**

An assessment of possible environmental impact and risk associated with waste management has been undertaken within the Section 8.0 (Shoreline Response: Protect & Deflect) and Section 9.0 (Shoreline Response: Clean-up).

### **11.4 Environmental Performance Outcomes (Waste Management)**

The performance outcomes, standards, and measurement criteria associated with waste management have been addressed in Section 8.0 (Protection and Deflection) and Section 9.0 (Shoreline Assessment and Clean-up).

## **12.0 Scientific Monitoring**

The Offshore Victoria OSMP (VIC-ER-EMP-0002) provides a comprehensive framework for the monitoring programs that may be implemented in the event of a level 2/3 hydrocarbon spill.

### **12.1 Consultation to Support Operational and Scientific Monitoring**



In the event of a level 2/3 spill, Amplitude Energy will consult with Commonwealth and State authorities for all areas potentially exposed to hydrocarbons, including Australian Marine Parks to ensure that scientific monitoring is undertaken to the satisfaction of the Commonwealth and State. The State CA will coordinate the whole of State Government advice on the focus, scope and duration of the scientific program.

Amplitude Energy will notify these relevant authorities on a level 2/3 spill event and provide operational data to these authorities relevant to the spill level. Amplitude Energy will consult with these authorities at the commencement of a level 2/3 spill on any proposed baseline or scientific studies and control sites to allow for feedback and OSMP study implementation plan modification<sup>4</sup> to fulfil all State requirements (e.g. on-the-day sampling design, modified scope).

Operational monitoring results will continue to be provided throughout the response to allow for continued feedback and modification of baseline or scientific requirements. Other critical liaison points will be established between relevant authorities through the spill consultation process.

## 12.2 Response Activities

The OSMP can be separated into two categories of monitoring:

- Type I monitoring (also referred to as operational monitoring) - undertaken during a spill response to support response planning and operations. The focus of Type I monitoring is to obtain and process information regarding the nature and scale of the spill and the resources at risk so it can be acted upon as quickly as possible. Operational monitoring typically finishes when the spill response is terminated.
- Type II monitoring (also referred to as scientific monitoring) – aims to quantify the extent, severity, and persistence of environmental impacts from a significant spill and inform on appropriate remediation activities. Scientific monitoring may continue for extended periods after a spill response is terminated.

### 12.2.1 Operational Monitoring (Type I)

A summary of the operational monitoring studies that may be initiated during a hydrocarbon spill event are provided in Table 12-1. Refer to the Offshore Victoria OSMP (VIC-ER-EMP-0002) and the supplementary implementation plans for further details on each monitoring study.

*Table 12-1: Operational Monitoring (Type I) Studies*

ID	Study	Study Description
Op1	Operational Forecast Modelling	Real-time predictions (forecasts) of the temporal / spatial distribution and concentrations of hydrocarbons on the surface and within the water column via numerical modelling.

<sup>4</sup> OSMP currently provides for study modules with expected scopes. These will be modified accordingly.



ID	Study	Study Description
Op2	Hydrocarbon Spill Surveillance and Tracking	<p>Conduct surveillance and tracking of surface hydrocarbon spill distribution to:</p> <ul style="list-style-type: none"> <li>Provide operational data / information to support and inform response planning and operations and monitor the spill response.</li> <li>Implement operational monitoring in accordance with the OSMP to identify sensitivities at risk of hydrocarbon exposure, inform the NEBA and identify sensitivities which require scientific monitoring.</li> </ul>
Op3	Hydrocarbon Weathering Assessment	<p>To determine the physical and chemical properties of hydrocarbon as it weathers to characterise temporal decrease in toxicity to meet the following OPEP requirements:</p> <ul style="list-style-type: none"> <li>Provide operational data information to support and inform response planning and operations and monitor the spill response.</li> <li>Implement operational monitoring in accordance with the OSMP to identify sensitivities at risk of hydrocarbon exposure, inform the NEBA and identify which sensitivities require scientific monitoring.</li> </ul>
Op4	Coastal Shoreline Assessment	<p>To obtain information on the physical and biological character of the shoreline prior to hydrocarbon exposure at priority shorelines to establish an operational baseline condition, to monitor post-exposure hydrocarbon distribution and the physical and biological character of the shoreline, and to measure effectiveness of shoreline response measures.</p>
Op5	Dispersant Efficacy Assessment	<p>Provides information on the efficacy of the chemical dispersant applied to the spilled hydrocarbon, and to:</p> <ul style="list-style-type: none"> <li>Provide operational data / information to support and inform response planning and operations and monitor the spill response.</li> <li>Monitor the effectiveness of dispersant application to reduce surface VOCs.</li> </ul>

## 12.2.2 Scientific Monitoring (Type II)

A summary of the scientific monitoring studies that may be initiated during a hydrocarbon spill event are provided in Table 12-2. Refer to the Offshore Victoria OSMP (VIC-ER-EMP-0002) and the supplementary implementation plans for further details on each monitoring study.

*Table 12-2: Scientific Monitoring (Type II) Studies and relevant Baseline Data*

ID	Study	Study Description
Sc1	Ecotoxicology Assessment of Hydrocarbons	Undertake eco-toxicological studies to establish hydrocarbon exposure thresholds for sensitive biotic receptors to assist with the assessment of impacts to environmental sensitivities affected by the spill.
Sc2	Hydrocarbon Monitoring in Marine Waters	Monitor hydrocarbon and dispersant content (if used in response) in marine waters at sub-tidal and intertidal impact sites (which may include where relevant: priority/sensitive locations, State or Commonwealth marine protected areas, pelagic sites, commercial fishery areas) and reference sites to support the assessment of environmental impacts and recovery.



ID	Study	Study Description
Sc3	Hydrocarbon Monitoring in Marine Sediments	Monitor hydrocarbons in marine sediments at sub-tidal (rocky reef) and intertidal (sandy beaches) sensitive locations, pelagic sites, commercial fishery areas and reference sites to support assessment of environmental impacts and recovery.
Sc4	Intertidal and Subtidal Habitat Monitoring	Monitor sub-tidal habitats (e.g., sponge gardens) including demersal fish and also intertidal saltmarsh at priority sensitive locations and one reference site to support the assessment of environmental impacts and recovery.
Sc5	Shorebird and Seabird Population Monitoring	Monitor shorebird and seabird populations to assess potential impacts to, and subsequent recovery following a hydrocarbon release. This will be used to: <ul style="list-style-type: none"> <li>Quantify the level of exposure to affected populations.</li> <li>Provide operational response resources to implement secondary and tertiary oiled wildlife response strategies.</li> <li>Assess any impacts to shorebirds or seabirds resulting from response activities.</li> <li>Determine the recovery of populations after hydrocarbon release.</li> </ul>
Sc6	Marine Megafauna	Undertake marine megafauna monitoring to assess: <ul style="list-style-type: none"> <li>The impacts and disturbance to marine megafauna; and</li> <li>Monitor the recovery of shoreline megafauna following a hydrocarbon release.</li> </ul>
Sc7	Hydrocarbon Monitoring of representative Commercial and recreational Fish Species	Monitor for hydrocarbon and dispersant content (if used in response) in representative commercial and recreational fish species (including shellfish) to assess the physiological impacts to fisheries; seafood quality/safety and the fisheries recovery following a hydrocarbon release.
Sc8	Hind-cast Modelling Impact Assessment	Undertake hind-cast simulations of a hydrocarbon release, validated with information / data from other OSMP studies to refine post-incident impact assessment and to inform long-term scientific monitoring specifications to support assessments of the impacts and recovery of environmental sensitivities affected by the hydrocarbon spill.
Sc9	Socio-economic Survey Assessment	The monitoring performance outcomes for this study is to carry out socio-economic monitoring studies to assess socio-economic impacts and subsequent recovery pathways following a Level 2/3 hydrocarbon spill.

### 12.2.3 Baseline Data

The establishment of a robust baseline dataset is required for the assessment of impacts and the recovery to environmental sensitivities at sensitive locations in the event of a hydrocarbon incident.

The Offshore Victoria OSMP (VIC-ER-EMP-0002) has identified that the establishment of baseline datasets during routine operations is important given the predicted timeframes that hydrocarbons may reach identified environmental sensitivities. The procedure for the establishment of baseline data in each relevant scientific monitoring implementation plan will include the following:



- Relevant scientific monitoring studies at the sensitive locations are catalogued along with the custodian's contact details.
- The monitoring methodology, monitoring sites, and sampling duration and frequency of these relevant monitoring studies will (where known) be available in a tabular format to identify methodology and spatial/temporal types of baseline data gaps.
- Data custodians will be contacted, and datasets requested. As a contingency, 'data mining' from publicly available information will occur on an ongoing basis for baseline database establishment through consultancy resources.
- Any identified data gaps will be used by the principle investigator (PI) of a particular study in the development of the sampling and analysis component of the IP to optimise the design of each scientific monitoring study; given the methodological, spatial and temporal properties of the existing monitoring data sets identified in the 'study catalogue'.

Table 12-3 provides a summary of the available baseline data that have been reviewed to establish the individual monitoring implementation plans, and the methods to address any baseline data gaps. Each IP Coordinator (or delegate) will use the resources below, and other suitable sources as they become available, to identify gaps in the available baseline data. In the event of a spill occurring, the data gaps within the extent and trajectory of the spill will be identified and integrated into the Implementation Plans for the OSMP modules.

*Table 12-3: Review of Available Baseline Data*

Component and relevant Sc	Available Baseline Data	Source	Baseline Data Gap Review
<b>Marine Fauna (Sc4 – Sc6)</b>	<p>Publicly available data is for marine fauna can be accessed via:</p> <ul style="list-style-type: none"> <li>• EPBC Recovery Plans</li> <li>• Species Profiles and Threats Database (SPRAT)</li> <li>• Protected Matters Search Tool (PMST)</li> <li>• CoastKit, Victoria (see Table notes)</li> <li>• Atlas of Living Australia (see Table notes)</li> <li>• ListMap Tasmania (see Table notes).</li> </ul>	DCCEEW DEECA DNRE Tasmania CSIRO	A comprehensive literature review of available reports and peer review journal articles via research and journal databases (i.e. PubMed) has been conducted to advise the implementation strategies of the OSMP. The individual IPs also provide comprehensive summaries of marine fauna.
<b>Marine Fauna – Birds (Sc5)</b>	<p>Parks Victoria technical paper on Marine Natural Values in the Parks in the Otway Bioregion includes bird survey data on:</p> <ul style="list-style-type: none"> <li>• population numbers</li> <li>• locations</li> <li>• breeding areas</li> <li>• threats and details of migration timing.</li> </ul>	Parks Victoria Technical Paper Marine Protected Areas of the Otway Bioregion (Parks Victoria)	<p>The monitoring priorities in the event of a spill will vary according to the extent of the spill.</p> <p>Vessel-based and land-based surveys will be undertaken as soon as possible after the spill (and for three months after cessation of the</p>

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Component and relevant Sc	Available Baseline Data	Source	Baseline Data Gap Review
	<p>An atlas to search and map species from across the state, check for threatened species. Includes population estimates of migratory shorebirds across the East Asian – Australasian Flyway at important conservation sites.</p> <ul style="list-style-type: none"> <li>• CoastKit, Victoria (see Table notes)</li> <li>• Atlas of Living Australia (see Table notes)</li> <li>• ListMap Tasmania (see Table notes)</li> </ul>	<p>Victorian Biodiversity Atlas DEECA DNRE Tasmania CSIRO</p>	<p>hydrocarbon release) and revised accordingly to advise remediation strategies and assess long-term changes in behaviour and population numbers.</p> <p>These monitoring surveys will be informed by the review of existing data for the sensitive receptor potentially at risk, with monitoring tailored to target areas and species that require further investigation and acquisition data (as per the direction of the OSMP service provider).</p>
	<p>Comprehensive species' accounts of seabird, shorebird and wader population studies. Includes detailed statistics of all researched parameters on all species including data on:</p> <ul style="list-style-type: none"> <li>• diet</li> <li>• nesting success</li> <li>• growth rates</li> <li>• populations parameters</li> <li>• behavioural data</li> <li>• feeding ecology data.</li> </ul>	<p>Birdlife Australia</p>	
<b>Marine Fauna – Demersal Fish (Sc4)</b>	<p>Parks Victoria Monitoring - has included surveys of demersal reef fish, including seahorses, pipefishes, and sea dragons. Surveys have included:</p> <ul style="list-style-type: none"> <li>• Baited Remote Underwater Video Surveys (BRUV)</li> <li>• diver observed transects</li> <li>• Remotely Operated Vehicle Observations (ROV)</li> <li>• Atlas of Living Australia (see Table notes).</li> </ul>	<p>Parks Victoria CSIRO</p>	<p>The methods of data collection have been assessed to ensure that they are sufficient to allow for statistically valid comparisons between different times and locations.</p> <p>Monitoring surveys will be advised by this assessment and tailored to target areas that require further data (as per the direction of the OSMP provider).</p>
<b>Marine Fauna – Megafauna (Sc6)</b>	<p>Various databases including:</p> <ul style="list-style-type: none"> <li>• Blue whale population, movement and feeding data (Whale Ecology Group - Deakin University, Warrnambool)</li> <li>• The Southern Right Whale Research and Monitoring Project (DEECA)</li> <li>• Humpback whale sightings (Dolphin Research Institute, Hastings)</li> <li>• Whales sightings (DEECA, Warrnambool)</li> <li>• New Zealand /Australian fur seals (Phillip Island Nature Parks</li> </ul>	<p>DEECA Phillip Island Nature Parks University Groups (i.e. Flinders University, Deakin University) DNRE Tasmania CSIRO</p>	<p>The monitoring priorities in the event of a spill will vary according to the spill event.</p> <p>Aerial surveys and vessel-based monitoring will be undertaken as soon as possible after the spill. The identified survey transect areas have been advised by the review of the existing data and adapted to target/prioritise areas that require further data (as per the direction of the OSMP provider).</p>

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Component and relevant Sc	Available Baseline Data	Source	Baseline Data Gap Review
	<ul style="list-style-type: none"> <li>Sharks numbers / movements (Flinders University Adelaide)</li> <li>Turtle sightings and population data across south-eastern Australian waters. (Deakin University Centre for Integrative Ecology)</li> <li>CoastKit, Victoria (see Table notes)</li> <li>Atlas of Living Australia (see Table notes)</li> <li>ListMap Tasmania (see Table notes).</li> </ul>		<p>Further, recognising the limitations of the data collected with aerial surveys, other survey methods including vessel-based, and collaboration with benthic habitat teams have been used to address gaps in species presence information that aerial surveys may not be able to support.</p> <p>The studies designed in this module are based on the ability to respond in a timely fashion and provide information such that it can be useful to the overall spill response. The readiness extends to having the appropriate equipment available to support the field team's activities.</p> <p>The monitoring methods which have been identified within the implementation plans of the OSMP are consistent with the requirements of the conservation plans for each of the species and the databases provided as baseline reference</p>
<b>Intertidal and Subtidal Reefs (Sc2 and Sc4)</b>	<p>Victorian Subtidal Reef Monitoring Program – provides long-term data of temporal and spatial changes to subtidal reef communities in Victoria's marine parks and reserves. These reefs have been the subject of monitoring by Parks Victoria with the aim of providing a database that can be used for comparison with sites outside the area and at different times</p> <p>Other resources include:</p> <ul style="list-style-type: none"> <li>CoastKit, Victoria (see Table notes)</li> <li>Atlas of Living Australia (see Table notes)</li> <li>ListMap Tasmania (see Table notes).</li> </ul>	Parks Victoria Marine Monitoring Program DEECA DNRE Tasmania CSIRO	The methods of data collected have been assessed to ensure that they are sufficient to allow for statistically valid comparisons between different times and locations.
<b>Benthic Habitat (Sc4)</b>	<p>Various subtidal benthic surveys undertaken within the Victorian coastline will be used to supplement existing data, such as:</p> <ul style="list-style-type: none"> <li>Victorian Subtidal Reef Monitoring Program (i.e. data on the reef biota on the Western Victorian Coast).</li> </ul>	Parks Victoria DCCEEW DNRE Tasmania CSIRO	Data acquired from the seabed surveys undertaken within the relevant corresponding Amplitude Energy EPs for each activity will contribute to the baseline data assessment and gap analyst for the OSMP.

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Component and relevant Sc	Available Baseline Data	Source	Baseline Data Gap Review
	<ul style="list-style-type: none"> <li>Marine Natural Values Study Vol 2: Marine Protected Areas of the Otway Bioregion (Parks Victoria).</li> <li>Commonwealth Marine Conservation Assessment Program (i.e. assessment of the conservation values of the Bass Strait sponge beds area). Management Plan for the Twelve Apostles Marine National Park and The Arches Marine Sanctuary (Parks Victoria, 2006).</li> <li>Marine Natural Values Study Victorian Marine National Parks and Sanctuaries.</li> </ul> <p>Other resources include:</p> <ul style="list-style-type: none"> <li>CoastKit, Victoria (see Table notes)</li> <li>Atlas of Living Australia (see Table notes)</li> <li>ListMap Tasmania (see Table notes).</li> </ul>		<p>A baseline literature review has been conducted to fill any data gaps, such as an assessment of available ecological surveys and environment reports conducted for Amplitude Energy and other Petroleum Operators operating within the Otway Basin and Bass Strait region, such as:</p> <ul style="list-style-type: none"> <li>Amplitude Energy (i.e. Otway Basin Exploration, Casino, Netherby &amp; Henry Operations)</li> <li>Santos (i.e. Casino, Netherby &amp; Henry pipeline Operations)</li> <li>Beach Energy (i.e. Otway Offshore Operations, Thylacine,)</li> <li>Woodside (i.e. Minerva).</li> </ul> <p>The identified survey areas have been advised by the review of the existing data, and will be adapted to incorporate any additional data, to ensure areas that require further data are prioritised (as per the direction of the OSMP provider).</p>
<b>Saltmarsh (Sc4)</b>	<p>A range of surveys of Victorian saltmarsh communities have been undertaken and the data uploaded to and stored with the Victorian Government.</p> <p>Other resources include:</p> <ul style="list-style-type: none"> <li>CoastKit, Victoria (see Table notes)</li> <li>Atlas of Living Australia (see Table notes)</li> <li>ListMap Tasmania (see Table notes).</li> </ul>	Victorian Biodiversity Atlas	Such data have been determined to be suitable for comparison with any information that may be collected post spill as per the OSMP.
<b>Hydrocarbon presence in water/sediments (Sc2, Sc3)</b>	There is a paucity of data in relation to naturally occurring background levels of hydrocarbons in the waters/sediment of Bass Strait.	-	To address this identified data gap, a baseline value of zero for petroleum hydrocarbons in Bass Strait waters has been assumed as a reasonable initial baseline estimate, which has been adopted within the OSMP. Therefore, no baseline report is required prior to any spill event. As such, the data from any sampling undertaken will be compared to a baseline of zero

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Component and relevant Sc	Available Baseline Data	Source	Baseline Data Gap Review
			hydrocarbons in the water column / sediments.
<b>Hydrocarbon Ecotoxicology (Op3, Sc1)</b>	Oil Spill Modelling Reports including: <ul style="list-style-type: none"> <li>• Weathering and Fate Assessment</li> <li>• Hydrocarbon plume modelling</li> <li>• Trajectory Modelling (Forecast and Hindcast).</li> </ul>	RPS (or equivalent)	Baseline toxicity literature review has been conducted to fill any data gaps, such as an assessment of the toxicity of Australian marine species.
<b>Other (Sc7)</b>	There is extensive baseline data available from a wide variety of sources on: <ul style="list-style-type: none"> <li>• Data from Australian Fisheries Management Authority and State fisheries authorities.</li> <li>• Commercial and Recreational Fishing catch and effort data.</li> <li>• Local Government Authorities (council) (LGAs)</li> <li>• status of Native Title Claims</li> <li>• shipping Statistics</li> <li>• tourism activities</li> <li>• Petroleum Exploration, Development and Production.</li> </ul>	AFMA / VFA Fisheries Research and Development Corporation ABS / ABARES Glenelg and Moyne Shire Councils, Warrnambool City Council NNTT AMSA / BITRE DJSIR DCCEEW / DEECA / APPEA	Assessment of the extensive data available has been conducted to advise the implementation strategies of the OSMP. Consultation with relevant persons (i.e. Commercial Fisheries, recreational Fishers, first nation persons, local council) will also be undertaken as per the process outlined in the corresponding activity EPs. Data acquired will be assessed prior to monitoring plan implementation to ensure any data gaps has been accounted for.

*Notes: Current interactive databases include the Atlas of Living (Australia-wide, hosted by CSIRO), Coast Kit (Victoria) hosted by DEECA, and Tas List hosted by the Department of Natural Resources and Environment (DNRE) Tasmania. These are marine and coastal knowledge decision-support tools.*

## 12.3 Response Resources

Amplitude Energy will ensure that an agreed contract is in place with OSMP Service Provider to ensure trained personnel are available to support the OSMP throughout the life of the relevant EPs.

The total number of personnel required to implement the OSMP will vary depending on the nature and scale of the hydrocarbon spill, however, as a minimum the contract will include access to the capability outlined in Table 12-4 and Table 12-5.

### 12.3.1 Operational Monitoring (Type I)

Table 12-4 details the resources that may be required to undertake operational monitoring. The resources will be deployed by the formal request of the OSMP Coordinator in collaboration with the

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Amplitude Energy IC and any relevant State Agencies. Further details on the resources required for a spill response have been summarised within Appendix 5 - .

*Table 12-4: Operational Monitoring (Type I) Response Resource List*

ID	Study	Resource Requirement	Provider	Resource Availability	Comments
Op1	Operational Forecast Modelling	Access to RPS via contract to initiate callout on a 24/7 basis.	AMOSC	AMOSC contract with RPS for immediate call-out.	AMOSC membership allows access to RPS contract which provides for Oil Spill Model and Response System results to be provided within two hours and Spill Impact Mapping model system results within four hours of activation.
Op2	Hydrocarbon Spill Surveillance and Tracking	Access to RPS via contract to initiate callout on a 24/7 basis.	AMOSC	AMOSC contract with RPS for immediate call-out.	<i>AMOSC Service Level Statement confirms access to RPS Trajectory Modelling within 60 minutes</i>
Op3	Hydrocarbon Weathering Assessment	The monitoring team should initially consist of: <ul style="list-style-type: none"> <li>• 1 x Principal Investigator (PI)</li> </ul>	Trained personnel available from AMOSC / AMOSPlan or OSMP Service Provider	As per OSMP service provider Resource Monitoring Matrix (provided 6-monthly): <ul style="list-style-type: none"> <li>• 3 x PIs</li> <li>• 14 x Monitoring Personnel.</li> </ul> Refer to Appendix 5 - Samples to be sent to a NATA accredited analytical laboratory service provider.	Amplitude Energy have agreements in place with OSMP Service Provider. Support personnel (field leaders and other field assistants, laboratory personnel and office support) will be sourced through OSMP Service Provider or an appropriate sub-consultant. All support personnel will have training and experience commensurate with the role that they are performing and consistent with the requirements of the OSMP.
Op4	Coastal Shoreline Assessment	As per SCAT and Shoreline Clean-up Response within Section 9.0	Trained personnel available from AMOSC / AMOSPlan or OSMP Service Provider	As per availability within Section 9.0: Shoreline Clean-up.	Amplitude Energy have agreements in place with AMOSC as per Section 9.0: Shoreline Clean-up.

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ID	Study	Resource Requirement	Provider	Resource Availability	Comments
Op5	Dispersant Efficacy Assessment	<p>Coordination of this module:</p> <ul style="list-style-type: none"> <li>• 1 x coordinator</li> </ul>	Coordination capacity from within Environment Unit, either through existing resources, additional AMOSC Core Group member, or OSMP Service Providers.	OSMP service provider Resource Monitoring Matrix (provided 6-monthly) Refer to Appendix 5.	<p>Personnel involved in Op5, in addition to the module coordinator, will include: Offshore Project Representative – use of efficacy test kit supplied by AMOSC and provision of results to the IP</p> <p>Offshore Project and vessel representatives to provide air monitoring results via gas monitoring (PGMs or as installed)</p> <p>Hydrocarbon tracking and trajectory modelling from IPs overseeing Ops 1-4</p> <p>Hydrocarbon sampling and monitoring from IPs overseeing Sc2 and 3.</p> <p>Further information in Table 6-1.</p>

## Operational Monitoring Support

Op3	Laboratory Support Services	Access to a NATA accredited analytical laboratory	Accessed via OSMP Service Provider	Arrangements in place with a NATA accredited analytical laboratory via OSMP Service Provider	<p>Amplitude Energy have agreements in place with the Stantec as the OSMP service provider which allows access to subconsultants, such as:</p> <ul style="list-style-type: none"> <li>• Australian Laboratory Services (ALS)</li> <li>• Eurofins</li> <li>• National Measurement Institute (NMI)</li> <li>• Ecotox Service Australia.</li> </ul>
Op3-5	Vessel Support	Vessel(s)/Master(s) – dependent on the initiation triggers	Amplitude Energy has arrangement in place with vessel service providers	As per service provider agreement.	<p>Amplitude Energy maintains an agreement with a Marine Services provider to provide vessels and can be supplied within 24 – 48 hours (weather dependent)</p> <p>OSMP service provider carries the following sub-</p>

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ID	Study	Resource Requirement	Provider	Resource Availability	Comments
					consultants/contracted resources which are available to Amplitude Energy: <ul style="list-style-type: none"><li>• Specialised vessels, crew and divers for sub-tidal habitat monitoring</li></ul>
<b>Op2</b> <b>Op4</b>	Aerial Support	1 x Pilot/Aircraft	Pre-qualification with Helicopter Services and arrangements for fixed wing aircraft.	As per service provider agreement.	Supplier has identified that surplus aircraft are usually available and can be supplied within 24 hours (weather dependent).
		1 x Aerial observer	Trained observers via AMOSC.	Refer to Appendix 5	Available on site – best endeavours eight personnel within three hours and guaranteed terrestrially in 12 hours (AMOSC Service Level Agreement). AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours. AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation.
<b>Op5</b>	Monitoring Equipment	Dispersant Efficacy test kit Surface-based vessel with fluorometer (Sc2) In-situ water quality monitoring equipment (to sample surface and up to 10 m depth) (Sc2). Work class ROV and Crew (24hr) (project equipment) Vessel-based Air Quality hydrocarbon monitoring equipment (project equipment)	AMOSC OSMP Service Provider Project Vessel and ROV provider	As per service provider agreements	Amplitude Energy have agreements in place with relevant service providers



## 12.3.2 Scientific Monitoring (Type II)

Table 12-5 details the resources that may be required to undertake scientific monitoring. The resources will be deployed by the formal request of the OSMP Coordinator in collaboration with the Amplitude Energy IC and any relevant State Agencies. Further details on the resources required for a spill response have been summarised within Appendix 5.

*Table 12-5: Scientific Monitoring (Type II) Response Resource List*

ID	Study	Resource Requirement	Provider	Resource Availability	Comments
Sc1	Ecotoxicology Assessment of Hydrocarbons	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>• 1 x Principal Investigator</li> <li>• 3 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider / AMOSC / AMOSPlan CG	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>• 3 x Principal Investigators</li> <li>• 14 x Monitoring Personnel.</li> </ul> <p>Samples to be sent to a NATA accredited analytical laboratory service provider.</p>	Amplitude Energy have agreements in place with OSMP service provider.
Sc2	Hydrocarbon Monitoring in Marine Waters	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>• 1 x Principal Investigator</li> <li>• 3 x supporting Monitoring Personnel</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>• 3 x Principal Investigators</li> <li>• 14 x Monitoring Personnel.</li> </ul> <p>Samples to be sent to a NATA accredited analytical laboratory service provider.</p>	
Sc3	Hydrocarbon Monitoring in Marine Sediments	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>• 1 x Principal Investigator</li> <li>• 3 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>• 3 x Principal Investigators</li> <li>• 14 x Monitoring Personnel.</li> </ul> <p>Samples to be sent to a NATA accredited analytical laboratory service provider.</p>	
Sc4	Intertidal and Subtidal Habitat Monitoring	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>• 1 x Principal Investigator</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>• 3 x Principal Investigators</li> </ul>	

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ID	Study	Resource Requirement	Provider	Resource Availability	Comments
		<ul style="list-style-type: none"> <li>3 x supporting Monitoring Personnel.</li> </ul>		<ul style="list-style-type: none"> <li>12 x Monitoring Personnel.</li> </ul>	
Sc5	Shorebird and Seabird Population Monitoring	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>1 x Principal Investigator</li> <li>3 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>1 x Principal Investigators</li> <li>6 x Monitoring Personnel.</li> </ul>	<p>Amplitude Energy have agreements in place with OSMP service provider.</p> <p>Access to additional subconsultants via OSMP service provider if required.</p>
Sc6	Marine Megafauna	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>1 x Principal Investigator</li> <li>1 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>2 x Principal Investigators</li> <li>6 x Monitoring Personnel.</li> </ul>	<p>Amplitude Energy have agreements in place with OSMP service provider.</p>
Sc7	Hydrocarbon Monitoring of representative Commercial and recreational Fish Species	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>1 x Principal Investigator</li> <li>3 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>2 x Principal Investigators</li> <li>10 x Monitoring Personnel.</li> </ul> <p>Samples to be sent to a NATA accredited analytical laboratory service provider.</p>	
Sc8	Hind-cast Modelling Impact Assessment	Access to RPS via contract to initiate callout on a 24/7 basis.	RPS	AMOSC contract with RPS for immediate call-out.	<p>AMOSC membership allows access to RPS contract which provides for Oil Spill Model and Response System results to be provided within two hours and Spill Impact Mapping model system results within four hours of activation.</p> <p><i>AMOSC Service Level Statement confirms access to RPS</i></p>

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ID	Study	Resource Requirement	Provider	Resource Availability	Comments
					<i>Trajectory Modelling within 60 minutes</i>
Sc9	Socio-economic Survey Assessment	<p>The monitoring team should initially consist of:</p> <ul style="list-style-type: none"> <li>• 1 x Principal Investigator</li> <li>• 1 x supporting Monitoring Personnel.</li> </ul>	OSMP Service Provider	<p>As per OSMP Service Provider Monitoring Matrix:</p> <ul style="list-style-type: none"> <li>• 2 x Principal Investigators</li> <li>• 3 x Monitoring Personnel.</li> </ul>	Access to additional subconsultants via OSMP Service Provider if required.
<b>Scientific Monitoring equipment</b>					
Sc1	Laboratory Support Services	Access to a NATA accredited analytical laboratory	Accessed via OSMP Service Provider	Arrangements in place with a NATA accredited analytical laboratory (e.g. ALS / Intertek / NMI) via OSMP Service Provider	Amplitude Energy have agreements in place with OSMP service provider which allows access to subconsultants, such as: <ul style="list-style-type: none"> <li>• Australian Laboratory Services (ALS)</li> <li>• Eurofins</li> <li>• National Measurement Institute (NMI)</li> <li>• Ecotox Service Australia</li> </ul>
Sc1-7	Vessel Support	Vessel(s) / Master(s) – dependent on the initiation triggers	Amplitude Energy has arrangement in place with vessel service providers	As per service provider agreement.	Amplitude Energy maintains an agreement with a Marine Services provider to provide vessels and can be supplied within 48 hours.
Sc6	Aerial Support	1 x Pilot/Aircraft	Pre-qualification with Offshore Services Australasia (formerly Warrnambool Babcock).	As per service provider agreement.	Supplier has identified that surplus aircraft are usually available and can be supplied within 24 hours.



ID	Study	Resource Requirement	Provider	Resource Availability	Comments
		1 x Aerial observer	Trained observers via AMOSC.	Refer to Appendix 5 -	<p>Available on site – best endeavours eight personnel within three hours and guaranteed terrestrially in 12 hours (AMOSC Service Level Agreement).</p> <p>AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours.</p> <p>AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation.</p>
Sc4	Specialist Monitoring Equipment	<p>Various equipment depends on monitoring study, such as:</p> <ul style="list-style-type: none"> <li>• video / drop cameras</li> <li>• side-scan sonar (SSS)</li> <li>• Smith McIntyre Grab Sampler</li> <li>• Water Quality Meter (YSI)</li> <li>• water sampling</li> <li>• TRH/PAH bottles</li> <li>• storage equipment</li> <li>• additional ancillaries.</li> </ul>	Accessed via OSMP Service Provider	Stantec has arrangements in place for specialised monitoring equipment	Amplitude Energy have agreements in place with the Stantec as the OSMP provider.

## 12.4 Environmental Risk Assessment (Scientific Monitoring)

An assessment of possible environmental impact and risk associated with scientific monitoring is undertaken as part of the respective OSMP (VIC-ER-EMP-0002).

## 12.5 Environmental Performance Outcomes



The monitoring performance outcomes are provided within the OSMP and provide explicit linkages as to why the monitoring studies are required for the OPEP (i.e., Type I environmental information for response planning and management) and EP (i.e., Type II scientific study to monitor impact to and recovery of environmental sensitivities).

In addition the performance outcomes, standards, and measurement criteria associated with shoreline activities have been addressed in Section 8.0 (Protection and Deflection) and Section 9.0 (Shoreline Assessment and Clean-up).

Table 12-6 provides the performance outcomes, standards and measurement criteria for scientific monitoring that is specific for Amplitude Energy.

*Table 12-6: Scientific Monitoring Performance Outcomes and Standards*

Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
Amplitude Energy maintains capability to support OSMP requirements in a level 2/3 spill event.	OPEP CM44: Service Agreements - OSMP	<p>OPEP EPS44.1: Amplitude Energy maintains the following agreements to maintain OSMP response capabilities:</p> <ul style="list-style-type: none"> <li>OSMP Service Provider to access equipment and personnel necessary to implement the OSMP response commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists.</li> <li>On-going AMOSC membership to access modelling service provider, equipment, and personnel.</li> <li>Operational and scientific monitoring capability will be maintained in accordance with Table 12-2 and Table 12-4 (of this OPEP).</li> <li>Waste management contract.</li> <li>agreement with Vessel provider in Victoria.</li> </ul>	Chief Corporate Services Officer	Contracts / memberships verify currency of membership.



Environmental Performance Outcome	Controls	Environmental Performance standard	Responsible person	Measurement Criteria
		<ul style="list-style-type: none"> <li>Vessel of Opportunity listing.</li> </ul> <p>OPEP EPS44.2: 1 x OSMP Coordinator (accessed via OSMP service provider) to supervise the monitoring operations within 24 hours of call-out.</p>	Amplitude Energy IC	

## 13.0 Demobilisation

There are specific tasks that are required to be undertaken by various response personal on the demobilisation of the response. Some of these are detailed in the sections to follow.

### 13.1 Demobilisation Tasks for the IC

Upon conclusion of the spill activity, the following tasks will be undertaken by the IC (or delegate):

- Advise all relevant contractors and Amplitude Energy personnel.
- Advise all relevant government authorities.
- Prepare detailed reports on the response activities and outcomes and collate all documents for secure storage and/or submission to regulators.
- Undertake an inventory of consumables and prepare accounts.
- Arrange for the return and/or refurbishment of equipment.
- Investigate the cause of the incident and report to relevant authorities.
- Assess environmental monitoring requirements.

### 13.2 Demobilisation Tasks for the Operations Officer

Upon completion of the oil pollution response operation, the Operations Officer (or delegate) will:

- Arrange recovery of all equipment and unused materials.
- Ensure that all equipment is cleaned, to the extent that available facilities allow.
- Ensure that all equipment is returned to the owner by the quickest possible means (having regard to costs).
- Upon its return to the owner, equipment must be thoroughly serviced or replaced in accordance with equipment maintenance schedules prior to being stored.

With regards to marine operations, upon receipt of response termination, the IMT will ensure:



- All equipment is recovered and cleaned.
- All vessels return to their respective berths.
- All personnel are accounted for.
- Equipment is safely offloaded and transported to a site for cleaning or repair.
- All equipment returned is logged.
- All equipment is returned to the correct owner/ location.

For shoreline response activities, the Operations Officer (or delegate) will ensure:

- All equipment is retrieved and stowed away.
- All equipment is retrieved and returned to the relevant location for cleaning and redistribution.
- Any equipment not collected is secured.
- All clean-up team members are transported back to the contractor's base for demobilisation.
- All shorelines are left free of litter or other refuse.

### 13.3 Response Debrief/Critique

The IC will hold a post-spill debriefing for any spill for which a response was activated. De-briefing should address:

- spill causes (if known)
- speed of response activation
- effectiveness of tactics and strategies
- equipment suitability
- health and safety issues (if any)
- communications
- integration of OPEP and procedures with other agencies
- lessons learned for implementation in future responses.



## 14.0 Revision History

Rev	Issue Date	Revision summary	Originator	Reviewer	Approver
0	24/02/17	Updated from AMOSC and DEDJTR EMD Comments	LC	JH	IM
1	15/03/2017	Issued to NOPSEMA and DEDJTR ERR for Acceptance	LC	DC, JH	IM
2	31/05/17	Revised for NOPSEMA RFFWI	LC	JH	IM
3	15/8/17	Revised for terminology changes	JM	RL	IM
4	13/4/2018	Internal review and revision to reflect update to CEMT and incorporate Sole infrastructure	JE	RL	IM
5	12/9/18	Revised to reflect updates to the CEMT and additional input to incorporate Sole infrastructure installation	PR	OGW	IM
6	27/12/18	Revised to incorporate BMG activities	PR	OGW	IM
7	20/01/19	Revision to include Otway Basin exploration drilling	PR	OGW	IM
7a	04/02/19	Issued to NOPSEMA for assessment	PR	OGW	IM
7b	30/04/2019	Updated to address Vic State review comments & minor revisions post-exercise.	PR	OGW	IM
7c	28/06/2019	Update to reflect new response contracts and additional Vic State comments.	OGW	OGW	IM
7d	03/04/2020	Update to Notification contact details and AMOSC activation DoA.	JH	JM	IM
7e	30/08/2021	Annual review and update; inclusion of relevant Vic State Gov Review comments for BMG P&A scope.	JM	JH	MJ
8 (7f)	18/07/2022	Updated figures, references, SCERP details, reconciled facility spill scenarios, added appendix 'systems, forms, templates, tools'. Note Rev 8 and Ref 7f were same version	Xodus Group	JM	MJ
9	31/08/2023	Update includes removal Otway Basin Phase III drilling and reconcile associated source control Performance Standards. Update of Government Contacts for reporting purposes.	Xodus Group	JM	DB
9a	04/01/2024	Draft for internal review. Update includes removal of BMG activities, revision of response strategies, priority protection areas and figures	AES	JM	
10	24/01/2024	Minor updates and re-submission with Operations EP.	AES	JM	
11	30/08/2024	Revised to include Otway Basin exploration drilling.	Xodus Group	JM	DB
12	19/02/2025	Revised to address NOPSEMA RFFWI for ASP EP	Xodus Group and Stantec	JM	OGW
13	10/09/2025	Revised to: • integrate Annie-2 development	Xodus Group	SM / JM	OGW

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Rev	Issue Date	Revision summary	Originator	Reviewer	Approver
		<ul style="list-style-type: none"><li>transfer BMG decommissioning activities from the BMG OPEP into the Vic OPEP.</li></ul> <p>There are no changes to current worst case LOC scenario's, preparedness or response measures. The Annie-2 WC LOC scenario fits within the ASP WC LOC scenario. The BMG WC LOC scenario is the same as the Gippsland Ops EP WC LOC scenario.</p>			



## 15.0 Definitions & Acronyms

Acronym	Definition
<b>AASFA</b>	Agriculture and Animal Services Functional Area
<b>ABARES</b>	Australian Bureau of Agricultural and Resource Economics
<b>ABS</b>	Australian Bureau of Statistics
<b>ADIOS</b>	Automated Data Inquiry for Oil Spills
<b>AFMA</b>	Australian Fisheries Management Authority
<b>AGL</b>	Above Ground Level
<b>ALARP</b>	As low as reasonably practicable
<b>ALS</b>	Australian Laboratory Services
<b>AMOSC</b>	Australian Marine Oil Spill Centre
<b>AMOSPlan</b>	Australian Marine Oil Spill Plan
<b>Amplitude Energy</b>	Amplitude Energy Limited and its subsidiaries
<b>AMSA</b>	Australian Maritime Safety Authority
<b>API</b>	American Petroleum Institute
<b>APPEA</b>	Australian Petroleum Production & Exploration Association (now AEP)
<b>ASAP</b>	As soon as possible
<b>ASX</b>	Australian Securities Exchange
<b>bbl</b>	Barrels
<b>BIA</b>	Biologically Important Areas
<b>BITRE</b>	Bureau of Infrastructure and Transport research Economics
<b>BOM</b>	Bureau of Meteorology
<b>BRUVs</b>	Baited Remote Underwater Video Surveys
<b>BMG</b>	Basket Manta Gummy
<b>CA</b>	Control Agency
<b>CG</b>	Core Group (AMOSC)
<b>CHN</b>	Casino-Henry-Netherby
<b>CMP</b>	Crisis Management Plan
<b>CMT</b>	Crisis Management Team
<b>cP</b>	Centipoise
<b>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water
<b>DEECA</b>	Department of Energy, Environment and Climate Action (Victoria)

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Acronym	Definition
<b>DEW</b>	Department for Environment and Water (South Australia)
<b>DIT</b>	Department for Infrastructure and Transport (South Australia)
<b>DJSIR</b>	Department of Jobs, Skills, Industry and Regions
<b>DNRE</b>	Department of National Resources and Environment (Tasmania)
<b>DoT</b>	Department of Transport (Victoria) (now DTP)
<b>DPI</b>	Department of Primary Industries (New South Wales)
<b>DPIPWE</b>	Department of Primary Industries, Parks, Water and Environment (Tasmania)
<b>DTP</b>	Department of Transport and Planning (Victoria)
<b>EHU</b>	Electro-hydraulic umbilical
<b>EP</b>	Environment Plan
<b>EPA</b>	Environment Protection Authority
<b>EPBC</b>	Environment Protection and Biodiversity Conservation
<b>ERP</b>	Emergency Response Plan
<b>ERR</b>	Earth Resource Regulation
<b>ERT</b>	Emergency Response Team
<b>ESD</b>	Emergency Shutdown
<b>ESI</b>	Environmental Sensitivity Index
<b>FOB</b>	Forward Operating Base
<b>GOR</b>	Gas Oil Ratio
<b>GOWRS</b>	Global Oiled Wildlife Response System
<b>HSE</b>	Health Safety & Environment
<b>IAP</b>	Incident Action Plan
<b>IC</b>	Incident Controller
<b>IMO</b>	International Maritime Organization
<b>IMP</b>	Incident Management Plan
<b>IMT</b>	Incident Management Team
<b>IPs</b>	Implementation Plans
<b>ITOPF</b>	Formerly known as International Tanker Owners Pollution Federation
<b>IUCN</b>	International Union for Conservation of Nature
<b>IWCF</b>	International Well Control Forum
<b>JHA</b>	Job Hazard Analysis

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Acronym	Definition
<b>JSCC</b>	Joint Strategic Coordination Committee
<b>JV</b>	Joint Venture
<b>Km</b>	Kilometre
<b>KSAT</b>	Kongsberg Satellite
<b>LoC</b>	Loss of Containment
<b>LOWC</b>	Loss of well control
<b>m<sup>3</sup></b>	Cubic metres
<b>MEG</b>	Mono-ethylene glycol
<b>MDO</b>	Marine Diesel Oil
<b>mm</b>	Millimetre
<b>MMscf</b>	Million Standard Cubic Feet
<b>MMscfd</b>	Million Standard Cubic Feet per Day
<b>MoC</b>	Management of Change
<b>MODU</b>	Mobile Offshore Drilling Unit
<b>MoU</b>	Memorandum of Understanding
<b>N/A</b>	Not Applicable
<b>NATA</b>	National Association of Testing Authorities
<b>NatPlan</b>	National Plan for Maritime Environmental Emergencies
<b>ND</b>	Nominal Diameter
<b>NEBA</b>	Net Environmental Benefit Assessment
<b>NES</b>	National environmental significance
<b>Nm</b>	Nautical miles
<b>NMI</b>	National Measurement Institute
<b>NNTT</b>	National Native Title Tribunal
<b>NOPSEMA</b>	National Offshore Petroleum Safety and Environmental Management Authority
<b>NOPTA</b>	National Offshore Petroleum Titles Authority
<b>NP</b>	National Park
<b>NRET</b>	National Resources and Environmental (Tasmania) (formerly DPIPWE)
<b>NRT</b>	National Response Team
<b>NSR</b>	Non search and rescue
<b>NSW</b>	New South Wales

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Acronym	Definition
OPEP	Oil Pollution Emergency Plan
OPGGSR	Offshore Petroleum and Greenhouse Gas Storage Regulations
OPGGS(E)R	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations
OSMP	Operational and Scientific Monitoring Plan
OSRA	Oil Spill Response Atlas
OSTM	Oil Spill Trajectory Modelling
OW	Oiled Wildlife
OWR	Oiled Wildlife Response
P&A	Plug and Abandon
PAH	Polycyclic Aromatic Hydrocarbons
PB	Patricia Baleen
PI	Principle investigator
PINP	Phillips Island National Park
POLREP	Marine Pollution Report
PPE	Personal protective equipment
RFFWI	Request For Further Written Information
ROV	Remotely Operated Vehicle
RPS	RPS Environmental Consultancy
RTM	Response time model
SA	South Australia
SCAT	Shoreline Clean-up Assessment Technique
SCERP	Source Control Emergency Response plan
SCME	State Controller Maritime Emergencies
SCT	Source Control Team
SEC	Site Emergency Controller
SIMOPS	Simultaneous Operations
SITREP	Situation Report
SMPEP	Shipboard Marine Pollution Emergency Plan
SPRAT	Species Profiles and Threat Database
SSS	Side Scan Sonar
Tas	Tasmania

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Acronym	Definition
TasPlan	Tasmanian Marine Oil Spill Plan
TRH	Total Recoverable Hydrocarbons
TRP	Tactical Response Plan
VFA	Victoria Fisheries Authority
Vic	Victoria
VMRA	Victorian Marine Pollution Risk Assessment
VoCs	Volatile Organic Compounds
VSCP	Victoria Source Control Plan
WA	Western Australia
WOMP	Well Operations Management Plan
YSI	Yellow Springs Instrument



## 16.0 References

Document code	Title
Internal Documents	
CMS-PB-STD-0002	MS05 – Management Standard Five – External Affairs, Investor Relations, Community and Stakeholder Management
CMS-TS-STD-0001	MS08 – Management Standard Eight – Technical Management
CMS-IM-PCD-0002	Technical Information Management Procedure
CMS-HS-STD-0001	MS09 – Management Standard Nine – Health, Safety and Environment Management
CMS-ER-STD-0001	MS10 – Management Standard Ten - Incident and Crisis Management
CMS-ER-PRO-0002	Incident and Crisis Management Protocol
AEL-ER-ERP-0001	Amplitude Energy Incident Management Plan
AEL-ER-ERP-0003	Amplitude Energy Crisis Management Plan
VIC-DC-ERP-0001	Source Control Emergency Response Plan Offshore Victoria (and asset specific sub-plans)
VIC-ER-EMP-0002	Offshore Victoria Operational & Scientific Monitoring Plan
CHN-EN-EMP-0001	Otway Operations (Casino Henry Netherby) Environment Plan
VOB-EN-EMP-0006	Athena Supply Project Environment Plan (exploration drilling)
VOB-EN-EMP-0007	Annie-2 Development Well Environment Plan (development drilling)
VIC-EN-EMP-0002	Gippsland Offshore Operations Environment Plan
BMG-DC-EMP-0002	BMG Closure Project (Phase 2) EP
AEL-EN-EMP-0001	Description of the Environment
CHN-HS-SMP-0001	Casino Henry Netherby Pipeline Safety Case
SOL-HS-SMP-0007	Sole Pipeline Safety Case
PBN-HS-SMP-0001	Patricia BALEEN Pipeline Safety Case
CHN-DC-WMP-0001	Casino Henry Netherby Well Operations Management Plan
SOL-DC-WMP-0001	Sole Well Operations Management Plan
PBN-DC-WMP-0001	Patricia BALEEN Well Operations Management Plan
<b>Joint Industry / AMOSC Tactical Response Plans: Tactical Response Plans</b>	
Modelling Reports – all offshore facilities: <a href="#">Modelling</a>	
Oil Profiles – all offshore facilities: <a href="#">Oil Profiles - ADIOS</a>	
<b>External Documents</b>	
<b>Plans</b>	
AMOSPlan (2025): <a href="https://amosc.com.au/amosplan/">https://amosc.com.au/amosplan/</a>	
Australian National Plan for Maritime Environmental Emergencies (NatPlan). AMSA. (2020): <a href="https://www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies">https://www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies</a>	
New South Wales (NSW) Coastal Waters Marine Pollution Plan (NSW Government 2022): <a href="https://www.nsw.gov.au/sites/default/files/2022-11/Coastal%20Waters%20Marine%20Pollution%20Plan%20-%20Endorsed.pdf">https://www.nsw.gov.au/sites/default/files/2022-11/Coastal%20Waters%20Marine%20Pollution%20Plan%20-%20Endorsed.pdf</a>	

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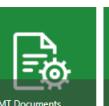
Document code	Title
	New South Wales (NSW) Marine Estate Threat and Risk Assessment Report Final Report <b>(2017)</b> : <a href="https://www.marine.nsw.gov.au/marine-estate-programs/threat-and-risk-assessment">https://www.marine.nsw.gov.au/marine-estate-programs/threat-and-risk-assessment</a>
	Victorian Joint Industry and State Oil Pollution Responses Guidance Notes <b>(2025)</b>
	Victorian Maritime Emergencies (non-search and rescue [NSR]) Plan <b>(2024)</b> : <a href="https://www.emv.vic.gov.au/responsibilities/semp-sub-plans/semp-maritime-emergencies-non-search-and-rescue-sub-plan">https://www.emv.vic.gov.au/responsibilities/semp-sub-plans/semp-maritime-emergencies-non-search-and-rescue-sub-plan</a>
	Victorian Marine Pollution Risk Assessment (VMR) (DoT 2011)
	Department of Biodiversity, Conservation and Attractions. Department of Transport. <b>(2022)</b> . WA Oiled Wildlife Response Plan for Maritime Environmental Emergencies. Revision 4. <a href="https://www.dbca.wa.gov.au/wildlife-and-ecosystems/marine/marine-wildlife-response-oiled-wildlife-response">https://www.dbca.wa.gov.au/wildlife-and-ecosystems/marine/marine-wildlife-response-oiled-wildlife-response</a>
	Tasmanian Marine Oil and Chemical Spill Contingency Plan (TasPlan) <b>(2022)</b> : <a href="https://epa.tas.gov.au/about-the-epa/policy-legislation-cooperative-arrangements/cooperative-arrangements/marine-oil-and-chemical-spills/tasmanian-marine-oil-spill-contingency-plan-(tasplan)">https://epa.tas.gov.au/about-the-epa/policy-legislation-cooperative-arrangements/cooperative-arrangements/marine-oil-and-chemical-spills/tasmanian-marine-oil-spill-contingency-plan-(tasplan)</a>
	Tasmanian Oiled Wildlife Response Plan (WildPlan) <b>(2006)</b> : <a href="https://epa.tas.gov.au/about-the-epa/policy-legislation-cooperative-arrangements/cooperative-arrangements/marine-oil-and-chemical-spills/tasmanian-marine-oil-spill-contingency-plan-(tasplan)">https://epa.tas.gov.au/about-the-epa/policy-legislation-cooperative-arrangements/cooperative-arrangements/marine-oil-and-chemical-spills/tasmanian-marine-oil-spill-contingency-plan-(tasplan)</a>
	South Australian Marine Spill Contingency Action Plan (SAMSCAP) <b>(2022)</b> . <a href="https://www.sa.gov.au/_data/assets/pdf_file/0005/886271/South-Australian-Marine-Spill-Contingency-Action-Plan-SAMSCAP-November-2022.pdf">https://www.sa.gov.au/_data/assets/pdf_file/0005/886271/South-Australian-Marine-Spill-Contingency-Action-Plan-SAMSCAP-November-2022.pdf</a>

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## Appendix 1 - Systems, Forms, Templates and Tools

Systems / Forms / Templates					
Amplitude Energy IMT Response System					
Includes: Incident Status Boards, External Reporting Forms, Planning Templates					
					
					
					
					
Conversation Log					
<a href="#">Create Conversation</a> <a href="#">Create Task</a>					
Refresh Page					
Tools					
Weather and Tides <a href="http://www.bom.gov.au/">http://www.bom.gov.au/</a> / <a href="https://www.windy.com">https://www.windy.com</a>					
Trajectory/velocity calculator, Oil Volume estimator, marine travel calculator: <a href="#">Spill Response Tools</a>					
Oil Spill Tracking Buoy online tracking access: <a href="#">Oil Spill Tracking Buoy</a>					
Victoria CoastKit – A tool developed by DEECA to provide an online data repository for the community to explore and use Victoria's marine and coastal information: <a href="https://mapshare.vic.gov.au/coastkit/">https://mapshare.vic.gov.au/coastkit/</a>					
Victoria EstuaryWatch. A citizen science program that supports the monitoring and recording of estuary health: <a href="http://www.estuarywatch.org.au/">http://www.estuarywatch.org.au/</a>					
Tasmania LISTmap – Hosted by the Tasmanian government. Listmap is publicly accessible, searchable geospatial tool providing access to a wide range of information including oil spill sensitivity layers, shoreline types, species presence and seasonal sensitivity: <a href="https://maps.thelist.tas.gov.au/listmap/app/list/map">https://maps.thelist.tas.gov.au/listmap/app/list/map</a>					
Oil Spill Response Atlas (OSRA) – GIS based system which compiles relevant Australian geographic information for oil spill response management: <a href="#">Oil Spill Response Atlas (OSRA).pdf</a>					
Response Planning Map Layers: <a href="#">Oil Spill Response Map Layers</a>					
Login to Perth IMT or Adelaide IMT to use the Response Map					



## Appendix 2 - Net Environmental Benefit Assessment (NEBA) Template

The NEBA template is available on Amplitude Energy IMT Response System

### Purpose

NEBA is a simple tool intended to rapidly assess the risks posed by an oil spill to a specific location as well as facilitate and simultaneously document the decision-making process to most effectively deploy resources and minimise environmental impacts. This provides evidence to justify priority setting and response option selection.

Impacts are ranked from slight - severe and recovery time is considered from slow – rapid using an assessment (below). Protection priority of resources is ranked numerically. This includes the assessment of whether the sensitivity (impact) ranking of various spill response options would increase, decrease or remain the same when compared with no action (natural recovery i.e. monitor and evaluate).

This process should be conducted by the IMT Planning Officer (or delegate) in consultation with appropriately qualified experts from AMOSC, relevant Control Agency (if applicable), the relevant State agency and other agencies (as required). Resources required include the respective asset Environment Plans, this OPEP, OSRA maps, OSTM/vectors for the spill event and marine charts. Local knowledge of the resources at stake is highly desirable to inform the assessment.

### Instructions

1. Identify which of the sensitive resources occur in the affected area and list details. Resources are grouped into 3 categories (water surface, shoreline, water column) and may have biological/ecological (emphasis), economic or social/cultural significance. Use OSTM in conjunction with an OSRA or Maritime Incident Geospatial Support map of the projected impact area.
2. Rank sensitivity (Low/Medium/High) using the Resource Oil Sensitivity Matrix (below) to give a qualitative measure of likely impact if no response actions are taken (Natural Recovery i.e. Monitor and Evaluate). Sensitivity can be assessed by selecting a potential impact rank (Slight/Minor/Major/Severe) and recovery time (>10 years/5-10 years/2-5 years/<1 year). For particular shoreline types, use the Environmental Sensitivity Index (ESI) rankings in (below) (shoreline types) as a guide. Record this information for each resource in the NEBA.
3. Assign priority protection numbers (1-n) for each resource based upon sensitivity rankings assuming no response actions are taken (Natural Recovery i.e., Monitor and Evaluate). Highest priority resources should be assigned '1' – n is lowest priority. Resources may be ranked equally. Record this information for each resource in Table A4-1.
4. Assess whether the sensitivity (impact) ranking would increase () or decrease () or remain the same () for each of the 3 remaining response strategies (Dispersant Application, Offshore Containment and Recovery, Protection and Deflection & Shoreline Clean-up). The Oiled Wildlife Response Strategy is adopted for all level 2/3 spills.
5. Select which overall response strategy (Natural Recovery i.e., Monitor and Evaluate, Dispersant Application, Offshore Containment and Recovery, Protection and Deflection and Shoreline Clean-up) would reduce or increase the sensitivity (impact) ranking for the highest priority shorelines/resources for protection. I.e., what response option provides net environmental benefit.

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		RECOVERY TIME			
		SLOW		RAPID	
		<10 years	5 – 10 years	2 – 5 years	< 1 year
Potential Impact Rank	Severe	A	High 1A	High 2A	High 3A
	Major	B	High 1B	High 2B	Medium 3B
	Minor	C	High 1C	Medium 2C	Medium 3C
	Slight	D	Medium 1D	Low 2C	Low 3D

	ESI	High	ESI	Medium	ESI	Low
Shoreline Types	9	Sheltered tidal flats	5	Mixed sand and gravel beaches	1	Exposed Rocky Shores
	10	Salt marshes and mangroves	6	Gravel beaches	2	Exposed Wave-Cut Platform
			7	Exposed tidal flats	3	Fine-medium grain sand beaches
			8	Sheltered rocky-rubble coasts	4	Coarse grain sand beaches

Resource sensitivity assessment matrix and shoreline type sensitivity ranks

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## Net Environmental Benefit Analysis - Environmental Effects of Response Options Risk Analysis Matrix

Receptor Type	Sensitivity (adjust as required)	Protection Priority Ranking (Insert Locations)			Expected impact under each scenario (adjust as required)						
		Priority site 1	Priority site 2	Priority site 3	Source control	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/ Clean-up	Oiled Wildlife
<b>Significant marine ecology</b>											
Cetaceans (whales, dolphins)	S1				⬆	-	NA	⬆	NA	NA	NA
Seabirds (feeding, roosting, nesting)	S1				⬆	-	NA	⬆	NA	NA	⬆
Shorebirds (feeding, roosting, nesting)	S1				⬆	-	NA	⬆	NA	NA	⬆
Pinnipeds (seals, sea lions)	S2				⬆	-	NA	⬆	NA	NA	NA
Turtles	S2				⬆	-	NA	⬆	NA	NA	⬆
Fish and Sharks (including spawning/nursery areas)	S2				⬆	-	NA	⬆	NA	NA	NA
Marine Invertebrates (sponges, molluscs, crustaceans, etc.)	S3				⬆	-	NA	⬆	NA	NA	NA
Abalone	S3				⬆	-	NA	⬆	NA	NA	NA
<b>Significant coastal habitats</b>											
Saltmarshes	S1				⬆	-	NA	⬆	⬆	⬇	NA
Mangroves	S1				⬆	-	NA	⬆	⬆	⬇	NA
Mudflats	S1				⬆	-	NA	⬆	⬆	⬇	NA
Seagrass	S1				⬆	-	NA	⬆	⬆	⬇	NA
Estuaries / wetlands	S1				⬆	-	NA	⬆	⬆	⬇	NA



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Receptor Type	Sensitivity (adjust as required)	Protection Priority Ranking (Insert Locations)			Expected impact under each scenario (adjust as required)						
		Priority site 1	Priority site 2	Priority site 3	Source control	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/Clean-up	Oiled Wildlife
Kelp habitats (inter-tidal)	S2				⬆	-	NA	⬆	NA	NA	NA
Littoral Rainforest / Coastal Vine Thickets	S3				⬆	-	NA	⬆	⬆	⬇	NA
Intertidal rocky flat/headland	S3				⬆	-	NA	⬆	NA	⬆	NA
Sub-tidal reef	S3				⬆	-	NA	⬆	NA	NA	NA
Sand beaches	S3				⬆	-	NA	⬆	NA	⬆	NA
<b>Significant coastal ecology</b>											
Pinniped haul-out sites	S2				⬆	-	NA	⬆	NA	NA	⬆
Penguin colonies	S2				⬆	-	NA	⬆	NA	NA	⬆
Protected area - Marine Parks or Sanctuaries	S2				⬆	-	NA	⬆	NA	NA	⬆
<b>Significant Socio-economic</b>											
Tourism	S2				⬆	-	NA	⬆	⬆	⬆	NA
Commercial Fisheries / Aquaculture	S2				⬆	-	NA	⬆	NA	⬆	NA
Cultural Heritage sites	S2				⬆	-	NA	⬆	⬆	⬆	NA
Amenity beaches	S3				⬆	-	NA	⬆	⬆	⬆	NA
Ports, Harbours, Yacht Clubs, Marinas	S3				⬆	-	NA	⬆	⬆	⬆	NA
Shipwrecks (submerged)	S3				⬆	-	NA	⬆	NA	NA	NA



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Receptor Type	Sensitivity (adjust as required)	Protection Priority Ranking (Insert Locations)			Expected impact under each scenario (adjust as required)						
		Priority site 1	Priority site 2	Priority site 3	Source control	Monitor and Evaluate	Chemical Dispersant	Offshore Containment and Recovery	Protect & Deflect	Shoreline Assessment/ Clean-up	Oiled Wildlife
Recreational fishing / diving	S3				⬆	-	NA	⬆	NA	⬇	NA
Approvals											
Approved By:			Signature:				Company / Agency:				
Position in IMT:			Contact Number:				Email:				



## Appendix 3 - Amplitude Energy Oil Spill Team Duty Cards

Amplitude Energy Oil Spill IMT Lead Roles:

- IC
- Operations Officer
- Planning Officer
- Finance Officer
- Logistics Officer

Each of these Roles has an IMT duty card (AEL-ER-GDE-0005) which is maintained on the [Amplitude Energy IMT Sharepoint](#) site and within IMT Rooms.



## Appendix 4 - SCAT Execution

To undertake the assessment, the shoreline predicted to be contacted will be divided into segments within which the shoreline character is relatively homogenous in terms of physical features and sediment type. Methods adopted to describe State shoreline segments have been derived based on relevant State Agency processes; namely the Victorian Marine Pollution Risk Assessment (VMRA) (DoT 2011) for Gippsland Basin and the NSW Marine Threat and Risk Assessment (TARA) (BMT WBM 2017) for New South Wales coastline. There is no specific shoreline clean-up process for Tasmania, therefore any response would follow the process described in the Tasmanian Marine Oil Spill Contingency Plan.

Once the SCAT is onsite, the following tasks will be conducted:

- 1. Undertake a Job Hazard Analysis with the team to identify hazards and put controls in place where possible.
- 2. Conduct a segment overview or full site walk over to gain the overall perspective of the survey area and verify the pre-determined segment boundaries are correct.
- 3. Complete observations and measurements of the segment.

The following shoreline characteristics should be documented during the baseline assessment:

- Shoreline description including shoreline type (beach, cliff, reef, dune etc.), substrate (bedrock, boulder, pebble, gravel, sand etc.) and energy (high or low).
- Biological character of the shoreline – flora and fauna inhabiting the shoreline.
- In addition, the following information about the site under assessment should be documented:
  - Site access (e.g., road or track access).
  - Site hazards and constraints (e.g., steep cliffs, slippery rocks).
  - Sensitive areas (e.g., bird nesting areas).
  - Features and landmarks (natural or man-made)
  - Potential decontamination and waste storage areas.
- 4. Take photos and videos wherever possible.
- 5. Annotate or draw maps and beach profiles.
- 6. Fill in Shoreline Assessment Form.

The Shoreline Assessment form as contained in the OSMP Module Op4B – Coastal Shoreline Assessment (Gippsland) will be used to record the shoreline assessment results. The assessment will be communicated to the IMT and used to inform the NEBA to determine whether the implementation of shoreline clean-up activities will be of net benefit. The daily NEBA outcome will be used to inform the IAP.

### Post Exposure Shoreline Assessment



In the event that oil reaches the shoreline, the SCAT will undertake a post exposure assessment. This includes recording the following description of the oiling:

- oil character (colour, viscosity, stickiness)
- percentage oil cover and position
- oil thickness and depth.

The SCAT must immediately notify the Amplitude Energy Operations Officer of any observed, or at-risk oiled wildlife, to inform the potential Oiled Wildlife Response if required.

In the event a shoreline clean-up response is activated, the SCAT must be undertaken twice daily to document the effectiveness of the clean-up response measures implemented. This information will be provided to the Amplitude Energy Operations Officer.

## Appendix 5 - Response Resources Needs Assessment

### Peak Response Needs

Amplitude Energy's IMT structure is designed to be scalable to meet the particular requirements of any credible spill scenario associated with Amplitude Energy's offshore Victorian assets and activities.

Analysis of personnel requirements vs the resource pool accessible via agreement in place during the activity indicates a sufficient level of trained and competent people.

### Needs Assessment Process

As part of the planning process for the Amplitude Energy's Athena Gas Supply Project, Amplitude Energy and AMOSC undertook a needs analysis, with a focus on the Incident Management Team (IMT), Forward Operating Base (FOB) and Field Team capacity and capability required to respond to a worst-case discharge scenario from the relevant Project well locations. The response assessment is based on modelling for the Annie-2 well, for the same rationale the Annie-2 well was selected as a proxy for oil spill modelling for the ASP well (Section 11.8.3 of the EP), notably Annie-2 is closer to shore, and has a higher persistent fraction compared to the expected characteristics of the ASP wells. To account for potential future variability in reservoir volumes, the Annie 2 LOWC volumes ashore were increased by 25%, which translates to a more conservative estimate of resources required to respond to the scenario.

Figure A5-1 shows the process used by Amplitude Energy and AMOSC to determine response needs. Against these needs, resource pools are assigned from Amplitude Energy and response parties.

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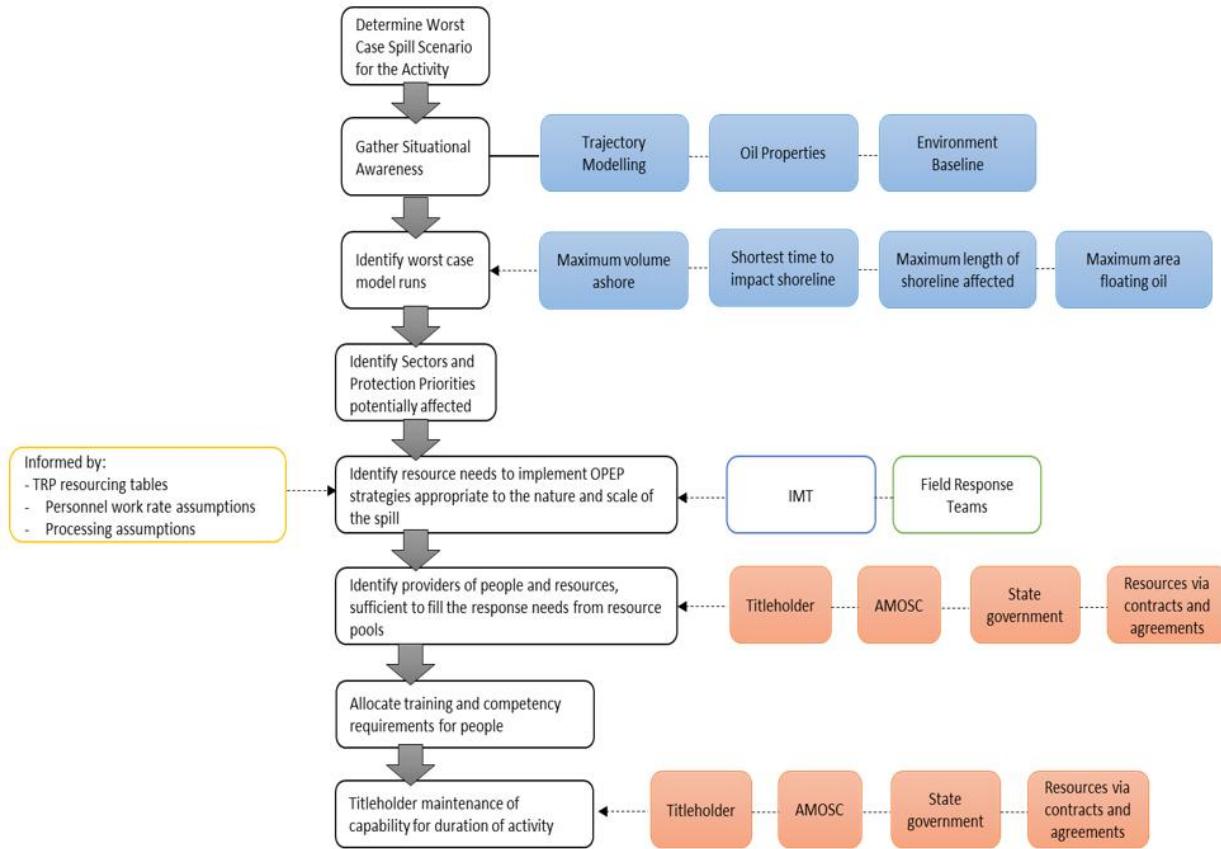


Figure A5-1: Response Resource Assessment Process

## Overview of oil ashore from modelling with ramp up of IMT and field resources.

Modelling indicates oil above the cleanup action threshold of 100g/m<sup>2</sup> begins to accumulate after 20-days with a slow build up, up to a rate of ~1m<sup>3</sup>/day over the following 60-days.

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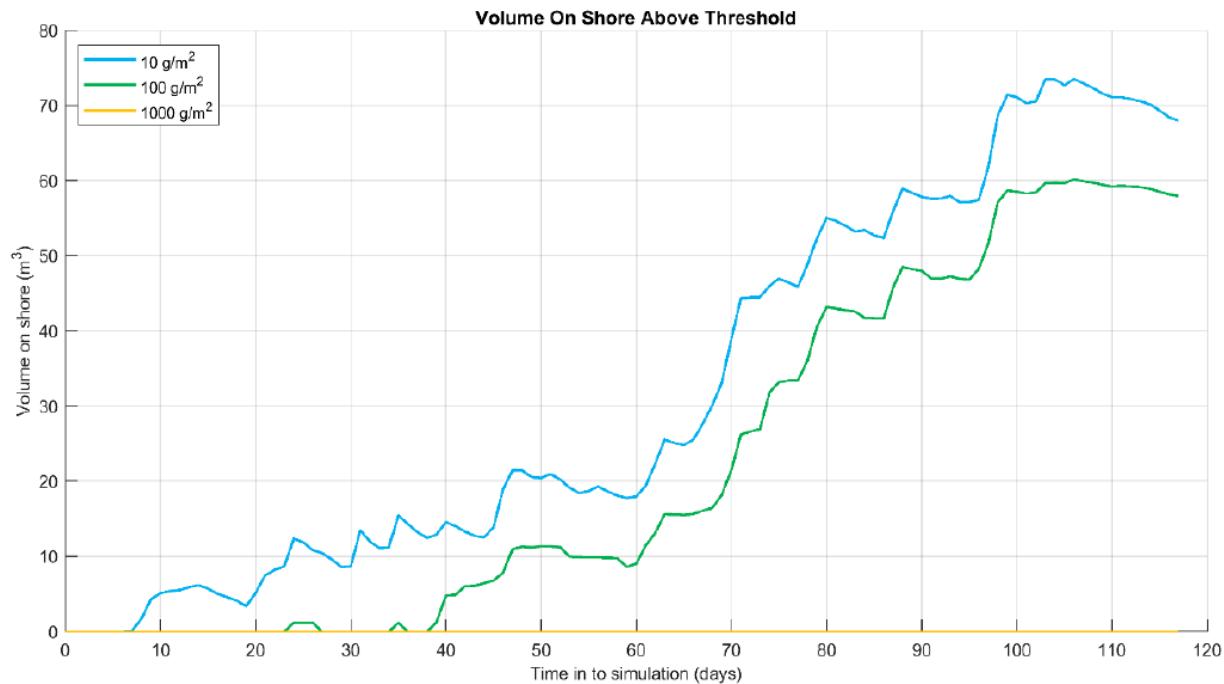


Figure A5-2: Oil Ashore over the course of a protracted LOWC from ASP subsea well during drilling.

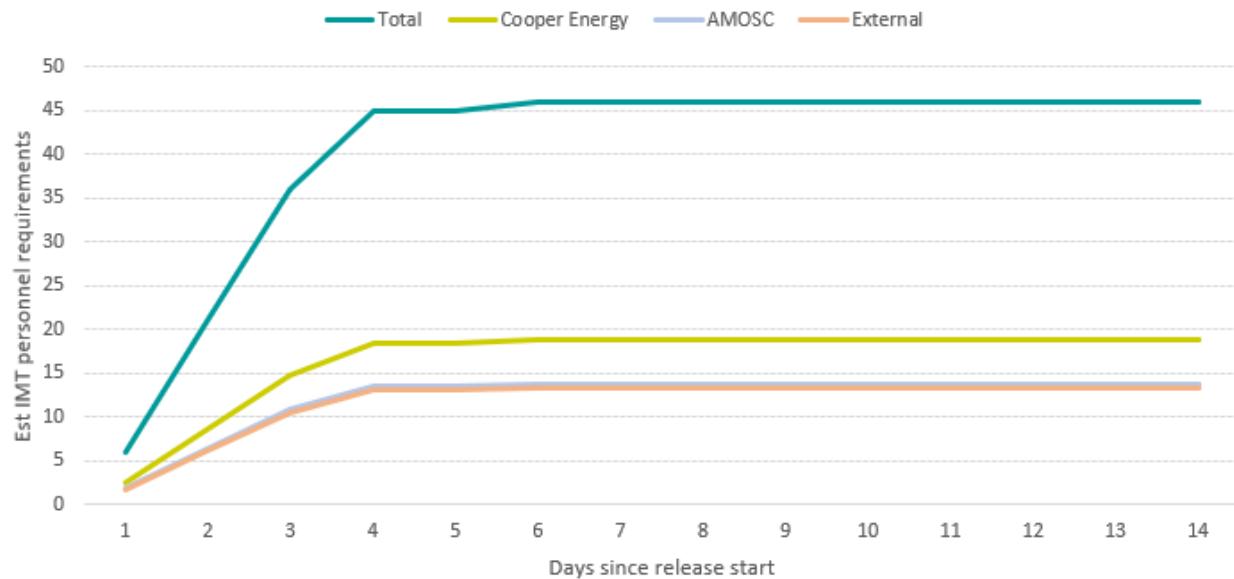
The response resourcing estimate shows a quick ramp up of IMT and field resources, peaking and reaching plateau at 2-weeks into the incident.

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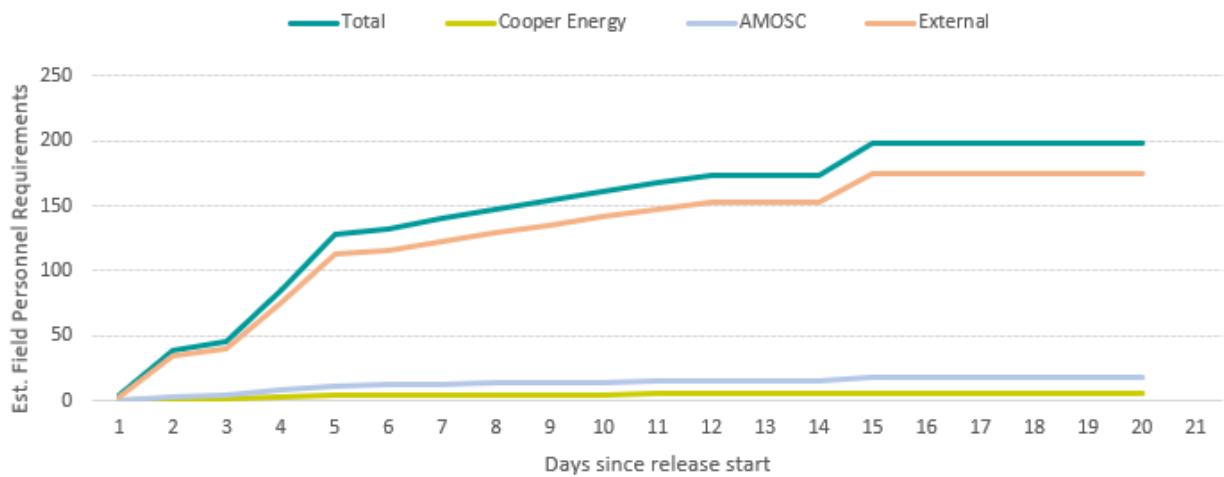


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## 24hr IMT Personnel Estimate



## Field Team Personnel Estimate



*\*These figures do not include source control team members; these are determined in the SCERP and described below in Table A5-3.*

Figure A5-3: IMT and Field Spill Response Team ramp-up with time.

### OPEP Pre-determined Peak Capacity

Given the hydrocarbon properties (Type II oil) and the potential for weathering, the primary field options are:

- Source control

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- Monitor and evaluate.

Secondary measures were also considered and include:

- Protect and deflect
- Shoreline clean up
- Oiled wildlife response.

Further information on each of these response strategies is provided in the OPEP. Table A5-1 provides a summary of the strategy, tactics and peak field resourcing requirements for a worst-case scenario response. Table A5-2 provides a detailed resourcing estimates for the entire IMT, FOB and Field Team Lead and Coordinator roles, including resource pool sizes, personnel numbers by shift/team and where those persons would be sourced from.

*Table A5-1: Peak Field Resourcing Requirements*

Strategy	Tactics	Peak Capacity Description / Amount	Provider	Time to initiate	Approx. Peak resourcing
IMT	Incident Control	IMT Teams working roster	Refer to Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements	Immediate	Refer to Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements Peak / plateau day 4
Source Control	Survey, Intervention, Debris Clearance, Dispersant Application, Relief Well Drilling and Well Kill	Elements of all source control responses active simultaneously	Refer to Table A5-3:	Refer to SCERP response time models	Refer to Table A5-3: Peak around relief well MODU arrival
Establish FOB	Aerial Observation, Marine Response, Shoreline Response	FOB Teams working Roster	Refer to Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements.	Immediate	Refer to Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements Peak / plateau day 4.
<b>Field Response Teams</b>					

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Strategy	Tactics	Peak Capacity Description / Amount	Provider	Time to initiate	Approx. Peak resourcing
<b>Monitor and Evaluate</b>	Overflights of the spill / search area	2 x daily overflights of the spill / search area	Aerial observers – AMOSC Aircraft – Third party arranged by Amplitude Energy.	Immediate	Daily
<b>Shoreline Protection and Deflection</b>	Shoreline sensitivity protection & deflection boomer, recovery operations	2 x protection & deflection strikes teams (initial establishment of TRP). The need and extent of the booms required will be dependent on the status of each of the TRP sensitivities.	OSPR crew – AMOSC CG, labour hire OSPR shoreline equipment – AMOSC / CG, Labour hire arranged by Amplitude Energy and NRT as available. Small vessels – third-party arranged by Amplitude Energy Overseen / directed by the relevant State jurisdiction.	Ongoing consideration over the duration of the spill of the need for initiation of the TRP dependent on the state of the sensitivity (i.e. whether an estuary is open).	22 personnel Week 1
<b>Shoreline Clean-up</b>	Shoreline Clean-up Assessment Technique (SCAT) field survey teams	2 x 6 person SCAT (data collection) teams (including 1 x wildlife SME and 1 x cultural SME).	Scat teams – AMOSC CG – overseen/directed by relevant State jurisdiction.	Ongoing consideration	12 personnel Week 1
	Shoreline Clean-up (shoreline type specific)	6 x shoreline clean-up teams across the identified oiled sectors (teams reflective of specific sector oiling)	Shoreline Clean up – Directed by AMOSC, bulk labour hire via third party arranged by Amplitude Energy (under control of State Jurisdiction).	Ongoing consideration	104 personnel Week 2+
<b>Oiled Wildlife Response</b>	Reconnaissance, deterrence or displacement strategies, staging, recovery, cleaning and rehabilitation.	2 x wildlife coordinators managing operations up to 50 x OW responders. 5 additional SME roles.	Directed by the relevant State jurisdiction. Resourcing from AMOSC / CG and AMOSC agreements with OWL facilities, labour hire arranged by Amplitude Energy, and NRT as available.	Dependent of wildlife encounter	57 personnel Week 2+
<b>Operational (Type I) and</b>	Including, but not limited to:	1 x OSMP Coordinator	Operational and Scientific Monitoring	Refer to sampling plans	Refer to Table A5-2: IMT,

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Strategy	Tactics	Peak Capacity Description / Amount	Provider	Time to initiate	Approx. Peak resourcing
<b>Scientific Monitoring (Type II)</b>	Operational forecast modelling, hydrocarbon spill surveillance and weathering, shoreline assessment, ecotoxicology assessment, hydrocarbon monitoring, benthic, bird surveys, marine megafauna, and hindcast modelling.	3-6 x OSMP response support personnel (dependent on the initiation triggers of each sampling plan).	directed by OSMP service provider arranged by Amplitude Energy.	within the OSMP and individual Implementation Plans (IPs).	FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements. OSMP Service Provider issues personnel availability matrix to Amplitude Energy every 6-months.

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Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements

IMT Functional Role	Resource Requirements				Resource Pool					
	Team 1	Team 2	Night Shift	Total Persons	Cooper Energy	AMOSC & Core Group	OSMP Contractor	Waste Management	Agency / Consultancy	Total Available
Incident Controller	1	1	1	3	3	3				6
Deputy IC	1	1		2	1	1				2
Health & Safety Officer	1	1		2	1				1	2
Liaison Officers (external / government)	2	2		6	4				2	6
<b>Planning Section Lead</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>				<b>6</b>
Documentation Lead	1	1		2	1				1	2
Environment Unit Lead	1	1		2	2					2
Trajectory Forecasting Lead	1	1		2		2				2
GIS Lead	1	1		2			2		2	4
Cultural SME	1	1		2					2	2
Response Programme Manager	1	1		2		2				2
OSMP Coordinator	1	1		2			2			2
<b>Operation Section Lead</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>3</b>				<b>5</b>
Air Operations Manager	1	1		2		2				2
Marine Operations Manager	1	1		2		2				2
Shoreline Clean-up Commander	1	1		2		2				2
Resource Protect Division Commander	1	1		2		2				2
Oiled Wildlife Division Lead	1	1		2		2				2
Waste Management Coordinator	1	1		2		2				2
<b>Logistics Section Lead</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>				<b>6</b>
Support Branch Coordinator (Facilities / Equipment)	1	1		2					2	2
Service Branch Coordinator (Comms, IT, Medical, Food)	1	1		2					2	2
<b>Finance and Administration Lead</b>	<b>1</b>	<b>1</b>		2	2	2				4
Procurement Coordinator	1	1		2					2	2
Compensation Coordinator	1	1		2					2	2
Administration and Records	1	1		2					2	2
<b>FOB Lead</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>				<b>3</b>
Deputy FOB Lead	1	1	1	3	1	2				3
Safety Officer	1	1		2					2	2
<b>Arial Base FOB Lead</b>	<b>1</b>	<b>1</b>		2		2				2
Aerial Observer – Spill monitoring	1	1		2		2				2
<b>Shoreline Operations Manager</b>	<b>1</b>	<b>1</b>		2		2				2
SCAT Team Leads	2	2		4		6				6
Cultural SMEs	1	1		2					2	2
Wildlife SME	1	1		2					2	2
TRP Team Leads	2	2		4		6				6
Waste Management Coordinator	1	1		2				2		2
Oiled Wildlife Coordinators	1	1		2		2				2
Reconnaissance Manager	1	1		2		2				2
Rescue and Transport Manager	1	1		2		2				2
Staging and Holding Manager	1	1		2		2				2
Rehabilitation Manager	1	1		2		2				2
<b>Resource Need</b>			Total	98			<b>Resource Pool</b>		Total	117

Notes: The assessment considers teams working a roster to provide relief in the event of a protracted response.

\*Denotes National Response Team and State Government resources (under State and National Plan arrangements) have not been factored into this table, though are likely to provide resources where they are the designated Control Agency, or where support is requested under National Plan Response Arrangements.

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## SCERP Pre-determined Peak Capacity

The source control response options for the assets and activities in offshore Victorian waters are:

- Survey, Debris Clearance, and Intervention
- Dispersant Application
- Relief well drilling.

Further information on each of these response strategies is provided in Section 6.

Table A5-3: provides a summary of the peak resources required to fill leadership roles for the source control team, during a worst-case scenario source control response. A detailed resourcing plan for the source control team is prepared as part of the project's SCERP.

*Table A5-3: Peak Resourcing Requirements (Source Control Leads)*

Source Control IMT Lead Roles	Resources Required			Resource Pool					
	Team 1 (Pax / 24hr)	Team 2 (Pax / 24hr)	Total	Amplitude Energy	Well Control Services	Subsea Engineering	Well Construction Engineering	Survey Services	Total Sourced
Source Control Team Lead	2	2	4	4					4
Well Intervention Team Lead	1	1	2	2					2
Site Survey Team Lead	2	2	4					4	4
BOP Intervention Team Lead	2	2	4	2			2		4
Subsea Dispersants Team Lead	2	2	4			4			4
Debris Clearance Team Lead	2	2	4	2	2				4
SIMOPS Team Lead	2	2	4	4					4
Well Capping Team Lead	2	2	4		4				4
Relief Well Team Lead	2	2	4	4					4
Well Kill Team Lead	2	2	4		4	4			4
Logistics Team Lead	2	2	4	4					4
Resource Need		Total:	42						
Resources Sourced								Total:	42