# Offshore Victoria Oil Pollution Emergency Plan

Victoria | ER | EMP

**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, Otway Exploration Drilling

Gippsland Subsea Facilities: Patricia Baleen, Sole

| Role | Job Title | Signature | Document Control |
|---|---|---|---|
| **Document Originator:** | Environment Consultant | Digitally signed by Joe Morris Date: 2025.02.21 14:37:30 +08'00' | **Doc No.VIC-ER-EMP-0001** |
| **Document Reviewer:** | Environment Advisor | | **Rev: 12** |
| **Document Approver:** | Manager Environment & Sustainability | | **Rev Date: February 2025** |

# Health, Safety and Environment Policy

AEMS | Health & Safety | 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 Cooper Energy's Limited (Cooper Energy) assets and activities in offshore Victorian waters.

The OPEP consolidates Cooper Energy's response to all spill risks across the Patricia-Baleen (PB) and Sole) (Figure 1-1) and Otway (Casino, Netherby and Henry (CHN), and Otway exploration) (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) 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).

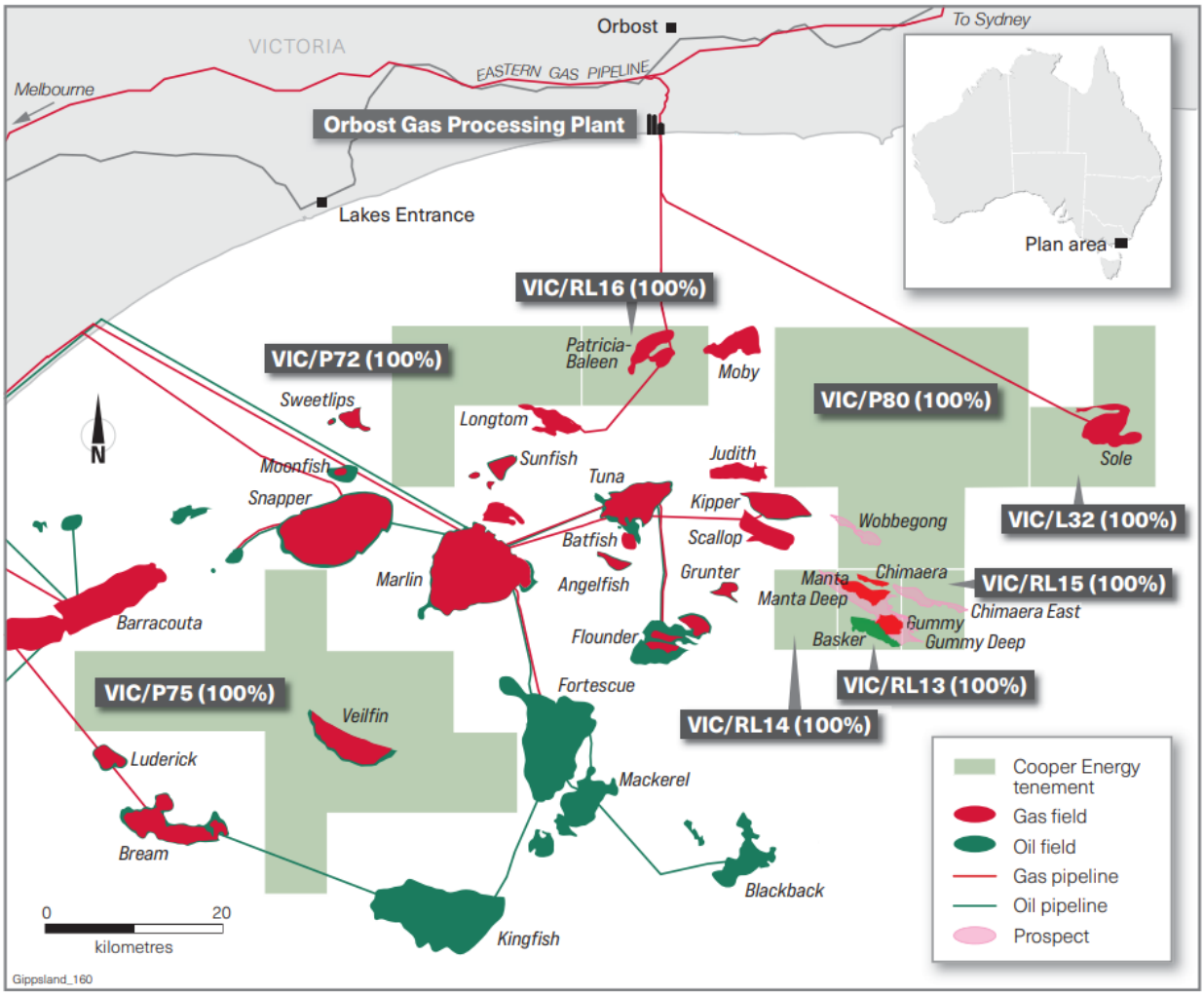



*Figure 1-1: Cooper Energy Offshore Gippsland Assets*

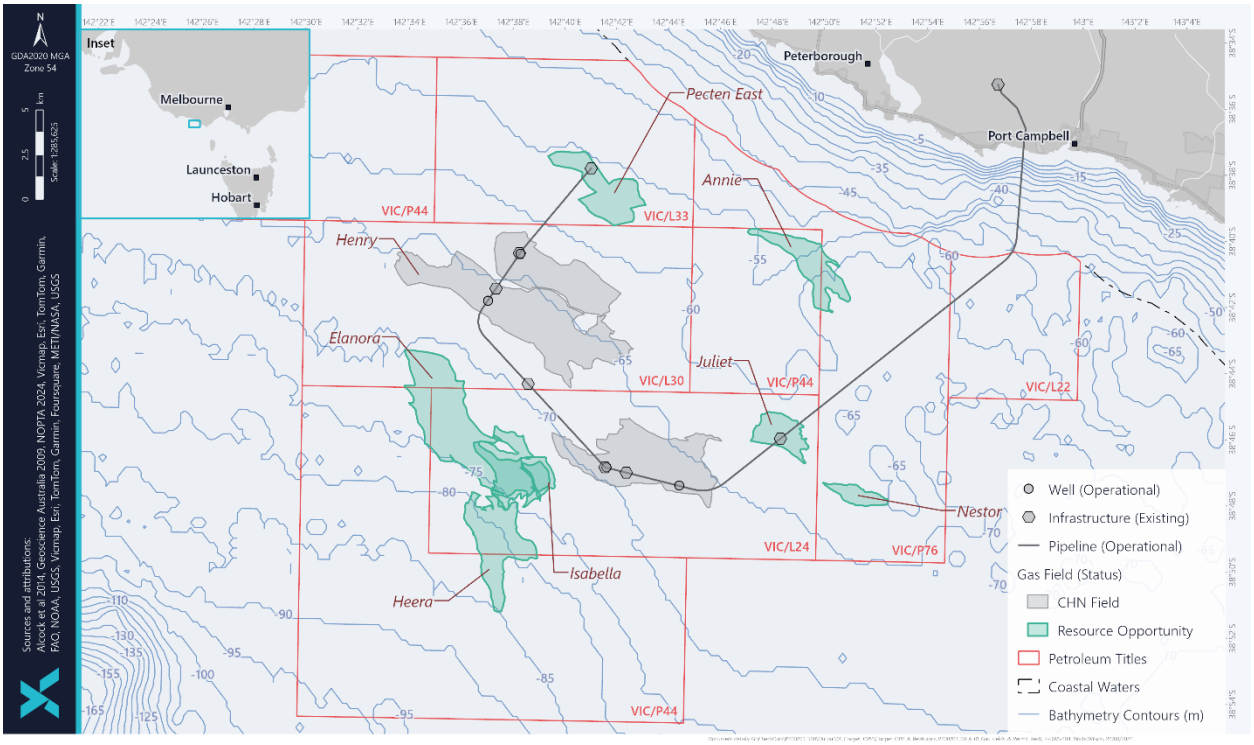



*Figure 1-2: Cooper Energy Offshore Otway Assets and resource opportunities*

## 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 OPEP*

| Asset | Description | Activities | Fluid Types |
|---|---|---|---|
| PB – Gippsland Basin | 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). | PB non-production phase activities which includes integrity management on the following offshore assets in Commonwealth and Victorian state waters:<br>• two subsea production wells, Patricia -2 and Baleen-4 (currently shut-in) in 54 m water depth<br>• one suspended well (Patricia-1) in 54 m water depth<br>• 24 km x 300 mm (ND) subsea pipeline from Patricia-2 and Baleen-4 wells to shore. The pipeline is non-operational and suspended. It contains nitrogen (4,550 $m^3$), | Gas and condensate<br>Hydraulic fluid<br>Nitrogen<br>MEG<br>Marine diesel oil (MDO) |

| Asset | Description | Activities | Fluid Types |
|---|---|---|---|
| | | natural gas (2,700 $m^3$), residual Longtom condensate (5 $m^3$) and Mono-ethylene glycol (MEG) / water mixture (150 $m^3$ in a 40:60 ratio)<br>• a subsea umbilical located 20 m to the west of the pipeline running from the gas plant to the subsea wells. | |
| Sole – Gippsland Basin | 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 Licenced Pipeline VIC/PL43 and VIC/PL006401(V), a 65 km subsea pipeline and umbilical cable. | Sole operations activities which include integrity management of the following assets and activities in Commonwealth and Victorian state waters:<br>• two subsea producing wells (Sole-3 and Sole-4) in 124 m water depth<br>• one plugged and abandoned well (Sole-2) in 125 m water depth<br>• operations of pipeline to the Orbost Gas Plant<br>• a subsea umbilical located 20 m to the west of the pipeline running from the gas plant to the subsea wells. | Gas and condensate<br>Hydraulic fluid<br>MEG<br>MDO |
| Otway stage I & II – Otway Basin | 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). | Operations and maintenance activities on the following facilities in Commonwealth and Victorian state waters:<br>• subsea wells (Netherby-1, Casino-4, Casino-5 and Henry-2) in ~63-70 m water depth<br>• 32.6 km x 300 mm Nominal Diameter (ND) subsea pipeline (Casino-5 well to shore-crossing)<br>• 22 km x 300 mm ND subsea pipeline (Casino-5 to Pecten east pipeline)<br>• 31.2 km x 120 mm Electro-hydraulic umbilical (EHU) cable (Casino-5 to shore crossing)<br>• 22 km x 135 mm EHU cable (Casino-5 to Netherby-1 well). | Gas and condensate<br>Hydraulic fluid<br>MDO |
| Otway Basin | A proposed scope for the well construction located in the petroleum titles VIC/L24 and VIC/P76 in the Otway Basin in Commonwealth waters. | Well construction activities for the following proposed well locations within Commonwealth waters:<br>• Subsea wells (Juliet-1, Nestor-1, And Elanora-1) in ~ 63-74 m.<br>• One contingent subsea well (Elanora-1 ST1) in ~74 m water depths. | Gas and condensate<br>Hydraulic fluid<br>MDO |

## 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 | Otway |
|---|---|---|---|---|---|
| Loss of Containment (LoC) minor spill (level 1) | MDO, hydraulic oil | Up to 50 $m^3$ | ✓ | ✓ | ✓ |
| Vessel LoC (collision) (level 1/2) | MDO | 250 $m^3$ surface release over 6 hours.<br>500 $m^3$ surface release over 6 hours. | ✓ | ✓ | ✓ |
| Subsea LoC (pipeline or infrastructure leak) (level 1/2) | Gas / condensate / diesel | PB: 5 $m^3$ Longtom condensate, 2,700 $m^3$ gas<br>Sole: 0.5 $m^3$<br>Otway: 50 $m^3$ | ✓ | ✓ | ✓ |
| Loss of well control (LOWC**) (level 1) | Gas / condensate | PB: 24.4 MMscf/d gas (0.4 $m^3$/d)<br>Sole: 160 MMscf/d gas (1.6 $m^3$/d)<br>Otway: 41 MMScf/d (0.1 $m^3$/d) | ✓ (Cth) | ✓ (Cth) | ✓ (Cth) |
| Loss of well control (LOWC) (level 2/3) | Gas / condensate | Up to 16,740 $m^3$ 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).*

The Environments 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 1-5to Figure 1-7). 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.

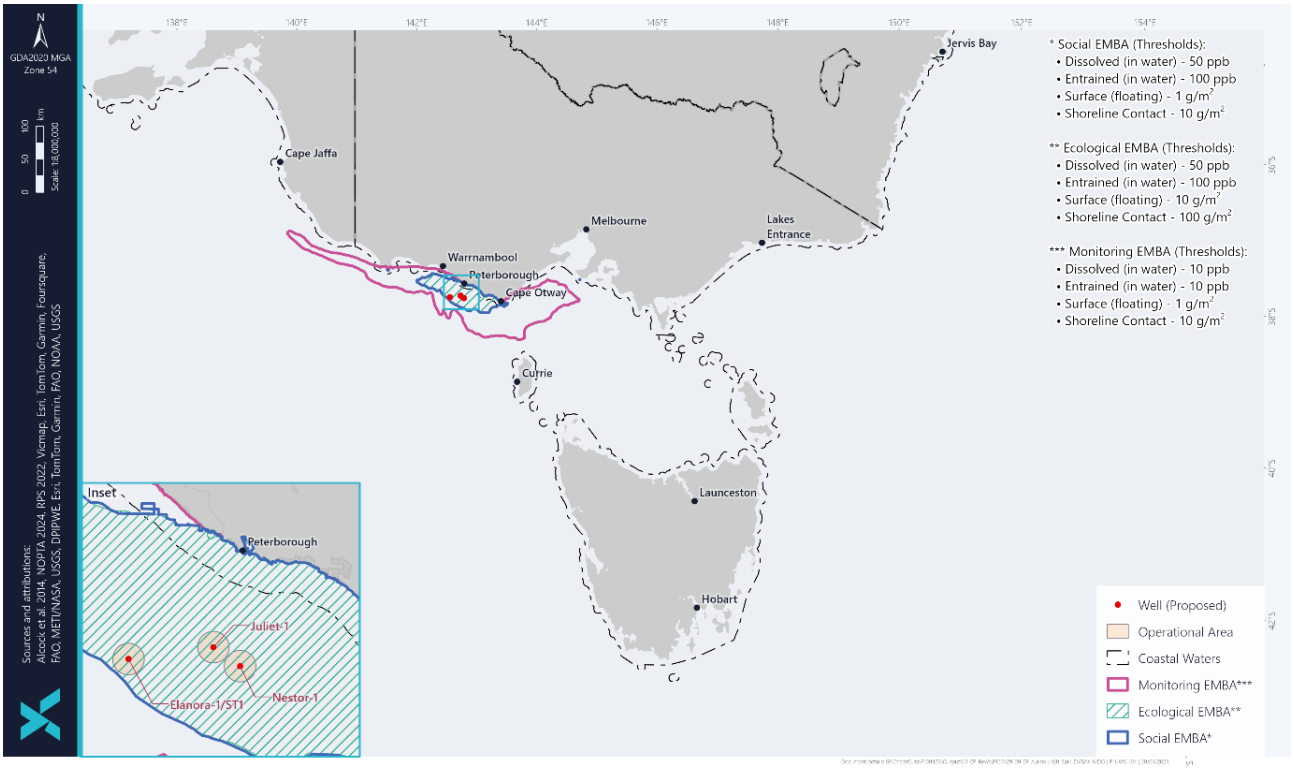



*Figure 1-3: Combined oil EMBAs for Otway (Visiting Vessel) MDO Spill Scenario*

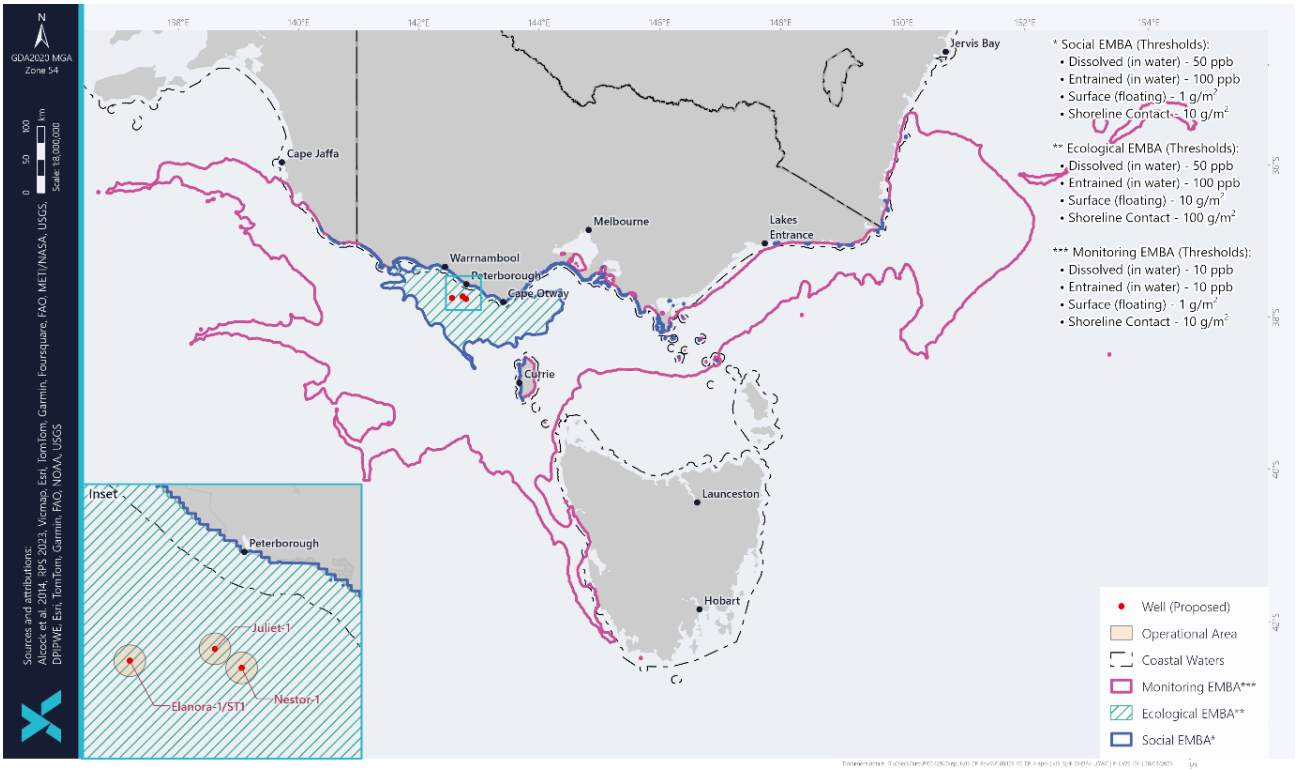



*Figure 1-4: Combined condensate EMBAs for Otway Basin Drilling  LOWC Spill Scenario*

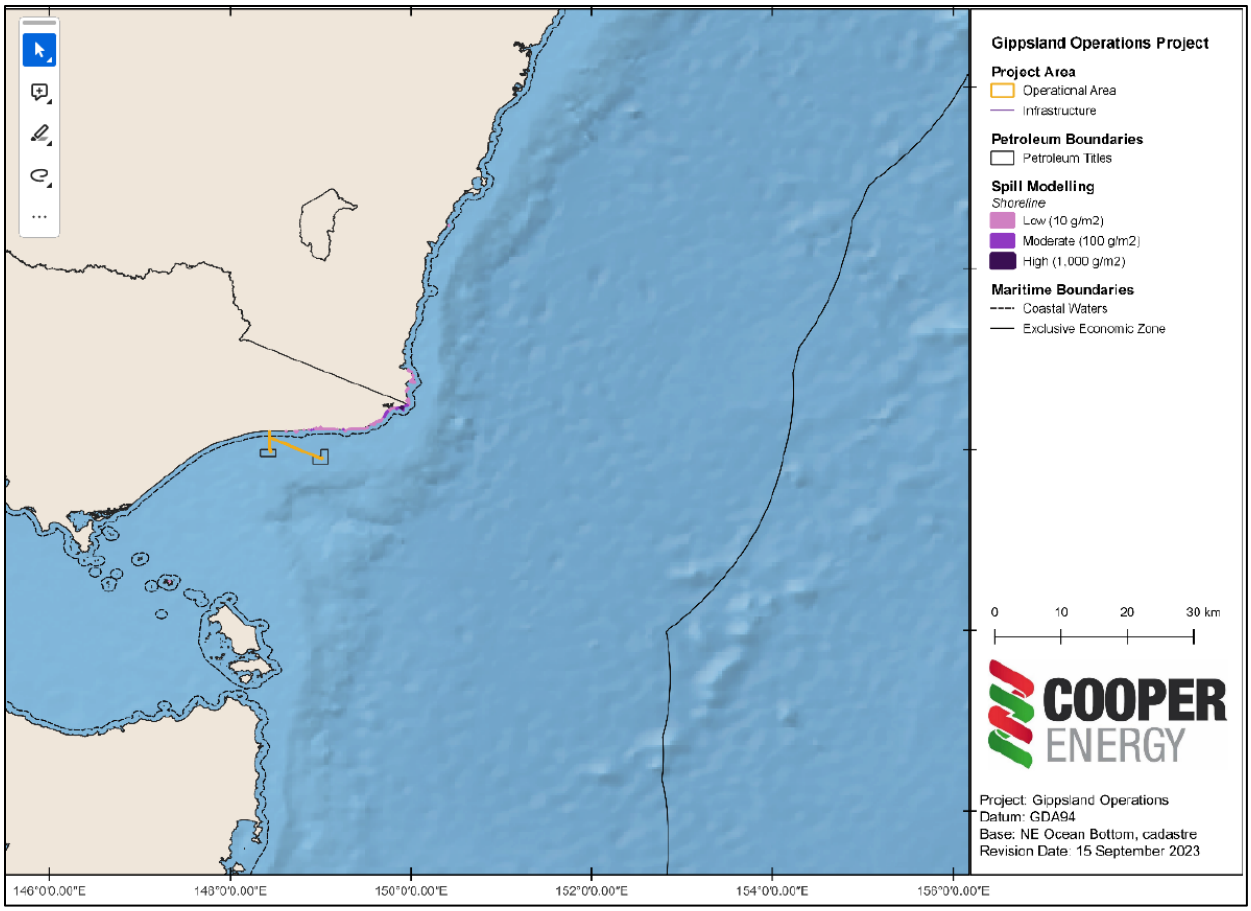



*Figure 1-5: Shoreline oil EMBAs for Gippsland (Visiting Vessel) MDO Spill Scenario*

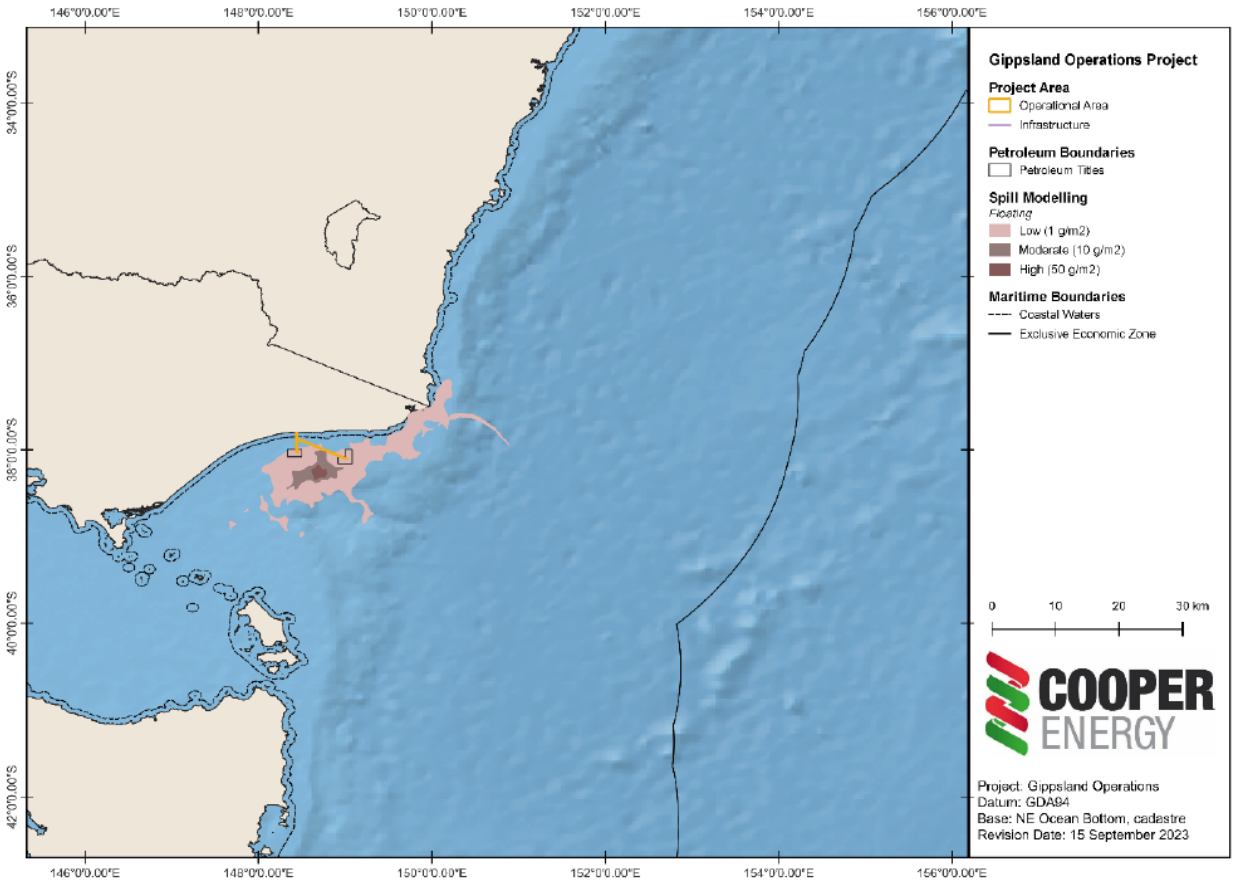



*Figure 1-6: Shoreline oil EMBAs for Gippsland (Visiting Vessel) MDO Spill Scenario*

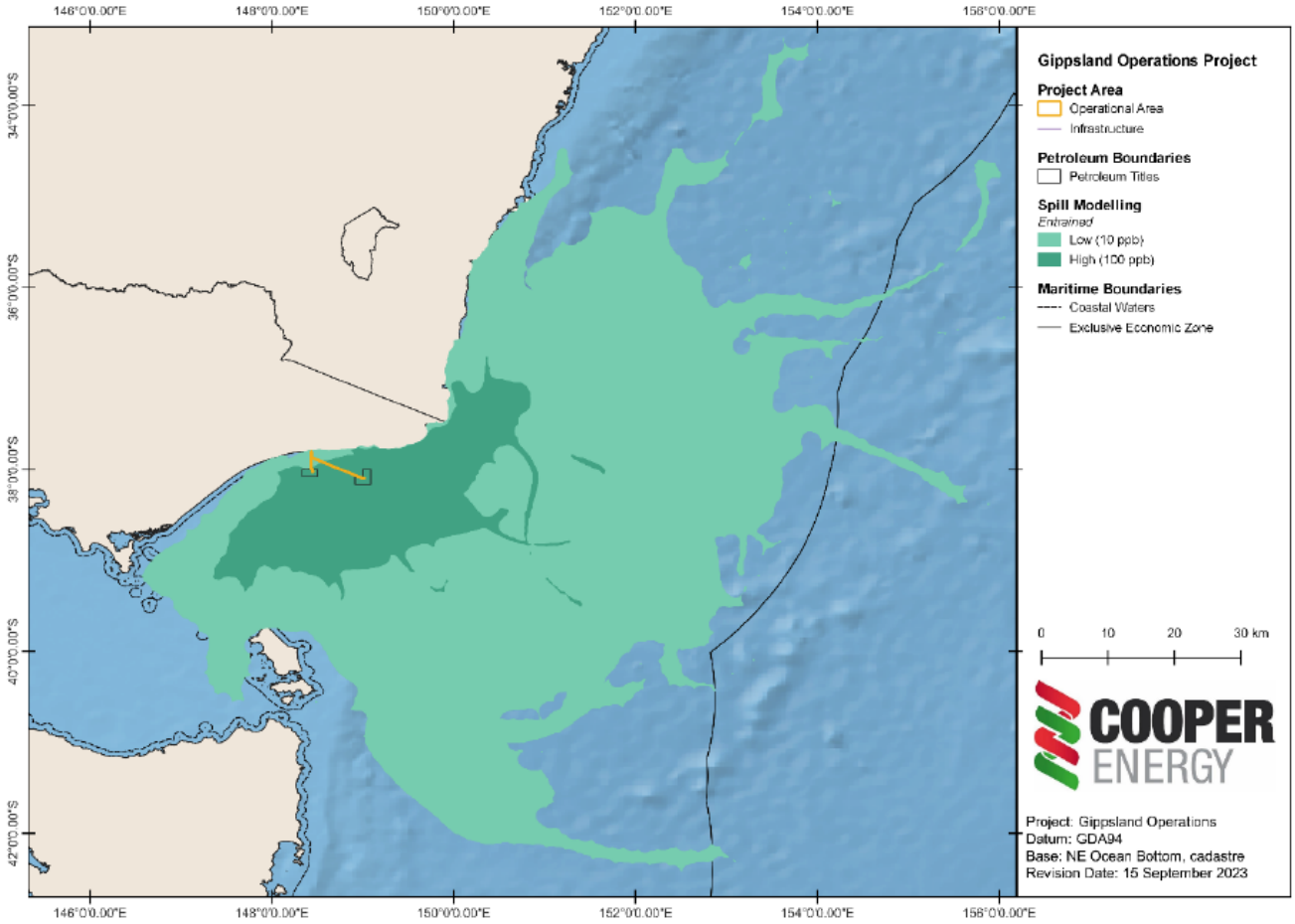



*Figure 1-7: Entrained oil EMBAs for Gippsland (Visiting Vessel) MDO Spill Scenario*

## 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

Cooper Energy manages emergencies from the offshore operations and activities in accordance with the Cooper Energy Incident Management Plan (IMP) (COE-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:

- Cooper Energy IMP (COE-ER-ERP-0001)
- Cooper Energy Crisis Management Plan (CMP) (COE-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 Cooper Energy's behalf.

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 2021)
- New South Wales (NSW) State Waters Marine Oil and Chemical Spill Contingency Plan (NSW Government 2016)
- Tasmanian Marine Oil 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 2021).

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

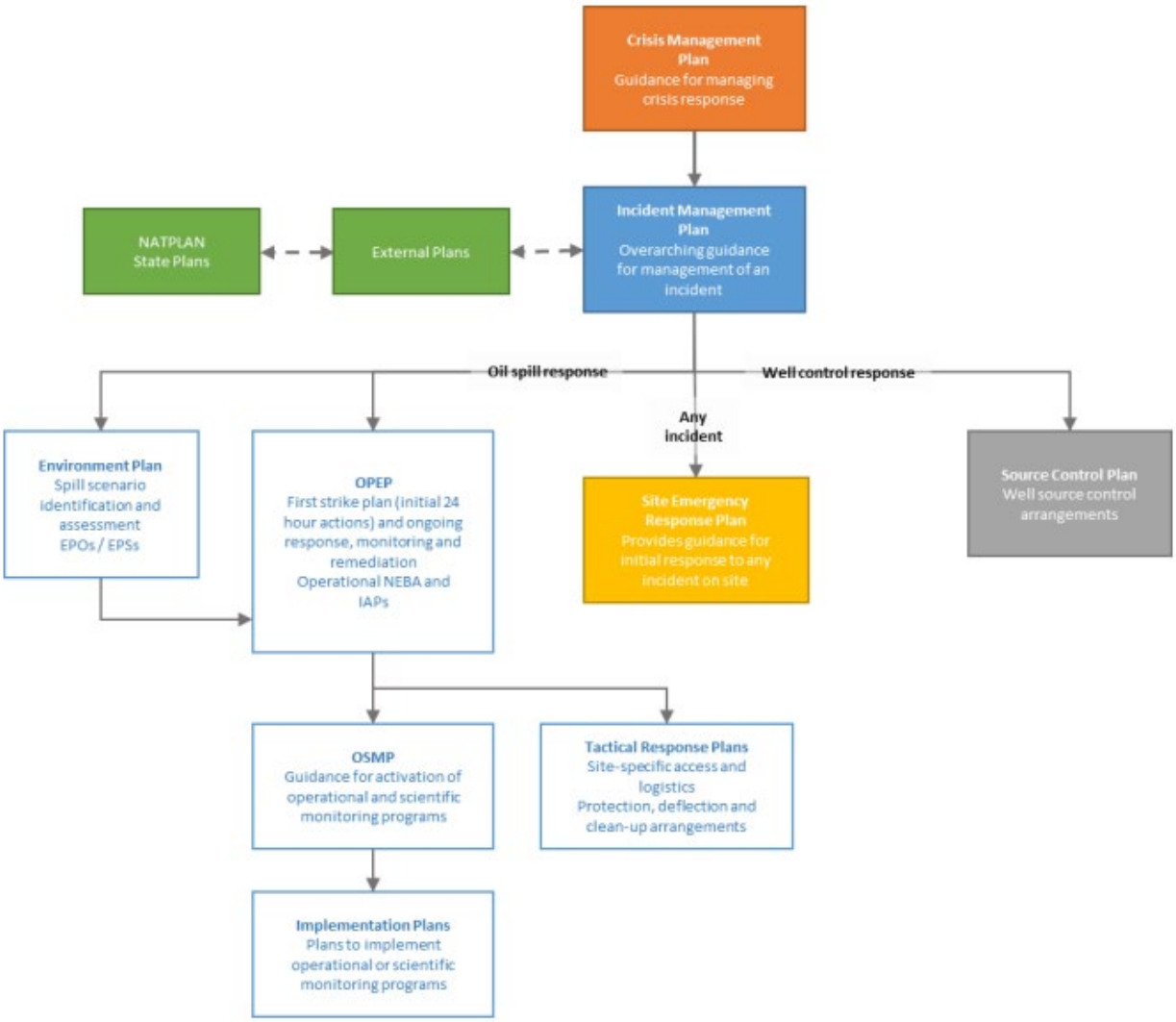



*Figure 1-8: Relationship Between Cooper Energy Emergency and Oil Response Plans*

## 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 2023):

*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 Cooper 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 Cooper Energy's activities are included in Table 1-4. The arrangements detail those actions which will be undertaken by Cooper 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 Cooper Energy's specific training and exercise plans for the activity.

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

| Performance Outcome | Control | Performance Standards | Measurement Criteria |
|---|---|---|---|
| Response personnel are trained and prepared to respond to a worst-case spill scenario for the activity.<br>The OPEP is implemented and is effective in mitigating a spill event. | C1 Response training. | Response personnel are trained according to schedule. | • training records. |
| | C2 Response exercise and testing. | Exercise and testing are completed according to schedule. | • exercise and testing plan progress tracked via Synergi. |
| | | Lessons from exercises and testing are captured, actioned and integrated into the relevant part of the OPEP. | • exercise report including observations and opportunities for improvement<br>• actions are managed through Synergi. |

*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** | Cooper 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** | Cooper Energy | OPEP | On joining the IMT, FOB or Field Team. | Offshore Victorian OPEP induction for:<br>• IMT<br>• FOB<br>• Field Team Lead and Support Roles.<br>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 training. |
| **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** | Cooper 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** | Cooper 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. |

| Aspect | Who | Plan | Timing | Preparedness Activity Scope (Arrangements and Capabilities tested) | Training/Testing Objectives | Indicative duration | Evaluation / lessons learned |
|---|---|---|---|---|---|---|---|
| **Exercise** | Cooper Energy & AMOSC | OPEP | Annually. | OPEP drill (Desktop):<br>• IMT response teams form and initiate alert and call-out of response teams to respective incident control centres<br>• notifications to regulators undertaken within the regulatory timeframes (simulated)<br>• first-strike response operation activated monitoring and surveillance (simulated) within implementation timeframes<br>• contact external resources to confirm support first strike response<br>• common operating picture established<br>• Incident Action Plan (IAP) generated for the next operational period integrating information from monitoring and surveillance and net environmental benefit assessment (NEBA) recommendations. | IMT Roles are provided for, and responsibilities are understood.<br>IMT communications and systems support coordinated and efficient response.<br>Capability to develop IAP for the next operational phase of a response.<br>Response Option Initiation inside OPEP implementation timeframes.<br>External resources are available to respond. | 1 day | Observer for the duration of the drill.<br>Evaluation against the planned scope and objectives. |
| **Exercise** | Cooper Energy & OSMP contractors | OSMP | Annually. | OSMP Drill:<br>• call out of external resources for at least two OSMP module simultaneously (nominally hydrocarbon weathering assessment and coastal shoreline assessment [simulated scenario])<br>• test of logistical arrangements to meet implementation timeframes form nominated modules<br>• confirm sufficient Principal Investigators for all OSMP Modules. | Response Options are initiated according to OPEP implementation timeframes.<br>IMT-OSMP Contractor communications are established.<br>External resources sufficient for a worst-case scenario for the activity are available to respond. | ½ day | Evaluation against the planned scope and objectives. |

| Aspect | Who | Plan | Timing | Preparedness Activity Scope (Arrangements and Capabilities tested) | Training/Testing Objectives | Indicative duration | Evaluation / lessons learned |
|---|---|---|---|---|---|---|---|
| **Exercise** | Cooper Energy | OPEP / Crisis Management Plan | Prior to well activities. | Crisis Management Team (CMT) will be notified during a level 2/3 incident and may need to provide support to the IMT:<br>• CMT forms and establishes communications with the IMT IC<br>• CMT obtain situational awareness<br>• external notifications are issued (simulated) including media release. | CMT Roles are provided for, and responsibilities are understood.<br>CMT-IMT Communication protocols are understood.<br>Notifications developed efficiently. | 2 hours | Observer for the duration of the drill.<br>Evaluation against the planned scope and objectives. |
| **Exercise** | AMOSC, National and State response personnel | AMOSC Plan / NatPlan | Ongoing testing and exercise regime. | IMT Desktop and Operational exercises spanning all potential response strategies both nearshore and offshore including:<br>• monitoring and evaluation<br>• containment and recovery<br>• chemical dispersant application<br>• protection and deflection<br>• shoreline response<br>• wildlife response.<br>These exercises involve field responders and use of response equipment. | 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** | Cooper Energy | SCERP | Prior to well activities. | SCERP Drill:<br>• SCERP Leads availability to implement selected source control options is verified<br>• communications between leads are established<br>• vessel and Mobile Offshore Drilling Unit (MODU) availability and mobilisation times are verified<br>• equipment (relief well long leads) availability and mobilisation times are verified. | SCERP source control response times verified.<br>Source control response logistics confirmed. | ½ day | Evaluation against the planned scope and objectives. |

| Aspect | Who | Plan | Timing | Preparedness Activity Scope (Arrangements and Capabilities tested) | Training/Testing Objectives | Indicative duration | Evaluation / lessons learned |
|---|---|---|---|---|---|---|---|
| **Exercise** | Cooper Energy and Response Contractors | OPEP / OSMP / SCERP | Annually<br>May be undertaken with other exercises or separately. | Callout response contact details and personnel availability verification:<br>• OPEP contractors<br>• OSMP contractors<br>• SCERP contractors. | Personnel required to implement OPEP, OSMP and SCERP are available to respond. | ½ day | Evaluation against the planned scope and objectives. |
| **Exercise** | Cooper Energy<br>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 Cooper Energy Assets and activities; hydrocarbon exposure above the actionable contact thresholds for surface and shoreline hydorcarbons 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 |
| **Distance from Project** | | ~10 | >100 | >500 | >150 |
| **Floating** | 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$^2$)? | 100% | - | - | - |
| | What is the probability of floating oil in state waters above Moderate threshold (50 g/m$^2$)? | - | - | - | - |
| **Entrained** | What is the worst potential level of entrained oil in state waters (ppb)? | 641 | <50 | <50 | <50 |
| **Shoreline** | 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$^2$)* | 1,845 | 74 | 58 | 25 |
| | What is the peak volume of oil that could arrive on the coast (m$^3$)? | 312.1 | 8.9 | 4.1 | 6 |
| | How much of the shoreline could be affected (km) above the Low threshold (10g/m$^2$)? | 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$^2$.

While Cooper 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.

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) (formerly DELWP) 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 for marine pollution incidents within Tasmania, and the Wildlife Health and Marine (WHAM) division of the Department of Natural Resources and Environment Tasmania (NRE Tas) (formerly DPIPWE) will resume responsibilitity for wildlife impacted by pollution within Tasmanian waters.

NSW Maritime, 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 Victorian 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 | Cooper Energy |
| | | | ✓ | NOPSEMA | Cooper Energy |
| | 2/3 | ✓ | | State CA | State CA |
| | | | ✓ | NOPSEMA | Cooper 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.*

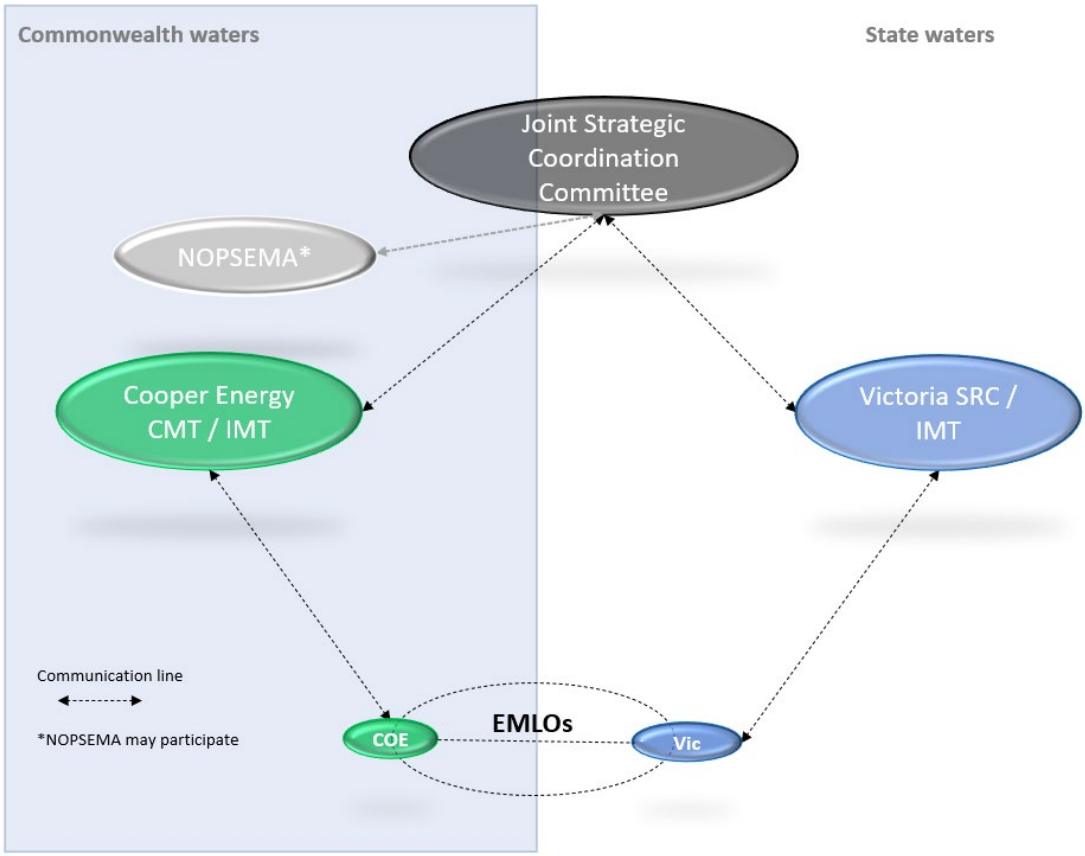
### 1.7.1 Joint Strategic Coordination Committee (Cooper Energy Interface with State Governments)

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 Cooper 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 Cooper 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* (2023)

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

# 2.0 Response Activation

## 2.1 Cooper Energy Incident Management Plan and OPEP Activation

Cooper Energy manages emergencies from its offshore activities in accordance with the Cooper 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 Cooper Energy Duty Manager by operator/maintainers or by contracted vessel masters. The Cooper Energy Duty

Manager will notify the IC of the incident, providing the following information to allow the IC to assess the required response level:

- 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 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 IC is responsible for:

- identifying the CA (Section 1.7 provides description of regulator responsibilities)
- determining the response level
- activating the Cooper Energy IMT (either where Cooper Energy is the CA or is directed by the CA)
- 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 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 Cooper 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 Cooper 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 |
|---|---|---|---|
| **Management** | | | |
| **Jurisdiction** | Single jurisdiction | Multiple jurisdiction | Multiple jurisdictions including international |
| **Number of Agencies** | First Response Agency | Routine multi-agency response | Agencies from across government and industry |
| **Incident Action Plan** | Simple/Outline | Outline | Detailed |
| **Resources** | Onsite resources required only | Requires intra-state resources | Requires national or international resources |
| **Type of Incident** | | | |
| **Type of response** | First Strike | Escalated | Campaign |
| **Duration** | Single shift | Multiple shifts<br>Days to weeks | Extended response<br>Weeks to months |
| **Hazard** | Single Hazard | Single Hazard | Multiple Hazards |
| **Resources at Risk** | | | |
| **Human** | Potential for serious injuries | Potential for loss of life | Potential for multiple loss of life |
| **Environment (Habitat)** | 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. |
| **Wildlife** | Individual fauna | Groups of fauna or threatened fauna | Large numbers of fauna |
| **Economy** | Business level disruption | Business failure | Disruption to a sector |
| **Social** | Reduced services | Ongoing reduced services | Reduced quality of life |
| **Infrastructure** | Short term failure | Medium term failure | Severe impairment |
| **Public Affairs** | Local and regional media coverage | National media coverage | International media coverage |
| **Cooper Energy Assets – Spill Scenarios – Notional Level Classification** | | | |
| **Offshore Victoria Operations** | Vessel LoC<br>Subsea LoC | Vessel LoC<br>Subsea LoC<br>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 |
|---|---|---|---|---|---|
| **Primary Notifications Information: Incident Details and Actions underway.** | Internal, Regulators and CAs and associated support Agencies. | Has jurisdiction for an aspect of the response. | As defined in the OPEP. | Targeted communications. *Calls, Email, Remote and face to face meetings.* | OPEP. Emergency Contacts Register. |
| **Secondary Notifications Information: Incident Details and Actions underway.** | 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). *Direct contact via agreed / available contact details, and / or as directed by the CA.* | Emergency Contacts Register. Relevant persons database. |
| **Ongoing Consultation Incident Details Actions Underway and Completed** | 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. *Calls, Email, Remote and face to face meetings.* | OPEP. Emergency Contacts Register. |
| **Ongoing Consultation** | 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). *Direct contact via agreed / available contact details, and / or as directed by the CA.* | 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 Cooper 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.

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

| Vessel Spill Notifications | | | | |
|---|---|---|---|---|
| From | **To** | **Type** | **Timing** | **Supporting Information** |
| **Vessel Master** | Cooper Energy Duty Manager | Verbal | Immediately | Contact details provided within campaign emergency response bridging document.<br>Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | AMSA – All spills to sea<br>Australian Hydrographic Service | Verbal | Immediately (no later than 2 hours after incident) | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written notification | As soon as possible (ASAP) | Complete a marine pollution report (POLREP) online available at:<br>**https://amsa-forms.nogginoca.com/public/polrep.html** |
| | | Written updates | As requested, or every 24 hours | Complete and issue a situation report (SITREP)/POLREP and IAP<br>SITREP/POLREP available at:<br>**https://amsa-forms.nogginoca.com/public/polrep.html** |
| **Cooper Energy Duty Manager** | Cooper Energy IMT<br>Cooper Energy CMT | Verbal | As required | IMT Duty Roster<br>CMT Duty Roster<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy Duty Manager (or delegate)** | NOPSEMA (and copy to the National Offshore Petroleum Titles Administrator [NOPTA])<br>Dangerous occurrences at or near facilities must be reported to NOPSEMA under the applicable safety case. Occurrences include:<br>• any hydrocarbon spill >80 L | Verbal | As soon as practicable and no later than 2 hours | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written notification | As soon as practicable after oral notification | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

| Vessel Spill Notifications | | | | |
|---|---|---|---|---|
| | • spill has caused, or has the potential to cause, moderate to significant environmental damage.<br>(Refer to activity-specific EP spill risk assessment) | Written report | As soon as practicable, but within 3 days of incident | Complete and issue written report: NOPSEMA Form N-03000-FM0831 **A543965** |
| **Vessel Master or Cooper Energy Duty Manager (or delegate) as relevant** | State and Port Authorities<br>Level 1 / 2 / 3 Vessel spills (threatening State waters)<br>As relevant to Port (Port Master) and/or State Waters (State Duty Officer). Authorities include:<br>**Victorian State Waters**<br>Port of Portland<br>Gippsland Ports<br>For level 2/3 spills notify the DTP State Duty Officer<br>**South Australia**<br>Department for Infrastructure and Transport<br>State Controller, Marine Pollution (coastal)<br>**NSW State Waters**<br>Maritime emergency (24 hours)<br>NSW Maritime<br>**NSW Port (phone diverted for out-of-hours response)**<br>Port of Eden<br>Port of Kembla<br>Port of Sydney<br>Port of Newcastle<br>Port of Yamba | Telephone | ASAP (no later than 2 hours after risk identification) | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

| Vessel Spill Notifications | | | | |
|---|---|---|---|---|
| | **Tasmanian State Waters**<br>Environmental Protection Agency (EPA) Tasmania<br>Radio: Transports Vessel Traffic Services VHF radio channel 16/14/12<br>Call sign "relevant port name VTS | | | |
| **Cooper Energy Duty Manager (or delegate)** | Relevant State Agency – State Waters (<3 nm)<br>• level 2/3 spill threatening State waters<br>• spill has caused, or has the potential to cause, moderate to significant environmental damage in State waters.<br>(Refer to activity-specific EP spill risk assessment) | Verbal | As soon as practicable and no later than 2 hours | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written notification | As soon as practicable after oral notification | POLREP available at:<br>**https://amsa-forms.nogginoca.com/public/polrep.html**<br>Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Email | As soon as practicable after oral notification | |
| **Cooper Energy IC (or delegate)** | Resources/Contractors | Telephone | As directed | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy IC (or delegate)** | Director of National Parks<br>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 Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy IC (or delegate)** | Relevant Persons (fishers, adjacent titleholders, Traditional Owners, etc.) | Telephone | As soon as practicable | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

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

| Subsea LoC Notifications | | | | |
|---|---|---|---|---|
| From | **To** | **Type** | **Timing** | **Supporting Information** |
| **Cooper Energy Duty Manager (or delegate)** | Cooper Energy IMT<br>Cooper Energy CMT | Verbal | As required | IMT Duty Roster<br>CMT Duty Roster<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy Duty Manager (or delegate)** | NOPSEMA Commonwealth Waters (>3 nm)<br>• spill has caused, or has the potential to cause, moderate to significant environmental damage.<br>(Refer to activity-specific EP spill risk assessment) | Verbal | As soon as practicable and no later than 2 hours | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written notification | As soon as practicable after oral notification | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written report | As soon as practicable, but within 3 days of incident | Complete and issue written report: NOPSEMA Form N-03000-FM0831 **A543965** |
| **Cooper Energy Duty Manager (or delegate)** | AMSA<br>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.<br>Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy Duty Manager (or delegate)** | Relevant State Agency – State Waters (<3 nm)<br>• level 2/3 spills (threatening State waters)<br>• spill has caused, or has the potential to cause, moderate to significant environmental damage. | Verbal | As soon as practicable and no later than 2 hours | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| | | Written notification | As soon as practicable after oral notification | POLREP available at:<br>**https://amsa-forms.nogginoca.com/public/polrep.html** |

| Subsea LoC Notifications | | | | |
|---|---|---|---|---|
| | (Refer to activity-specific EP spill risk assessment) | | | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy Duty Manager (or delegate)** | State and Port Authorities<br>Level 1 / 2 / 3 (threatening State waters)<br>As relevant to Port (Port Master) and/or State Waters (State Duty Officer). Authorities include:<br>**Victorian State Waters**<br>Port of Portland<br>Gippsland Ports<br>For Level 2-3 spills notify the DTP State Duty Officer | Telephone | ASAP | Port of Portland: (03) 5525 0999<br>Gippsland Ports: (03) 5150 0500<br>Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy IC (or delegate)** | Resources/Contractors | Telephone | As directed | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020.<br>**Emergency Roster and Emergency Contacts Directory** |
| **Cooper Energy IC (or delegate)** | Relevant Persons (fishers, adjacent titleholders, Traditional Owners, etc.) | Telephone | As soon as practicable | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

*Table 2-5: Additional External Notifications*

| Stakeholder | Issue | Spill Level | Timeframe | References |
|---|---|---|---|---|
| **Australian Hydrographic Service** | Protection of mariners from safety and environmental impacts of spill | 2, 3 | 2 hours | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

| Stakeholder | Issue | Spill Level | Timeframe | References |
|---|---|---|---|---|
| **Vic – DEECA** | Oiled Wildlife in respective state jurisdictions | 1, 2, 3 | Immediately, or whenever wildlife in Victoria's jurisdiction is expected to be impacted. | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| SA – Department of Environment and Water (DEW) | | | Immediately, or whenever wildlife in South Australia's jurisdiction is expected to be impacted. | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **Tas – EPA** | | | Immediately, or whenever wildlife in Tasmania's jurisdiction is expected to be impacted. | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **NSW – EPA** | | | Immediately, or whenever wildlife in NSW jurisdiction is expected to be impacted. | Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |
| **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 Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-ER-EMP-0020<br>**Emergency Roster and Emergency Contacts Directory** |

*Table 2-6: Spill Notification Performance Outcome*

| Performance Outcome | Control | Performance Standard | Measurement Criteria |
|---|---|---|---|
| Notification and reporting to regulators and other relevant persons occur in a timely manner. | C3 Response Communications | 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 OPEP 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.<br>Secure sources of ignition and alert all personnel (appropriate to the level of the spill). | Vessel Master | ASAP |
| If safe, stop the spill through source control actions.<br>Assess incident and prevent further spillage.<br>Estimate the quantity of oil released and provide initial incident information.<br>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 Cooper Energy Duty Manager of the spill, providing information available from preliminary spill assessment. Including:<br>• what is it – oil type / group / properties?<br>• where is it – latitude/longitude?<br>• how big is it – area/volume?<br>• where is it going – weather conditions / currents / tides?<br>• what is in the way – resources at risk?<br>• when will it get there – weather conditions / currents / tides?<br>• what is happening to it – weathering processes predicted. | Vessel Master | ASAP |
| Based on the preliminary spill assessment and operational monitoring from the Vessel Master approximate the spill level. | Cooper Energy Duty Manager | ASAP |

| Vessel LoC – MDO Spill – Response Actions | | |
|---|---|---|
| Assess response required.<br>Response commensurate to the size and level of risk. | | |
| Undertake regulatory notifications and other stakeholder notifications (as required). Refer to Section 2.4. | Cooper Energy Duty Manager | ASAP |
| Assemble Cooper Energy IMT (as required). Number of, and team members selected, will be based upon the nature and scale of response required.<br>The IC is responsible for:<br>• identifying the CA<br>• determining the response level<br>• activate the Cooper Energy IMT (either where Cooper is the CA or is directed by CA)<br>• implementing this first strike plan and the OPEP (where relevant).<br>**NOTE: Cooper Energy is in a support role for this scenario as AMSA (Commonwealth waters) or designated State CA (state waters).** | Cooper Energy Duty Manager | ASAP |
| Activate AMOSC Member Agreement to support the response if require. Cooper Energy Authorising Officer to activate via the AMOSC Duty Manager<br>• level 1 spill for remote advice<br>• 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).<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for **AMOSC call-our authority personnel.** | IC or Delegate | Cooper Energy Offshore Victoria OPEP: **Section 3.1** |
| Login to AMOSC Website for the latest equipment and personnel information.<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for log in details (username and password). http://www.amosc.com.au | Planning Officer or delegate | |
| Determine spill trajectory – weather conditions and perform initial vector analysis.<br>See Spill Response Tools on IMT SharePoint for Trajectory Estimator | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| Identify protection priorities at risk and confirm response strategies via NEBA. | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 4.0** |
| Based on operational monitoring and in consultation with CA, where applicable activate the relevant Tactical Response Plan (TRP). | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 0** |

| Vessel LoC – MDO Spill – Response Actions | | |
|---|---|---|
| Support IAP (as required) in consultation with AMOSC and CA (AMSA or State CA). | IC or Delegate | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| 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 | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| As directed by CA, continue until termination criteria is met. | IC or Delegate | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| **Monitor and Evaluate – if required (NOTE: Cooper Energy is in a support role for this scenario)** | | |
| Obtain weather data via of the Bureau of Meteorology (http://www.bom.gov.au/) for the spill location. | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP**: Section 0** |
| Use vectoring to identify predicted spill trajectory or initiate modelling (as required) via AMOSC Duty Manager.<br>Determine Spill Trajectory – weather conditions and vectoring and/or modelling via AMOSC Duty Manager.<br>• AMOSC Duty Manager: Emergency Roster and Emergency Contacts Directory<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for AMOSC and RPS contact. | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| Undertake automated data inquiry for oil spills (ADIOS) modelling using hydrocarbon characteristics in Section 4.2. https://response.restoration.noaa.gov/adios | Planning Officer (or delegate) | |
| As directed by CA, mobilise aerial observation (if level 2)<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for Aerial Services Provider.<br>Confirm the 'opening status' of estuaries identified as areas for priority protection.<br>Preliminary information may be obtained via: http://www.estuarywatch.org.au/ | Logistics Officer (or delegate) | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| Access oil spill tracking buoy live feed data if a buoy has been deployed from the vessel:<br>Website: https://myionu.track-viewer.com/Login.aspx<br>See Spill Response Tools on IMT SharePoint for username and password for tracking buoy data. | Logistics Officer (or delegate) | Cooper Energy Offshore Victoria OPEP: **Sections 0** |

| Vessel LoC – MDO Spill – Response Actions | | |
|---|---|---|
| **Shoreline assessment and clean-up - if required (NOTE: Cooper Energy is in a support role for this scenario)** | | |
| As directed by CA (as relevant to State) and in consultation with AMOSC identify SCAT. | IC (or delegate) | Cooper Energy Offshore Victoria OPEP: **Section 9.0** |
| In consultation with CA (as relevant to State) identify SCAT locations. | Planning Officer (or delegate) | Cooper Energy Offshore Victoria OPEP: **Section 9.0** |
| As directed by CA (as relevant to State) initiate SCAT surveys. | Operations Officer/OSMP Support Contractors | Cooper Energy Offshore Victoria OPEP: **Section 9.0** |
| Undertake NEBA for shoreline clean-up as required. | Planning Officer (or delegate) | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| **Protection and deflection – if required (NOTE: Cooper Energy is in a support role for this scenario)** | | |
| Assess deployment location with AMOSC, CA (as relevant to State) and relevant waterway manager. | Operations Officer | Cooper Energy Offshore Victoria OPEP: **Section 8.0** |
| As directed by CA (as relevant to State), mobilise equipment and people to location. | Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 8.0** |
| In consultation with EPA, and as directed by CA (as relevant to State), mobilise waste management contractor. | Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 11.0** |
| **Oiled Wildlife Response (OWR) – if required (NOTE: Cooper Energy is in a support role for this scenario)** | | |
| Notify relevant State Authority if any oiled wildlife is identified or have the potential to be impacted and provide support services as directed.<br>Refer to Cooper Energy Contacts directory on the Cooper Energy Intranet VIC-EREMP-0020 Emergency Roster and Emergency Contacts Directory | IC (or delegate) | Cooper Energy Offshore Victoria OPEP: **Section 10.0** |
| In consultation with State lead agency for wildlife response, and as directed by CA (as relevant to State), mobilise waste management contractor. | Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 10.0** |
| **Scientific monitoring – if required (NOTE: Cooper Energy is in a support role for this scenario)** | | |
| Consult with government environmental department (as relevant), and State Statutory Authority on the scope of the scientific monitoring if required. | Planning Officer | Cooper Energy Offshore Victoria OPEP: **Section 12.0** |

| Vessel LoC – MDO Spill – Response Actions | | |
|---|---|---|
| Initiate scientific monitoring contractor.<br>24/7 Emergency Response Hotline: Emergency Roster and Emergency Contacts Directory | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 12.0** |
| 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 | Cooper Energy Offshore Victoria OPEP: **Section 12.0** |
| 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:<br>• initiate source control to prevent further spillage<br>• notify the Duty Incident Manager providing initial incident information<br>• 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. | Site Operator / Maintainer | ASAP |
| Undertake spill assessment.<br>• what is it - oil type / group / properties?<br>• where is it – latitude / longitude?<br>• how big is it -area / volume?<br>• where is it going - weather conditions / currents / tides?<br>• what is in the way - resources at risk?<br>• when will it get there - Weather conditions / currents / tides?<br>• what is happening to it - weathering processes predicted?<br>• assess response required<br>• response commensurate with the size and level of risk<br>• marine safety assessment undertaken. | Cooper Energy Duty Manager | ASAP |
| Undertake regulatory notifications and other stakeholder notifications (as required). Refer to Section 2.4. | Cooper Energy Duty Manager or delegate | ASAP |
| Assemble Cooper Energy IMT (as required). Number of, and team members selected, will be based upon the nature and scale of response required.<br>The IC is responsible for:<br>• determining the response level<br>• activating the Cooper Energy IMT and Source Control Team (SCT)<br>• implementing the OPEP (where relevant).<br>N.B. the Cooper Energy SCT initiate the VSCP (VIC-DC-ERP-0001) | Cooper Energy Duty Manager | ASAP |

| Subsea LoC or LOWC - Condensate – Response Actions | | |
|---|---|---|
| Activate AMOSC Member Agreement to support the response. Cooper Energy Authorising Officer to activate via the AMOSC Duty Manager.<br>• AMOSC (level 2/3 for advice/support) (e.g. aerial observers, SCAT, OSTM)<br>• AMOSC Duty Manager: Emergency Roster and Emergency Contacts Directory<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for call-our authority personnel. | Cooper Energy Authorising Officer | |
| Login to AMOSC Website for the latest equipment and personnel information:<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for website login (username and password). http://www.amosc.com.au | Planning Officer or delegate | |
| Contact AMSA (level 2/3 for support) as per Table 2-4: Emergency Roster and Emergency Contacts Directory | Cooper Energy Duty Manager | |
| Determine Spill Trajectory – weather conditions and vectoring and/or RPS modelling via AMOSC Duty Manager.<br>• AMOSC Duty Manager: Emergency Roster and Emergency Contacts Directory<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for **AMOSC and RPS contact.** | Planning Officer or delegate Officer | |
| 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 | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| Based on operational monitoring and in consultation with the relevant State CA activate the relevant TRP, where applicable. | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 4.0** |
| 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 | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| 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 | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| Response Termination – continue until termination criteria met. | IC or delegate | Cooper Energy Offshore Victoria OPEP: **Section 5.0** |
| **Monitor & Evaluate** | | |

| Subsea LoC or LOWC - Condensate – Response Actions | | |
|---|---|---|
| Obtain weather data via of the Bureau of Meteorology (http://www.bom.gov.au/) for the spill location. | Planning Officer or delegate | Cooper Offshore Victoria OPEP: **Section 0** |
| Use manual vectoring to identify predicted spill trajectory.<br>Spill Response Tools on IMT SharePoint for Trajectory Estimator<br>Initiate RPS modelling using Form in Section 4.0 and via AMOSC Duty Officer:<br>• AMOSC Duty Manager: Emergency Roster and Emergency Contacts Directory | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| Undertake ADIOS modelling using hydrocarbon characteristics in Section 4.2 - https://response.restoration.noaa.gov/adios | Planning Officer or delegate | Cooper Energy Offshore Victoria OPEP: **Section 4.0** |
| As directed by CA, mobilise aerial observation (if level 2/3) to commence operations in daylight hours.<br>See Cooper Energy Emergency Roster and Emergency Contacts Directory (VIC-ER-EMP-0020): Emergency Roster and Emergency Contacts Directory for aerial services provider.<br>Confirm the 'opening status' of estuaries identified as areas for priority protection.<br>Preliminary information may be obtained via: http://www.estuarywatch.org.au/ | Operations and Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| Mobilise vessel observations and confirm deployment of satellite tracking buoys (as appropriate if level 2/3 incident).<br>Access oil spill tracking buoy live feed data if a buoy has been deployed from the vessel: Website: https://myionu.track-viewer.com/Login.aspx<br>See Spill Response Tools on IMT SharePoint for username and password for tracking buoy data. | Operations and Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 0** |
| **Protection and Deflection – if required** | | |
| Assess deployment location with AMOSC, the relevant State CA and relevant waterway manager. | Operations Officer | Cooper Energy Offshore Victoria OPEP: **Section 8.0** |
| As directed by the relevant State CA, mobilise equipment and people to location. | Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 8.0** |
| In consultation with EPA, and as directed by the relevant State CA, mobilise waste management contractor. | Logistics Officer | Cooper Energy Offshore Victoria OPEP: **Section 11.0** |
| **Shoreline Assessment and Clean-up - if required** | | |
| As directed by the relevant State CA and in consultation with AMOSC identify SCAT. | Operations Officer | Cooper Energy Offshore Victoria OPEP: **Section 9.0** |

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

## 2.6 Safety Exclusion Zones

On activation of the OPEP, the Cooper 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
- Cooper 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 Cooper 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*

| Applicable Level | Performance Outcome | Control | Standard | Measurement Criteria |
|---|---|---|---|---|
| **2/3** | Establish and implement safety exclusion zones. | C4: Exclusion Zones. | IAP documents the need for, and if required, refines throughout the incident safety exclusion areas to prevent exposure of Cooper 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

Cooper Energy's emergency management structure is scalable according to the level of incident. In general, incident response is managed by the Cooper 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. Cooper Energy's incident control system provides for remote access and integration of IMT personnel.

*Table 3-1: Emergency Response Groups*

| Parameter | CMT | IMT and Field Teams | Well SCT |
|---|---|---|---|
| **Role** | 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).<br>Interface between local relevant persons, external spill response and support agencies. | Responsible for planning and recovery from source control and well incidents. |
| **Leader** | CMT Leader | IC. | SCT Leader |
| **Plan** | Cooper Energy CMP | Cooper Energy IMP<br>Cooper Energy OPEP<br>Cooper Energy TRP | Cooper Energy Offshore VSCP<br>Activity SCERP |
| **Nominal Location** | CMT Room<br>Level 8, 70 Franklin St, Adelaide, SA | Incident Control Centre<br>Level 8, 70 Franklin St, Adelaide, SA<br>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.<br>FOB and Field Teams will be directed by the IMT to locations identified through the IAP cycle. | Perth<br>Level 15, 123 St Georges Terrace, Perth Western Australia (WA) |
| **Interface with regulator/industry response plans and resources** | - | NatPlan<br>Victorian Maritime Emergencies NSR subplan<br>NSW State Waters Marine Oil and Chemical Spill Contingency Plan<br>TasPlan<br>AMOSPlan | Memorandum of understanding (MoU) between Titleholders |
| **External Liaison Positions within Team** | AMOSC Industry Intergovernmental Advisor. | Liaison Officers (AMOSC, AMSA, State CA, State government Lead Agencies) (as required).<br>**Note – Cooper Energy Liaisons should be prepared to deploy to Government Agency Location (e.g. Melbourne or Canberra)**. | - |

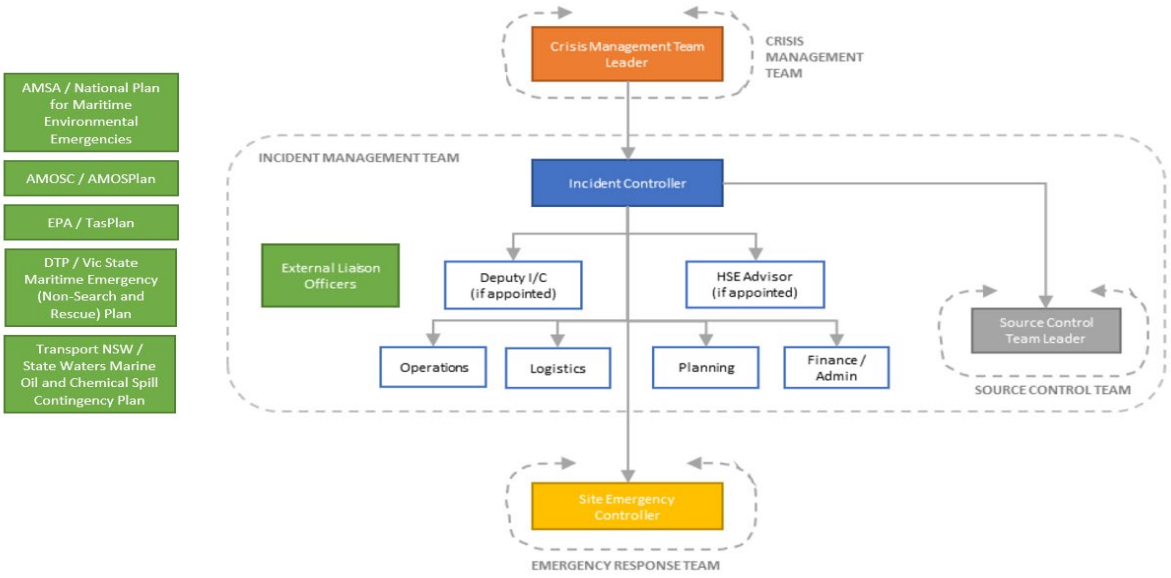



*Figure 3-1: Cooper Energy Oil Spill Response Structure*

## 3.1 Spill Management Team – Level Structures

Figure 3-1 and Table 3-2 provides the Cooper 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 Cooper Energy and regulator/industry plans and allows external trained resources to fit seamlessly into the Cooper Energy IMT structure in a surge capacity.

*Table 3-2: Cooper Energy Emergency Response Structure*

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

**Level 3 Spill Management Structure**

A level 3 spill incident requires resources which exceed the capacity of Cooper Energy. Cooper 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 Cooper 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. AMSAs 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 MASA 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 Manager.

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 Cooper 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.

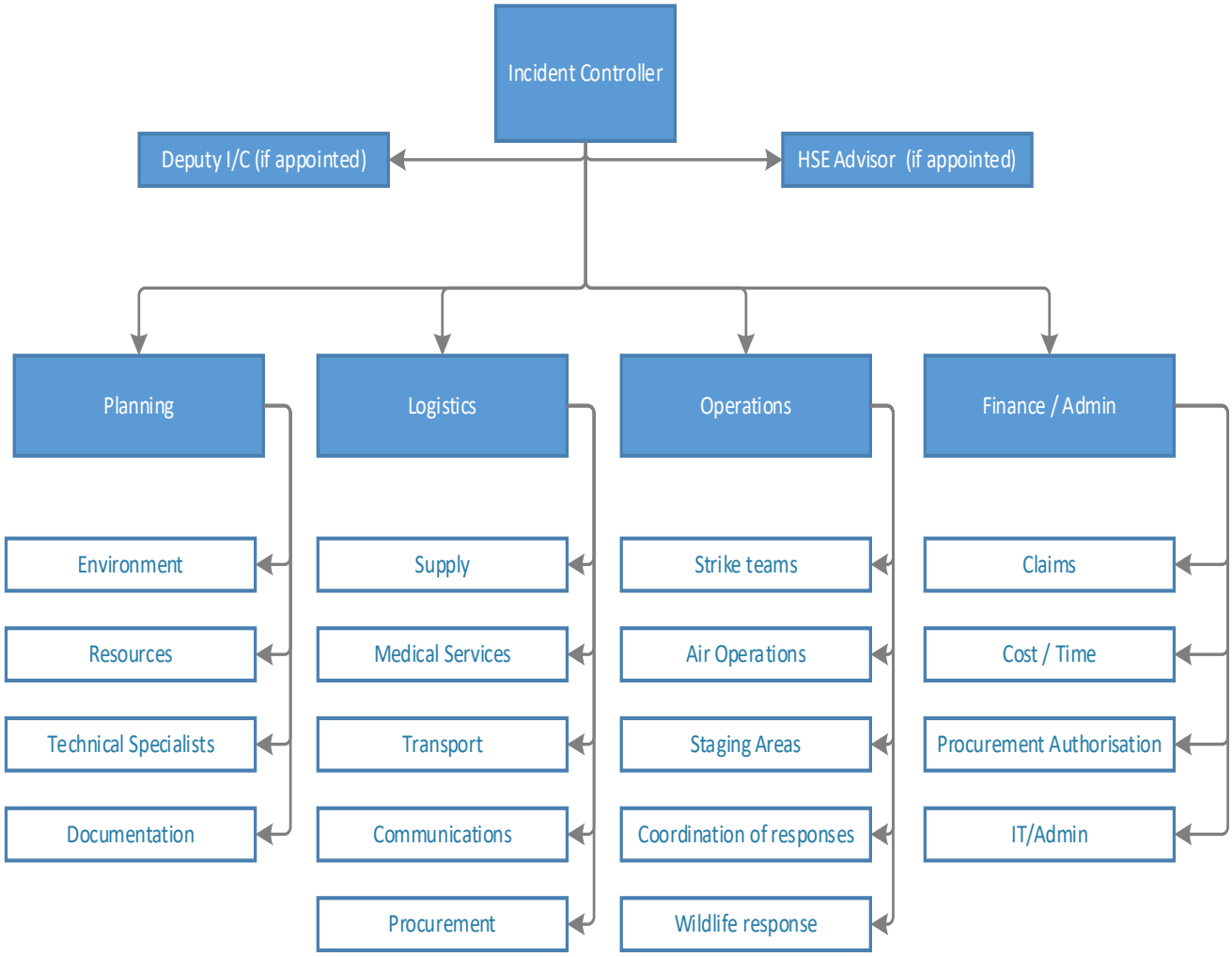



*Figure 3-2: Spill Level 2/3 Support Organisation (Indicative)*

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

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| **Incident Controller** | Management of all activities necessary for the resolution of an incident. | Safe and efficient response structure and organisation. | IMO3 or equivalent<br>OPEP Induction | Cooper Energy / AMOSC Core Group<br><br>CA Emergency Management |

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| | | | | Liaison Officer (or equivalent) |
| **Health & Safety Officer** | Oversees the health and safety of the response operations. | Health and Safety Plans, control measures and evaluation. | Industry Health Safety & Environment (HSE) role >5 years<br>OPEP induction | Cooper Energy |
| **Liaison Officers** | Relaying critical information to key stakeholders (government, community). Feeding back stakeholder concerns to the IC for resolution. | External / pubic/ stakeholder affairs are managed. | Industry or communications role >3 years<br>OPEP Induction | Cooper Energy / AMOSC Core group |
| **Planning Section Lead** | 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<br>Internal competencies*<br>OPEP Induction | Cooper Energy / AMOSC Core Group / |
| **Environment Unit Lead** | 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*<br>OPEP Induction | Cooper Energy / Environmental Consultancy or AMOSC Core Group. (External interface: State Environmental Officers) |
| **Operations Section Lead** | 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 | IMO2 or equivalent<br>Internal competencies*<br>OPEP Induction | AMOSC Core Group |

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| | | tech input to the safety plans. | | |
| **Logistics Section Lead** | 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<br>Internal competencies*<br>OPEP Induction | AMOSC Core Group |
| **Finance and Administrator Lead** | 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*<br>OPEP Induction | Cooper Energy |

*Notes: *Defined for role and maintained as part of the Cooper 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 |
|---|---|---|---|---|
| **FOB Lead** | Set-up and management of the forward operating base, IT systems, personnel, materials, and equipment. | Functional FOB for response. | IMO2 or equivalent<br>OPEP Induction | Cooper Energy / AMOSC |
| **Safety Officer** | Coordinate welfare requirements for all field response personnel. | Implementation of health and safety plan measures. | Industry HSE role >5 years<br>OPEP induction | Cooper Energy |
| **Aerial Operations Manager** | Coordination of aerial response operations. | Aerial response operations are implemented in line with the IAP. | IMO2 or equivalent<br>OPEP Induction<br>Functional specific training/workshop | AMOSC |

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| **Aerial Observer** | 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 |
| Marine Operations Manager | Coordination of marine response operations. | Marine response operations are implemented in line with the IAP. | IMO1 or equivalent<br>OPEP Induction | AMOSC |
| **Shoreline Operations Manager** | Coordination of shoreline response operations. | Shoreline response operations are implemented in line with the IAP. | IMO1 or equivalent<br>OPEP Induction<br>Functional specific training/workshop | AMOSC |
| **SCAT Team Leads** | Coordinate day to day SCAT at respective field location. | SCAT operations are implemented in line with the IAP. | IMO1 or equivalent<br>Functional specific training/workshop | AMOSC and AMOSC Core Group |
| **Shoreline Response Team Leads** | Coordinate day to day shoreline response at respective field location. | Shoreline response operations are implemented in line with the IAP. | OPEP Induction<br>Functional specific training/workshop | AMOSC Core Group |
| **TRP Team Leads** | Coordinate tactical response at respective tactical response site. | Response operations are implemented in line with TRPs/IAP. | IMO1 or equivalent<br>Functional specific training/workshop | AMOSC Core Group |
| **Oiled Wildlife Coordinator** | Coordinate OWR. | OWR is implemented in line with TRPs/IAP. | Functional specific training/workshop - OWR management<br>OPEP Induction | AMOSC Core Group |
| **Oiled Wildlife Rehabilitation Manager** | 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 |
| **OSPM Coordinator** | 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 Cooper Energy Offshore Victoria Source Control Plan (VIC-DC-ERP-0001) provides details and guidance on emergency well control management for Cooper 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.

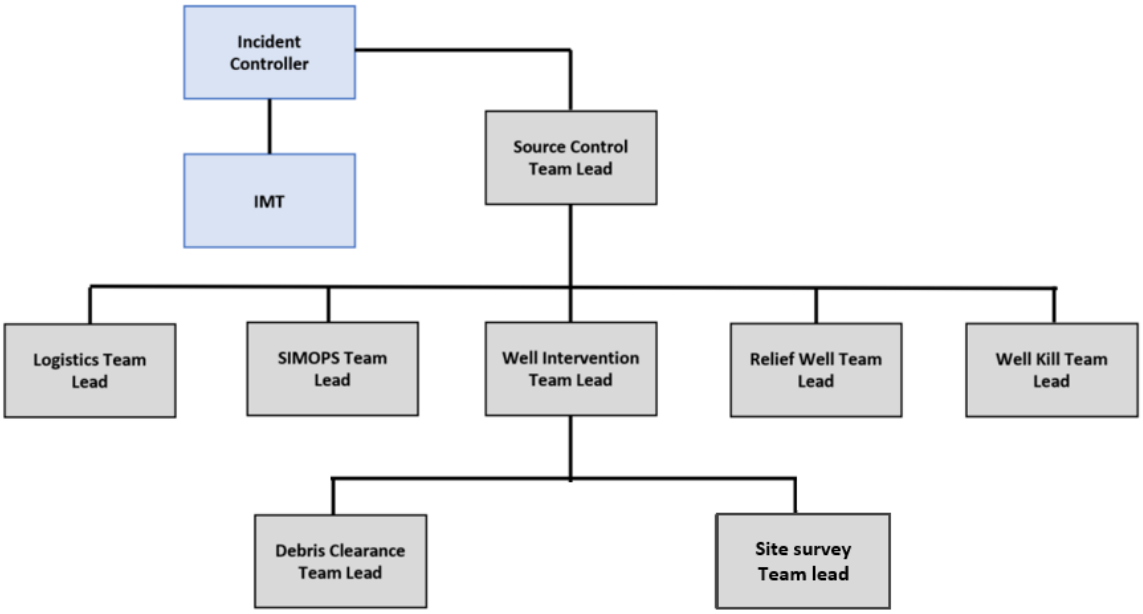



*Figure 3-3: Source Control Team Structure*

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

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| **SCT Lead** | 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. | IMO III, International Well Control Forum (IWCF) Subsea Supervisor Well Control or equivalent | Cooper Energy<br>Labour Agency<br>Service Partners |

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| **Well Intervention Team Lead** | 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:<br>• site survey plan<br>• well intervention plan<br>• debris removal plan. | IMO II, IWCF Subsea Supervisor Well Control | Cooper Energy<br>Labour Agency<br>Service Partners |
| **Site Survey Team Lead** | 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 | Cooper Energy<br>Labour Agency<br>Service Partners |
| **Debris Removal Team Lead** | 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<br>subsea operations<br>lead role | Cooper Energy<br>Labour Agency<br>Service Partners |
| **Subsea Dispersants Team Lead** | The Dispersant Team Leader is responsible for the management and coordination of subsea dispersant operations at or near the source. | Coordinate the development of the subsea dispersant application and monitoring plans and procedures, secure resources, and manage subsea dispersant operations.<br>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 | Cooper Energy<br>AMOSC<br>WWC<br>Oceaneering<br>Service Rep. – Dispersant Vessel |
| **Simultaneous Operations (SIMOPS) Team Lead** | 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 | Experience SIMOPS lead role | Cooper Energy<br>Labour Agency<br>Service Partner |

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| | | transport of all well control materials to the site.<br>Create and maintain SIMOPS plan detailing organization and process flow. Establish On-Site SIMOPS Control/Coordination Centre. | | |
| **Relief Well Team Lead** | 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 | Cooper Energy<br>Labour Agency<br>Service Partners |
| **Well Kill Team Lead** | 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 | Cooper Energy<br>Labour Agency<br>Service Partner |
| **Logistics Team Lead** | 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 source | 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 | Cooper Energy<br>Labour Agency<br>Service Partner |

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

### 3.2.4 Crisis Management Team

The Cooper Energy CMT typically comprises senior executives representing the major areas of the Cooper 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.

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

| Initial Responder | Responsibilities | Output | Responder Competency/ Training | Sourced from |
|---|---|---|---|---|
| **CMT Lead** | 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) | Cooper Energy |
| **External Affairs / Stakeholder relations** | Advise on development of internal and external affairs and communications strategy. Brief company spokesperson. | Provision of information to external parties in timely manner. | Manger (or delegate) | Cooper Energy |
| **Legal** | 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) | Cooper Energy |
| **Finance** | Financial notifications, provision of adequate funds, advice on financial impacts. | Response is adequately funded to implement the IAP. | Chief Officer (or delegate) | Cooper Energy |
| **Human Resources** | Source relief and specialist personnel. | Response is adequately resourced to implement the IAP. | Manager (or delegate) | Cooper 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

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 2023).

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

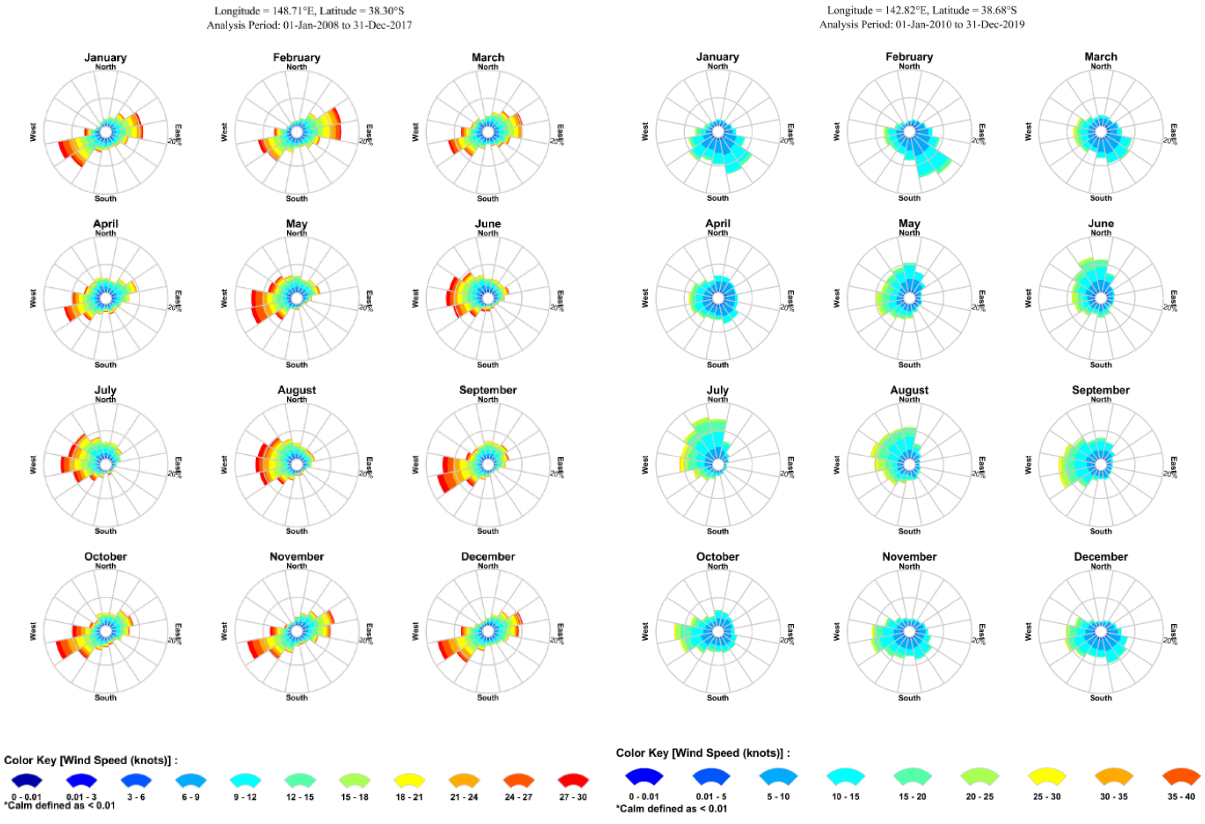


*Figure 4-1: Modelled Monthly Wind Data Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2023))*

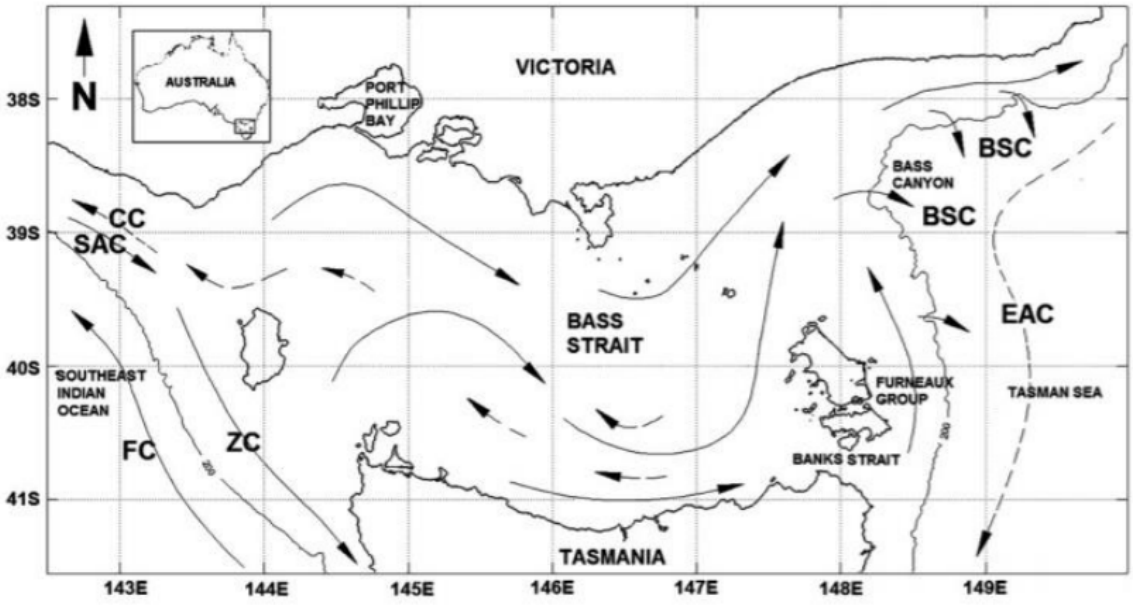
### 4.1.2 Surface Currents

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 though 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 2023). 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)*

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

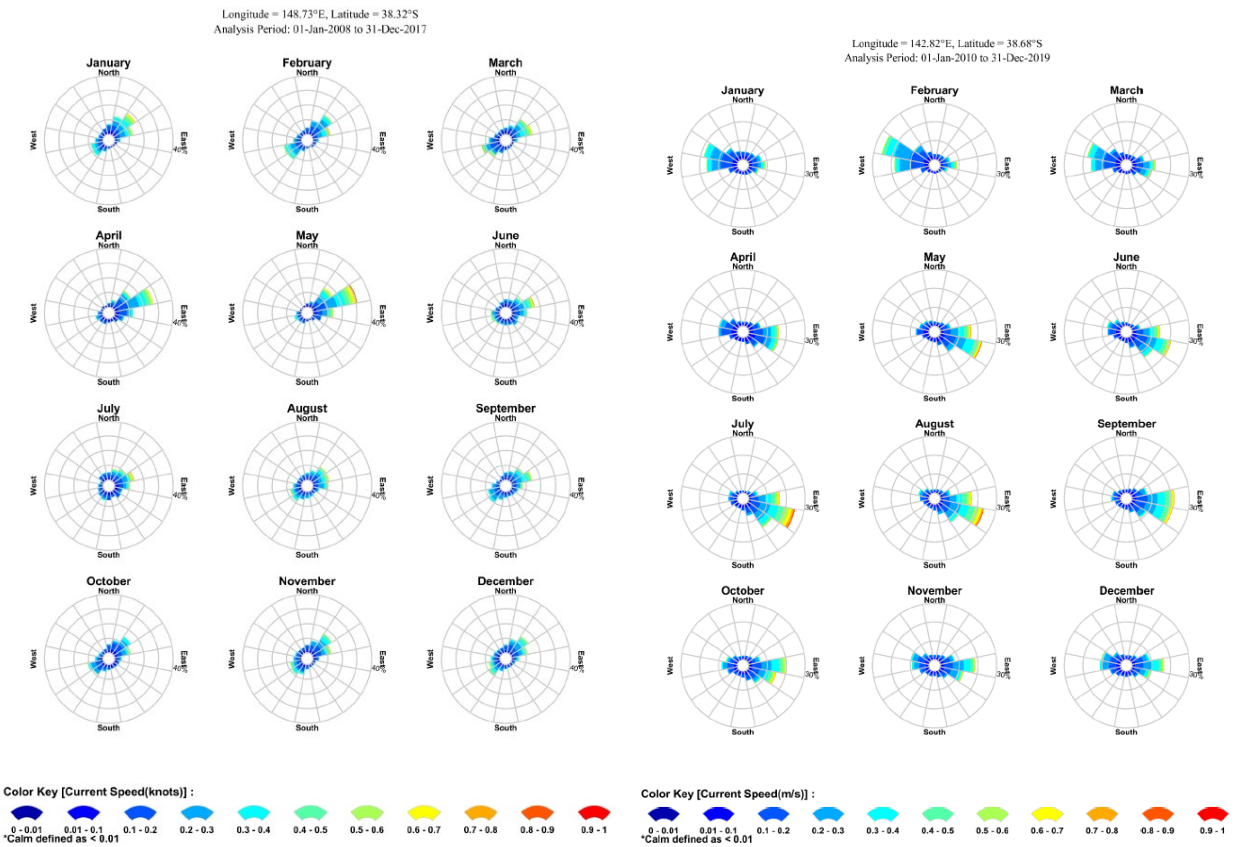



*Figure 4-3: Modelled Monthly Surface Current Data Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2023)*

### 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 2023). Salinity tends to remain consistent throughout the year, between 35.4-35.6 psu (RPS 2021, RPS 2023).

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

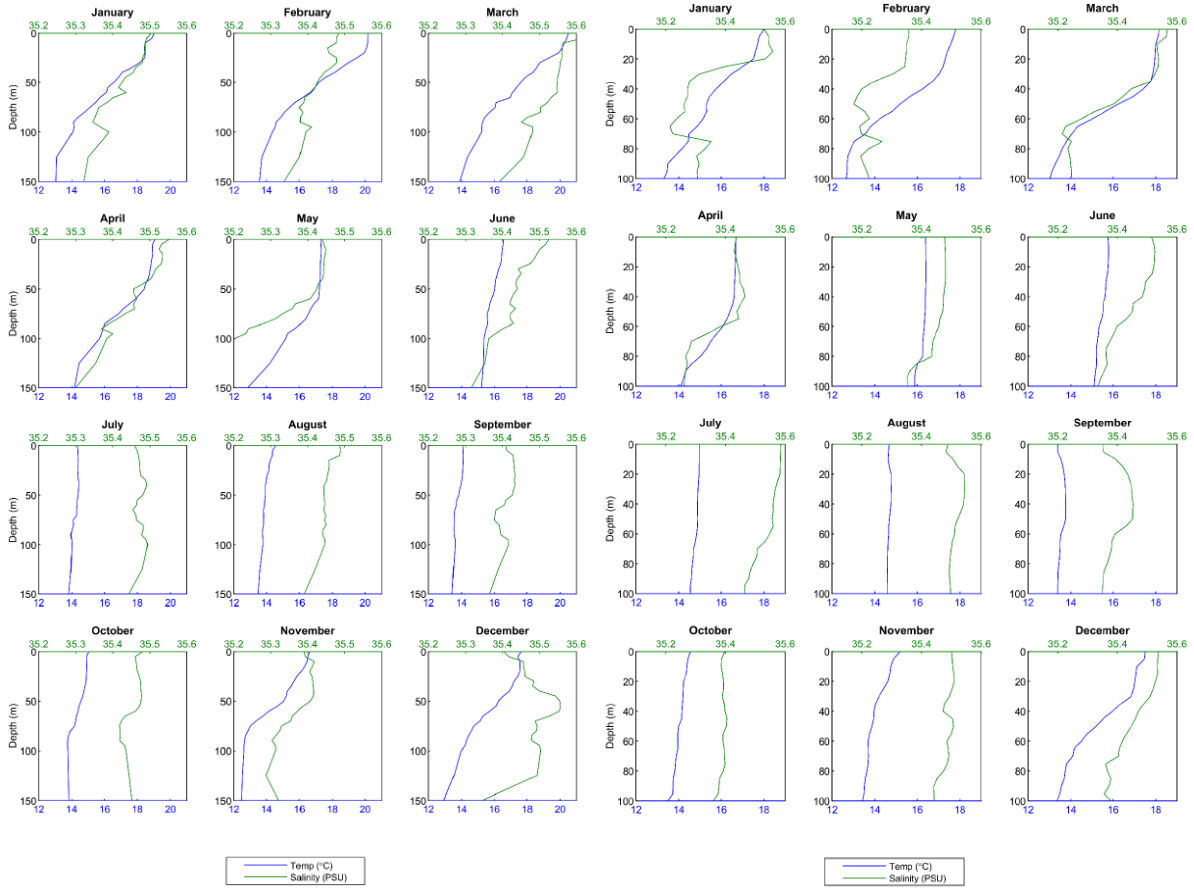



*Figure 4-4: Monthly Temperature and Salinity Profiles Throughout the Water Column Gippsland Basin (left (RPS 2021)) and Otway Basin (right (RPS 2023)*

## 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 constatn 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.

Table 4-1 provides the physical properties of MDO.

*Table 4-1: MDO Properties and Behaviour*

| Properties | | MDO |
|---|---|---|
| **American Petroleum Institute (API) Gravity** | | 24 |
| **Density@25°C g/ml** | | 0.89 |
| **Dynamic Viscosity @ 25°C (cP)** | | 14.0 |
| **Pour Point (°C)** | | -9 |
| **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 |

Source: Oil Spill Modelling Annie-2 *(RPS 2023)*

### 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 $m^3$ 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)*

*Table 4-3: Longtom Condensate Physical Properties*

| Properties | Longtom Condensate |
|---|---|
| **API Gravity** | 51.2 |
| **Density@25°C g/ml** | 0.777 |

| Properties | | Longtom Condensate |
|---|---|---|
| **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)** | 61.5 |
| | **Semi-volatile (180-265°C)** | 14.3 |
| | **Low Volatility (265-380°C)** | 21.1 |
| | **Residual (>380°C)** | 3.1 |
| **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)** | 37.2 |
| | **Semi-volatile - Residual (>180°C)** | 62.8 |
| **ITOPF Group** | | II |

Source: Sole condensate Assay *(Intertek 2021)*

### 4.2.4 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 ~11 km northeast of the Casino field and modelling for Annie-1 well has been used as a conservative proxy for response planning purposes[1] in lieu of CHN specific modelling. Table 4-7 details the physical characteristics of the Annie condensate.

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

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

*Table 4-7: CHN and Annie Condensate Physical Properties*

| Properties | | CHN Condensate | Annie Condensate |
|---|---|---|---|
| **API Gravity** | | 51.2 | 48.23 |
| **Density@25°C g/ml** | | 0.774 | 0.78 |
| **Dynamic Viscosity @ 25°C (cP)** | | 0.14 | 1.06 |
| **Pour Point (°C)** | | -54 | -30 |
| **Boiling Point Curve (% mass)** | **Volatiles (<180°C)** | 84 | 54.73 |
| | **Semi-volatile (180-265°C)** | 14 | 32.67 |
| | **Low Volatility (265-380°C)** | 2 | 11.79 |
| | **Residual (>380°C)** | - | 0.8 |
| **ITOPF Group** | | I | I |

[1] *Refer to CHN-EN-EMP-001 for further information.*

## 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 Cooper 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 and Sole 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.

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

| Response Option (OPEP Section Reference) | Description | MDO | PB and Sole* | Otway |
|---|---|---|---|---|
| **Source Control (OPEP Section 6.0)** | Limit flow of hydrocarbons to environment. | ✓ | ✓ | ✓ |
| **Monitor & Evaluate (OPEP Section 0)** | Direct observation-aerial or marine, vector calculations, OSTM, satellite tracking buoys. To maintain situational awareness, all monitor and evaluate options suitable. | ✓ | ✓ | ✓ |
| **Dispersant Application** | Breakdown surface spill & draw droplets into upper layers of water column.<br>Increases biodegradation and weathering and provides benefit to sea-surface air breathing animals. | x | x | x** |
| **Contain and Recover** | Booms and skimmers to contain surface oil where there is a potential threat to environmental sensitivities. | x | x | x |
| **Protect & Deflect (OPEP Section 8.0)** | Booms and skimmers deployed to protect environmental sensitivities. | ✓ | ✓ | ✓ |
| **Shoreline Clean-up (OPEP Section 9.0)** | The selection and application of shoreline clean-up methods will take into account environmental sensitives based on NEBA. | ✓ | ✓ | ✓ |
| **Oiled Wildlife Response (OPEP Section 10.0)** | 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.*

## 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$^2$ 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$^2$ 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 |
|---|---|---|
| **Severe Impact** | S1 | Region of known sensitive habitat (e.g. mangrove, saltmarsh, wetlands) or landform type (e.g.<br>sheltered tidal flats, sheltered rocky coasts), which if impacted may have significant impacts and long recovery periods.<br>Known presence of feeding, breeding, or nesting behaviours of threatened species (e.g. biologically important areas [BIAs]).<br>Other areas of ecological or social significance (e.g. marine protected areas, Ramsar wetlands, threatened ecological communities, Commonwealth heritage listed areas). |

| Sensitivity | Code | Criteria |
|---|---|---|
| **Medium Impact** | S2 | 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).<br>Known presence of feeding, breeding, or nesting behaviours of non-threatened species (e.g. BIAs).<br>Other areas of ecological or social significance (e.g. commercial fishing, tourist attractions, cultural heritage sites). |
| **Low Impact** | S3 | 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).<br>Other areas with expected minimal impact to marine life, commercial activities, public areas or cultural heritage sites. |

### 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 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 CHN 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 4-5 shows a map of the TRPs currently on file within Cooper Energy and shared between relevant control agencies and operators.

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

| Location | Latitude | Longitude | Summary | TRP |
|---|---|---|---|---|
| **Betka river** | -37.57 | 149.75 | High coastal habitat sensitivity | Betka River |
| **Cape Howe** | -37.52 | 149.94 | High coastal habitat sensitivity<br>High biological sensitivity | Cape Howe Marine National Park |
| **Gabo Island** | -37.56 | 149.91 | High coastal habitat sensitivity<br>High biological sensitivity | Gabo Island |
| **Point Hicks** | -37.80 | 149.27 | High biological sensitivity | Point Hicks |
| **Shipwreck Creek** | -37.64 | 149.70 | High coastal habitat sensitivity<br>High biological sensitivity | Shipwreck Creek |
| **Tamboon Inlet** | -37.78 | 149.14 | High coastal habitat sensitivity<br>High biological sensitivity | Tamboon Inlet |
| **Tullaburga Island** | -37.55 | 149.84 | High biological sensitivity | Tullaburga Island |
| **Yeerung River** | -37.79 | 148.78 | High coastal habitat sensitivity<br>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 |
|---|---|---|---|---|
| **Curdies Inlet** | -38.60 | 142.87 | State terrestrial protected area, International Union for Conservation of Nature (IUCN) Category III<br>High coastal habitat sensitivity<br>High biological sensitivity | Curdies Inlet |
| **Lower Aire River Inlet (and Aire River mouth)** | -38.81 | 143.46 | State terrestrial protected area, IUCN Category II<br>High coastal habitat sensitivity<br>High biological sensitivity | Aire River Inlet |
| **Port Campbell** | -38.61 | 142.99 | Coastal settlement<br>Amenity beach, tourism, camping, fishing<br>High coastal habitat sensitivity<br>High biological sensitivity | Port Campbell |

| Location | Latitude | Longitude | Summary | TRP |
|---|---|---|---|---|
| **Princetown Wetlands (and Gellibrand River mouth)** | -38.70 | 143.16 | Coastal settlement<br>Main industries are tourism and fishing (including port for rock lobster fishery) | Princetown / Gellibrand River |

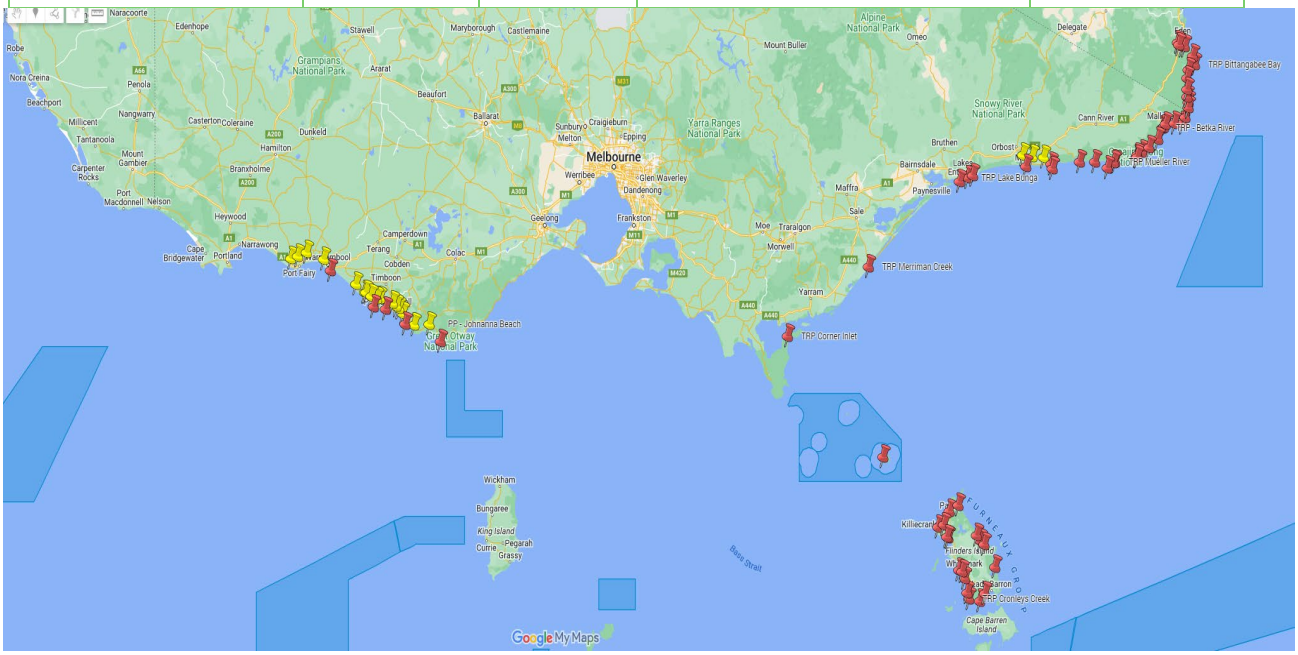



*Figure 4-5: Map of TRP locations currently on File within Cooper Energy. (File Location: **Tactical Response Plans)***

### 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.

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.

*Table 4-12: Sensitivities within the Priority Response Planning Areas identified for the PB and Sole 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 | OWR |
| | | | | | | | | | | | **MDO** | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | | | | | **Condensate**[2] | Yes | Yes | No | No | N/A | N/A | N/A |
| | | | | | | | | | | | **Gas** | Yes | Yes | No | No | N/A | N/A | N/A |
| **Marine Ecology** | | | | | | | | | | | | | | | | | | |
| 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 |
| **Coastal Habitats** | | | | | | | | | | | | | | | | | | |
| Saltmarsh/Seagrass | S1 | | | | | ✓ | | | | ✓ | | ↑ | - | | | ↑ | ↓ | N/A |
| Mangroves | S1 | | ✓ | | | | | | | | | ↑ | - | | | ↑ | ↓ | N/A |
| Mudflats | S1 | | ✓ | | | | | | | | | ↑ | - | | | ↑ | ↓ | N/A |

[2] *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.*

| 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 | OWR |
| | | | | | | | | | | | MDO | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | | | | | Condensate[2] | Yes | Yes | No | No | N/A | N/A | N/A |
| | | | | | | | | | | | Gas | Yes | Yes | No | No | N/A | N/A | N/A |
| Kelp Habitats (inter-tidal) | S2 | | | | | | | | | | | ↑ | - | | | N/A | N/A | N/A |
| Sand Beaches | S3 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | N/A | ↑ | N/A |
| Sub-tidal Reef | S3 | | | | | | | | | | | ↑ | - | | | N/A | N/A | N/A |
| Inter-tidal Rocky Plat/Headland | S3 | | ✓ | | | ✓ | ✓ | | | | | ↑ | - | | | N/A | ↑ | N/A |
| Wetlands | S1 | | ✓ | | | | | ✓ | | ✓ | | ↑ | - | | | ↑ | ↓ | N/A |
| **Coastal Ecology** | | | | | | | | | | | | | | | | | | |
| 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 | ↑ |
| **Socio-economic** | | | | | | | | | | | | | | | | | | |
| 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 |

| 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 | OWR |
| | | | | | | | | | | | MDO | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | | | | | Condensate[2] | Yes | Yes | No | No | N/A | N/A | N/A |
| | | | | | | | | | | | Gas | Yes | Yes | No | No | N/A | 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 | Response Option Effective? | | | | | | | |
| | Sensitivity | Marine | Otway NP<br>Aire River Beach<br>Aire River | Otway NP<br>Aire River Beach<br>Aire River | Port Campbell<br>Port Campbell Beach<br>Port Campbell Inlet | Port Campbell NP<br>Twelve Apostles Marine NP<br>Gellibrand Rover | Oil Type | Source Control | Monitor and Evaluate | Dispersant Application | Contain and Recover | Protect and Deflect | Shoreline Clean-up | OWR |
| | | | | | | | **MDO** | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | **Condensate** | Yes | Yes | No[3] | No | Yes | Yes | Yes |
| | | | | | | | **Gas** | Yes | Yes | No | No | No | No | No |
| **Marine Ecology** | | | | | | | | | | | | | | |
| Cetaceans | S1 | ✓ | | | | | | ↑ | - | | | N/A | N/A | N/A |
| 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 |
| **Coastal Habitats** | | | | | | | | | | | | | | |
| Saltmarsh/Seagrass | S1 | | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | ↑ | ↓ | N/A |
| Mangroves | S1 | | | | | | | ↑ | - | | | ↑ | ↓ | N/A |

*[3] 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.*

| Receptor | Classification | | Priority Response Planning Area | | | | Response Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Curdies Inlet | Aire River Wetlands | Port Campbell | Princetown Wetlands | Response Option Effective? | | | | | | | |
| | Sensitivity | Marine | Otway NP<br>Aire River Beach<br>Aire River | Otway NP<br>Aire River Beach<br>Aire River | Port Campbell<br>Port Campbell Beach<br>Port Campbell Inlet | Port Campbell NP<br>Twelve Apostles Marine NP<br>Gellibrand Rover | Oil Type | Source Control | Monitor and Evaluate | Dispersant Application | Contain and Recover | Protect and Deflect | Shoreline Clean-up | OWR |
| | | | | | | | **MDO** | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | **Condensate** | Yes | Yes | No[3] | No | Yes | Yes | Yes |
| | | | | | | | **Gas** | Yes | Yes | No | No | No | No | No |
| 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 |
| **Coastal Ecology** | | | | | | | | | | | | | | |
| Shoreline Birds | S1 | | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | ↑ | ↑ | ↑ |
| Pinniped Haul-out Sites | S2 | | | | | | | ↑ | - | | | ↑ | N/A | ↑ |
| Penguin Colonies | S2 | | ✓ | ✓ | | ✓ | | ↑ | - | | | ↑ | N/A | ↑ |
| Protected areas | S2 | | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | N/A | N/A | ↑ |
| **Socio-economic** | | | | | | | | | | | | | | |
| Tourism | S2 | | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | ↑ | ↑ | N/A |
| Amenity beach | S2 | | ✓ | ✓ | ✓ | ✓ | | ↑ | - | | | ↑ | ↑ | N/A |
| Ports, Harbours, Yacht Club | S3 | | | | ✓ | | | ↑ | - | | | ↑ | ↑ | N/A |

| Receptor | Classification | | Priority Response Planning Area | | | | Response Options | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Curdies Inlet | Aire River Wetlands | Port Campbell | Princetown Wetlands | Response Option Effective? | | | | | | | |
| | Sensitivity | Marine | Otway NP<br>Aire River Beach<br>Aire River | Otway NP<br>Aire River Beach<br>Aire River | Port Campbell<br>Port Campbell Beach<br>Port Campbell Inlet | Port Campbell NP<br>Twelve Apostles Marine NP<br>Gellibrand Rover | Oil Type | Source Control | Monitor and Evaluate | Dispersant Application | Contain and Recover | Protect and Deflect | Shoreline Clean-up | OWR |
| | | | | | | | **MDO** | Yes | Yes | No | No | Yes | Yes | Yes |
| | | | | | | | **Condensate** | Yes | Yes | No[3] | No | Yes | Yes | Yes |
| | | | | | | | **Gas** | Yes | Yes | No | No | No | No | No |
| 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**

| 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.

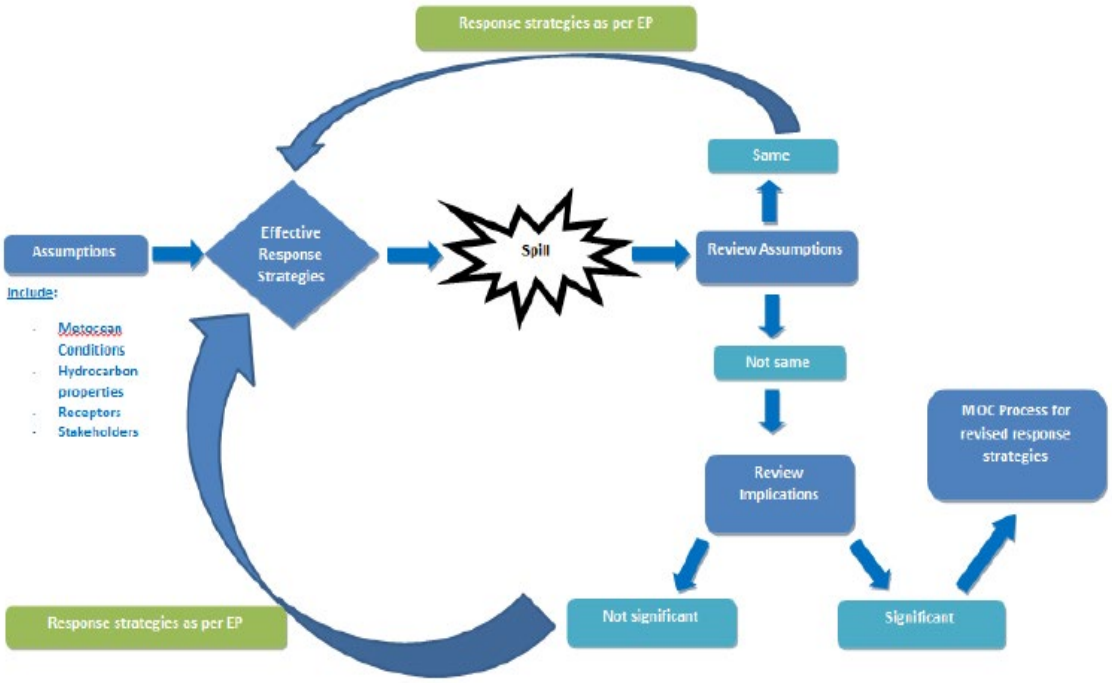



*Figure 5-1: Process for Reviewing Response Strategy Effectiveness in the Event of a Spill*

## 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 occuring within Victorian waters.

To ensure consistency of approach between Cooper Energy and the relevant State CA (DTP) for the spill scenarios identified for the Cooper Energy Assets and activities (see Section 1.2) with respect to NEBAs, Cooper 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 2 - .

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 Cooper 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, Cooper 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. Cooper 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 |
|---|---|
| **Source Control (Vessel/subsea)** | Termination criteria varies according to the incident and spill level:<br>• 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<br>• for pipeline: the pipeline is verified as isolated from feedstock<br>• for a subsea well leak incident: the hydrocarbon release has been contained and well control re-established. |
| **Monitor and evaluate** | Termination occurs when the following criteria is fulfilled:<br>• the spill has ceased<br>• 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<br>• modelling results (OM1) do not predict surface exposures at visible levels.<br>Termination criteria to be agreed with the relevant State CA for a spill in state waters. |
| **Chemical dispersion** | Termination occurs when the following criteria is fulfilled:<br>• When dispersant is not assisting in supressing LELs; and / or,<br>• If the risk associated with LELs is managed by other means; and/or<br>• Agreement is reached with Statutory Agency to terminate the response |
| **Contain and recover** | N/A |
| **Protect and deflect** | 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:<br>• the spill is no longer observable to human observers and all oil has impacted shorelines and is unlikely to remobilise<br>• slick thickness and characteristics mean that protection/deflection booms will not be effective as determined by the NEBA<br>• NEBA concludes that continued activity will not produce any net environmental benefit. NEBA has been signed off by State CA IC. |
| **Shoreline assessment and clean-up** | To be determined in consultation with State CA, and aligned with the National Plan Response, Assessment and Termination Guidance (NP-GUI-025). Suggested criteria: |

| Response Option | Termination Criteria |
|---|---|
| | • the spill has ceased<br>• no additional response or clean-up of habitat is predicted<br>• location areas predicted to be contacted by hydrocarbons have been contacted<br>• independent scientific advice indicates that hydrocarbon levels are below 100 g/m$^2$ or further clean-up activities are unlikely to materially decrease hydrocarbon impacts on environmental sensitivities. |
| **OWR** | To be determined in consultation with State CA and relevant State nominated oiled wildlife authority. Suggested criteria:<br>• OWR is discontinued when all affected/recovered animals are cleaned and rehabilitated to their natural habitat as advised by the Lead CA. |

# 6.0 Source Control

## 6.1 Response Activities

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

The performance outcome for vessel-related hydrocarbon releases is provided in Table 6-1.

*Table 6-1: Source Control – Vessels (level 1/2 spills)*

| Spill Level | Environmental Performance Outcome | Control | Performance Standard | Measurement Criteria |
|---|---|---|---|---|
| **1/2** | Source control, isolation and containment prevent hydrocarbon release to the marine environment. | C5 Vessel SMPEP or equivalent | In a level 1/2 spill, the vessel implements SMPEP (or equivalent) to prevent/limit discharge to the environment. | Vessel incident report verifies action taken. |

**Level 1 Spill**

Vessels engaged to undertake petroleum activities on Cooper 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 $m^3$.

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 Cooper Energy Duty Manager will notify the IC of the incident. The IC will activate the relevant SCERP and notify the Cooper Energy SCT Leader. Upon SCERP initiation, the SCT Leader will mobilise the Cooper 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 exepcted 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

Cooper 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 6-2 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 6-2: Source Control Resource Availability (Drilling)*

| Resource | Resource Requirement | Resource Availability / Provider |
|---|---|---|
| **Survey, Debris Clearance, Intervention, Dispersant Application** | | |
| **Engineering support** | Well and subsea engineering support services | Available throughout projects and operations. |
| **Vessels** | 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. |
| **Offshore Personnel** | 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. |
| **ROVs and ROV crew** | Work Class ROV and crew 24 hours/day to install and operate subsea equipment. | Refer to 'Vessels' |

| Resource | Resource Requirement | Resource Availability / Provider |
|---|---|---|
| **Equipment** | Survey and debris clearance equipment:<br>• Camera inspection ROV operated<br>• ROVs<br>• Grinders / super grinders<br>• Impact wrenches<br>• Multipurpose cleaning tools<br>• Remote control units<br>• Hydraulic cutters<br>• Chop saws<br>• Diamond wire cutters<br>• Hydraulic power units<br>• ROV dredges<br>• Torque tools<br>• Test jig<br>• Pressure control equipment intervention skid and operating equipment<br>• Linear valve override tools<br>• Manipulator knife<br>• Flying lead orientation tool<br>• Umbilicals | 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. |
| Dispersant application | • Dispersant IBCs (~170m$^3$), approx. 1.6m$^3$ / day @ 1:100 (dispersant: oil) application ratio<br>• Surface dispersant booms<br>• Distribution hose and manifolds<br>• Pumps<br>• Subsea Dispersant wand for ROV<br>• ROV bladder packs<br>• In-water monitoring (refer to OSMP)<br>• Surface plume modelling<br>• Gas detection monitors (see additional resources below) | AMOSC have >500m$^3$ Dasic Slickgone (preferred product for condensate and subsea application) NS available. 75m$^3$ available at AMOSC in Geelong, less that 1-day sail to Otway Title Areas. Additional supply could be mobilised from Fremantle.<br>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.<br>Subsea application equipment is available through AMOSC/Oceaneering Subsea First Response Toolkit, or through Wild Well Control.<br>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. |
| Dispersant efficacy monitoring | This component comprises direct efficacy testing of dispersant and in-field monitoring of dispersant effectiveness to optimise | 1. Cooper Energy has a dispersant efficacy testing kit and instructions for use from AMSOC, and will locate the kit on the MODU |

| Resource | Resource Requirement | Resource Availability / Provider |
|---|---|---|
| | treatment rates. Resource requirements are:<br>1. Efficacy testing kit and instructions for use.<br>2. Personnel to monitor Dispersant Product used, dispersant volumes used and dispersant dilutions applied<br>3. Gas monitors to (at least 1 per vessel within the operational area) to measure surface VOCs (LELs) in vicinity of the well<br>4. Aerial survey capability and modelling to assess the extent of surface oil and volume and extent of shoreline oil.<br>5. Results from OSMP Sc2 and Sc3 hydrocarbon monitoring modules. | or support vessel. Application of the kit will be overseen by a Cooper Energy representative.<br>2. Personnel involved in the dispersant application will monitor use parameters and provide to the source control team in daily operations reports.<br>3. Surface VOCs will be monitored by Cooper Energy or contractor offshore safety representative and levels reported in daily operations reports to the source control team.<br>4. The extent of surface and shoreline oiling will be assessed under the Operational Monitoring Module which provides for aerial survey capability and modelling; results will be provided daily to the IMT and source control team.<br>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. |
| **Relief Well** | | |
| **Engineering Support** | Well and subsea engineering support services | Available throughout projects and operations. For additional support, Cooper 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. |
| **Relief Well MODU** | 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 Cooper Energy) to expediate access to suitable MODUs for relief well drilling. If required Cooper Energy can request the use of a MODU that may be under contract to another operator. |
| **Materials** | Casing and Wellhead (standard specifications)<br>Drilling fluids<br>Moorings | Multiple materials suppliers to Australia, to enable mobilisation of relief well materials to site inside 50-days of an incident requiring response activation.<br>Multiple providers of drilling fluids with plants either operational or can be set-up in the Southeast region. |

| Resource | Resource Requirement | Resource Availability / Provider |
|---|---|---|
| | | Mobile Offshore Unit moorings or rental moorings. |
| **Offshore Personnel** | 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. |
| **ROVs and ROV crew** | Work Class ROV and crew 24 hours/day to install and operate subsea equipment. | Refer to 'Vessels' |
| **Cooper Energy Relief Well Readiness Form** | The Cooper Energy Relief Well Readiness Form is a live document and supports source control preparedness by documenting current information on the availability and location of resources required to manage a LoC from a well, more specifically:<br>• available and suitable MODUs and contacts<br>• available installation support vessel and contacts<br>• available equipment* required to support a source control response and contacts.<br>*Tracked equipment includes wellhead systems, conductor, surface and intermediate casing. | The Cooper Energy Relief Well Readiness Form is verified every 6-months during operations phase and every 2 months during drilling. |
| **Regulatory Approvals** | | |
| **Safety Case** | Facility Safety Case Revision required for vessels undertaking well activities. | Preferential selection of MODUs and vessels with existing Australian safety cases (monitored via the relief well readiness form).<br>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). |
| **Additional resources** | | |
| **Gas monitors** | 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 6-3 provides the performance outcomes, standards and measurement criteria for source control.

*Table 6-3: Source Control Performance Outcomes and Standards*

| ID | Environmental Performance Outcome | Control | Environmental Performance Standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|---|
| 1 | **Cooper Energy maintains capability to implement the Source Control Emergency Response** | C6 Source Control Emergency Response Planning | A SCERP aligned to the APPEA Source Control Guideline will be available and will include (or be supplemented by):<br>• accepted WOMP and Field Safety Case which provide for source control activities<br>• pre-identified quadrant(s) suitable for relief well locations covering all well clusters<br>• nominal mooring analysis for drilling in field from moored MODU, where applicable.<br>**Timing:**<br>Established prior to activity commencement and maintained throughout the activity (well production operations and well construction/maintenance activities). | Chief Operating Officer | SCERP in place |
| | | C7 Source Control Emergency Response Personnel | Cooper Energy maintains:<br>• resourcing plan to enable the implementation of source control strategies defined within the SCERP relevant to the activity scope.<br>• 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::<br>- well control specialist (e.g. Wild Well Control) (during well construction activities)<br>- well engineering services providers<br>- Australian safety case specialists<br>- subsea engineering services<br>- ROV contractors.<br>**Timing:**<br>Established prior to activity commencement and maintained throughout the activity (well production operations and well construction activities). | Chief Operating Officer | Contracts/ agreements demonstrate preparedness. |

| ID | Environmental Performance Outcome | Control | Environmental Performance Standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|---|
| | | | | | |
| | | C8 Source Control Emergency Response Equipment | • Cooper Energy maintains agreements or contractor pre-qualifications with service providers in line with the strategies and equipment defined within the campaign SCERP, including:<br>• survey equipment<br>• debris clearance equipment<br>• dispersant and application equipment (during well construction activities)<br>• intervention equipment<br>• industry MoU for access to relief well resources including relief well MODU.<br>**Timing:**<br>Established prior to activity commencement and maintained throughout the activity (well production operations and well construction activities). | Chief Operating Officer | Contracts/ agreements demonstrate preparedness. |
| | | C9 Source Control Response Resources Monitoring | Cooper Energy monitors the location and availability of source control response resources and materials defined within the campaign SCERP, including:<br>• available and suitable MODUs and contacts<br>• available construction support vessels and contacts<br>• available equipment* required to support a source control response and contacts.<br>*Tracked equipment includes wellhead systems, conductor, surface and intermediate casing strings.<br>**Timing:**<br>Established prior to activity commencement and maintained throughout activity (well production operations and well construction activities). | Chief Operating Officer | Completed relief well readiness form (verified every 6-months during operations)<br><br>SCERP response time model (RTMs) (reviewed annually, accounting for information received through the relief well readiness form) |
| | | C10 Source Control Response Logistics | Cooper Energy maintains agreements or contractor pre-qualifications with the following specialists:<br>• freight services provider. | Chief Operating Officer | Contracts/ agreements demonstrate preparedness. |

| ID | Environmental Performance Outcome | Control | Environmental Performance Standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|---|
| | | | **Timing:**<br>• Established prior to activity commencement and maintained throughout activity (well production operations and well construction activities). | | |
| | | C11 Source Control Response Exercises | Cooper Energy conducts source control desktop exercise in accordance with the activity SCERP.<br>**Timing:**<br>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** | C12 Survey Capability | 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.<br>**Timing:**<br>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 (C9). | Cooper Energy IC | Incident log verifies field mobilisation within this timeframe. |
| | | C13 Source Control Diagnostics | Source control specialists are mobilised to support within 3 days to assist with the diagnosis of the well problem and develop remedial action options.<br>**Timing:**<br>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 (C9). | Cooper Energy IC | Incident log verifies field mobilisation within this timeframe. |

| ID | Environmental Performance Outcome | Control | Environmental Performance Standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|---|
| | | C14 Debris Clearance and Intervention | 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.<br>**Timing:**<br>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 (C9). | Cooper Energy IC | Incident log verifies field mobilisation within this timeframe according to SCERP response time models. |
| | | C15 Capping Solution | 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.<br>**Timing:**<br>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 (C9). | Cooper Energy IC | Incident log verifies field mobilisation within this timeframe according to SCERP response time models. |
| | | C16 Relief Well | 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 (C9). | Cooper Energy IC | Incident log verifies field mobilisation within this timeframe according to SCERP response time models. |

| ID | Environmental Performance Outcome | Control | Environmental Performance Standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|---|
| | **No unacceptable risk chemicals used for activities described** | C17 Chemical selection process | All planned chemical discharges shall be assessed and deemed acceptable before use, in accordance with Cooper Energy's Offshore Environment Chemical Assessment Process (COE-MS-RCP-0042). | Cooper Energy IC | Chemicals will meet the requirements of the Cooper Energy Offshore Chemical Assessment Procedure |
| | **Dispersant use provides net environmental benefit** | C18 Dispersant Optimisation | Dispersant use is targeted at the flowing well. | Cooper Energy IC | Daily field report shows where dispersant was applied |
| | | | During the response the following parameters will be monitored and compared at least daily:<br>• Dispersant product used<br>• Dispersant volumes used<br>• Dispersant dilutions applied<br>• Surface VOCs (LELs) in vicinity of the well<br>• Extent of surface oil<br>• Volume and extent of shoreline oil.<br>• Results from OSMP Sc2 and Sc3 hydrocarbon monitoring modules | Cooper Energy IC | Daily field reports provide dispersant and LEL monitoring results for the day. |
| | | | Dispersant use is terminated if any of the following criteria are met:<br>• Well is controlled<br>• NEBA indicates no net environmental benefit | Cooper 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$^2$ |
|---|---|---|---|
| **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 | | |

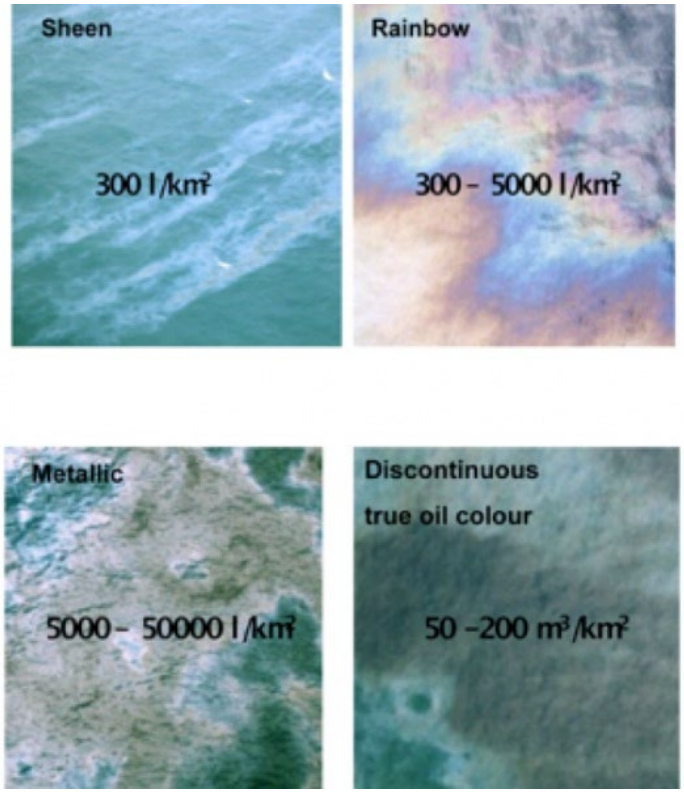



*Figure 7-1: Bonn Agreement Oil Appearance Code (Examples)*

### 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 7-4.

#### *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-sate conditions are calm.

#### *7.1.2.3 Satellite Tracking Drifter Buoys*

Vessels associated with Cooper 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 Cooper 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.

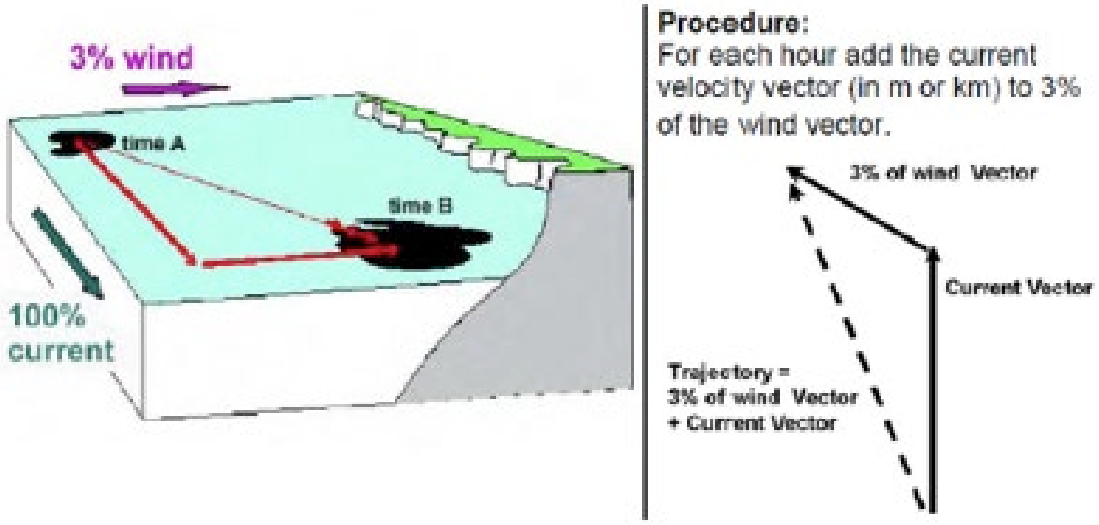



*Figure 7-2: Spill Vectoring Overview (AMSA Oil Spill Monitoring Handbook)*

#### *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. Cooper 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 Cooper 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 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 to download from **http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/response-tools/downloading-installing-and-running-adios.html**

### 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 Cooper 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 |
|---|---|---|---|---|
| **Satellite Tracking Buoys** | 1 x Satellite Tracking Buoy offshore | Buoys available from AMOSC or Worley Parsons. | 1 x Satellite Tracking Buoy offshore during | Satellite Tracking Buoy will be located offshore and ready for deployment for the duration of the campaign. |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | | | vessel or MODU activities.<br>Additional satellite tracking buoys can be accessed from AMOSC from the Geelong and/or Fremantle stockpiles. | Operating instructions which accompany buoy rental will be provided to contracting vessel prior to mobilisation with instruction to deploy from vessel in the event of a significant spill event. |
| **OSTM** | 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.<br>*AMOSC Service Level Statement confirms access to RPS Trajectory Modelling within 60 minutes.* |
| **Manual Trajectory Calculation** | 1 x IMT Member (IMO2) | IMT Planning Officer (or equivalent). | Refer to Appendix 5 | Resources available within Cooper Energy. |
| | Current and Wind Data | BOM “Meteye” Service. | N/A | Wind data available online.<br>Current data obtained from satellite tracking buoy. |
| **Satellite Imagery** | 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.<br>*Imagery to be determined at the time of request will dictate supply timeframes depending on satellite availability.* |
| **Aerial/Vessel Surveillance** | 1 x Pilot/Aircraft | Pre-qualification with Offshore Services Australasia (formerly | 1 x Pilot/Aircraft<br>As per service provider agreement. | Supplier has identified that surplus aircraft are usually available and can be supplied within 24 hours. |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | | Warrnambool Babcock). | Additional resources may be requested. | 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).<br>AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours.<br>*AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation.* |
| | 1 x vessel | Service/Equipment agreement with Undersea Marine Pty Ltd. | 6 x vessels available in Victoria including offshore support / survey vessel and coastal utility launch.<br>As per service provider agreement.<br>Additional resources may be requested. | Cooper Energy maintains an agreement with a Marine Services 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 Cooper Energy assets.

Use of vessels and aircraft has the potential to disturb marine fauna. To mitigate these impacts the Cooper Energy oil spill IC (or delegate) will ensure the control measures identified in Table 7-3 are implemented.

*Table 7-3: Monitor and Evaluate Activity Controls*

| Control Measure | Environmental Performance standard | Responsible Person |
|---|---|---|
| Consultation ensures stakeholder readiness to support | Consultation in the event of a spill will ensure that relevant government agencies support the monitor and evaluate strategy thus minimising potential impacts and risks to sensitivities. | Cooper Energy IC |
| Surveillance platforms maintain buffer distance to prevent disturbance to fauna | Fauna Buffer Distances - Aircraft Surveillance aircraft will ensure buffer distances of 500m (helicopters) and 300m (fixed wing) are maintained to whales and dolphins. | Pilot |
| | Vessel/Cetacean Caution Zones: Vessels adhere to the distances and vessel management practices of EPBC Regulations (Part 8):<br>• Vessels will travel at less than 6 knots within the caution zone of a cetacean and minimise noise (Caution Zone is 150m radius for dolphins and 300 m for whales);<br>• The vessel must not drift closer than 50 m (dolphin) and 100 m (whale);<br>• If whale comes within above limits, the vessel master must disengage gears and let the whale approach or reduce the speed of the vessel and continue on a course away from the whale;<br>• If cetacean is disturbed immediately withdrawn at speed less than 6 knots;<br>• The vessel must not restrict the path of the cetacean; Vessel Masters<br>• If a dolphin approaches the vessel, the master must not change the course or speed of the vessel suddenly. | Vessel Masters |

## 7.4 Environmental Performance Outcomes (Monitor and Evaluate)

Table 7-4 identifies monitoring and evaluation strategy outcomes, performance standards and measurement criteria. Cooper Energy oil spill IC (or delegate) will ensure the activity control measures identified below are implemented.

*Table 7-4: Monitor and Evaluate Performance Outcomes and Standards*

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| Cooper Energy maintains capability to implement operational monitoring in a level 2/3 spill event. | C19: Service Agreements -Monitor & Evaluate | Cooper Energy maintains the following agreements (or contractor pre-qualifications) to maintain operational response capabilities for the duration of the activities provided for under this OPEP: | Chief Operating Officer | Contracts, memberships and pre-qualification records are current. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | • AMOSC membership (Aerial Observers, RPS Contract, Kongsberg Contract)<br>• aviation support (pre-qualification assessment)<br>• marine support services.<br>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists. | | |
| | C20: Oil Spill Tracking Buoy | 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 Cooper Energy implements operational monitoring to inform spill response (level 2/3 spill only). | C21: Response – Aerial Observation | 1 x Trained Aerial Observer (via AMOSC) available to be deployed within 24 hours. | Cooper Energy IC | Contracts, memberships and pre-qualification records are current. |
| | | Operational monitoring is initiated during daylight hours within 24 hours for aircraft observation.<br>Observation to be undertaken in accordance with OSMP OP2 (Hydrocarbon Spill Surveillance and Tracking). | Cooper Energy IC | Spill response log notes that aircraft are deployed within 24 hours of spill (or nearest daylight hours immediately post 24 hours).<br>Completed Aerial Observation Logs (as per OSMP OP2) emailed to Cooper Energy IMT. |
| | C22: Response – Vessel Observation | Operational monitoring from campaign vessels already in-field is initiated immediately (within 2 hours).<br>Observation to be undertaken in accordance with OSMP OP2 (Hydrocarbon Spill Surveillance and Tracking). | Cooper Energy IC | Spill response log notes that in-field vessels are deployed within 2 hours of spill.<br>Completed Observation Logs (as per OSMP OP2) emailed to Cooper Energy IMT. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | C22: OSTM | RPS provides OSTM results within 4 hours of spill notification in accordance with OSMP OP1 (Operational Forecast Modelling). | Cooper Energy IC | Incident records verify operational monitoring timeframes are met. |
| | C23: Response – Oil Spill Vector Calculation | Manual vector calculations identify spill impact areas within two hours of spill incident notification. | Cooper 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 | C24: Prevention of Marine Fauna Collision | 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. | HSE Advisor | Training records confirm vessel masters have been briefed. |
| | | A vessel master (or delegate) will be on duty at all times. | Vessel Master | Bridge watch records confirm vessel master (or delegate) on duty at all times. |
| | | 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. |
| | | 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. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | 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. |
| | | 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 | C25: Incident reporting | 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. |

# 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 g/m$^2$) to occurwithin is ~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 g/m$^2$ would be prioritised under the protect and deflect strategy as concentrations above this theshold 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 of to the sea at certain times of year, though for resource analysis purposes it is assumed inlets are open. Protect and defelct 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 - .

*Table 8-1: Protection and Deflection Response Resource List*

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| **Trained oil spill response personnel** | 2 x Trained TRP Team Leads | Trained personnel available from AMOSC / AMOSPlan CG<br>Additional resources can be requested from the NRT as per the agreement under the National Response Plan | 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.<br>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 Cooper Energy's membership with AMOSC. |
| | 4-8 x Trained TRP Responders | | | |
| | 12-14 x General Responders | Third Party provider<br>(general labour hire) | Refer to Appendix 5 - | Cooper Energy will engage labour hire to support shoreline clean-up activities |
| | 12-14 x TRP Response Equipment Operators | Third Party provider<br>(general labour hire) | Refer to Appendix 5 - | Cooper Energy will engage labour hire to support shoreline clean-up activities |
| **Waste Management Support Services** | 2 x Waste Management Coordinators | Cooper Energy has contract with waste management provider in Victoria (Clean-away) | 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) | | Refer to Appendix 5 - | |
| **Equipment** | | | | |
| **Boom and ancillary equipment** | 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). | 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. |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | | Additional resources may 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) | 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. |
| | 16 x 25 m beach guardian boom (shore seal boom) | | 181 x AMOSC beach guardian boom located in Geelong. | |
| | 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).<br>Additional anchor kits available through AMSA (x17) and Mutual Aid via AMOSC (x15). | |
| **Boom Deployment Vessel** | 8 x utility task vessels (UTV)& Trailer | AMOSC Equipment supply /<br>Mutual Aid<br>Cooper 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.<br>As above resource availability is expected to meet boom deployment timeframes (24-48 hours). |
| **Skimmer and ancillary Equipment** | 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.<br>Availability is expected to meet boom deployment timeframes (24-48 hours). |
| **Temporary Water Storage** | Temporary storage units (reflective of specific sector oiling) | AMOSC equipment Supplies.<br>Additional resources | 4 x 5m$^3$ units (Geelong)<br>Additional 5 x 5m$^3$ units available (Fremantle, Broome, Exmouth) | Contractor is available on a 7-day basis to assist with water storage.<br>Availability is expected to meet the predicted shortest time to shore of 24 hours but within 48h. |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | | may be requested from<br>Mutual Aid (via AMOSC) or AMSA as per the National Plan agreements. | Additional units (x34) available via Mutual Aid (accessed via AMOSC). | |
| **Mechanical Equipment** | 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 Cooper Energy assets.

Shoreline and nearshore boom deployment and associated waste management activities has the potential to cause disturbance to vegetation and cultural heritage; disturb sensitive estuarine habitats; restrict access to the shoreline; and may lead to secondary oil spill impacts. To mitigate these impacts the IC (or delegate) will ensure the control measures identified in Table 8-2 are implemented.

*Table 8-2: Protect & Deflect Activity Controls*

| Control Measure | Environmental Performance standard | Responsible Person |
|---|---|---|
| Consultation | Consultation In the event of a spill will ensure that relevant government agencies support the tactical response arrangements thus minimising potential impacts and risks to sensitivities. | Cooper Energy IC |
| Use of existing Tracks | Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP. | Cooper Energy IC / State Government IC |

## 8.4 Environmental Performance Outcomes (Protect & Deflect)

Table 8-3 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 8-3: 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 | C26 TRPs | 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. |
| Cooper Energy maintains capability to implement protect and deflect in a level 2 or 3 spill event. | C27 Service Agreements - Protect & Deflect | Cooper Energy maintains the following agreements to maintain shoreline assessment/protect and deflect capabilities for the duration of the activities provided for in this OPEP:<br>• AMOSC membership (equipment, personnel, CORE Group. Mutual aid)<br>• AMOSPlan Industry Mutual aid (equipment)<br>• scientific resource support agreement<br>• marine support services<br>• vessel of opportunity listing<br>• waste management contract.<br>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists. | Chief Operating Officer | Agreements/memberships are current. |
| Cooper 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. | C28 Shoreline Protect & Deflect – Resource Deployment | 2 x Trained TRP Team Leads (via AMOSC) to be available onsite within 24-48 hours. | Cooper Energy IC | Agreements/memberships are current.<br>. |
| | | TRP teams deployed and available onsite within 24-48 hours of spill event (daylight hours permitting) in consultation with the State CA. | Cooper Energy IC | Incident management records verify that TRP teams are deployed to site within the designated timeframe. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | | | |
| | C29 Operational NEBA | An operational NEBA is undertaken to determine net benefits with State CA to confirm implementation of the response strategy. | Cooper Energy IC | Operational NEBA is available, approved and was undertaken prior to shoreline protect and deflect. |
| Impacts to cultural heritage and social values are prevented | C30 Consultation with Traditional owners | In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance. | Cooper Energy IC | Incident records verify consultation has occurred and controls implemented. |
| | C31 Land and Waterway Manager Consultation | In conjunction with State CA, consultation is undertaken with land and waterway manager prior to deployment of equipment to establish recreational user controls along affected coastline. | Cooper Energy IC | Incident records verify consultation has occurred and controls implemented. |
| Impacts to native vegetation and fauna are prevented. | C32 Site survey for critical habitat | Surveys are undertaken to identify, mark out and protect nesting and critical habitat.<br>Existing tracks and paths are used where possible to minimise disturbance footprint. | Cooper Energy IC | Incident records verify surveys have occurred and controls implemented. |
| | C33 Trained Fauna Handlers | Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna. | Cooper Energy IC (as directed by the Lead Agency) | Shoreline induction reinforces this constraint.<br>Induction records. |

## 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 Cooper 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 $m^3$ (peak volume ashore) for operations

and up to 312.1 $m^3$ (peak volume ashore) for drilling activities. The worst case deterministic run from the modelling has identified up to 263 $m^3$ 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 $g/m^2$) 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. Cooper Energy will remain actively engaged in the response until stood down by the DTP IC and will place a Cooper Energy liaison Coordinator within the state IMT. Cooper 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

Cooper 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.

### 9.1.2 SCAT execution is described in Appendix 4 - .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 $g/m^2$) 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, Cooper 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 $m^3$ per day (based upon a single person collecting 1 $m^3$ per day); and each mechanical collection team had a treatment capacity of 2.4 $m^3$ per hour (based upon bucket size of 0.04 $m^3$ and a single excavation per minute).

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

| Equipment/personnel | Requirements |
|---|---|
| **Manual clean-up** | |
| Support personnel | 10 |
| Team supervisor | 1 |
| Waste storage (per team) | 10 $m^3$ per day |
| **Mechanical collection** | |
| Equipment (single excavator/machine) | 1 |
| Operator | 1 |
| Waste storage (per team) | 25 $m^3$ per day |

Cooper 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 $m^3$ per day for each 'shoreline clean-up team', Cooper Energy has estimated that the volume of waste that may need to be managed could be up to 3,121 $m^3$ based on spill modelling suggesting maximum volume of hydrocarbons ashore is less than 312.1 $m^3$ and volume of collected oil based on multiplying by a factor of ten (AMSA 2017).for conservatism, Cooper Energy applied a 25% increse 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 $g/m^2$) would be less. Appendix 5 - provides further information on the resources required to respond to a shoreline cleanup in the event of a LOWC.

### 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 - .

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

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| **Shoreline Assessment** | | | | |
| SCAT Team Leaders<br>**Trained SCAT Crew** | Refer to Appendix 5 - for Personnel resourcing assessment | | | 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.<br>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 Cooper Energy's membership with AMOSC.<br>Cooper Energy contract for scientific specialists allows for deployment to field within 24 hours of notification. |
| **Shoreline Clean-up** | | | | |
| **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 | | | Cooper 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 | | | Cooper 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 | | | Cooper Energy waste contracts to support waste disposal from shoreline clean-up activities via specialist waste management company. |
| **Shoreline Response Equipment** | | | | |
| **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. |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | 2 x Beach Clean-up Kits (Williamstown North)<br>1 x Beach Clean-up Kit (Port Fairy) | VIC DTP<br>Port of Portland. | 2 x Beach Clean-up Kits (Williamstown North)<br>1 x Beach Clean-up Kit (Port Fairy) | Access to equipment via VIC DTP and Port of Portland. |
| **Decontamination Kit** | 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)<br>1 x Decontamination Kit (Portland) | VIC DTP<br>Port of Portland. | 1 x Decontamination Kit (Williamstown North)<br>1 x Decontamination Kit (Portland) | Access to equipment via VIC DTP and Port of Portland. |
| **Temporary Waste Units** | Temporary storage units (reflective of specific sector oiling) | AMOSC.<br>Additional resources may be requested from<br>Mutual Aid (via AMOSC) or AMSA as per the National Plan agreements. | 4 x 5m$^3$ units (Geelong)<br>Additional 5 x 5m$^3$ units available (Fremantle, Broome, Exmouth)<br>Additional units (x34) available via Mutual Aid (accessed via AMOSC). | AMOSC deployment from Geelong and arrival at site expected within 12 hours. |
| **Mechanical Equipment (surf washing)** | 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. | AMOSC | Surplus equipment available from | AMOSC deployment from Geelong or pick-up from hardware store local to |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | sandbags, shovels, wheelbarrows)<br>Site support equipment (e.g. PEE) | | general hardware stores across Vicotria | shoreline response location, and arrival at site expected within 12 hours. |

## 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 Cooper Energy assets.

Shoreline assessment and clean-up activities have the potential to cause disturbance to vegetation, fauna habitats and cultural heritage; restricting access to the shoreline; and may lead to secondary oil spill impacts. To mitigate these impacts the IC will ensure the control measures identified in Table 9-3 are implemented.

*Table 9-3: Shoreline Clean-up Activity Controls*

| Control Measure | Environmental Performance standard | Responsible Person |
|---|---|---|
| Consultation | Consultation In the event of a spill will ensure that relevant government agencies support the tactical response arrangements thus minimising potential impacts and risks to sensitivities. | Cooper Energy IC |
| Use of existing Tracks | Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP. | Cooper Energy IC /<br>State Government IC |

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

Table 9-4 provides the performance outcomes, standards and measurement criteria for shoreline clean-up. The IC will ensure the control measures identified below are implemented.

*Table 9-4: Shoreline Response – Performance Outcomes and Standards*

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| Cooper Energy maintains capability to implement SCAT and | C34 Service Agreements | Cooper Energy maintains the following agreements to maintain | Chief Operating Officer | Agreements/memberships are current. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| shoreline clean-up in a level 2/3 spill event. | - Shoreline Clean-up | shoreline assessment/clean-up response capabilities for the duration of the activities provided for under this OPEP:<br>• AMOSC membership (equipment, personnel, Core Group. Mutual aid).<br>• AMOSPlan Industry Mutual aid (equipment)<br>• scientific resource support agreement<br>• waste management contract<br>• labour hire provider.<br>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists. | | |
| Cooper 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. | C35 Shoreline Assessment and clean-up – Resource Deployment | 1 x Shoreline Operations Manager available (via AMOSC) within 24 hours. | Cooper Energy IC | Agreements/memberships are current. |
| | | 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. | Cooper Energy IC (as directed by the Lead Agency) | Agreements/memberships are current. |
| | | SCAT teams deployed and available onsite within 12 hours of spill event (daylight hours permitting) in consultation with the relevant State CA.<br>Note: SCAT information will be provided to Planning function of the IMT for NEBA | Cooper Energy IC | Incident management records verify that SCAT teams are deployed to site within the designated timeframe. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | preparation, which will form part of the IAP.<br>SCAT teams to be comprised of:<br>3-6 trained personnel – including 1 x wildlife SME and 1 x cultural SME | | |
| | C29 Operational NEBA | An operational NEBA is undertaken to determine net benefits with relevant State CA.<br>to confirm implementation of the response strategy. | Cooper Energy IC | Operational NEBA is available, approved and was undertaken prior to shoreline clean-up. |
| Impacts to cultural heritage and social values are prevented | C30 Consultation with Traditional owners | In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance. | Cooper Energy IC | Incident records verify consultation has occurred and controls implemented. |
| | C31 Land and Waterway Manager Consultation | 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. | Cooper Energy IC | Incident records verify consultation has occurred and controls implemented. |
| Impacts to native vegetation and fauna are prevented. | C320 Site survey for critical habitat | Surveys are undertaken to identify, mark out and protect nesting and critical habitat.<br>Existing tracks and paths are used where possible to minimise disturbance footprint. | Cooper Energy IC | Incident records verify surveys have occurred and controls implemented. |

| Environmental Performance Outcome | Control | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | C33 Trained Fauna Handlers | 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.<br>Induction records. |

# 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).

Cooper Energy will provide support for the response through the provision of resources. The equipment which Cooper 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 undertaken 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 |
|---|---|
| **Primary Response** | 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. |
| **Secondary Response** | 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.<br>Pre-emptive capture involves:<br>• the isolation and/or capture of wildlife from contaminated sites by either physical barriers preventing access or exclusion to contaminated sites<br>• transferring the wildlife well away from contaminated sites and releasing them<br>• holding the wildlife in short-term captivity, while the contamination threat is removed.<br>Secondary responses are unlikely to be required. |
| **Tertiary Response** | Tertiary response will be applied as required by oil spill trained and accredited teams deployed by the Lead Agency.<br>Tertiary response includes capturing, cleaning, rehabilitation, transportation, and stabilisation of contaminated wildlife for release. |

## 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, Cooper 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 - .

*Table 10-2: Oiled Wildlife Response Resource List*

<table>
<tr><th>Resource</th><th>Resource Requirement</th><th>Provider</th><th>Resource Availability</th><th>Comments</th></tr>
<tr><td>Oiled wildlife response personnel</td><td>Refer to Appendix 5 - for Personnel resourcing assessment</td><td colspan="3">Oiled wildlife response is led by the State government agency.<br>• 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.<br>• 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.<br>• Tasmania: The Tasmanian Oiled Wildlife Response Plan (WildPlan) is administered is administered by the Wildlife Health and Marine (WHAM) of the Department of Natural Resources and Environment Tasmania (NRET) (formerly DPIPWE) and outlines priorities and procedures for the rescue and rehabilitation of oiled wildlife.<br>Cooper Energy and its service providers such as AMOSC provide supplementary resources and personnel as requested by the State Government Lead Agency for oiled wildlife. Cooper Energy’s OPEPs are reviewed by State Government Agencies during their development to ensure alignment of response expectations and resources.<br>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 numbers 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.
<table>
<tr><th>Organisation</th><th>Personnel</th><th>Availability to mobilise</th></tr>
<tr><td>AMOSC</td><td>Minimum 2pax trained OWR personnel</td><td>1 (12hr)</td></tr>
<tr><td>Industry Personnel</td><td>62 trained industry personnel – minimum introductory level<br>• 35 introductory trained personnel</td><td>~10 (24hr)</td></tr>
</table>
</td></tr>
</table>

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | | | • 24 completed Management course<br>• 16 completed Responder course | |
| | | State and National Response Teams | Precise numbers to be determined but indicate between 50-100 available through the National Plan. | (conservatively anticipate 20 x personnel within 14-days) |
| | | Dwyertech | 2 personnel | 2 (24hr) |
| | | Phillip Island Nature Park - Victoria | ~ 50 PINP staff – collection/facility ops/rehabilitation<br>~ 45 volunteers – collection/facility ops/rehabilitation<br>~ 20 staff – animal feeding<br>6 x PINP staff - wildlife emergency response Inc. cetacean stranding/entanglement etc.<br>17 x PINP staff - wildlife team leaders<br>5 x PINP staff - IMT training | Best Endeavours<br>(conservatively anticipate 20 x personnel within 14-days) |
| | | Zoo's Victoria | Marine Mammal Unit<br>4x Personnel | Best Endeavours<br>Conservatively anticipate 2 x personnel in ~7 days |
| | | Sea Alarm | 2 Personnel for support | ~7 days |
| | | GOWRS | 4 Personnel from the GOWRS network for advice in country | Remote advice |
| | | Massey University | 4-6 OW Response personnel | Best Endeavors<br>Conservatively anticipate 2 x personnel in ~14 days |
| | | In addition to this, Cooper 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. | | |
| **OWR Facility establishment and management** | 1 x Facilities Establishment Group<br>Refer to Appendix 5 - for Personnel | Current call-off contract with AMOSC has service available within 24 hours of call-out. | | |

| Resource | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|
| | resourcing assessment | | | |
| **OWR Equipment** | | | | |
| **Oiled Wildlife Response Kits** | 1 x OWR Kit (Geelong) | AMOSC | 1 x OWR Kit (Geelong)<br>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)<br>1 x OWR Kit (Colac)<br>1 x OWR Kit (Port Phillip)<br>1 x OWR Kit (Warrnambool)<br>1 x State-wide Trailer | Each kit can process approximately 50 units. To be provided by DEECA. |
| **Oiled Wildlife Response Containers** | 1 x Container (Geelong) | AMOSC | 1 x Container (Geelong)<br>1 x Container (Fremantle) | Each container can process approximately 100 units per day. Geelong container available onsite within 24 hours of call-out.<br>Additional resources may be available through AMSA as per agreements specified within the NatPlan upon a formal request. Equipment includes:<br>• 1 x Container (Dampier)<br>• 1 x Container (Darwin)<br>• 1 x Container (Townsville)<br>• 1 x Container (Sydney) – from transport for NSW, accessed via AMSA<br>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. |
| **Vessel Support** | 1 x Vessel/Master | Undersea Marine Supply-time Agreement with Cooper Energy | 1 x Vessel/Master | Cooper Energy maintains an agreement with Undersea Marine (formerly COMCHART Marine) to |

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

OWR has the potential to cause disturbance, injury or death to fauna if handlers are not appropriately trained. To mitigate these impacts the Cooper Energy Operations Officer (or delegate) will ensure the control measures identified in Table 10-3 are implemented.

*Table 10-3: Oiled Wildlife Response Activity Controls*

| Control Measure | Environmental Performance standard | Responsible Person |
|---|---|---|
| Consultation | Consultation In the event of a spill will ensure that relevant government agencies support the tactical response arrangements thus minimising potential impacts and risks to sensitivities. | Cooper Energy IC |
| Use of existing Tracks | Utilising existing tracks and paths where possible will ensure the disturbance footprint associated with the implementation of this response technique is reduced to ALARP. | State Government IC |
| Wildlife is only approached or handled by State agency trained oiled wildlife responders unless | Cooper Energy Response Personnel Inductions | Cooper Energy IC / State Government IC |

| Control Measure | Environmental Performance standard | Responsible Person |
|---|---|---|
| formal direction is received from the State Government IMT. | Cooper Energy response personnel are advised of wildlife interaction restrictions through site safety inductions. | |

## 10.6 Environmental Performance Outcomes (Oiled Wildlife Management)

Table 10-4 provides the performance outcomes, standards, and measurement criteria for oiled wildlife management. The Cooper Energy Operations Officer (or delegate) will ensure the control measures identified below are implemented.

*Table 10-4: Oiled Wildlife Response – Performance Outcomes and Standards*

| Environmental Performance Outcome | Controls | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| Cooper Energy maintains capability to support oiled wildlife management in a level 2/3 spill event. | C36 Service Agreements - Oiled Wildlife Response | Cooper Energy maintains the following agreements to maintain OWR response capabilities:<br>• AMOSC membership (equipment, personnel)<br>• waste management contract<br>• Agreement with vessel operator based in Victoria<br>• vessel of Opportunity listing | Executive Leadership Team Member | Contracts/memberships verify currency of membership. |
| | | 2 x Oiled Wildlife Coordinators (via AMOSC) to supervise the oiled wildlife operations who have completed an OPEP-specific induction.<br>Response personnel will be available commensurate to the activity worst case spill scenario throughout the activity whilst the spill risk exists. | Cooper Energy IC | |
| Cooper Energy provides resources to support oiled wildlife response strategies as | C37 Notification to State CA or Oiled Wildlife | Relevant state CA is notified as soon as possible after the sighting of oiled wildlife has occurred or if it is | Cooper Energy IC | Incident management records verify that verbal and/or written notification was provided to relevant State agency as soon as |

| Environmental Performance Outcome | Controls | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| directed by State CA. | | considered wildlife likely to be impacted. | | possible after the sighting was noted. |
| | C38 Oiled Wildlife Response Kits | AMOSC OWR kits are deployed to site within timeframes as directed by State Agency. | Cooper Energy IC | Incident records verify oiled wildlife response kits are deployed to site as directed by State Agency. |
| | C39 Oiled Wildlife Resource Resourcing | Cooper Energy meets State Agency resourcing needs throughout the response, meeting IAP performance outcomes. | Cooper Energy IC | Incident log verifies requested Cooper 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. | C40 Oiled Wildlife Response Induction | Cooper Energy personnel are inducted into wildlife interaction restrictions. | Cooper Energy IC<br>State Government IC | Induction records.<br>Incident records verify no interaction by Cooper Energy personnel and wildlife without formal direction and induction by the State Government IMT. |
| Impacts to native vegetation and fauna are prevented. | C32 Site survey for critical habitat | Surveys are undertaken to identify, mark out and protect nesting and critical habitat.<br>Existing tracks and paths are used where possible to minimise disturbance footprint. | IC | Incident records verify surveys have occurred and controls implemented. |
| Impacts to cultural heritage and social values are prevented | C30 Consultation with Traditional owners | In consultation with State CA, engage with Traditional Owners to facilitate site surveys and tagging out and protection of identified areas or importance. | IC | Incident records verify consultation has occurred and controls implemented. |
| Impacts to native vegetation and fauna are prevented. | C32 Site survey for critical habitat | Surveys are undertaken to identify, mark out and protect nesting and critical habitat.<br>Existing tracks and paths are used where possible to | Cooper Energy IC | Incident records verify surveys have occurred and controls implemented. |

| Environmental Performance Outcome | Controls | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | minimise disturbance footprint. | | |
| | C33 Trained Fauna Handlers | Only trained and accredited teams deployed by the Lead Agency for oiled wildlife will approach and handle fauna. | Cooper Energy IC (as directed by the Lead Agency) | Shoreline induction reinforces this constraint.<br>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 MDO and light crude oil 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** | Vessel Release | 500 $m^3$* | Oily water<br>Sand with oil residue | 5,000 $m^3$ |
| **Gippsland Basin – Sole / PB** | Subsea release | 5 $m^3$* | Oily water<br>Sand with oil residue | 50 $m^3$ |
| **Otway Basin - CHN** | Vessel release | 250 $m^3$* | Oily water<br>Sand with oil residue | 2,500 $m^3$ |
| **Otway Basin - CHN** | Pipeline release | 50 $m^3$* | Oily water<br>Sand with oil residue | 500 $m^3$ |

| Asset | Worst Case Spill Scenario | Peak Hydrocarbon Shoreline Volume | Waste Type | Waste Volume** |
|---|---|---|---|---|
| **Otway Basin – Wells (inc. exploration)** | Subsea release | 312.1 $m^3$ | Oily water<br>Sand with oil residue | 3,121 $m^3$ |
| **General** | Oiled Wildlife Waste | - | Wastewater | 1 $m^3$ per unit (1 bird = 1 unit) |
| | | - | Personal protective equipment (PPE) | 5 kg per unit per day |
| | Decontamination stations | - | Wash-water | ~1 $m^3$/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 Cooper 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 Cooper 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 Cooper 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 theSection 8.0 (Shoreline Response: Protect & Deflect) and Scetion 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, Cooper 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.

Cooper 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. Cooper 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[4] 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 montoring) - 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. |
| **Op2** | Hydrocarbon Spill Surveillance and Tracking | Conduct surveillance and tracking of surface hydrocarbon spill distribution to:<br>• provide operational data / information to support and inform response planning and operations and monitor the spill response.<br>• 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. |
| **Op3** | Hydrocarbon Weathering Assessment | To determine the physical and chemical properties of hydrocarbon as it weathers to characterise temporal decrease in toxicity to meet the following OPEP requirements:<br>• Provide operational data information to support and inform response planning and operations and monitor the spill response. |

[4] *OSMP currently provides for study modules with expected scopes. These will be modified accordingly.*

| ID | Study | Study Description |
|---|---|---|
| | | • 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. |
| **Op4** | Coastal Shoreline Assessment | 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. |
| **Op5** | Dispersant Efficacy Assessment | Provides information on the efficacy of the chemical dispersant applied to the spilled hydrocarbon, and to:<br>• Provide operational data / information to support and inform response planning and operations and monitor the spill response.<br>• Monitor the effectiveness of dispersant application to reduce surface VOCs. |

### 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. |
| **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: |

| ID | Study | Study Description |
|---|---|---|
| | | • Quantify the level of exposure to affected populations.<br>• Provide operational response resources to implement secondary and tertiary oiled wildlife response strategies.<br>• Assess any impacts to shorebirds or seabirds resulting from response activities.<br>• Determine the recovery of populations after hydrocarbon release. |
| **Sc6** | Marine Megafauna | Undertake marine megafauna monitoring to assess:<br>• The impacts and disturbance to marine megafauna; and<br>• Monitor the recovery of shoreline megafauna following a hydrocarbon release. |
| **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 review 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 |
|---|---|---|---|
| **Marine Fauna (Sc4 – Sc6)** | Publicly available data is for marine fauna can be accessed via:<br>• EPBC Recovery Plans<br>• Species Profiles and Threats Database (SPRAT)<br>• Protected Matters Search Tool (PMST)<br>• CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | DCCEEW<br>DEECA<br>DNRE Tasmania<br>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. |
| **Marine Fauna – Birds (Sc5)** | Parks Victoria technical paper on Marine Natural Values in the Parks in the Otway Bioregion includes bird survey data on:<br>• Population numbers<br>• Locations<br>• Breeding areas<br>• Threats and details of migration timing | **Parks Victoria Technical Paper Marine Protected Areas of the Otway Bioregion**<br>(Parks Victoria) | The monitoring priorities in the event of a spill will vary according to the extent of the spill.<br>Vessel-based and land-based surveys will be undertaken as soon as possible after the spill (and for three months after cessation of the hydrocarbon release) and revised accordingly to advise remediation strategies and assess long-term changes in behaviour and population numbers.<br>These monitoring surveys will be informed by the review of |
| | 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. | **Victorian Biodiversity Atlas**<br>DEECA<br>DNRE Tasmania<br>CSIRO | |

| Component and relevant Sc | Available Baseline Data | Source | Baseline Data Gap Review |
|---|---|---|---|
| | • CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | | 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). |
| | Comprehensive species' accounts of seabird, shorebird and wader population studies.<br>Includes detailed statistics of all researched parameters on all species including data on:<br>• Diet<br>• Nesting success<br>• Growth rates<br>• Populations parameters<br>• Behavioural data<br>• Feeding ecology data | **Birdlife Australia** | |
| **Marine Fauna – Demersal Fish (Sc4)** | Parks Victoria Monitoring - has included surveys of demersal reef fish, including seahorses, pipefishes, and sea dragons. Surveys have included:<br>• Baited Remote Underwater Video Surveys (BRUV)<br>• Diver observed transects<br>• Remotely Operated Vehicle Observations (ROV)<br>• Atlas of Living Australia (see Table notes) | **Parks Victoria**<br>CSIRO | 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.<br>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). |
| **Marine Fauna – Megafauna (Sc6)** | Various databases including:<br>• Blue whale population, movement and feeding data (Whale Ecology Group - Deakin University, Warrnambool)<br>• The Southern Right Whale Research and Monitoring Project (DEECA)<br>• Humpback whale sightings (Dolphin Research Institute, Hastings)<br>• Whales sightings (DEECA, Warrnambool)<br>• New Zealand /Australian fur seals (Phillip Island Nature Parks<br>• Sharks numbers / movements (Flinders University Adelaide)<br>• Turtle sightings and population data across south-eastern Australian waters. (Deakin University Centre for Integrative Ecology)<br>• CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | DEECA<br>Phillip Island Nature Parks<br>University Groups (i.e. Flinders University, Deakin University)<br>DNRE Tasmania<br>CSIRO | The monitoring priorities in the event of a spill will vary according to the spill event.<br>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).<br>Further, recognising the limitations of the data collected with aerial surveys, other survey methods including vessel-based, |

| Component and relevant Sc | Available Baseline Data | Source | Baseline Data Gap Review |
|---|---|---|---|
| | | | 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.<br>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.<br>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 |
| **Intertidal and Subtidal Reefs (Sc2 and Sc4)** | 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<br>Other resources include:<br>• CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | Parks Victoria Marine Monitoring Program<br>DEECA<br>DNRE Tasmania<br>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. |
| **Benthic Habitat (Sc4)** | Various subtidal benthic surveys undertaken within the Victorian coastline will be used to supplement existing data, such as:<br>• Victorian Subtidal Reef Monitoring Program (i.e. data on the reef biota on the Western Victorian Coast) | Parks Victoria<br>DCCEEW<br>DNRE Tasmania<br>CSIRO | Data acquired from the seabed surveys undertaken within the relevant corresponding Cooper Energy EPs for each activity will contribute to the baseline data |

| Component and relevant Sc | Available Baseline Data | Source | Baseline Data Gap Review |
|---|---|---|---|
| | • Marine Natural Values Study Vol 2: Marine Protected Areas of the Otway Bioregion (Parks Victoria)<br>• Commonwealth Marine Conservation Assessment Program (i.e. assessment of the conservation values of the Bass Strait sponge beds area)<br>• Management Plan for the Twelve Apostles Marine National Park and The Arches Marine Sanctuary (Parks Victoria, 2006).<br>• Marine Natural Values Study Victorian Marine National Parks and Sanctuaries<br><br>Other resources include:<br>• CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | | assessment and gap analyst for the OSMP.<br>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 Cooper Energy and other Petroleum Operators operating within the Otway Basin and Bass Strait region, such as:<br>• Cooper Energy (i.e. Otway Basin Exploration, Casino, Netherby & Henry Operations)<br>• Santos (i.e. Casino, Netherby & Henry pipeline Operations)<br>• Beach Energy (i.e. Otway Offshore Operations, Thylacine,)<br>• Woodside (i.e. Minerva)<br>The identified survey areas have been advised by the review of the existing data, and will adapted to incorporate any additional data, to ensure areas that require further data are prioritised (as per the direction of the OSMP provider). |
| **Saltmarsh (Sc4)** | A range of surveys of Victorian saltmarsh communities have been undertaken and the data uploaded to and stored with the Victorian Government.<br>Other resources include:<br>• CoastKit,Victoria (see Table notes)<br>• Atlas of Living Australia (see Table notes)<br>• ListMap Tasmania (see Table notes) | **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. |
| **Hydrocarbon presence in water/sediments (Sc2, Sc3)** | 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. |

| Component and relevant Sc | Available Baseline Data | Source | Baseline Data Gap Review |
|---|---|---|---|
| | | | As such, the data from any sampling undertaken will be compared to a baseline of zero hydrocarbons in the water column / sediments. |
| **Hydrocarbon Ecotoxicology (Op3, Sc1)** | Oil Spill Modelling Reports including:<br>• Weathering and Fate Assessment<br>• Hydrocarbon plume modelling<br>• Trajectory Modelling (Forecast and Hindcast) | 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. |
| **Other (Sc7)** | There is extensive baseline data available from a wide variety of sources on:<br>• Data from Australian Fisheries Management Authority and State fisheries authorities<br>• Commercial and Recreational Fishing catch and effort data<br>• Local Government Authorities (council) LGAs<br>• Status of Native Title Claims<br>• Shipping Statistics<br>• Tourism Activities<br>• Petroleum Exploration, Development and Production | AFMA / VFA<br>Fisheries Research and Development Corporation<br>ABS / ABARES<br>Glenelg and Moyne Shire Councils, Warrnambool City Council<br>NNTT<br>AMSA / BITRE<br>DJSIR<br>DCCEEW / DEECA / APPEA | Assessment of the extensive data available has been conducted to advise the implementation strategies of the OSMP.<br>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 inlcude the Atalas of Living (Australia-wide, hosted by CSIRO), Coast Kit (Victoria) hosted by DEECA, and Tas List hoster by the Department of Natural Resources and Environment Tasmania. These are marine and coastal knowledge decision-support tools.*

## 12.3 Response Resources

Cooper 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 Cooper 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.<br>*AMOSC Service Level Statement confirms access to RPS Trajectory Modelling within 60 minutes* |
| **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. | |
| **Op3** | Hydrocarbon Weathering Assessment | The monitoring team should initially consist of:<br>• 1 x Principal Investigator | Trained personnel available from AMOSC / AMOSPlan or OSMP Service Provider | As per OSMP service provider Resource Monitoring Matrix (provided 6-monthly)<br>• 3 x Principal Investigators<br>• 14 x Monitoring Personnel<br>Refer to Appendix 5<br>Samples to be sent to a NATA accredited analytical laboratory service provider. | Cooper Energy have agreements in place with OSMP Service Provider.<br>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. |

| ID | Study | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|---|
| **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 8.2: Shoreline Clean-up. | Cooper Energy have agreements in place with AMOSC as per Section 8.2: Shoreline Clean-up. |
| **Op5** | Dispersant Efficacy Assessment | • Coordination of this module:1 x coordinator | 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 | Personnel involved in Op5, in addition to the module coordinator, will include:<br>Offshore Project Representative – use of efficacy test kit supplied by AMOSC and provision of results to the IP<br>Offshore Project and vessel representatives to provide air monitoring results via gas monitoring (PGMs or as installed)<br>Hydrocarbon tracking and trajectory modelling from IPs overseeing Ops 1-4<br>Hydrocarbon sampling and monitoring from Ips overseeing Sc2 and 3.<br>Further information in Table 6-2. |
| **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 | Cooper Energy have agreements in place with the Stantec as the OSMP service provider which allows access to subconsultants, such as:<br>• Australian Laboratory Services (ALS), Eurofins, and National Measurement Institute (NMI), Ecotox Service Australia |

| ID | Study | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|---|
| **Op3-5** | Vessel Support | Vessel(s)/Master(s) – dependent on the initiation triggers | Cooper Energy has arrangement in place with vessel service providers | As per service provider agreement. | Cooper Energy maintains an agreement with a Marine Services provider to provide vessels and can be supplied within 24 – 48 hours (weather dependent)<br>OSMP service provider carries the following sub-consultants/contracted resources which are available to Cooper Energy:<br>• Specialised vessels, crew and divers for sub-tidal habitat monitoring |
| **Op2**<br>**Op4** | 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).<br>AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours.<br>AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation. |
| **Op5** | Monitoring Equipment | Dispersant Efficacy test kit<br>Surface-based vessel with fluorometer (Sc2)<br>In-situ water quality monitoring equipment | AMOSC<br>OSMP Service Provider | As per service provider agreements | Cooper Energy have agreements in place with relevant service providers |

| ID | Study | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|---|
| | | (to sample surface and up to 10 m depth) (Sc2).<br>Work class ROV and Crew (24hr) (project equipment)<br>Vessel-based Air Quality hydrocarbon monitoring equipment (project equipment) | Project Vessel and ROV provider | | |

### 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 Cooper 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 | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 3 x supporting Monitoring Personnel | OSMP Service Provider / AMOSC / AMOSPlan CG | As per OSMP Service Provider Monitoring Matrix:<br>• 3 x Principal Investigators<br>• 14 x Monitoring Personnel<br>Samples to be sent to a NATA accredited analytical laboratory service provider. | Cooper Energy have agreements in place with OSMP service provider. |
| **Sc2** | Hydrocarbon Monitoring in Marine Waters | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 3 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:3 x Principal Investigators<br>• 14 x Monitoring Personnel<br>Samples to be sent to a NATA accredited analytical laboratory service provider. | |
| **Sc3** | Hydrocarbon Monitoring in Marine Sediments | The monitoring team should initially consist of:<br>• 1 x Principal Investigator | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:3 x Principal Investigators<br>• 14 x Monitoring Personnel | |

| ID | Study | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|---|
| | | • 3 x supporting Monitoring Personnel | | Samples to be sent to a NATA accredited analytical laboratory service provider. | |
| **Sc4** | Intertidal and Subtidal Habitat Monitoring | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 3 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:3 x Principal Investigators<br>• 12 x Monitoring Personnel | |
| **Sc5** | Shorebird and Seabird Population Monitoring | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 3 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:1 x Principal Investigators<br>• 6 x Monitoring Personnel | Cooper Energy have agreements in place with OSMP service provider.<br>Access to additional subconsultants via OSMP service provider if required. |
| **Sc6** | Marine Megafauna | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 1 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:2 x Principal Investigators<br>• 6 x Monitoring Personnel | Cooper Energy have agreements in place with OSMP service provider. |
| **Sc7** | Hydrocarbon Monitoring of representative Commercial and recreational Fish Species | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 3 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:2 x Principal Investigators<br>• 10 x Monitoring Personnel<br>Samples to be sent to a NATA accredited analytical laboratory service provider. | |
| **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. | 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 |

| ID | Study | Resource Requirement | Provider | Resource Availability | Comments |
|---|---|---|---|---|---|
| | | | | | within four hours of activation.<br>*AMOSC Service Level Statement confirms access to RPS Trajectory Modelling within 60 minutes* |
| **Sc9** | Socio-economic Survey Assessment | The monitoring team should initially consist of:<br>• 1 x Principal Investigator<br>• 1 x supporting Monitoring Personnel | OSMP Service Provider | • As per OSMP Service Provider Monitoring Matrix:2 x Principal Investigators<br>• 3 x Monitoring Personnel | Access to additional subconsultants via OSMP Service Provider if required. |
| **Scientific Monitoring equipment** | | | | | |
| **Sc1**<br>**Sc2**<br>**Sc3**<br>**Sc7** | 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 | Cooper Energy have agreements in place with OSMP service provider which allows access to subconsultants, such as:<br>• Australian Laboratory Services (ALS), Eurofins, and National Measurement Institute (NMI), Ecotox Service Australia |
| **Sc1-7** | Vessel Support | Vessel(s) / Master(s) – dependent on the initiation triggers | Cooper Energy has arrangement in place with vessel service providers | As per service provider agreement. | Cooper 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 | 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 |
|---|---|---|---|---|---|
| | | | Warrnambool Babcock). | | |
| | | 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).<br>AMOSC has five trained observers and AMOSC Core Group have four trained members available within 24-48 hours.<br>AMOSC Service Level Statement confirms AMOSC Core Group activation – within one hour of initial activation. |
| **Sc4** | Specialist Monitoring Equipment | Various equipment depend on monitoring study, such as:<br>• Video / drop cameras<br>• Side-scan sonar<br>• Smith McIntyre Grab Sampler<br>• Water Quality Meter (YSI)<br>• Water Sampling<br>• TRH/PAH bottles<br>• Storage equipment<br>• Additional ancillaries | Accessed via OSMP Service Provider | Stantec has arrangements in place for specialised monitoring equipment | Cooper 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 Cooper Energy.

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

| Environmental Performance Outcome | Controls | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| Cooper Energy maintains capability to support OSMP requirements in a level 2/3 spill event. | C41 Service Agreements - OSMP | Cooper Energy maintains the following agreements to maintain OSMP response capabilities:<br>• 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.<br>• On-going AMOSC membership to access modelling service provider, equipment, and personnel.<br>• waste management contract<br>• Agreement with Vessel provider in Victoria<br>• vessel of Opportunity listing<br>• | Chief Corporate Services Officer | Contracts/memberships verify currency of membership. |
| | | 1 x OSMP Coordinator (accessed via OSMP service provider) to supervise the monitoring | Cooper Energy IC | |

| Environmental Performance Outcome | Controls | Environmental Performance standard | Responsible person | Measurement Criteria |
|---|---|---|---|---|
| | | operations within 24-h hours of call-out. | | |

## 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 Cooper 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 |

| Rev | Issue Date | Revision summary | Originator | Reviewer | Approver |
|---|---|---|---|---|---|
| 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 | JJM | IM |
| 7e | 30/08/2021 | Annual review and update; inclusion of relevant Vic State Gov Review comments for BMG P&A scope. | JJM | JH | MJ |
| 8 (7f) | 18/07/2022 | Updated figures, references, SCERP details, reconciled facility spill scenarios, added appendix ‘systems, forms, templates, tools’.<br>Note Rev 8 and Ref 7f were same version | Xodus Group | JJM | 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 | JJM | 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 |

## 15.0 Definitions & Acronyms

| Acronym | Definition |
|---|---|
| **ABARES** | Australian Bureau of Agricultural and Resource Economics |
| **ABS** | Australian Bureau of Statistics |

| Acronym | Definition |
|---|---|
| **ADIOS** | Automated Data Inquiry for Oil Spills |
| **AFMA** | Australian Fisheries Management Authority |
| **AGL** | Above Ground Level |
| **ALARP** | As low as reasonably practicable |
| **AMOSC** | Australian Marine Oil Spill Centre |
| **AMOSPlan** | Australian Marine Oil Spill Plan |
| **AMSA** | Australian Maritime Safety Authority |
| **API** | American Petroleum Institute |
| **APPEA** | Australian Petroleum Production & Exploration Association (now AEP) |
| **ASAP** | As soon as possible |
| **ASX** | Australian Securities Exchange |
| **bbl** | Barrels |
| **BIA** | Biologically Important Areas |
| **BITRE** | Bureau of Infrastructure and Transport research Economics |
| **BOM** | Bureau of Meteorology |
| **CA** | Control Agency |
| **CHN** | Casino-Henry-Netherby |
| **Cooper Energy** | Cooper Energy Limited and its subsidiaries |
| **CMP** | Crisis Management Plan |
| **CMT** | Crisis Management Team |
| **cP** | Centipoise |
| **DCCEEW** | Department of Climate Change, Energy, the Environment and Water |
| **DEECA** | Department of Energy, Environment and Climate Action (Victoria) |
| **DELWP** | Department of Environment, Land Water and Planning (Victoria) |
| **DEW** | Department for Environment and Water (South Australia) |
| **DIT** | Department for Infrastructure and Transport (South Australia) |
| **DJSIR** | Department of Jobs, Skills, Industry and Regions |
| **DoT** | Department of Transport (Victoria) (now DTP) |
| **DPI** | Department of Primary Industries (New South Wales) |
| **DPIPWE** | Department of Primary Industries, Parks, Water and Environment (Tasmania) |

| Acronym | Definition |
|---|---|
| **DTP** | Department of Transport and Planning (Victoria) |
| **EHU** | Electro-hydraulic umbilical |
| **EP** | Environment Plan |
| **EPA** | Environment Protection Authority |
| **EPBC** | Environment Protection and Biodiversity Conservation |
| **ERP** | Emergency Response Plan |
| **ERR** | Earth Resource Regulation |
| **ERT** | Emergency Response Team |
| **ESD** | Emergency Shutdown |
| **ESI** | Environmental Sensitivity Index |
| **FOB** | Foreword Operating Base |
| **GOR** | Gas Oil Ratio |
| **HSE** | Health Safety & Environment |
| **IAP** | Incident Action Plan |
| **IC** | Incident Controller |
| **IMO** | International Maritime Organization |
| **IMP** | Incident Management Plan |
| **IMT** | Incident Management Team |
| **ITOPF** | Formerly known as International Tanker Owners Pollution Federation |
| **IUCN** | International Union for Conservation of Nature |
| **IWCF** | International Well Control Forum |
| **JHA** | Job Hazard Analysis |
| **JSCC** | Joint Strategic Coordination Committee |
| **JV** | Joint Venture |
| **Km** | Kilometre |
| **KSAT** | Kongsberg Satellite |
| **LoC** | Loss of Containment |
| **LOWC** | Loss of well control |
| **$m^3$** | Cubic metres |
| **MEG** | Mono-ethylene glycol |

| Acronym | Definition |
|---|---|
| **MDO** | Marine Diesel Oil |
| **mm** | Millimetre |
| **MMscf** | Million Standard Cubic Feet |
| **MMscfd** | Million Standard Cubic Feet per Day |
| **MoC** | Management of Change |
| **MODU** | Mobile Offshore Drilling Unit |
| **MoU** | Memorandum of Understanding |
| **N/A** | Not Applicable |
| **NatPlan** | National Plan for Maritime Environmental Emergencies |
| **ND** | Nominal Diameter |
| **NEBA** | Net Environmental Benefit Assessment |
| **NES** | National environmental significance |
| **Nm** | Nautical miles |
| **NNTT** | National Native Title Tribunal |
| **NOPSEMA** | National Offshore Petroleum Safety and Environmental Management Authority |
| **NOPTA** | National Offshore Petroleum Titles Authority |
| **NP** | National Park |
| **NRE** | National Resources and Environmental (Tasmania) (formerly DPIPWE) |
| **NRT** | National Response Team |
| **NSR** | Non search and rescue |
| **NSW** | New South Wales |
| **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 |
| **OWR** | Oiled Wildlife Response |
| **PB** | Patricia Baleen |
| **POLREP** | Marine Pollution Report |

| Acronym | Definition |
|---|---|
| **PPE** | Personal protective equipment |
| **RFFWI** | Request For Further Written Information |
| **ROV** | Remotely Operated Vehicle |
| **RPS** | RPS Environmental Consultancy |
| **RTM** | Response time model |
| **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 |
| **Tas** | Tasmania |
| **TasPlan** | Tasmanian Marine Oil Spill Plan |
| **TRP** | Tactical Response Plan |
| **VFA** | Victoria Fisheries Authority |
| **Vic** | Victoria |
| **VMRA** | Victorian Marine Pollution Risk Assessment |
| **VSCP** | Victoria Source Control Plan |
| **WA** | Western Australia |
| **WHAM** | Wildlife Health and Marine division (Tasmania) |
| **WOMP** | Well Operations Management Plan |

## 16.0 References

| Document code | Title |
|---|---|
| Internal Documents | |
| CMS-PB-STD-0001 | MS05 – Management Standard Five – External Affairs and Investor Relations |
| 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 |

| Document code | Title |
|---|---|
| CMS-ER-STD-0001 | MS10 – Management Standard Ten - Incident and Crisis Management |
| CMS-ER-PRO-0002 | Incident and Crisis Management Protocol |
| COE-ER-ERP-0001 | Cooper Energy Incident Management Plan |
| COE-ER-ERP-0003 | Cooper 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 |
| **CHN-EN-EMP-HOLD** | Athena Supply Project Environment Plan (exploration drilling) |
| VIC-EN-EMP-0002 | Gippsland Offshore Operations Environment Plan |
| COE-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 |
| **Joint Industry / AMOSC Tactical Response Plans:** Tactical Response Plans | |
| Modelling Reports – all offshore facilities: Modelling | |
| Oil Profiles – all offshore facilities: Oil Profiles - ADIOS | |
| **External Documents** | |
| **Plans** | |
| AMOSPlan **(2021):** https://amosc.com.au/amosplan/ | |
| AMSA NATPLAN **(2020)**: https://www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies | |
| New South Wales Marine Estate Threat and Risk Assessment Report Final Report **(2017)** : https://www.marine.nsw.gov.au/marine-estate-programs/threat-and-risk-assessment | |
| Victorian Joint Industry and State Oil Pollution Responses Guidance Notes **(2023)** | |
| Victorian Maritime Emergencies (non-search and rescue) Plan **(2021)**: https://www.emv.vic.gov.au/responsibilities/semp-sub-plans/semp-maritime-emergencies-non-search-and-rescue-sub-plan | |
| Victorian Marine Pollution Risk Assessment (VMR) (DoT, 2011) | |

| Document code | Title |
|---|---|
| Department of Biodiversity, Conservation and Attractions. Department of Transport. **(2022)**. WA Oiled Wildlife Response Plan for Maritime Environmental Emergencies. Revision 4. https://www.dbca.wa.gov.au/wildlife-and-ecosystems/marine/marine-wildlife-response-oiled-wildlife-response | |
| Tasmanian Marine Oil and Chemical Spill Contingency Plan **(2022)**: 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) | |
| Tasmanian Oiled Wildlife Response Plan **(2006)**: 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) | |
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## Appendix 1 - Systems, Forms, Templates and Tools

| Systems / Forms / Templates |
|---|
| Cooper Energy IMT Response System<br>Includes: Incident Status Boards, External Reporting Forms, Planning Templates |

| Systems / Forms / Templates |
|---|
|  |



| Tools |
|---|
| Weather and Tides http://www.bom.gov.au/ / https://www.windy.com |
| Trajectory/velocity calculator, Oil Volume estimator, marine travel calculator: Spill Response Tools |
| Oil Spill Tracking Buoy online tracking access: Oil Spill Tracking Buoy |
| Victoria CoastKit – A tool developed by DELWP (now DEECA) to provide an online data repository for the community to explore and use Victoria's marine and coastal information: https://mapshare.vic.gov.au/coastkit/ |
| Victoria EstuaryWatch. A citizen science program that supports the monitoring and recording of estuary health: http://www.estuarywatch.org.au/ |
| 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: https://maps.thelist.tas.gov.au/listmap/app/list/map |
| Oil Spill Response Atlas (OSRA). GIS based system which compiles relevant Australian geographic information for oil spill response management: Oil Spill Response Atlas (OSRA).pdf |
| Response Planning Map Layers: Oil Spill Response Map Layers<br>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 Cooper 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 (□), 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.

| | | | RECOVERY TIME SLOW ⟷ RAPID | | | |
|---|---|---|---|---|---|---|
| | | | >10 years | 5 – 10 years | 2 – 5 years | < 1 year |
| | | | 1 | 2 | 3 | 4 |
| Potential Impact Rank | Severe | A | High 1A | High 2A | High 3A | Medium 4A |
| | Major | B | High 1B | High 2B | Medium 3B | Low 4B |
| | Minor | C | High 1C | Medium 2C | Medium 3C | Low 4C |
| | Slight | D | Medium 1D | Low 2C | Low 3D | Low 4D |

| | 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**

## 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 |
| **Significant marine ecology** | | | | | | | | | | | |
| 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 |
| **Significant coastal habitats** | | | | | | | | | | | |
| Saltmarshes | S1 | | | | ↑ | - | NA | ↑ | ↑ | ↓ | NA |
| Mangroves | S1 | | | | ↑ | - | NA | ↑ | ↑ | ↓ | NA |
| Mudflats | S1 | | | | ↑ | - | NA | ↑ | ↑ | ↓ | NA |
| Seagrass | S1 | | | | ↑ | - | NA | ↑ | ↑ | ↓ | NA |
| Estuaries / wetlands | S1 | | | | ↑ | - | NA | ↑ | ↑ | ↓ | NA |
| 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 |

| 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 |
| Sub-tidal reef | S3 | | | | ↑ | - | NA | ↑ | NA | NA | NA |
| Sand beaches | S3 | | | | ↑ | - | NA | ↑ | NA | ↑ | NA |
| **Significant coastal ecology** | | | | | | | | | | | |
| Pinniped haul-out sites | S2 | | | | ↑ | - | NA | ↑ | NA | NA | ↑ |
| Penguin colonies | S2 | | | | ↑ | - | NA | ↑ | NA | NA | ↑ |
| Protected area - Marine Parks or Sanctuaries | S2 | | | | ↑ | - | NA | ↑ | NA | NA | ↑ |
| **Significant Socio-economic** | | | | | | | | | | | |
| 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 |
| Recreational fishing / diving | S3 | | | | ↑ | - | NA | ↑ | NA | ↓ | NA |
| **Approvals** | | | | | | | | | | | |
| **Approved By:** | | | Signature: | | | | Company / Agency: | | | | |
| **Position in IMT:** | | | Contact Number: | | | | Email: | | | | |

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

Cooper Energy Oil Spill IMT Lead Roles:

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

### COE INCIDENT CONTROLLER (DUTY CARD 1)

| **ROLE [Incident Controller]** |
|---|
| The Cooper Energy Incident Controller has overall responsibility for the management of the Cooper Energy's response and integration with government response agencies. |
| **RESPONSIBILITIES** |
| ☐ Activate and lead the overall management of the IMT.<br>☐ Notify and keep the CMT/ IMT Liaison Coordinator informed as appropriate.<br>☐ Determine strategic objectives & general direction for managing the situation.<br>☐ Establish the immediate priorities.<br>☐ Ensure that adequate safety measures are in place.<br>☐ Ensure that the needs of any people affected by the emergency are handled appropriately.<br>☐ Establish an appropriate organization and coordinate support as required.<br>☐ Maintain a personal log.<br>☐ Direct provision of appropriate responses to affected contractors.<br>☐ Approve and authorise the implementation of an Incident Action Plan<br>☐ Terminate response activities when appropriate |
| **SPECIFIC TASKS** |

| ROLE [Incident Controller] |
|---|
| **Initial Actions**<br>☐ Activate and lead the overall management of the IMT.<br>☐ Obtain briefing on emergency from the Site Emergency Controller (SEC) or ERT contact and review initial assessment.<br>☐ Use the emergency Information Capture Form<br>☐ Activate the necessary members of the IMT.<br>☐ Proceed to the IMT Room<br>☐ Ensure Room is fully set-up before response commences.<br>☐ Obtain status report.<br>☐ Communicate with CMT/ IMT Liaison Coordinator as appropriate.<br>☐ Advise CMT/ IMT Liaison Coordinator of any requirement for immediate support.<br>☐ Arrange schedule for ongoing contact |
| **Determine strategic objectives & general direction for managing the situation**<br>☐ Establish the immediate priorities:<br>☐ Define IMT objectives.<br>☐ If necessary, confer with operator or government agencies to agree on common objectives and priorities.<br>☐ Chair initial IMT briefing.<br>☐ Communicate priorities to the team.<br>☐ Confirm ongoing means of communications with SEC has been established to Operations Officer<br>☐ Confirm which regulatory agencies need to be notified.<br>☐ Confirm with Planning Officer that all appropriate log-keeping, issues and actions, and status boards are maintained. |

| ROLE [Incident Controller] |
|---|
| **Ongoing Actions**<br>☐ Refer to and follow the IMT Process<br>☐ Hold regular IMT updates.<br>☐ Time out, phones switched to time out mode.<br>☐ Every 30 minutes initially (as a guide)<br>☐ Monitor effectiveness of response and review issues & actions and priorities.<br>☐ With Planning Officer, establish short-term/long-term recovery goals, milestones, and resource requirements.<br>☐ Brief CMT/IMT Liaison as required.<br>☐ Delegate Responsibilities<br>☐ Allow yourself to focus on setting strategic objectives for next operational period.<br>☐ Determine duration and structure of response operations.<br>☐ Decide duration of current operational period (start thinking of when to stand down or next day operations)<br>☐ Identify additional personnel needs to maintain 24-hour support.<br>**Stand Down**<br>☐ Communicate end of IMT response to all relevant internal and external parties<br>☐ Provide copies of all emergency related documents and logs to the Log Keeper<br>☐ Stand down those people not required in managing ongoing recovery process.<br>☐ Hold debrief of IMT, specialist advisors, support teams and receive feedback.<br>☐ Review any capability gaps and opportunities for improvement in the response.<br>☐ Review and approve the emergency report.<br>☐ Commission post-emergency investigation<br>☐ Ensure accepted recommendations have been incorporated into the IMP |

**COE OPERATIONS OFFICER (DUTY CARD 2)**

| ROLE [Operations Officer] |
|---|
| Reports to IC and is responsible for monitoring and supervising operational response operations in the field. Implements the operational plans to achieve response objectives and protect people, the environment and property |
| **RESPONSIBILITIES** |
| Maintain two-way communication with scene.<br>Establish facts/needs.<br>Coordinate immediate response.<br>Identify key issues.<br>Provide/resource technical support for IC |
| **SPECIFIC TASKS** |

**Initial Actions**

- ☐ Identify the SEC and where located - obtain all available information on the situation.
- ☐ Agree call schedule with the SEC or ERT
- ☐ Use the emergency Status Board/ Form
- ☐ Assess emergency, including emergency potential.
- ☐ Start a personal log.

**Ongoing Actions**

- ☐ Propose and agree immediate priorities with the IC.
- ☐ Update Planning Officer on situation for development of the Action Plan
- ☐ Work with ERT to identify logistical support requirements.
- ☐ Identify issues and actions required for the next period - mark and track on Issues board.
- ☐ Source and provide technical information and support required by the response teams.
- ☐ Develop strategy (i.e., what we are attempting to achieve)
- ☐ Identify tactics/breaking down tactics into manageable tasks (i.e., how we are going to implement strategy)
- ☐ Confer with response contractors / consultants for equipment and techniques.
- ☐ Allocate tactical resources based on strategy requirements.
- ☐ Provide updates to the situation board to reflect current operations in the field.
- ☐ Resource additional technical support as required.

**Stand Down**

- ☐ Attend the IMT debrief.
- ☐ Provide copies of all emergency related documents and logs to the Log Keeper
- ☐ Monitor the demobilization of response teams

## COE PLANNING OFFICER (DUTY CARD 3)

| ROLE [Planning Officer] |
|---|
| Reports to the IC and manages the IMT related planning functions and information capture for the response |
| **RESPONSIBILITIES** |
| Responsible for the collection, evaluation, dissemination, and use of emergency information<br>Oversees the display of information on the status boards.<br>Oversees environmental support for the response operations.<br>Development of recovery planning options<br>Collection and retention of emergency plans and documents<br>Activates and manages the Log Keeper |
| **SPECIFIC TASKS** |

**Initial Actions**

- ☐ Assist the IMT-Leader to maintain and use the Brainstorming/Planning Board/ Form
- ☐ Mobilize any additional resources or specialist advisors immediately required to commence recovery planning
- ☐ Ensure Log Keeper is in place and the IMT is maintaining an auditable trail.
- ☐ Provide immediate notifications to regulatory authorities as required under legislation or as per accepted regulatory documentation.
- ☐ Identify one or more Emergency Management Liaison Officers continue notifications and ongoing consultation in accordance with Section 2.4 (Notification Requirements) of the OPEP.
- ☐ Consider activating additional Environmental and Community Consultation Support:
- ☐ Setup and maintain a document retention process for all response documentation.
- ☐ Start a personal log.

**Ongoing Actions**

- ☐ Drive and monitor the IM process.
- ☐ Prepare the Action Plan – compile data from display boards and use Situation, Mission, Execution, Administration and (Logistics), Command (and Communication) guide for format:
- ☐ Identify environmental issues and where necessary seek advice and support from environmental technical authorities/ environmental specialists.
- ☐ Establish time for next operational period (generally starting the next morning for 24-hour duration)
- ☐ Create strategic objectives for next operational period and submit to IMT-Leader for approval.
- ☐ Create meeting schedule and advise IMT-Leader on planning process issues.
- ☐ Develop plans for recovery operations to implement tomorrow, the next day, next week etc.
- ☐ Consolidate the Action Plan and assemble for final approval and signoff.

**Stand Down**

- ☐ Ensure team members and supports complete any outstanding log/record keeping.
- ☐ Ensure all log sheets are collected before the team leaves the room. (All notebooks to be copied and / or originals to be retained)
- ☐ Arrange for copies of all email traffic and emergency files to be collated and stored.
- ☐ Consider need to photograph Incident Control Centre and key display boards before it is tidied.
- ☐ Contribute to the development of the post emergency report.

## COE FINANCE & ADMIN OFFICER (DUTY CARD 4)

| ROLE [Finance & Admin Officer] |
|---|
| Reports to the IC and manages IMT related HR and Financial aspects of the response |
| **RESPONSIBILITIES** |
| - Coordinate all general administrative support requirements for the IMT and response activities overall.<br>- Handle accounting services and financial record-keeping, track, and report on emergency costs<br>- Manage HR issues and emergency contact notifications. |
| **SPECIFIC TASKS** |
| **Initial Actions**<br>☐ Determine if additional Finance & Admin support personnel are needed. Coordinate their activation and manage their activities.<br>☐ Activate additional telephone responders if required.<br>☐ Use the Medical Planning Board/ Form – to capture and display casualty management information.<br>☐ Start a personal log.<br><br>**Ongoing Actions**<br>☐ Establish procedures for use in establishing financial controls.<br>☐ Establish & communicate pre-approved spending authorities for the IMT.<br>☐ Establish contact and coordinate finance-related activities with other agency finance personnel.<br>☐ Coordinate with the IMT-Leader and Sections to determine immediate financial needs.<br>☐ Provide the IMT-Leader with information on the financial implications of major and/or costly actions taken or being considered by IMT, contractor, government agency, etc.<br>☐ Coordinate with appropriate Company and contractor or government agency personnel to receive timely and accurate information on the costs that they incur.<br>☐ Ensure that insurers have been notified and provided with accurate facts concerning the emergency.<br>☐ Set up appropriate financial reviews and controls for all contracts, agreements and other legally binding documents used by the IMT during the response, as appropriate. |
| **Stand Down**<br>☐ During demobilization, ensure that any outstanding IMT related costs or other financial issues have been resolved, insurance requirements have been met and there is a system in place to receive and process any remaining claims.<br>☐ Prepare a final report accounting for all costs incurred during the response.<br>☐ Attend the IMT debrief.<br>☐ Provide copies of all emergency related documents and logs to the Planning Function |

## COE LOGISTICS OFFICER (DUTY CARD 5)

| ROLE [Logistics Officer] |
|---|
| Reports to the IC and manages Logistics. Coordinates the provision, storage and transportation of supplies and resources required for the emergency response and recover |

| RESPONSIBILITIES |
|---|
| - Coordinate all logistic requirements for the IMT and response activities overall.<br>- Liaise with Finance to establish normal expenditure control and any necessary insurance controls.<br>- Manage logistic issues and emergency contact notifications.<br>- Negotiate with contractors, consultants, external enterprises, and agencies |

| SPECIFIC TASKS |
|---|
| **Initial Actions**<br>☐ Obtain a full briefing on the emergency, paying attention to marine and air logistics considerations in supporting the response or actions in place.<br>☐ Evaluate the logistics ramifications of the current response and any planned actions.<br>☐ Identify existing or potential international and macro logistics issues.<br>☐ Consult with other ESG members to calculate the levels and identify the sourcing of additional resources and services needed to support response operations.<br>☐ Start a personal log.<br><br>**Ongoing Ac**tions<br>☐ Provide logistics support to the affected site in accordance with tactical plans developed by the IMT.<br>☐ Assess the local availability of equipment and personnel suitable to support the response and recovery activities.<br>☐ Negotiate with contractors, consultants, external enterprises, and agencies for supply of personnel, equipment, and services.<br>☐ Coordinate reception, assembly, storage, and deployment in liaison with the IMT and Site Logistics Officer<br>☐ In conjunction with IMT Information Officer, ensure a logistics status board is maintained showing all support resources, aircraft and marine movements supporting the operation.<br>☐ Maintain an overview of weather conditions and their effect on aircraft and marine movements. Relay information as required.<br>☐ Ensure inventories are kept of all equipment, materials, services, and supplies purchased, rented or borrowed or obtained during the response operation.<br>☐ Liaise with Finance Officer to establish normal expenditure control and any necessary insurance controls which may be required.<br>☐ Document all emergency actions on log sheets pass to Information Officer |
| **Stand Down**<br>☐ During demobilisation, ensure that any outstanding IMT related costs or other financial issues have been resolved, insurance requirements have been met and there is a system in place to receive and process any remaining claims.<br>☐ Prepare a final report accounting for all costs incurred during the response. |

☐ Attend the IMT debrief.
☐ Provide copies of all emergency related documents and logs to the Planning Function

## 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); and
  - 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 Cooper 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 Cooper Energy Operations Officer.

## Appendix 5 - Response Resources Needs Assessment

**Peak Response Needs**

Cooper Energy's IMT structure is designed to be scalable to meet the particular requirements of any credible spill scenario associated with Cooper 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 Cooper Energy's Athena Gas Supply Project, Cooper 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 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 below shows the process used by Cooper Energy and AMOSC to determine response needs. Against these needs, resource pools are assigned from Cooper Energy and response parties.

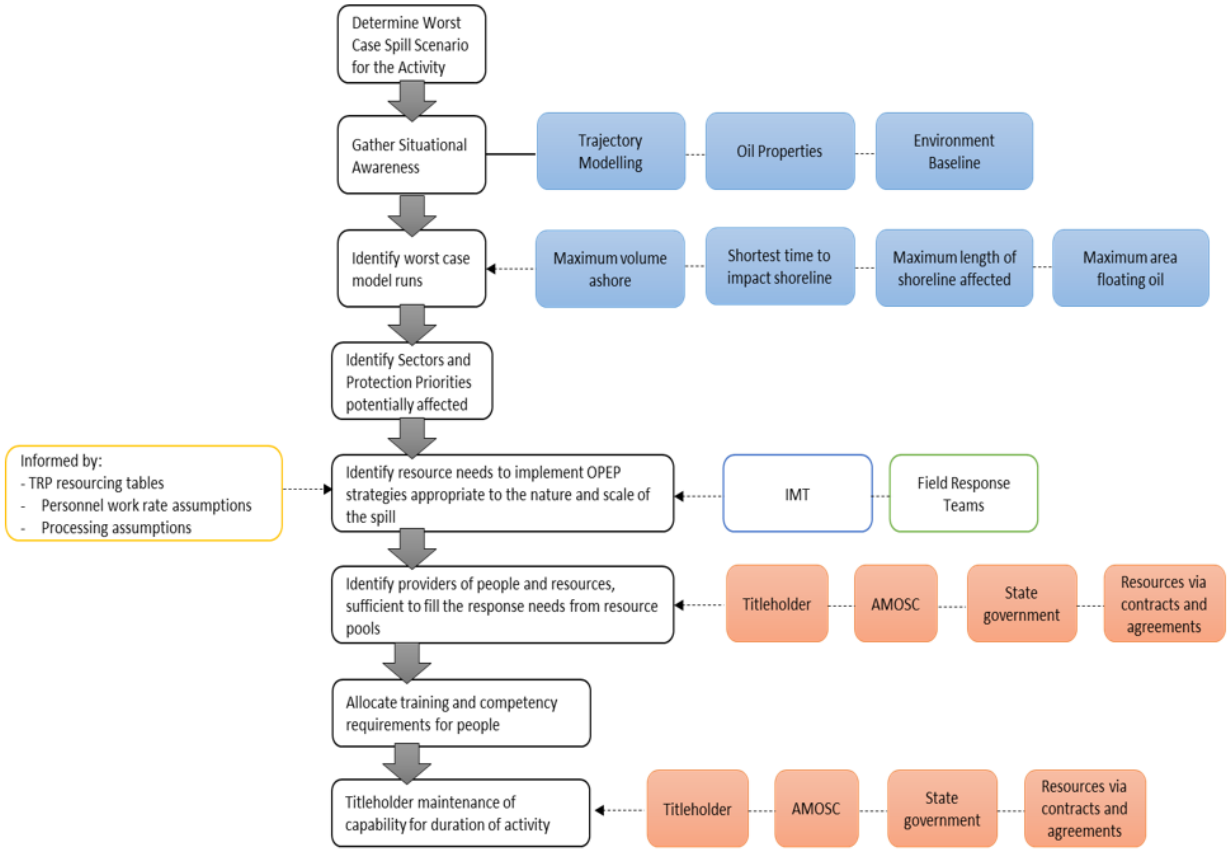



*Figure A5-1: Response Resource Assessment Process*

**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$^2$ begins to accumulate after 20-days with a slow build up, up to a rate of ~1m$^3$/day over the following 60-days.

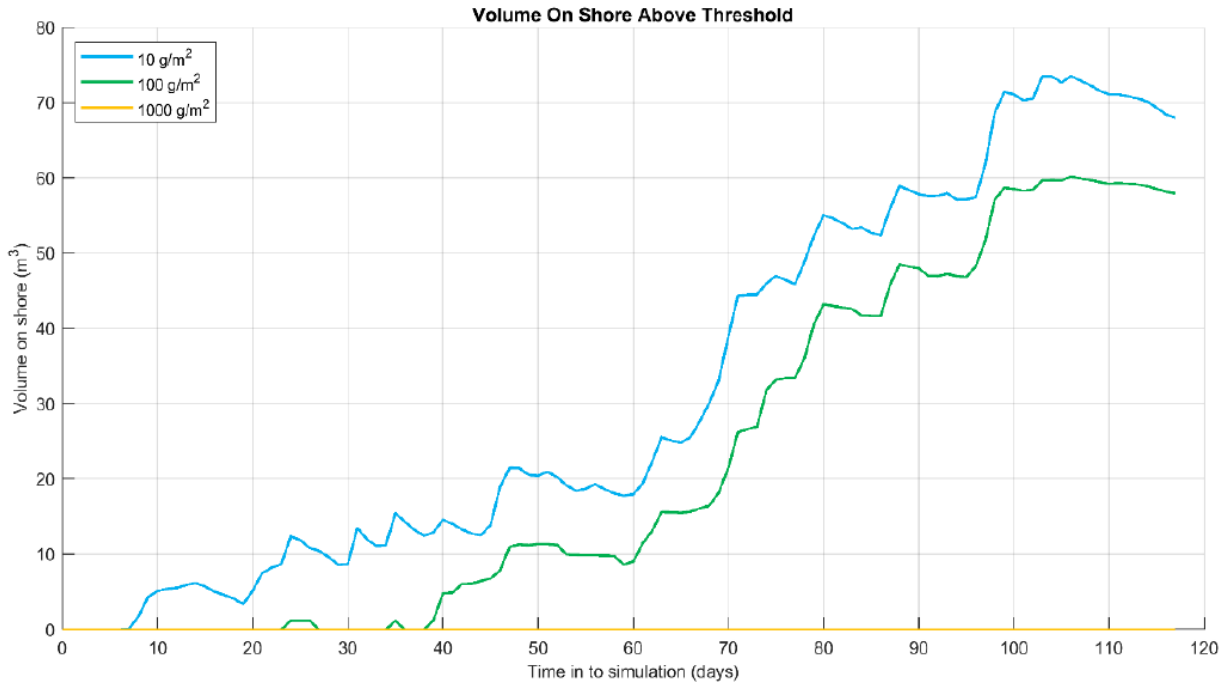
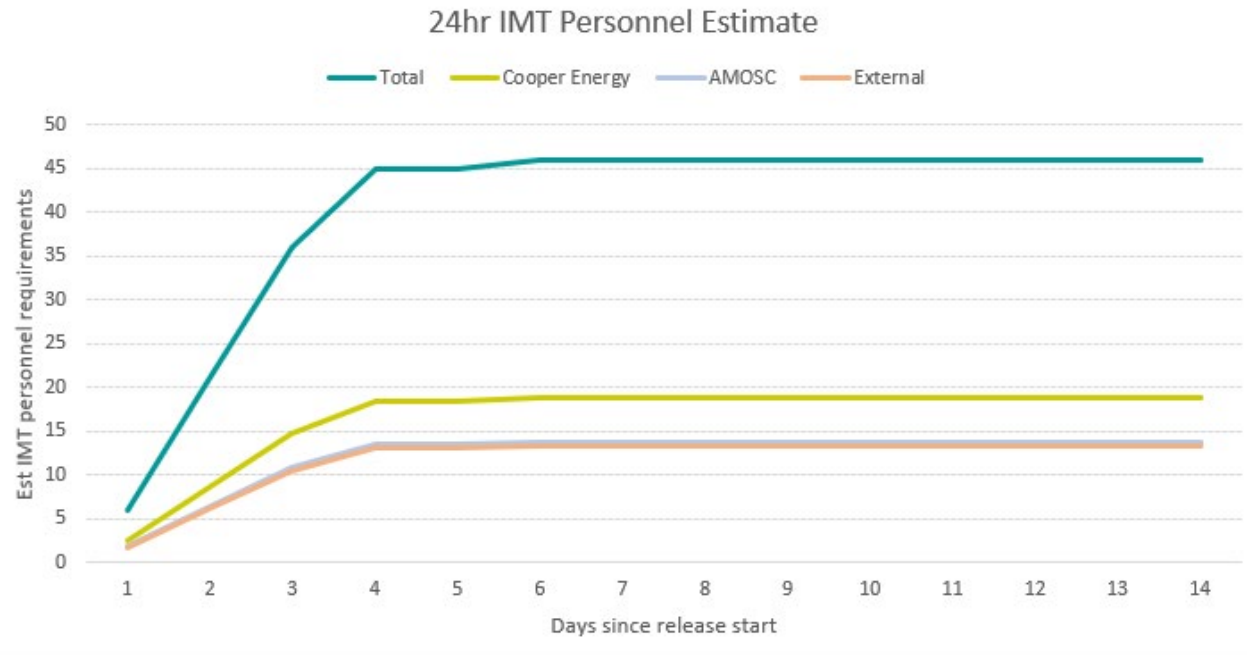
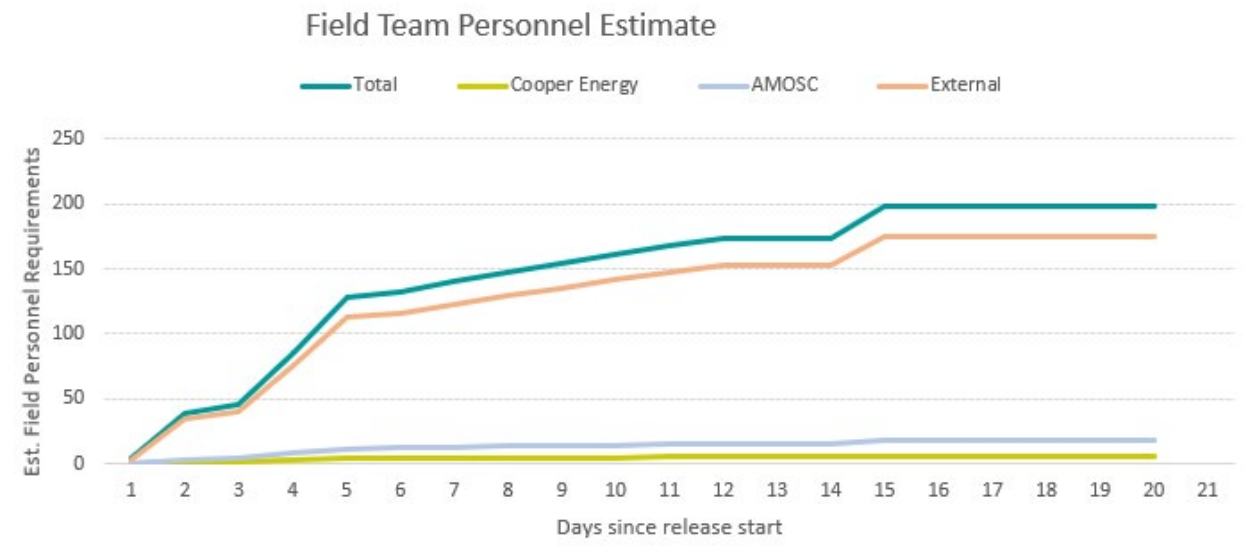



*Figure A5-2: Oil Ashore over the course of a protracted LOWC from ASP subsea well during drilling.*

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




**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 (light crude oil) and the potential for weathering, the primary field options are:

- Source control

- 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<br>Peak / plateau day 4 |
| **Source Control** | Survey, Intervention, Debris Clearance, Dispersant Application<br>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:*<br>Peak around relief well MODU arrival |
| **Establish FOB** | Aerial Observation<br>Marine Response<br>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<br>Peak / plateau day 4 |
| **Field Response Teams** | | | | | |

| Strategy | Tactics | Peak Capacity Description / Amount | Provider | Time to initiate | Approx. Peak resourcing |
|---|---|---|---|---|---|
| **Monitor and Evaluate** | Overflights of the spill / search area | 2 x daily overflights of the spill / search area | Aerial observers – AMOSC<br>Aircraft – Third party arranged by Cooper Energy | Immediate | Daily |
| **Shoreline Protection and Deflection** | Shoreline sensitivity protection & deflection booming, recovery operations | 2 x protection & deflection strikes teams (initial establishment of TRP).<br>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<br>OSPR shoreline equipment – AMOSC / CG, Labour hire arranged by Cooper Energy and NRT as available.<br>Small vessels – third-party arranged by Cooper Energy<br>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<br>Week 1 |
| **Shoreline Clean-up** | 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<br>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 Cooper Energy (under control of State Jurisdiction) | Ongoing consideration | 104 personnel<br>Week 2+ |
| **Oiled Wildlife Response** | Reconnaissance, deterrence or displacement strategies, staging, recovery, | 2 x wildlife coordinators managing operations up to 50 x OW responders. 5 additional SME roles. | Directed by the relevant State jurisdiction.<br>Resourcing from AMOSC / CG and AMOSC agreements with | Dependent of wildlife encounter | 57 personnel<br>Week 2+ |

| Strategy | Tactics | Peak Capacity Description / Amount | Provider | Time to initiate | Approx. Peak resourcing |
|---|---|---|---|---|---|
| | cleaning and rehabilitation. | | OWL facilities, labour hire arranged by Cooper Energy, and NRT as available. | | |
| **Operational (Type I) and Scientific Monitoring (Type II)** | Including, but not limited to: Operational forecast modelling, hydrocarbon spill surveillance and weathering, shoreline assessment, ecotoxicology assessment, hydrocarbon monitoring, benthic, bird surveys, marine megafauna, and hindcast modelling. | 1 x OSMP Coordinator<br>3-6 x OSMP response support personnel (dependent on the initiation triggers of each sampling plan) | Operational and Scientific Monitoring directed by OSMP service provider arranged by Cooper Energy | Refer to sampling plans within the OSMP and individual Implementation Plans (IPs) | Refer to Table A5-2: IMT, FOB and Field Team (Leads & Coordinators) Peak Resourcing Requirements.<br>OSMP Service Provider issues personnel availability matrix to Cooper energy every 6-months. |

*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 |
| **Planning Section Lead** | 1 | 1 | 1 | 3 | 3 | 3 | | | | 6 |
| 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 |
| **Operation Section Lead** | 1 | 1 | 1 | 3 | 2 | 3 | | | | 5 |
| 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 |
| **Logistics Section Lead** | 1 | 1 | 1 | 3 | 3 | 3 | | | | 6 |
| Support Branch Coordinator (Facilities / Equipment) | 1 | 1 | | 2 | | | | | 2 | 2 |
| Service Branch Coordinator (Comms, IT, Medical, Food) | 1 | 1 | | 2 | | | | | 2 | 2 |
| **Finance and Administration Lead** | 1 | 1 | | 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 |
| **FOB Lead** | 1 | 1 | 1 | 3 | 1 | 2 | | | | 3 |
| Deputy FOB Lead | 1 | 1 | 1 | 3 | 1 | 2 | | | | 3 |
| Safety Officer | 1 | 1 | | 2 | | | | | 2 | 2 |
| **Arial Base FOB Lead** | 1 | 1 | | 2 | | 2 | | | | 2 |
| Aerial Observer – Spill monitoring | 1 | 1 | | 2 | | 2 | | | | 2 |
| **Shoreline Operations Manager** | 1 | 1 | | 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 |
| **Resource Need** | | | **Total** | **98** | **Resource Pool** | | | | **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.*

### 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 | Cooper 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 |

| Source Control IMT Lead Roles | Resources Required | | | | Resource Pool | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Team 1 (Pax / 24hr) | Team 2 (Pax / 24hr) | Total | Cooper Energy | Well Control Services | Subsea Engineering | Well Construction Engineering | Survey Services | Total Sourced |
| **Resource Need** | | **Total:** | **42** | | | | | | |
| **Resources Sourced** | | | | | | | | **Total:** | **42** |