

Oil pollution risk management

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Core concepts

The Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Environment Regulations) require a titleholder to have an accepted environment plan (EP) in place for any petroleum activity or greenhouse gas activity in Commonwealth waters. This guidance note describes key aspects of the risk management process relating to oil pollution that is necessary to produce an acceptable EP submission.

This guidance note provides NOPSEMA's interpretation of the requirements, under the Environment Regulations, for an Oil Pollution Emergency Plan (OPEP) submitted as part of an EP required for offshore petroleum and greenhouse gas storage activities.

The EP must:

- demonstrate that oil pollution risks of the petroleum activity have been reduced to as low as reasonably practicable (ALARP) and acceptable levels
- detail control measures that will be used to reduce oil pollution impacts and risks to ALARP and an acceptable level (these control measures will address oil pollution prevention, preparedness and response)
- demonstrate that impacts and risks associated with implementing oil pollution response control measures have been reduced to ALARP and acceptable levels
- set environmental performance outcomes to ensure that oil pollution impacts and risks will be of an acceptable level
- set environmental performance standards and measurement criteria for the adopted oil pollution
- contain an OPEP (see below) and include mechanisms to maintain and update the OPEP
- identify a chain of command and roles and responsibilities of oil pollution response personnel
- include arrangements for testing the response arrangements in the OPEP
- include measures to ensure that oil pollution response personnel are aware of their responsibilities and have appropriate competencies and training
- provide for monitoring environmental impacts of an oil pollution incident and any response activities.

The OPEP must:

- include adequate arrangements to ensure that titleholders can implement oil pollution response control measures in a timely manner and for the duration of the activity. The response arrangements and capability detailed in the OPEP should:

- be commensurate with the level of oil pollution risk identified in the risk assessment and be fit for purpose, performance based, adaptable, scalable, executable and sustainable
- provide for implementation of response control measures to meet set levels of performance
- detail when and how the titleholder will seek assistance and any dependence on other response organisations
- ensure titleholders have the capacity to meet obligations to clean up potential oil pollution incidents that may result from their activity
- provide for monitoring of oil pollution to inform response activities and the effectiveness of control measures as well as monitoring of impacts to the environment from oil pollution and response activities
- be consistent with the national system for oil pollution preparedness and response.

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Acronyms

ALARP	As low as reasonably practicable
AMOS Plan	Australian industry cooperative oil spill response arrangements
AMSA	Australian Maritime Safety Authority
AS/NZS ISO	Australian standard/New Zealand standard International Organisation for Standardisation
DAWE	Department of Agriculture, Water and the Environment
EP	Environment plan
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPO	Environmental performance outcome
EPS	Environmental performance standard
IAP	Incident action plan
IMT	Incident management team
NEBA	Net environmental benefit analysis
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OPGGGS Act	<i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i>
OPRC	International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990
OPEP	Oil pollution emergency plan
OSCA	Oil spill control agent
OSMP	Operational and Scientific Monitoring Program
OWR	Oiled wildlife response
SIMA	Spill Impact Mitigation Assessment
TRP	Tactical response plan

1. Introduction

1.1. Purpose and scope

The purpose of this guidance note is to provide specific information on the content required in an OPEP and to articulate considerations that support the development of an acceptable EP submission in relation to oil pollution risks. While the level of detail provided in any submission to NOPSEMA should be relative to the nature and scale of a proposed activity and its complexity, the considerations provided here provide an indication of the type and range of information that may be relevant when preparing an EP and OPEP. References to other relevant NOPSEMA advice documents are included in section 6.

The relative merits of different oil pollution control measures, the range of possible risk assessment methods, and options for OPEP design and structure, while important, are not in the scope of this document. There are a number of other external references available that address these topics and provide further information for titleholders to consider (some examples are listed in section 6).

This guidance note supplements the NOPSEMA EP Content Requirements Guidance Note (N-04750-GN1344). Where the guidance note discusses the regulatory purpose of each regulation, this paper provides additional information on the application of the Environment Regulations to oil pollution risk management. Both guidance notes address the content requirements of an EP. Criteria for acceptance of an EP detailed in Regulation 10A are not the focus of this guidance note.

NOPSEMA has published an Environment Plan Decision Making Guideline (N-4750-GL1721) which describes how NOPSEMA evaluates EP submissions against the legislated criteria for acceptance (Regulation 10A). The guideline details the relationship between the content requirements of specific regulations addressed in this guidance note and each acceptance criteria.

This guidance note indicates what is explicitly required by the Environment Regulations, discusses good practice and suggests possible approaches. An explicit regulatory requirement is indicated by the word 'must', while other cases are indicated by the words 'should', 'may' etc. NOPSEMA acknowledges that what is 'good practice' and viable approaches will vary according to the nature of different offshore activities, their risks and surrounding environments.

This guidance note is not a substitute for legal advice or detailed consideration of the OPGGS Act and relevant Regulations.

1.2. Content and structure

The structure of this document is designed to match a logical sequence of the key steps in conducting a risk assessment and developing an OPEP rather than the order that the requirements appear in the Environment Regulations (Figure 1). Figure 1 highlights those aspects of the EP contents which are generally presented in an EP document (shown in blue in Figure 1) and those that are generally presented in an OPEP or its component parts/supplementary documents (shown in orange in Figure 1).

It should be noted though, that the regulations do not specify where content is contained, or what structure is used to organise EP/OPEP documentation and other approaches may also be suitable.

This guidance note is structured with the following subheadings to frame the advice:

- **Core concepts:** provides the specific content requirements that must be met.

- **Considerations:** provide an explanation of why a content requirement is necessary, how it may relate to other EP content requirements and provides discussion of some common considerations that may assist in preparation of an EP.

Blue 'break-out boxes' have been included in some sections of the guidance note. These focus on a specific aspect or potential approach to oil pollution risk management related to the Regulation(s) addressed by the relevant section (e.g. net environmental benefit analysis, dispersants etc.). The topics presented in the 'break-out boxes' were selected based on specific issues which have often required further consideration or explanation during NOPSEMA's strategic engagement with titleholders and EP assessments.

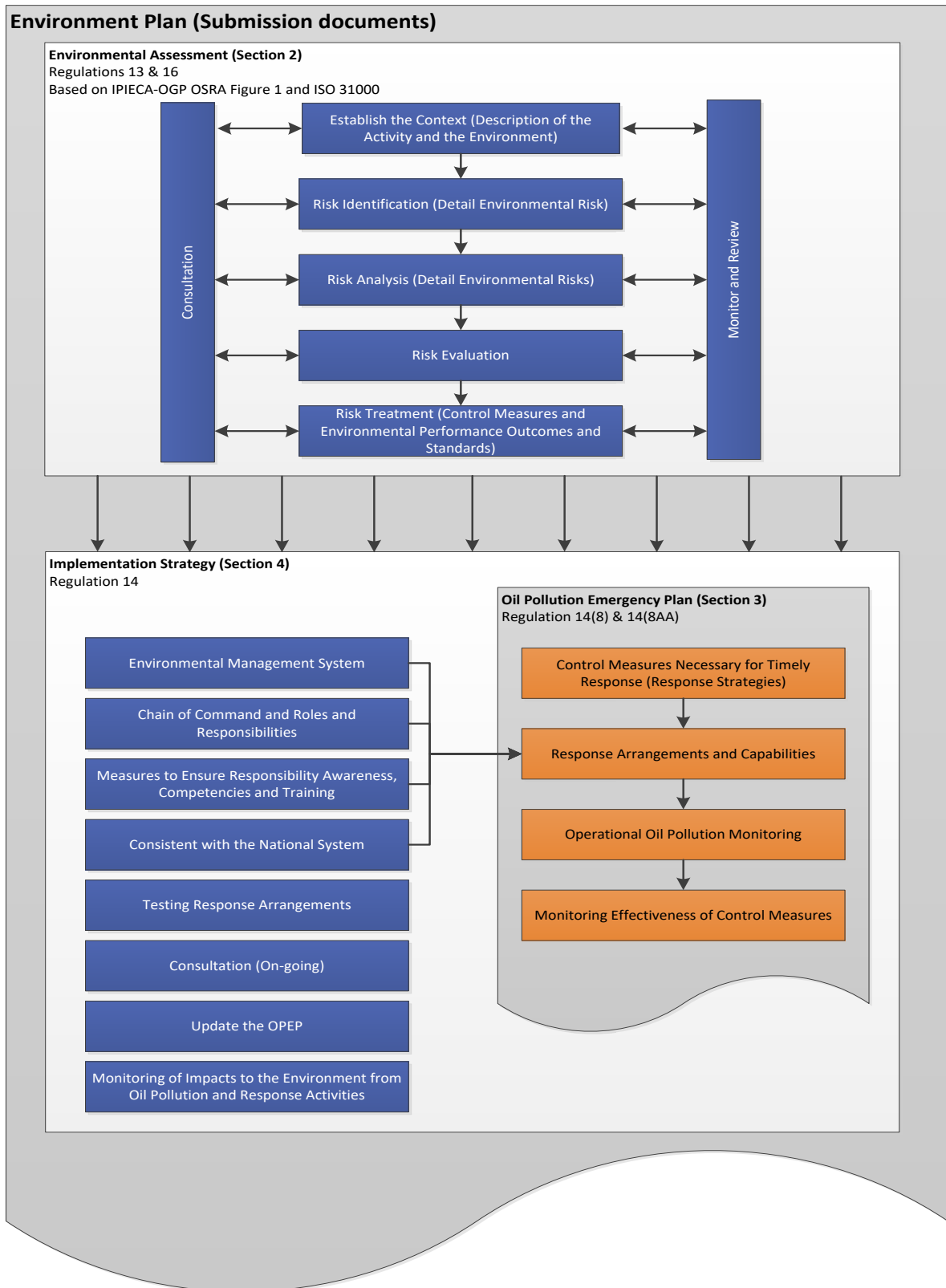


Figure 1: Relationship between the Environment Regulations and key steps in developing an OPEP

This figure is for illustrative purposes only. It is recognised that environmental risk assessment and developing an implementation strategy is not a linear process and includes monitoring and review feedback stages.

2. Oil pollution risk assessment and management

The Environment Regulations require that risks associated with the petroleum activity are detailed, evaluated and reduced to ALARP and acceptable levels. The Environment Regulations, however, do not prescribe in detail how this is to be accomplished. National and international guidelines and standards on risk assessment provide a useful source of information on how risk assessment is best carried out. A good example of a risk management process can be found in the AS/NZS ISO 31000:2009 Risk management - principles and guidelines.

Whatever approach is adopted, titleholders must provide reasoning for oil pollution risk management choices in order for NOPSEMA to be reasonably satisfied that the control measures selected as a result of the risk assessment will reduce the risks associated with the activity to ALARP and acceptable levels.

Establishing the situational context through consultation and a comprehensive description of the activity and environment is the first step in the process of managing risk.

2.1. Consultation

Applicable regulations – EP content

Regulation 11A – Consultations with relevant authorities, persons and organisations, etc.
Subregulation 16(b) – Other information in the environment plan

Core concepts

- The Environment Regulations require titleholders to undertake consultation during the preparation of an EP. Consultation provides additional context for the risk assessment, preparedness and response planning process and must be addressed in the EP submission.
- Relevant persons include each department or agency of the Commonwealth, State or the Northern Territory that have been assigned as the control agency or has other legislated responsibilities for oil pollution response.

Considerations

- Consultation should seek to inform response preparedness and selection of control measures to ensure the activity is carried out in a manner which reduces oil pollution risks to ALARP and acceptable levels.
- Early engagement should occur with relevant persons that are expected to have a response role to strengthen response arrangements through agreement of roles and responsibilities.
- Relevant persons may have published guidance on how they might be affected by offshore petroleum activities, their requirements or expectations in relation to oil pollution incidents and/or how they wish to be consulted (e.g. WA Department of Transport, Victorian Department of Economic Development, Jobs, Transport and Resources, Australian Fisheries Management Authority).
- Consultation with relevant resource management agencies should be undertaken to facilitate the identification and classification of environmental protection priorities during an oil pollution incident.
- Additional consultation with external oil spill response organisations is not required where a titleholder has entered into a contract or other documented agreement with that organisation for the provision of response services.

- Possible matters for consultation may include:
 - notification and mobilisation procedures and/or arrangements including but not limited to communication types, channels and timeframes
 - interface and/or integration with arrangements, plans and procedures
 - strength and reliability of any agreed arrangements
 - roles and responsibilities of supporting organisations including key deliverables
 - viability of control measures to meet the defined outcomes
 - availability of resources and response times, including shared resource implications
 - arrangements for exercises, audits and maintenance resources and documentation
 - expectations for service providers to act in compliance with the EP
 - liability and cost recovery arrangements for resources deployed during an incident
 - any other information that the relevant person or the titleholder believe is appropriate.
- The following NOPSEMA publications provide further guidance on consultation:
 - Petroleum activities and Australian Marine Parks guidance note (GN1785)
 - Consultation with Commonwealth agencies with responsibilities in the marine area guideline (GL1887)

2.2. Description of the activity and the environment

Applicable regulations – EP content

Regulation 4 – Definitions

Regulation 9(7) – Form of an environment plan

Regulation 13(1) – Description of the activity

Regulations 13(2) and 13(3) – Description of the environment

Core concepts

- The description of the activity includes potential emergency conditions.
- The description of the environment must address the values and sensitivities of the environment that may be affected by any oil pollution and by the implementation of response control measures.

Considerations

- The description of the activity and environment should be sufficiently detailed to ensure all risks associated with the activity are identified and that consequences of oil pollution can be predicted accurately.
- The description of physical and chemical characteristics of hydrocarbons associated with the activity should provide sufficient detail to support the risk assessment, including any modelling of fates, weathering and/or trajectories. A suitable explanation and justification should be provided where an analogue is adopted to support the risk evaluation, including confidence in the prediction and consideration of any effect of uncertainties in the predicted hydrocarbon properties.

- Consideration should be given to sampling and characterising hydrocarbons as early as possible in the exploration or production process to inform oil pollution risk assessment and response planning (this may also include testing dispersant efficacy in some instances).
- The description of the environment should detail the method applied to define the area that may be affected by oil pollution and how it is appropriate for the oil type and receptors.
- The description of the environment must include matters of national environmental significance protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Information prepared by the Department of Agriculture, Water and the Environment (DAWE) regarding these matters must be considered (see NOPSEMA's EP content requirements guidance note (GN1344))
- Sufficient details of environmental values and sensitivities should be provided to inform oil pollution risk assessment and response planning. For example:
 - vulnerability of the receptor
 - distribution and abundance
 - social, economic and cultural values
 - resilience and ability to recover from impacts
 - relevant policies, guidelines, threatened species recovery plans, plans of management, management principles and other documents published on the DAWE web site in relation to matters protected under Part 3 of the EPBC Act.
- The level of detail provided should be commensurate with the environmental value and sensitivity of receptors and the likely extent, severity, and duration of potential oil pollution impacts.
- Clearly identifying environmental resources at risk will assist in defining protection priorities and managing any trade-offs between environmental resources that may be affected as part of oil pollution planning and response decision-making processes.
- Consideration should be given to natural (e.g. nesting, calving and roosting) and commercial (e.g. fishing and tourism seasons) temporal sensitivities that may influence the risk to affected environmental resources, protection priorities and selection of oil pollution response control measures.

2.3. Detail environmental impacts and risks (risk identification and analysis)

Applicable regulations – EP content

Regulation 4 – Definitions

Subregulation 13(5)(a) - Details of environmental impacts and risks

The Environment Regulations require that an EP must include details of the environmental impacts and risks for the activity. In risk assessment terminology (ISO 31000) this can be thought of as the 'risk identification' and 'risk analysis' stages (Figure 1).

Core concepts

- The EP must detail the oil pollution impacts and risks associated with the activity including their likelihood and consequences.

- Potential sources of oil pollution should not be ignored or discounted because of low likelihoods or the continued effectiveness of preventive control measures.

Considerations

- All potential sources and volumes of oil pollution from a petroleum activity (including vessel operations), up to and including worst-case scenarios should be identified to define the level of risk.
- NOPSEMA is unlikely to accept an EP where a high consequence oil pollution scenario has been omitted, especially where related incidents have been experienced elsewhere by industry.
- The level of detail provided in describing possible consequences and likelihoods should reflect the nature and scale of each oil pollution risk, with greater effort placed where there are greater potential consequences or higher likelihoods.
- Titleholders should provide a clear explanation of the implications of any uncertainty generated in the risk assessment and any subsequent degree of conservatism applied.
- Contemporary and relevant scientific and technical information, including analysis of comparable incidents, should be provided to support descriptions of likelihood and consequence.
- Sufficient detail should be provided of potential oil pollution scenarios selected to inform both the risk evaluation and subsequent response planning.
- Published guidelines on tools and techniques for hazard identification and risk assessment may be considered, for example ISO 17776:2016¹ and IPIECA & OGP (2013)². In the context of oil pollution risk assessment the following is relevant:
 - sources and release locations of oil pollution (e.g. subsea/surface)
 - hydrocarbon characteristics and properties relevant to determining risks and evaluation of viable response control measures (e.g. fate/weathering, emulsification potential, toxicity, persistence)
 - flow rates, spill duration and total discharge volumes of oil that could be released
 - possible distribution, extent and behaviour (e.g. spreading,) of oil pollution (both surface and subsurface transport of hydrocarbons)
 - potentially affected environmental receptors, at sea, subsurface and on shorelines
 - time to impact sensitive environmental receptors
 - likely duration of an oil pollution response and cleanup.

¹ Petroleum and natural gas industries - Offshore production installations - Major accident hazard management during the design of new installations

² IPIECA & OGP (2013) Oil spill risk assessment and response planning for offshore installations. Oil spill response joint industry project. Finding 6, IPIECA and OGP London

Oil pollution scenarios

Titleholders should identify and describe potential oil pollution scenarios for their activities to support the risk evaluation and inform pollution response planning. Scenarios should address the range of potential pollution sources for the activity (e.g. vessel spills, pipeline breaches, well blowouts) and be representative of the key consequences. Many of the characteristics of potential offshore petroleum pollution scenarios (e.g. location, oil type(s), potential flow rates and volumes) are likely to be either known and/or can be reasonably predicted for spill response planning purposes.

The process for identifying and selecting oil pollution scenarios should be clearly described and give consideration to the different requirements of risk evaluation versus response planning. The EP should explain how the approach to defining pollution scenarios is appropriate to the risks of the current activity including where the method has been adopted from external guidance or other jurisdictions. Pollution scenario terminology should also be defined and consistently applied throughout the EP.

One or more scenarios (for example, worst case consequences at priority receptors defined by deterministic modelling) from the risk evaluation may be selected as the basis for pollution response planning. Consideration should be given to whether the selected planning scenarios represent the response needs for all the response levels. Different response levels may, for example, have different requirements for first-strike actions, response decision-making processes, operational monitoring, response escalation/de-escalation, resource mobilisation, implementation of control measures etc.

The response arrangements and capability detailed in the OPEP should provide for a response to the planning scenarios selected.

Oil spill modelling

There are various qualitative and quantitative methods available to assist in predicting oil pollution consequences. Typically, numerical modelling is used to simulate the likely fate and trajectory of oil pollution in different scenarios to support the determination of a level of consequence. Useful modelling outputs include predictions of:

- movement and total geographical extent of hydrocarbons (surface and subsurface) over time
- minimum time to contact with shorelines or sensitive resources (surface and subsurface)
- hydrocarbon concentrations in the water column and duration of exposure at sensitive resources
- maximum volume of oil ashore including shoreline accumulation
- potential effect of implementing oil pollution response control measures e.g. subsea/surface dispersant.

These outputs can be used to define the area that may be affected, identify vulnerable receptors (in particular pre-identified protection priorities) and inform the risk evaluation and oil pollution response planning.

Titleholders should consider the limitations of the model and the level of uncertainty in the modelling outputs and apply an appropriate level of conservatism in the application of the results. Titleholders should provide suitable details of model inputs, parameters, and output information to demonstrate that the results are appropriate to the oil pollution scenarios.

When utilising modelling to inform risk assessments and response planning, consideration should be given to the following:

- relevance of the modelling method to the proposed activity, oil type, location, temporal period and any site specific oceanographic/environmental conditions (in particular where modelling is adapted from nearby activities or locations).
- appropriate application of different modelling techniques (e.g. stochastic and deterministic) to match the purpose of the modelling (e.g. risk assessment versus spill response planning).
- the number of model runs selected for stochastic modelling.
- extracting relevant outputs from different modelling techniques to match different requirements of risk evaluation versus pollution response planning.
- application of appropriate threshold values (e.g. surface thickness, entrained or dissolved hydrocarbon concentrations) to interpret and apply modelling outputs.
- ensuring that modelling inputs match the sources and volumes of the spill risk scenarios.
- selection of a modelling period that is relevant to the pollution risks and has regard to the likely persistence of residual oil in the environment.
- appropriate use of 'probability contours' so that they do not have the effect of restricting the area that may be affected or underestimate potential consequences.

2.4. Evaluation of impact and risks (Risk evaluation and risk treatment)

Applicable regulations – EP content

Regulation 4 – Definitions

Subregulations 13(5)(b) & (c) and 13(6) – Evaluation of environmental impacts and risks and details of control measures to reduce impacts and risk to ALARP and an acceptable level

The Environment Regulations require that an EP include an evaluation of the environmental impacts and risks (including impacts and risks associated with implementing an oil pollution emergency response) and provide details of the control measures that will reduce those impacts and risks to ALARP and acceptable levels. In risk assessment terminology this can be thought of as the 'risk evaluation' and 'risk treatment' stages of a risk assessment (Figure 1). The risk treatment stage will encompass spill response planning processes leading to development of an OPEP.

Core concepts

- Oil pollution control measures must be described in the EP and the risk evaluation must show, through reasoned and supported evidence, that adopted control measures will be effective in reducing impacts and risks to ALARP and an acceptable level and that there are no further practicable measures that could reasonably be taken to further reduce impacts and risks.
- Impacts and risks associated with implementing oil pollution control measures must also be evaluated and reduced to ALARP and acceptable levels. This is critical to NOPSEMA's acceptance of an EP providing "pre-approval" of control measures such as dispersant application.

Considerations

- An evaluation concludes the theoretical component of the risk management process by making decisions about which control measures should be adopted and the level of performance they are required to function at to collectively reduce risks to ALARP and acceptable levels.
- The evaluation method should match the nature and scale of the oil pollution risks being evaluated. Methods may include a mix of good practice, industry standards, professional judgements, qualitative reasoning, semi-quantitative or quantitative analysis and the precautionary principle.
- The level of detail provided in the evaluation should be commensurate with the criticality of the control measure and the level of risk reduction it achieves.
- The risk evaluation should provide the necessary information on pollution response needs to support a strategic and tactical response planning process.
- Where a number of potential oil pollution scenarios are identified (see breakout box below), titleholders may choose to use a representative or group of scenarios (including for different incidents types or levels) for which the relevance of controls measures can be evaluated.
- The selection and evaluation of oil pollution control measures should:
 - consider the range of anticipated environmental conditions that may affect a response
 - consider protection priorities (having regard to any protection status of resources at risk including matters protected under Part 3 of the EPBC Act)

- relate to the values and sensitivities in the environment that may be affected (see Section 2.2), and not only rely on generic information regarding environmental sensitivities and oil pollution impacts
- assess the feasibility and likelihood of success of known control measures for reducing oil pollution risks
- consider the relative environmental benefits of implementing each control measure (for example NEBA³ - see breakout box below)
- consider any new or increased environmental impacts and risks due to implementing control measure (see Demonstration of ALARP and acceptable level of impact and risk in oil pollution response planning breakout box below)
- identify the required level of effectiveness and performance levels of the selected control measures.
- Oil pollution response control measures should be evaluated in terms of effectiveness and required level of performance considering a range of factors, for example, functionality, availability, reliability, survivability, dependency and compatibility.
- Defining the required effectiveness and level of performance of control measures is critical to the risk evaluation and subsequent development of environmental performance standards (see Section 2.5).
- For higher order impacts and risks it is expected that alternative, additional and/or improvements to control measures that may further reduce impacts and risks are identified and evaluated.
- Exploration of options to improve the effectiveness of oil pollution control measures should:
 - consider the response capability and resource requirements and identify the need for any additional resources (e.g. capability review and gap analysis)
 - identify and consider the environmental benefit of options to improve to the control measures
 - identify any dependencies or assumptions on availability of response resources and personnel that may affect the effectiveness of a selected control measure
 - provide an appropriate justification for predicted effectiveness of response control measures having regard to realistic response considerations including previous real-world incidents, resource availability, logistical considerations, environmental constraints, weather/oceanographic conditions, remoteness of response locations etc.
 - identify realistic alternatives, additions and improvements consistent with best practice and not just compare the cost of the adopted control measures to the costs of extreme options that are unlikely to be reasonably practicable
 - consider improvements to response preparedness (e.g. increased response resources, greater certainty in resource availability, pre-spill tactical response planning, pre-deployment of response equipment, contractual agreements with external organisations) as well as response outcomes (e.g. reduced response timeframes, duration of response, oil stranding on shores, waste volumes and numbers of oiled wildlife)

³ Spill impact mitigation assessment (SIMA) is being adopted as an alternative approach to NEBA by some organisations.

- consider opportunities for collaborative approaches to share the 'costs' of alternative, additional and/or improvements to control measures that may be disproportionate for a single titleholder.
- The evaluation should enable a titleholder to demonstrate that all reasonably practicable measures to reduce oil pollution risks are being implemented and the adopted oil pollution response control measures and response arrangements detailed in the OPEP will be effective in reducing impacts and risks to ALARP and an acceptable level (see ALARP and acceptable level breakout box below).
- The titleholder may not be the control agency for some potential oil pollution incidents from its activity (e.g. vessel spills, spills entering state waters). In these cases the evaluation of effectiveness of control measures and demonstration of ALARP should consider the likely response needs of the relevant control agency and how the titleholder will support a response (e.g. operational monitoring, provision of vessels, aircraft and other response resources). Resource requirements of the control agency should be addressed during consultation (see section 2.1).

Demonstration of ALARP and acceptable level of impact and risk in oil pollution response planning

- Titleholders must demonstrate that all reasonable and practical oil pollution response control measures have been adopted and that adopting additional, alternative or improved control measures is grossly disproportionate when comparing sacrifice to environmental benefit (see NOPSEMA EP Decision Making Guideline GL1721).
- The evaluation of impacts and risks and demonstration of ALARP in relation to oil pollution risks should address prevention, preparedness and response.
- The method(s) applied to demonstrate ALARP for the response arrangements and preparedness levels for the control measures should be described where it differs from the evaluation method(s) applied to other impacts and risks described in the EP.
- Implementing oil pollution response control measures may introduce new or modify existing impacts and risks (e.g. dispersant toxicity, increased dispersed oil concentrations, shoreline or wildlife disturbance by clean-up teams). Any new or change in impacts and risks associated with a spill response must be considered in the risk evaluation and shown to be reduced to ALARP and an acceptable level.
- An acceptable level of impact and risk should be defined in relation to implementing the adopted oil pollution response control measures. A systematic evaluation method should then be applied to demonstrate that the predicted levels of the impact of a spill response will be acceptable.
- For low level impacts and risks, in typical circumstances, it is expected that demonstrating an impact or risk will be reduced to ALARP will be sufficient for demonstrating that the same impact or risk will be of an acceptable level. For higher order impacts a method is required that shows a comparison between the predicted levels of impact and the defined acceptable levels of impact (see NOPSEMA's Environment plan decision making guideline GL1721).
- The specific measures to be taken during a spill response to ensure that the impacts and risks of implementing each oil pollution response control measure are reduced to ALARP and an acceptable level should be identified (e.g. dispersant selection processes, dispersant use/exclusion zones, monitoring etc.).

Net environmental benefit analysis

Net environmental benefit analysis (NEBA) is a decision-support tool commonly used to compare and evaluate the suitability of oil pollution control measures. It typically involves identifying the advantages and disadvantages of each potential control measure in a given spill scenario to determine whether or not it will do more good than harm (e.g. have an overall positive environmental benefit). This recognises that response control measures may introduce new environmental impacts and risks, but can still have an overall environmental benefit (e.g. dispersants may increase impacts in the water column, but reduce shoreline impacts by reducing oil volumes at the sea surface).

Typically a 'strategic' or pre-spill NEBA is undertaken as part of oil pollution response planning to select appropriate response control measures and support the development of an OPEP. This can be useful to provide situation-specific information on the suitability of each control measure. However, NEBA focuses on the environmental impacts and risks of response control measures generally and does not typically also weigh-up alternative or additional options (e.g. logistical, resourcing) to improve the effectiveness of the control measures. Consequently, a strategic NEBA is unlikely to sufficiently address all aspects required of a demonstration of ALARP for spill risk management and response planning.

OPEPs often include commitments to conduct an 'operational' NEBA process throughout a spill incident to confirm the ongoing implementation of control measures pre-identified by the strategic NEBA. However, an 'operational' NEBA may not meet all the requirements of identifying and managing the impacts and risks of implementing response control measures. Consequently, a commitment to conduct an 'operational' NEBA during a response may not, by itself, be sufficient to demonstrate that the impacts and risks of implementing the proposed control measures will be reduced to ALARP and an acceptable level for the duration of a response.

Titleholders should also consider any operational limitations when selecting response control measures to evaluate through a NEBA process. Limiting factors may include amount and availability of equipment, sufficient trained/competent personnel, logistical support (e.g. vessels, aircraft and land transport), access, maintaining equipment deployments, waste management, unfavourable weather conditions and seasonal variations.

2.5. Environmental performance outcomes and standards

Applicable regulations – EP content

Regulation 4 - Definitions

Regulation 13(7) – Environmental performance outcomes and standards

Core concepts

- Environmental performance outcomes (EPOs) are measurable levels of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks, including oil pollution incidents and response, will be of an acceptable level.

- Environmental performance standards (EPS) are a statement of the performance required of a control measure which should correspond with the levels of effectiveness required to reduce impacts and risks to ALARP and acceptable levels as determined through the risk evaluation process.

Considerations

- The EP must contain EPOs and EPS' that relate to managing the environmental impacts and risks associated with both oil pollution risks and the implementation of oil pollution control measures in the event of a pollution incident.
- Appropriate EPOs should enable a titleholder to answer the following questions:
 - why are we proposing particular actions/controls to be implemented?
 - what would constitute an acceptable outcome should the chosen actions/controls be implemented?
- EPS' enable the titleholder to measure, monitor and test the effectiveness of control measures to ensure that they achieve the required level of performance to reduce impacts and risks to ALARP and an acceptable level.
- Appropriate EPS' should enable the titleholder to answer the following questions:
 - how does the control measure address the impacts and risks it is intended to manage?
 - what level of performance makes this control effective in reducing impacts/risks to ALARP/ Acceptable?
- EPS' should address all spill mitigation and response control measures that have been identified as necessary to reduce impacts and risks to ALARP and an acceptable level.
- It can be helpful to delineate EPS' according to the different phases of spill response, that is:
 - maintaining response preparedness
 - implementing oil pollution control measures during an incident (including monitoring and terminating a response).
- The EPS should allow the titleholder to monitor the effectiveness of each response control measure. As such, each EPS must be measurable, auditable and feature a clear statement of performance.
- EPS' provide the main link between the risk assessment and the OPEP; titleholders should consider whether EPS are best placed in the OPEP or the EP.
- Offshore petroleum activities may include pollution risks with scenarios where a government agency will assume the control agency function for some or all of a pollution incident (e.g. vessel spills, spills that enter State waters). This does not negate the need for titleholders to have response control measures in place and to define appropriate EPS' for those control measures. EPS' in these circumstances should reflect a titleholder's:
 - required level of response preparedness
 - arrangements and capability to implement an immediate response and continue that response until the relevant control agency assumes incident control

- arrangements for transition of incident control to the government control agency and capability to support the control agency for the duration of the response.
- Identifying a single overarching EPS that simply identifies implementing the OPEP in the event of an oil pollution incident (or other operational plan or set of plans) is unlikely to provide an appropriate statement of performance for managing responses to complex incidents.
- Titleholders should consider how they will monitor compliance with oil pollution response EPS' during an incident and this should inform the selection of appropriate measurement criteria.
- Measurement criteria for oil pollution response control measures should address the observations and records used to support decision-making processes and not just the outcomes of response decisions.

3. The oil pollution emergency plan (OPEP)

Applicable regulations – EP content

Regulation 14(8)– Implementation strategy must contain an OPEP

Regulation 14(8AA) - Adequate arrangements for responding to and monitoring oil pollution

The OPEP⁴ is the output of the response planning process and implements the arrangements determined to be ALARP. It forms part of the implementation strategy for an EP and in keeping with this, the OPEP should be an operationally-focused document.

The control measures selected to mitigate risks form the foundation of a titleholder's overall spill response arrangements to protect the environment. Having selected the control measures and set performance standards the OPEP must include adequate arrangements to respond to and monitor oil pollution. The OPEP should provide the mechanism for implementing spill response control measures and managing and sustaining a response effort for the duration of an incident through a combination of pre-planning and response management systems.

Titleholders are able to determine the OPEP format and structure that best meets their response requirements. Where an OPEP is made up of more than one document (e.g. a hierarchy or series of interconnected and/or supporting documents) the EP should clearly identify which documents and elements of an EP submission make up the OPEP as required by the Environment Regulations.

Only information that is required for an oil pollution response should be found in the OPEP. For example, information that is required to demonstrate response preparedness (e.g. testing and training) or inform response decision-making processes, but is not operational in nature should be contained in the EP rather than the OPEP. Further guidance on the scope, design and content of an OPEP is provided in references produced by a range of government and industry bodies (see Section 6).

3.1. Oil pollution control measures

Applicable regulations – EP content

Subregulation 14(8AA)(a) – Control measures for timely response to an emergency that results, or may result in, oil pollution

⁴ The OPEP terminology is adopted from Article 3 of the *International Convention on Oil Pollution Preparedness, Response and Co-operation* (OPRC)

Core concepts

- The OPEP must detail the arrangements in place for timely implementation of response control measures required to reduce oil pollution risks to ALARP.

Considerations

- Oil pollution response control measures implemented through the OPEP should be informed by the outputs of the EP risk evaluation and response planning processes.
- The OPEP and associated response plans are considered critical procedural control measures to ensure timely response to an oil pollution emergency. Response plans should be developed for all foreseeable actions to an extent commensurate to the nature and scale of the risk (e.g. taking into account possible consequences, time to impact, value of receptors etc.).
- The OPEP should identify timeframes for implementation of time critical response control measures including activation, mobilisation, transportation and deployment stages.
- The arrangements for timely implementation of pollution response control measures should consider prudent steps taken in response to an emergency that has the potential to result in oil pollution or where the initial scale and size of an incident is unclear.
- Control measures should account for all preparedness and response aspects of oil pollution risk management. Only response control measures (e.g. directly related to implementing an oil pollution response) need to be included in the OPEP. Other preparedness control measures (e.g. contract management, exercise, training etc.) can be described in the EP.
- Oil pollution response control measures can be classified as technical, administrative or procedural:
 - Technical control measures (e.g. response systems and equipment) physically reduce consequence and include source control, in-situ burning, dispersants, offshore containment and recovery, nearshore protection booming, shoreline clean-up, wildlife response, waste management etc.
 - Administrative control measures can improve the effectiveness of technical controls, and include spill monitoring and evaluation, incident control systems and structures, roles and responsibilities, communications systems, training and inductions, and testing arrangements.
 - Procedural control measures detail how to complete specified tasks or actions and include checklists, templates, operating procedures, first-strike and tactical response plans, incident action plans (IAP), NEBA processes and other response SOPs.

Dispersants

The EP submission process provides the mechanism for titleholders to gain 'acceptance' for oil spill dispersant products and deployment strategies (e.g. surface and/or subsea) prior to an incident. Any dispersant use during an oil pollution incident from an offshore petroleum activity must be carried out in accordance with an accepted EP and no additional 'approvals' are required to implement these response arrangements in Commonwealth waters. Dispersant use in State/Territory waters is subject to relevant state/Territory agency requirements.

The EP should provide an appropriate evaluation of the impacts and risks of dispersant use and demonstrate that they will be reduced to ALARP and be of an acceptable level. Appropriate control measures to manage the selection, transport, supply, deployment and monitoring of dispersants should be identified. Dispersant supply chains and logistics should match the predicted response needs for the duration of a response.

Titleholders may decide to refer to dispersant products listed on the National Plan oil spill control agent (OSCA) register to support the demonstration that its use is acceptable and ALARP (see NOPSEMA Explanatory Note N-04750-IP1597). However, it should be noted that the National Plan OSCA Policy was developed for testing dispersants intended for surface use at vessel spills. Listing of a particular dispersant on the OSCA Register does not mean that NOPSEMA will automatically accept its use for a spill response at an offshore petroleum activity. It may be more appropriate, for example, to test dispersant efficacy with oil(s) relevant to an activity and/or toxicity with species relevant to its geographic location not covered by the OSCA Policy. There is also no regulatory requirement for a titleholder to restrict its evaluation of dispersants to only those products listed on the OSCA Register.

3.2. Response arrangements and capability

Applicable regulations – EP content

Subregulation 14(8AA)(b) - Arrangements and capability for timely implementation of control measures (including ongoing maintenance of response capability)

Core concepts

- Oil pollution preparedness and response arrangements should be commensurate with the identified risk and be fit for purpose, performance based, adaptable, scalable, sustainable, and clearly identify roles and responsibilities.
- All necessary arrangements to support timely response to foreseeable oil pollution emergencies must be in place prior to an activity commencing, and be maintained for the duration of the activity.

Considerations

- Adequate arrangements for responding to and monitoring oil pollution should clearly provide for:
 - the capability to respond in a timely manner, for the duration of any pollution incidents and to the range of oil pollution risks presented by the activity
 - suitable plans and capability to sustain a response to a prolonged incident (e.g. beyond the first-strike response), up to and including worst-case scenarios
 - maintaining responsibility for the incident
 - when and how the titleholder will seek assistance from others
 - how responders will implement control measures ensuring the levels of performance required of adopted control measures will be met
 - expert environmental advice and timely access to up-to-date environmental and scientific data
 - roles, responsibilities, and priority actions to guide an effective response.
- The strength and depth of arrangements should match the criticality of the control measures, which are influenced by:
 - timeframes for implementation
 - response locations and pre-identified protection priorities
 - scale of resources and logistics required
 - reliance on the specific control measure (e.g. the amount of risk reduction it achieves)
 - independence of the control measure (e.g. in relation to other control measures).
- Response capability should be detailed in terms of available personnel and equipment, including:
 - total numbers of trained/unskilled personnel
 - number, type and location of equipment (contracted and/or titleholder owned)
 - local, regional, national and international resources
 - equipment technical specifications and limitations

- logistical considerations and requirements including:
- ability to effectively deploy these resources at the potential incident locations in a timely manner
- capacity to sustain the resources for the duration of a response.
- Response arrangements should identify additional regulatory approvals that may be required in conducting response operations and implementing response control measures (e.g. safety case requirements for vessels installing a capping stack, dispersant use approval in state waters).

3.2.1. Other pollution response planning and OPEP content considerations

The following sub-sections provide information on some of the key elements typically addressed within an OPEP. While these elements are not prescribed by the Environment Regulations, they are commonly presented as control measures, consistent with industry guidelines on OPEP design and content.

Initial actions and first-strike plans

Because every incident will involve a unique set of circumstances it cannot be expected that an OPEP will detail each step through every possible response action. It should, however, be possible to outline in advance many of the common initial actions for timely and efficient activation of a response, mobilisation of resources and implementation of the spill response control measures. These actions may be detailed in the first-strike plan section of the OPEP that covers the first hours to days of a response and could include:

- roles, responsibilities, and processes for initial actions/first-strike response
- incident classification, notification, consultation and mobilisation processes (including timeframes)
- initial spill assessment actions including initiating operational monitoring
- pre-populated templates, checklists, procedures and/or decision matrices
- triggers, responsibilities and process for escalation and de-escalation of a response
- arrangements for when and how the titleholder will seek assistance from external response organisations.

However, it is important to note that response arrangements and capabilities detailed in an OPEP should not be limited to first-strike actions. The OPEP should provide for a transition to an incident action plan (see below) and sustaining a response for the duration of an incident.

Interface with government and industry response plans

Oil pollution response arrangements should detail the interface with other relevant oil pollution response plans. Titleholders should ensure that their response arrangements can interface with government and industry response plans and consider using compatible response structures and terminology (see also section 4.3). Discrepancies, gaps or inconsistencies in the interface between government and industry response plans should be resolved during consultation when preparing an EP for submission. Where an OPEP references these other response plans, those documents do not need to be provided in full.

State/Territory government agencies may assume the control agency role for that part of a spill from an offshore petroleum activity that enters state/Territory waters. An OPEP should clearly identify the potential control agency jurisdictions for its oil pollution risks and any arrangements for joint, unified or transition of

control. Incident management structures should reflect the interface with other control agencies and relevant response positions such as liaison officers. The roles of other relevant agencies that may have jurisdiction or management responsibilities for potential receptors in a pollution incident (e.g. wildlife, coastlines and fisheries) should also be identified. Titleholders should consider any guidance published by relevant Government agencies on their expectations during a pollution response and resolve any uncertainties in expectations or arrangements through consultation.

Incident classification and escalation

An incident classification system should be considered to support response planning and provide information on how to categorise oil pollution incidents relevant to the titleholder's response capabilities. A pollution incident classification system should support a graduated scale of response based on factors relevant to the scenarios, such as oil pollution sources and volumes, resources at risk and necessity for additional response resources to combat the oil pollution.

Incident action planning

For incidents that are anticipated to extend beyond the scope of a first-strike plan, the OPEP should establish a framework including the required inputs and process for transition to the 'project phase' of the incident with an integrated process of incident action planning. An IAP should define the response objectives and response operations for the operational period and, provide for continual updates having regard to the observations from operational monitoring and response effectiveness. The process for transition from first-strike plans and timing for the development and on-going maintenance of an IAP should be described. The OPEP should clearly identify the responsibilities for developing and maintaining an IAP.

Response priorities

The OPEP should identify criteria for setting response priorities to guide the strategic direction of a response and should align with pre-identified environmental sensitivities and protection priorities defined by the risk assessment. Protection priorities should consider relevant policies, guidelines, threatened species recovery plans, plans of management, management principles and other documents published on the DAWE web site in relation to matters protected under Part 3 of the EPBC Act.

As part of the on-going consultation requirements under regulation 14(9) of the Environment Regulations, titleholders should consider a process for communicating with relevant authorities, organisations and persons to agree protection priorities prior to a response. Consultation requirements to confirm protection priorities during a response should also be considered, and where possible, the OPEP should identify representatives of relevant Departments or agencies who will have a role in this process (e.g. state/Territory Environmental Scientific and Technical Coordinator). The OPEP should identify a process for validating decisions on protection priorities during an incident based on planned operational monitoring (see section 4.7) and monitoring effectiveness of control measures (see section 3.3).

Response decision-making

The OPEP should identify decision-making processes to support deployment, assessment and ongoing review of the implementation of oil pollution response control measures. An operational NEBA may assist in validating planning information so that the most appropriate and efficient response control measures

with the least environmental harm continue to be implemented. Where titleholders adopt a NEBA approach as a control measure to guide response decision-making the OPEP should detail the analysis methodology including responsibilities and information requirements.

Response decision-making processes should identify how they give consideration to relevant management plans, species recovery plans or management principles that apply to matters protected under Part 3 of the EPBC Act (see Response Priorities above).

Support and tactical response plans

Oil pollution response arrangements may include a range of support and/or tactical response plans (TRP) to supplement the response arrangements detailed in the OPEP. These may address detailed requirements for implementing oil pollution response control measures, for example logistics, dispersant, shoreline, oiled wildlife and waste management.

The decision on whether a support plan or TRP should be included in full as part of an EP submission will depend on the nature and scale of the spill impacts it addresses, the criticality of the control and its role in reducing impacts and risks to ALARP or showing they will be of an acceptable level. Where a support plan or TRP is still under development at the time of an EP submission, the same considerations will apply to determining whether a commitment to its completion prior to an activity commencing is sufficient.

Where a TRP is not included as part of an EP, the submission should provide an appropriately detailed description of the scope, content, and level of performance the TRP is required to meet. Where a TRP is still under development, the submission should provide a timetable with a commitment for its completion prior to the activity commencing and responsibilities for its completion and integration in the response arrangements.

Response termination

The OPEP should describe the responsibilities and process for terminating a response which may utilise termination or 'end-point' criteria. If using this approach it is useful to consider:

- the applicability of the criteria to all adopted response control measures
- the adaptability of the criteria to the range of possible oil types/scenarios and environmental sensitivities identified in the risk evaluation
- the alignment of the criteria with the oil pollution response EPOs
- diminishing returns (e.g. no further improvement to environmental outcomes is expected by continuing the response)
- consultation with relevant persons (e.g. community, external response organisations and contractors, government and non-government agencies) including the expectations and responsibilities of agencies with jurisdiction over the affected resources (e.g. state authorities)
- linkages to the outputs of operational monitoring and monitoring of impacts to the environment.

Oiled wildlife response

Oiled wildlife response (OWR) can present considerable challenges in offshore oil pollution incidents (particularly where oil from an offshore incident enters nearshore environments) and typically attracts a high level of community interest and concern. OWR planning and implementation is likely to require a high level of interaction and cooperation with Commonwealth, state and Territory departments and agencies. Titleholders should conduct an appropriate level of consultation to understand the response priorities and expectations of these agencies in the event of a pollution incident.

Predicting OWR resource requirements can be difficult due to the widespread distribution and mobility of many species. However, titleholders should not restrict their evaluations of OWR response needs and control measures to generic information on environmental sensitivities of wildlife in oil pollution incidents. Consideration should be given to the actual values and sensitivities in the environment that may be affected, particularly where there are known locations with concentrations of species (e.g. migratory shorebird feeding/roosting sites, shorebird nesting colonies, turtle nesting beaches, seal colonies). OWR arrangements should also give particular attention to wildlife protected under Part 3 of the EPBC Act having regard to relevant information sources including policies, plans and guidelines (see NOPSEMA EP Content Requirements Guidance Note N-04750-GN1344).

Where an oil pollution incident may affect state/Territory waters the OPEP should identify how the titleholder's response arrangements will interface with any state/Territory OWR plan(s) and the response resources it will provide to support any state/Territory response.

Response arrangements that simply identify implementing a state/Territory OWR plan or activating an external organisation to conduct an OWR, without identifying how those response arrangements and capability meet a titleholder's response needs or exploring options to improve the effectiveness of the arrangements, are unlikely to be sufficient to demonstrate that they reduce impacts and risks to ALARP.

Attention should be given to managing potential impacts and risks of implementing any proposed OWR control measures (e.g. hazing, aerial/vessel observations, pre-emptive capture and relocation of unoiled wildlife). The OPEP should identify appropriate and realistic measures to reduce these impacts and risks to ALARP and an acceptable level, including any requirements for approval or consultation with relevant wildlife management agencies.

3.3. Monitoring effectiveness of control measures

Applicable regulations – EP content

Subregulation 14(8AA)(c) – Monitoring effectiveness of control measures and ensuring environmental performance standards for control measures are met

Core concepts

- Titleholders must have processes in place to monitor the effectiveness of control measures and to ensure environmental performance standards are met.

Considerations

- Realistic and practical methods for monitoring effectiveness of the control measures should be employed considering the primary activity is responding to the spill.
- Where relevant, titleholders may be able to use information gained from operational monitoring to also monitor the effectiveness of oil pollution response control measures (e.g. shoreline contamination assessment techniques (SCAT)).
- Consideration should be given to the need for trained and experienced personnel to make observations on effectiveness of response control measures.
- Information gathered when monitoring the effectiveness of control measures should be used to support decisions on whether to continue, discontinue, or escalate implementation of a control measure and ensure that control measures are meeting or exceeding the required level of performance detailed in the EPS.
- The OPEP should show that the titleholder has the capacity to implement the identified monitoring methods and approaches.

3.4. Operational oil pollution monitoring

Applicable regulations – EP content

Subregulation 14(8AA)(d) - Arrangements and capability in place for monitoring oil pollution to inform response activities

Core concepts

- The OPEP should describe arrangements for timely mobilisation of personnel and equipment to undertake effective operational or 'response phase' oil pollution monitoring to inform response decision making.

Considerations

- The range, scope and detail of operational monitoring arrangements and capabilities required will vary depending on the likely size and extent of oil pollution incidents, oil characteristics and response control measures.
- The strength of operational monitoring arrangements will be dependent on the nature and scale of the incident. Titleholders should consider:
 - flexibility of the arrangements to account for the uncertainty inherent in unplanned events, and provide information on the changing effect of oil in the environment
 - capacity of the arrangements to address the range of information required to inform activation, implementation and termination of response activities and information management requirements
 - ability of the monitoring to be undertaken in a timely manner and meet the level of accuracy consistent with the requirements of response decision-making
 - capability of the monitoring to provide a measurable demonstration of specific end-point criteria for the purposes of terminating the response or to trigger and/or inform implementation of environmental monitoring required by regulation 14(8D).

- Where trajectory modelling (surface and/or sub-surface) is to be used to guide the location and intensity of operational monitoring during an incident, the process for applying modelling to support the monitoring should be described.

4. Implementation strategy

The Environment Regulations require an EP to contain an implementation strategy that includes an OPEP (section 3). Titleholders should determine the most appropriate design and structure of the implementation strategy and OPEP and placement of specific details required by the Environment Regulations. Information that focuses on oil pollution response preparedness (e.g. testing, training and competencies) and not required during a response, may be best placed in the implementation strategy rather than the OPEP.

The application of a titleholder's environmental management system (regulation 14(3)) to oil pollution preparedness and response aspects of the implementation strategy (including the OPEP) should be described (see Environment plan content requirements guidance note (N-04750-GN1344)).

4.1. Chain of command and roles and responsibilities

Applicable regulations – EP content

Subregulation 14(4) – Chain of command and roles and responsibilities

Core concepts

- The chain of command should identify all levels of a titleholder's crisis management and emergency response structure relative to the identified risks from the activity.
- It should clearly define the roles and responsibilities of personnel involved in oil pollution preparedness and all phases of response activities.

Considerations

- Roles and responsibilities should be defined at strategic, operational and tactical levels.
- The emergency management structure should clearly identify reporting lines, information flows and other linkages between the different levels of crisis and emergency response teams. The titleholder should have a well-understood incident response structure that can easily integrate with associated response plans (e.g. the National Plan, state/Territory plans, AMOS plan).
- The structure should be scalable and flexible to support implementation of response control measures for the duration of the response.
- Roles and responsibilities should include identifying those with authority for activating external response contracts.
- Where potential oil pollution incidents may cross different jurisdictions, titleholders may consider the use of liaison officers to assist in coordinating complex responses with other response agencies. These roles should feature in a titleholder's emergency response structure.

- Where a titleholder may be required to integrate its response with a Government control agency response structure during an incident, the OPEP should describe structures for coordinating with the control agency's chain of command.

4.2. Ensuring responsibility awareness, competencies and training

Applicable regulations – EP content

Subregulation 14(5) – Measures to ensure each employee and contractor is aware of their responsibilities including during emergencies or potential emergencies

Core concepts

- Oil pollution response personnel, including those involved in monitoring should be trained and competent.
- Personnel involved in oil pollution preparedness and response must be aware of their individual responsibilities.
- Titleholders must have measures in place to ensure employees and contractors are aware of their responsibilities and have appropriate competencies and training.

Considerations

- The type, relevance and frequency of training required should be included in the implementation strategy.
- Appropriate measures need to encompass all stages of hydrocarbon risk management including preparedness, response, operational and environmental monitoring.
- Titleholders should consider the resources required to fill identified roles in the event of an oil pollution incident and ensure that arrangements are adequate to meet the needs.
- The skills, competencies and experience of personnel required to fulfil each response role may vary depending on the nature and scale of the oil pollution incident.

4.3. Consistency with the national system

Applicable regulations – EP content

Subregulation 14(8E) – Consistent with the national system for oil pollution preparedness and response

Core concepts

- The national system for oil pollution preparedness and response is the National Plan for Maritime Environmental Emergencies (the National Plan).

Considerations

- The National Plan applies to Commonwealth and State waters and establishes a framework that encompasses state and Northern Territory response arrangements.
- Response arrangements should detail the interface with national and state/Territory oil pollution response agencies, contingency plans and other National Plan support arrangements.

- Other relevant information that may be included in an implementation strategy to demonstrate that response arrangements are consistent with the national system include:
 - details of roles and responsibilities including control agencies and support agencies consistent with the National Plan
 - detail of the interface or implementation of an incident control system consistent with the National Plan
 - incident classification, response escalation processes and response priorities consistent with the National Plan
 - adopting pollution response procedures (e.g. reporting and assessment forms) consistent with the National Plan
 - use of response terminology consistent with the National Plan.

Vessel based oil pollution incidents

The Australian Maritime Safety Authority (AMSA) is responsible for the control of incidents in offshore areas involving ships whenever the *Navigation Act 2012* (the Navigation Act) applies. This is regardless of whether ships are conducting an offshore petroleum activity under the OPGSS Act or not. Titleholders undertaking petroleum activities are responsible for incident control when the Navigation Act does not apply to facilities located in offshore areas.

Further information on preparedness and response requirements of vessel operations associated with petroleum activities and relevant control agencies is provided in the AMSA publication: *Australian Government Coordination Arrangements for Maritime Environmental Emergencies*. Note: where there is any uncertainty about the control agency due to the source of the spill, titleholders should refer to the definition of a facility (see OPGSS Act Volume 3 Schedule 3, Part 1, Clause 4 & Volume 2 Part 6.8 Section 640).

Regardless of the control agency, the evaluation of spill risks and response arrangements should extend to all vessels conducting offshore petroleum activities (e.g. support vessels and offtake tankers). Where an oil pollution response will rely solely on National Plan arrangements to combat marine pollution from a vessel based spill, the EP must still demonstrate that those response arrangements will be effective in reducing the impacts and risks to ALARP and to acceptable levels. Utilising National Plan arrangements does not remove the responsibility of the titleholder from providing response resources or support to implement control measures if deemed reasonable and practical. Titleholders also remain responsible for monitoring of impacts to the environment of oil pollution and response activities.

4.4. Testing response arrangements

Applicable regulations – EP content

Subregulation 14(8A)(8B)(8C) – Arrangements for testing the response arrangements

Core concepts

- The arrangements for testing response arrangements in the OPEP should be appropriate to the particular response arrangements and to the nature and scale of oil pollution risks for the activity.
- Testing arrangements must set out the objectives of testing, and include mechanisms to examine the effectiveness of response arrangements against those objectives and to address recommendations arising from the tests. This aims to ensure that the response capability is effectively tested and requires the titleholder to demonstrate they are adequately prepared to respond to and mitigate the impacts of a spill.
- A schedule of tests is required that includes testing when response arrangements are introduced and at least annually.
- Titleholders are required to have mechanisms in place to examine the effectiveness of response arrangements against the testing objectives. This must include mechanisms to address recommendations and findings arising from testing, such as assigning responsibility and tracking any actions to closure.

Considerations

- Tests of response arrangements are administrative controls focused on response preparedness and effectiveness of the response arrangements.
- The implementation strategy should contain an appropriate range of tests to ensure that the titleholder is adequately prepared to respond to oil pollution incidents and that the response arrangements function as required. Tests can include:
 - audits and peer review
 - notification/communication exercises
 - desktop, equipment deployment and/or incident management team exercises
 - unannounced or 'no-notification' drills.
- The testing regime should ensure that the effectiveness of response arrangements are genuinely tested rather than just followed or practiced in response exercises. Tests should seek to challenge the status quo and identify opportunities for improvement.
- The testing program and schedule should be appropriate to the nature and scale of the activity. It should seek to test the range of control measures and response arrangements detailed in the OPEP.
- Pollution scenarios selected to test response arrangements should reflect all the identified oil pollution incident levels identified by the risk evaluation over the duration of the activity.
- Where response arrangements are dependent on external response organisations, testing should encompass these arrangements.

- When developing tests and test objectives, titleholders should consider what they need to achieve in the event of an oil pollution incident. Issues for consideration include:
 - triggers and timeframes for incident notification and mobilisation/deployment of resources
 - incident management team and structure function effectively
 - competency of responders including key external response organisations and familiarity with response arrangements
 - availability and adequacy of incident control centres, equipment and personnel (trained and untrained)
 - adequacy of resource deployment arrangements (logistical functions, transportation and procurement pathways)
 - arrangements with external organisation to provide personnel and equipment
 - capacity to sustain a response for the duration of an incident
 - ability to disseminate information internally and externally
 - interface with external stakeholders including management of media and public relations, complaints and claims and relations with external agencies.
 - Some forms of testing (e.g. exercises and drills) can contribute to training and maintaining response personnel competencies for their appointed roles (see section 4.2). Any relationships or interactions between testing and training arrangements should be described.
 - Tests should be as realistic as possible and encompass relevant personnel in their assigned roles with consideration given to reliance on external providers and key stakeholders.
 - Titleholders should consider prioritising testing commensurate with the criticality and complexity of control measures, in particular where specialised response equipment and systems are used infrequently.

4.5. Ongoing consultation

Applicable regulations – EP content

Regulation 14(9) – Appropriate consultation

Core concepts

- On-going consultation with control and support agencies is required to maintain response preparedness.

Considerations

- Titleholders should consider relevant persons that require on-going consultation and also ensure that reasonable expectations and requests for on-going consultation are agreed.
- Relevant persons may require on-going consultation throughout the planned activity and/or for the duration of any oil pollution response.

- Where there is a reliance on external response organisations, the on-going consultation process may require including the role of those organisations in OPEP training and testing arrangements.
- Titleholders should also provide for timely notification and engagement with relevant stakeholders in the event of a spill. This should not be restricted to organisations with direct response roles, but also include persons who may be able to take their own response actions (e.g. aquaculture operators) or be required to modify their activities (e.g. commercial fishers).

4.6. Updating the OPEP

Applicable regulations – EP content

Regulation 14(8) – Implementation strategy must provide for updating the OPEP

Core concepts

- The implementation strategy must contain arrangements for updating and reviewing the OPEP to ensure that all relevant information is accurate and that new information or improved technology will be evaluated regularly and used to adapt and improve the management of oil pollution risks.

Considerations

- The OPEP should be regularly reviewed and updated to ensure maintenance of the response capability. Reviews should facilitate learning, identify strengths and deficiencies, recognise lessons learnt, and identify areas for improvement.
- The frequency and depth of reviews to update an OPEP will depend on the duration of the activity, potential impacts and risks and complexity of response arrangements.
- Updates to an OPEP should reflect outcomes of testing of response arrangements (section 4.4) and on-going consultation (section 4.5).
- Presenting a proposed timetable of reviews and when and what conditions prompt the updating of the OPEP supports an appropriate implementation strategy.
- Significant modifications of an OPEP and the oil pollution response arrangements that materially alters the basis upon which the EP was accepted may require a revised EP to be submitted to NOPSEMA (see NOPSEMA's Environment plan assessment policy (PL1347) and When to submit a proposed revision of an EP guideline (GL1705)).

4.7. Monitoring of impacts to the environment

Applicable regulations – EP content

Regulation 14(8D) – The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities

The submission must propose oil pollution environmental impact monitoring that is appropriate to the nature and scale of the environmental risks presented by spill scenarios from the activity. The titleholder is responsible for the planning, implementation and costs of response and recovery phase monitoring under their financial assurance arrangements.

Environmental monitoring arrangements do not necessarily need to be incorporated in the OPEP document and can be contained in a separate Operational and Scientific Monitoring Program (OSMP).

The environmental monitoring arrangements have attributes such as: receptors to be monitored, monitoring objectives, initiation and termination triggers, experimental design(s), pre-determined monitoring sites and/or the rationale for site selection, spatial extent, procedures for quality control, assurance, peer review and reporting. The breadth and depth of monitoring arrangements may range from those needed for a single program that may have its focus on the behaviour and fate of the spilled oil, through to arrangements required for implementation of sophisticated environmental effects monitoring programs designed to determine the extent, severity and duration of impact to a relevant suite of environmental receptors.

Core concepts

- Environmental monitoring arrangements must be commensurate with the identified risks such that more developed oil pollution environmental monitoring arrangements are expected for higher levels of risk.
- Arrangements for monitoring should address impacts to the environment from oil pollution and any control measures used in a response.
- Data proposed to be collected must be sufficient to inform decisions about the need for, and scope of, potential remediation activities.
- Environmental baselines are a key consideration for determining extent, severity and persistence of impact.

Considerations

- The description of environmental monitoring arrangements in the EP submission or other attachments should clearly identify any links to the response arrangements (e.g. results of operational monitoring triggers, resources, reporting, etc.).
- Environmental monitoring arrangements should be based on a comprehensive assessment of environmental impacts and risks of activity-specific spill scenarios and response control measures.
- The scope of environmental monitoring arrangements should be consistent with the definition of environment under the Environment Regulations, which includes ecological and physical resources as well as socio-economic, cultural and heritage features and the reasoning behind the scope should be included.
- The environmental monitoring arrangements should be sufficiently flexible, adaptable and conservative to account for uncertainty associated with pre-spill risk analysis (e.g. stochastic modelling) and associated consequence predictions, and information collected about a spill and the environment during the response phase (e.g. modelling of subsurface hydrocarbon distribution, visual observations of surface oil).
- Consultation with relevant stakeholders (e.g. protected area and fishery managers) and relevant government policy documents, guidelines and plans of management should inform key features of monitoring programs (e.g. scope, parameters to be measured, locations to be monitored, initiation and termination points).

- Monitoring programs should identify how they will be consistent with management plans for matters protected under Part 3 of the EPBC Act (e.g. decision criteria that reflect any relevant requirements/aims/objectives of any management documentation for protected matters that may be affected by a pollution incident from the activity.)
- Individual monitoring programs for determining environmental impacts and assessing recovery should have aims or objectives that clearly state what is to be achieved.
- Monitoring programs may occur concurrently with and/or directly after the response phase. In many cases, the individual monitoring programs activated may be directly determined by the response activities implemented and/or the information collected during the response phase (refer sections 3.3 and 3.4).
- Monitoring programs should account for identified variables (e.g. oil type, nature of receiving environment) and be shown to be implementable within timeframes that are specific to the circumstances of the oil pollution scenarios detailed in the submission.
- Any experimental design described in a submission should be robust and defensible; including a description of what baseline data will be used and/or collected to achieve the monitoring program's stated objectives.
- Describing the key features of the monitoring program rather than the specific methods for gathering data is encouraged. Key features may include the reporting timetable, measures to be implemented to ensure overall science quality including statistical rigour (e.g. form of peer review, program delivery by suitably trained and competent environmental specialists), how relevant receptors and sites will be selected for monitoring and the ability to adapt monitoring to suit the circumstances of a spill.
- Initiation and termination criteria for the monitoring should be defined as clear decision points. Ambiguous language should be avoided to ensure that operational decisions relating to the monitoring arrangements can be made with confidence and relevant stakeholders are clear as to how the titleholder will act in the event of a spill.
- Termination criteria for an oil spill response typically differ from those for scientific monitoring, as they are done for different purposes. Monitoring requires termination criteria that relate to, for example, pollution thresholds, changes in receptors against baseline values and may include peer review and stakeholder consultation processes that will support/reinforce termination decisions against the defined criteria. In addition, monitoring may continue long after response operations have been completed and de-mobilised.
- When developing initiation and termination criteria, consider the appropriateness of data proposed to be collected (during operational and/or impact monitoring phases) to ensure the effective evaluation of whether the criteria has been met.
- Monitoring may consider a phased approach with greater preparedness to facilitate targeted monitoring for time-critical aspects of impacts to the environment. For example, arrangements for monitoring ephemeral effects, such as validation of model predictions of entrained oil, should have a greater level of preparedness than ongoing monitoring of remediation to background/baseline levels over longer time periods.

- The readiness to implement the identified monitoring programs should be described including project execution plans, required logistics, timeframes for mobilisation and commencement of monitoring activities; availability of monitoring personnel/contractors with suitable qualifications, training and experience.
- The environmental monitoring arrangements should define roles and responsibilities of personnel in relation to implementation of the arrangements and include measures to ensure awareness of these, as well as appropriate training and competencies (see sections 4.1 and 4.2).
- Where the monitoring is dependent on arrangements or agreements with third-party service providers, the submission should provide an appropriate level of detail on the strength of these arrangements and what these arrangements provide for in order to demonstrate suitability for the activity-specific circumstances.
- The environmental monitoring arrangements must be in place prior to the commencement of the activity. However, it may be appropriate to include forward commitments for aspects that improve readiness, e.g. testing of arrangements and updating baseline information as well as information justifying this approach.

CSIRO Oil Spill Monitoring Handbook

The CSIRO Oil Spill Monitoring Handbook (the Handbook) published in 2016 provides technical advice and guidance primarily for 'response phase' monitoring (i.e. operational monitoring). The Handbook guidelines were written with a focus on oil spills in the maritime sector, including in ports and terminals, but some content may also be relevant to oil spills from offshore petroleum activities. Titleholders should consider their own needs and obligations in assessing the application of the Handbook.

There may be situations where the methods and/or techniques outlined in the Handbook are not fit-for-purpose in planning for monitoring an oil spill from an offshore petroleum activity. Where a titleholder chooses to refer to a method or technique that is outlined in the Handbook or any other relevant source or published literature, a justification for why the proposed monitoring is appropriate to the risk of environmental impacts should be provided in the EP.

5. Common deficiencies

NOPSEMA assesses each EP submission on its own merits. Each EP relates to a specific activity (or multiple activities) in a specific place and time. Furthermore, as is to be expected under an objective-based regulatory regime, titleholders take differing approaches to fulfilling their regulatory obligations. In spite of these differences, in NOPSEMA's assessment experience there are a number of common deficiencies.

5.1. General deficiencies

- The level of detail provided in the EP does not match the nature and scale of the risk presented or the criticality of the control measures being described.

- Failing to detail and evaluate all sources of oil pollution appropriate to the nature and scale of the impact and risk, underestimating possible consequences and/or inadequate demonstrations of how the level of response preparedness matches the identified risk.
- Limited consideration and/or inappropriate application of industry best-practice approaches to oil pollution risk assessment and response planning.
- Inappropriate use of spill modelling outputs (stochastic and deterministic) to inform oil pollution response planning, e.g. limited application of predicted shoreline oiling (volume, locations and distribution) in evaluation of shoreline or oiled wildlife response arrangements.
- Outputs of the risk assessment are not clearly utilised or linked to oil pollution response planning. This includes cases where the risk evaluation and OPEP development appear to have been undertaken by teams working independently of each other rather than as part of an integrated risk management process.
- Risk assessments that discount or ignore potential impacts and risks of an extended oil pollution incident.
- Risk assessments based on unsupported predictions or assumptions about the likely mobilisation or deployment timeframes and success of the pollution control measures, including failure to consider the principle of independence of controls.
- Risk assessments that give inadequate consideration to potential limiting factors that may affect the level of certainty, feasibility, effectiveness and successful implementation of the control measures.
- Evaluations of oil pollution control measures that rely on generic information regarding environmental sensitivities and oil pollution impacts and risks without an appropriate consideration of the specific values and sensitivities identified in the environment that may be affected by the specific activity.
- ALARP demonstrations that only consider extreme options to improve effectiveness of pollution response control measures and omit other plausible and realistic additional or alternative options.
- ALARP demonstrations that only address implementation of oil pollution control measures in an incident and do not address oil pollution response preparedness arrangements (e.g. being better prepared).
- ALARP arguments written to support the status quo and effectively 'reverse engineering' the risk assessment so that alternative and/or additional controls are ignored, or at best, poorly argued as grossly disproportionate.
- ALARP demonstrations where the identified response capability has not been established according to response need.
- Environmental performance outcomes, standards and measurement criteria that do not relate to the identified control measures and/or will not allow environmental performance to be measured.
- Environmental performance standards that simply refer to implementing an oil pollution response procedure, tactical response plan or response guideline that is not submitted with the EP and/or does not identify the required level of performance that makes it effective in managing impacts and risks to ALARP and an acceptable level.

- Environmental performance standards that fail to define a level of performance required to make the control measure effective in managing impacts and risks to ALARP and an acceptable level (i.e. not just the mobilisation timeframe).

5.2. OPEP deficiencies

- Long and overly complicated OPEPs that will be difficult to use in an oil pollution emergency (e.g. OPEPs that contain material better suited to the EP).
- OPEPs that largely refer to other procedures, tactical response plans, or response guideline etc. that are not submitted with the EP.
- OPEPs that are written as if for regulatory compliance purposes only. Plans should be operational and written for implementation by the titleholder in an incident to ensure that it can manage its risks.
- OPEPs that place inappropriate caveats or limitations on response actions (e.g. activation, mobilisation and/or deployment timeframes, response resource availability) and are written more as response guidelines that do not provide clear response commitments.
- OPEPs that fail to make reference to environmental performance standards or identify appropriate performance levels for control measures that manage oil pollution impacts and risks.
- OPEPs that only present notification requirements and response arrangements or capabilities for first-strike actions to be implemented in the first hours to days of an incident.
- OPEPs that do not consider multiple competing demands likely to be placed on key response assets (e.g. vessels, aircraft, waste storage and transportation) required to implement the range of identified control measures (e.g. operational and scientific monitoring, offshore containment, shoreline protection).
- OPEPs that do not identify potential impacts and risks of spill response control measures and/or fail to identify additional control measures required to reduce impacts and risks of the oil spill response itself to ALARP and an acceptable level.
- OPEPs that incorrectly define/apportion responsibilities between the titleholder and other organisations or are inconsistent with published state/Territory/Commonwealth response plans or guidelines.
- OPEPs with decision-making processes that incorrectly identify a requirement to seek operational approval from NOPSEMA to implement or vary particular control measures during an incident. The EP/OPEP submission process is the mechanism for acceptance of all oil pollution response control measures to be implemented during pollution incidents.
- Spill response testing arrangements that focus on conducting spill response exercises that will primarily meet requirements for ensuring that response personnel are aware of their responsibilities and have appropriate competencies and training, but do not clearly provide for testing the effectiveness of response arrangements in the OPEP.

6. References, acknowledgments and notes

References

All regulatory references contained within this guidance note are from the Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and the associated Commonwealth regulations. For facilities located in designated coastal waters, please refer to the relevant state or Northern Territory Petroleum (Submerged Lands) Act 1982 and the associated regulations.

Further information on emergency and oil spill response and contingency planning is available from a range of sources including, but not limited to, the following:

- Australian Fire and Emergency Services Authorities Council - www.afac.com.au
- Australian Maritime Safety Authority – www.amsa.gov.au
- [National plan for maritime environmental emergencies](#)
- Australian government coordination arrangements for maritime environmental emergencies
- Australian Marine Oil Spill Centre Pty Ltd – www.amosc.com.au
- Australian Petroleum Production & Exploration Association – www.appea.com.au
- American Petroleum Institute – www.api.org
- [Guidelines for offshore oil spill response plans. Guidance for offshore oil and gas exploration, production and pipeline facility operators, API Technical Report 1145 September 2013](#)
- International Association of Oil and Gas Producers - Global Industry Response Group - <http://oilspillresponseproject.org/>
- International Maritime Organisation - www.imo.org
- [Manual on oil spill risk evaluation and assessment of response preparedness, IMO, 2010](#)
- International Oil Spill Conference Proceedings - <http://ioscproceedings.org/>
- International Offshore Petroleum Environment Regulators (IOPER) - <http://ioper.org/>
- International Petroleum Industry Environmental Conservation Association (IPIECA) www.ipieca.org
- Contingency planning for oil spills on water. Good practice guidelines for the development of an effective spill response capability, OGP Report Number 519, January 2015
- Oil spill risk assessment and response planning for offshore installations, OGP and IPIECA, 2013
- International Tanker Owners Pollution Federation (ITOPF) - www.itopf.com
- [Contingency planning for marine oil spills, Technical Information Paper 16, 2011](#)
- NOAA Office of Response and Restoration - <http://response.restoration.noaa.gov/>
- [UK Department of Energy & Climate Change \(DECC\)](#)
- Guidance notes for preparing oil pollution emergency plans for offshore oil & gas installations and relevant oil handling facilities, August 2015

- [USA Bureau of Safety and Environmental Enforcement \(BSEE\) - https://www.bsee.gov/](https://www.bsee.gov/)

The above list is provided for information purposes only. It does not represent a NOPSEMA endorsement or requirement to consider or be restricted to these information sources in conducting a risk assessment or developing an OPEP.

Related NOPSEMA documents

- N-04750-GL1721 – Environment plan decision making
- N-04750-GL1705 – When to submit a proposed revision of an EP
- N-04750-GL1381 – Financial assurance for petroleum titles
- N-04000-GL0225 - Making submissions to NOPSEMA
- N-04750-GN1343 – Petroleum activity
- N-04750-GN1344 – Environment plan content requirements
- N-04750-GN1785 – Petroleum activities and Australian Marine Parks
- N-03000-GN0926 – Notification and reporting of environmental incidents
- N-04750-IP1349 – Operational and scientific monitoring programs
- N-04750-IP1382 – Streamlining environmental regulation of petroleum activities in Commonwealth waters
- N-06800-GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area

Notes

For more information regarding this guidance note, contact the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA):

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