



Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

GUIDELINE

Guideline for the Development of Petroleum, Geothermal and Pipeline Environment Plans in Western Australia

June 2022

Document Hierarchy for Environment Plans in Western Australia

Legislation	<p><i>Petroleum and Geothermal Energy Resources Act 1967</i> <i>Petroleum (Submerged Lands) Act 1982</i> <i>Petroleum Pipelines Act 1969</i> Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 Petroleum (Submerged Lands) (Environment) Regulations 2012 Petroleum Pipelines (Environment) Regulations 2012</p>
Policy	Environmental Regulatory Strategy
Guidelines	<p>This Document Guideline for the Development of an Onshore Oil Spill Contingency Plan Guideline for Groundwater Monitoring in the Onshore Petroleum and Geothermal Industry Chemical Disclosure Guideline Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline</p>
Procedures	Environmental Applications Administrative Procedures 2020

Version History

Version	Date	Changes
1.0	2012	Initial publication of the Guideline for the Development of Petroleum and Geothermal Environment Plans in Western Australia
2.0	November 2016	Revised version of the Guideline for the Development of Petroleum and Geothermal Environment Plans in Western Australia
1.0	April 2018	Initial Publication of the Guidance Note – Environmental Performance Objectives, Environmental Performance Standards and Measurement Criteria for Petroleum Environment Plans
1.0	November 2019	Initial Publication of the Guidance Note – Decommissioning, Rehabilitation and Closure of Petroleum Activities
1.0	December 2019	Initial Publication of the Proposed Stakeholder Engagement and Consultation Guide – Public Consultation Paper
2.0	June 2022	Amalgamation of related documents and revision of the Guideline for the Development of Petroleum, Geothermal and Pipeline Environment Plans in Western Australia

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1. Introduction

1.1 Purpose

The purpose of this Guideline is to assist petroleum, geothermal and pipeline operators to develop an Environment Plan (EP) in accordance with the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012, the Petroleum (Submerged Lands) (Environment) Regulations 2012, and the Petroleum Pipelines (Environment) Regulations 2012 (the Regulations).

It is the operator's responsibility to ensure that all relevant, current legislation and any other applicable requirements (i.e. codes of practice, standards, guidance material etc.) are identified and referenced.

1.2 Objectives

The Department of Mines, Industry Regulation and Safety (DMIRS) is the lead agency responsible for regulating the resources industry in Western Australia (WA) and ensuring that the industry is developed in a safe and responsible manner.

The objectives of this Guideline is to:

- Provide transparency around the environmental management expectations of DMIRS for the petroleum, geothermal and pipeline industry.
- Provide guidance to the level of detail required to be included in an EP.

1.3 Scope

This Guideline applies to EPs in accordance with the aforementioned Regulations.

It has been updated to provide greater clarity for operators regarding DMIRS' expectations. This includes planning and preparing for site decommissioning, rehabilitation and closure as early as possible, and identifying appropriate post-activity land use(s), closure objectives, and rehabilitation criteria.

1.4 Legislative context

Petroleum, geothermal and pipeline activities (petroleum activities) undertaken in WA are regulated by DMIRS under the:

- *Petroleum and Geothermal Energy Resources Act 1967* (PGERA) which applies to all onshore areas in WA, including its islands and, in certain circumstances, areas of submerged lands internal to the State (i.e. those waters landward of the baseline).
- *Petroleum (Submerged Lands) Act 1982* (PSLA) which applies to petroleum resources located within WA's territorial sea (including the territorial sea around State islands) and includes related pipelines.
- *Petroleum Pipelines Act 1969* (PPA) which applies to the construction, operation and maintenance of pipelines for the conveyance of petroleum on land within the State.

Petroleum activity is defined in the Regulations, and means any operations or works carried out in the State under a petroleum, geothermal, or pipeline instrument; or any other operations or works carried out in the State relating to petroleum or geothermal exploration or development, or to a pipeline which may have an environmental impact.

Petroleum activities include, but are not limited to:

- Seismic, geotechnical or other surveys.
- Drilling, well interventions, and hydraulic fracturing.
- Construction, installation, operation or modification of a facility or pipeline.
- Storage, processing or transport of petroleum or geothermal energy.
- Care and maintenance of wells, facilities or pipelines.
- Decommissioning, dismantling or removing of a well, facility or pipeline.
- Rehabilitation and closure.

The protection of the environment while undertaking petroleum activities is of importance to the State. The Petroleum and Geothermal Energy Resources (Environment) Regulations 2012, the Petroleum (Submerged Lands) (Environment) Regulations 2012, and the Petroleum Pipelines (Environment) Regulations 2012, collectively referred to as 'the Regulations' in this document, are subsidiary legislation to the above Acts, and provide specific environmental requirements that operators must comply with.

The Regulations came into effect on 29 August 2012 and were developed to align with the requirements in the Australian Government Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009.

The objective of the Regulations is to ensure that any petroleum activity carried out in the State is:

- Carried out in a manner consistent with the principles of ecologically sustainable development (ESD).
- Carried out in accordance with an EP that:
 - Demonstrates the environmental impacts and risks of the petroleum activity will be reduced to 'as low as is reasonably practicable' (ALARP).
 - Has appropriate environmental performance objectives (EPOs) and environmental performance standards (EPSs).
 - Has appropriate measurement criteria (MC) for determining whether those EPOs and EPSs have been met.

The Regulations are objective and risk based, and encourage the adoption of leading practice environmental management systems and continuous improvement management strategies to ensure environmental impacts and risks are acceptable and reduced to ALARP.

Objective based regulation places responsibility on the operator to meet the requirements and objectives of the legislative framework. It also encourages continuous improvement in all aspects of an operator's environmental performance, and allows operators to adapt environmental management practices as new information, new technology, and improved industry standards become available. This ensures the relevance, currency and ongoing appropriateness of the control measures (EPSs) and practices implemented.

The Regulations require the operator to gain approval for, and comply with, an EP. In order to be approved, an EP must meet the requirements of the Regulations, be appropriate for the nature and scale of the petroleum activity, and demonstrate that the environmental impacts and risks of the activity will be reduced to ALARP and acceptable levels. While developing an EP, the operator must consider all relevant legislation that may be applicable to the proposal. It is the operator's responsibility to ensure that any other necessary approvals have been obtained prior to the commencement of the petroleum activity.

2. Preparation of an Environment Plan

2.1 Notification of operator (regulation 37/36 and 38/37)

An operator is defined in the Regulations as the person responsible to the instrument holder for the overall management and operation of a petroleum activity (regardless of whether or not the petroleum activity has commenced). Before commencing a petroleum activity, the operator must submit an EP and gain approval from DMIRS to undertake the activity.

Part 5 of the Regulations requires the instrument holder(s) to ensure that, at all times, there is an operator of the petroleum activity. The instrument holder must notify DMIRS in writing of the contact details of the operator before the first submission of an EP.

The following details are to be included in the notification:

- Instrument holder(s)/operator names and Australian Business Number(s).
- Petroleum instrument title(s).
- Contact person and position, or delegated representative (on behalf of joint ventures).
- Email addresses.
- Telephone numbers.
- Mailing addresses.

Where an EP is submitted before this notification is made, DMIRS may decline to consider the submission until that notification has occurred.

The operator must include the abovementioned contact details in any submissions they make to DMIRS under Part 2 (EP), or Part 3 (Incidents, Reports and Records), in accordance with the Regulations.

The operator must also ensure the above information is maintained up-to-date and notify DMIRS within seven days after changes to the contact details are made.

A *Notification of Operator Form* is available on the DMIRS website which may be used to meet these regulatory requirements.

Please note this requirement is specified in regulation 37 and 38 of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the Petroleum (Submerged Lands) (Environment) Regulations 2012, and regulation 36 and 37 of the Petroleum Pipelines (Environment) Regulations 2012.

2.2 The Environment Plan (regulation 9)

The objective of an EP is to ensure petroleum activities are carried out in a manner consistent with the principles of ESD. An EP must be appropriate for the nature and scale of the petroleum activity, and provide a management tool for operators to identify and manage environmental impacts and risks. All petroleum activities are to be undertaken in accordance with an EP that has appropriate EPOs and EPSs, and provides MC for determining whether these are met.

Operators should ensure that best practice environmental management standards are implemented at all times. Operators are also encouraged to research and implement continual improvement initiatives, to ensure the most effective EPSs are being implemented that meet operational requirements.

An EP is required for all stages of a petroleum activity including exploration (e.g. seismic or other surveys, drilling, and hydraulic fracturing), construction and installation, modification, operation (production), storage of petroleum, care and maintenance, decommissioning, rehabilitation, and closure. An EP may be submitted for each stage of a petroleum activity. Alternatively an EP may cover multiple stages of a petroleum activity and/or may incorporate multiple repetitive activities where they are:

- Carried out by the same operator.
- Located in the same geographical area (having the same/similar environmental values and significance).
- Of the same nature (such as a multiple well drilling program).

Under regulation 6, the operator of a petroleum activity commits an offence if they carry out the activity without an approved EP.

Table 1 provides guidance to operators for typical stages of a petroleum activity and the inclusion of this information in an EP, however discussion with Environmental Officers from the DMIRS Petroleum and Energy Compliance Branch is advised prior to submission.

It is an expectation of DMIRS that decommissioning, rehabilitation and closure be considered in all EPs, rather than only at the end of a project's life. This ensures that the activity is not designed, constructed and implemented in a fashion that prevents optimal closure outcomes. The level of information required will be dependent on the nature, scale, and stage of the petroleum activity (see section 3.1.4).

Table 1: Example of petroleum activity stages to be included in an Environment Plan

Petroleum activity	Stages covered in an Environment Plan
Seismic or other surveys	All stages of the activity to be incorporated in an EP, including exploration, decommissioning (if applicable), rehabilitation, and closure.
Drilling	All stages of the activity to be incorporated in an EP, including exploration, care and maintenance (if applicable), decommissioning, rehabilitation, and closure.
Hydraulic fracturing	
Construction and installation	Construction and installation/modification may be addressed in an EP, with consideration of decommissioning, rehabilitation, and closure.
Modification	
Operation	Operation/storage of petroleum may be addressed in an EP, with consideration of care and maintenance (if applicable), decommissioning, rehabilitation, and closure.
Storage of petroleum	
Care and maintenance	Care and maintenance may be addressed in an EP, with consideration of decommissioning, rehabilitation, and closure.
Decommissioning, dismantling or removing	Decommissioning, dismantling or removing infrastructure may be addressed in an EP, with consideration of rehabilitation, and closure.
Rehabilitation	Rehabilitation and closure addressed in an EP.

2.2.1 Ecologically Sustainable Development (regulation 3(a))

It is an object of the Regulations that petroleum activities be undertaken in a manner consistent with the principles of ESD.

Australia's *National Strategy for Ecologically Sustainable Development (1992)* defines ESD as 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.' The National Strategy applies to governments, business, community organisations and individuals in Australia. Refer to the Australian Government Department of Agriculture, Water and the Environment (DAWE) website for further information.

Under section 3A of the *Environment Protection and Biodiversity Conservation Act 1999*, the principles of ecologically sustainable development are:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
- (e) improved valuation, pricing and incentive mechanisms should be promoted.

Operators should carefully consider the principles of ESD, particularly when developing EPOs, EPSs and MC. The principles of ESD should also be considered in demonstrating that the levels of environmental risks and impacts are of an acceptable level.

2.2.2 Document control

An EP must be clearly identifiable with an appropriate title, document number, date and sequential revision number. These details are particularly important as revisions of the document may be provided to DMIRS during the assessment process. As the approved revision of the EP constitutes a legally binding document, the approved revision number must be clearly identifiable. Prior to resubmission of a modified document, the operator must update the revision number.

Operators must comply with the version of the EP that is approved by DMIRS. Any material changes to the EP made by the operator must be submitted to DMIRS for assessment and approval (see section 2.3).

DMIRS recommends displaying document control information in a table such as the example provided in Table 2.

Table 2: Document control information

Operator name:	Petroleum Exploration Pty Ltd
Document title:	Field Exploration Drilling Well-01
Document type	EP
Document number:	PE-FEW01-EP-001
Current revision:	4
Current version:	4a or 4.1
Changes since DMIRS approval:	Section x, page x amended to...

2.3 Requirement for revisions and change management (regulation 18, 19, 20 and 23)

It is an offence under the Regulations if a petroleum activity is carried out in a way that is contrary to the EP approved by DMIRS. Operators must ensure the information included in the EP is current and relevant to the petroleum activity, and practical for implementation onsite. The Regulations require an operator to submit a proposed revision of the EP to DMIRS where:

- A new petroleum activity is proposed which is not provided for in the EP.
- Any significant modification of, change in, or new stage of a petroleum activity is proposed to commence which is not provided for in the EP.
- There is a change in the instrument holder or operator of the petroleum activity.
- New or increased environmental impacts or risks associated with the petroleum activity have been identified.
- DMIRS formally requests a revised EP from the operator.
- An EP has been in place for five years.
- An Oil Spill Contingency Plan (OSCP) (see section 3.7) has been in place for two and a half years.

Under regulation 8, a petroleum activity must not continue if any significant, new or increased environmental impacts or risks are identified. In these circumstances a revised EP must be submitted to DMIRS, and approved prior to continuing the activity.

Administrative changes to the EP (e.g. update of contact phone numbers) do not require resubmission of the EP to DMIRS. However, the EP must contain a record of the management of change process undertaken by the operator with all administrative changes recorded, and produced to DMIRS upon request. Document control must show this as a version of the approved EP (i.e. Revision 3, Version 1). Administrative changes cannot impact on how the petroleum activity will be undertaken, or materially change the content of the EP.

Where temporary or short term modifications to the petroleum activity are required, with no significant increase in environmental impacts or risks, DMIRS may agree to the submission of an amendment to an approved EP in the form of a Bridging Document (BD) (see section 2.3.1) or a Written Notification (WN) (see section 2.3.2). This should be discussed with an Environmental Officer from the DMIRS Petroleum and Energy Compliance Branch prior to the development or submission of an amendment, to determine the most appropriate form for submission.

2.3.1 Bridging Document

A BD may be appropriate for temporary or short term modifications to an existing approved petroleum activity that involves minor additional or increased environmental impacts and risks not addressed in the approved EP. Additional or increased environmental impacts and risks need to be identified and assessed in the BD, and include appropriate EPSs for managing these. Operators should ensure they adequately demonstrate how the environmental impacts and risks will be managed to ALARP for the duration of the modification.

At the time of submitting a BD, a revised public disclosure summary (see section 5.2) must be submitted.

As a minimum, a BD should include:

- Reference to all relevant documents being bridged to (e.g. EP and OSCP).
- Description of, and reasons for, modification to the petroleum activity.
- Location of the modified petroleum activity.
- Timing of the modified petroleum activity.
- Risk assessment of additional or increased environmental impacts and risks, and demonstration of ALARP and acceptability.
- Appropriate EPOs, EPSs and MC for managing any additional or increased environmental impacts and risks.
- Additional information relevant to monitoring, recording and reporting requirements (i.e. the implementation strategy for the modified petroleum activity).
- A statement that all environmental impacts and risks associated with the modified petroleum activity will be managed in accordance with the BD and the EP being bridged to.
- Any other relevant details not included in the approved EP that is being bridged to.

DMIRS will assess the BD in conjunction with the approved EP to determine whether they meet the requirements of the Regulations.

2.3.2 Written Notification

A WN may be appropriate for temporary or short term modifications to an existing approved petroleum activity where there are no additional or increased environmental impacts and risks.

As a minimum, a WN should include:

- Reference to all relevant documents being bridged to (e.g. EP and OSCP).
- Description of, and reasons for, modification to the petroleum activity.
- Location of the modified petroleum activity.
- Timing of the modified petroleum activity.
- A statement that there are no additional or increased environmental impacts and risks associated with the modified petroleum activity.
- A statement that the modified petroleum activity will be managed in accordance with the WN and the EP being bridged to.
- Any other relevant details not included in the approved EP that is being bridged to.

DMIRS will assess the WN in conjunction with the approved EP to determine whether they meet the requirements of the Regulations.

3. Contents of Environment Plan

The EP must identify any actual or potential environmental impacts and risks associated with the petroleum activity, and define the process that the operator will implement to identify, minimise, monitor, manage, and mitigate these. A comprehensive EP will facilitate the assessment process by providing sufficient information to determine the level of environmental impact and risk, and ensure that adequate EPSs are in place to reduce these to ALARP. The content and level of detail required in an EP will depend on the nature and scale (i.e. significance) of environmental impacts and risks associated with the proposal.

The structure and content of an EP is based on the requirements of the Regulations.

3.1 Description of the petroleum activity (regulation 14(1))

Regulation 14

(1) The EP must include a comprehensive description of the petroleum activity including:

- (a) The location or locations of the petroleum activity.
- (b) Details of the construction and layout of any facility.
- (c) A description of the operational details of the petroleum activity and proposed timetables.
- (d) Any additional information relevant to consideration of the environmental impacts and risks of the petroleum activity.

The objective of this requirement is to provide details of all operational stages of the petroleum activity which are relevant to its interaction with the environment. It is an expectation of DMIRS that decommissioning, rehabilitation and closure be considered and included in all EPs.

The description of the petroleum activity should be comprehensive to ensure that the assessment of the environmental impacts and risks is appropriate to the nature and scale of the activity.

3.1.1 Location

Location details should include coordinates, relevant petroleum title(s), landmarks, towns and environmentally significant features. The EP should specifically detail the distance of the petroleum activity from any sensitive features, and identify whether there is the potential for these to be impacted.

3.1.1.1 Mapping

The EP should provide clear maps and figures to demonstrate the location of the petroleum activity in relation to the existing environment (see section 3.2). Maps and figures should include (where relevant), but not be limited to:

- Aerial imagery.
- Scale bar, north arrow and legend.
- Petroleum title boundaries and labels.
- Freehold (private) land lots and relevant cadastral information.
- Towns and locations of sensitive receptors (e.g. houses, camps, pastoral stations, other industries etc.) in proximity to the petroleum activity.
- Topographic/bathymetric features.
- Location of the petroleum activity and the associated disturbance footprint.
- Previous disturbance in the petroleum title (e.g. existing tracks/access, wells, facilities etc.).
- Protected areas including declared/proposed National Parks, Nature Reserves, and Conservation Parks etc.

- Surface water features.
- Public Drinking Water Source Areas and water reserves.
- Location of water bores and dams in proximity to the petroleum activity.
- Aboriginal, European or other cultural heritage sites.
- National Heritage and World Heritage Areas.
- Environmentally significant areas (e.g. Environmentally Sensitive Areas (ESAs), Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs), threatened and priority flora and fauna).
- Vegetation and flora mapping.
- Fauna sightings and habitat mapping.
- Any other sites or sensitivities of relevance (e.g. geological, soil, dieback, quarantine areas etc.).

3.1.2 Construction and operational details

The construction and operational details of the petroleum activity should be described in sufficient detail to allow the environmental impacts and risks to be identified. The description should include, but not be limited to:

- Name and description of facility, rig, vessels and major equipment/infrastructure.
- Inventory of all infrastructure and equipment.
- Names of contractors.
- Details of any new environmental disturbances, and use of existing disturbed areas.
- A diagram and description of the proposed or existing site layout.
- Details of the preparation and construction of the site, for example:
 - Clearing and stockpiling.
 - Excavations.
 - Water bores.
 - Site security.
 - Camp establishment and required infrastructure.
 - Facility and site establishment and required infrastructure.
- Details of the petroleum specific operation, for example:
 - Seismic source and receivers.
 - Well construction and schematics.
 - Fluids and cuttings management.
 - Flaring and venting.
 - Pipeline trenching.
 - System processes and design.
 - Details of ancillary operational aspects of the petroleum activity, for example:
 - Site access and transport.
 - Chemical and hazardous materials storage, handling, transfers and disposal.
 - Quarantine and disease management.
 - Waste management and disposal.

- Details of ongoing site management, for example:
 - Inspection, maintenance and repair.
 - Care and maintenance activities (e.g. during well suspension or facility preservation) (see section 3.1.4.1).
- Details of demobilisation and removal of infrastructure from site (decommissioning) (see section 3.1.4.2).
- Details of remediation, rehabilitation, and closure (see section 3.1.4.2).

3.1.3 Timeframes and schedules

The EP must include a description of the operational details of the petroleum activity and the proposed timetables. Where exact timetables are unable to be provided, indicative timeframes, expected duration, and hours of operation should be included.

Operators should allow for potential delays prior to and during the petroleum activity (e.g. adverse weather conditions, contractual delays with service providers, etc.). These potential delays may be relevant to the environmental risk assessment (ERA) (see section 3.3), and the management of environmental impacts and risks due to environmental constraints or considerations, such as the examples described in Table 3 below.

Where the activity may be undertaken in more than one stage, a schedule should be included in the EP outlining the sequence, proposed timing and expected duration of each stage.

The petroleum activity should take place in accordance with the proposed timeframe described in the EP. Where the timing changes materially, operators must consider the need for a revision to the EP or change management (see section 2.3).

Table 3: Activity timeframes and environmental considerations

	Example	Examples of environmental considerations
Timeframe	Mar 2021 – Aug 2021	Fauna (migration, breeding, aggregation etc.). Impacts of weather (rain affecting water storage capacity in sumps, fire restrictions etc.). Impacts on other users (fisheries, cropping seasons etc.).
Duration	40 days	Continued dust generation and noise exposure impacts to sensitive receptors.
Hours of operation	24 hours (night and day operations)	Fauna impacts from driving at dawn or dusk. Impacts to sensitive receptors (e.g. lighting impacts on turtle hatchlings, nocturnal species etc.).

3.1.4 Planning for closure

3.1.4.1 Care and maintenance

If infrastructure is not planned to be decommissioned or removed, or a site is not planned for rehabilitation immediately following completion of the petroleum activity, then the EP must describe the ongoing inspection, monitoring, and maintenance that will be undertaken to reduce environmental impacts and risks to ALARP.

For example, a well may be temporarily suspended, or a facility may be temporarily mothballed while the operator considers future economic viability. During this time, DMIRS expects that the site will be left in a state that reduces as far as reasonably practicable, the impacts and risks to the environment.

A description of these activities should therefore detail the immediate, mid-term and long-term actions to be taken by the operator. These may involve well suspension, installing site safety and security measures, draining storage tanks, removing hazardous substances and materials, stabilising banks, contouring excavations, removing waste materials from sumps or flare pits, and installing culverts or drains to manage runoff. Ongoing activities such as environmental monitoring, maintenance, repairs and regular integrity testing (wells, tanks, pipelines, equipment etc.) should be described in sufficient detail in the EP to demonstrate that all environmental impacts and risks will continue to be managed to ALARP and acceptable levels.

Depending on the petroleum activity, and period of care and maintenance, these activities may be included as a stage in the EP or submitted in a separate EP specific to this stage.

If care and maintenance is not adequately described in the EP approved by DMIRS, the operator must include a commitment to have an approved EP in place which adequately addresses care and maintenance prior to any care and maintenance activities being undertaken.

It is DMIRS expectation that the period of care and maintenance be minimised as far as practicable. In cases where commercial decisions are made to not proceed with exploration/development of a site, the operator should begin site decommissioning (including remediation), rehabilitation and closure (see section 3.1.4.2).

3.1.4.2 Decommissioning, rehabilitation and closure

The Petroleum Acts require the operator to decommission and remove all structures, equipment and other property from petroleum activity sites (e.g. sumps, flare pits, water storage ponds, and other infrastructure used for the purpose of the activity). The base case is for full decommissioning and removal of all infrastructure brought into the title area, however exceptions to this requirement may be considered by the Minister on a case by case basis.

DMIRS' principal closure objectives are for rehabilitated petroleum sites to be (physically) safe to humans and animals, stable, non-polluting/non-contaminating, and capable of sustaining an agreed post-activity land use.

The following key principles and approaches should be considered when planning and preparing for site decommissioning (including remediation), rehabilitation and closure:

- Decommissioning, rehabilitation and closure activities are the responsibility of the titleholder.
- Closure planning should demonstrate that ecologically sustainable closure can be achieved consistent with the agreed post-activity end state, outcomes and land uses, and without unacceptable liability to the State.
- While case by case consideration is appropriate, the end goal should be the complete removal of property and infrastructure and returning the site to an agreed state.
- Decommissioning, rehabilitation and closure activities should be undertaken in a safe and environmentally responsible manner.

- Closure planning should be integrated in the life of activity planning, and should start as early as possible and continue through to final closure and surrender/relinquishment of title. For new projects, closure planning should start in the project feasibility stage (before project approvals) and continue through exploration, construction and operations.
- Closure planning should be site-specific.
- Early and appropriate planning is critical to decommissioning, rehabilitation and closure success.
- Progressive decommissioning and rehabilitation should be undertaken as early as possible in the operational life of a project.
- Closure planning should be risk-based, taking into account data on the local environmental and climatic conditions, and consideration of potential impacts through contaminant pathways (including but not limited to site activities or infrastructure) and environmental receptors.
- Consultation should take place between operators and relevant stakeholders (see section 3.8) which should include acknowledging and responding to stakeholder concerns.
- Post-activity land uses should be identified and agreed upon through consultation before approval of new projects, and should take into account the operational life span of the project. For existing projects, post-activity land uses should be agreed as soon as practicable.
- Good quality rehabilitation material which is intended to be used during rehabilitation, should be identified.
- Closure planning, which includes decommissioning and rehabilitation, should be based on adaptive management, and should identify relevant experience from other projects and research.
- Appropriate systems for closure performance monitoring and maintenance, and record keeping and management should be identified.

Continual improvement in technologies and rehabilitation techniques will occur over time and operators should review and update their closure planning accordingly.

Effective, early planning is likely to minimise rehabilitation costs. Taking a more integrated and progressive approach to rehabilitation can achieve effective rehabilitation and aid in meeting closure outcomes as it is recognised that revegetation is likely to be more successful in temporarily disturbed areas. The Department of Water and Environmental Regulation (DWER), Environmental Protection Authority's (EPA) *Guidance for the Assessment of Environmental Factors – Rehabilitation of Terrestrial Ecosystems* is a useful reference for consideration when planning onshore rehabilitation.

DMIRS encourages operators to progressively decommission and rehabilitate (where possible). Progressive decommissioning and rehabilitation involves the staged removal of infrastructure, and treatment of disturbed areas (including remediation and rehabilitation) that are no longer required for operational reasons (i.e. current or future activities), rather than deferring all decommissioning and rehabilitation works to the end of operations. Operators should therefore detail the decommissioning, rehabilitation and closure activities to be undertaken, and the indicative timeframe for these in the EP.

Progressive development of closure planning throughout the lifecycle of the petroleum activity, and progressive decommissioning and rehabilitation, are critical to the successful implementation of closure planning; working towards the agreed end state (e.g. post-activity land use); achieving closure objectives; and ensuring WA's oil and gas industry complies with their obligations. Demonstration of the progressive decommissioning and rehabilitation activities undertaken should be included in the Annual Environmental Report submitted to DMIRS (see section 3.9.1).

The level of decommissioning, rehabilitation and closure required to be undertaken must be appropriate to the nature and scale of the petroleum activity, and account for any specific requirements of relevant stakeholders. It will therefore be dependent on the specific details of the petroleum activity (e.g. activity type, location, potential impacts and risks, and relevant stakeholder interests).

Operators should address the following in the EP:

- Post-activity land use.
- Closure objectives (including decommissioning and rehabilitation).
- Completion criteria.
- Collection and analysis of closure data.
- Rehabilitation and closure monitoring and maintenance.

The level of information to be included in the EP increases with the level of decommissioning, rehabilitation and closure risk of the petroleum activity. Additionally, the level of information required will be dependent on the stage of the petroleum activity (i.e. exploration, construction, operations, care and maintenance, decommissioning, post-closure maintenance and monitoring), with detail increasing as the site moves towards closure.

DMIRS recognises that closure planning is a progressive process, and acknowledges that post-activity land use(s), closure objectives, and completion criteria may be refined and/or changed over time. DMIRS also recognises that not all of the technical details will be available at the early stages of a petroleum project. The information presented to DMIRS may therefore change in revisions of the EP (see section 2.3) following ongoing review, development, and stakeholder engagement; and as more information is acquired (through progressive decommissioning and rehabilitation). Further refinement or amendments must be documented, together with sufficient clarification, in subsequent revisions of the EP. At all stages, DMIRS expects operators to demonstrate, based on reliable science and appropriate site-specific information, that closure objectives (see section 3.1.4.2.2) can be achieved.

The Western Australian Biodiversity Science Institute (WABSI) and DMIRS have published *A Framework for Developing Mine-site Completion Criteria in Western Australia* that, while focussed on the mineral extraction industry, provides a robust framework for determining the post-activity land use(s), closure objectives and completion criteria that would apply to petroleum activities.

3.1.4.2.1 Post-activity land use(s)

Post-activity land use(s) should be identified and agreed upon through consultation with relevant stakeholders before approval of new projects. This should take into account the operational life span of the petroleum activity, and should include consideration of the existing land use and pre-disturbance state of the area. For existing projects, post-activity land use(s) should be known or agreed as soon as practicable.

The post-activity land use(s) should be:

- Relevant to the environment in which the petroleum activity will be undertaken (or is being undertaken).
- Achievable in the context of post-activity land capability.
- Acceptable to the key relevant stakeholders (see section 3.8).
- Ecologically sustainable in the context of the local and regional environment.

Closure planning should identify all potential (or pre-existing) environmental legacies (including contaminated sites) which may restrict the post-activity land use. The following land use hierarchy provides a guide to determining post-activity land use(s):

- Reinstatement "natural" ecosystems to be as similar as possible to the original ecosystem.
- Develop an alternative land use with higher beneficial uses than the pre-activity land use.
- Reinstatement the pre-activity land use.

- Develop an alternative land use with beneficial uses other than the pre-activity land use.

3.1.4.2.2 Closure objectives

Closure objectives define the closure outcomes for the petroleum activity and should be realistic, robust and achievable. These objectives must be developed based on the proposed post-activity land use(s) and be as specific as possible to provide a clear indication to DMIRS and relevant stakeholders, on what the operator commits to achieve at closure.

Closure objectives should consider and address decommissioning (including remediation), rehabilitation and final closure of the petroleum site or activity. Development of closure objectives should consider each of the environmental factors impacted by the petroleum activity. These may include, but should not be limited to, compliance, revegetation, fauna, water, soil, land, infrastructure and waste. The ability to specify closure objectives will depend on the amount and quality of the environmental data collected. Therefore it is essential that adequate baseline data, such as flora and fauna surveys, and/or the best available data are used for this purpose.

Progressive decommissioning and rehabilitation can provide an early indication as to whether closure planning needs to change to meet closure objectives proposed by the operator and whether closure objectives are realistic and achievable.

Table 4 provides examples of closure objectives. Please note these examples may not be applicable to all petroleum sites and activities. It is therefore essential for operators to develop site specific objectives that are appropriate, realistic and achievable.

Table 4: Example closure objectives

Theme	Example closure objectives
Compliance	The disturbed environment shall be made safe; and closure requirements of the regulatory authorities will be met. All commitments relevant to rehabilitation and closure will be met.
Revegetation	Vegetation in rehabilitated areas will have equivalent environmental values as surrounding natural ecosystems. The rehabilitated ecosystem has equivalent functions and resilience as the target (baseline) ecosystem. Soil properties will be appropriate to support target ecosystem.
Fauna	Rehabilitated areas provide appropriate habitat for fauna. Fauna utilisation, abundance and diversity are present in appropriate proportions given the specified post-activity land use.
Water	Surface and groundwater hydrological patterns/flows not adversely affected. Surface and groundwater levels and quality reflect original levels and water chemistry. There shall be no long term reduction in the availability of water to meet local environmental values.
Soil	The rehabilitated soil profile is appropriate to support the target ecosystem.
Land	Disturbed surfaces rehabilitated to facilitate future specified land use. Landform features are compatible with local topography.
Infrastructure and waste	No infrastructure left on site unless agreed to by the Minister, other regulators, and post-activity land managers/owners. All waste removed from site will be disposed of at a licensed facility relevant to the class of waste.

3.1.4.2.3 Completion criteria

Completion criteria are necessary to provide the basis on which successful decommissioning and rehabilitation, and achievement of closure objectives are determined. Where applicable, they must be developed in consultation with key relevant stakeholders (see section 3.8).

In accordance with the SMART Principle, completion criteria should be:

- **Specific:** targets a unique set of environmental, social and economic circumstances.
- **Measurable:** demonstrates that rehabilitation is trending towards analogue indices.
- **Achievable:** realistic so that the criteria being measured are attainable.
- **Relevant:** to the closure objectives that are being measured and the risks being managed, and flexible enough to adapt to changing circumstances without compromising objectives.
- **Time-bound:** so that the criteria can be monitored over an appropriate timeframe to ensure the results are robust for ultimate surrender/relinquishment of title.

Completion criteria should be developed upfront for new petroleum activities; or as early as possible for existing activities. Completion criteria should be reviewed and refined throughout the development and operation of the petroleum activity to respond to monitoring (i.e. the effectiveness of progressive rehabilitation), research and trial information, and any other information or change as appropriate.

For each closure objective, a set of completion criteria should be developed to demonstrate the attainment of that objective. Completion criteria should be quantitative and usually include post-closure environmental outcomes together with performance indicators (measurement tools).

The approved completion criteria (and associated performance indicators) will form the basis on which rehabilitation performance is measured and reported to DMIRS (and relevant stakeholders where applicable).

The inclusion of high level closure objectives only may be appropriate for those projects with an extended operational design life. In these cases, completion criteria should be developed as early as possible, with the level of detail increasing as the site moves towards closure.

Table 5 illustrates examples of closure objectives, completion criteria and associated measurement tools. Please note these examples may not be applicable to all petroleum sites and activities. It is therefore essential for operators to develop site specific completion criteria and measurement tools.

Table 5: Example closure objectives, completion criteria and measurement tools

Closure objectives	Completion criteria	Measurement tools
Vegetation in rehabilitated areas will have equivalent environmental values as surrounding natural ecosystems.	Reaching agreed species or ecosystem diversity targets, such as areas to have at least <i>X of particular species</i> per m ² .	Quantitative vegetation monitoring using recognised standard techniques acceptable to regulators.
	Species richness is greater than <i>X per cent</i> of the mean value recorded in all reference plots (<i>X length x X width</i>) in analogue sites in the target ecosystem.	
	Foliar cover is within the <i>range of values</i> from analogue sites in the target ecosystem.	
	All plant material used in rehabilitation to be of local provenance (sourced from within <i>X distance</i> of the project site).	Audit of rehabilitation records for sources of plant materials used in rehabilitation.
	No evidence of new weed species, including both declared agricultural weeds and environmental weeds.	Annual monitoring and visual impact evaluation of rehabilitated areas to identify the presence of weed species.
The rehabilitated soil profile is appropriate to support the target ecosystem.	Physical and chemical properties of rehabilitated soil profile are within the range of values from the <i>target landscape type</i> .	Soil analysis using accredited laboratory, plus field measures.
	Topsoil and, if necessary, subsoil applied at an appropriate depth for the <i>target landscape type</i> over at least <i>x%</i> of the area.	Visual inspection of rehabilitation works by <i>person responsible for overseeing rehabilitation activities</i> .
Disturbed surfaces rehabilitated to facilitate future specified land use.	Disturbed surfaces re-contoured to be stable, and to reflect natural topographical features of the surrounding environment.	Annual monitoring and visual impact evaluation (supported by photographs) of rehabilitated areas.
	No significant erosion (<i>> X depth x X length</i>) identified as a result of re-contouring of landform.	
	Final land use acceptable for the area.	Endorsement from key relevant stakeholders.

3.1.4.2.4 Collection and analysis of data

Relevant data should be collated by the operator to:

- Provide a basis to develop criteria or indicators for closure monitoring and performance.
- Establish achievable closure outcomes and goals in the local and regional context.
- Establish baseline conditions for closure monitoring programs, including the identification of reference sites.
- Identify the issues to be managed through the site closure process.

Before closure issues can be managed, they need to be identified through the collation of relevant data e.g. groundwater monitoring, flora and fauna monitoring etc. Where applicable, collection and analysis of relevant data must use recognised or acceptable methodologies and standards; and consider the wider receiving environment, receptors and exposure pathways.

From a closure planning perspective, information from baseline studies undertaken prior to the commencement of the petroleum activity, and from ongoing studies (where relevant), may be necessary (see section 3.2.1).

3.1.4.2.5 Rehabilitation and closure monitoring and maintenance

The EP should include the following information with regard to rehabilitation and closure monitoring and maintenance (where relevant):

- Appropriate detail on the monitoring framework (including minimum monitoring timeframes) to be implemented for each of the closure criteria (e.g. annual monitoring of rehabilitated areas).
- Use of recognised or acceptable monitoring methodologies and standards (e.g. photo monitoring, establishment of control sites, quadrat based assessments, subsequent surveying etc.).
- Monitoring that takes into account the wider receiving environments, receptors and exposure pathways.
- Monitoring using appropriate quality control systems and procedures in sampling, analysis and reporting of results.
- Referencing trends against expected or predicted performance based on agreed closure criteria.
- Contingency strategies if monitoring data indicates key environmental indicators move outside agreed closure criteria and/or rehabilitation efforts have been unsuccessful.
- A commitment for the remediation and rehabilitation of any areas impacted onsite as a result of the petroleum activities undertaken (e.g. due to spills, fire, excess clearing etc.).
- Post-closure monitoring to continue until agreed completion criteria have been demonstrated to be met.

The performance monitoring results will be reported to DMIRS annually in an Annual Environmental Report for the activity (see section 3.9.1). The report must document rehabilitation and closure progress against the agreed completion criteria. Any remedial action taken where the results are outside the agreed targets must also be reported.

3.2 Description of the environment (regulation 14(2))

Regulation 14

(2) The EP must -

- (a) Describe the existing environment that may be affected by the petroleum activity.
- (b) Include any details of the particular relevant values and sensitivities (if any) of that environment.

The EP must describe the existing environment that may be affected by the petroleum activity including the physical environment, biological environment, cultural heritage features, socio-economic environment, and any relevant values and sensitivities of that environment (Table 6). The description of the environment should therefore consider and include any features that may be affected during any aspect of the petroleum activity, including during potential emergency conditions (e.g. well blowout, major oil spill, fire, etc.).

The description of the environment that may be affected by petroleum activity should be comprehensive to ensure that all environmental impacts and risks associated with the activity have been adequately identified and evaluated.

Table 6: Environmental values

Natural		Heritage	Socio-economic
Physical	Biological		
Geography	Flora (including vegetation associations)	Indigenous	Fisheries
Geology	Fauna	Historic	Shipping
Water resources	Habitat	Geoheritage	Tourism
Bathymetry	Communities	Shipwrecks	Agriculture
Oceanography		World Heritage Areas	Industries
Climate		National Heritage Areas	Recreational use
Hydrogeology			

3.2.1 Collection and analysis of baseline data

Details of desktop reviews undertaken, databases accessed for information, field surveys, monitoring programs, studies and/or other research undertaken should be included in the EP. Reports generated (desktop and field) should be included as appendices.

Early consultation with relevant stakeholders will assist in the identification of relevant local and regional values and sensitivities.

Where there is potential for environmental sensitivities to be impacted by a petroleum activity, monitoring or studies of these may be required to obtain baseline data and information. The following information should be included (where relevant and as determined by the ERA):

- Local climatic conditions.
- Local physical conditions – topography, geology, hydrogeology, hydrology, seismicity and geotechnical data.
- Local and regional environmental information on flora, fauna, ecology, communities and habitats.
- Local water resources details – type, location, extent, hydrology, quality, quantity and environmental values (ecological and beneficial uses).
- Soil physical and chemical properties – soil properties, structure and stability (e.g. erodibility), growth medium type.

The description of the environment should be based on high quality, up-to-date field information (e.g. current flora and fauna surveys conducted during the optimal season). Where applicable, collection and analysis of monitoring data must use recognised or acceptable methodologies and standards; and consider the wider receiving environment, receptors and exposure pathways.

For long term activities, it is important that the collection of environmental data is continued and expanded throughout the project life to include data from research, field trials and investigations, and to identify the spatial and temporal variations in the surrounding environments. The data will assist in the refinement of closure objectives and completion criteria, and the setting of indicators for management intervention (see section 3.1.4.2).

3.2.2 Natural environment

Features of the natural environment must be identified and described for the area that may be affected by the petroleum activity. Examples of databases that may be accessed include, but are not limited to:

- WA Biodiversity Search (Naturemap) – Department of Biodiversity, Conservation and Attractions (DBCA).
- Australian Protected Matters Search Tool – DAWE.
- Geographic Data Atlas (surface and groundwater) – DWER.
- Weed and Disease Mapping – Department of Primary Industries and Regional Development (DPIRD).

Where clearing of native vegetation is proposed, on-ground flora and fauna surveys conducted by suitably qualified personnel is required. The level and timing of the survey should be based on a desktop study, and be in accordance with the EPA Services *Technical Guidance – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment and the Technical Guidance – Terrestrial Fauna Surveys*, which are available on the DWER website.

The survey results should then be considered when implementing the ten principles of clearing native vegetation contained in Schedule 5 of the *Environmental Protection Act 1986* (EP Act).

3.2.3 Heritage

The EP must describe the heritage values of the environment that may be affected by the petroleum activity including Indigenous and other cultural heritage values. This should include details of any local groups, claims, registered Aboriginal heritage sites and other areas of cultural significance.

Examples of databases that may be accessed include, but are not limited to:

- Aboriginal Heritage Inquiry System – Department of Planning, Lands and Heritage (DPLH).
- Australasian Underwater Cultural Heritage Database – DAWE.
- State Register of Heritage Places – Heritage Council of WA.
- Australian Protected Matters Search Tool – DAWE.
- Geoheritage Location Search – DMIRS.

3.2.4 Socio-economic environment

The EP must describe the socio-economic environment including local towns, population centres, and land uses in the vicinity of the petroleum activity (e.g. industrial activities, commercial and recreational fishing, agricultural and pastoral activities, other resource exploration and development etc.).

3.2.5 Values and sensitivities

Local and regional environmental values and sensitivities must be included in the description of the environment that may be affected by the petroleum activity.

Environmental values and sensitivities may include, but are not limited to:

- Flora and fauna protected under the *EPBC Act* and the *Biodiversity Conservation Act 2016* (BC Act).
- Protected areas including declared/proposed National Parks, Nature Reserves, Conservation Parks, Marine Parks and Marine Management Areas.
- Areas of importance for protected, rare, or endangered flora and fauna including ESAs, TECs, PECs, biologically important areas (BIA), key ecological features etc.
- Areas of significant habitat (e.g. coral reefs, seagrass meadows, macroalgal communities, mangroves, watercourses and wetlands).

- Areas of temporal significance including breeding grounds, migration routes, and resting and aggregation areas.
- Public Drinking Water Source Areas, groundwater dependent ecosystems, local groundwater use, and other important wetlands and waterways.

Environmental values and sensitivities should be considered a high priority when undertaking the ERA, defining EPOs, and developing EPSs for implementation on site.

3.3 Environmental risk assessment process and evaluation (regulation 14(3) and 14(4))

Regulation 14

- (3) The EP must include -
- (a) Details of all environmental impacts and environmental risks of the petroleum activity.
 - (b) An evaluation of those impacts and risks.
 - (c) A description of the environmental risks assessment process used to evaluate those impacts and risks, including the terms used in that process to categorise the levels of seriousness of those impacts and risks.
- (4) For the avoidance of doubt, the evaluation mentioned in subregulation (3)(b) must evaluate all the environmental impacts and environmental risks arising directly or indirectly from -
- (a) All aspects of the petroleum activity.
 - (b) Potential emergency conditions, whether resulting from accident or any other cause.

The *AS/NZS ISO 31000:2018 Risk Management – Principles and Guidelines* defines risk management as ‘coordinated activities to direct and control an organisation with regard to risk’. The environmental risk management process is iterative, requires ongoing engagement with key relevant stakeholders, and regular monitoring and review throughout the activity to ensure continual improvement.

It is the operator’s responsibility to conduct an ERA and demonstrate that all environmental impacts and risks arising from the petroleum activity have been identified, and can be reduced to ALARP and acceptable levels (see section 3.3.3).

The *AS/NZS ISO 31000:2018 Risk Management – Principles and Guidelines* provides a guide for conducting risk assessments and the *HB 203:2012 Managing Environment-related Risk* provides specific guidance for conducting an ERA. Operators should refer to these guidelines and adopt the risk assessment strategies described to ensure the ERA undertaken is efficient, effective and robust.

DMIRS considers that Figure 1 outlines a suitable risk management framework.

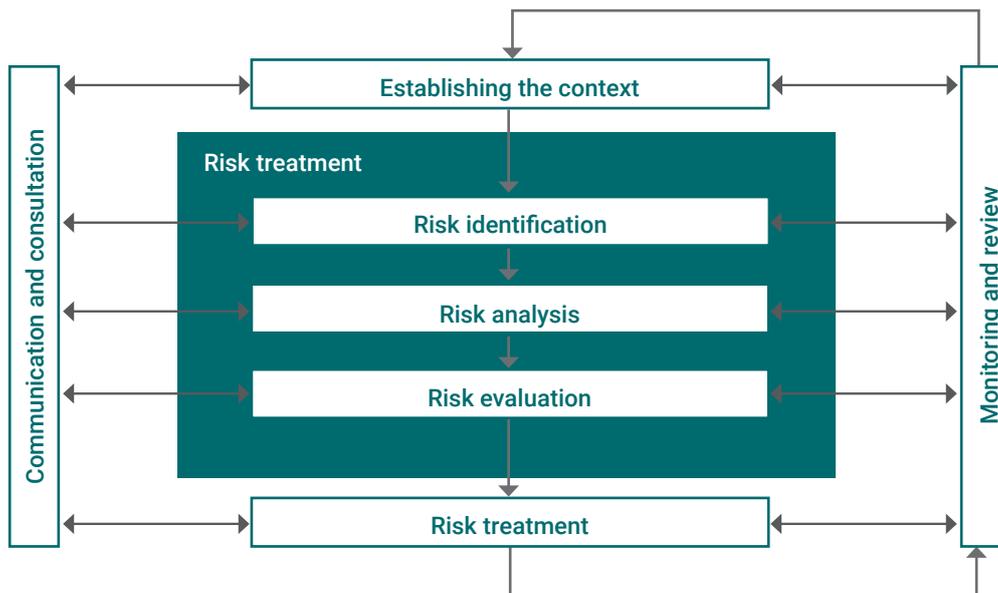


Figure 1: Risk management process ISO 31000:2018

The EP must demonstrate that the operator has evaluated the environmental impacts and risks associated with the petroleum activity, and reduced those to ALARP and acceptable levels, in line with the requirements of the Regulations. DMIRS therefore recommends that the ERA details both pre-treatment risk and residual risk, which are defined in Table 7 below.

DMIRS notes the risk matrix and definitions provided by the operator should be contextually relevant to the petroleum activity being undertaken in WA.

Table 7: Useful environmental risk assessment terms

Aspect – Elements of the operator’s activities, products, or services that may interact with the environment. These include planned and unplanned activities.
Source of potential risk – Where there is potential to cause adverse impact to the environment. All potential sources of risk, including worst case scenario incidents should be provided (e.g. accidents, incidents, emergency response).
Environmental impact – Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an activity or event.
Consequence – The outcome of an event expressed qualitatively or quantitatively, being a loss, impact, injury, an expressed concern, disadvantage or gain.
Likelihood – The probability or frequency of an event occurring.
Pre-treatment risk – The risk rating for an event before control measures (EPSs) are applied. The pre-treatment risk rating reflects the worst case scenario (i.e. the worst possible consequences and their likelihood of occurrence in the absence of risk management).
Hierarchy of controls – a system used to eliminate or minimise exposure to hazards. Typically includes, in order of priority and effectiveness: elimination, substitution, engineering and administrative controls.
Control measures – Measures, controls or risk treatments implemented to reduce the likelihood or consequence of an event occurring (e.g. EPSs).
Residual risk – The risk rating for an event after control measures (EPSs) are applied. The residual risk rating reflects the expected outcomes if risk management is effective and robust (i.e. to reduce the consequences or likelihood of their occurrence).

3.3.1 Risk assessment methodology

In order to provide clarity on the ERA process undertaken, the EP must contain a description of the risk assessment methodology. This initially involves developing a risk matrix and clear definitions of the consequence and likelihood levels.

Consequence levels should be allocated based on the nature and scale of the petroleum activity and the potential impacts on, and risks to the environment (including relevant environmental values and sensitivities).

The likelihood level relates to the known frequency of the event occurring, based on available industry data or a statistical review.

All terms and definitions used will need to be included in the EP. Table 8 provides an example of a risk matrix, with corresponding definitions of consequence and likelihood levels in Table 9 and Table 10 respectively. Please note these are provided as examples only.

Table 8: Example risk matrix

		Consequence					
		Level	1	2	3	4	5
		Descriptor	Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	1	Rare	Low	Low	Medium	Medium	High
	2	Unlikely	Low	Low	Medium	High	High
	3	Possible	Low	Medium	High	High	Extreme
	4	Likely	Low	Medium	High	Extreme	Extreme
	5	Almost Certain	Medium	High	Extreme	Extreme	Extreme

Table 9: Example consequence definitions

			Reportable incidents		
Level	1	2	3	4	5
Environmental value	Insignificant	Minor	Moderate	Major	Catastrophic
Biodiversity/ flora/fauna/ ecosystem	Alteration or disturbance to an isolated area that is unlikely to affect the habitat, population or ecosystem.	Alteration or disturbance to less than 5% of a habitat, population or ecosystem resulting in a minor, recoverable impact within one year.	Alteration or disturbance to 5-30% of a habitat, population or ecosystem resulting in a moderate, recoverable impact within one to two years.	Alteration or disturbance to 30-70% of a habitat, population or ecosystem resulting in a major, recoverable impact within three to 10 years.	Alteration or disturbance to more than 70% of a habitat, population or ecosystem resulting in extinction or permanent changes, recovery (if possible) greater than 10 years.
Water resources	Low impact to isolated area with no effect on the use of the water.	Contained low impact with negligible effect on the use of the water.	Uncontained impact that will materially affect the use of the water, but is able to be rectified in the short-term.	Extensive hazardous impact requiring long-term rectification.	Uncontained hazardous impact with long-term residual effect.
Land degradation	Negligible impact to isolated area.	Contained low impact, no impact on environmental value.	Uncontained impact, able to be rectified in the short-term without causing pollution or contamination.	Extensive hazardous impact requiring long-term rectification.	Uncontained hazardous impact with long-term residual effect.
Air quality	No detectable impact.	Contained low impact, no impact on environmental value.	Uncontained impact that will materially affect an environmental value, but is able to be rectified in the short-term.	Extensive hazardous impact on an environmental value requiring long-term rectification.	Uncontained hazardous impact with long-term residual effect.

Table 10: Example likelihood definitions

Level	Descriptor	Expected frequency	Probability
1	Rare	Once in 15 years.	Highly unlikely, but may occur in exceptional circumstances.
2	Unlikely	At least once in 10 years.	Not expected, but there is a slight possibility it may occur at some time.
3	Possible	At least once in 3 years.	This event might occur at some time as there is a history of casual occurrence of similar issues with past projects/activities internally or externally.
4	Likely	At least once per year.	There is a strong possibility the event will occur as there is a history of frequent occurrence with past projects/activities internally or externally.
5	Almost certain	More than once per year.	The event is expected to occur at some time as there is a history of continuous occurrence with past projects/activities internally or externally.

3.3.2 Identification of environmental impacts and risks

The *HB 203:2012 Managing Environment-related Risk* states ‘comprehensive identification is critical, because a risk not identified at this stage will not be included in further analysis.’ If an environmental impact and/or risk is not identified measures to mitigate these will not be implemented.

Environmental impacts and risks must be identified for both planned activities (routine) and unplanned events (accidents/incidents/emergencies) associated with the petroleum activity. During the ERA process, the environmental impacts and risks should be clearly defined to determine what is being assessed.

It should be acknowledged that there is a distinction between environmental impacts and risks. Environmental impacts can be defined as any change to the environment, whether adverse or beneficial, that wholly or partly results from a petroleum activity. Environmental impacts are planned as an inherent part of the activity. For example, acoustic discharges are an impact on the environment from a seismic survey which cannot be avoided for the petroleum activity to have purpose. Environmental risks can be defined as the chance of something happening that will have an adverse environmental impact, measured in the terms of the environmental consequences and the likelihood of those particular consequences occurring. For example, a spill of diesel is an environmental risk from refuelling during a drilling activity that may have an adverse environmental impact.

It is common practice to conduct a workshop to identify the potential environmental impacts and risks. This is best undertaken by a multidisciplinary team of personnel who are trained, competent, experienced, have specialist knowledge of the proposal, and can make appropriate decisions regarding the implementation of EPSs onsite. Additionally, literature reviews should be conducted, and appropriate specialist advice sought to ensure that all environmental impacts and risks have been adequately identified, and the consequence and likelihood levels are appropriately determined.

The EP must detail the risk assessment process undertaken by the operator.

This may include the details of the workshops conducted (date, title and experience of personnel involved), the risk (hazard) assessment methodology utilised, and the environmental impacts and risks assessed.

The ERA is required to be included in the EP. This should be in tabular format and demonstrate that the operator has systematically evaluated all environmental impacts and risks that may arise from the petroleum activity, the sources of risk (hazard), likelihood of occurrence, potential consequences and EPSs to be implemented.

The ERA table should include pre-treatment risk ratings and post-treatment residual risk ratings. Table 11 provides an example of how the ERA may be presented in the EP. Please note this is provided as an example only, and the scenarios used may not be applicable to all sites and activities. It is therefore essential for operators to consider site specific conditions and activity-specific risks when undertaking an ERA.

Risk analysis is not a one off process. Operators must continuously review the environmental impacts and risks associated with the petroleum activity and demonstrate that all environmental impacts and risks are reduced to ALARP at all times. The ERA will need to be reviewed and updated as part of this process to ensure that information is maintained and up-to-date. This forms part of the operator's Environmental Management System.

Table 11: Basic example to demonstrate activities with different risks

Activity	Aspect	Hazard (source of risk)	Potential impact	Pre treatment			Control measures (EPSs to reduce risk)	Post treatment		
				Likelihood	Consequence	Pre-treatment risk		Likelihood	Consequence	Residual risk
Facility operations	Refuelling of equipment	<100L spill of diesel from the refuelling hose on the well pad	Contamination of the soil contained to hardstand area	5	1	Medium	<ul style="list-style-type: none"> Refuelling procedures are in place including requirements for: <ul style="list-style-type: none"> All mobile equipment to be refuelled in a bunded refuelling area. All immobile refuelling to be undertaken using drip tray. Constant watch during refuelling. Dry break couplings used on refuelling hose. Spill kits available for use and located at strategic locations around the site (including refuelling area). Spill kits are stocked and maintained. Immediate clean-up of all spills. Daily site inspections include inspection of refuelling area, bunding and equipment. 	3	1	Low
	Bulk storage of hydrocarbons	<10,000L spill of diesel from rupture of storage tank	Contamination of soil offsite and groundwater	3	5	Extreme	<ul style="list-style-type: none"> Double skinned tank. Tank stored within a lined bunded area (5mm HDPE) with 110% capacity of the tank volume. Tank stored >10m from the edge of hardstand and ground surface graded to slope away from edge. 	1	5	High

3.3.3 Demonstration of ALARP and acceptability

3.3.3.1 ALARP

For an EP to be approved, it must demonstrate that the environmental impacts and risks of the petroleum activity will continuously be reduced to ALARP, in accordance with regulation 11(1)(b).

DMIRS recommends operators apply a systematic decision-making approach, such as the hierarchy of controls (elimination, substitution, isolation, engineering, administrative and/or personal protective equipment controls) or cost-benefit analysis in demonstrating environmental impacts and risks will be reduced to ALARP.

ALARP can be defined as the point where the cost involved in further reducing the environmental impacts and risks of the activity would be grossly disproportionate to the environmental benefit gained. This principle arises from the reality that resources are finite and should focus on reducing the environmental impacts and/or risks that will deliver the best environmental outcomes possible.

When applying the ALARP concept it is necessary to consider:

1. If I do something, is there an outcome whereby it will reduce the impact or risk?
2. If it will reduce the impact or risk, what exactly are the costs and benefits?
3. Is the cost grossly disproportionate to the benefit in reducing risk?

If the cost is not grossly disproportionate to the benefit, the measure is reasonably practicable. In practice there are likely to be many measures that, through processes of systematic evaluation, are identified as being reasonably practicable. However, not every reasonably practicable measure will be selected for implementation. The costs and benefits of any single measure may be reasonably practicable, however, this may not be true for the sum of multiple measures when considered as a whole.

Operators should carefully consider which measures they will implement and those that they will not at the current time.

The implementation strategy must identify the specific systems, practices and procedures that will be used to ensure that the levels of environmental impacts and risks will be continuously reduced to ALARP. For example, the systems and procedures to monitor and review the effectiveness of selected reasonably practicable measures over time, and the adaptive management processes to maintain levels of environmental impacts and risks to ALARP.

This information is to be presented in the implementation strategy to meet the intent of regulation 15(3)(a).

3.3.3.2 Acceptability

For an EP to be approved, it must demonstrate that the environmental impacts and risks of the petroleum activity will be of an acceptable level, in accordance with regulation 11(1)(c).

The concept of “acceptability” or “acceptable level” is described in *HB 203:2012 Managing Environment-related Risk*. There are two other related concepts that should also be considered when demonstrating the acceptability of a level of environmental impact or risk; “unacceptable level” and “tolerable level”.

An unacceptable level of impact or risk is described as the level at which an organisation or stakeholder will not accept it under any circumstances.

A tolerable level of impact or risk is described as the level at which an organisation or stakeholder is willing to tolerate a risk that is not of an acceptable level, where it is controlled under specific circumstances or for a limited period of time only. Impacts and risks should only be tolerated because there are not feasible means to significantly reduce it further.

An acceptable level of impact or risk is described as the level at which further action is not worthwhile because it will not result in significant reductions in impact or risk levels.

It should be noted that cost is not a consideration as to whether a risk is “tolerable” or “acceptable”. It is an analysis of the treatment options that currently exist to reduce risks.

To assess whether the levels of environmental impacts and risks are of an acceptable level, the operator should identify relevant risk criteria. Risk criteria are typically informed by relevant legislative requirements, international and Australian standards, codes of practice, government policy, company policies and procedures, community and stakeholder expectations, and must be aligned with the objects of the Regulations.

Although an operator may reduce the environmental impacts and risks to ALARP, these may not be acceptable due to the impacts or risks to environmental values or sensitivities that may be ecologically unsustainable.

The EP should clearly state the reasons why the environmental impacts and risks are of an acceptable level. Operators may approach this by explaining the contextual relevance of the environmental impacts and risks, for example: their significance locally and regionally; their effect on individuals, populations and communities; their effects in respect of timing and duration; in terms of the limits or extent of impacts; the capacity of the receiving ecosystem to cope with the levels of impact over the short, medium or long term; and otherwise their alignment with the principles of ESD.

3.3.4 Presenting environmental management strategies

Table 12 provides an example of how environmental management information may be presented in an EP (as detailed throughout sections 3.3, 3.4 and 3.6). It can also be used as an effective onsite tool for managing environmental impacts and risks of the petroleum activity.

Table 12: Recommended template for presenting environmental management strategies relating to the environmental risk assessment

Environmental aspect (e.g. waste management)			
Activities	<i>(E.g. site preparation, mobilisation, drilling, demobilisation, decommissioning and rehabilitation).</i>		
Hazard	<i>(E.g. inappropriate storage and disposal of waste, loss of waste during transport).</i>		
Pre-treatment risk analysis and ranking			
Environmental impact/risk	Consequence	Likelihood	Pre-treatment risk
<i>Detail impact/risk (e.g. soil contamination).</i>	X	Y	<i>X x Y (e.g. High)</i>
<i>NOTE: more than one environmental impact/risk can be included (add new rows for each impact).</i>			
Evaluation of impacts and risks			
<i>Describe and evaluate the environmental impacts and risks associated with the hazard identified (e.g. soil contamination, groundwater contamination, visual amenity, toxicity to fauna, toxicity to flora).</i>			
Environmental management and performance			
EPO	EPS	MC	Person(s) responsible
<i>Detail EPOs</i>	<i>Detail EPSs</i>	<i>Detail MC</i>	<i>Detail who is responsible</i>
Residual risk analysis and ranking			
Environmental impact/risk	Consequence	Likelihood	Residual risk
<i>Detail impact/risk (e.g. soil contamination).</i>	X	Y	<i>X x Y (e.g. Medium)</i>
Demonstration of ALARP and acceptability			
<i>Detail ALARP (consider hierarchy of controls):</i>			
<i>Detail acceptability:</i>			

3.4 Environmental performance objectives, environmental performance standards and measurement criteria (regulation 14(5))

Regulation 14

(5) The EP must include -

- (a) EPOs that define the goals of the operator in relation to the -
 - (i) Processes, policies and practices to be followed; and
 - (ii) Equipment to be used; and
 - (iii) Actions to be taken,
For the purpose of minimising the environmental impacts and environmental risks of the petroleum activity; and
- (b) EPSs -
 - (i) That state the performance required of persons, equipment and procedures for the purposes of managing the environmental impacts and environmental risks of the petroleum activity; and
 - (ii) Against which the performance of the operation in meeting the EPOs in the EP can be measured; and
- (c) MC for the purposes of determining whether -
 - (i) The EPOs and EPSs in the EP have been met; and
 - (ii) The implementation strategy in the EP has been complied with.

An EP must include EPOs, EPSs, and MC related to all environmental impacts and risks associated with the petroleum activity as identified in the ERA. These EPOs, EPSs and MC must be defined in such a way that the operator's performance in protecting the environment can be measured.

3.4.1 Environmental performance objectives

The purpose of setting EPOs is to clearly define the goals of the operator in terms of preventing, avoiding or minimising the environmental impacts and risks of the petroleum activity, and to assess environmental performance.

An EPO should:

- Be clearly linked to the ERA (see section 3.3) and be relevant to site-specific conditions.
- Relate to processes, policies and practices to be followed, equipment to be used, and actions to be taken.
- Be expressed in the form of a specific environmental goal of the operator, such as:
 - An impact that will be avoided (e.g. no new weed species introduced by construction activities).
 - A level of impact that will not be exceeded (e.g. no clearing of native vegetation outside of the approved disturbance boundaries).
 - A level of protection that will be achieved (e.g. no impact to environmentally sensitive areas and conservation significant flora).
- Be capable of objective monitoring, recording and reporting for the purpose of reporting progress against the implementation strategy (i.e. recordable incident reporting) and annual environmental reporting to DMIRS.

The defined acceptable levels of impact (as determined through the ERA process) should directly inform the development of EPOs as a measurable level of performance that will ensure environmental impacts and risks will be of an acceptable level. EPOs are a level of protection/performance/result (i.e. goal of the operator) that must be achieved, for the activity to be considered compliant.

The collection of baseline environmental data is essential in understanding the current site-specific condition and how best to define and measure an appropriate EPO relevant to the environmental impacts and risks of the petroleum activity. Baseline environmental data provides the benchmark which environmental performance should be compared to over the life of a project.

A breach of an EPO must be reported to DMIRS as a recordable incident (see section 4.2.2), through monthly reporting processes, in accordance with the Regulations. Additionally, the operator must include arrangements in the EP for the monitoring and recording of information about the petroleum activity, to determine whether the EPOs have been met. This information must be reported to DMIRS not less than annually (e.g. Annual Environmental Report). Operators should therefore consider these reporting requirements when developing EPOs for the petroleum activity, and ensure they are embedded in monitoring, recording and reporting processes.

3.4.2 Environmental performance standards

EPSs form the basis on which performance in achieving the agreed EPOs can be measured and reported to DMIRS.

EPSs relate to the way in which the petroleum activity is undertaken, for the purpose of managing (and minimising) the environmental impacts and risks of that activity to ALARP and acceptable levels.

An EPS should:

- Be relevant to one (or more) EPOs defined by the operator.
- Be clearly linked to the ERA (see section 3.3) and be relevant to site-specific conditions.
- Be expressed in the form of specific control measures that:
 - State the performance required of persons (e.g. HSE Advisor responsible for conducting daily site inspections to look for evidence of any spills to the environment).
 - State the performance required of equipment (e.g. hazardous materials shall be stored in containment facilities (bundled areas, leak proof trays) designed to hold 110% of the capacity of the largest container or 25% of the total, whichever is greater).
 - State the performance required of procedures (e.g. all spills of hazardous materials are controlled, contained and cleaned up immediately upon identification (within 24 hours as a maximum) in accordance with the *Company Spill Prevention and Response Procedure*).
- Be auditable, measurable and achievable statements (e.g. avoid using terminology such as 'where possible', 'should', 'where practicable', 'may' etc.).
- Be capable of objective monitoring, recording and reporting for the purpose of reporting progress against the implementation strategy (i.e. recordable incident reporting) and annual environmental reporting to DMIRS.

The identification of EPSs should consider the hierarchy of controls which typically includes, in order of priority and effectiveness: elimination, substitution, isolation, and engineering controls. In circumstances where these controls have been exhausted, the use of administrative or procedural controls will be required to ensure residual environmental impacts can be sufficiently managed.

In developing EPSs, operators should take into account site specifics (location, baseline environment, environmental sensitivities), activity specifics (proposed infrastructure, equipment and operations, new/improved technologies), and specific practices and processes (industry best practice standards, legislative requirements).

This information is then used to determine the environmental management of the activity (i.e. the performance required of persons, equipment, and procedures) that must be achieved, for the petroleum activity to be considered compliant. EPSs must therefore be achievable and measurable, and demonstrate the environmental impacts and risks of the petroleum activity are being adequately managed.

Where an operator is stating the performance required of procedures, EPSs may refer to legislation, codes of practice, guidance material, or company procedures, however it is essential the specific requirements from these (relevant to the environmental management of the activity) are detailed. It is not appropriate to simply provide a list of documents as EPSs.

A breach of an EPS must be reported to DMIRS as a recordable incident (see section 4.2.2), through monthly reporting processes, in accordance with the Regulations. Additionally, the operator must include arrangements in the EP for the monitoring and recording of information about the petroleum activity, to determine whether the EPSs have been met. This information must be reported to DMIRS at least annually (e.g. Annual Environmental Report). Operators should therefore consider these reporting requirements when developing EPSs for the petroleum activity, and ensure they are embedded in monitoring, recording and reporting processes.

3.4.3 Measurement criteria

MC are the measures used to track progress toward meeting EPOs and EPSs, and determining compliance with the implementation strategy as specified in the EP.

MC state the targets to be achieved and allow for direct measurement of performance/compliance through testing, monitoring, data analysis, inspections, audits, and/or other means of verification.

The MC should be clearly linked to the EPOs defined by the operator, the EPSs designed to manage the petroleum activity, and the details contained within the implementation strategy.

In accordance with the SMART Principle, MC should be:

- **Specific:** targets a specific EPO and/or EPS to be achieved, and relates this to the implementation strategy (where appropriate).
- **Measurable:** quantifies or at least demonstrates an indicator of progress or success that can be readily compared over time.
- **Achievable:** realistic when compared with baseline performance and resources available.
- **Relevant:** states the results that can realistically be achieved to see environmental impacts and risks reduced to ALARP and acceptable levels.
- **Time-bound:** specifies when testing, monitoring, data analysis, inspections, audits, and/or other means of verification will be undertaken or achieved so the criteria can be monitored over an appropriate time frame to ensure the results are robust.

MC must address the full range of EPOs and EPSs specified in the EP.

MC should allow for the timely identification of potential issues, environmental impacts and/or non-compliances with EPOs, EPSs, and the implementation strategy throughout the course of the petroleum activity. Corrective and preventative actions can then be implemented by the operator to prevent recurrence, and ensure the environmental impacts and risks of the petroleum activity are continuously reduced to ALARP and acceptable levels.

The operator must include arrangements in the EP for the monitoring and recording of information about the petroleum activity, to determine whether the EPOs and EPSs have been met, and the implementation strategy complied with. MC form the basis on which performance in achieving these can be measured, and reported to DMIRS at least annually (e.g. Annual Environmental Report).

Table 13 provides an example of how EPOs, EPSs and MC may be presented in the EP. Please note these examples may not be applicable to all sites and activities. It is therefore essential for operators to consider site specific conditions and activity-specific risks when undertaking an ERA, and determining appropriate EPOs, EPSs and MC.

Table 13: Example environmental performance objectives, environmental performance standards and measurement criteria

Source of risk	Example EPOs	Example EPSs	Example MC
Leak or spill of hazardous materials to groundwater, surface water and/or soil.	No contamination of groundwater or surface water as a result of operational activities.	<p>All hazardous materials (including chemicals and hydrocarbons) will be managed in accordance with the following EPSs as specified in the <i>Company Hazardous Materials Management Procedure</i>:</p> <ul style="list-style-type: none"> Storage containers will be closed when not in use. Storage containers will be labelled with the technical product name as per the Safety Data Sheet. Spill response equipment will be readily available at the site of hazardous materials storage or use. 	<p>Weekly site inspection checklist confirms all hazardous materials are stored and managed in accordance with the EPSs specified.</p>
	No contamination of soil (as defined in the <i>Contaminated Sites Act 2003</i>) as a result of operational activities.	<ul style="list-style-type: none"> Hazardous materials shall be stored in containment facilities (e.g. bunded areas, leak proof trays) designed to hold 110% of the capacity of the largest container or 25% of the total, whichever is greater. HSE Advisor responsible for conducting daily site inspections to look for evidence of any spills to the environment. All spills of hazardous materials are controlled, contained and cleaned up immediately upon identification (within 24 hours as a maximum) in accordance with the <i>Company Spill Prevention and Response Procedure</i>. All spills of hazardous materials will be recorded in the <i>Company Incident Record Management System</i>. 	<p>Daily site inspection checklist confirms there is no evidence of spills that have not been responded to.</p>
			<p>All leaks or spills of hazardous materials are recorded in the <i>Company Incident Record Management System</i> and reported monthly to DMIRS.</p>
			<p>Results of quarterly groundwater monitoring undertaken onsite demonstrates there has been no groundwater contamination as a result of operational activities.</p>
		<p>Operations personnel will be trained in spill response.</p>	<p>Training records verify that operations personnel are trained and competent in spill response.</p>

Source of risk	Example EPOs	Example EPSs	Example MC
		All personnel have completed site inductions in accordance with <i>Section 1</i> of this EP (which includes spill response procedures and responsibilities).	Induction records demonstrate 100% of onsite personnel and contractors have completed site inductions (which includes spill response procedures and responsibilities).
Fauna injury or death as a result of pipeline construction activities.	Minimise and manage the impacts to fauna from entrapment.	<p>Risks to fauna will be managed in accordance with the following EPSs as specified in the <i>Company Fauna Management Procedure</i>:</p> <ul style="list-style-type: none"> • All excavations left open overnight will be equipped with fauna exit ramps, and fauna shelters/refuges (e.g. hessian bags) at intervals not exceeding 50m. • All excavations will be inspected for fauna within 3 hours of sunrise and again prior to sunset. • All excavations will be inspected for fauna immediately before backfilling. • Welded pipeline sections shall be capped at the end of shift to prevent fauna ingress. 	<p>Daily site inspection checklist confirms excavations were equipped with fauna egress measures and shelter.</p> <hr/> <p>Records from daily excavation inspections confirms inspections were completed within specified timeframes.</p> <hr/> <p>Additional management controls implemented where monthly analysis of incident trends demonstrates an increase in fauna deaths as a result of excavation activities.</p>

Source of risk	Example EPOs	Example EPSs	Example MC
		<p>Fauna handlers undertaking retrieval and release of fauna will:</p> <ul style="list-style-type: none"> • Be licenced in accordance with Division 2 of the Biodiversity Conservation Regulations 2018. • Meet the training requirements of DBCA. • Record all fauna interactions. • Relocate fauna immediately following capture, to a suitable habitat away from the site of disturbance. 	<p>Training register demonstrates 100% of all fauna handlers have current fauna handling licences and have completed DBCA training requirements.</p>
			<p>Fauna Interaction Report records details of all fauna interactions (relocations, injuries and fatalities) and includes; date, location, species, habitat, form of encounter and release details.</p>
		<p>No fauna deaths attributed to vehicle strikes.</p>	<p>Risks to fauna from vehicle strike will be managed in accordance with the following EPSs as specified in the <i>Company Safe Driving Procedure</i>:</p> <ul style="list-style-type: none"> • Vehicle speeds shall not exceed site specified speed limits (40km/hour on access roads, 8km/hour within operational area). • Vehicle access will be restricted to established access tracks, unsealed roads, and sealed roads
		<p>All personnel have completed site inductions in accordance with <i>Section 1</i> of this EP (which includes personnel access restrictions and speed limits).</p>	<p>Induction records demonstrate 100% of onsite personnel and contractors have completed site inductions (which includes personnel access restrictions and speed limits).</p>

Source of risk	Example EPOs	Example EPSs	Example MC
Vegetation and habitat disturbance as a result of clearing activities.	Minimise and manage impacts to native vegetation and habitat from clearing activities.	<p>Native vegetation and ground disturbance will be managed in accordance with the following EPSs as specified in the <i>Company Native Vegetation Management Procedure</i>:</p> <ul style="list-style-type: none"> • A Vegetation Disturbance Certificate will be obtained before clearing activities, and will include a pre-disturbance inspection. • Clearing boundaries are clearly demarcated physically (i.e. flagging) and in GIS mapping systems used in all earthmoving equipment. • 50 metre buffer zones are established around environmentally sensitive areas and conservation significant flora, and are clearly demarcated physically (i.e. flagging) and in GIS mapping systems used in all earthmoving equipment to mitigate against accidental disturbance. • Vegetation and topsoil will be stockpiled separately and will not exceed 2 metres in height. 	Vegetation Disturbance Certificate has been completed and is available for all clearing activities.
	No impact to environmentally sensitive areas and conservation significant flora.		Vegetation Disturbance Certificate confirms all boundaries and buffer zones have been demarcated (physically and in GIS mapping systems).
			Post clearing inspection checklist confirms vegetation and topsoil is managed in accordance with the EPSs specified.
	No clearing of native vegetation outside of the approved disturbance boundaries.	Vegetation clearing will be undertaken in accordance with the requirements of <i>Vegetation Clearing Permit CPS 0000</i> and will not exceed the approved clearing area of 15 hectares.	<p>Post clearing inspection checklist confirms all vegetation clearing was undertaken in accordance with the <i>Vegetation Clearing Permit CPS 0000</i>.</p> <p>A review of the GIS mapping system demonstrates vegetation clearing was within approved areas and did not exceed 15 hectares.</p>

3.5 Legislation and other requirements (regulation 14(6))

Regulation 14

- (6) The EP must describe the requirements that -
- (a) Apply to the petroleum activity under legislation (including conditions imposed under legislation), international conventions or agreements, or applicable codes of practice.
 - (b) Are relevant to the environmental management of the petroleum activity.

The EP must detail the relevance of applicable State and Australian Government legislation, international conventions and agreements, codes of practice, and Australian standards to the petroleum activity, and outline any specific requirements that may affect the environmental management of the activity.

It is the operator's responsibility to ensure that all relevant legislation and any other requirements (i.e. approvals) applicable to the petroleum activity are identified. It should be noted that the EP approval does not negate the requirement for other regulatory approvals.

3.5.1 Legislation

Australian Government legislation is available on the Federal Register of Legislation website: www.legislation.gov.au.

State legislation is available on the Western Australian Legislation website: www.legislation.wa.gov.au.

The operator should continuously monitor legislation and associated requirements for any changes/ amendments throughout the petroleum activity to ensure ongoing compliance.

3.5.2 International conventions and agreements

Information regarding environmental international conventions and agreements is available on the DAWE website.

Examples of international conventions and agreements that may be considered relevant include, but are not limited to:

- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).
- United Nations Convention on the Law of the Sea (UNCLOS).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention).
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).
- Ramsar Convention on Wetlands of International Importance (Ramsar Convention).
- Japan Australia Migratory Bird Agreement (JAMBA).
- China Australia Migratory Bird Agreement (CAMBA).
- Republic of Korea Migratory Bird Agreement (ROKAMBA).
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention).
- 1996 Protocol to the London Convention (London Protocol).

3.5.3 Australian Standards

Australian Standards are available on the Standards Australia website: www.standards.org.au.

3.5.4 Codes of Practice

The Australian Pipelines and Gas Association (APGA) have developed a code of environmental practice for all pipeline activities which is available on the APGA website: www.apga.org.au.

The Australian Petroleum Production and Exploration Association (APPEA) have developed three codes of environmental practice which are available on the APPEA website: www.appea.com.au.

- APPEA Code of Environmental Practice.
- Seismic Exploration and the Marine Environment.
- Operating in Protected Areas.

3.5.5 Other requirements

The EP must detail any other requirements that may be relevant to the proposed petroleum activity, including but not limited to:

- Management Plans: lands that have been reserved, declared or otherwise dedicated under the *Land Administration Act 1997*, or any other written law, may have a Management Plan specifying management requirements for that area. An EP must detail the requirements of any Management Plan relevant to the location of the petroleum activity (e.g. within National Parks, Nature Reserves, and specific use areas); and demonstrate that the activity will be undertaken in a manner consistent with these management requirements.
- Government requirements: guidelines and publications released by government departments and agencies that provide detailed information and guidance on specific environmental matters should be considered during the development of an EP. These are available on the various government departments and agencies websites.

3.5.6 Referrals to other Government agencies

An EP must consider legislative (and other) requirements relevant to the environmental management of the petroleum activity; and specifically detail any referrals, permits, or licences required. The EP must also provide details of any decision making processes where the operator has considered, but decided not to refer the proposal to other agencies (i.e. provide reasons and justification for this decision).

Appendix B provides further information regarding other agency referrals.

3.6 Implementation strategy (regulation 15)

Regulation 15

- (1) The EP must include an implementation strategy for the petroleum activity in accordance with this regulation.
- (2) The implementation strategy must include measures to ensure that the EPO's and EPS's in the EP are met.
- (3) The implementation strategy must identify the specific systems, practices and procedures to be used to ensure that -
 - (a) The environmental impacts and environmental risks of the petroleum activity are continuously reduced to ALARP.
 - (b) The EPO's and EPS's in the EP are met.
- (4) The implementation strategy must establish a clear chain of command, setting out the roles and

responsibilities of personnel in relation to the implementation, management and review of the EP.

- (5) The implementation strategy must include measures to ensure that each employee or contractor working on, or in connection with, the petroleum activity is aware of his or her responsibilities in relation to the EP and has the appropriate competencies and training.
- (6) The implementation strategy must provide for the monitoring or, audit of, management of non-compliance with, and review of, the operator's environmental performance with the implementation strategy.
- (7) The implementation strategy must provide for -
 - (a) Specified emissions and discharges (whether occurring during normal operations or otherwise) to any air, marine, seabed and sub-seabed environment to be monitored and recorded in a way that -
 - (i) Is accurate.
 - (ii) Can be audited against the EPS's and MC in the EP.
 - (b) The monitoring mentioned in paragraph (a) to be done either continuously or at specified intervals.
 - (c) Tests to assess the performance of the monitoring equipment used for the purposes of paragraph (a) to be conducted at specified intervals.
- (8) If the petroleum activity may involve the injection or re-injection of produced formation water into wells, the implementation strategy must specify the maximum permissible concentration of petroleum in that produced formation water. *Note this regulation does not apply to the PP(E)R.*
- (9) The implementation strategy must include details of any chemicals or other substances that may be -
 - (a) In, or added to, any treatment fluids to be used for the purposes of drilling or hydraulic fracturing undertaken in the course of the petroleum activity; or
 - (b) Otherwise introduced into a well, reservoir or subsurface formation in the course of the petroleum activity. *Note this regulation does not apply to the PP(E)R.*

The objectives of the implementation strategy are to ensure that the EPOs and EPSs in the EP are met, and that all environmental impacts and risks of the petroleum activity are continuously reduced to ALARP. Appropriate technologies, systems, practices, and procedures should therefore be utilised to ensure environmental performance against the implementation strategy in the EP can be reviewed, managed and reported.

3.6.1 Systems, practices and procedures

The EP must:

- Include details of the operator's systems, practices, and procedures to be used which relate to environmental management (e.g. preventative maintenance system, incident reporting and tracking system, Emergency Response Plan, etc.).
- Demonstrate how the environmental impacts and risks of the petroleum activity will continuously be reduced to ALARP.
- Demonstrate how these systems, practices and procedures will be used to ensure the EPOs and EPSs in the EP are met.

Where relevant, systems, practices and procedures specified in the EP should be identifiable through the use of document numbers and titles. Any measures included in procedures that are relevant to environmental management should be included in the EP (i.e. as EPSs).

Internal management of systems, practices and procedures should be detailed in the EP, including periodic review and updates. This is to ensure they are current, relevant, and consistent with best practice industry standards. DMIRS encourages operators to adopt an ISO 14001 accredited Environmental Management System to establish, implement, maintain and improve environmental management, performance and compliance associated with the petroleum activity.

3.6.2 Roles and responsibilities of personnel

The Regulations require that the EP establishes a clear chain of command and sets out the roles and responsibilities of personnel in relation to the implementation, management and review of the EP. This is to ensure that duties, functions, resources and accountability of tasks are assigned to the appropriate personnel.

The EP must include the roles of all relevant authority levels (ranging from Senior Management, to employees and contractors), and describe their responsibilities in relation to environmental management. The roles and responsibilities specified in the EP should be commensurate with authority levels and include:

- The specific tasks, systems, practices and procedures assigned to each person or position.
- The authority given to each person or position to implement appropriate environmental management practices.
- The resources assigned to those roles, appropriate to the responsibilities.

3.6.3 Training and competencies

The EP must include measures to ensure that all personnel (including employees and contractors) working on, or in connection to the petroleum activity are aware of their environmental responsibilities in relation to the EP. All personnel must have the appropriate competencies (e.g. licences and qualifications) and training to undertake their role.

The EP should, as a minimum, include an overview of the competencies and training required of personnel, and a summary of the content relevant to environmental management (e.g. environmental inductions, emergency response training etc.). Competencies and training should relate to specific roles and responsibilities, and may therefore differ between personnel.

The EP should also outline how the competency and training of personnel will be assessed, reviewed, tracked and recorded.

The responsibility for managing personnel competencies and training should also be included in the roles and responsibilities section of the EP (see section 3.6.2).

3.6.4 Monitoring, auditing, management of non-conformance, and review

The Regulations require that the implementation strategy provides for the monitoring of, audit of, management of non-conformance with, and review of the operator's environmental performance and the implementation strategy. This is to ensure continuous improvement in the environmental management of the petroleum activity.

The monitoring, auditing, management and review of environmental performance should be appropriate to the nature and scale of the petroleum activity, with all results systematically recorded. Examples include, but are not be limited to:

- Routine environmental monitoring (e.g. groundwater monitoring, weed monitoring etc.).
- Review and analysis of EPOs and EPSs for the purpose of determining whether they have been met.
- Standing agenda items and/or discussions during daily meetings.
- Environmental inspections and audits (including routine and ad hoc) with the completion of checklists and audit reports.

DMIRS notes that monitoring, auditing, management and review may be required to continue after the petroleum activity has ceased to demonstrate environmental performance (e.g. groundwater monitoring, rehabilitation monitoring etc.).

3.6.4.1 Monitoring

Environmental monitoring should be conducted in a way that the results can be used to determine compliance with EPOs and EPSs. The EP should detail all environmental monitoring to be undertaken for the petroleum activity based on the environmental impacts and risks. Environmental monitoring may include desktop reviews, site inspections and, where relevant, scientific monitoring. Examples of the information to be described in the EP (where relevant) includes, but is not limited to:

- Monitoring methodology.
- Frequency of monitoring to be undertaken.
- Details of any equipment, procedures or checklists to be used.
- Process for obtaining and collecting samples.
- Laboratory accreditation (e.g. National Association of Testing Authorities (NATA) certified).
- Process for ensuring accuracy of any monitoring equipment used (e.g. calibration).

Information obtained during environmental monitoring events should be included in Annual Environmental Reports (see section 3.9.1) submitted to DMIRS, with a description of the methodology, identification of trends, and a summary of results.

Examples of environmental monitoring that may be undertaken includes, but is not limited to:

Routine site inspections

The frequency of routine site environmental inspections should be determined by the nature and scale of the petroleum activity, the environment that may be affected, and the associated environmental impacts and risks. Site inspections should be undertaken regularly (e.g. daily, weekly) with the frequency of inspections justified in the EP. Site inspections should be undertaken to ensure that the petroleum activity is being undertaken and managed in accordance with the implementation strategy of the EP (e.g. the EPSs specified). The EP should provide detailed information regarding the timing, scope and method for recording these site inspections.

Groundwater monitoring

Baseline monitoring may be undertaken to identify groundwater quality and quantity in the vicinity of the petroleum activity location prior to the commencement of activities onsite. Ongoing monitoring can then be undertaken to demonstrate that EPOs specified in the EP are being met, and the environmental impacts and risks of the petroleum activity are being appropriately managed to ALARP. DMIRS has developed *Groundwater Monitoring in the Onshore Petroleum and Geothermal Industry Guidelines* to provide operators with guidance for the development of effective groundwater monitoring programs.

Monitoring of flora and fauna

Where there is a potential to impact on flora or fauna species of conservation significance, monitoring may be required to demonstrate that environmental impacts and risks to flora and/or fauna are being effectively managed to ALARP. Examples of monitoring include observations and photo monitoring for the presence of conservation significant fauna species within the vicinity of the petroleum activity.

Monitoring of emissions and discharges

The Regulations require the operator to monitor and report on emissions and discharges associated with the petroleum activity on a quarterly basis.

Further information regarding this regulatory requirement is detailed in section 4.3.2.

Monitoring of produced formation water

If the petroleum activity may involve the injection or re-injection of produced formation water (PFW) into wells, the implementation strategy must specify the maximum permissible concentration of petroleum in that PFW. Monitoring of PFW must therefore be undertaken to ensure compliance with the maximum permissible concentration.

Further information regarding this regulatory requirement is detailed in section 4.3.1.

Please note this requirement only applies to the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the Petroleum (Submerged Lands) (Environment) Regulations 2012.

Other environmental monitoring

The operator must consider and determine whether other environmental monitoring is required based on the nature and scale of the petroleum activity, and the associated environmental impacts and risks (e.g. noise monitoring, air quality monitoring etc.).

3.6.4.2 Auditing

The operator is required to review the effectiveness of the implementation strategy periodically to determine the environmental performance of the petroleum activity, and identify continuous improvement initiatives.

The EP must outline the arrangements that are in place for environmental auditing. This may include desktop or field audits undertaken internally or by a third-party. The EP must specify the planned frequency or schedule of audits, and detail the process and scope of the audits to be undertaken. The level of auditing should be commensurate with the nature and scale of the petroleum activity, and the environment that may be affected.

DMIRS expects that environmental audits will be undertaken no less often than annually to demonstrate whether the EPOs and EPSs in the EP have been met, and the implementation strategy complied with. Audits should be undertaken more regularly where a petroleum activity is undertaken in multiple stages (e.g. drilling a well followed by production testing), has a higher level of risk, or there are sensitive receptors in proximity to the activity location.

Environmental audits should be used to:

- Ensure all significant environmental aspects of the petroleum activity are specified and addressed in the EP.
- Ensure that EPSs implemented onsite are appropriate, and continuously reduce environmental impacts and risks to ALARP.
- Demonstrate whether the EPOs and EPSs specified in the EP are being met.
- Demonstrate whether the implementation strategy is being complied with, reviewed, and amended where necessary.
- Identify non-compliances and opportunities for continuous improvement in environmental management practices.
- Ensure that all closure objectives and completion criteria have been met prior to the surrender/ relinquishment of title.

Pursuant to the provisions of section 118 and 119 of the PGERA, section 125 and 126 of the PSLA, and section 62 and 63 of the PPA, DMIRS Inspectors may conduct inspections of the petroleum activity to evaluate environmental management, and the level of compliance with the approved EP.

3.6.4.3 Management of non-conformance

The EP must outline the arrangements in place for the management of non-compliance with the implementation strategy of the EP (including EPOs and EPSs).

Details for the management, tracking, action, and close out of any non-compliances identified should be detailed in the EP (e.g. the use of a corrective action tracking register). Any corrective or preventative actions taken to prevent recurrence should be commensurate to the severity of the non-compliance identified.

3.6.4.4 Review

To facilitate continuous improvement in the environmental management of a petroleum activity, operators must undertake ongoing and periodic reviews of all aspects of the activity. This is particularly important for longer term or repetitive petroleum activities.

The monitoring of, audit of, and management of non-compliance discussed above are important aspects in reviewing environmental performance. To ensure the best environmental outcomes are achieved, operators should not only review environmental performance, but should also identify any unexpected trends or variances in environmental performance. This will enable the operator to determine if any other measures can be effectively implemented to continuously reduce environmental impacts and risks to ALARP and acceptable levels. This should be considered in the EP and the results discussed in Annual Environmental Reports submitted to DMIRS (see section 3.9.1).

3.6.5 Details of chemicals and other substances

The EP must include details of any chemicals or other substances that may be in, or added to, any treatment fluids to be used for the purpose of drilling or hydraulic fracturing; or otherwise introduced into a well, reservoir or subsurface formation during the course of the petroleum activity.

The following guidelines are available on the DMIRS website to provide operators with further information regarding these requirements:

- *Chemical Disclosure Guideline* (including the *Chemical Disclosure Reporting Template*).
- *Environmental Risk Assessment of Chemicals*.

Please note this requirement only applies to the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012, and the Petroleum (Submerged Lands) (Environment) Regulations 2012.

3.7 Oil Spill Contingency Plan (regulation 15(10)/15(8))

Regulation 15

(10)/(8) The implementation strategy must include an OSCP that -

- (a) Sets out the following -
 - (i) Preparations to be made for the possibility of an oil spill.
 - (ii) Emergency response arrangements to be implemented if an oil spill occurs.
 - (iii) Recovery arrangements to be implemented if an oil spill occurs.
 - (iv) Current oil spill trajectory modelling that applies to the petroleum activity.
- (b) Requires the operator to conduct tests of the emergency response arrangements set out in the OSCP at specified intervals.
- (c) Describes the tests mentioned in paragraph (b).

The purpose of an OSCP is to provide a practical reference tool for personnel responding to a spill event (e.g. hydrocarbons, chemicals, and other hazardous materials). An OSCP should therefore be activity specific, appropriate to the nature and scale of the petroleum activity, and identify the various levels and types of response that may be required should a spill incident occur (including worst case spill scenarios). The OSCP must set out details of the following:

- Preparations to be made for the possibility of a spill event.
- Emergency response arrangements to be implemented if a spill event occurs.
- Recovery arrangements to be implemented if a spill event occurs.
- Current spill trajectory modelling that applies to the petroleum activity.
- Tests of the emergency response arrangements at specified intervals.

The operator must demonstrate that they have the appropriate resources, management structure, capacity and capability for the prevention, response, recovery and ongoing monitoring of any spill incidents (including any associated environmental impacts).

The Regulations state that the implementation strategy of an EP must include an OSCP. OSCPs may be submitted in the following forms:

- As a section of the implementation strategy of the EP.
- As an appendix to the EP.
- As an activity specific, stand-alone document for assessment that directly relates to the petroleum activity covered under the EP.

The *Guideline for the Development of an Onshore Oil Spill Contingency Plan* is available on the DMIRS website and provides detailed guidance for operators regarding the content and structure of an onshore OSCP.

Please note this requirement is specified in regulation 15(10) of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the Petroleum (Submerged Lands) (Environment) Regulations 2012, and regulation 15(8) of the Petroleum Pipelines (Environment) Regulations 2012.

3.8 Stakeholder engagement (regulation 15(11)/15(9) and 17(1)(b))

Regulation 15

(11)/(9) The implementation strategy must provide for appropriate consultation with relevant authorities and other relevant interested persons or organisations.

Regulation 17

(1) The EP must include the following -

- (b) A report on all consultations between the operator and relevant authorities and other relevant interested persons and organisations in the course of developing the EP.

The Regulations require that adequate consultation be undertaken between the operator and relevant authorities, interested persons and organisations (stakeholders). A report on this consultation must be included in the EP.

Preliminary engagement with all relevant stakeholders (including DMIRS) should be initiated well in advance of the preparation of an EP and should be ongoing throughout the planning, approval and operational stages of a petroleum activity.

The identification of potential stakeholders must take into consideration the activity type, location, environmental impacts and risks (planned activities and unplanned events) and relevant stakeholder interests or concerns.

DMIRS acknowledges that not all petroleum activities will require the same level of engagement with stakeholders. For example, proposals for hydraulic fracture stimulation activities proposed would require significantly more engagement with relevant stakeholders than an airborne gravity survey, or the drilling of an exploration well in remote locations with no environmental sensitivities present. The level of stakeholder engagement required is therefore dependent on the nature and scale of the petroleum activity proposed.

Effective engagement is the key to ensuring ongoing positive relationships between the petroleum industry, stakeholders, communities and the public. It is important to note the definition of 'environment' in the Regulations includes 'people and communities.'

Please note this requirement is specified in regulation 15(11) of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the Petroleum (Submerged Lands) (Environment) Regulations 2012, and regulation 15(9) of the Petroleum Pipelines (Environment) Regulations 2012.

3.8.1 Stakeholder Engagement Strategy

Operators proposing to undertake exploration and/or development activities should implement a Stakeholder Engagement Strategy and ensure the strategy is updated regularly. Engagement should be a priority at the earliest opportunity and throughout every stage of the lifecycle of a petroleum project.

The Stakeholder Engagement Strategy should employ a risk-based approach to assist in identifying what issues will need to be addressed, as well as the style and frequency of engagement with relevant stakeholders to ensure that the operator is demonstrating a commitment to social responsibility and maintaining this over the project lifecycle.

A Stakeholder Engagement Strategy should:

- Be relevant to the nature and scale of the activity proposed.
- Establish principles for effective communication with relevant stakeholders.
- Identify all stakeholders relevant to the activity, taking into consideration the activity type, location, potential impacts and risks (planned activities and potential unplanned events) and community interests or concerns or Government approval requirements.
- Map relevant stakeholders and identify potential matters for consideration during the planning and execution of exploration and development activities.
- Identify internal accountability for stakeholder engagement (e.g. a dedicated stakeholder engagement coordinator).
- Outline when and how often stakeholders would be consulted on proposed activities.
- Establish parameters (timeframes and protocols) for receiving feedback.
- Detail the level of engagement necessary for consultation, guided by the level of the impact of the petroleum activity and the need to demonstrate how potential risks and impacts to relevant stakeholders can be reduced to ALARP.
- Identify how stakeholder issues will be recorded, responded to and documented for the information of regulators and other stakeholders (e.g. a stakeholder consultation register).
- Consider the level of engagement required to inform relevant stakeholders about the petroleum activity.
- Determine how often the strategy will be reviewed and identify triggers which may also require amendment of the strategy.
- Be transparent by sharing available information with relevant stakeholders.

When undertaking consultation, stakeholders should be provided with a reasonable timeframe to review, consider, and respond to the information provided. The period of time provided should be appropriate for the stakeholders being consulted and the amount and complexity of the information.

The operator should address any potential language barriers which may impact on the ability of stakeholders to make an informed assessment of the potential consequences of the activity. For example, communication with Aboriginal people should be conducted by trusted informants in a language commonly used and understood by the local people. If English is not commonly used, then translators should be available to convey information.

All stakeholders should be provided with sufficient information to allow them to make an informed assessment of the potential consequences of the petroleum activity on their interests or activities. Information should be presented in a format that is readily understandable to the stakeholder being consulted.

The operator should ensure that all relevant information about the proposed petroleum activity is provided to relevant stakeholders. The below list of discussion topics is intended as a guide only, and individual stakeholders may have other specific requirements:

- Contact details (name, telephone number and email address) for the person responsible for coordinating stakeholder engagement and consultation on behalf of the operator.
- A description of the proposed petroleum activity.
- Details of any chemicals that may be required, and their potential impacts.
- The timing and duration of the petroleum activity.
- Any potential impacts and risks such as:
 - The size, shape, location and timing of disturbance activities at onsite locations (e.g. the location of access roads and well pads, and number and spacing of wells).
 - In relation to the production phase development, the size and location of any disturbance footprint of linked ancillary production facilities.
 - What, if any, impacts there may be on local community infrastructure.
 - What, if any, impacts there would be on road networks, such as the number and timing of truck movements relating to the petroleum activity, as well as any potential degradation of road surfaces as a result of the increased traffic.
 - What, if any, impacts on natural, social or cultural environmental values.
- The source, if local, of materials such as sand and water required for the petroleum activity.
- Plans for decommissioning, rehabilitation and closure.
- Any specific access arrangements or consent requirements for accessing land.
- Any potential associated business/commercial opportunities for the local community.
- Requirements for any specific Aboriginal Heritage Management Plans.
- Requirements for any specific inductions (cultural orientation/awareness or land holder specific).

Operators should also demonstrate that the following principles (Table 14) have been addressed when formulating and implementing their Stakeholder Engagement Strategy. These principles have been adapted from the Ministerial Council on Mineral and Petroleum Resources (MCMPR) *Principles for Engagement with Communities and Stakeholders* (2005).

Table 14: Principles of stakeholder engagement

Communication – Communication must be open, accessible, clearly defined, two-way and appropriate.
Transparency – The process and outcomes of community and stakeholder engagement should, wherever possible, be made open and transparent, agreed upon and documented.
Collaboration – A co-operative and collaborative approach to seek mutually beneficial outcomes is considered key to effective engagement.
Inclusiveness – Inclusiveness involves identifying and involving communities and stakeholders early and throughout the process, in an appropriate manner.
Integrity – Community and stakeholder engagement should establish and foster mutual trust and respect.

3.8.2 Potential stakeholders

The Regulations require that adequate consultation be undertaken between the operator and relevant authorities, interested persons and organisations.

DMIRS encourages good practice approaches to engagement beyond the statutory stakeholder consultation requirements. Operators should use existing environmental knowledge, past experience, initial campaign emails, existing networks and forums, social media, and other research tools to decide who to engage during this process.

It is the expectation of DMIRS that a clear process, system or method is used by the operator to identify relevant stakeholders. This process should be documented in the EP to support the case that appropriate consultation has been undertaken.

A ‘nested’ approach (Figure 2) to identifying directly and indirectly affected stakeholders, and relevant interested stakeholders should be used. A reasonable approach would be to define the environment that may be affected by the petroleum activity (including the socio-economic environment), and then identify the relevant authorities, interested persons and organisations who may be affected by the activities within that environment. Information about the concerns and interests of these stakeholders can be organised at local, regional, and national scales.

Operators should note that once an authority, person or organisation has been identified as a relevant stakeholder, all consultation is to be documented in the consultation report included in the EP.

Relevant authorities

The operator must consider and consult with any relevant authorities including:

- Each department or agency of the Australian Government to which the proposed activities may be relevant.
- Each department or agency of the State Government to which the proposed activities may be relevant.

This is taken to mean a government department or agency that has responsibility for managing or protecting the environment that may be affected by the petroleum activity. Departments/agencies should be considered based on legislative requirements (i.e. licences or required approvals) as well as general interests or management of particular reserves or aspects (i.e. groundwater protection, reserve management, Native Title etc.).

Interested persons and organisations

The operator must consider and consult with any relevant persons and organisations, including but not limited to:

- Land holders or users in the vicinity of the petroleum activity that may be interested in or impacted by any planned activities or unplanned events.
- Shires and councils.
- Community groups.
- Non-government organisations.
- Indigenous communities and/or community bodies.
- Other area or resource users (i.e. water bore holders – licensed and unlicensed).

This is taken to mean any relevant person or organisation whose functions, interests or activities may be affected by the petroleum activity (i.e. the conduct of hydraulic fracture stimulation, drilling, or seismic survey etc.).

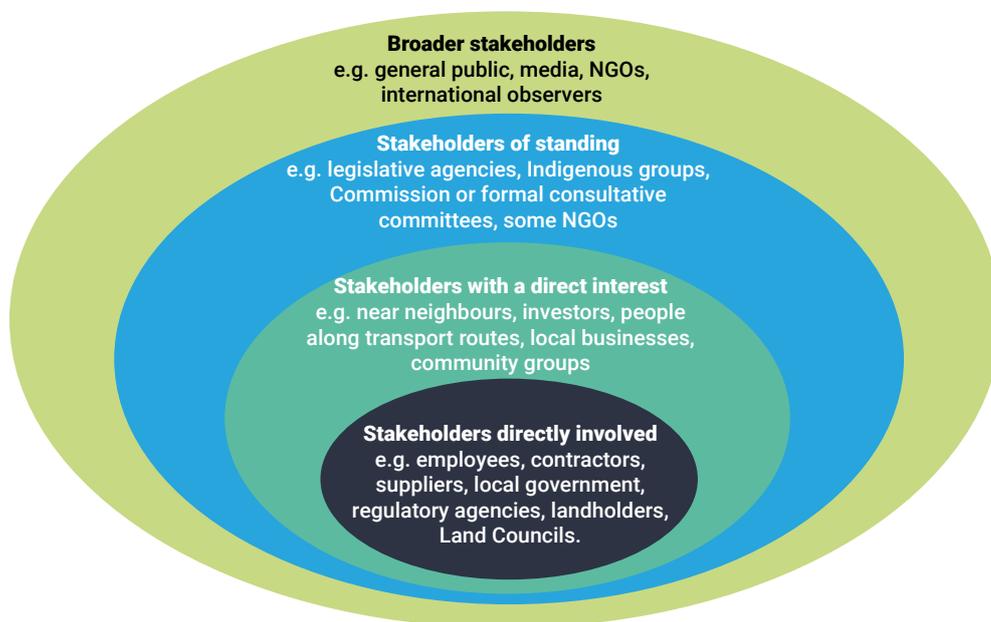


Figure 2: Stakeholder Identification by Nature of Interest and Impact (Source: CSR Report)

A Framework for Social Impact Assessment of shale Gas Development in the Northern Territory, Witt K, Vivoda V, Everingham J and Bainton N, November 2017.

3.8.3 Initial project/activity engagement (during planning)

Initial engagement should be undertaken as early as possible in the planning stage of the petroleum activity, and may be in the form of a letter drop or email to inform relevant stakeholders of the:

- Type of activity being planned.
- Tentative timeframes associated with the petroleum activity.
- Contact person or persons for obtaining further information regarding the petroleum activity.

3.8.4 Project/activity engagement (during Environment Plan development)

This stage of engagement should be used to provide relevant stakeholders with more detailed information regarding the activity proposed, and any updates to information provided during initial engagement. Operators should seek comments and feedback from stakeholders, and maintain open communication while ensuring that any responses or issues raised are considered, adequately addressed and actioned appropriately.

This stage of engagement should also consider rehabilitation requirements of any land holders, land owners or relevant government departments. Compensation for planned activities and unplanned events that may affect relevant stakeholders should also be considered, and appropriate agreements put in place.

The EP must demonstrate that all environmental impacts and risks of the activity on the environment (including people and the community) have been identified and reduced to ALARP.

3.8.5 Ongoing engagement (post approval)

Ongoing engagement must be undertaken to ensure that stakeholders are kept up-to-date. This includes providing general updates on activity progress; notification of any changes to the proposal (e.g. methods, timeframes); notification of any significant aspects of the activity (e.g. notifying landholders prior to flaring); and any other updates as necessary or as committed to.

Ongoing consultation should also provide an avenue for stakeholders to communicate any concerns, queries or feedback to the operator during the course of the activity and for the operator to respond accordingly.

The EP should identify ongoing communication protocols to be implemented during and after approval of the EP. This includes keeping DMIRS informed of any significant stakeholder concerns or issues, particularly in circumstances where the concern or issue cannot be alleviated or addressed.

All records of ongoing consultation must be recorded and reported to DMIRS in Annual Environmental Reports (see section 3.9.1).

3.8.6 Recording stakeholder engagement

The EP must demonstrate that the operator has undertaken adequate consultation and must include a detailed report of the consultation undertaken, including at a minimum:

- Date of consultation and timeframe provided for response.
- Person, department, or organisation consulted (position, branch, company etc.).
- Method of consultation (i.e. meeting [minuted], letter, email).
- A summary of the information provided.
- Details of all questions, comments, issues or concerns raised by the stakeholder.
- Any conditions imposed (where appropriate).
- Evidence demonstrating that all questions, comments, issues or concerns raised have been adequately addressed to the satisfaction of the party who raised it.
- Any additional information or justification for decisions made by the operator in relation to stakeholder engagement.

3.9 Monitoring, recording and reporting arrangements (regulation 16)

Regulation 16

The EP must include arrangements for -

- (a) Monitoring, and recording information about, the petroleum activity that are sufficient to enable the Minister to determine whether -
 - (i) The EPO's and EPS's in the EP have been met.
 - (ii) The implementation strategy complied with.
- (b) Reporting to the Minister on the information recorded under paragraph (a) at intervals agreed with the Minister, but not less often than annually.

All reports and notifications must be submitted to petroleum.environment@dmirs.wa.gov.au or via the DMIRS Online Submission System.

3.9.1 Annual Environmental Reports

The Regulations require that an EP include arrangements for the monitoring and recording of information about the petroleum activity that is sufficient to enable DMIRS to determine whether the EPOs and EPSs (see section 3.4) in the EP have been met, and the implementation strategy complied with. Reports must be provided to DMIRS not less often than annually (i.e. Annual Environmental Reports). Annual reporting must continue until the operator can demonstrate that all closure objectives and completion criteria (see section 3.1.4.2) for the petroleum activity have been met.

Reports must contain:

- A detailed summary of the activities undertaken during the reporting period.
- Details of any clearing of native vegetation undertaken during the reporting period.
- A statement of compliance for each EPO and EPS specified in the EP including justification based on the MC.
- A summary of environmental audits undertaken during the reporting period, including the findings and associated corrective actions.
- A summary of any incidents that occurred (recordable and reportable) during the reporting period and the lessons learned from these.
- A summary of all emissions and discharges that occurred during the reporting period, and any trends or anomalies.
- A review of the chemicals and other substances (including volumes) that were used down-hole during the reporting period (if relevant).
- Details of methodology and results of any biological or environmental monitoring undertaken during the reporting period, and a discussion of any trends or anomalies identified.
- Progressive decommissioning and rehabilitation undertaken during the reporting period.
- Details of any new or increased environmental impacts or risks identified during the reporting period.
- Details of all training and exercises undertaken during the reporting period (including emergency response exercises, and tests of the OSCP).
- Details of all stakeholder engagement and consultation undertaken during the reporting period.

The methods and timing for reporting must be identified in the EP. DMIRS recommends that reports be submitted within three months of the end of the reporting period.

Guidelines for Preparing Petroleum Annual Environmental Reports are available on the DMIRS website to provide operators with further information regarding Annual Environmental Report content requirements.

3.10 Other information in Environment Plan (regulation 17)

Regulation 17

(1) The EP must include the following -

- (a) A statement of the operator's corporate environmental policy.
- (b) A report on all consultations between the operator and relevant authorities and other relevant interested persons and organisations in the course of developing the EP.
- (c) A list of all incidents that are classified as reportable incidents in relation to the petroleum activity.

(2) The EP must classify an incident as a reportable incident if -

- (a) It could arise from the petroleum activity.
- (b) It has the potential to cause an environmental impact that is classified, under the ERA process described in the EP, as moderate or more serious than moderate.

3.10.1 Corporate Environmental Policy

The Corporate Environmental Policy should be relevant to the petroleum activity, be recently signed and dated by a company Executive (e.g. within 2 years), and outline the operator's environmental objectives. The Corporate Environmental Policy should also demonstrate that the operator has a high level of commitment to minimising environmental impacts and risks to ALARP; and encourages continuous improvement initiatives.

3.10.2 Report on stakeholder engagement

A report on all consultation undertaken between the operator and relevant stakeholders must be included in the EP.

Further information regarding this regulatory requirement is detailed in section 3.8.

3.10.3 Reportable incidents

The Regulations require the operator to include a list of all incidents that are classified as reportable incidents in relation to the petroleum activity, in the EP.

Further information regarding this regulatory requirement is detailed in section 4.2.1.

4. Incidents, reports and records

All reports and notifications must be submitted to petroleum.environment@dmirs.wa.gov.au or via the DMIRS Online Submission System.

4.1 Prestart and cessation notifications

DMIRS requests operators inform the Petroleum Environment section of the DMIRS Petroleum and Energy Compliance Branch of the start date of the petroleum activity prior to the commencement of activities onsite (i.e. mobilisation to site); and provide notification of the completion date within one week of the petroleum activity ceasing (i.e. demobilisation from site). Note that ongoing monitoring and maintenance may still continue after DMIRS has been advised of a cessation notification, and ongoing reporting requirements must continue to be met (see sections 3.9.1, 4.2 and 4.3.2).

Additionally, operators are requested to notify DMIRS of any changes to stages of the petroleum activity. Note these stages must already be covered under an approved EP.

4.2 Incident reporting (regulation 28, 29 and 30)

4.2.1 Reportable incidents

The Regulations define a reportable incident as:

- An incident that is classified as a reportable incident under the EP for the petroleum activity.
- An incident arising from the petroleum activity if:
 - The incident has caused, or has the potential to cause, an adverse environmental impact; and
 - Under the ERA process described in the EP for the petroleum activity, that environmental impact is categorised as moderate, or more serious than moderate.

Reportable incidents must be clearly specified in the EP; as part of the ERA (based on the inherent consequence levels), and in the implementation strategy of the EP. To ensure clarity on what constitutes a reportable incident, operators should use quantitative (size or number that can be measured) and/or qualitative (quality or characteristic value that can be observed) descriptors. The requirement to report the identification of any significant new or increased environmental impacts or risks to DMIRS should also be included.

The Regulations require the operator of an activity to notify DMIRS of a reportable incident as soon as practicable, and in any case within two hours after the first occurrence of the reportable incident; or after the time that the operator becomes aware of the reportable incident.

A written report must be submitted as soon as practicable, but no later than three days after the reportable incident first occurred.

The written report(s) must contain detailed information (Table 15) about the reportable incident, any action taken to avoid or mitigate any adverse environmental impacts, and any action taken (or proposed to be taken) to prevent recurrence.

DMIRS may require further information regarding the reportable incident depending on the level of environmental impact caused by the incident, the results of any investigations/root cause analysis, or the status of the action(s) to be taken.

Table 15: Example of information to be provided in a written incident report

- Facility name, petroleum title(s), site name, or location where the reportable incident occurred.
- Name of the operator responsible for the overall management of the petroleum activity.
- Time and date of the reportable incident.
- Names and contact details of any witnesses.
- Name, position and telephone number of person(s) submitting the report.
- Reportable incident details and description.
- Description of the petroleum activity being undertaken at the time of the reportable incident.
- Estimated quantity, composition and known toxicity of any fluids that escaped (if relevant).
- Duration of escape (if relevant).
- Details of any environmental impacts.
- Any action taken to avoid or mitigate any adverse environmental impacts.
- Arrangements for investigations/root cause analysis. Note that regulatory investigation may be required, and will be evaluated once the report is received.
- Any action taken, or proposed to be taken to prevent a similar reportable incident.

4.2.2 Recordable incidents

The Regulations define a recordable incident as an incident arising from the petroleum activity that breaches an EPO or EPS in the EP for the petroleum activity, and is not a reportable incident. A written report must be submitted to DMIRS as soon as practicable and in any case within 15 days after the end of the month to which it relates.

At a minimum, the following information must be included in the written report:

- Details of the approved EP(s), including document title, revision, EARS identification number, and associated petroleum title(s) covered by the report.
- A record of all recordable incidents that occurred during the reporting period (calendar month), including the location where they occurred.
- All material facts and circumstances concerning those recordable incidents that the operator knows or is able, by reasonable search or inquiry, to find out.
- Any action taken to avoid or mitigate any adverse environmental impacts of those recordable incidents.
- Any action taken, or proposed to be taken, to prevent similar recordable incidents.

In circumstances where no recordable incidents occurred during the month, the operator must provide DMIRS with a statement to that effect (i.e. a written report confirming there were nil recordable incidents).

4.3 Requirements relating to emissions and discharges (regulation 33 and 34/33)

4.3.1 Discharge, injection or re-injection of produced formation water

The operator of a petroleum activity must ensure that the concentration of petroleum in any PFW does not exceed the following concentration (where relevant):

- For PFW discharged to sea, an average of 30 mg/L over any period of 24 hours.
- For PFW injected or re-injected into a well, the maximum permissible concentration specified by the operator in the EP.

Where PFW may be injected or re-injected into a well, the operator must therefore specify a maximum permissible concentration of petroleum. An exceedance of this specified concentration must be reported to DMIRS.

Please note this requirement only applies to the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012, and the Petroleum (Submerged Lands) (Environment) Regulations 2012.

4.3.2 Monitoring and reporting on emissions and discharges

The Regulations require the operator of an activity to monitor all emissions and discharges to any land, air, marine, seabed, sub-seabed, groundwater, sub-surface or inland waters environment.

Examples of emissions and discharges include, but are not limited to:

- Vehicle and equipment air emissions.
- Flaring and venting air emissions.
- Fugitive air emissions.
- Produced water discharges.
- Reverse osmosis plant discharges.
- Sewage and grey water discharges.
- Waste (e.g. general, recyclable, hazardous).

To satisfy regulatory requirements the EP must detail the following information:

- The emissions and discharges that will be monitored during the petroleum activity (whether during normal operations or otherwise).
- The frequency in which monitoring will be undertaken (either continuously or at specified intervals).
- The frequency and details of any tests to assess the performance of monitoring equipment.

Planned emissions and discharges should be considered during the development of EPOs, EPSs and MC, with a goal to continuously reduce those emissions and discharges to ALARP.

Unplanned emissions and discharges must also be reported to DMIRS as incidents (either recordable incidents or reportable incidents) (see section 4.2).

The operator of the petroleum activity must, for each reporting period (three months), submit a written report of emissions and discharges as soon as practicable, and in any case within 15 days, after the end of the reporting period. The report must also include a summary of the results of any tests to assess the performance of monitoring equipment, undertaken during the reporting period.

Please note this requirement is specified in regulation 34 of the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the Petroleum (Submerged Lands) (Environment) Regulations 2012, and regulation 33 of the Petroleum Pipelines (Environment) Regulations 2012.

For ease of reference, routine and non-routine reporting requirements have been summarised in Table 16.

Table 16: Routine and non-routine reporting requirements

Requirement		Timing
Annual environmental reporting as per regulation 16		
Annual Environmental Reports (see Section 3.9.1)	<p>Regulation 16 requires an operator to report at least annually and demonstrate whether EPOs and EPSs specified in the EP have been met, and the implementation strategy complied with.</p> <p>Reporting is required for all stages of an activity (i.e. from initial ground disturbance until closure objectives and completion criteria have been met).</p> <p>DMIRS recommends that these reports be submitted within three months of the end of each reporting period.</p> <p><i>Guidelines for Preparing Petroleum Annual Environmental Reports</i> are available on the DMIRS website.</p>	<p>Written report submitted at least annually.</p> <p>Frequency and date for submission to be detailed within the EP.</p>
Incident reporting as per regulation 28, 29 and 30		
Reportable incident reporting (see section 4.2.1)	<p>The operator must notify DMIRS of any unplanned incident identified as having a 'moderate or more serious than moderate' consequence level as identified during the ERA process (see section 3.3 and Table 8).</p> <p><i>(E.g. Uncontrolled release or loss of containment (>80L to water or >500L to other areas), fire, quarantine incident, disturbance to a particular environmental sensitivity etc.).</i></p> <p><i>A Reportable Incident Report Template</i> is available on the DMIRS website.</p>	<p>Notification as soon as practicable, but within two hours, followed by a written report within three days.</p>
<p>Note: an activity must not continue if a significant new or increased environmental impact or risk is identified that is not addressed in the approved EP.</p> <p>This must be reported to DMIRS as soon as practicable.</p>		

Recordable incident report (see section 4.2.2)	<p>Any incident arising from the activity that breaches an EPO or EPS specified in the EP and is not classified as a reportable incident.</p> <p><i>(E.g. All spills (<80L to water or <500L to other areas), unplanned gaseous release (<500m³), minor exceedance of limits or concentrations of specified discharges, death or injury to fauna, unplanned flora disturbance).</i></p> <p>A <i>Recordable Incident Report Template</i> is available on the DMIRS website.</p>	<p>Written report submitted monthly, within 15 days after the end of the month to which it relates.</p>
Monitoring and reporting on emissions and discharges as per regulation 33 of the PP(E)R and regulation 34 of the PGER(E)R and PSL(E)R		
Emissions and discharges report (see section 4.3.2)	<p>The operator of an activity must monitor and report to DMIRS all emissions and discharges to any land, air, marine, seabed, sub-seabed, groundwater, sub-surface or inland waters environment that occur in the course of the petroleum activity.</p> <p>An <i>Emissions and Discharges Report Template</i> is available on the DMIRS website.</p>	<p>Written report submitted every three months, within 15 days after the end of the reporting period.</p>

4.4 Storage of records and making records available (regulation 31 and 32)

Regulation 31 of the Regulations requires the operator to store and maintain documents and records for a minimum of five years.

In accordance with Regulation 32, the operator of a petroleum activity must make these records available to DMIRS upon request to demonstrate compliance with the EP.

The EP should identify the types of environmental records that will be maintained.

The types of documents and records that may be maintained by the operator include, but are not limited to:

- The EP for the activity (including the OSCP).
- Revisions and proposed revisions of the EP (including the OSCP).
- Written reports (including monitoring, audit and review reports) about environmental performance, or about the implementation strategy.
- Records of monitoring and test results associated with emissions and discharges.
- Records of calibration and maintenance of monitoring devices used in accordance with the EP.
- Records and copies of recordable and reportable incidents (i.e. details and associated investigations undertaken).
- Any other records that may be used to demonstrate compliance with the implementation strategy of the EP.

A summary of documents and records to be maintained may be displayed as a list in the EP, or included in the tables shown in section 3.4. where they can be linked to relevant MC.

5. Submission and assessment of an Environment Plan

The *Environmental Applications Administrative Procedures*, which is available on the DMIRS website, outlines:

- DMIRS procedures for screening and assessing environmental applications, and making decisions.
- The statutory and agreed administrative requirements for interaction of assessments with those required under other legislation.
- The target timeframes for completing environmental assessments.

5.1 Submission (regulation 9)

Before commencing a petroleum activity, the operator of the petroleum activity must submit an EP to DMIRS and receive approval. DMIRS recommends that EPs are submitted at least three months prior to the proposed commencement date of the petroleum activity, and at least six months in advance for larger scale projects and/or activities within environmentally sensitive areas. Operators should therefore submit the EP as early as possible to reduce the likelihood of project delays.

As DMIRS has adopted a paperless system, the online Environmental Assessment and Regulatory System (EARS Online) is required to be used for the submission of all EPs.

EARS Online is available through the DMIRS website and all users must register to obtain access. Registration will require the submission of a form which provides the operator details, and the details of an authorising officer. The authorising officer must not be the person applying for access, and should be someone occupying a managerial position within the operator's corporate structure.

Operators may choose to provide access to the EARS Online system to contractors or consultants. This is managed by the operator's administrative person who has the ability to add and remove permissions as required.

Access to EARS Online is only available for operators and their authorised personnel.

Once an EP is submitted, DMIRS will screen the application to ensure the document meets the form and content requirements of regulations 9(3)(a) and 13 of the Regulations. Failure to meet these requirements may result in DMIRS declining to accept the application for assessment. In these circumstances, the operator must address the deficiencies identified by DMIRS, prior to making a further submission. Once the submission of an EP is accepted, it will be assessed against the criteria in regulation 11(1) of the Regulations (see section 5.5), and further information may be required at that time.

5.2 Public disclosure document

DMIRS is committed to ongoing improvements to transparency arrangements, particularly in relation to public disclosure of environmental data and information received. In order to improve public availability of information, at the time of submission of an EP the operator will be required to:

- Consent to the use of the EP as the public disclosure document; or
- Provide a confidential copy of the EP for public disclosure; or
- Provide a summary of the EP for public disclosure (see section 5.2.1).

Operators must ensure they do not include sensitive information about the petroleum activity (e.g. coordinates of heritage sites, identity of personnel, contact details of stakeholders etc.) in the public disclosure document.

Publicly available information regarding environmental applications can be found on the DMIRS website.

5.2.1 Public disclosure summary (regulation 11(8))

A public disclosure document must include a summary of the following information:

- Contact details of the operator of the petroleum activity or the nominated liaison person.
- Location of the petroleum activity (e.g. coordinates and locality maps).
- Description of the existing environment that may be affected by the petroleum activity.
- Details of the construction and layout of any facility.
- Operational details of the petroleum activity and proposed timetables.
- Environmental impacts and risks of the petroleum activity.
- The implementation strategy included in the EP.
- Consultation that has been undertaken during the development of the EP and that is to be undertaken in accordance with the implementation strategy.
- Disclosure of any chemicals and other substances that may be used down hole during the course of the petroleum activity.

5.3 Assessment timeframes (regulation 10)

The Regulations provide a 30 day period for DMIRS to make a decision about an EP. Within that timeframe DMIRS must:

- Approve the EP; or
- Refuse to approve the plan; or
- Give written notice to the operator stating a decision about the plan is unable to be made within the 30 day timeframe, and provide a proposed timeframe for this consideration to occur.

If the EP does not meet the requirements of the Regulations, DMIRS will provide the operator with a reasonable opportunity to modify and resubmit the plan. If resubmission of the EP is required, DMIRS will have a further 30 day period to make a decision on the revised EP.

All environmental applications are processed in the order in which they are received. DMIRS will only consider 'fast-tracking' applications in exceptional circumstances, and specifically where it is demonstrated that the approval is required for the following reasons:

- To address an immediate safety risk.
- To prevent significant environmental impact from occurring or continuing.
- In response to an emergency event.
- To address an error made by DMIRS in issuing a previous approval.

Any requests for prioritisation of applications must be made in writing to the Executive Director, Resource and Environmental Compliance Division, DMIRS. Project timeframes as a result of poor planning will not be considered a valid reason for prioritising the assessment of an application. Further information is available in the *Environmental Applications Administrative Procedures* referenced in section 5 above.

5.4 Environment Plan assessment (regulation 11)

The assessment of an EP includes a number of steps and often involves interaction with a range of government departments and stakeholders.

Figure 3 provides an overview of the environmental assessment and approval processes for petroleum activities regulated under State legislation, and provides guidance on the documentation required as part of that process.

Once an operator has obtained the necessary petroleum title they should consult with the Petroleum Environment Section of the DMIRS Petroleum and Energy Compliance Branch to clarify environmental approval requirements for the petroleum activity, and obtain guidance on other agency involvement (where necessary and/or relevant).

During the assessment of an EP, DMIRS will assess the content of the EP against the requirements of the Regulations. As outlined in the *Environmental Applications Administrative Procedures*, DMIRS may request modifications be made where it is determined that the EP does not contain sufficient information to complete the assessment, or if the EP does not meet the requirements of the Regulations.

Where requests for modifications have been made on multiple occasions, and DMIRS determines the EP still does not meet the requirements of the Regulations, the EP will be refused in accordance with regulation 11(3).

Where the environmental impacts and risks are deemed unacceptable, DMIRS will advise the operator accordingly.

If the EP is deemed to meet the criteria for approval (see section 5.5), and all of the requirements of the Regulations, DMIRS will issue the operator with a Notice of Decision letter advising them that the EP has been approved.

5.5 Criteria for approval (regulation 11(1))

In order for an EP to be approved, the Minister must be reasonably satisfied that the plan meets the following criteria:

- Is appropriate for the nature and scale of the petroleum activity.
- Demonstrates that the environmental impacts and risks of the petroleum activity will continuously be reduced to ALARP.
- Demonstrates that the environmental impacts and risks of the petroleum activity will be of an acceptable level.
- Provides for appropriate EPOs, EPSs and MC.
- Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements.
- For the requirement mentioned in regulation 17(1)(b) – demonstrates that there has been an appropriate level of consultation with relevant authorities and interested persons and organisations.
- Complies with Division 3 of the Regulations.

5.6 Withdrawal of approval of an Environment Plan (regulation 25)

DMIRS, under delegation of the Minister, may withdraw the approval of an EP on any of the following grounds:

- The operator or titleholder for the petroleum activity has not complied with a direction given by the Minister.
- The operator has not complied with regulation 7, 8, 18, 19, 20 or 23.
- The operator has not complied with imposed conditions.
- DMIRS has refused to approve a proposed revision of the EP or the OSCP.

Before withdrawing the approval of an EP, DMIRS must set out reasons for the decision, and give the operator at least 30 days written notice of the intention to withdraw approval of the EP.

Operators are advised that it is an offence to conduct a petroleum activity without a DMIRS approved EP.

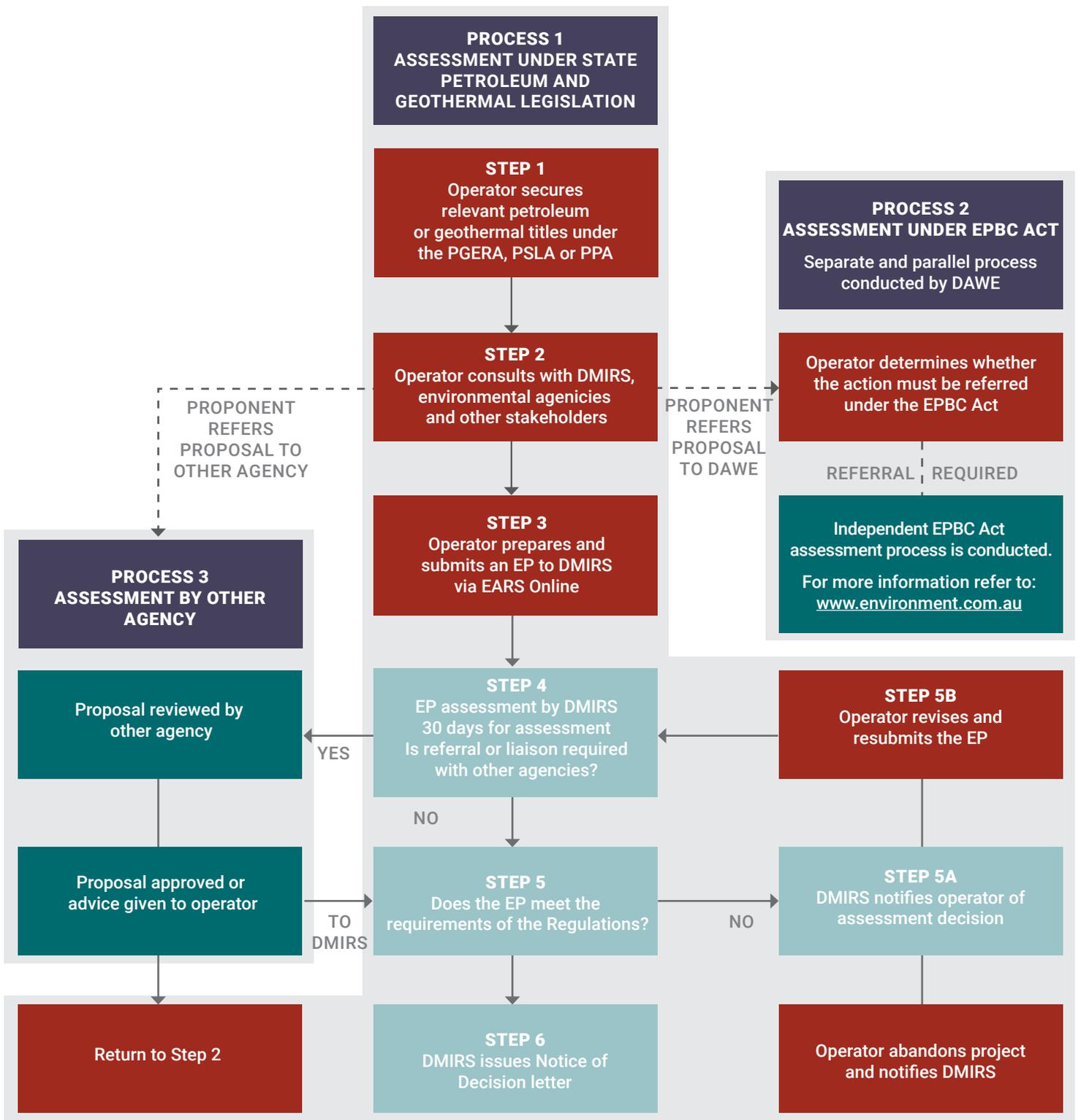


Figure 3: Schematic representation of the Environment Plan assessment process for petroleum activities in Western Australia

■ Actions taken by operator
 ■ Actions taken by DMIRS
 ■ Actions taken by other agencies

Appendix A – Abbreviations

ALARP	As Low as is Reasonably Practicable
APGA	Australian Pipelines and Gas Association
APPEA	Australian Petroleum Production and Exploration Association
AS/NZS	Australian /New Zealand Standard
Basel Convention	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
BC Act	<i>Biodiversity Conservation Act 2016</i>
BD	Bridging Document
BIA	Biologically Important Areas
Bonn Convention	Convention on the Conservation of Migratory Species of Wild Animals
CALM Act	<i>Conservation and Land Management Act 1984</i>
CAMBA	China Australia Migratory Bird Agreement
DAWE	Australian Government Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DMIRS	Department of Mines, Industry Regulation and Safety ¹
DMP	Department of Mines and Petroleum (now DMIRS)
DoT	Department of Transport
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning Lands Heritage
DWER	Department of Water and Environmental Regulation
EARS Online	Environmental Assessment and Regulatory System
EIA	Environmental Impact Assessment
EP	Environment Plan
EPA	DWER Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPO	Environmental Performance Objective
EPS	Environmental Performance Standard
ERA	Environmental Risk Assessment
ESA	Environmentally Sensitive Area
ESD	Ecologically Sustainable Development
HDPE	High Density Polyethylene

Appendix A – Abbreviations (Continues)

IVMS	In Vehicle Monitoring System
JAMBA	Japan Australia Migratory Bird Agreement
JTSI	Department of Jobs, Tourism, Science and Innovation
MARPOL	International Convention for the Prevention of Pollution from Ships 1973 ("MARPOL" is short for Marine Pollution)
MC	Measurement Criteria
MCMPR	Ministerial Council on Mineral and Petroleum Resources
MoU	Memorandum of Understanding
NATA	National Association of Testing Authorities
NES	National Environmental Significance
NORM	Naturally Occurring Radioactive Materials
NVCP	Native Vegetation Clearing Permit
OSCP	Oil Spill Contingency Plan
PEC	Priority Ecological Community
Petroleum Activity	Petroleum, geothermal and pipeline activities
PFW	Produced Formation Water
PGERA	<i>Petroleum and Geothermal Energy Resources Act 1967</i>
PPA	<i>Petroleum Pipelines Act 1969</i>
PSLA	<i>Petroleum (Submerged Lands) Act 1982</i>
Ramsar Convention	Ramsar Convention on Wetlands of International Importance
ROKAMBA	Republic of Korea Migratory Bird Agreement
SMART	Specific, Measurable, Achievable, Relevant, Time-based
TEC	Threatened Ecological Community
The Regulations PGER(E)R PP(E)R PSL(E)R	Collective term for the three sets of Petroleum Environment Regulations listed below: <ul style="list-style-type: none"> • Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 • Petroleum Pipelines (Environment) Regulations 2012 • Petroleum (Submerged Lands) (Environment) Regulations 2012
UNCLOS	United Nations Convention on the Law of the Sea
WABSI	Western Australian Biodiversity Science Institute
WA	Western Australia
WN	Written Notification

¹ The Department of Mines, Industry Regulation and Safety under the delegation, and on behalf, of the Minister for Mines and Petroleum.

Appendix B – Referrals

This section provides an overview of referrals to other agencies that may be required prior to or during the assessment of an EP by DMIRS.

Department of Mines, Industry Regulation and Safety

DMIRS is the lead regulator and decision-making authority for resource development in WA under the PGERA, PSLA, and PPA. DMIRS is responsible for the management of the resources industry to ensure that development occurs in a manner that is safe, environmentally acceptable, and achieves community and stakeholder confidence. The Regulations provide the regulatory framework for onshore and offshore petroleum activities in WA and outline the requirements for an EP.

Clearing undertaken for an EP currently requires a Native Vegetation Clearing Permit (NVCP) under Part V of the EP Act unless it meets one of the exemptions listed under this Act or the Environmental Protection (Native Vegetation Clearing) Regulations 2004. DMIRS has been delegated to accept, assess and approve NVCP applications relating to petroleum activities in WA.

For further information on the submission and assessment of NVCPs, please see the DMIRS website.

Activities on reserved and otherwise dedicated lands

In some instances consent for petroleum activities may be required for access to certain reserved and otherwise dedicated lands under section 15A of the PGERA (e.g. for activities in a National Park, Nature Reserve etc.). Consent may be required from the Minister for Mines and Petroleum, and the Ministers responsible for the affected reserves/lands.

Other agency advice and referrals

The assessment and approval process for an EP often requires advice or endorsement from other agencies including but not limited to:

- DWER, EPA services: administering Part IV of the EP Act.
- DWER, Water services: administering the *Rights in Water and Irrigation Act 1914*, the *Metropolitan Water Supply Sewerage and Drainage Act (1909)*, the *Country Areas Water Supply Act 1947*, the *Waterways Conservation Act 1976*, the *Water Agencies Powers Act 1984*, and the *Water Services Act 2012*.
- DWER, Environmental Regulation services: administering Part V of the EP Act, and the *Contaminated Sites Act 2003*.
- DBCA: administering the BC Act and the *Conservation and Land Management Act 1984* (CALM Act).
- Department of Jobs, Tourism, Science and Innovation (JTSI): administers State Agreements for operators proposing to undertake significant projects in WA.
- Department of Transport (DoT): responsible for maintenance and implementation of the *State Hazard Plan Maritime Environmental Emergencies*.
- Radiological Council: administering the *Radiation Safety Act 1975*.
- DAWE: administering the Australian Government EPBC Act.

Advice or endorsement from other agencies will be sought on a case-by-case basis and/or in accordance with relevant inter-departmental agreements, Memorandums of Understanding (MoU), Administration Agreements etc.

Where possible, DMIRS will assess an EP in parallel with other environmental assessments or approvals. Further information regarding parallel processing can be found in the *Environmental Applications Administrative Procedures* available on the DMIRS website.

Department of Water and Environmental Regulation

DWER is responsible for environment and water regulation, serving as a 'one stop shop' for industry, with the aim of streamlining and simplifying regulation associated with WA's environment and water resources.

Further guidance relating to these services (EPA, Water, and Environmental Regulation) is available on the DWER website.

Environmental Protection Authority Services Directorate

EPA services, DWER conducts Environmental Impact Assessments (EIA) of significant proposals in WA in accordance with Part IV of the EP Act.

A referral process (Administration Agreement) between DMIRS and EPA exists for proposals that are deemed environmentally significant. As well as the significance test, there are a number of triggers outlined in the Administration Agreement that requires DMIRS to either liaise with EPA or refer activities to EPA in accordance with section 38(5) of the EP Act. The *Administration Agreement between DMIRS and DWER* is available on the DMIRS website.

Operators are encouraged to liaise with EPA during the planning phase if there is the potential that referral of the petroleum activity will be required (i.e. it meets the significance test, or where a trigger for referral under the Administration Agreement is identified). Where referral is required, it is recommended that operators refer the proposal directly to EPA.

Once a proposal is referred, EPA will then make a decision as to whether the proposal requires a formal EIA.

DMIRS assessment can run in parallel to the EP Act process, however, DMIRS will be constrained from making a decision on the proposal until the Minister for the Environment has made a decision under Part IV of the EP Act.

Water

Water services, DWER plans and manages all water resources throughout WA. A referral process (Administration Agreement) between DMIRS and DWER exists for proposals that may impact on water resources. The *Administration Agreement between DMIRS and DWER* is available on the DMIRS website.

Operators are encouraged to liaise with DWER during the planning phase of a petroleum activity if it is identified (in the Administrative Agreement) that DMIRS will be required to seek advice from DWER. This is likely to reduce the requirement for further information to be provided during the EP assessment process (i.e. provision of information to the satisfaction of DWER).

Specific water resource related approvals (i.e. Bed and Banks Permits, Licences to Take Water, Licences to Construct or Alter a Well (water bore) etc.) may also be required from DWER.

Environmental Regulation

Environmental Regulation services, DWER assumes responsibility for all environment and water regulation. Works approvals and licences (or registration) required for the construction and operation of all prescribed premises are administered under Part V of the EP Act. There are a number of prescribed premises described in the Environmental Protection Regulations 1987 that relate to petroleum activities.

Operators are encouraged to liaise with DWER during the planning phase of a petroleum activity if it is identified that a works approval may be required.

DMIRS assessment can run in parallel to the DWER works approval and/or licensing processes, and DMIRS will not be constrained from making a decision on the proposal

In accordance with the *Contaminated Sites Act 2003*, known or suspected contaminated sites must be reported to DWER, investigated and, if necessary, remediated. The ongoing management and operation of a reported site must also be described in the EP submitted to DMIRS.

Department of Biodiversity, Conservation and Attractions

DBCA is responsible for administering the BC Act and the CALM Act.

Where a petroleum activity is proposed to be undertaken within, or in close proximity to reserved lands or waters (e.g. Nature Reserve, State Forest, Marine Park etc.) managed under the CALM Act, operators should liaise with DBCA. Where entry into CALM Act reserves is proposed, the Minister responsible for managing the reserve (Minister for Environment) will also be required to consider the proposal via the section 15A consent process (in accordance with the PGERA).

DBCA is also responsible for the protection of flora and fauna under the BC Act. Where there is the potential for impacts to rare or threatened flora and/or fauna, or other ecosystem values (such as TECs, PECs and BIAs), DMIRS may seek advice from DBCA regarding the proposal.

Operators are encouraged to liaise with DBCA if the petroleum activity is likely to impact CALM Act reserves, or if impacts to flora, fauna or ecological communities of conservation significance are likely. If sufficient evidence of engagement and consultation with DBCA is provided in the EP, DMIRS may not need to request advice from DBCA regarding the proposal.

Department of Jobs, Tourism, Science and Innovation

JTSI is the lead agency for economic development, international trade and investment, and tourism. JTSI also leads the promotion and development of the resources, defence, international education, science, and innovation sectors in WA. Of relevance to the petroleum industry, JTSI administers State Agreements, which are legal contracts between the WA Government and operators, and detail the rights, obligations, terms and conditions for the development of a specific project. Operators with relevant State Agreements should liaise with JTSI prior to submitting an EP to DMIRS.

Further guidance is available on the JTSI website.

Department of Transport

DoT is the hazard management agency for marine pollution response in WA. DMIRS may seek advice from DoT on OSCPs for offshore petroleum activities in State waters, or nearshore petroleum activities where there is a potential for impacts to State waters. This is to ensure the OSCP is consistent with the *State Hazard Plan Maritime Environmental Emergencies*.

Further guidance is available on the DoT website.

Radiological Council

The Radiological Council is an independent statutory authority appointed under the *Radiation Safety Act 1975* in WA to assist the Minister for Health to protect public health and to maintain safe practices in the use of radiation. Of relevance to the petroleum industry, the Radiological Council regulates the storage and management of radioactive substances such as Naturally Occurring Radioactive Materials (NORM). The *Memorandum of Understanding between DMIRS (formerly the Department of Industry and Resources) and the Radiological Council in relation to the Regulation of NORM associated with Petroleum Exploration and Production* exists for petroleum activities where NORMs have been identified. If NORMs associated with a petroleum activity is discovered in WA, DMIRS will advise the Radiological Council. Additionally, DMIRS will advise the petroleum operator of the need to apply for registration with the Radiological Council.

Further guidance is available on the Radiological Council website.

Australian Government Department of Agriculture, Water and the Environment

DAWE is responsible for administering the EPBC Act, which provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of National Environmental Significance (NES).

Operators are encouraged to liaise with DAWE during the planning phase of a petroleum activity where there is the potential for matters of NES to be impacted, to determine whether referral is required. Should referral of the proposal be required, the assessment of the EP by DMIRS is undertaken independently of any assessments undertaken by DAWE.

To reduce duplication between State and Australian Government agencies, certain relevant agencies will seek to undertake environmental assessments under a single process (e.g. DAWE and DWER). Bilateral agreements of relevant environmental assessment and approval processes continue to be negotiated.

Further guidance (including access to a number of useful databases and applications, and information regarding bilateral agreements) is available on the DAWE website.

Government of Western Australia

**Department of Mines, Industry Regulation
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