



Preparing operation plans

Guideline for authority holders
under the *Petroleum Act 1998*

VICTORIA
State
Government

Energy,
Environment
and Climate Action

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Table 1: Acronyms List

Acronym	Meaning
ABN	Australian business number
AIIMS	Australasian Inter-service Incident Management System
AIPM	Australian Institute of Project Management
ANZG	Australia and New Zealand Guidelines for Fresh and Marine Water Quality 2018
APGA	Australian Pipelines and Gas Association
APPEA	Australian Petroleum Production and Exploration Association
AS	Australian Standard
BOP	Blow out preventer
COP	Code of practice
CO2	Carbon dioxide
DEECA	Department of Energy, Environment and Climate Action (formerly DELWP: Department of Environment, Land, Water and Planning) or successor
DJPR	Department of Jobs, Precincts and Regions (succeeded by DJSIR: Department of Jobs, Skills, Industry and Regions)
EES	Environment Effects Statement
EMP	Environment Management Plan
EPA	Environment Protection Authority (Victoria)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERR	Earth Resources Regulation
ERS	Environment Reference Standard
GED	General environmental duty
Ha	Hectare
H2S	Hydrogen sulphide
IAP2	International Association for Public Participation
IEMT	Incident emergency management team
IMT	Incident management team
ISO	International Organisation for Standardisation
KPI	Key performance indicator
MOU	Memorandum of Understanding
RRAM	Resource Rights Allocation and Management System
TOR	Terms of reference
TDS	Total dissolved solids (measured in milligrams per litre)
VVG	Visualising Victoria's Groundwater (public information database)
WIMS	Well integrity management system
WOMP	Well operation management plan

1. Background

1.1 Purpose of this guideline

The purpose of this guideline is to provide holders of petroleum exploration permits, retention leases, production licences, special access authorisations and special drilling authorisations with guidance in preparing and submitting operation plans in accordance with section 161 of the *Petroleum Act 1998* (the Petroleum Act) and variations to operation plans in accordance with section 163 of the Petroleum Act.

Note: The information in this publication is provided for general purposes only. Earth Resources Regulation has made every reasonable effort to provide current and accurate information. This publication reflects the law as at the date of publication but may not reflect the law after this date and is not to be relied on as legal advice. The Department of Energy, Environment and Climate Action (DEECA) accepts no liability for losses caused by reliance on the material in this publication.

1.2 Scope of this guideline

The scope of this guideline includes the following:

- support the preparation of an operation plan from planning through to development, submission and consideration and ongoing monitoring and consents required
- provide guidance on preparing operation plans and the information required to be included in operation plans, including:
 - communications and engagement provisions
 - environment management plans
 - rehabilitation plans
 - emergency response manuals; and
 - well operation management plans.

1.3 Other relevant guidance

1.3.1 Standards from other organisations

The International Organisation for Standardisation (ISO) is an international non-government organisation made up of national standards bodies. It develops and publishes a vast array of proprietary, industrial and commercial standards and is made up of representatives from various national standards organisations.

One of the objectives of the Petroleum Regulations 2021 (Regulations) includes eliminating or minimising hazards and risks to the environment, public amenity and public safety so far as is reasonably practicable. One way of achieving this may be through compliance with ISO publications:

- SO 31000:2018 provides guidance on managing risks faced by organisations. It is based on a common approach to managing any type of risk and is not industry or sector specific. Authority holders should consider ISO 31000:2018 in the approach to managing risks.
- ISO 14001:2015 provides guidance on establishing environment management systems. It is based on a common approach to managing environmental issues and is not industry or sector specific. Authority holders should consider ISO 14001:2015 in the approach to managing environmental issues.

- APPEA/APGA Code of Environmental Practice provides guidance on establishing environment management systems specific to the upstream petroleum industry. Authority holders should consider the APPEA/APGA Code of Environmental Practice in the approach to managing environmental issues.
- AS 2885.3-2012 provides standards on managing pipelines that contain and convey petroleum. It is industry-specific and an industry adopted standard for constructing, operating and decommissioning any pipelines.

The operation plan should set out which standards have been observed in its preparation.

1.3.2 Code of Practice for Petroleum Wells (Vic)

The Code of Practice for the Construction, Operation and Decommissioning of Petroleum Wells in Victoria (COP) provides practical guidance to authority holders carrying out petroleum operations that involve wells. The COP has been developed under section 250 of the Petroleum Act to inform industry how to minimise and manage risks associated with onshore petroleum wells, including construction, operation and decommissioning so that:

1. The impacts on members of the public and the environment, land and property as a result of petroleum operations will be minimised as far as is reasonably practical; and
2. Land affected by petroleum activities is rehabilitated.

The COP is to be read in conjunction with the Petroleum Act and Regulations.

The COP is referred to in the Well Operation Management Plan (WOMP) chapter of this guideline (chapter 6) and should be considered when developing a WOMP. A copy of the COP can be viewed on the Earth Resources Regulation website.

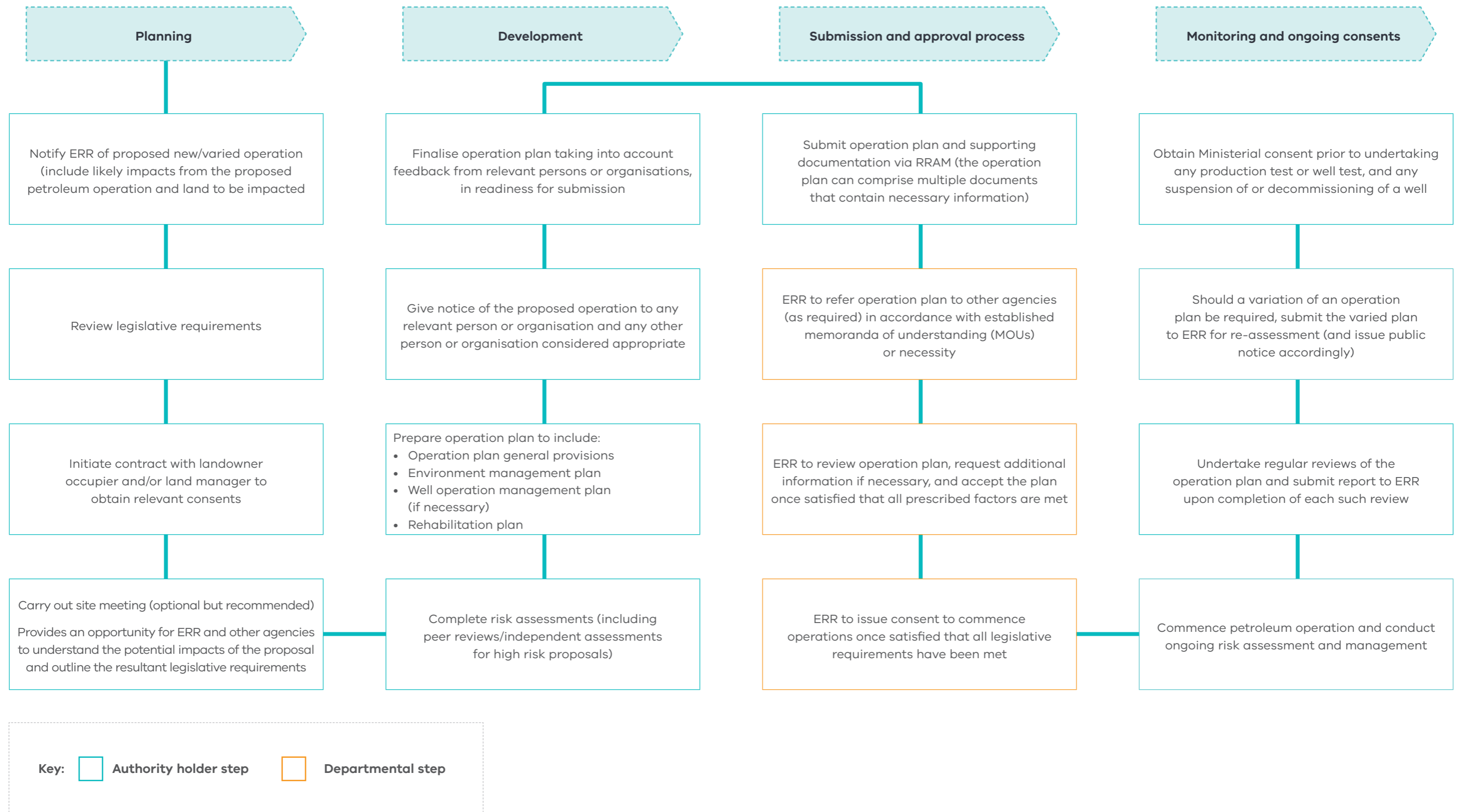
1.4 Petroleum Regulations 2021

The Regulations are made under section 252 of the Petroleum Act and set out prescribed requirements to support the administration of the Petroleum Act including the content of operation plans. The Regulations have a strong focus on the requirements for community consultation, risk mitigation as far as is reasonably practicable, enhanced reporting requirements and other requirements to support achieving the objectives of the Petroleum Act.

The Regulations can be sourced here: [Petroleum Regulations 2021 \(legislation.vic.gov.au\)](https://legislation.vic.gov.au/Petroleum-Regulations-2021)

Note: the Regulations use the term ‘as far as is reasonably practicable’ in relation to minimisation and mitigation of risks. A similar term is used in the *Environment Protection Act 2017* in the context of requiring a person engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste, and to minimise those risks so far as reasonably practicable. Guidelines from the Environment Protection Authority (EPA) are referenced and will assist you to demonstrate compliance with your general environmental duty (GED) when the operation plan is referred to the EPA.

Figure 1: Summary of key activities involved in developing and maintaining an operation plan



2. Approval and consent requirements

This chapter is intended to highlight the process of submitting your operation plan, including key planning considerations and the different consents you may be required to obtain.

Note that planning considerations additional to the operation plan are referenced in Appendix 3.

2.1 Proposal, assessment and approval process

2.1.1 Pre-submission recommendation – site visit

An authority holder should approach Earth Resources Regulation early to discuss the issues regarding the proposed petroleum operation and the land to be impacted. The authority holder should provide a brief outline of the nature of the proposed project to our Assessments team (workplan.approvals@ecodev.vic.gov.au).

An initial site visit is voluntary but highly encouraged and should be conducted for all new sites (as relevant). It is considered an effective way for authority holders to progress their proposal. The objectives of the site visit are to:

- provide an opportunity for Earth Resources Regulation and other relevant agencies to understand the potential impacts of the proposal on their areas of responsibility
- provide an opportunity for authority holders to understand the requirements of each agency
- discuss issues and requirements with us and other relevant agencies regarding the proposal.

It is the responsibility of the authority holder to coordinate this site visit. Earth Resources Regulation will identify the relevant agencies, and provide their contact details, based on the nature of the project.

An authority holder should invite each agency to point out their requirements (as determined by relevant legislation, guidelines, or policies) regarding the proposed activity. The site visit is often the starting point for ongoing discussions and initiation of applications for meeting other requirements.

Note: a site visit is not requested for every variation of an operation plan. However, if the variation changes the scope of work at a site significantly, then a further site visit may be warranted.

2.1.2 Submission timing

All operation plans are to be submitted via our online system called RRAM. To submit an operation plan, a plan record must first be created in RRAM against the relevant authority and assigned to an authorised contact of the authority holder. Contact Earth Resources Regulation via workplan.approvals@ecodev.vic.gov.au to request this be created.

All operation plan documents must be in MS Word or PDF format.

When submitting an operation plan, ensure it clearly identifies a contact name, telephone number and email address of a representative to which requests for further clarification can be directed.

It is recommended that authority holders submit an operation plan at least six (6) months prior to proposed commencement. Once an operation plan is submitted, the Minister is required, within a reasonable time, to refuse to accept or accept the operation plan subject to any conditions the Minister considers appropriate. We commit to making a decision (accept, require additional information or refuse to accept) within 90 days of each submission or resubmission.

To streamline this timeline, Earth Resources Regulation suggests that the operation plan undergo a peer review prior to submission. Not only is it a quality control measure but it promotes good governance and could potentially accommodate learnings from other projects and jurisdictions. The review approach, including peer(s) engaged, the recommendations, and how the findings/recommendations have been addressed, should be outlined in a separate document.

If a peer review will not occur, the operation plan should be submitted as early as possible to Earth Resources Regulation for assessment (prior to commencement of proposed works).

2.1.3 Referral

Earth Resources Regulation has in place memoranda of understanding (MOUs), or agreements, to ensure activities carried out support those of other regulators and vice versa. These agreements identify how we manage regulatory connectivity, and are in place with WorkSafe, the Environment Protection Authority (EPA), the former Department of Environment, Land, Water and Planning (now DEECA) and the Country Fire Authority. These MOUs place restrictions on the sharing of information and do not require either party to share or disclose documents in circumstances where such information sharing or disclosure would be contrary to law, including section 247 of the Petroleum Act.

The decision to refer individual operation plans (within an area of jurisdiction and technical expertise) depends on the individual MOU in place. The individual MOUs can be located here: [Memoranda of Understanding – Earth Resources](#).

Operation plans can also be referred to other agencies where there is no MOU. The decision to refer will be dependent on the technical issue and role/jurisdiction of the other agency.

Operation plans will typically be referred to all agencies identified to attend the initial site visit.

2.1.4 Acceptance

A decision to accept an operation plan will be based on the requirements of section 161 of the Petroleum Act, regulation 22 of the Regulations and the prescribed factors set out in regulation 24 of the Regulations. In addition, section 20 of the *Climate Change Act 2017* requires decision-makers to consider climate change, where relevant, when making a decision to accept an operation plan. As such, the authority holder should consider how the petroleum operation might affect climate change-related indicators for any relevant environmental aspects when preparing the environment management plan (EMP) (see Chapter 4 of this guideline).

Written notice will be sent to the authority holder if the operation plan has been accepted. Note that acceptance of the operation plan does not give authorisation for the authority holder to commence work as consent from the Minister is still required (see section 2.2).

If the operation plan is not satisfactory, a notice will be issued under regulation 22(4) of the Regulations requiring additional information. The notice may require the additional information to be incorporated into a revised operation plan under regulation 22(5) of the Regulations.

If the operation plan is still not satisfactory upon resubmission or has significant issues, a notice of intention to refuse to accept an operation plan may be issued. It would set out the reasons for the intention and provide an opportunity to address those matters before a final decision is made.

Upon consideration of any further information, if a decision to refuse to accept the operation plan is made, the authority holder will be advised of the decision and be provided with a statement of reasons for the decision.

2.2 Minister's consent to commence operations

Relevant provisions

Section 138 of the Petroleum Act – *Consent of Minister needed to carry out petroleum operations on any land.*

- (1) The holder of an authority must not carry out any petroleum operation on any land without the written consent of the Minister.
- (2) The giving of consent by the Minister—
 - (a) does not relieve the holder of the authority from the requirement to obtain any consents or other authorities required, or comply with any other requirements imposed, by or under this or any other Act; and
 - (b) does not relieve the holder of the authority from liability under this or any other Act for a failure to obtain any necessary consent or other authority or to comply with any applicable requirement.

Section 142 of the Petroleum Act – *Provisions applying to consents*

- (1) If the consent of a person or body is sought for the purposes of this Division, the person or body—
 - (a) must not unreasonably withhold that consent; and
 - (b) may impose any conditions she, he or it considers to be appropriate in giving that consent; and
 - (c) must give or refuse to give that consent within 28 days (or any longer period allowed by the Minister) after the consent is sought.
- (2) A person or body that does not comply with subsection (1)(c) in relation to any land that is not native title land is deemed to have given the consent sought.

The acceptance of an operation plan does not enable an authority holder to commence the petroleum operation. The petroleum operation may require other approvals and processes to be completed under other legislative requirements (see section 4.7). Where this is the case, the Minister will likely give written consent once all other legislative requirements have been met.

If the Minister intends to impose condition(s) on the consent, the authority holder will likely be first consulted on the condition(s).

2.2.1 Consent to conduct production test or well test

Relevant provision

Regulation 28 of the Regulations – *Consent to conduct production test or well test*

- (1) The holder of an authority must not conduct a production test or well test in a well except with, and in accordance with, the written consent of the Minister.
- (2) An application for consent under subregulation (1) must include a plan setting out—
 - (a) the equipment to be used; and
 - (b) the timeframe for the testing; and
 - (c) how 2 verified well barriers will be maintained in the well at all times or, if this cannot be achieved, the alternative measures that will be in place to maintain well integrity; and
 - (d) the controls that will be in place to manage any potential well integrity hazards; and
 - (e) details regarding the suitably qualified or experienced person who designed the well testing; and
 - (f) details regarding the suitably qualified or experienced person who will be onsite to supervise the testing; and
 - (g) details of how any owner or occupier of the land on which the proposed test is to be conducted will be notified of the proposed test.

If the project will include a production test or well test, a separate consent is required under regulation 28 of the Regulations, which is additional to any consent given under section 138 of the Petroleum Act.

We recommend the operation plan includes the details required by regulation 28 of the Regulations if the project will include a production test or well test. This will expedite the process to consider the request for consent. If the operation plan does not include these details, they will be required before this consent could be given.

2.2.2 Consent to suspend or decommission a well

Relevant provision

Regulation 29 of the Regulations – *Consent to suspend or decommission a well*

- (1) The holder of an authority must ensure that a well is not suspended except with, and in accordance with, the written consent of the Minister.
- (2) The holder of an authority must ensure that a well is not decommissioned except with, and in accordance with, the written consent of the Minister.
- (3) An application for consent to suspend or decommission a well must include—
 - (a) the name and number of the well; and
 - (b) the reasons for the proposed suspension or decommissioning; and
 - (c) a plan setting out details of the proposed suspension or decommissioning program, including the method by which the well will be made safe after it is suspended or decommissioned.
- (4) The plan under subregulation (3)(c) must set out—
 - (a) the authority holder's proposed measures for care and maintenance of the well, if proposed to be suspended; and
 - (b) the equipment to be used; and
 - (c) the timeframe for the suspension or decommissioning; and
 - (d) how 2 verified well barriers will be maintained in the well at all times or, if this cannot be achieved, the alternative measures that will be in place to maintain well integrity; and
 - (e) the controls that will be in place to manage any potential well integrity hazards; and
 - (f) the controls that will be in place to maintain well integrity while the well is suspended (including but not limited to the period in which suspension activity is occurring); and
 - (g) details of the suitably qualified or experienced person who will be responsible for designing the suspension or decommissioning of the well; and
 - (h) details of the suitably qualified or experienced person who will be responsible for supervising the suspension or decommissioning of the well; and
 - (i) details of how any owner or occupier of the land on which the well is located will be notified of the proposed suspension or decommissioning of that well.

If the project will include a suspension or the decommissioning of a well, a separate consent is required under regulation 29 of the Regulations, which is additional to any consent given under section 138 of the Petroleum Act.

We also recommend the operation plan includes the details required by regulation 29 of the Regulations if the project will include a suspension or the decommissioning of a well. This will expedite the process to consider the request for consent. If the operation plan does not include these details, they will be required before this consent could be given.

3. Operation plan

Guidance is provided in sections 3.1 to 3.13 and chapters 4, 5, 6 and 7, to support the preparation of an operation plan. An operation plan that is prepared by adopting this structure should assist your understanding of the legislative requirements and assessment of the operation plan.

Given regulation 22 of the Regulations specifies multiple components to be in an operation plan, the operation plan may comprise multiple documents that contain the necessary information.

Note that the operation plan must be appropriate for the nature and scale of the activities to be carried out during the petroleum operation, in accordance with regulation 22(3)(a) of the Regulations.

3.1 Revision history

Establish a version control system to ensure that employees, contractors and Earth Resources Regulation have the current version of the operation plan and supporting documents. Clearly identify the version on each document.

The document identifier is to include the name of the authority holder, its Australian Business Number (ABN) as well as the postal address of the authority holder.

3.2 Approvals

Earth Resources Regulation requests that authority holders include a document control table or equivalent to indicate the internal approval process – i.e. authorised employees' names, position titles and dated signatures showing that the operation plan has been approved and by whom.

3.3 Distribution list

Earth Resources Regulation requests that authority holders list all employees, contractors and sub-contractors who will be provided a copy of the operation plan(s) or parts of the operation plan that are relevant to their work.

3.4 Associated documents

List any supporting documents you intend to submit with the operation plan.

3.5 Definitions and abbreviations

Define technical terms and list the abbreviations used in the document.

3.6 Project overview

3.6.1 Authority holder and contractors

Set out the authority holder(s) and all contractors that will be involved in the proposed activities. Set out the contact details.

3.6.2 Previous projects

Describe the petroleum projects the authority holder has previously undertaken relevant to the proposed petroleum operation.

3.6.3 Work program commitments

If the petroleum operation will be within the boundary of a single authority, include the work program of the authority and list the element(s) of the work program that the proposed petroleum operation is intended to deliver.

If the petroleum operation will extend beyond the boundary of a single authority, include the work program of each authority that the petroleum operation extends into and list the element(s) of each work program that the proposed petroleum operation is intended to deliver.

3.6.4 Project objectives and scope

Briefly outline the objectives of the project (e.g. drill a well that encounters [insert descriptor] formation and test for hydrocarbons).

Set out the scope of the project that details:

- the authority/authorities in place for the entire geographic area of the petroleum operation
- a summary of the range of activities (e.g. site preparation, drill well, well clean-up and test, decommission and rehabilitation); and
- activities that are outside the scope of the proposed petroleum operation.

3.6.5 Proposed activities

Relevant provision

Regulation 22(1)(a)(ii) of the Regulations – *Content of operation plan*

a comprehensive description of the petroleum operation, including details of each of the proposed stages of the petroleum operation that must include, if appropriate, the following stages—

- (A) construction;
- (B) operation;
- (C) decommissioning;
- (D) rehabilitation

Based on the proposed project, the comprehensive description of the petroleum operation must include all relevant stages.

Table 2: Stages for inclusion by activity type

Activity	Construction	Operation	Decommissioning	Rehabilitation
Drilling and testing	✓		✓	✓
Surveying	✓	✓		✓
Ongoing well and pipeline operations (well already constructed)		✓	✓	✓
Decommissioning redundant assets			✓	✓

The comprehensive description of the petroleum operation should clearly set out the site preparation works (e.g. creating/upgrading access to the site, creation of hardstand area incorporating all pits/sumps, fencing), installation and commissioning of the facilities (e.g. mobilisation of drilling rig and ancillary equipment, well clean-up and Christmas tree installation, welding and pipe emplacement of gathering lines), operation of the facilities (e.g. acquiring seismic data, production and/or injection using a well), decommissioning triggers (e.g. data of formation, end of design life of infrastructure) and rehabilitation intentions (e.g. removal of plant and infrastructure, revegetation). The technical details of the petroleum operation should be set out in the subsequent sections of the operation plan.

In addition to the above, the operation plan should include the following details based on the nature of the activity:

Survey (geological, geophysical or geochemical), include details of:

- uphole drills if applicable
- access arrangements
- site preparation activities; and
- contingencies if proposed locations cannot be used.

Drilling, include details of:

- details of the stratigraphic column
- the type of drilling fluid to be used, including composition, volumes, and toxicity
- well testing plan (if applicable), including justification, flow sequence, equipment, and site layout
- the maximum deviation angle and total depth
- description of the well control arrangements
- description and layout of the drainage system, including the capacity of fluid holding area(s); and
- chemical and hazardous substances inventory, including quantities and storage arrangements.

Gathering line, include details of:

- all conditions specified in an exemption from the provisions of the *Pipelines Act 2005* (if applicable)
- all disturbance activities; and
- burial depth.

A gathering line is defined in section 82 of the Petroleum Act. It is defined as a pipeline that is situated wholly within a production licence area or a drilling authorisation area and is to be used or designed to convey petroleum (or petroleum product) from one place to another in that area, or between a drilling authorisation area and a production licence area.

As required by regulation 22(2) of the Regulations, the details of the petroleum operation must be sufficient to enable the Minister to assess whether the facility is adequate for the proposed petroleum operation. Refer to regulation 5 of the Regulations for the definition of a facility.

In addition, as per regulation 22(1)(a)(v) of the Regulations, if the petroleum operation involves petroleum exploration (which is defined in section 7 of the Petroleum Act), provide a statement of the activities that are proposed to be carried out.

3.6.6 Project timeline

Provide proposed commencement and completion dates (or estimates if uncertain), along with any relevant seasonal information that may impact on or constrain the operation.

Provide a timetable for the activities associated with each relevant stage:

- construction of the facility
- obtaining survey data and any other surveying activities
- drilling any well
- production
- decommissioning; and
- rehabilitation.

Weather may be a factor in the timing of an operation. The operation plan should detail the circumstances under which inclement weather will cause a stop to work or other non-routine situation.

3.7 Facilities description

3.7.1 Facilities details

Relevant provision

Regulation 22(1)(a)(i) of the Regulations – *Content of operation plan*

a comprehensive description of the equipment and facilities to be used in the petroleum operation

Regulation 22(1)(c)(i) – (iii) of the Regulations – *Content of operation plan*

must include, in relation to any facility proposed to be used in connection with the petroleum operation—

- (i) a map of the location of the facility; and
- (ii) a description of the location; and
- (iii) details of all the sites related to the petroleum operation (including but not limited to accommodation camps), the activities to be undertaken at those sites and their location on the map referred to in subparagraph (i)

Include a description of all facilities (e.g. drilling rig and its components detailing the technical specifications, survey vibration emitter and geophones detailing technical specifications, gas plant, gathering lines) that will be involved in the petroleum operation.

Provide maps showing all the sites related to the petroleum operation which includes accommodation camps (both by coordinates and the property address), layout of the facilities/equipment at each site indicating what activities will be undertaken at each site and the authority boundary. The maps should also identify notable features (such as landmarks and receptors that will be sensitive to the petroleum operation) and the nearest town(s) and relevant local roads. The maps of the layout or proposed layout must include a scale of labelled distances and must include all non-operational facilities for context.

Schematics of the facilities layout should be included.

3.7.2 Facility construction, maintenance, modifications and decommissioning

Relevant provision

Regulation 22(1)(c)(iv) – (vi) of the Regulations – *Content of operation plan*

must include, in relation to any facility proposed to be used in connection with the petroleum operation—

- (iv) details of the proposed design, construction, installation and maintenance of the facility;
- (v) if the facility is to be modified, details of the proposed modifications; and
- (vi) details of the proposals for the decommissioning of the facility.

Provide details of the design, construction and installation of all facilities to be involved in the petroleum operation. These details must be sufficient to enable the Minister to assess whether the facility is adequate for the proposed petroleum operation (regulation 22(2) of the Regulations).

Note that during all stages of the petroleum operation, maintenance is required to ensure that equipment is fit-for-purpose at all times. Section 166(1) of the Petroleum Act sets out that 'the holder of an authority must maintain in good condition and repair all structures, equipment and other property in the authority area that is used in connection with the petroleum operations being carried out under the authority'. The maintenance details should include an overview of the maintenance program (i.e. activity, scope, objectives, timing/frequency, records/logs) that considers the manufacturer's recommended servicing timelines and the suitability of equipment that will be used for the maintenance activities.

If the facility is to be modified, the details should include:

- triggers for a variation to the operation plan
- specifications of the modification
- the risk review process to be adopted; and
- the final configuration of the facility.

Details of the decommissioning of the facility should include demobilisation of the facility and ensure that any remaining plant and/or infrastructure remains safe following the decommissioning of the relevant facility. Note the following:

- if the facility is a well, there is a requirement to obtain consent to decommission the well, as set out in regulation 29 of the Regulations. This is in addition to an operation plan; and
- section 166(2) of the Petroleum Act sets out that authority holders 'must remove from the authority area all structures, equipment and other property that are not being used, or that are not to be used, in connection with the petroleum operations being conducted under the authority'.

Best practice decommissioning

Decommissioning is the process of removing or otherwise satisfactorily dealing with petroleum infrastructure, in a safe and environmentally responsible manner, at the end of its usual life. This process includes plugging and abandoning wells, removing or managing infrastructure, rehabilitating the site to post-closure land use standards, and undertaking monitoring to verify that decommissioning is complete and closure criteria are achieved. All associated infrastructure must be comprehensively disclosed and addressed in an operation plan for decommissioning. Details regarding associated features of the petroleum operation should be included (e.g. easements).

Decommissioning is a significant activity in the life of a petroleum operation and should be considered well in advance of any construction. It is important to recognise that early planning should include consideration of decommissioning options and these options should form part of the design and implementation of the operation. Decommissioning may be undertaken at various points over the life of a petroleum operation when the infrastructure is no longer needed – it is not restricted to the end of an authority. Considering options to decommission disused infrastructure should occur at all stages of the project's lifecycle.

3.7.3 Plant and process facilities

Provide an overview of any relevant plant and process facilities.

3.8 Risk framework

Relevant provision

Section 161(1)(a) and (b) of the Petroleum Act – *Operation plan to be prepared*

Before carrying out any petroleum operation, the holder of the authority under which the operation is to be carried out must give the Minister an operation plan—

- (a) that identifies the risks that the operation may pose to the environment, to any member of the public, land or property in the vicinity of the operation and to any petroleum, source of petroleum or reservoir that the operation might affect;
- (b) that specifies what the holder of the authority will do to eliminate or minimise those risks.

The risk framework outlined in this guideline (or an equivalent risk framework) should be used by authority holders in the assessment of risks for all components of the operation plan.

Note: the risk framework draws parallels with the general environmental duty model under the *Environment Protection Act 2017* as both statutory frameworks reference risk mitigation 'as far as is reasonably practicable'. Most operation plans will be referred to the EPA, so it is beneficial to demonstrate how the overarching principles have been addressed in the operation plan to support assessment of the operation plan by the EPA.

3.8.1 Overview

Assessing and controlling risk in a structured way will help prevent harm to sensitive receptors, such as to the environment, any member of the public, land or property, or to any petroleum, source of petroleum or reservoir. It will also help authority holders comply with their statutory obligations and meet community expectations.

Refer to the guidance below to develop an implementation plan that considers all sensitive receptors and triggering scenarios (both planned and unplanned) for all stages of the petroleum operation. A 'sensitive receptor' is taken to mean the environment, any member of the public, land or property in the vicinity of the operation and any petroleum, source of petroleum or reservoir that may be put at risk by the hazard associated with the petroleum operation or rehabilitation activity. In other words, any environmental aspect that is potentially sensitive to or vulnerable from the petroleum operation.

The risk framework described here is how we recommend you demonstrate compliance with the requirements of the Petroleum Act and Regulations. This framework will facilitate authority holders to identify the risks posed to the environment, any member of the public, land, property, any petroleum, source of petroleum or reservoir and specify what will be done to eliminate or minimise those risks.

This will enable the authority holder, under regulation 31, to include 'an assessment of the environmental risks and impacts of the petroleum operation that:

- (a) identifies and evaluates the environmental risks and impacts that may arise directly or indirectly from the normal activities of the petroleum operation (including construction if applicable); and
- (b) assesses the environmental risks and impacts resulting from—
 - (i) reasonably possible activities in relation to the petroleum operation; and
 - (ii) incidents or events (whether planned or unplanned) that are not normal activities, incidents or events in relation to the operation including emergencies and foreseeable but unwanted events; and
- (c) specifies the methodology used for the assessment'.

The control measures to eliminate or minimise those risks should be based on mitigation as far as is reasonably practicable. The authority holder should consult available industry resources and may find *EPA Publication 1856: Reasonably Practicable* useful. Under the GED, the EPA considers 'reasonably practicable' to mean putting in proportionate controls to mitigate or minimise the risk of harm. Controls that eliminate or substitute the source of the risk are most effective, followed by engineering or building controls, and finally training and site practices. Often a combination of all types of controls is required. Being proportionate means the greater the risk of harm, the greater the expectation for it to be managed. This is achieved by demonstrating consideration for and implementation of the most suitable controls available to eliminate or minimise the harm.

In its publication, the EPA notes six factors to consider in demonstrating 'reasonably practicable':

- **Eliminate first:** Can the risk be eliminated?
- **Likelihood:** What is the chance that harm (without controls that are not part of the inherent design) will occur?
- **Degree (consequence):** How severe could the harm be to human health or to the environment?
- **Knowledge about the risks:** What does the authority holder know, or what can be found out, about the risks the activities pose?
- **Availability and suitability:** What technology, processes or equipment are available to control the risk? What controls are suitable for use under the circumstances?
- **Cost:** How much does the control cost to put in place compared to how effective it would be in reducing the risk?

Authority holders can generally demonstrate they have done what is reasonably practicable by:

- adopting well established effective practices or controls to eliminate or minimise risk; and/or
- where well established practices or controls do not exist, demonstrating that assessment and adoption of effective controls have been undertaken.

Table 3: Summary of the risk assessment process for operation plans

Identify hazards and sensitive receptors	<ul style="list-style-type: none"> • Identify all possible petroleum operation and rehabilitation hazards associated with the project. • Identify the sensitive receptor(s).
Assess inherent risks	<ul style="list-style-type: none"> • For each hazard, list all possible risks. • For each risk, assess the likelihood and consequence to determine the inherent risk rating.
Develop risk control measures	<ul style="list-style-type: none"> • Identify control measures to eliminate or reduce each risk as far as is reasonably practicable.
Assess residual risks	<ul style="list-style-type: none"> • After applying control measures to eliminate or mitigate the identified risks, re-assess the likelihood and consequence to determine the residual risk rating.

3.8.2 Identifying hazards and sensitive receptors

The operation plan should identify the hazards relevant to the proposed petroleum operation activities.

Hazards should be identified for each stage of the proposed operations, including construction, operation, decommissioning and rehabilitation.

Sensitive receptors (being those that may be sensitive to any aspect of the proposed petroleum operation or its outcomes) should be identified. They may be located either inside (e.g. heritage, artefact, flora) or outside (e.g. waterways, public roads, fauna) the proposed site of the petroleum operation.

Consideration should be given as to how these hazards may harm or damage sensitive receptors (the environment, any member of the public, land, property, any petroleum, source of petroleum or reservoir).

3.8.3 Consequence determination

Consequence is the severity of harm the hazard could cause if it occurs. When determining the consequence of a hazard, consider the potential impacts to:

- members of the public (e.g. public health, safety, amenity and Aboriginal heritage)
- land and property (e.g. neighbouring property, land use and nearby infrastructure such as highways, transmission lines, pipelines, schools and hospitals and other shared infrastructure)
- the environment (e.g. ambient air, surface water and groundwater, land, ambient sound, vegetation, flora and fauna)
- any petroleum, source of petroleum or reservoir (being intersected by the petroleum operation or nearby which could be impacted by the petroleum operation).

The descriptions of the suggested consequence criteria to assess the harm caused by a hazard are provided in Appendix 1 (see section 9.1).

Where consequence is being assessed in relation to air quality (e.g. hydrocarbon gas emissions), a baseline figure should be provided to determine the scale of consequence.

If a production well is to be drilled, groundwater is considered a sensitive receptor. Baseline data should be provided to determine the scale of consequence.

Note: authority holders may use their own framework for assessing consequence and likelihood. However, it must address the prescribed categories of environment, public safety, land, property, petroleum, source of petroleum and reservoir. If an authority holder's framework does not cover all prescribed categories required under section 161 of the Petroleum Act (and presented in Appendix 1), then they must develop consequence and likelihood definitions and ratings of the missing categories and explain how they are complementary to their existing framework. The consequence and likelihood definitions provided in this guideline could be used to develop the missing categories.

3.8.4 Likelihood determination

Likelihood is how likely it is that the hazard will occur. Likelihood is based on what is known about the hazard and the way circumstances and activities affect the hazard.

Descriptions of the suggested likelihood criteria to assess the likelihood of a hazard occurring are provided in Appendix 1 (see section 9.2).

3.8.5 Assess inherent risks

A hazard becomes a risk if there is a pathway for the hazard to affect a sensitive receptor (e.g. the risk of excessive noise being experienced by residents does not exist if there are no residences within the vicinity of the petroleum operation). For all hazards stemming from the petroleum operation that may affect a sensitive receptor, the sensitive receptors should be identified and described.

The combination of consequence and likelihood will determine the inherent risk rating (i.e. the risk that the hazard will impact a sensitive receptor where there are no control measures in place that are not part of the inherent design).

3.8.6 Risk rating

The consequence and likelihood are used together to determine the risk rating. The purpose of a risk rating is to guide decision-making on risk management to eliminate or reduce the risk as far as is reasonably practicable. The suggested risk matrix is provided in Appendix 1 (see section 9.3). If an alternative risk matrix is being used, provide full details of the risk framework in the operation plan. This should include definitions and categories of consequence and likelihood, and clearly set out how the framework considers impacts to the environment, any member of the public, land, property, petroleum, source of petroleum or reservoir. Also include why it is considered appropriate to manage the risks of the petroleum operation and how it will achieve better outcomes.

Determination of risk must include consideration of both low probability, high consequence events, as well as high probability events with lower consequence.

There may be multiple consequences for a single risk. When this occurs, the highest risk rating (after assessment of consequence and likelihood for each sensitive receptor) should be used to categorise the overall rating of the risk. For example, the risk may have the following determinations:

- a consequence for a member of the public rated as major and with a likelihood of rare
- a consequence of moderate for land and property and with a likelihood of likely; and
- a consequence of minor for the environment and with a likelihood of possible.

This results in individual risk ratings of medium, high and medium, respectively. In this instance, the overall rating for the risk is to be deemed high.

3.8.7 Identify risk control measures

Effective risk management requires all risks be eliminated or minimised as far as is reasonably practicable. Therefore, control measures must be identified and applied to achieve this.

Risk ratings should be used to determine the criticality of the control measures. In determining the control measures, consider what is required to reduce the risk to an acceptable level. Higher inherent risk ratings should take priority.

3.8.8 Assess residual risks

The residual risk assessment is based on implementation of the identified control measures. The new likelihood and consequence may result in a lower risk rating.

If any inherent risks can be eliminated with application of control measures, they should still be recorded as a risk that has been eliminated. Eliminated risks are those where control measures have been applied to the inherent risk and result in either:

- reducing the likelihood of the hazard impacting on a sensitive receptor to zero; and/or
- preventing the consequences of the hazard upon the sensitive receptor.

If the residual risk is not lower than the inherent risk, consideration must be given to the additional control measure(s) that minimise the risk. The acceptability of residual risks should be detailed (see Table 8 in section 9.4 of Appendix 1 for expectations of acceptability). As described in Table 8, residual risks rated 'high' are considered generally unacceptable and 'very high' risks are considered totally unacceptable. However, if any residual risk is 'very high', a comprehensive explanation is required to attest that it is acceptable, including evidence that the risk cannot be minimised any further as it has been minimised as far as is reasonably practicable.

3.8.9 Management of change

Once the operation plan has been accepted, circumstances may arise in which the identified risks change and therefore the risk control measures need to be changed. This may be triggered by newly acquired information regarding the environment (surface or subsurface, biological, social, etc.), an intention to utilise modified control measures or the petroleum operation not performing as expected. Risks include those identified in the operation plan general provisions, environment management plan, well operation management plan, emergency response manual and rehabilitation plan.

It is expected that the operation plan will include details for managing unplanned but foreseeable events (see section 4.9.1). If it does not, consideration must be given to seeking a variation to the operation plan. Refer to section 163A(2) of the Petroleum Act for the basis on which the Minister may require a variation to an accepted operation plan.

Earth Resources Regulation requests authority holders notify us in real time of any changes to the authority holder's risk assessment (likelihood, consequence) and risk control measures not included in a variation to the operation plan.

A real-time notification should be submitted to Earth Resources Regulation, as soon as it is practical to do so, via workplan.approvals@ecodev.vic.gov.au

The notification should include, with respect to the change(s), the:

- technical basis
- likely impact on the environment, any member of the public, land, property, petroleum, source of petroleum or reservoir
- specific modifications to the control measure(s) (physical and administrative)
- necessary timeframe; and
- training requirements of relevant personnel.

For the avoidance of doubt, the notification should include, if applicable, changes to personnel responsible for supervising the construction of a well.

Depending on the nature of the change(s) to operations required and/or the severity of the associated risk, Earth Resources Regulation may also be contacted on the below:

- **Earth Resources Regulation Duty Officer:** 0419 597 010 (24 hours)
- **Written notifications:** ERRChiefInspector@ecodev.vic.gov.au

3.9 Occupational Health and Safety Act 2004

Relevant provision

Section 10 of the Petroleum Act – *Relationship of this Act to certain other Acts*

If this Act makes provision in relation to a matter and provision is also made in relation to that matter by, or under, the *Occupational Health and Safety Act 2004* or the *Dangerous Goods Act 1985*, the provision made by this Act—

- (a) if not inconsistent with that other provision, must be observed in addition to that other provision; and
- (b) if inconsistent with that other provision, is, to the extent of the inconsistency, of no force or effect and that other provision prevails.

The *Occupational Health and Safety Act 2004* is the governing legislation that secures the health, safety and welfare of employees and other persons at work. Aspects in the operation plan related to employees, contractors or other persons at work are subject to the Petroleum Act unless they are inconsistent with the *Occupational Health and Safety Act 2004*, in which case the provisions of the *Occupational Health and Safety Act 2004* would prevail to the extent of the inconsistency.

All risks and control measures should be included in the operation plan to maintain consistent information in key documents.

3.10 Review of the operation plan

Relevant provision

Regulation 22(1)(b) of the Regulations – *Content of operation plan*

[An operation plan] must provide for—

- (i) a review of the operation plan by the holder of the authority before the holder commences each stage of the petroleum operation; and
- (ii) a review by the holder of the authority of the risks identified in the operation plan whenever there is a significant change in the risks that the petroleum operation may pose; and
- (iii) a review of the operation plan by the holder of the authority at least once every 5 years; and
- (iv) the submission of a report by the holder of the authority, within 7 days of each review being finalised, to the Minister setting out the findings of that review.

The petroleum operation will likely involve multiple stages. Given that the operation plan will be prepared prior to the first stage (whichever stage that may be), it is possible that the details in the operation plan may not accurately reflect the planned operation as the petroleum operation progresses. A review of the operation plan prior to commencement of each stage should identify where details may need to be adjusted. The report submitted must identify the findings of the review and should outline whether a variation to the operation plan will be sought.

At any time during the petroleum operation, the risks posed by the petroleum operation may change. Significant changes to the risks (i.e. any changes that will alter any risk rating) must be identified and trigger a review of the operation plan. The report submitted must identify the findings of the review and should outline whether a variation to the operation plan will be sought.

Some petroleum operations will be carried out over a long term. Given that the operation plan will be prepared for the commencement of the petroleum operation, it is possible that the details in the operation plan may not accurately reflect the petroleum operation as it progresses. A review of the operation plan every five years should identify where details may need to be adjusted. The report submitted must identify the findings of the review and should outline whether a variation to the operation plan will be sought.

3.11 Record keeping

Relevant provisions

Section 161 of the Petroleum Act – *Operation plan to be prepared*

- (3) The Minister must not accept an operation plan unless the holder of the authority has provided the Minister with evidence in the prescribed form—
- (a) that the holder of the authority has complied with subsections (1A) and (1B); and
 - (b) if a person or organisation makes a submission on the operation plan within a reasonable period after receiving notice under subsection (1A), that the holder of the authority has considered the submission when preparing the operation plan.

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (e) provides for the monitoring, audit and review of the environmental performance and implementation strategy of the holder of the authority;
- (f) provides for the maintenance of a quantitative record of emissions and discharges into the air, or onto the land surface environment, or below the land surface environment that is accurate and that can be monitored and audited against the environmental performance standards; and
- (g) includes arrangements for recording, monitoring and reporting information about the petroleum operation (including information required to be recorded under the Act, these Regulations and any other environmental legislation applying to the activity) sufficient to enable the Minister to determine whether the holder of the authority is complying with the environment management plan;

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (g) describe how the holder of the authority is to keep records and conduct inspections, including but not limited to leak detections, well-head inspections, well-head maintenance, workovers, and downhole inspections;
- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (p) how the holder of the authority will, during the life of the well—
 - (ii) keep records containing details of any well interventions, well-head maintenance activities, workovers and well testing.

The Petroleum Act and Regulations require specified records and documents to be kept. Arrangements for retention of those records and documents need to be in place, including making records available for inspection for the duration of the petroleum operation.

Most of this information will need to be included in the annual report required by regulation 39 of the Regulations. Therefore, the design of the records, monitoring and review process should support efficient compliance with the annual report requirements.

3.12 Notices

Relevant provisions

Section 161 of the Petroleum Act – *Operation plan to be prepared*

- (1A) In the course of preparing an operation plan for a petroleum operation, the holder of the authority—
- (a) must give notice of the proposed operation to any relevant person or organisation; and
 - (b) may give notice of the proposed operation to any other person or organisation that the holder of the authority considers appropriate.
- (1B) A notice under subsection (1A) must—
- (a) contain sufficient information to allow the person or organisation to make an informed assessment of any impact that the petroleum operation may have on the activities or interests of that person or organisation; and
 - (b) state that the person or organisation may, within a reasonable period of receiving the notice, make a submission to the holder of the authority about the operation plan; and
 - (c) contain any prescribed information.

NOTES

- the prescribed information of the notice for an operation plan is set out in regulation 23 of the Regulations
- the prescribed information of the notice for a variation to an operation plan is set out in regulation 26 of the Regulations
- the prescribed evidence of the notice for an operation plan is set out in regulation 25 of the Regulations
- the prescribed evidence of the notice for a variation to an operation plan is set out in regulation 27 of the Regulations

Regulation 22 of the Regulations – *Content of operation plan*

- (1) For the purposes of section 161(1)(d) of the Act, an operation plan—
- (a) must set out—
 - (iii) details of the proposed process to ensure that the Minister is notified prior to commencement of each stage of the petroleum operation;

Regulation 38 of the Regulations – *Notifying start and end of petroleum operation*

- (1) For the purposes of section 179(c) of the Act, the holder of an authority must notify the Minister of the proposed commencement date of a petroleum operation carried out under the authority at least 10 days before the petroleum operation is to commence.
- (2) For the purposes of section 179(c) of the Act, the holder of an authority must notify the Minister of the completion date of a petroleum operation carried out under the authority within 10 days after that completion.

A notice is required to be issued to relevant persons or organisations whenever an operation plan or a variation of an operation plan is proposed.

This helps ensure that relevant persons and organisations are informed and offered the opportunity to voice their attitudes and concerns regarding the proposed petroleum operation. It then establishes awareness of issues that should be addressed as part of the petroleum operation. It is also an important step for setting up ongoing consultation regarding the petroleum operation.

The following text is suggested to be included and could be adapted in the notice of an operation plan:

What is an operation plan?

An operation plan is a document required under the Petroleum Act 1998 in relation to a proposed petroleum operation.

This plan identifies the risks that the operation may pose to the environment, to any member of the public and to land or property in the vicinity of the operation. It also identifies the risks to any petroleum, source of petroleum or reservoir in the vicinity of the operation.

The plan outlines what the authority holder will do to eliminate or minimise those risks. It also specifies what the authority holder will do to rehabilitate land that will or could be affected by the operation. In addition, the plan sets out any other matters required by the Petroleum Regulations 2021.

By law, an authority holder must not carry out the proposed petroleum operation unless the Minister has, in writing, accepted the operation plan.

Prior to the commencement of the petroleum operation, the Minister must be notified of the commencement date. However, most petroleum operations include multiple stages running for differing lengths of time. Each stage will also comprise different activities. Whenever a different stage will commence, an additional notice to the Minister must be given.

3.13 Reporting requirements

Relevant provisions

Regulation 22 of the Regulations – *Content of operation plan*

- (1) For the purposes of section 161(1)(d) of the Act, an operation plan—
- (b) must provide for—
 - (iv) the submission of a report by the holder of the authority, within 7 days of each review being finalised, to the Minister setting out the findings of that review;

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (g) includes arrangements for recording, monitoring and reporting information about the petroleum operation (including information required to be recorded under the Act, these Regulations and any other environmental legislation applying to the activity) sufficient to enable the Minister to determine whether the holder of the authority is complying with the environment management plan;
- (k) in relation to any groundwater impacts of a well activity carried out during a petroleum operation—
 - (iii) if the operation is a petroleum production operation—
 - (A) identifies the method by which the holder of the authority will establish the baseline water quality before petroleum production commences; and
 - (B) identifies the groundwater monitoring methodology, including the frequency of the monitoring and the parameters to be monitored prior to and during petroleum production; and
 - (C) identifies a reporting schedule for the holder of the authority to report to the Minister in relation to any monitoring identified in sub-subparagraph (B).

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (m) include details of when and how the holder of the authority is to give the Minister reports and information about—
 - (i) each well activity; and
 - (ii) any well integrity hazards; and
 - (iii) progression from one stage to another during the well operation; and
 - (iv) significant increases in existing risks in relation to the well; and
 - (v) other matters relevant to the conduct of each well activity

The majority of the reports to be provided do not have a timeframe prescribed by the Petroleum Act or Regulations. The authority holder will need to propose the appropriate reporting intervals considering the prescribed triggers and stage of the petroleum operation.

Reports to be provided in accordance with regulation 33(g) must be designed to enable the Minister to determine whether the authority holder is complying with the environment management plan. The report should set out an analysis of the records and monitoring that will be available against the environmental performance objectives and standards.

The operation plan should outline how these reports will be used by the authority holder for action and continuous improvements.

4. Environment management plan

Relevant provision

Regulation 22 of the Regulations – *Content of operation plan*

- (1) For the purposes of section 161(1)(d) of the Act, an operation plan—
- (a) must set out—
 - (iv) an environment management plan

The EMP is a mandatory component of an operation plan and its purpose is for authority holders to set out how environmental risks and impacts of the petroleum operation will be managed. The EMP requires the authority holder to demonstrate that environmental risks and impacts have been identified, evaluated and eliminated or minimised as far as is reasonably practicable.

It is requested that authority holders prepare EMPs using the guidance in this chapter and sections 3.8 to 3.13 of this guideline. This is intended to assist assessment of the EMP and compliance with the legislation by authority holders. The specific requirements for an EMP are set out in regulations 30-35.

Guidance is set out under each heading.

4.1 Revision history

Establish a version control system to ensure that employees, contractors and Earth Resources Regulation have the current version of the EMP and supporting documents. Clearly identify the version on each document.

4.2 Approvals

Earth Resources Regulation requests that authority holders include a document control table or equivalent to indicate their internal approval process – i.e. authorised employees' names, position titles and dated signatures showing that the EMP has been approved and by whom.

4.3 Distribution list

Earth Resources Regulation requests that authority holders list all employees, contractors and sub-contractors who will be provided a copy of the EMP or parts of the EMP that are relevant to their work.

4.4 Associated documents

List any supporting documents you will submit with the EMP.

4.5 Definitions and abbreviations

List definitions and abbreviations.

4.6 Corporate environmental policy

Provide a statement of the authority holder's corporate environmental policy as per regulation 34(a) of the Regulations.

4.7 Other relevant Victorian and Commonwealth legislation

Relevant provision

Regulation 34 of the Regulations – *Other information in the environment management plan*

The environment management plan must contain the following—

- (b) a list of all environmental legislation of the Commonwealth or the State that may apply to the petroleum operation;
- (c) the strategy of the holder of the authority to ensure compliance with the environmental legislation referred to in paragraph (b)

The petroleum operation may be subject to other Victorian and Commonwealth legislation. The other legislation may require the authority holder to obtain approvals prior to commencing any petroleum operation. Authority holders are advised to review the full suite of relevant legislation and consult the applicable agencies administering the relevant legislation, including and not limited to the following set out in 4.7.1 to 4.7.13.

The operation plan must set out how these legislative requirements will be complied with. This may include a list of other licences and permits held, or to be held, for this project (from the other agencies).

Information discussed at the site meeting should assist in determining the scope of regulatory requirements that need to be addressed within, and in addition to, the operation plan (refer to section 2.1.1 for recommended guidance on setting up site visits).

4.7.1 Offshore Petroleum and Greenhouse Gas Storage Act 2010

If the petroleum operation will occur within three nautical miles beyond the baseline from which the breadth of the territorial sea is measured off Victoria, it will be subject to the *Offshore Petroleum and Greenhouse Gas Storage Act 2010*. Authority holders should review the *Offshore Petroleum and Greenhouse Gas Storage Act 2010*, its regulations and any related guidance notes to become familiar with the provisions and address the regulatory requirements of this Act.

4.7.2 Environment Protection Act 2017

All petroleum operations are subject to the *Environment Protection Act 2017*. Authority holders should review the *Environment Protection Act 2017*, various subordinate legislation and related guidance notes (examples are set out in the table below) to become familiar with the provisions and address the regulatory requirements of this Act.

Current environment protection legislation, in force as of 1 July 2021, introduces a proactive, risk-based approach to environmental management in Victoria, focusing on preventing pollution impacts rather than managing those impacts after they have occurred. The cornerstone of the new legislation is the general environmental duty (GED). The GED requires a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste to understand and minimise those risks so far as reasonably practicable.

Table 4: EPA legislative framework

Subordinate Legislation Tools	Example Guidance
<p>Environment Protection Regulations</p> <ul style="list-style-type: none"> • Permissions • Waste • Contaminated land • Litter • Onsite wastewater management systems • Financial assurance • Air and water • Noise 	<ul style="list-style-type: none"> • EPA Publication 1826.4: Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues • EPA Publication 1827.2: Waste Classification Assessment Protocol • EPA Publication 1828.2: Waste Disposal Categories – Characteristics and Thresholds • EPA Publication 1727.2: Protocol for calculating monetary benefits • EPA Publication 1741.1: Industry guidance: supporting you to comply with the general environmental duty • EPA Publication 1756.2: Summary of waste framework • EPA Publication 1757.2: Summary of noise framework
<p>Environment Reference Standard (ERS)</p>	<ul style="list-style-type: none"> • EPA Publication 1302: Environmental Quality Guidelines for Victorian Lakes • EPA Publication 1992: Guide to the Environment Reference Standard
<p>Legislative instruments</p> <ul style="list-style-type: none"> • Determinations 	<ul style="list-style-type: none"> • EPA Publication 2005: How to read and comply with a waste determination

4.7.3 Climate Change Act 2017

Section 20 of the *Climate Change Act 2017* establishes a commitment on behalf of the Victorian Government to endeavour to ensure that any decision made by the government and any policy, program or process developed or implemented by the government appropriately takes account of climate change if it is relevant. In order to inform Earth Resources Regulation’s consideration of the operation plan, it is recommended that authority holders detail the impacts their project will have on climate change and the potential impact of climate change on the project (see section 4.9). This analysis should consider:

- direct emissions that occur from sources that are controlled by the organisation (i.e. Scope 1 emissions), for example, from the construction and operation of the well;
- indirect emissions associated with the project, such as electricity purchased to operate it (i.e. Scope 2 emissions);
- indirect emissions that will result from use of the gas produced by the project (i.e. Scope 3 emissions);
- the changes to the climate that are possible due to the impacts from the project; and
- any climate change adaptation issues or risks that should be considered as part of the decision (for example if hypothetically the project is considered at risk due to rising sea levels or increased severity and frequency of bushfires, then the operation plan should include the strategies to deal with those aspects).

Authority holders should consider Division 2 and 3 of Part 4 of the *Climate Change Act 2017* which provides policy objectives and guiding principles to statutory decision-makers.

Any information to support the statutory decision-maker’s consideration under the *Climate Change Act 2017* that is not required by the Petroleum Regulations should be contained within a separate document(s) to the operation plan.

4.7.4 National Parks Act 1975

If the petroleum operation will be carried out in a national or state park in Victoria, it will be subject to the *National Parks Act 1975*. Authority holders should review the *National Parks Act 1975*, its regulations and related guidance notes to become familiar with the provisions and address its regulatory requirements.

Authority holders should approach DEECA for statutory and strategic guidance about consent requirements under the *National Parks Act 1975*.

4.7.5 Marine and Coastal Act 2018

Petroleum operations that will be located in coastal Crown land may require consent under the *Marine and Coastal Act 2018*. Authority holders should approach DEECA to determine whether consent is required.

In general, consent is only required for the use of marine and coastal Crown land to a depth of 200 metres below the surface of that land, but verification must be obtained from DEECA for the petroleum operation.

4.7.6 Planning and Environment Act 1987

Authority holders should review the *Planning and Environment Act 1987*, the various subordinate legislation, the Victorian Planning Provisions and the local planning scheme.

The planning provisions exempt:

- petroleum exploration from requiring planning approvals if section 118 of the Petroleum Act is complied with; and
- petroleum production if section 120 of the Petroleum Act is complied with.

Authority holders should approach the relevant local council for advice on the planning permissions required regarding any proposed petroleum production. If the council is unable to assist or considers that the proposal is beyond its responsibilities, authority holders should approach [Planning Victoria](#) for statutory and strategic guidance about planning in Victoria.

4.7.7 Flora and Fauna Guarantee Act 1988

If the petroleum operation requires the removal of listed flora and fauna species, approvals must be granted under the *Flora and Fauna Guarantee Act 1988*. Authority holders should approach DEECA to determine whether approvals are required.

4.7.8 Environment Effects Act 1978

If the project involves petroleum production, it could potentially have significant environmental effects. In these cases, a written referral should be sent to the Minister for Planning requesting a decision on whether an Environment Effects Statement (EES) is required.

According to the Ministerial guidelines for assessment of environmental effects under the *Environment Effects Act 1978*, there are triggers for a project to be referred based on individual criteria and where there are combined criteria:

Referral trigger – Individual criteria Individual types of potential effects on the environment that might be of regional or state significance.	Referral trigger – Combination of two or more criteria A combination of two or more of the following types of potential effects on the environment that might be of regional or state significance.
Potential clearing of 10 ha or more of native vegetation from an area that is of an Ecological Vegetation Class identified by DEECA as endangered (in accordance with Appendix 2 of Victoria's Native Vegetation Management Framework).	Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan.
Potential clearing of 10 ha or more of native vegetation from an area that is, or likely to be, of very high conservation significance (in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework) and is not authorised under an approved Forest Management Plan or Fire Protection Plan.	Matters listed under the <i>Flora and Fauna Guarantee Act 1988</i> – potential loss of a significant area of a listed ecological community.
Potential long-term loss of a significant proportion (e.g. 1-5% depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria.	Matters listed under the <i>Flora and Fauna Guarantee Act 1988</i> – potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats.
Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in <i>A Directory of Important Wetlands Australia</i> .	Matters listed under the <i>Flora and Fauna Guarantee Act 1988</i> – potential loss of critical habitat.
Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term.	Matters listed under the <i>Flora and Fauna Guarantee Act 1988</i> – potential significant effects on habitat values of a wetland supporting migratory bird species.
Potential extensive or major effects on the health, safety or wellbeing of a human community due to emissions to air or water or chemical hazards or displacement of residences.	Potential extensive or major effects on landscape values of regional importance, especially where recognised by a planning scheme overlay or within or adjoining land reserved under the <i>National Parks Act 1975</i> .
Potential greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum, directly attributable to the operation of the facility.	Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long-term.
	Potential extensive or major effects on beneficial uses of water bodies over the long-term due to changes in water quality, stream flows or regional groundwater levels.
	Potential extensive or major effects on social or economic wellbeing due to direct or indirect displacement of non-residential land use activities.
	Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development.
	Potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.
	Potential exposure of a human community to severe or chronic health or safety hazards, over the short or long-term, due to emissions to air or water or noise or chemical hazards or associated transport.
	Potential extensive or major effects on Aboriginal cultural heritage.
	Potential extensive or major effects on cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the <i>Heritage Act 1995</i> .

Further details about the EES requirements can be found here – www.planning.vic.gov.au/environment-assessment/environment-assessment-home

4.7.9 Aboriginal Heritage Act 2006

Relevant provision

Section 146 of the Petroleum Act – *Areas of Aboriginal significance*

Before carrying out any petroleum operation on any land, the holder of the authority under which the operation is to be carried out must take reasonable steps to ensure that the operation will not contravene the *Aboriginal Heritage Act 2006*.

The authority holder should determine whether a cultural heritage management plan will be required for the petroleum operation. Details regarding cultural heritage management plan requirements can be found here: www.firstpeoplesrelations.vic.gov.au/cultural-heritage-management-plans

The EMP must set out whether a cultural heritage management plan is required, or any other approvals under the *Aboriginal Heritage Act 2006*, and should describe the status of those requirements.

4.7.10 Water Act 1989

Rural water authorities have responsibility for administering water shares and take and use licences. Catchment Management Authorities are responsible for the integrated planning and coordination of land, water and biodiversity management in all catchment and land protection regions.

Depending on the nature of the petroleum operation, the requirements of the *Water Act 1989* may be triggered and therefore approvals will need to be obtained from the relevant rural water authority and/or the Catchment Management Authority.

4.7.11 Dangerous Goods Act 1995

If the petroleum operation will involve chemicals, hazardous materials and certain substances that are dangerous goods, it will be required to comply with the *Dangerous Goods Act 1995* and related regulations. The storage, handling, transporting and disposing of dangerous goods must be in accordance with the Victorian WorkSafe Code of Practice for the Storage and Handling of Dangerous Goods. Authority holders should approach WorkSafe Victoria for advice on these requirements.

4.7.12 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides a legal framework for the protection of the environment, especially those aspects of the environment that are 'matters of national environmental significance'. Currently, there are nine matters of national environmental significance:

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- listed threatened species and communities
- listed migratory species
- the marine environment
- Great Barrier Reef Marine Park
- nuclear actions (including uranium mining); and
- a water resource, in relation to coal seam gas development and large coal mining development.

If the person proposing to take an action thinks that the petroleum operation may be a 'controlled action' and an approval is required otherwise it would be prohibited under the EPBC Act, they must refer the proposal to the Minister for determination as to whether it is a controlled action (section 68 of the EPBC Act). This will be informed by whether the proposal will have, or is likely to have, a significant impact on a matter of national environmental significance. This referral is to be submitted to the Commonwealth Department of Climate Change, Energy, the Environment and Water.

4.7.13 Native Title Act 1993

All Crown land is potentially subject to native title, provided that a previous act of the government has not extinguished native title. While native title rights do not apply to minerals, gas or petroleum under Australian law, applications related to Crown land must be assessed to determine what procedural rights must be afforded to potential native title claimants before a decision is made regarding the application.

If agreement is reached between the proponent and any native title party, it may specify requirements in relation to carrying out petroleum operations on the land. Those details should be included in the operation plan.

4.8 Existing environment

Relevant provision

Regulation 30 of the Regulations – *Description of the environment*

An environment management plan included in an operation plan under regulation 22(1)(a)(iv) must—

- (a) describe the environment, including any relevant values and sensitivities; and
- (b) describe any relevant cultural, historical, aesthetic, social, recreational, ecological, biological, landscape and economic aspects of the environment that may be affected by the petroleum operation; and
- (c) identify any communities, land or property in the vicinity of the operation and any petroleum operation or petroleum resources that the petroleum operation might affect.

4.8.1 Environment of the locality

Describe the environment and relevant values and sensitivities. This should consider the climate of the locality encompassing temperatures, rainfall, wind, air quality, background noise levels and the local history related to bushfire incidence.

Include the relevant cultural, historic, aesthetic, social, recreational, ecological, biological, landscape and economic aspects as they apply to the petroleum operation. Guidance regarding these aspects is given below.

4.8.2 Landscape

Provide an overview of the geology, hydrology (including wetlands), hydrogeology (groundwater) and landforms within the area, including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.3 Biological and ecological

Provide an overview of the flora and fauna within the area that considers:

- native and exotic species
- the status of the species (e.g. threatened species or ecological communities, invasive species and pathogens)
- parks and wilderness areas in the vicinity.

This should include any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.4 Cultural heritage

Provide an overview of Aboriginal heritage within the area, including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.5 Historic heritage

Provide an overview of European heritage within the area, including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.6 Social

Provide an overview of nearby townships, tourism operations, community interest in climate change and the environment, local traffic and roads, including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation. This should include a qualitative assessment of current/baseline traffic in the area.

4.8.7 Aesthetic

Provide an overview of local visual amenity, air and noise environment including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.8 Recreation

Provide an overview of sporting, fishing, camping, hunting and other recreational activities that occur in the area, including any relevant aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.8.9 Economic

Provide an overview of agriculture, tourism, manufacturing and other industries/activities that occur in the area, including any relevant environmental aspects that may be potentially sensitive or vulnerable to impact during the petroleum operation.

4.9 Environmental risks and impacts

Relevant provisions

Regulation 31 of the Regulations – *Description of environmental risks and impacts*

An environment management plan must include an assessment of the environmental risks and impacts of the petroleum operation that—

- (a) identifies and evaluates the environmental risks and impacts that may arise directly or indirectly from the normal activities of the petroleum operation (including construction if applicable); and
- (b) assesses the environmental risks and impacts resulting from—
 - (i) reasonably possible activities in relation to the petroleum operation; and
 - (ii) incidents or events (whether planned or unplanned) that are not normal activities, incidents or events in relation to the operation including emergencies and foreseeable but unwanted events; and
- (c) specifies the methodology used for the assessment.

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (k) in relation to any groundwater impacts of a well activity carried out during a petroleum operation—
 - (i) assesses the risks and impacts to the groundwater environment from the well activity

All petroleum operations will impact the environment. There is a distinction between environmental risks and impacts. Environmental impacts are planned as they are an inherent part of the activity whereas environmental risks are events that may or may not happen. For example, acoustic discharges are an impact on the environment from a seismic survey and induced seismicity is a risk that may or may not happen due to the acoustic discharges.

The EMP within the operation plan must identify not only the risks that the petroleum operation may pose (to the environment, any member of the public, to land or property, or to any petroleum, source of petroleum or reservoir) but also the impacts.

Therefore, the operation plan must set out a comprehensive description of the petroleum operation (see section 3.6.4). This should include details of each activity and stage, details and layout of the equipment and facilities (including any accommodation camp), the existing environment and proposed timeline at a level of detail that enables environmental risks and impacts of the petroleum operation to be identified and evaluated.

The level of detail provided in the EMP should be commensurate to the significance and uncertainty associated with the risk or impact, and the amount of interest expressed by any person or organisation regarding that risk or impact. Risk and impact identification and evaluation should include consideration of potential cumulative risks and impacts for the petroleum operation.

The risks and impacts that should be included, as a minimum (where relevant), in an EMP are:

- disturbance to native flora
 - o removal/destruction of flora
 - o spread of weeds and pathogens
 - o habitat degradation – erosion and sedimentation, soil contamination (e.g. spills), soil biological activity and soil modification (imported material and inversion of soil profile)
 - o inadequate rehabilitation

- disturbance to native fauna
 - exclusion from the area
 - lighting (artificial lighting, flaring)
 - noise (plant and equipment, flaring)
 - spread of pests and diseases
- geotechnical instability
 - land subsidence
 - induced seismicity
- disturbance to surface water bodies
 - spills entering surface water bodies
 - interference with natural surface water flows
 - sedimentation
 - flooding
- disturbance to groundwater
 - spills seeping into groundwater
 - drilling and completion fluids contaminating groundwater
 - subsurface blowouts
- disturbance to land use and property
 - exclusion of existing land use from the area
 - damage to property and infrastructure (private infrastructure like cattle yards or public utilities)
 - inappropriate handling, storage and disposal of hazardous and non-hazardous materials
- disturbance to the community (includes landowners)
 - lighting (artificial lighting, flaring)
 - noise (plant and equipment, flaring)
 - traffic
 - visual amenity
 - site access
- air emissions
 - greenhouse gases (venting, flaring, leaks, use of internal combustion engines)
 - dust
- emergency events
 - fire
 - loss of containment (well, gathering line, gas plant).

The identification and evaluation of environmental risks and impacts will inform the decision-making process in selecting control measures. Some control measures adopted to manage impacts and risks, including those associated with potential emergency conditions, may result in additional or modified impacts and risks. These impacts and risks should be detailed and evaluated in the same manner as impacts and risks from the petroleum operation.

4.9.1 Foreseeable but unplanned events

The operation plan must include details of not only reasonably possible activities, but those which are foreseeable but unplanned events. Activities which are 'reasonably possible' include, but are not limited to:

- additional/different lines of a survey required due to local conditions
- side-track a well (where the side-track is still within the authority area)
- fishing for lost tools and equipment
- logging; and
- different/additional drilling or completion fluids (provided that the fluids do not introduce or increase any safety or environmental risks).

The foreseeable but unplanned events also include emergency situations that pose imminent risk to human health and safety or the environment. Management of events of this nature must be described in the emergency response manual (see Chapter 7 of this guideline).

4.10 Environmental performance objectives and standards

Relevant provision

Regulation 32 of the Regulations – *Environmental performance objectives and standards*

An environment management plan must—

- (a) define environmental performance objectives, and set environmental performance standards, against which performance by the holder of the authority in protecting the environment from the petroleum operation is to be measured; and
- (b) include measurement methods for determining whether the objectives and standards have been met.

The EMP must define the environmental performance objectives and standards that will drive the performance of the petroleum operation in protecting the environment. Environmental performance objectives and standards should be set for each aspect of the existing environment. Given that the petroleum operation will create impacts on the environment, authority holders will need to take all reasonable steps to demonstrate compliance with their general environmental duty under the *Environment Protection Act 2017*. Care should be taken to define environmental performance objectives and standards that promote prevention of impacts (where possible), rather than compliance with limits.

Once the performance objectives and standards are defined, the EMP must detail the measurement methods that will be used to determine whether performance is achieved with the standards set. The measurement methods must be specific and reportable to enable an assessment of the performance. Each performance objective and standard may require more than one method to measure the performance. Where performance objectives and standards have a common method to measure performance, it should be clear how the data will be used to measure each performance objective and standard.

It is expected the performance of the petroleum operation will be evaluated and the outcomes of these evaluations may influence decisions to employ different/additional control measures. Consideration must then be given as to whether a variation to the operation plan will be required.

4.11 Control measures for environmental risks and impacts

Relevant provisions

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (a) identifies the controls, specific systems, practices and procedures to be used to ensure that—
 - (i) any potential environmental risks and impacts arising from the petroleum operation are eliminated or minimised as far as is reasonably practicable; and
 - (ii) the environmental performance objectives and standards in the environment management plan are met;
- (j) in relation to hydrocarbon gas emissions from the petroleum operation, includes—
 - (i) the measures in place to ensure any hydrocarbon gas emissions will be minimised as far as reasonably practicable;

Regulation 5 of the Regulations – *Definitions*

In these Regulations—

hydrocarbon gas emissions means gaseous emissions from leaks, flaring or venting of hydrocarbons

- (k) in relation to any groundwater impacts of a well activity carried out during a petroleum operation—
 - (ii) identifies how these risks and impacts to the groundwater environment will be mitigated

Once the EMP has identified and evaluated the environmental risks and impacts, and defined the environmental performance objectives and standards, controls must be set out that eliminate or minimise the risks as far as is reasonably practicable. The control measures must also identify which environmental performance objectives and standards will be met by adoption of the controls.

Control measures should be understood in terms of their effectiveness. This will include consideration of a range of factors including their functionality, availability, reliability, independence, survivability, compatibility, maintainability, benefit, cost and ability to minimise risk.

The description of control measures should clearly demonstrate how they will function to ensure that the environmental performance objectives will be achieved. They should include control measures to meet the requirements of other environmental legislation applying to the petroleum operation.

Control measures can include physical actions of an activity, facility, individual and elements of the environmental management system employed by the authority holder, that eliminates, prevents, minimises or mitigates the consequence or likelihood of a risk or the occurrence of an environmental impact.

Control measures regarding noise need to include specification of the hours at which operations are to take place and must be appropriate to the site location. In this regard, the authority holder should consider requirements under the *Environment Protection Act 2017* and *Environment Protection Regulations 2021* in relation to noise.

Control measures should not include monitoring activities. Monitoring measures the performance of the petroleum operation and therefore the effectiveness of control measures. Monitoring is an important action but should not be specified as a control measure in isolation.

4.11.1 Justification for selection of control measures

Relevant provision

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (b) specifies why the controls, specific systems, practices and procedures to eliminate or minimise risks and impacts have been adopted, whether other measures were considered but not adopted and the reasons why

You must outline the logic behind the choice of controls, specific systems, practices and procedures that have been selected to ensure that the environmental performance objectives and standards are met, and any potential environmental risks are eliminated or minimised as far as is reasonably practicable.

The selection process for the control measures is expected to follow the hierarchy of controls:

- elimination
- substitution
- isolation
- engineering controls
- administrative controls
- personal protective equipment.

The selection process is expected to consider all relative control measures and therefore it is likely to identify some control measures that will not be adopted. The reasons for not adopting those control measures must be set out. In some cases, it may be necessary to outline the costs involved and provide an analysis to demonstrate that the costs are grossly disproportionate to environmental benefit gained for the life of the petroleum operation. This is an important step in demonstrating that impacts and risks of a petroleum operation are eliminated or minimised as far as is reasonably practicable.

In cases where there is a low level of confidence in the ability of certain control measures to effectively manage risks and impacts to an acceptable level, an adaptive management approach may be suitable. Adaptive risk management is a well-established practice of combining monitoring, research, evaluation and learning as a means of improving future management strategies.

4.12 Responsibilities for implementation

4.12.1 Organisational structure

Relevant provision

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (c) establishes a clear chain of command, setting out the roles and responsibilities of personnel in relation to the implementation, management and review of the environment management plan

The EMP should include an overview of both the authority holder's and contractor's organisational structures.

The organisational structure of the authority holder should identify the roles and detail their responsibilities in implementing the EMP, including for monitoring, reviewing and reporting on the performance of the petroleum operation as set out in the EMP.

The organisational structure of any contractor(s) should do the same. It should also identify the roles that will be responsible for communicating with the authority holder and the nature of those communications.

4.12.2 Training and competency

Relevant provisions

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (d) includes measures to ensure that each employee or contractor working in connection with the petroleum operation—
 - (i) is aware of the employee's or contractor's responsibilities in relation to the environment; and
 - (ii) has the appropriate skills and training to be able to fulfil those responsibilities;

Regulation 35 of the Regulations – *Information on consultation with relevant persons or organisations*

For the purposes of regulation 34(d), the environment management plan must—

- (e) set out how the holder of the authority will ensure that, while the operation plan is in effect, the holder of an authority will engage a suitably qualified or experienced person to be responsible for ensuring that the measures relating to consultation with relevant persons or organisations under the operation plan for the petroleum operation are implemented

The EMP is a prescribed requirement within an operation plan that describes the proposed petroleum operation and how its environmental risks and impacts will be managed. It is intended to also be a reference/manual used by personnel to enable them to be familiar with the commitments and adhere to them.

You must outline the measures to ensure that each employee, and any contractor, is aware of their responsibilities associated with the EMP. It should also include details of reminders/refreshers regarding their responsibilities, what arrangements will be available to access a copy of the EMP and avenues to seek further information or clarification.

The authority holder's employees and any contractors must have appropriate skills and qualifications to carry out the petroleum operation. You must outline the measures that will be utilised to ensure this is the case and will remain so for the duration of the petroleum operation. Consideration should be given, but not limited, to:

- employment of personnel holding appropriate qualifications, for example:
 - o Chartered Professional Engineer (or equivalent) that oversees design and engineering work
 - o an Australian Institute of Project Management (AIPM) Certified Practising Project Manager (or equivalent) that oversees project management/superintendency work
 - o an individual accredited by the International Association for Public Participation (IAP2) or equivalent who oversees community engagement and consultation
- employment of personnel who have commensurate experience in the petroleum industry and on similar projects
- training programs to be delivered to key roles (ideally prior to the commencement of the petroleum operation and throughout the operation)
- induction for all personnel, commensurate with the level of responsibility of each role
- exercises/drills for non-routine/emergency situations.

A chartered professional is a person who has attained a specific level of skill or competence in a particular professional endeavour and has been recognised by the award of a formal credential or certification by a relevant professional organisation (such as Engineers Australia). Chartership is important because it demonstrates that a benchmarked level of competence has been achieved and can be recognised between different jurisdictions. As such, it provides confidence that risks to quality control and engineering integrity have been minimised by a chartered professional.

Earth Resources Regulation will notify the authority holder if further evidence of qualifications or experience of its employees and any contractors is required when assessing the operation plan.

4.13 Communications and engagement

Relevant provisions

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (h) provides for appropriate consultation, ongoing for the life of the petroleum operation, about the authority holder's environmental performance with—
 - (i) relevant agencies of the Commonwealth and the State; and
 - (ii) other relevant persons or organisations;

Regulation 34 of the Regulations – *Other information in the environment management plan*

The environment management plan must contain the following—

- (d) details of how the holder of the authority will consult with any relevant persons or organisations during the petroleum operation.

Regulation 35 of the Regulations – *Information on consultation with relevant persons or organisations*

For the purposes of regulation 34(d), the environment management plan must—

- (a) identify any relevant persons or organisations; and
- (b) set out how the holder of the authority will share information with relevant persons or organisations; and
- (c) set out how the holder of the authority will receive feedback from relevant persons or organisations; and
- (d) set out how the holder of the authority will manage complaints and other communications from relevant persons or organisations; and
- (f) in the case of an environment management plan for a production licence, set out how the holder of the authority will—
 - (i) identify concerns and expectations of relevant persons or organisations; and
 - (ii) analyse feedback from relevant persons or organisations, taking into account those concerns or expectations.

Section 161(4) of the Petroleum Act – *Operation plan to be prepared*

In this section— **relevant person or organisation**, in relation to an operation plan, means—

- (a) any person or organisation that may be affected by an activity carried out under the operation plan, and
- (b) any person or organisation that has interests that may be affected by an activity carried out under the operation plan.

The details regarding engagement with relevant persons or organisations should be relevant to environmental, social and other risks or impacts associated with the petroleum operation. Arrangements to ensure this happens should be specified. Appendix 2 outlines the preferred approach.

While regulation 33(h) is applicable over the life of the petroleum operation, it focuses on consultation and engagement around the environmental performance of the authority holder's petroleum operation. It is ideal that the consultation is broader to enable social licence; however, it must address the environmental performance of the authority holder's petroleum operation at a minimum.

In this guideline, the term 'relevant person or organisation' may also refer to local 'community' or 'stakeholders' with an interest that may be affected by the project, wherever these terms appear. Authority holders should refer to sections 4 and 5 of the Communications and Engagement Schedule (Appendix 2) for examples of the types of individuals and groups Earth Resources Regulation considers to be a 'relevant person or organisation'.

4.14 Emergency management

Relevant provision

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (i) provides for the maintenance of an up-to-date emergency response manual prepared for the petroleum operation that includes detailed response arrangements for—
 - (i) dealing with any threat to individuals, public safety, public amenity or the environment in the vicinity of the petroleum operation; and
 - (ii) ensuring that the threat does not harm individuals, public safety, public amenity or the environment; and
 - (iii) dealing with any unwanted event that occurs that is harming individuals, public safety, public amenity or the environment

Refer to chapter 7 of this guideline for further details.

4.15 Hydrocarbon gas emissions

Relevant provisions

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (j) in relation to hydrocarbon gas emissions from the petroleum operation, includes—
- (i) the measures in place to ensure any hydrocarbon gas emissions will be minimised as far as reasonably practicable; and
 - (ii) the measures in place to identify any hydrocarbon gas emissions as they occur; and
 - (iii) an estimate of the hydrocarbon gas emissions that will be generated by the petroleum operation

Regulation 5 of the Regulations – *Definitions*

In these Regulations—

hydrocarbon gas emissions means gaseous emissions from leaks, flaring or venting of hydrocarbons

Refer to section 4.11 of this guideline for guidance regarding measures to minimise hydrocarbon gas emissions as far as is reasonably practicable.

Given that hydrocarbon gas emissions are defined to be gaseous emissions from leaks, flaring or venting of hydrocarbons, the point sources of such emissions are limited. There are various methods to identify these emissions as they occur including by electronic gas detectors, gas detection cameras, visual observations of ignited gas, etc. The EMP must detail which methods will be employed to identify hydrocarbon gas emissions during the petroleum operation.

The definition of hydrocarbon gas emissions limits the type of emissions to be considered. An estimation of the hydrocarbon gas emissions should be based on (where relevant) but not limited to:

- well clean-up and testing program
- production test program
- venting program
- pigging of gathering line
- leak tolerances set by manufacturer
- maintenance program recommended by manufacturer
- maintenance program adopted
- design life of equipment to be used and the life remaining according to the design life.

The estimation methodology and logic should be outlined.

4.16 Groundwater impacts

Relevant provision

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (k) in relation to any groundwater impacts of a well activity carried out during a petroleum operation—
 - (i) assesses the risks and impacts to the groundwater environment from the well activity; and
 - (ii) identifies how these risks and impacts to the groundwater environment will be mitigated; and
 - (iii) if the operation is a petroleum production operation—
 - (A) identifies the method by which the holder of the authority will establish the baseline water quality before petroleum production commences; and
 - (B) identifies the groundwater monitoring methodology, including the frequency of the monitoring and the parameters to be monitored prior to and during petroleum production; and
 - (C) identifies a reporting schedule for the holder of the authority to report to the Minister in relation to any monitoring identified in sub-subparagraph (B).

This provision is only applicable if the petroleum operation involves a well. It is however applicable irrespective of the nature of the activity that involves a well (e.g. construction/drilling a well, workover, production/operation, decommissioning a well).

Refer to section 4.9 of this guideline for guidance regarding the assessment of risks and impacts to the groundwater environment from well activity.

Refer to section 4.11 of this guideline for guidance regarding measures to mitigate the risks and impacts to the groundwater environment.

If the petroleum operation involves petroleum production (as defined in section 8 of the Petroleum Act), the baseline water quality must first be established. To enable baseline analysis and monitoring, a water bore is required. Authority holders can establish the location of the nearest water bore using public information sources, such as Visualising Victoria's Groundwater (VVG). VVG brings together repositories of data that are managed by different government departments, agencies and research institutions, and displays the bores on a map with individual data for each bore. If the authority holder cannot locate an appropriate nearby bore, a new water monitoring bore(s) will need to be drilled. The bore, for hydraulic purposes, needs to be up hydraulic gradient of the site of the petroleum operation.

The EPA Environment Reference Standard (ERS) provides the basis for monitoring and maintaining groundwater quality in Victoria. It sets out standards for environmental values for groundwater comprising objectives for supporting groundwater uses and indicators which can be measured to determine whether those objectives are being met (see ERS Part 5 – Water). Appendix D of *EPA Publication 1992: Guide to the Environment Reference Standard* provides guidance on structuring tailored monitoring programs.

In the context of the ERS, environmental values are considered a use, attribute or function of the environment. For groundwater, examples of environmental values include agriculture and irrigation, Traditional Owner cultural values, buildings and structures, and geothermal properties. Environmental values are applied to groundwater on the basis of the background water quality level of total dissolved solids (TDS). For example, the environmental value of 'agriculture and irrigation' applies to groundwater in segments A1, A2 and B (i.e. concentrations of between 0 and 3,100 mg/L as per ERS Table 5.3).

Environmental values should be applied using baseline (trend) monitoring and take into account local landowner consultation. Table 5.4 of the ERS provides indicators and objectives for groundwater based on applicable environmental values. Both indicators and objectives should be measured through a mix of trend, intervention or event monitoring as appropriate. Important design considerations for monitoring include indicator selection, monitoring scale, duration and frequency.

Note: The Victorian Aquifer Framework should be used for the definition of 'aquifer' as it pertains to groundwater.

5. Rehabilitation plan

Relevant provisions

Section 161 of the Petroleum Act – *Operation plan to be prepared*

- (1) Before carrying out any petroleum operation, the holder of the authority under which the operation is to be carried out must give the Minister an operation plan—
 - (c) that specifies what the holder of the authority will do to rehabilitate the land that will be affected by the operation;

Regulation 22 of the Regulations – *Content of operation plan*

- (3) The operation plan must—
 - (b) include a rehabilitation plan.

A rehabilitation plan is a mandatory component of an operation plan. It is requested that authority holders prepare rehabilitation plans using the guidance in this chapter. This guidance is intended to assist authority holders with compliance with the legislation and assist with assessment of the operation plan.

A rehabilitation plan is one of the key requirements of an operation plan under section 161(1)(c) of the Petroleum Act, and also under regulation 22(3)(b) of the Petroleum Regulations. The specific requirements for a rehabilitation plan are set out in regulation 37.

The rehabilitation plan is the mechanism to establish rehabilitation performance objectives and standards and will therefore be important in the context of rehabilitation bonds.

5.1 Revision history

Establish a version control system to ensure that employees, contractors and Earth Resources Regulation have the current version of the rehabilitation plan and supporting documents. Clearly identify the version on each document.

5.2 Approvals

Earth Resources Regulation requests that authority holders include a document control table or equivalent to indicate internal approval process – i.e. authorised employees' names, position titles and dated signatures showing that the rehabilitation plan has been approved and by whom.

5.3 Distribution list

Earth Resources Regulation requests that authority holders list all employees, contractors and sub-contractors who will be provided a copy of the rehabilitation plan or parts of the rehabilitation plan that are relevant to their work.

5.4 Associated documents

List any supporting documents you intend to submit with the rehabilitation plan.

5.5 Definitions and abbreviations

List definitions and abbreviations.

5.6 Progressive and final rehabilitation

Relevant provision

Regulation 37 of the Regulations – *Rehabilitation plan*

(1) For the purposes of regulation 22(3)(b), a rehabilitation plan must include—

- (a) details of the proposed rehabilitation of surface areas of land proposed to be affected by the petroleum operation including, but not limited to, facilities and accommodation camps.

Sites where petroleum operations will take place are likely to have different environmental characteristics and a variety of post-closure land uses. Factors that typically influence rehabilitation considerations include, but are not limited to:

- landowner/land manager requirements
- surrounding vegetation
- post-closure land use
- stakeholder perspectives
- significance or threat status of local native flora and fauna; and
- future forecasting of environmental trends.

An overview of the factors and assumptions considered in determining the rehabilitation approach should be included.

A level of rehabilitation is expected to occur at the end of each stage of the petroleum operation (e.g. the construction area of a well may be partially rehabilitated if the well commences operations and no longer requires the entire construction area). In addition, it may be feasible for progressive rehabilitation to occur during each stage of the petroleum operation (e.g. the construction area of a well may be partially rehabilitated if the well is suspended pending future well tests or tie-in to production facilities).

Provide details of the proposed rehabilitation and closure of the site, which should include the security of the site and the removal of plant and equipment, taking into account any potential short and long-term degradation of the environment.

The details of the proposed rehabilitation should also be presented in marked-up maps illustrating the intended state of the land once rehabilitation has been completed.

5.7 Revegetation approach

Relevant provision

Regulation 37 of the Regulations – *Rehabilitation plan*

(1) For the purposes of regulation 22(3)(b), a rehabilitation plan must include—

- (b) proposed measures for revegetation of that land.

If some level of rehabilitation will occur at the end of each stage of the petroleum operation, the measures to revegetate the land not being used by a facility should be included.

Consideration must be given to any commitments or agreements with, or conditions set by, the landowner or any agencies regarding the petroleum operation. In addition, these need to be consistent with applicable Victorian and Commonwealth legislation.

If all rehabilitation will occur after decommissioning has been completed, the measures to revegetate all of the land affected by the petroleum operation must be included.

5.8 Rehabilitation objectives

Relevant provision

Regulation 37 of the Regulations – *Rehabilitation plan*

(2) A rehabilitation plan must—

- (a) set out rehabilitation performance objectives and rehabilitation performance standards against which the authority holder's performance in rehabilitating the land is to be measured; and
- (b) include measurement methods for determining whether those objectives and standards have been met.

Section 4.10 of this guideline provides guidance regarding environmental performance objectives and standards and the methodology for measurement. An identical approach should be adopted for determining the rehabilitation performance objectives and standards.

The rehabilitation performance objectives and standards should define completion criteria. The completion criteria will provide a clear definition of successful rehabilitation for each aspect of a petroleum operation site. The completion criteria should relate to the environmental, social and safety context of each site of the petroleum operation. These should be used to determine the details of the proposed rehabilitation (see section 5.6 of this guideline). As noted above, this will be important in the context of rehabilitation bonds.

It is recommended that these criteria are developed in consultation with relevant persons and organisations (e.g. affected landowners and land managers, local government, scientists, Indigenous groups, community groups and various Victorian Government departments) and align with the post-closure land use. Consultation regarding the completion criteria should be included as a discrete activity within the Communications and Engagement Schedule (Appendix 2). The post-closure land use should have been clearly determined and defined as part of the process to obtain permission to access the land. You must provide details of how the authority holder will manage the final rehabilitation and closure of the site, including the security and removal of plant and equipment, taking into account any potential short and long-term degradation of the environment.

5.9 Reporting

Following rehabilitation works at petroleum operation sites, a period of observation and reporting is necessary to determine the performance of the rehabilitation carried out. An outline of the monitoring and reporting arrangements should be included in the rehabilitation plan, together with details of any commitments to address rehabilitation performance that is not meeting the objectives and standards.

The reporting arrangement can be used to support the details that will need to be included in the annual report required (see regulation 39(2)(g) of the Regulations).

The reporting arrangement can be used to provide assurance that rehabilitation has been, and will be, undertaken in accordance with the accepted performance objectives and standards.

6. Well operation management plan

Relevant provision

Regulation 22 of the Regulations – *Content of operation plan*

(1) For the purposes of section 161(1)(d) of the Act, an operation plan—

(a) must set out—

(vi) if the petroleum operation includes the making of a new well, carrying out activities on an existing well or decommissioning a well, a well operation management plan in accordance with Division 3.

It is requested that authority holders prepare well operation management plans (WOMP) using the guidance in this chapter and sections 3.8 to 3.13 of this guideline. The information requested in this structure is intended to facilitate compliance with the legislation by authority holders and assessment of the WOMP. Guidance is set out under each heading.

Note that the WOMP must be appropriate for the nature and scale of each well activity to be carried out under the operation plan, in accordance with regulation 36(1)(d) of the Regulations.

6.1 Code of Practice for Petroleum Wells (Vic)

Clearly set out if the petroleum operation will align with the Code of Practice for the Construction, Operation and Decommissioning of Petroleum Wells (COP) or if you intend to use alternative means for well management.

If authority holders intend to align with the COP, appropriate details within the COP should be specified in the WOMP.

If authority holders intend to use alternative means of compliance with the Petroleum Act and Regulations (i.e. different to the contents of the COP) demonstrate how this will achieve a better outcome than the measures in the COP. In addition, the WOMP must clearly set out the details that are different from the COP.

6.2 Revision history

Establish a version control system to ensure that employees, contractors and Earth Resources Regulation have the current version of the WOMP and supporting documents. Clearly identify the version on each document.

6.3 Approvals

Earth Resources Regulation requests that authority holders include a document control table or equivalent to indicate internal approval process — i.e. authorised employees' names, position titles and dated signatures showing that the WOMP has been approved and by whom.

6.4 Distribution list

Earth Resources Regulation requests that authority holders list all employees, contractors and sub-contractors who will be provided a copy of the WOMP or parts of the WOMP that are relevant to their work.

6.5 Associated documents

List any supporting documents you intend to submit with the WOMP. For example, offset review data and seismic maps.

6.6 Definitions and abbreviations

List definitions and abbreviations.

6.7 Well integrity management system

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates —
 - (n) demonstrate that the holder of the authority has a well integrity management system in place, or a process for managing well integrity during the life of the well that complies with relevant industry standards.
- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (n) details of how the holder of the authority will ensure well integrity

Describe the well integrity management system (WIMS) to be used, the relevant standards that will be adhered to and how it complies with these standards.

Well integrity ensures containment and prevents the escape of fluids to subsurface formations or the surface. To preserve the well in a suitable condition for its useful life, regular monitoring and maintenance is necessary. This data will also demonstrate the likelihood that well integrity will be maintained post-decommissioning.

The WIMS should address the following:

- all possible statuses of wells
- risk management approach/strategy
- barrier philosophy
- barrier standards
- barrier verification
- materials specifications
- barrier maintenance
- operational barriers
- suspension barriers
- well decommissioning
- performance standards
- organisational structure with clarification of roles, responsibilities and competencies
- management of change; and
- auditing.

6.8 General details of the well(s)

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (a) contain the name and number of the well; and
 - (b) set out the elevation, easting and northing coordinates of the well and the basin and sub-basin (if applicable) in which the well is located

Provide general details of each well to enable identification (i.e. name and number of the well and its location).

The WOMP should describe the studies that support the selection of the well location. These studies can be reservoir, geomechanical, and/or geotechnical in nature, with inputs from offset wells and/or from seismic, aeromagnetic and gravitational surveys.

6.9 Well activities

Relevant provisions

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (c) describe each of the proposed stages of any well activity carried out during the petroleum operation including, if appropriate, the design, construction, operation, suspension, care, maintenance and decommissioning of the well;
 - (k) describe the equipment and facilities to be used in connection with the well and ancillary equipment;

Regulation 5 of the Regulations – *Definitions*

In these Regulations—

ancillary equipment, in relation to a well, includes—

- (a) equipment located downhole; and
- (b) pressure control equipment; and
- (c) a well-head;

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (a) information about the conduct of each well activity

The WOMP must include an overview of the well activities proposed.

Clearly set out all stages of any well activities to be carried out (identifying more than one if relevant):

- design
- construction
- operation
- suspension
- maintenance
- decommissioning.

For each stage, include a description that outlines the conduct (and scope) of the activity that will be carried out on the well.

In addition, include a description of the facilities to be used in connection with the well and ancillary equipment. This is expected to include (where relevant), but is not limited to, a drilling rig, a workover rig and a slickline unit (detailing the respective components).

6.10 Operation timing

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (f) set out the authority holder's proposed timetable for carrying out each well activity

The WOMP should set out the timing for the commencement, key milestones and completion of each well activity, identifying the timetable of each stage (see section 6.9 of this guideline).

This should include duration and commencement of setting up plant and equipment, drilling or workover operations and demobilisation of the equipment.

6.11 Design of well activity

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (b) an explanation of the philosophy of and criteria for the design, construction, operational activity and management of the well and ancillary equipment;
 - (g) performance objectives against which the performance of each well activity is to be measured;
 - (h) measurement methods for determining whether the performance objectives have been met

The explanation of the philosophy behind the well activity and ancillary equipment should outline the basis for the approach to be adopted in carrying out the well activity. It need not be extensive but should be sufficient to support the petroleum operation.

The WOMP must define the performance objectives and standards that will drive the performance of the petroleum operation in preventing any uncontrolled release of formation fluids to the environment (surface and subsurface). The performance objectives and standards should be set in relation to each well activity and the respective stages.

Once the performance objectives and standards are defined, the WOMP must detail the measurement methods that will be used to determine the performance in achieving the standards set. The measurement methods must be specific and reportable to enable an assessment of the performance. Each performance objective and standard may require more than one method to measure the performance. Where performance objectives and standards have a common method to measure performance, it should be clear how the data will be used to measure each performance objective and standard.

It is expected that evaluations of the performance of the petroleum operation may influence decisions to employ different/additional control measures. Consideration must then be given as to whether a variation to the operation plan will be required.

6.12 Risk management

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (l) identify the risks associated with each well activity during each stage and state how the holder of the authority proposes to eliminate or minimise those risks as far as is reasonably practicable;
- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (i) the controls, systems, practices and procedures to be used to deal with—
 - (i) a well integrity hazard; and
 - (ii) a significant increase in an existing risk in relation to the well, including if an activity must continue to be carried out for the purpose of dealing with the risk; and
 - (iii) the protection of any aquifers;
 - (p) how the holder of the authority will, during the life of the well—
 - (i) maintain 2 verified well barriers at all times

In analysing risks within the WOMP, it is recommended that authority holders use the risk framework outlined in section 3.8.

Note: authority holders may use their own framework for assessing consequence and likelihood of risks within the WOMP. However, it must address the prescribed categories of environment, public safety, land, property, petroleum, source of petroleum and reservoir. If an authority holder's framework does not cover all prescribed categories required under section 161 of the Petroleum Act (and presented in section 9.1 of Appendix 1), then they must develop and provide consequence and likelihood definitions and ratings of the missing categories and explain how it is complementary to their existing framework. The consequence and likelihood definitions provided in Appendix 1 can be used or drawn from to develop the missing categories.

6.12.1 Geological prognosis, hazards and reservoir characteristics

In order to identify the risks associated with each well activity during each stage, the geology, its hazards and the relevant reservoir characteristics should be understood. A description of the known or predicted geology of the well, hazards and relevant reservoir characteristics should be included in the WOMP.

For example, provide details of geohazards (e.g. faults, abnormal-pressure zones), aquifers, porosity and permeability, thief zones, traps, pore pressure, fracture gradient, hydrogen sulphide (H₂S), carbon dioxide (CO₂) and presence of other reservoir components.

6.12.2 Identify risks

Based on the well activity proposed, and its stages during the petroleum operation (see section 6.9 of this guideline), the risks associated with those activities must be identified. Section 3.8 of this guideline provides guidance for identifying and assessing risks.

6.12.3 Control measures (well control)

Once the performance objectives and standards have been defined, controls must be set out that eliminate or minimise the risks as far as is reasonably practicable. The control measures should also identify which performance objectives and standards will be met by adoption of the controls.

Control measures should be understood in terms of their effectiveness. This will include consideration of a range of factors; for example, their functionality, availability, reliability, independence, survivability, compatibility, maintainability, benefit, cost and their ability to minimise risk.

The description of control measures should clearly demonstrate how they will function to ensure that the performance objectives will be achieved, while ensuring that two verified well barriers are maintained at all times. Well barriers refer to the components of a well designed to prevent fluids or gases from flowing unintentionally from one geological formation into another formation, or to escape at surface.

The well control methodology should define the justification for primary and secondary barriers to be provided to prevent uncontrolled release of formation fluids to the surface.

Control measures can include physical actions of an activity, facility, individual and elements of the well integrity management system employed by the authority holder that eliminates, prevents, minimises or mitigates the consequence or likelihood of a risk.

Control measures should not include monitoring activities. Monitoring measures the performance of the petroleum operation and therefore the effectiveness of control measures. Monitoring is an important action but should not be specified as a control measure in isolation.

6.13 Well design

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (e) include details of the design of the well and ancillary equipment, including details of how the well is to protect petroleum resources and aquifers

The design of the well should incorporate the controls that will be used to address well integrity hazards, protecting petroleum resources and aquifers, and the maintenance of two verified well barriers at all times.

The details of the design of the well must include details of ancillary equipment.

6.13.1 Casing design

Casing and tubing need to be designed to withstand the various compressive, tensile and bending forces that are exerted while running-in the hole. This is in addition to the collapse and burst pressures that it may experience during different phases of the well's life, such as cementing, pressure testing, stimulation and production cycles. Casing and tubing must also protect the aquifers and prevent cross-contamination between different aquifers. The selection process needs to have considered these aspects.

The WOMP should describe the philosophy for the selection of the casing.

6.13.2 Well-head and Christmas tree

Well-heads need to be designed to maintain well integrity at the surface, support casing and completion strings by providing a suspension point, and support the blow out preventer (BOP). The selection process needs to have considered these aspects.

The WOMP should describe the philosophy for selection of the well-head and Christmas tree.

6.13.3 Fluids

Drilling and completion fluids need to be designed to maintain well integrity and barrier requirements, optimise hole conditions, minimise formation damage and improve drilling performance. The selection process needs to have considered these aspects.

The WOMP should describe the philosophy for selection of drilling and completion fluids.

6.13.4 Drilling design and contingency program

The drilling program needs to be designed to keep the well objective and target in mind, such as

- expected pressures with depth versus pressures
- hole deviation and survey requirements
- target tolerance
- diverter
- BOP requirements and test pressures for each hole section
- bit program and well-head specifications
- casing
- cementing
- logging
- evaluation program.

A fit-for-purpose contingency program needs to be in place to mitigate the effects of failure in the event of unplanned process upsets or events during the construction and operation of the well.

The WOMP should describe the philosophy for designing the drilling program and contingent drilling program.

6.13.5 Completion program

The well completion program needs to be designed to maintain well integrity, protect the formation from unintended contamination and act as a barrier.

The WOMP should describe the philosophy for the completion and/or recompletion program. The philosophy needs to include how the completion program has been designed to withstand the various compressive, tensile and bending forces, as well as collapse and burst pressures throughout the lifecycle of the well.

6.13.6 Sampling and testing of well and ancillary equipment

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (d) details of—
 - (i) which logs will be run; and
 - (ii) how those logs will be run;
 - (e) proposals for testing of the well and ancillary equipment;
 - (f) proposed sampling and testing methods for petroleum

You must provide details of the proposed sampling and testing program of the well that includes consideration of necessary ancillary equipment. In addition, provide details of the sampling and testing methods to be used (to evaluate the formation).

The above details must demonstrate that two verified well barriers will be maintained at all times.

While the WOMP must include the above details (unless there is written permission not to include them), the acceptance of the operation plan (under section 161 of the Petroleum Act) and consent to carry out the petroleum operation (under section 138 of the Petroleum Act) are not sufficient to carry out well tests. Regulation 28 states that a holder of an authority must not conduct a production test or well test in a well except with, and in accordance with, the written consent of the Minister. Planning for the petroleum operation needs to take this into account.

6.13.7 Verification of well design

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (j) how the holder of the authority will ensure that the design of the well is verified by a person suitably qualified or experienced to verify the well design;
 - (k) the qualifications or experience of the person referred to in paragraph (j), and that person's work telephone number, email and postal address

The design of the well is a critical element that contributes to well integrity. As a result, it is important that the design is verified by a suitably qualified or experienced person(s). See section 4.12.2 for Earth Resources Regulation's policy position in this regard.

The WOMP must detail how the authority holder will ensure a suitably qualified or experienced person(s) will verify the well design and include details of their qualifications or experience and contact details.

Earth Resources Regulation will notify the authority holder if further evidence of qualifications or experience of its employees and any contractors is required during assessment.

6.14 Well construction and operation

6.14.1 Supervision of construction

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (l) how the holder of the authority will ensure that the construction of the well is supervised by a person suitably qualified or experienced to verify that the well construction—
 - (i) is completed in accordance with the design of the well; and
 - (ii) complies with any relevant requirements and standards

The construction of the well activity is a critical element that contributes to well integrity. As a result, it is important that the construction is supervised by a suitably qualified or experienced person(s). See section 4.12.2 for Earth Resources Regulation’s policy position in this regard.

The WOMP must detail how the authority holder will ensure a suitably qualified or experienced person(s) will supervise the construction of the well to verify that it is executed in accordance with the design and complies with relevant requirements.

Earth Resources Regulation will notify the authority holder if further evidence of qualifications or experience of its employees and any contractors is required during assessment.

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (3) The holder of the authority must give the following details to the Minister at least 10 days before construction of the well commences—
- (a) the qualifications or experience of the person referred to in subregulation (2)(l);
 - (b) the work telephone number, email address and postal address of the person referred to in subregulation (2)(l).

In some instances, the identity of the person who will supervise the construction of the well will not be known when the WOMP is prepared. Given a suitably qualified or experienced person(s) must supervise the construction of the well, the details of their qualifications or experience and contact details must be provided at least 10 days prior to commencement of construction.

6.14.2 Modification of the well

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (i) include details of how modifications, maintenance and repairs to the well and ancillary equipment are to be managed

Where modifications are proposed (e.g. workovers, change out of well-head, change out of Christmas tree), include the following details:

- triggers for a variation to the operation plan
- specifications of the modification
- the risk review process to be adopted
- management plan(s) for the modification activity detailing how pressures will be monitored; and
- the final configuration of the well and/or ancillary equipment.

Details must include how two verified well barriers will be maintained at all times during these works and should include plans for notifications to Earth Resources Regulation prior to commencing these works.

6.14.3 Maintenance and repair

During all stages of the petroleum operation (including construction), maintenance is required to ensure that equipment is fit-for-purpose at all times. Section 166(1) of the Petroleum Act states '*the holder of an authority must maintain in good condition and repair all structures, equipment and other property in the authority area that is used in connection with the petroleum operations being carried out under the authority*'. The maintenance details should include:

- an overview of the maintenance program
 - o activity (e.g. well clean-up, valve change out)
 - o scope
 - o objectives
 - o timing/frequency
 - o records/logs
- consideration of the manufacturer's recommended servicing timelines
- possible repairs to the well (e.g. valve repairs) and ancillary equipment
- suitability of equipment that will be used for the maintenance and repair activities.

Details must include how two verified well barriers will be maintained at all times during these works and should include plans for notifications to Earth Resources Regulation prior to commencing these works.

6.14.4 Inspections

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (g) describe how the holder of the authority is to keep records and conduct inspections, including but not limited to leak detections, well-head inspections, well-head maintenance, workovers, and downhole inspections

Provide details of how the authority holder will conduct inspections that include, but are not limited to, leak detection, well-head inspection, well-head maintenance, workovers and downhole inspection, whilst maintaining two verified well barriers at all times.

6.14.5 Production – preparation and operation

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (h) describe the process by which a connection is to be made between the well and a petroleum reservoir so that fluids can be produced from, or injected into, the reservoir

Perforations to well casings, tubing or liner are the most common method for fluids (and gases) to be able to be produced from, or injected into, the targeted reservoir.

The methodology (specifying the surface and downhole equipment to be used) to perforate cased-hole completions must be described. Once the perforation has taken place, include the methodology for enabling fluids (and gases) to flow from, and into, the well.

Open-hole completions may also be used, and the same (relevant) information must be included in the WOMP if it will be used.

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (c) the possible petroleum production and storage activities of the well

If the petroleum operation is the drilling and testing of an exploration (or appraisal) well, include a brief outline of possible petroleum production and storage activities of the well, should the well be successful.

If the petroleum operation is the drilling and testing of a production well, include details of possible (and likely) petroleum production and storage activities of the well. This information should include tie-ins to other facilities.

6.15 Well suspension and decommissioning

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (j) include details of how any suspension or decommissioning of the well is to be managed, including specifications for all materials that are to be used to maintain well integrity, including but not limited to casings, tubing, mud, cement, and well-heads

There are three main ways for a completed well to stop flowing fluids from a formation to beyond the well-head:

1. shut-in the well
2. suspend the well
3. decommission the well.

The WOMP must include details of suspending or decommissioning any well(s).

A well that is shut-in is a well which has not yet been suspended or is temporarily inactive (e.g. a well that has only had the valves closed on the Christmas tree).

A well that is suspended is a well which has an additional requirement to a shut-in well as defined in the WIMS, as it has been, or will be, offline for a significant period of time (e.g. a well that will have temporary packers and/or bridge plugs at the appropriate depths). It is also a well that has been temporarily isolated from the producing reservoir.

A well that is decommissioned is permanently isolated from the producing reservoir (e.g. a well that has been plugged permanently) and well infrastructure has been removed, where practicable.

Hazards will exist for any proposal to suspend or decommission a well. Risk assessment and selection of appropriate controls are critical to ensure that the risks posed by the well activity are eliminated or minimised as far as is reasonably practicable (see section 3.8 of this guideline). The control measures must take into consideration all materials that are to be used to maintain well integrity including but not limited to casings, tubing, mud, cement and well-heads. Specifications of the methodology and materials must be included.

Refer to section 2.2.2 of this guideline for further details regarding the approvals necessary to suspend or decommission a well.

6.15.1 Supervision of decommissioning

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
- (m) how the holder of the authority will ensure that the decommissioning of the well is supervised by a person suitably qualified or experienced to verify that the well decommissioning—
 - (i) is completed in accordance with the design of the well; and
 - (ii) complies with any relevant requirements and standards

The decommissioning of the well activity is a critical element that contributes to well integrity. As a result, it is important that the decommissioning is supervised by a suitably qualified or experienced person(s). See section 4.12.2 for Earth Resources Regulation's policy position in this regard.

The WOMP must include details (unless there is written permission not to include them) of how the authority holder will ensure a person(s) suitably qualified or experienced will supervise the decommissioning of the well to verify that it is executed in accordance with the design and complies with relevant requirements.

Earth Resources Regulation will notify the authority holder if further evidence of qualifications or experience of its employees and any contractors is required during assessment.

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (4) The holder of the authority must give the following details to the Minister at least 10 days before the well is decommissioned—
- (a) the qualifications or experience of the person referred to in subregulation (2)(m);
 - (b) the work telephone number, email address and postal address of the person referred to in subregulation (2)(m).

In some instances, the identity of the person who will supervise the decommissioning of the well will not be known when the WOMP is prepared. Given that a suitably qualified or experienced person(s) must supervise the decommissioning of the well, the details of that person(s), their qualifications or experience and contact details must be provided at least 10 days prior to commencement of decommissioning.

Note: the above details are also required for a proposal to suspend a well, but they must be submitted with the application for consent to suspend a well (see regulation 29(4)(g) and (h) of the Regulations).

6.16 Management of contractors

Most petroleum operations will require engagement of a contractor(s) to deliver the project. In those cases, the effectiveness of selected control measures will often be influenced by the relationship between the authority holder and contractor(s).

6.16.1 Overview of contractor relationship

The WOMP should describe the approach to management of contractors, specifically the drilling rig contractor relationship if relevant. It should also describe the process by which communication regarding well integrity will be managed with contractors and service providers to ensure long-term well integrity.

Note: The authority holder is responsible for the management of health and safety in relation to contractors. For the purposes of sections 21(1) and (2) of the *Occupational Health and Safety Act 2004*, a reference to an employee includes a reference to an independent contractor engaged by an employer and any employees of the independent contractor.

Under section 21(2) of the *Occupational Health and Safety Act 2004*, an employer must:

- (a) Provide or maintain plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health
- (b) Make arrangements for ensuring, so far as is reasonably practicable, safety and the absence of risks in connection with the use, handling, storage or transport of plant or substances
- (c) Maintain, so far as is reasonably practicable, each workplace under the employer's management and control in a condition that is safe and without risks to health
- (d) Provide, so far as is reasonably practicable, adequate facilities for the welfare of employees at any workplace under the management and control of the employer; and
- (e) Provide such information, instruction, training or supervision to employees of the employer as is necessary to enable those persons to perform their work in a way that is safe and without risks to health.

6.16.2 Competency of contractors and sub-contractors

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (o) how the holder of the authority will ensure that any contractors or sub-contractors involved in managing the operation of the well are suitably qualified or experienced.

Include details of how the authority holder will ensure that any contractors or sub-contractors involved in managing the operation of the well are suitably qualified or experienced. Managing the operation of the well encompasses persons that will design, execute, supervise and oversee the relevant aspect(s) of the well activity. This obligation is in place for the duration of the petroleum operation that involves a well. See section 4.12.2 for Earth Resources Regulation's policy position in this regard.

Earth Resources Regulation will notify the authority holder if further evidence of qualifications or experience of its employees and any contractors is required during assessment.

6.17 Record management

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
 - (g) describe how the holder of the authority is to keep records and conduct inspections, including but not limited to leak detections, well-head inspections, well-head maintenance, workovers, and downhole inspections;
- (2) The well operation management plan must include the following details, unless the Minister gives the holder of the authority written permission for any details specified in that permission not to be included—
 - (p) how the holder of the authority will, during the life of the well—
 - (ii) keep records containing details of any well interventions, well-head maintenance activities, workovers and well testing.

In addition to the requirements set out in section 3.11 of this guideline, there are additional record keeping obligations that apply during the life of a well.

Provide details regarding the record management practices to be employed so that records regarding sampling, testing, inspections, leak detection, maintenance activities, interventions and modifications will be accessible for the life of the well.

6.18 Reporting

Relevant provision

Regulation 36 of the Regulations – *Well operation management plan*

- (1) The well operation management plan included in an operation plan under regulation 22(1)(a)(vi) must, in relation to each well to which it relates—
- (m) include details of when and how the holder of the authority is to give the Minister reports and information about—
- (i) each well activity; and
 - (ii) any well integrity hazards; and
 - (iii) progression from one stage to another during the well operation; and
 - (iv) significant increases in existing risks in relation to the well; and
 - (v) other matters relevant to the conduct of each well activity

Set out how, and when, information and reports of the well activities, risk management updates and key milestones will be provided.

Note:

- The authority holder also needs to provide operational reports as appropriate for the stage of the operations, including but not limited to:
 - o biannual petroleum production report (regulation 40 of the Regulations)
 - o daily drilling reports (regulation 46 of the Regulations)
 - o well completion reports (initial and final), due within 6 and 12 months respectively, of rig release date (regulations 47 and 48 of the Regulations)
 - o well decommissioning reports within 2 months after the plugging and decommissioning of the well is completed (regulation 49 of the Regulations)
 - o incident reporting (regulation 45 of the Regulations).
- The authority holder also needs to retain any core, cutting or sample under regulation 50 of the Regulations and give the core, cutting or sample to the Minister in accordance with the table set out in regulation 51(2) of the Regulations.

7. Emergency response manual

Relevant provision

Regulation 33 of the Regulations – *Implementation strategy for the environment management plan*

An environment management plan must contain an implementation strategy that—

- (i) provides for the maintenance of an up-to-date emergency response manual prepared for the petroleum operation that includes detailed response arrangements for—
 - (i) dealing with any threat to individuals, public safety, public amenity or the environment in the vicinity of the petroleum operation; and
 - (ii) ensuring that the threat does not harm individuals, public safety, public amenity or the environment; and
 - (iii) dealing with any unwanted event that occurs that is harming individuals, public safety, public amenity or the environment

The operation plan should be accompanied by an emergency response manual prepared using the information in sections 7.1 through 7.13 in this guideline. The information requested in this structure is intended to assist with preparing emergency response manuals and compliance by authority holders with the broader content expectations of Earth Resources Regulation.

The information in this chapter is also based on the Australasian Inter-service Incident Management System (AIIIMS). This ensures consistency of emergency response between authority holders and with state emergency response arrangements.

7.1 Revision history

Establish a version control system to ensure that employees, contractors and Earth Resources Regulation have the current version of the emergency response manual and supporting documents. Clearly identify the version on each document.

7.2 Approvals

Earth Resources Regulation requests that authority holders include a document control table or equivalent to indicate internal approval process — i.e. authorised employees' names, position titles and dated signatures showing the emergency response manual has been approved and by whom.

7.3 Distribution list

Earth Resources Regulation requests that authority holders list all employees, contractors and sub-contractors who will be provided a copy of the emergency response manual or parts of the emergency response manual that are relevant to their work.

7.4 Associated documents

List supporting documents that should be read alongside the emergency response manual.

7.5 Definitions and abbreviations

List definitions and abbreviations.

7.6 Scope

Provide an overview of the petroleum operation to be carried out by the authority holder, including basic facility descriptions. This could be a summarised version of the descriptions provided in chapter 3, to ensure consistency of key information (noting the operation plan may be referred to various agencies that will have different areas of responsibility, as required in accordance with the relevant MOU. See also section 2.1.3 of this guideline).

7.7 Objectives

The emergency response manual should include an overview of performance objectives, standards and corporate key performance indicators (KPIs) with regard to emergency response.

7.8 Review and update

The emergency response manual should include an overview of the mechanism and corresponding timelines/intervals by which the authority holder will review and update the emergency response manual to ensure it remains up-to-date.

7.9 Emergency response

7.9.1 Emergency response initiation

Best practice: Incident Emergency Management Team

An Incident Emergency Management Team (IEMT) is a structured emergency response team responsible for initiating emergency response in a potential disaster situation. The IEMT should be guided by clearly defined Terms of Reference (ToR) setting out the practical steps to be taken from the onset of the disaster occurring through to close out of the response.

The ToR identifies the role holders and sets out their responsibilities individually and as a team in an emergency response. Contact details of the IEMT must be displayed and accessible to all staff at all times. An IEMT member must be always contactable.

Various resources from Emergency Management Victoria can provide further guidance on the standard roles and responsibilities of an IEMT.

Detail how an emergency response will be initiated, including a head count if required.

7.9.2 Risk management and prevention

Effective risk mitigation and management is crucial to ensuring one's own safety, reputation, financial standing and professional liability, as well as the safety of the community and the environment. It is important to systematically consider all possible risks, not just during a crisis/emergency/disaster (unplanned event), but also those likely to arise post-occurrence. Best practice emergency response includes risk mitigation strategies that address the following key questions:

- What can go wrong?
- What will we do to prevent a crisis/emergency/disaster?
- What will we do if it happens?
- How will we maintain or reference key learnings and industry improvements to help guide future risk management and prevention?

The emergency response manual should outline the philosophy for how risks will be identified, managed and prevented so as to control incident and exposure-related risks as far as is reasonably practicable in line with the principles of the risk framework identified in section 3.8 of this guideline (or an equivalent risk framework).

7.9.3 Emergency response training

The effectiveness of responding to an emergency relies on risk management protocols being ingrained in the mindset of personnel. A safety and security mindset comes from training and education. Practice simulation training should form part of this.

The emergency response manual should detail how emergency response training will be delivered and records maintained to ensure all staff and personnel are up-to-date with training requirements.

7.9.4 Community notification

The emergency response manual should outline how the immediate community will be notified of any emergency response requiring resources to be mobilised. If there is no requirement to mobilise resources, details outlining when the community will be notified should be included.

In a disaster situation, members of the public should be notified following a quick impact assessment to identify hazards to individuals, the community and the environment.

7.9.5 Emergency response equipment

The emergency response manual should detail the type and number of emergency response plant and equipment held by the authority holder, contractor(s) and sub-contractor(s) necessary for emergency response. This should include but not be limited to:

- first aid kits
- telephones (landline and mobile)
- alarms (including expected testing frequency)
- radios
- fire extinguishers
- eyewash stations
- spill kits
- emergency shut down systems.

7.10 Emergency procedures

Emergency procedures should be tailored to the site and be risk-specific. The emergency response manual should outline the procedure the authority holder will follow to ensure timely rectification, as well as the approach to proactively mitigating key risks as far as is reasonably practicable in each instance.

When outlining the approach to dealing with each threat, the authority holder needs to demonstrate how it is achieving each of the following (as required by regulation 33(i) of the Regulations):

- (a) dealing with any threat to individuals, public safety, public amenity or the environment in the vicinity of the petroleum operation;
- (b) ensuring that the threat does not harm individuals, public safety, public amenity or the environment; and
- (c) dealing with any unwanted event that is harming individuals, public safety, public amenity or the environment.

7.10.1 Muster locations

The emergency response manual should detail the emergency muster areas and the process that will be followed to ensure that these are displayed in all site premises.

7.10.2 Medical emergency

The emergency response manual should detail the emergency response procedure in the case of medical emergency.

7.10.3 Lone worker system

The emergency response manual should detail the emergency response procedure related to activation of the lone worker system (man down alarm).

7.10.4 Vehicle accident

The emergency response manual should detail the emergency response procedure related to vehicle accident/collision at or near the site of the petroleum operation (including accommodation camp(s)).

7.10.5 Uncontrolled release of gas

The emergency response manual should detail the emergency response procedure related to the uncontrolled release of gas (including but not limited to high pressure gas mixture of carbon dioxide/methane, hydrogen sulphide gas, any gas).

7.10.6 Fire and/or explosion

The emergency response manual should detail the emergency response procedure related to fire and/or explosion.

7.10.7 Bushfire

The emergency response manual should detail the emergency response procedure related to the occurrence of bushfires.

7.10.8 Chemical/fuel spill

The emergency response manual should detail the emergency response procedure related to chemical/fuel/hazardous material spill.

7.10.9 Heat stress

The emergency response manual should detail the emergency response procedure related to heat stress.

7.10.10 Snake bite

The emergency response manual should detail the emergency response procedure related to occurrence of snake bite.

7.10.11 Land instability

The emergency response manual should detail the emergency response procedure related to occurrence of land instability (e.g. landslides, subsidence).

7.10.12 Flooding

The emergency response manual should detail the emergency response procedure related to occurrence of flooding.

7.10.13 Unauthorised entry

The emergency response manual should detail the emergency response procedure related to occurrence or evidence of unauthorised entry.

7.10.14 Bomb threat

The emergency response manual should detail the emergency response procedure related to receipt of a bomb threat. In the case of a bomb threat, it should be handed over immediately to lawful specialist experts trained to identify and handle the threat where practicable. A risk such as this could be prolonged and could involve specialist negotiators working simultaneously with technical disarmament experts.

7.10.15 Sabotage

The emergency response manual should detail the emergency response procedure related to an instance of sabotage. Risk of sabotage could be internal (within the facility) and/or external to the perimeter and involve external sources with internal access.

7.10.16 Other

The emergency response manual should detail the emergency response procedure and risk mitigation approach for any other scenarios the authority holder deems pertinent to the implementation of an emergency response manual.

7.11 Roles and responsibilities

Authority holders should refer to the Australasian Inter-service Incident Management System (AIIMS) available through public information sources, such as the Emergency Management Victoria website, for detailed guidance and descriptions of incident and emergency roles and responsibilities.

7.11.1 Overview

The emergency response manual should provide a general overview of the roles and responsibilities pertinent to emergency response, including how they are coordinated from the top down.

7.11.2 Emergency levels

The emergency response manual should detail the different levels of emergency and incident response as per the authority holder's standard operating practice. Consideration should be given to how the authority holder's approach aligns with a recognised standard, such as the Australasian Inter-service Incident Management System (AIIMS):

- **Level 1** – Level 1 incidents are characterised by being able to be resolved through the use of local or initial response resources only (control is limited to the immediate area);
- **Level 2** – Level 2 incidents are more complex either in size, resources or risk. They are characterised by the need for deployment of resources beyond the initial response, sectorisation of the incident, the establishment of functional sections due to the levels of complexity, or a combination of these elements; and
- **Level 3** – Level 3 incidents are characterised by degrees of complexity that may require the establishment of Divisions for effective management of the situation. These incidents will, usually, involve delegation of all functions.

Establishing incident and emergency levels is important to ensure the personnel and teams are activated as appropriate for the tier of incident or emergency.

7.11.3 Tactical response activation

The emergency response manual should detail the mechanism through which a tactical response will be activated.

7.11.4 Incident management team activation

The emergency response manual should detail the mechanism through which an Incident Management Team (IMT) will be activated.

Under the AIIMS model, the IMT is grounded on the following principles:

- **Management by objectives:** determine incident outcomes for the purpose of ensuring all responders understand the direction taken during the response
- **Flexibility:** its structures can be applied to all hazards and used by all agencies
- **Unity of command:** responders should report to only one supervisor and should achieve one set of common objectives
- **Span of control:** relates to the number of groups or individuals that can be successfully supervised by one person. Up to five reporting groups or individuals is considered desirable, as this maintains a supervisor's ability to effectively task, monitor and evaluate performance
- **Functional management:** the IMT comprises the people responsible for the four functional roles of control, planning, operations and logistics.

Where all functions have been delegated, the IMT should, at a minimum, comprise the Incident Controller (Incident Management Team Leader), the Operations Officer, Planning Officer and Logistics Officer.

7.11.5 Incident emergency management team activation

The emergency response manual should detail the mechanism through which an Incident Emergency Management Team (IEMT) will be activated.

Under the AIIMS model, an IEMT should be formed for a major emergency and is generally chaired by the Incident Controller. The IEMT supports the Incident Controller to manage the effect and consequences of the emergency, ensuring every minute is used with efficacy. The IEMT will usually comprise:

- Incident Controller
- Agency Commanders (or their representatives)
- Community and/or business representatives appropriate for the emergency
- Incident Health Commander (IHC) (functional commander of supporting health agencies)
- Municipal Recovery Manager
- Emergency Response Coordinator
- Other Specialist Persons as required.

7.11.6 Emergency services

The emergency response manual should detail the mechanism through which emergency services will be activated.

7.11.7 General manager – operations and advisory

The emergency response manual should detail the roles and responsibilities of the General Manager Operations and Advisory (or equivalent title).

7.11.8 Incident controller

The emergency response manual should detail the roles and responsibilities of the Incident Controller.

7.11.9 Operations officer

The emergency response manual should detail the roles and responsibilities of the Operations Officer.

7.11.10 Logistics officer

The emergency response manual should detail the roles and responsibilities of the Logistics Officer.

7.11.11 Planning officer

The emergency response manual should detail the roles and responsibilities of the Planning Officer.

7.11.12 Intelligence officer

The emergency response manual should detail the roles and responsibilities of the Intelligence Officer.

7.11.13 Public information officer

The emergency response manual should detail the roles and responsibilities of the Public Information Officer.

7.11.14 Finance officer

The emergency response manual should detail the roles and responsibilities of the Finance Officer.

7.11.15 Human resources representative

The emergency response manual should detail the roles and responsibilities of the Human Resources Representative.

7.11.16 Administration support

The emergency response manual should detail the roles and responsibilities of Administration Support.

7.11.17 All personnel

The emergency response manual should detail the collective roles and responsibilities of all personnel.

7.11.18 Upstream petroleum site incident management team

The emergency response manual should provide details of the roles and responsibilities of the upstream petroleum site incident management team.

7.11.19 Incident management team roster guidelines

The emergency response manual should detail the process for updating the duty roster and issuing to all personnel notice of the above incident management team members who act in those positions. The duty roster should show all the contact details of those filling the incident management team defined positions.

7.11.20 Emergency response organisation chart

The emergency response manual should provide the organisational chart as it applies to emergency response and facility management.

7.12 Operations

7.12.1 Operating scenarios

The emergency response manual should detail operating scenarios related to the number of personnel on site at any one time and their exposure to emergency situations. This should include, at a minimum, operations with limited personnel on site and operations with limited personnel and contractors and visitors on site.

7.12.2 Emergency response procedures during unmanned periods

Manning levels will likely depend on the project and the stage of the project. The emergency response manual should provide details of how the site will be managed during unmanned periods to ensure management of all personnel and activities related to emergency response.

7.12.3 Emergency response levels and potential resource constraints

The emergency response manual should provide scenarios (if any) related to the scale of disaster/incident for which the authority holder may not have appropriate resources. This should consider its capacity as an entity and therefore may require external, additional tactical and management assistance.

7.12.4 Health, safety and environment systems

The emergency response manual should detail how the site(s) of the petroleum operation will be operated in accordance with management system standards for the facility.

7.12.5 Well control incident management/blow out contingency

The emergency response manual should detail the emergency response protocol related to well control and/or well blow out and the precautions/contingencies taken such as:

- well relief design
- equipment requirements
- rig availability
- personnel availability
- relief well kill schedule.

7.13 Other information

7.13.1 Emergency contacts

The emergency response manual should provide contact details of all emergency responders and parties to be notified. These external parties should include but not be limited to:

- State authorities
- Earth Resources Regulation
- EPA
- WorkSafe Victoria
- DEECA (formerly DELWP)
- Water Authority
- Emergency Services
- State Emergency Services
- Country Fire Authority
- Fire Rescue Victoria
- Police
- Medical Services
- Ambulance
- Parks Victoria
- Wildlife Victoria.

7.13.2 Management of change

The emergency response manual should detail how the authority holder will maintain rigorous change management protocols (see section 3.8.9 of this guideline). This should include notifying Earth Resources Regulation of any changes to emergency response protocols in real time. This ensures the manual remains up-to-date as required by regulation 33(i) of the Regulations.

7.13.3 Data management

The emergency response manual should detail how data and records pertinent to emergency response will be maintained, verified and audited.

It should include an outline of how staff/responders training currency records will be maintained. This is to facilitate Earth Resources Regulation auditing and to provide information about the standard of training received by personnel. Accreditations and currency of training lapse continually within workforces and records need to be available and reviewed on a regular basis by both Earth Resources Regulation and the authority holder.

8. Contacting Earth Resources Regulation

You may contact Earth Resources Regulation via email at: workplan.approvals@ecodev.vic.gov.au or via phone on 1300 366 356 (between 9am and 4.30pm Monday to Friday).



Appendices

9. Appendix 1: Risk assessment process

9.1 Consequences

The below consequence definitions (Table 5) have been tailored to the upstream petroleum industry based on an existing approach set by Earth Resources Regulation for other resource industries.

While authority holders are expected to use these definitions and Tables 6, 7 and 8 in determining risk ratings, authority holders may use their own risk framework if it specifies consequences on the environment, any member of the public, land or property in the vicinity of the operation and on any petroleum, source of petroleum or reservoir that the operation might affect.

If an authority holder's framework does not cover all prescribed categories, the authority holder must develop and provide consequence and likelihood definitions and ratings of the missing categories. They must also explain how these are complementary to their existing framework. The consequence and likelihood definitions provided here can be used or drawn from to develop the missing categories.

Table 5: Consequence definitions

	Consequence (explanation of consequence to environmental aspect)	Critical	Major	Moderate	Minor	Insignificant
Consequence for “any member of the public in the vicinity of the operation” Includes public health, safety, public amenity, Aboriginal heritage and cultural heritage	Public health and safety Fatalities, injuries or illnesses due to exposure to a hazard.	Fatalities, life-threatening injuries or illnesses or injuries resulting in permanent disablement. Public exposed to a severely debilitating chronic health impact or life-threatening hazard.	Injuries or illness requiring surgery or resulting in long-term disablement. Public exposed to a hazard that results in hospitalisation for treatment from injury or illness.	Injuries or illness requiring treatment by a physician or hospitalisation. Public exposed to a hazard that results in injuries or health effects requiring treatment by a physician.	Injuries or illness requiring first aid treatment. Public exposed to a hazard that could cause injuries or adverse health effects requiring first aid treatment.	Injury or ailment that does not require medical or first aid treatment.
	Public amenity Community or multiple individuals experience loss of amenity from visual impacts to the view shed, contamination of surface water or aquifer, dust, odour, fumes, noise, or other hazards.	Continuously experience significant losses of amenity over periods of weeks or longer.	Regularly experience (weekly-monthly basis) significant losses of amenity for multiple days on end.	Regularly experience (weekly-monthly basis) significant loss of amenity.	Infrequently experience (no more than monthly) a small effect on the amenity.	Infrequently experience (no more than monthly) a marginal reduction in the amenity.
	Aboriginal heritage Destruction of places and/or associated cultural values with Aboriginal cultural heritage.	Destruction of place(s) and/or associated cultural values of exceptional value. A place identified by Aboriginal Victoria and/or cultural values identified by Traditional Owners of exceptional value that the destruction would be catastrophic.	Destruction of a rare occurrence place(s) and/or associated cultural values. A place with a large number and diverse range of cultural materials. A place with stratified deposits and/or surface spatial patterning that reflects the way in which the cultural materials were deposited.	Destruction of a common occurrence place(s) and/or associated cultural values. A place with a limited range of cultural heritage materials and a place in fair to good condition with some degree of disturbance evident.	Destruction of a place(s) and/or associated cultural values in a deteriorated condition with a high degree of disturbance evident and some cultural heritage remaining.	No impact on Aboriginal cultural heritage sites.
	Cultural heritage Damage, works or disruption to a place, object or historical archaeological site listed on the Commonwealth National Heritage List, Victorian Heritage Register, Victorian Heritage Inventory or local Heritage Overlay.	Irreversible damage, or destruction.	Damage and removal, or relocation or removal of associated elements.	Works to features that will not alter the cultural heritage significance.	Isolated damage to regionally or locally significant features that is readily rectified.	No impacts to cultural heritage significance.

	Consequence (explanation of consequence to environmental aspect)	Critical	Major	Moderate	Minor	Insignificant
Consequences for “land or property in the vicinity of the operation” Includes the land and property where the operation will occur and surrounding area	Land and land uses Loss of production from primary production land or loss of annual-seasonal primary production. Environmental damage to National Park, other conservation reserve or other public land.	Permanent loss of production from primary production land >10 hectares (ha). Loss of annual-seasonal primary production from >100 ha of land. Irreversible or long-term environmental damage (with rehabilitation taking years or longer) to >1 ha of National Park or other conservation reserve.	Permanent loss of production from primary production land <10 ha. Loss of annual-seasonal primary production from 10-100 ha of land. Irreversible or long-term environmental damage to <1 ha of National Park or other conservation reserve or to ≥10 ha of other public land. Reversible damage to ≥1 ha of National Park or other conservation reserve or to ≥10 ha of other public land.	Loss of annual-seasonal primary production from <10 ha of land. Short-term (days-weeks). Disruption to 10-100 ha of primary production land. Reversible damage to <1 ha of National Park or other conservation reserve or to <10 ha of other public land.	Minor damage to agricultural land or public land not requiring active rehabilitation. Temporary and small-scale disruption to agricultural production (days, 1-10 ha).	Total damage to private or public property or infrastructure <\$1k.
	Public and private property Damage to private or public property or infrastructure or loss of income.	Total damage >\$10 million. Total loss of value of private property equivalent to >\$10 million.	Total damage \$1 million–\$10 million. Total loss of value of private property equivalent to \$1 million–\$10 million.	Total damage \$50k–\$1 million. Total loss of value of private property equivalent to \$50k–\$1 million.	Total damage \$1k–\$50k. Total loss of value of private property equivalent to \$1k–\$50k.	Total damage <\$1k. Total loss of value of private property equivalent to <\$1k.
	Services provided by infrastructure Negative impact to important community services (e.g. transport, energy, health, telecommunications, education, water).	Services suspended or significantly disrupted for extended period (weeks or longer).	Services suspended or significantly disrupted for days or experiencing minor disruptions for long periods (weeks or longer).	Services suspended or significantly disrupted for up to 1 day or experiencing minor disruptions for weeks.	Services suspended or significantly disrupted for short period (hours).	Services maintained but experiencing minor disruptions or delays.

Consequences for “the environment” Includes air, water, soil, flora and fauna species	Environmental contamination event Environmental contamination event (of air, soil, land and/or water).	A State-level incident response is required. Incident response, clean-up and rehabilitation expected to run for years and/or cost ≥\$10 million.	A regional emergency management incident response required. Clean-up and rehabilitation expected to run for months and/or cost \$1 million–\$10 million.	Clean-up and rehabilitation expected to run for weeks and cost \$10k–\$1 million.	Clean-up and rehabilitation may be required but can be completed within days.	Hazard event with minimal environmental impact and no noticeable effect beyond the immediate occurrence or expression of the hazard.
	Native vegetation, flora species or fauna species Environmental contamination event or other form of environmental damage that impacts native vegetation, flora or fauna species.	Damage leading to bioregional, State or national extinction of listed threatened species of native flora or fauna or vegetation community. Irreversible or long-term (years) damage or environment harm to ≥10 ha of native vegetation (not listed threatened vegetation community) or to ≥1 ha listed threatened native vegetation community. Deaths of hundreds (or more) of listed native flora or fauna species or native mammals. Contamination or other environmental damage leading to deaths of native fauna well beyond (>1 km) the boundaries of the operation.	Damage leading to local extinction of listed threatened species of native flora or fauna or vegetation community. Deaths of up to ~100 listed threatened flora or fauna species or native mammals. Major damage or environment harm to 1-10 ha of native vegetation (not listed threatened vegetation community) or to <1 ha listed threatened native vegetation community that will be irreversible or take years to recover from.	Damage leading to deaths of a small number of listed threatened flora or fauna species or native mammals. Reversible damage or environmental harm to <10 ha of non-listed native vegetation community or <1 ha of listed native vegetation community.	Damage to <1 ha of native vegetation (not listed threatened vegetation community) that can be recovered in weeks to months. Damage that affects native fauna populations but does not kill individuals or disrupt breeding or other important ecological processes.	Hazard event with minimal environmental impact and no noticeable effect beyond the immediate occurrence or expression of the hazard.
	Surface water or groundwater Contamination of surface water/ groundwater aquifer.	Contamination leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for more than a year.	Contamination leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for up to one year.	Localised contamination leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for weeks to months.	Contamination of natural waterway or wetland occurs, but water quality remains within applicable EPA or ANZECC guidelines. Water extraction or diversion reduces surface water flows or groundwater available for environmental uses, but with no detectable effect on dependent species or ecosystems and carried out within terms of water licence.	Hazard event with minimal environmental impact and no noticeable effect beyond the immediate occurrence or expression of the hazard.

	Consequence (explanation of consequence to environmental aspect)	Critical	Major	Moderate	Minor	Insignificant
Consequences for “any petroleum, source of petroleum or reservoir that the operation might affect”	Any petroleum Loss of, or contamination of, petroleum (as defined in section 6 of Petroleum Act) that is static or flowing within the facility of the authority holder or in the subsurface.	Complete loss of containment that results in escape of petroleum to the environment. Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, that cannot be rectified and therefore abandoned or disposed of.	Temporary loss of containment that results in escape of petroleum to the environment. Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works at a cost >\$1 million.	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works at a cost \$50k–\$1 million.	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works at a cost \$1k–\$50k.	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works at a cost <\$1k.
	Source of petroleum Damage to source material for petroleum (as defined in section 6 of Petroleum Act) (i.e. source rock).	Damage to source material leading to its incapacity to produce and/or release petroleum.	Damage to source material leading to its capacity to produce and/or release petroleum being significantly reduced or delayed.	Damage to source material leading to its capacity to produce and/or release petroleum being moderately reduced or delayed.	Damage to source material leading to its capacity to produce and/or release petroleum being reduced or delayed to a minor extent.	Damage to source material does not impact its capacity to produce and/or release petroleum.
	Reservoir Damage to subsurface formation that previously or currently holds petroleum (as defined in section 6 of Petroleum Act).	Damage that interferes with the integrity of the reservoir leading to total loss of the petroleum held to the surrounding subsurface or to surface.	Damage that interferes with the integrity of the reservoir leading to significant loss of the petroleum held to the surrounding subsurface or to surface.	Damage that interferes with the integrity of the reservoir leading to moderate loss of the petroleum held to the surrounding subsurface or to surface.	Damage that interferes with the integrity of the reservoir leading to minor loss of the petroleum held to the surrounding subsurface or to surface.	Damage that does not interfere with the integrity of the reservoir.

9.2 Likelihood

Table 6: Likelihood descriptions

Likelihood	Description	Probability of event occurring
Almost certain	The risk event is expected to occur in most circumstances	> 90%
Likely	The risk event is expected to occur in some common circumstances	70-90%
Possible	The risk event might occur in some circumstances	30-70%
Unlikely	The risk event could occur in some uncommon circumstances, as this is known to occur at comparable sites	5-30%
Rare	Highly unlikely, but the risk event may occur in exceptional circumstances, as may have occurred at comparable sites	< 5%

9.3 Risk rating

Table 7: Risk matrix

		Consequence				
		Insignificant	Minor	Moderate	Major	Critical
Likelihood	Almost Certain	Medium	High	Very High	Very High	Very High
	Likely	Medium	Medium	High	Very High	Very High
	Possible	Low	Medium	Medium	High	Very High
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Medium	Medium	High

9.4 Risk acceptability

Table 8: Risk rating acceptability

Risk level	Description
Very High	Totally unacceptable level of risk. Control measures must be put in place to reduce the risk to lower levels.
High	Generally unacceptable level of risk. Control measures must be put in place to reduce the risk to lower levels or seek specific guidance from Earth Resources Regulation.
Medium	May be acceptable provided the risk has been minimised as far as is reasonably practicable.
Low	Acceptable level of risk provided the risk cannot be eliminated.
Eliminated	The risk is eliminated.

9.5 Risk register

Note: the below table is intended to articulate the expected information, not necessarily to stipulate the specific form. If the authority holder will use a different risk register, it should still provide equivalent information.

Table 9: Suggested risk register

Risk identification									
Risk ID				Hazard Description					
–				[Provide a description of the hazard including its origin/cause and the sensitive receptor(s)]					
Inherent risk assessment (without controls)									
Consequence Description and Category			Likelihood Category				Inherent Risk Rating		
[Provide a description of the consequence, including quantification where possible] [Rating as a result of likelihood multiplied by consequence – see Appendix 1, section 9.3]			[Provide a description of the hazard including its origin/cause and the sensitive receptor(s)] [Likelihood category as per Appendix 1, section 9.2]				[Consequence category aligned to those provided in Appendix 1, section 9.1]		
Residual risk assessment (with controls)									
Measure	Rationale for Control Measure	Likelihood Category	Consequence Category	Residual Risk Rating	Environmental performance objective	Environmental performance standard	Measurement methodology	Person(s) responsible	Date updated
[Likelihood category as per Appendix 1, section 9.2]	[Consequence category as per Appendix 1, section 9.1]	[Rating as a result of likelihood multiplied by consequence – see Appendix 1, section 9.3]	[Identify the environmental performance objective(s) that will be aspired to by implementation of the control – see 4.10]	[Identify the environmental performance standard(s) that will be met by implementation of the control – see 4.10]	[Identify the methodology to be used to measure the environmental performance in meeting the objectives and standards – see 4.10]	[Person(s) in charge of overseeing and managing this risk]	[Date of last update DD.MM.YYYY]	[Person(s) in charge of overseeing and managing this risk]	[Date of last update DD.MM.YYYY]

10. Appendix 2: Communications and engagement schedule – template

It is requested that authority holders use this template to outline how relevant persons and organisations will be kept informed, consulted and engaged throughout the life of the project. This schedule is designed to assist authority holders with compliance against regulation 35, as set out in section 4.13 of this guideline.

Section	Key requirements under Petroleum Regulations 2021
1. Project name	Provide name of project/site and other relevant details (e.g. authority number, project name and location, date).
2. Overview	Briefly describe the project and outline its potential environmental, economic and social impacts on the local community.
3. Communications and engagement commitment and approach	Provide a qualitative statement about the authority holder’s commitment to communications and engagement. Key aspects to consider include pro-activeness, timeliness, inclusiveness, accessibility, transparency, fairness, information symmetry, plain English communication and responsiveness to feedback and concerns.
4. Primary stakeholders and community members	<p>Identify nearby residents, landowners, businesses, local community members/groups and facilities who could be directly affected by or interested in this project (e.g. those located on or near transport routes to and from the site, individuals with a high level of interest in what’s happening in their local area).</p> <p>List ways in which each is likely to be affected (e.g. noise, air quality, community safety and amenity, health and wellbeing, potential community activism).</p>
5. Other stakeholder and community interests	<p>Identify local groups and people who:</p> <ul style="list-style-type: none"> • will be interested in the project’s outcomes • may have information that could be of value (i.e. through previous involvement or specialist knowledge and experience) • might think they are affected by the project and in what way • are likely to be upset if they are not informed or invited to participate. <p>List the nature of their respective interests.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note: Identification and prioritisation might include but not be limited to:</p> <ul style="list-style-type: none"> • people who are seen as opinion leaders in the area • peak bodies, community and environment organisations, advocacy groups • groups with an interest in the type of project or development being proposed • Traditional Owner groups, particularly those with cultural and/or heritage interests in the project’s location • businesses and local Chambers of Commerce • local councils and regional organisations • residents and groups in the region affected by the broader impacts of the project. </div>
6. Environmental stakeholders under regulation 33(h)	As required under regulation 33(h), identify relevant Commonwealth and Victorian Government agencies and other relevant persons or organisations to be consulted throughout the life of the project about the environmental performance of the authority holder’s petroleum operation.

Section	Key requirements under Petroleum Regulations 2021
7. Issues register	<p>Briefly describe any project-related communications and engagement activities (e.g. discussions with landowners) undertaken before preparing this engagement schedule. This includes advertising, notifications and consultation activities mandated by section 161 of the <i>Petroleum Act 1998</i> and regulation 23 (or 26) of the Petroleum Regulations 2021 (see also sections 3.12 and 4.13 of this guideline).</p> <p>List feedback, expectations, interests, concerns and issues (social, environmental, economic, other) emerging from these communication and engagement activities, including issues raised through notification of application advertisements, public consultation by the Minister and the like (if available).</p> <p>For each issue, link it to the persons and organisations identified in sections 4 through to 6, identify the level of impact and/or importance (i.e. high, medium, low), and potential effect on the project (i.e. positive, negative, neutral). Outline how these will be addressed, including any planned controls to help minimise risks and impacts.</p> <p>Outline the process for maintaining the issues register throughout the life of the petroleum operation, including how existing and new issues will be discovered, monitored, reported in the annual report and responded to; and, where a rising number of complaints about the same issue exists, how these will be escalated for further investigation and wider engagement to seek resolution.</p>
8. Communications and engagement aims and outcomes	<p>Outline why communication and engagement is being undertaken (aims) and what will be achieved (outcomes) as shown in the following example.</p> <p>Aims</p> <ul style="list-style-type: none"> • Inform persons/organisations X about topic Y and enable them to ask questions and raise concerns. • Better align operations with local community and stakeholder expectations and build social licence. <p>Outcomes</p> <ul style="list-style-type: none"> • Persons/organisations X are better informed and get an opportunity to have their say. • The company gains greater insight into local community and stakeholder issues and concerns and builds social licence to operate more efficiently and effectively.
9. Engagement schedule	<p>Identify key project milestones that will trigger engagement, and other communications and engagement opportunities during the life of the petroleum operation and develop the communications and engagement schedule around these.</p>
10. Key information to be communicated	<p>Detail what information will be regularly communicated. This is likely to include but not be limited to:</p> <ul style="list-style-type: none"> • a description and rationale for the project • maps showing the project/activity location in both its local and regional context, and at a scale that locates properties likely to be impacted • the extent of likely or possible social, environmental and economic risks and impacts, engagement activities around these and their planned mitigation • alternatives considered in advance of the decision to pursue the project • project milestone dates, key information about milestone activities, and timing of communications and engagement around these activities • outline of feedback and complaints processes (refer section 12 below) • the point of contact, and how those details will be made available, for the relevant persons and organisations to obtain more information if needed • information about how feedback will be recorded and used.
11. Communications and engagement methods	<p>List what methods (e.g. newsletters, fact sheets, advertisements, websites, social media, meetings, briefings, information sessions/town hall events, listening posts, emails, phone calls, drop-ins, leaflet drops, public exhibition, posters, letters) will be used to share information and engage with relevant persons and organisations.</p> <p>Identify when/how often each of these methods will be used during the life of the project.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • Newspaper advertisements are important for geographical reach but should not be relied on or used as a substitute for direct contact (face-to-face or in writing) with relevant persons and organisations, including those seen as opinion leaders in the local community. • It is suggested that authority holders consider publishing relevant, publicly disclosable operational information (e.g. rehabilitation plans, risk management strategies, communications and engagement activities) on their websites to improve transparency and build social licence. </div>

Section	Key requirements under Petroleum Regulations 2021
12. Feedback and complaints process	<p>Detail the process(es) to be used to receive feedback, complaints and other communications from relevant persons and organisations.</p> <p>Define how this information will be recorded and used, how escalating stakeholder issues will be assessed and addressed, how responses will be provided back to concerned persons and organisations, and when and how the regulator will be notified.</p> <p>Detail how and how often feedback will be sought and how this will be acted upon regarding:</p> <ul style="list-style-type: none"> • any social, environmental and economic concerns that arise • any other relevant matters or local knowledge that may assist in minimising project impacts • engagement preferences • project benefits.
13. Evaluation and reporting	<p>Outline the process to be used to evaluate and report on this schedule, including:</p> <ul style="list-style-type: none"> • qualitative and quantitative evaluation measures • how these will be reported, who to and how often.
14. Communications and engagement resources	<ul style="list-style-type: none"> • Identify the personnel who will conduct the communications and engagement activities described in this schedule. Briefly describe their communications and engagement skills and experience. • List any specialist technology (e.g. digital consultation platforms) that will be used to support engagement with relevant persons and organisations as described in this schedule. <div style="background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • In the context of regulation 35(e), Earth Resources Regulation considers ‘a suitably qualified person’ synonymous with a person holding IAP2 accreditation or equivalent (see also section 4.12.2 of this guideline). </div>
15. Plan prepared by	<p>Provide name, position and contact details of the person who approved the details prepared according to this schedule.</p>

11. Appendix 3: Requirements prior to undertaking a petroleum activity

This appendix is intended to highlight the general requirements authority holders must consider and adhere to before starting (or restarting) petroleum operations, of which an operation plan as presented in chapters 3-7 is one discrete component.

11.1 Excluding hydraulic fracturing

The effect of section 16A of the Petroleum Act is to permanently ban hydraulic fracturing. Section 263 of the Petroleum Act sets out that any part of an existing work program that includes this practice is invalidated. Authority holders must therefore ensure that proposed operation plans do not include hydraulic fracturing.

11.2 Holding of relevant authority type

Prior to undertaking a petroleum activity in an onshore area of Victoria, a person (an individual or a body corporate) must hold an authority (exploration permit, retention lease, production licence, special access authorisation or special drilling authorisation), or a combination of authorities, over the entire area where the petroleum operation is to occur. Sections 18, 37, 46, 84 and 95A of the Petroleum Act set out the rights held by authority holders of those authorities (i.e. activities that could be permissible). A proposal to carry out a petroleum operation must be within the rights afforded by the authority type held.

11.3 Permission to access land

Note that the table in section 147 of the Petroleum Act – *Requirements to be complied with before petroleum operation carried out* – sets out the requirements that must be complied with by an authority holder before a petroleum operation of a kind set out in column 1 of the table may be carried out.

11.3.1 Consent from landowner, occupier and/or land manager

Relevant provisions

Section 128 of the Petroleum Act – *Consent of, or compensation agreement with, owner etc. needed before operation on private land starts*

- (1) A person must not carry out any petroleum operation on private land unless—
 - (a) it has obtained the consent of the owners and occupiers of the land to the operation; or
 - (b) it has entered into a compensation agreement with the owners and occupiers of the land in relation to the operation; or
 - (c) the Tribunal has determined the amount of compensation that is payable to the owners and occupiers of the land under this Act in relation to the operation.
- (2) Subsection (1) does not apply to any land that is owned by the person.

Section 139 of the Petroleum Act – *Petroleum operations on restricted Crown land*

A person must not carry out any petroleum operation on any restricted Crown land without the written consent of the Minister responsible for that land.

Section 140 of the Petroleum Act – *Petroleum operations on water authority land*

- (1) In this section, *water authority* means an Authority within the meaning of the *Water Act 1989* that has a water district or a sewerage district under that Act.
- (2) A person must not carry out any petroleum operation on any land that is owned, vested in or managed or controlled by a water authority without the written consent of the water authority.
- (3) A person must not carry out any petroleum operation that involves work at a depth of more than 0.75 metres below any land that is within 100 metres of—
 - (a) a waterway that is owned by, vested in or managed or controlled by a water authority; or
 - (b) any main drains, sewers, aqueducts, channels or pipelines of a water authority—without the written consent of the water authority.

Section 141 of the Petroleum Act – *Petroleum operations on highways, roads etc.*

A person must not carry out any petroleum operation on any land on which there is a public highway, road or street without the written consent of the person or body responsible for the land.

Prior to carrying out any work, the authority holder should seek the consent of the owner, occupier and/or land manager of the land where a proposed petroleum operation is to take place. A signed consent can be submitted (it is optional) to Earth Resources Regulation to demonstrate this requirement and must set out any conditions that the authority holder must abide by as part of the consent arrangement. See also [Commercial Consent Agreement for Access to Private Land in Victoria](#).

11.3.2 Compensation

Relevant provisions

Section 129 of the Petroleum Act – *What compensation is payable for – private/native title land*

- (1) Compensation is payable by an authority holder to the owners and occupiers of private land and native title land for any loss or damage that has been, or will be, sustained in relation to the land as a direct, natural and reasonable consequence of the approval of any petroleum operation or the carrying out of any petroleum operation under the authority including for—
 - (a) deprivation of possession of the whole, or any part of the surface, of the land; and
 - (b) damage to the surface of the land; and
 - (c) damage to any improvements on the land; and
 - (d) severance of the land from other land of the owner or occupier; and
 - (e) loss of amenity, including recreation and conservation values; and
 - (f) loss of opportunity to make any planned improvement on the land; and
 - (g) any decrease in the market value of the owner or occupier's interest in the land.
- (2) The amount of compensation payable under subsection (1)—
 - (a) must, if it is necessary for the owner or occupier of land to obtain replacement land, take account of the reasonable incidental expenses incurred in obtaining and moving to that land; and
 - (b) may be increased by up to 10% by way of solatium to compensate the owner or occupier for intangible and non-pecuniary disadvantages for which compensation is not otherwise payable and that result from the approval or the carrying out of the operation.
- (3) Compensation is not payable in respect of any land which only became private land after a petroleum operation under the authority started on that land.
- (4) Any amount of compensation paid, agreed to be paid or determined under this Part is not affected by any subsequent change in the ownership or occupancy of the land.
- (5) An authority holder is not liable to pay any greater total amount of compensation because of a change in the ownership or occupancy of the land.
- (6) If—
 - (a) a person is entitled to compensation on just terms (within the meaning of the Native Title Act) in respect of any loss or damage in relation to any native title land under subsections (1) and (2); and
 - (b) the compensation the person receives under this section (apart from this subsection) does not amount to compensation on just terms—
the person is entitled to any additional compensation that is necessary to ensure that compensation is paid on just terms.
- (7) In this section, *planned improvement*, in relation to land, means an improvement on the land in respect of which the owner or occupier had, before an application for an authority covering that land was made—
 - (a) applied for, or been granted, a building permit or a planning permit; or
 - (b) otherwise demonstrated a genuine intention to proceed.

An authority holder must present clear and accurate information during negotiations that will outline the impacts and management practices associated with the proposed petroleum operation. Once this information has been presented, an agreement to proceed (detailing specific arrangements between the authority holder and owners and occupiers of land or native title parties) may be reached. A copy of the signed agreement can be submitted (it is optional) to demonstrate this requirement and must set out any conditions that the authority holder must abide by as part of the agreement.

Relevant provision

Section 132 of the Petroleum Act – *What compensation is payable for – Crown land*

- (1) This section applies if the Minister is of the opinion that the approval of a petroleum operation, or the carrying out of any petroleum operation under an authority, in relation to any Crown land has, or will, result in loss or damage of the following nature being sustained as a direct, natural and reasonable consequence of the approval, or the carrying out of the operation—
 - (a) deprivation of possession of the whole, or any part of the surface, of the land; or
 - (b) damage to the surface of the land to such an extent that it cannot be rehabilitated and returned to its former, or a comparable, state; or
 - (c) damage to any improvements on the land; or
 - (d) severance of the land from any other Crown land; or
 - (e) loss of opportunity to make any planned improvement on the land.
- (2) The Minister may require the holder of the authority to pay compensation for the loss or damage—
 - (a) to the Crown; or
 - (b) to any person who is authorised to undertake activities on the land under a lease, licence, permit or other authority granted under an Act.
- (3) In determining whether compensation should be paid under subsection (2)(a), the Minister must take into account any benefits that may accrue to the people of Victoria from the petroleum operation.
- (4) In determining the amount of compensation to be paid, the Minister may, if it is necessary for the Crown to obtain replacement land, take account of the reasonable incidental expenses incurred in obtaining that land.
- (5) If the Minister determines that compensation should be paid to a person referred to in subsection (2)(b), the Minister may increase the amount payable by up to 10% by way of solatium to compensate the person for intangible and non-pecuniary disadvantages for which compensation is not otherwise payable and that result from the approval or the carrying out of the operation.
- (6) Compensation is not payable in respect of any land which only became Crown land after a petroleum operation under the authority started on that land.
- (7) Sections 129(4), (5) and (7) also apply to this section.

If the petroleum operation will take place on Crown land, and the Minister determines that compensation will be required, an extensive consultation process will be carried out.

11.3.3 The Victorian Civil and Administrative Tribunal

Relevant provision

Section 134 of the Petroleum Act – *Determination of disputes – private/native title land*

- (1) Subject to section 136, the owner or occupier of land or the holder of an authority may—
 - (a) apply to the Tribunal for the determination of a disputed claim for compensation in relation to private land or native title land (other than a claim for just terms compensation under section 53(1) of the Native Title Act); or
 - (b) refer a disputed claim referred to in paragraph (a) to the Supreme Court for determination—

in accordance with Part 10 of the *Land Acquisition and Compensation Act 1986* as if it were a claim for compensation under that Act and as if the authority holder were the Authority referred to in that Part.
- (2) A person may only make an application to the Tribunal in respect of a claim, or refer a claim to the Supreme Court under subsection (1), after the expiry of any period of time specified for the purposes of this section by the regulations.
- (3) A party who makes an application in respect of, or who refers, a claim under subsection (1) is only entitled to have that claim determined by the Tribunal or the Court (as the case requires) if the Tribunal or the Court is satisfied that the party has attempted to settle the claim by conciliation but has not been able to do so because the other party has refused to negotiate a settlement or because both parties are unable to agree.
- (4) In its application to a claim that is the subject of an application or reference under subsection (1), Part 10 of the *Land Acquisition and Compensation Act 1986* has effect as if—
 - (a) it required the Tribunal or the Court (as the case requires) in determining the compensation payable to have regard to the provisions of this Part; and
 - (b) section 91(1) provided that the holder of the authority must pay its own costs and the costs of the other party unless—
 - (i) the other party is not the owner or occupier of land in the authority area; or
 - (ii) the other party has been frivolous or vexatious or has otherwise acted unreasonably—

in which case the Tribunal or the Court (as the case requires) may, subject to that section, award the costs that it thinks are appropriate.
- (5) In determining how much compensation is due to a native title holder in any dispute concerning native title land, the Tribunal or Court must take into account any relevant amount that has been determined or agreed as compensation under the Native Title Act in relation to that land.
- (6) The holder of the authority must lodge a copy of a determination under this section with the Minister.

Section 135 of the Petroleum Act – *Determination of disputes—Crown land*

- (1) The holder of an authority may apply to the Tribunal for a review of any requirement made by the Minister under section 132.
- (2) A person who is authorised to undertake activities on Crown land under a lease, licence, permit or other authority granted under an Act may apply to the Tribunal for a review of any decision made by the Minister under section 132 that affects the person.
- (3) An application for a review under this section must be made within 28 days after the later of—
 - (a) the day on which the decision is made;
 - (b) if, under the *Victorian Civil and Administrative Tribunal Act 1998*, the applicant requests a statement of reasons for the decision, the day on which the statement of reasons is given to the applicant or the applicant is informed under section 46(5) of that Act that a statement of reasons will not be given.

Authority holders are expected to undertake all reasonable efforts in negotiating with the relevant landowner, occupier, native title party or Crown land manager to reach an agreement for access to the land. If those efforts fail to reach an agreement, an application may be made to the Victorian Civil and Administrative Tribunal for determination of disputed claims for compensation in relation to private land or native title land. Disputes claims may also be referred to the Supreme Court.

11.4 Rehabilitation bond

Relevant provisions

Section 172 of the Petroleum Act – *Definition of a rehabilitation bond*

An instrument acceptable to the Minister securing the payment of a specified amount of money for any rehabilitation work, clean-up work or pollution prevention work that may be necessary as a result of a petroleum operation.

Section 173 of the Petroleum Act – *Requirement to take out rehabilitation bond*

The holder of an authority must not carry out a petroleum operation unless it has obtained a rehabilitation bond that is acceptable to the Minister and is for an amount specified by the Minister.

Section 174 of the Petroleum Act – *Minister may require increased rehabilitation bond*

- (1) This section applies if the Minister believes that the amount secured by a rehabilitation bond in relation to a petroleum operation is insufficient.
- (2) The Minister may, by written notice, require the holder of the authority to obtain an extension of, or a further, rehabilitation bond for an amount determined by the Minister.
- (3) Before making a requirement, the Minister must consult the holder of the authority.
- (4) The holder of the authority must comply with a notice imposing such a requirement within 30 days after being given the notice.

An authority holder must lodge a rehabilitation bond with the department in accordance with the Bond Lodgement Policy. The policy is that the form of rehabilitation bond must be a Bank Guarantee. The Bank Guarantee must:

- be from a recognised bank (according to the current list of Individual Authorised Banks in Australia – Australian Prudential Regulation Authority, Reserve Bank of Australia), Building Society or Credit Union
- be in favour of the responsible Minister
- state the name of the authority holder and the authority number
- relate to a single authority only (each authority must have a separate bond)
- be on Bank, Building Society or Credit Union letterhead or have a recognised stamp to indicate authenticity
- not have an expiry date, nor be able to be terminated by the bank without the prior approval of the responsible Minister
- be an original document; and
- be signed and dated by an authorised officer of the financial institution.

Relevant provision

Section 176 of the Petroleum Act – *Return of bond if rehabilitation satisfactory*

- (1) Subject to subsection (2), the Minister must discharge a rehabilitation bond, or return a rehabilitation bond to the holder or former holder of the authority, as soon as possible once the Minister is satisfied—
 - (a) that the relevant land has been rehabilitated as required by section 170; and
 - (b) that the rehabilitation is likely to be successful; and
 - (c) that any other work in respect of which the bond was required has been satisfactorily completed.
- (2) If land used in carrying out a petroleum operation is private land, the Minister must not discharge or return a rehabilitation bond that applies in respect of that land before consulting the owner of the land and the municipal council in whose municipal district the land is situated.
- (3) The Minister may, as a condition of discharging or returning a rehabilitation bond, require the authority holder or former authority holder to obtain a further rehabilitation bond in respect of the land if the Minister—
 - (a) is not satisfied that the land or any part of the land has been rehabilitated as required by section 170; or
 - (b) is satisfied that further rehabilitation of the land or any part of the land is necessary.

For the Minister to be able to determine whether the rehabilitation bond could be discharged or returned, the authority holder should demonstrate that the performance objectives and standards set out in the rehabilitation plan (refer to regulation 37 of the Regulations) have been achieved before requesting a return of the bond.

11.5 Insurance

Relevant provision

Section 171 of the Petroleum Act – *Insurance must be held*

The holder of an authority must obtain and maintain, as directed by the Minister from time to time, insurance against expenses or liabilities or specified things arising in connection with, or as a result of, the carrying out of operations, or the doing of any other thing, under the authority, including the expenses of complying with directions with respect to the clean-up or other remedying of the effects of the escape of petroleum.

The Minister may consider any relevant aspect of the petroleum operation when determining whether to issue a direction to an authority holder to obtain and maintain insurance. The direction will specify what things the insurance must cover. The requirement for insurance is separate and additional to the requirement for a rehabilitation bond. Suitable evidence could include a certificate of insurance issued by an authorised agent.

Authorised by the Minister for Energy
and Resources, Department of Energy,
Environment and Climate Action

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