

# Guideline

*Environmental Protection Act 1994*

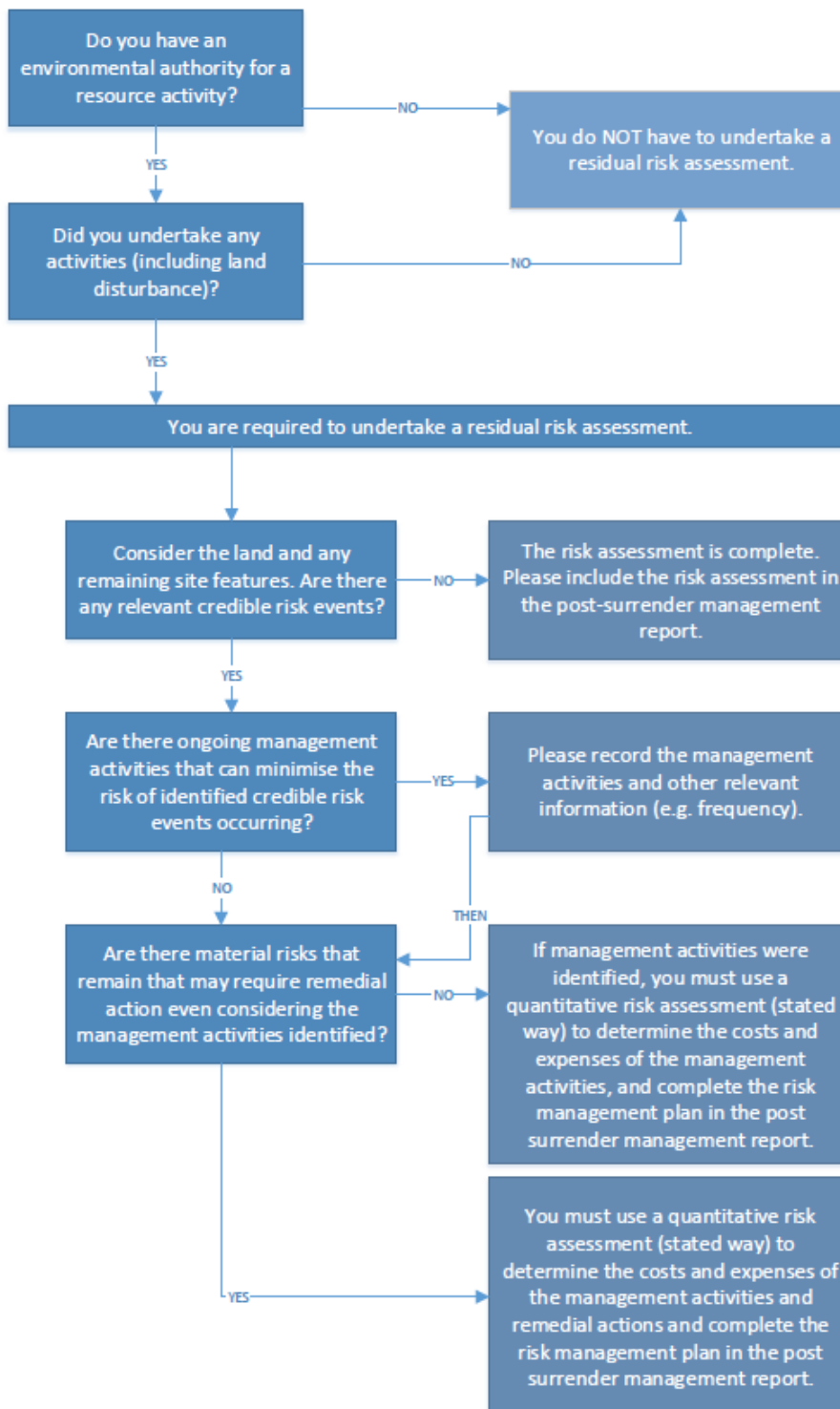
## Residual Risk Assessment Guideline - Interim

*This guideline describes how to undertake a residual risk assessment and provide information to help determine whether a risk management plan is required to be included with a post-surrender management plan under section 264A(1)(e) and 264(1)(f) of the Environmental Protection Act 1994 respectively. It is intended to be an interim guideline whilst the development of the final residual risk assessment guideline proceeds under the Ministerial Industry Implementation Working Group.*

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Overview of the risk assessment process



## 1 Introduction

Under the *Environmental Protection Act 1994* (EP Act), residual risks are considered as part of the surrender application for an Environmental Authority (EA) for a resource activity. EA holders can apply to surrender their EA following the completion of the resource activity provided that all conditions and requirements, including rehabilitation, have been met. In the case of those EA holders with a Progressive Rehabilitation and Closure Plan (PRCP), the rehabilitation milestones and, where relevant, management milestones under the schedule must be met.

Residual risks of land are those risks remaining at a rehabilitated resource site once surrender of the EA occurs. Even with the completion of rehabilitation to a satisfactory condition, there may be circumstances where ongoing management actions are required to manage the residual risk. While likely to be low, there is a level of risk that a rehabilitated area or structure may fail, and in some cases require remedial action to address or prevent potential environmental harm.

Where a resource activity has been carried out on the land, the EP Act requires the surrender application to be accompanied by a *post-surrender management report* (ESR/2020/5434) that contains a risk assessment of the land.

Under s264A of the EP Act, the risk assessment must be carried out in accordance with this guideline to identify if there are any residual risks remaining on the land.

The risk management plan component of the post-surrender management report must be completed if:

- a) the risk assessment of the land identifies residual risks for the land for which ongoing management activities or remedial action may be required; and
- b) this guideline requires the estimated costs and expenses that may be incurred for carrying out the remedial action or ongoing management activities to be worked out in a stated way.

The risk management plan must include the estimated amount of the costs and expenses that may be incurred in carrying out the remedial action or ongoing management activities. The estimated costs and expenses must be calculated using the quantitative risk assessment methodology set out in section 4 of this guideline<sup>1</sup>. If the administering authority decides a payment is required for residual risks of the land under section 271 of the EP Act, the decision to approve a surrender application does not take effect until the State receives the payment.

### 1.1 Purpose and Scope

The purpose of this guideline is to provide guidance on how to undertake a residual risk assessment to satisfy the requirement under section 264A(1)(e) of the EP Act. This guideline also contains information to help determine whether a risk management plan is required to be included with a post-surrender management report under section 264A(1)(f) of the EP Act.

This guideline applies to all surrender applications for an EA for a resource activity where the activity has been carried out and ground disturbance has occurred.

## 2 Risk Assessment

Under section 264(1) of the EP Act all EA holders applying for surrender of an EA relating to a resource activity must undertake a risk assessment in accordance with this guideline.

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<sup>1</sup> This methodology is the stated way for the purposes of section 264A(1)(f)(ii).

## 2.1 Identifying residual risks

To undertake a residual risk assessment in accordance with this guideline, the EA holder first must determine whether they have residual risks on their site.

Under the EP Act, to the extent related to resource activities carried out on the land, residual risks are either or both:

- the risk that, although the land has been rehabilitated and appropriately managed, remedial action will need to be carried out in relation to the land in the foreseeable future
- the risk that ongoing management activities will need to be carried out in relation to the land, including—
  - monitoring the condition of the land or site features of the land; and
  - taking action to prevent or minimise environmental harm caused by the land or site features of the land.

Site features are defined in the EP Act and includes land modifications as well as infrastructure that is left in place, either in part or whole, on the surface or underground, at the surrender of the EA.

As part of the risk assessment, there will be an identification of all credible risk events related to a failure of the rehabilitation or management action to perform as intended. An event is credible if there is a reasonable expectation that it is likely to occur at least once within a time span measured in hundreds or possibly thousands of years, and the event would result in a cost consequence. The *likelihood* and *consequence* of each credible risk event must be considered to determine its risk.

A range of credible risk events relevant to the resource industry in Queensland have been identified by experts and industry are at **Appendix 1**. This list should be considered in the risk assessment and may not be exhaustive.

## 2.2 Identifying management activities

If residual risks are identified, the assessment needs to consider whether ongoing monitoring or management may be necessary or effective in order to manage these parts of the land to prevent this change or failure occurring.

Ongoing rehabilitation activities may reduce the occurrence or severity of the change or failure occurring. Activities such as monitoring of a site, including geotechnical or geochemical assessments, can identify early and cost-effective interventions to manage residual risks. For example the periodic monitoring and maintenance of a waste rock emplacement left *in situ* would assist to detect and, if necessary allow action to be taken to prevent failure of the emplacement that could cause environmental harm and require much more costly remedial action.

Some monitoring and management activities undertaken by the EA holder during operation and rehabilitation may be relevant after rehabilitation has been completed and should inform what an EA holder considers in determining any ongoing management activities.

Where it is identified through the risk assessment that management activities are required to manage the residual risks identified, the EA holder must use a stated way to determine both the activity schedule and associated costs and expenses.

### 2.3 Identifying remedial actions

In some circumstances, even with ongoing management, some risks may remain. These risks may require remedial action in the future if the risk eventuates. Potential remedial actions may include any or all of the following:

- activities required to prevent harm or further harm,
- activities required to reinstate the land,
- further ongoing management activities of the reinstated land if necessary to avoid another of the same, or a different, credible risk event occurring.

These must all be considered in relation to credible risk events for remaining site features. The EA holder will be required to demonstrate that these have been considered and assessed. Where the risk assessment determines that there are one or more credible risk events where the risk of requiring remedial action is of a material nature, the EA holder is required to work out the cost and expenses of the remedial actions using a stated way.

## 3 Risk Management Plan

The EP Act requires an EA holder to include a risk management plan for the land that complies with subsection (2) of 264A if—

- (i) the risk assessment of the land identifies residual risks for the land for which remedial action or ongoing management activities may need to be carried out in relation to the land; and
- (ii) the residual risk assessment guideline requires the estimated costs and expenses that may be incurred in carrying out the remedial action or ongoing management activities to be worked out in a stated way.

Questions 9-13 in the *post-surrender management report* (ESR/2020/5434) should be filled out when a risk management plan is required in order to comply with subsection (2) of 264A.

## 4 Determining estimated costs and expenses

Costs and expenses will need to be worked out in a 'stated way' where the risk assessment has identified:

- Ongoing management activities are required to manage the risks and/or
- Credible risk events that may require remedial action as the risk is of a material nature.

The stated way to determine the estimated costs and expenses is a quantitative risk assessment.

The participants and process for this method should be discussed with the administering authority prior to undertaking the quantitative risk assessment, in particular if the site is particularly complex and/or the residual risk costs and expenses are likely to be of high value.

### 4.1.1 How to cost ongoing management activities

Where ongoing management activities have been identified, the tasks, activity schedule (regularity) and cost and expenses for these activities must be provided as part of the risk management plan. As these costs and expenses may be incurred into perpetuity, the EA holder must calculate the amount required to enable the costs to be met into the foreseeable future with respect to net present value.

The EA holder must nominate and use a method agreed to by the administering authority to undertake this calculation.

It is not intended that an EA holder will be required to provide funds to:

- cover 'normal' management costs that would be incurred if the resource activity disturbance had not taken place, or
- be used to address 'inappropriate' site management practices such as when another entity is utilising the post-surrender land use and they do, or fail to do, something that causes the rehabilitation to fail.

#### **4.1.2 How to cost remedial action**

Where a remedial action has been identified, the tasks, activity schedule and cost and expenses for these activities must be provided as part of the risk management plan. The range of activities associated with remedial action may be similar to those associated with operations and rehabilitation (e.g. the ERC calculators), with the addition of activities associated with the construction phase of a resource activity (if the reconstruction or restoration of a site feature may be necessary). Where possible and appropriate, the costs and expenses associated with these should be preferentially used. Where there are no obvious and accepted sources for cost rates the EA holder is encouraged to engage with the administering authority to assist in identifying these costs and expenses.

#### **4.1.3 Evidence**

To support the identified management activities and remedial actions in the activity schedule proposed in the risk management plan, relevant statements or certificates by an appropriately qualified person regarding the construction, stability or likely future performance of remaining site features (e.g. dams, escarpments) must be provided.

## **5 Payment Amount**

In deciding the payment amount for residual risks, the administering authority will consider the cost estimates and associated schedules submitted by the EA holder. The administering authority can only request a payment that reflects the likely costs and expenses of managing residual risk. To fully account for the costs of managing the risks, the final payment may include administration costs to ensure the costs of managing funds and managing the implementation of management schedules (e.g. contract management costs) by government is accounted for. The payment amount must be collected in full with no discounting applied.

Once a payment amount has been decided by the administering authority, an invoice will be issued to the EA holder with the payment amount, bank details, due date and any other relevant information.

If a payment is required, the surrender does not take effect until the payment has been made.

**Appendix 1 – Credible risk events**

<b>Geotechnical risks</b>	
Failure of aboveground <b>process waste emplacement</b>	Failure (e.g. through slumping) of an aboveground or in-pit process waste emplacement, which results in the potential erosion and release of embankment, cover or tailings materials, and which potentially impacts on a sensitive receptor, and requires remediation. The event could lead to physical impacts (e.g. sediment release) or geochemical impacts (e.g. due to the exposure of PAF materials).
Failure of aboveground <b>waste rock emplacement</b>	Failure (e.g. through erosion or slumping) of an aboveground (ex-pit) waste rock emplacement, which results in the potential erosion and release of dump or cover materials, and which potentially impacts on a sensitive receptor, and requires remediation. The event could lead to physical impacts (e.g. sediment release) or geochemical impacts (e.g. due to the exposure of PAF materials)
<b>Open void</b> wall failure	Failure of an open void wall (e.g. due to geotechnical instability) which results in a direct impact on nearby infrastructure or other sensitive receiver, or leads to an indirect impact (such as secondary geochemical impacts) on a sensitive receptor, and which requires remediation
Surface subsidence as a result of <b>underground void</b> failure	Failure of an underground void (e.g. due to geotechnical instability) resulting in surface subsidence which leads to a direct impact on infrastructure or other sensitive receptor, and which requires remediation
Failure of <b>water holding structure</b> or <b>drainage control structure</b>	Failure of a water holding structure or drainage control structure, which results in the release of sediments or contaminants, or redirection of flow away from natural or constructed watercourses, or redirection of flow to an area where erosion or contamination results, and which results in a potential impact on a sensitive receptor, and requires remediation.
Failure of aboveground <b>waste facility</b>	Failure (e.g. through erosion or slumping) of an aboveground waste facility, which results in the potential erosion and release of waste materials, and which potentially impacts on a sensitive receptor, and requires remediation. The event could lead to physical impacts (e.g. sediment

	release) or impacts due to contamination (e.g. due to the exposure of contaminated materials).
<b>Geochemical risks</b>	
Contaminated discharge from aboveground <b>process waste emplacement</b>	Discharge of untreated water from an aboveground process waste emplacement to surface waters or groundwater, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Contaminated discharge from aboveground <b>waste rock emplacement</b>	Discharge of untreated water from an above-ground waste rock emplacement, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Contaminated discharge from an <b>open void</b>	Discharge of untreated water from open void to surface waters or groundwater, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Contaminated discharge to surface water from an <b>underground void</b>	Discharge of untreated water from underground workings to surface waters, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Contaminated discharge to groundwater from an <b>underground void</b>	Discharge of untreated water from underground workings to groundwater, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Discharge of contaminated water from <b>water holding structure</b>	Discharge of untreated water from a water holding structure, where discharge contains contaminants as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation
Hydrocarbon release or aquifer fluid exchange due to a <b>CSG well</b>	Failure of a seal in a plugged and abandoned (P&A) well leading to the escape of fluids (e.g. hydrocarbons or saline fluids) from one aquifer and transportation either to another aquifer or
Hydrocarbon release or aquifer fluid exchange due to a <b>conventional or other</b>	



unconventional P&G well or a mining exploration bore	the surface, resulting in an impact that requires remediation.
<b>Spontaneous combustion risks</b>	
Spontaneous combustion of aboveground or in-pit <b>waste rock emplacements</b> and coal mine <b>open voids</b>	Spontaneous combustion of aboveground or in-pit waste rock emplacements at coal mines or metals mines, or spontaneous combustion of coal mine open voids, resulting in impacts on ambient air quality and potential impacts on land and infrastructure
Spontaneous combustion in <b>underground workings</b> at coal mines	Spontaneous combustion of coal in the underground workings of a coal mine resulting in impacts on ambient air quality and potential impacts on land and infrastructure
<b>Risk of water treatment failure</b>	
Treatment of discharge from <b>site features</b> fails to meet water quality requirements	Discharge of treated water from site features to surface waters contains greater than predicted contaminant levels as a result of geochemical processes, and results in a potential impact on a sensitive receptor, and requires remediation. This may occur where drainage quality is poorer and/or of higher volume than predicted and exceeds capacity of any passive or active management or treatment systems
<b>Waste facility risks</b>	
Discharge of contaminants to groundwater from <b>waste facility</b>	Failure of liner or seepage controls resulting in the discharge to groundwater of contaminants from materials contained in a waste facility, resulting in a potential impact on a sensitive receptor, and requiring remediation.

**Disclaimer**

While this document has been prepared with care it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the Department of Environment, Science and Innovation should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

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1.01	04 May 2022	Facsimile number removed.
1.02	21 February 2024	Updated to align with MOG