



Risk Assessments

Part V, Division 3, Environmental Protection Act 1986

Version: Final

February 2017



Document Version History

Date	Author	Version	Approved by
February 2017	Strategy and Reform	Final, V2	Jason Banks, Director General
November 2016	Strategy and Reform	Final, V1	Jason Banks, Director General
December 2015	As above	Draft released for consultation	As above

Produced and published by

Department of Environment Regulation
168 St Georges Terrace, Perth, Western Australia

February 2017

Copyright © State of Western Australia 2017

All material is the copyright of the State of Western Australia. Permission is not given for any commercial use or sale of this material. No part of the contents of the publication may be reproduced by any process, electronic or otherwise, distributed, adapted, broadcast, performed in public or communicated to the public without the written consent of Department of Environment Regulation, except as permitted under the *Copyright Act 1968*.

Accessibility

This document is available in alternative formats and languages on request.

Objective

To provide guidance on the Department of Environment Regulation's (DER) regulatory framework and the application of regulatory controls for works approvals and licences granted under Part V, Division 3 of the *Environmental Protection Act 1986* (EP Act).

DER will apply a risk-based approach to its regulatory functions to ensure that there is not an unacceptable risk of harm to public health or the environment. Licensing and approval decisions, including conditions imposed on works approval or licence, will be proportionate to the level of risk (consequence and likelihood) that the activity poses to public health and the environment.

Background

DER undertakes regulatory functions under Part V of the EP Act. The *Guidance Statement: Regulatory Principles* establishes and sets out how DER will apply principles of good regulatory practice

DER's risk assessment process has been developed to ensure a systematic approach in assessing risk and applying regulatory controls which are proportionate to the risk. The application of regulatory controls guides DER in the setting of appropriate conditions for works approvals and licences.

DER's risk assessment process has been developed generally in accordance with the following Australian/New Zealand Standards:

- AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines;
- AS/NZS 4360:2004 Risk Management; and
- HB 203:2012 Managing environment-related risk.

Legislation and other Guidance Statements

This Guidance Statement is principally related to DER's regulatory functions relating to works approvals and licences under Part V, Division 3 of the EP Act. This Guidance Statement should be read together with DER's *Guidance Statement: Decision Making*.

Scope

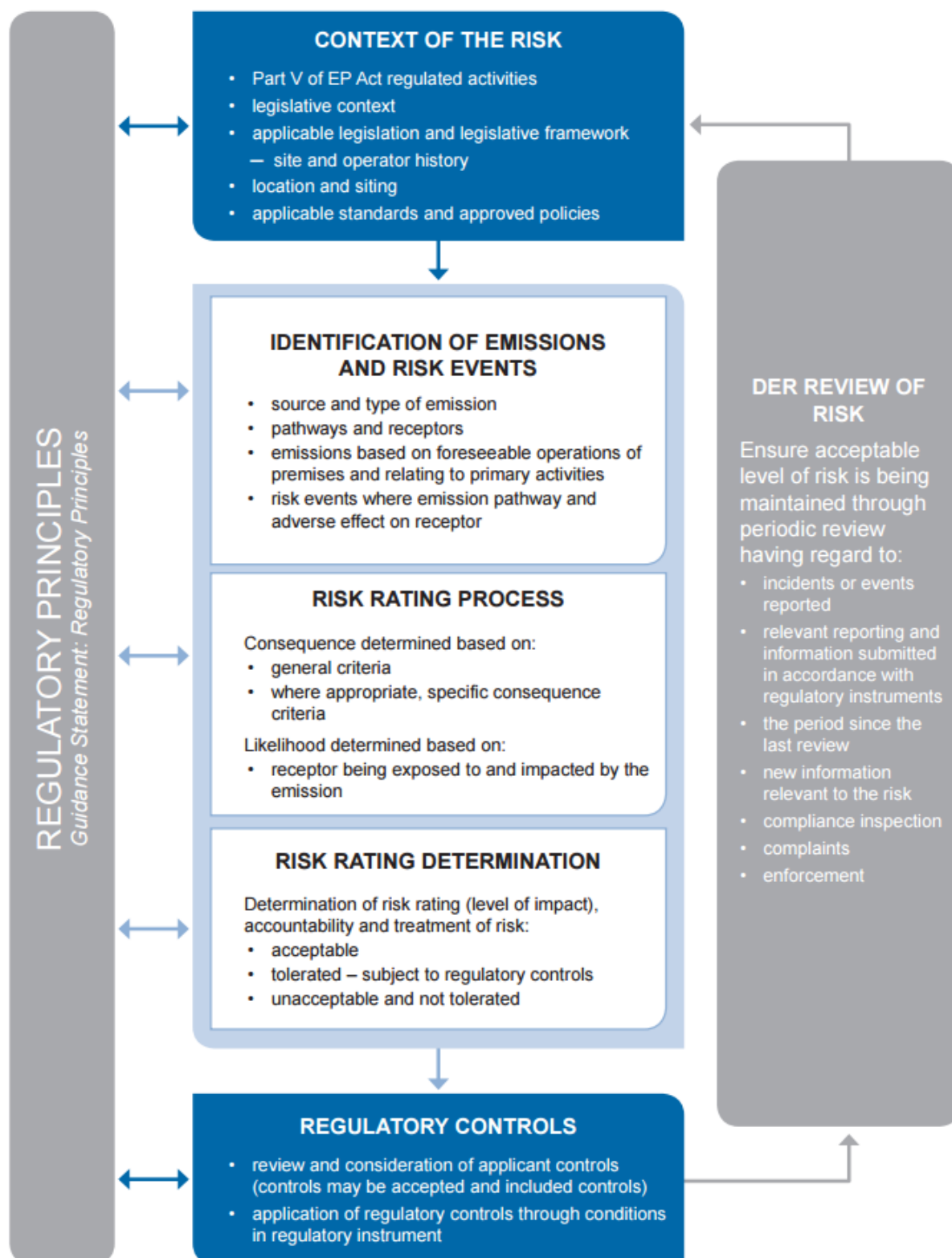
This Guidance Statement relates to DER's risk-based approach for assessing prescribed premises under Part V, Division 3 of the EP Act.

Guidance Statement

Overview of Risk Assessment Process

1. DER will undertake an assessment of the risks of emissions from prescribed premises and will identify the potential source, pathway and impact to receptors.
2. DER's risk assessment process for prescribed premises under Part V of the EP Act is depicted in Figure 1 below and involves DER's consideration of the following:
 - (a) establishing the context of the risk;
 - (b) identification of emissions;
 - (c) identification of risk events through source-pathway-receptor analysis;
 - (d) risk rating process by application of consequence and likelihood criteria;
 - (e) determination of risk rating; and
 - (f) determination of regulatory controls.

Figure 1 – DER Risk Assessment Process



3. DER will periodically review the risk of a site and the appropriateness of controls applied to regulatory instruments. The timing of reviews will be determined based upon the relative risk of a site.
4. DER will undertake its risk assessment:
 - (a) in accordance with the *Guidance Statement: Environmental Siting*;
 - (b) for specific categories of prescribed premises or types of emissions, in accordance with the relevant *Environmental Standards*;
 - (c) for other emissions, in accordance with the relevant *Guideline on Emissions*; and
 - (d) with regard to advice from relevant internal and external experts.

Context of the Risk

5. In establishing the context of the risk, DER will:
 - (a) have regard to the legislative context for the premises including relevant statutory approvals, such as approvals under Ministerial Statements issued under Part IV of the EP Act;
 - (b) identify applicable standards including environmental standards, prescribed standards and applicable approved policies;
 - (c) identify site and operator history under Part V of the EP Act for existing prescribed premises;
 - (d) identify the location of the prescribed premises;
 - (e) give consideration to relevant environmental site features including topography, geology and soils; and
 - (f) identify relevant meteorological conditions.

Identification of Emissions from Prescribed Premises

6. DER will identify the emissions from the prescribed premises and the sources of those emissions, having regard to information provided in the application, site inspections (for existing premises), similar premises, and any available monitoring data.
7. Where possible, DER will identify the type, volume, concentration and duration of the emission.

8. DER will identify likely emissions arising from:
 - (a) the expected operations and infrastructure of the prescribed premises, in the context in which the premises are situated;
 - (b) the foreseeable operations and expected infrastructure, equipment and operational failures at the prescribed premises which may, from time to time, give rise to higher emission levels or different emissions than during normal operations, for example as a result of plant start up or shut down for maintenance; and
 - (c) the primary activities which fall within the description of the category of prescribed premises in Schedule 1 of the *Environmental Protection Regulations 1987* and may be subject to specific conditions in regulatory instruments. Primary activities include directly related activities that give rise to emissions and discharges.

Identification of Pathways and Receptors

9. In identifying pathways, DER will have regard to topography, available data, and meteorological information.
10. DER will consider separation and environmental siting factors in determining the extent to which emissions may impact a receptor.
11. In identifying potential receptors, DER will exclude employees, visitors, or contractors of the Licence Holder, as protection of these parties often involves different exposure risks and prevention strategies and is provided for under other State legislation.

Risk Events

12. DER will identify risk events, being events which involve all of the following:
 - (a) an emission occurring; and
 - (b) a receptor being exposed to the emission through an identified actual or likely pathway; and
 - (c) potential adverse effects to the receptor from exposure to the emission.
13. Where the prescribed premises are situated in areas which have known and relevant geological or meteorological conditions (e.g. known flooding potential), this context will be taken into account by DER in identifying risk events.
14. DER will consider risk events that are reasonably foreseeable, including risk events which are outside normal operating parameters.

- 15. DER will exclude rare or unforeseeable risk events and risk events which arise from an intervening cause. The general provisions of the EP Act may apply to any such events.**
- 16. In respect of risk events which are risks to public health, DER:**
 - (a) may refer public health risks to the Department of Health for advice; and**
 - (b) may have regard to the Department of Health's published guidance on health risk and impact assessment.**

Consequence and Likelihood of Risk Event

- 17. DER will undertake an assessment of the consequence and likelihood of the risk event in accordance with the Risk Criteria Table specified below.**
- 18. In determining the consequence and likelihood of a risk event, DER will have regard to applicant controls. Where applicant controls lower the assessed likelihood or consequence of a risk event, these controls will be conditioned in the regulatory instrument.**

Table 1 – Risk Criteria Table

Consequence		
The following criteria will be used to determine the consequences of a risk event occurring:		
	Environment	Public Health* and Amenity (such as air and water quality, noise, and odour)
Severe	<ul style="list-style-type: none"> on-site impacts: catastrophic off-site impacts local scale: high level or above off-site impacts wider scale: mid level or above Mid to long term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity
Major	<ul style="list-style-type: none"> on-site impacts: high level off-site impacts local scale: mid level off-site impacts wider scale: low level Short term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity
Moderate	<ul style="list-style-type: none"> on-site impacts: mid level off-site impacts local scale: low level off-site impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid level impact to amenity
Minor	<ul style="list-style-type: none"> on-site impacts: low level off-site impacts local scale: minimal off-site impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Slight	<ul style="list-style-type: none"> on-site impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal impacts to amenity Specific Consequence Criteria (for public health) criteria met

Likelihood	
The following criteria will be used to determine the likelihood of the risk event occurring.	
Almost Certain	The risk event is expected to occur in most circumstances
Likely	The risk event will probably occur in most circumstances
Possible	The risk event could occur at some time
Unlikely	The risk event will probably not occur in most circumstances.
Rare	The risk event may only occur in exceptional circumstances

[^] Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*

* In applying public health criteria, DER may have regard to the Department of Health’s, *Health Risk Assessment (Scoping) Guidelines*

“on-site” means within the prescribed premises boundary

Consequence Rating of Risk Event

19. DER will rate the consequence of a risk event:
 - (a) in accordance with the general Consequence Criteria set out in the Risk Criteria Table; or
 - (b) where appropriate to do so, in accordance with specific criteria for consequences to the environment or public health (Specific Consequence Criteria). DER will expressly state in its decision documentation the basis upon which Specific Consequence Criteria have been determined.
20. In determining Specific Consequence Criteria:
 - (a) DER will apply prescribed standards and approved policies under the EP Act;
 - (b) DER may have regard to the published documents set out in Appendix 1;
 - (c) DER will undertake a site-specific assessment; and
 - (d) DER will consider information provided by the applicant including any Specific Consequence Criteria derived from baseline data or reference sites.
21. To determine the consequence rating of a risk event, DER will apply Consequence Criteria:
 - (a) at the receptor most affected by the emission and having regard to the nature, value and sensitivity of the receptor; and
 - (b) where possible, having regard to baseline and reference data which are representative of the receiving environment.

Likelihood Rating of Risk Event

22. DER will rate the likelihood of a risk event in accordance with the Likelihood Criteria in the Risk Criteria Table.
23. In applying the Likelihood Criteria, DER may have regard to:
 - (a) the compliance and operational history of an applicant;
 - (b) records of historical events;
 - (c) monitoring data;
 - (d) expert opinions and published research;
 - (e) previous experience of similar activities; and

- (f) **predictive modelling involving detailed mathematical models (including groundwater models, surface water models, noise models and air dispersion models).**

Risk Rating Determination

24. DER will determine a risk rating (level of impact) for the risk event in accordance with the Risk Rating Matrix table set out below.

Table 2 – Risk Rating Matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Acceptability and Treatment of Risk Event

25. DER will determine:

- (a) **whether a risk event is acceptable and tolerated, or unacceptable and not tolerated; and**
- (b) **the appropriate treatment and degree of regulatory control,**
in accordance with the Risk Treatment table below.

Table 3 – Risk Treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable	Risk event will not be tolerated. DER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls	Risk event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls	Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.

Rating of Risk Event	Acceptability	Treatment
Low	Acceptable, generally not controlled	Risk event is acceptable and will generally not be subject to regulatory controls.

26. **DER will determine regulatory controls having regard to the adequacy of controls proposed by an applicant. Regulatory controls may include applicant controls.**
27. **DER will determine regulatory controls appropriate for the risk event and having regard to the categories of controls described in Table 4. The categories in Table 4 are not exhaustive and other types of controls may be appropriate in the circumstances.**

Table 4 – Regulatory Controls table

Control	Description of regulatory control
Siting of Infrastructure	Where the location of infrastructure is specified to avoid or minimise the impact of emissions on receptors.
Infrastructure Design or Construction Requirements	Where the design and construction of infrastructure or equipment to an engineering or construction standard is specified to prevent, control, abate or mitigate pollution or environmental harm.
Emissions Limits	Where specified limits cannot be exceeded for specified emissions to air, land, surface and groundwater.
Monitoring	Where monitoring is required to validate performance within limits, to ensure or validate effectiveness of other controls (e.g. Infrastructure Requirements), to obtain baseline data to inform DER's ongoing assessment of the risk.
Requirements regarding Operation of Infrastructure	Where the operation and/or maintenance of infrastructure is specified (e.g. freeboard, storage volumes, physical or chemical parameters of abatement equipment) for control of emissions.
Specified Actions	Where specific, short term, or one-off actions are required (e.g. collection of data, installation of additional controls).
Volume/Scale Limits	Where production, throughput or acceptance is constrained.
Restriction on Input	Where the inputs (e.g. feedstock) in relation to the activity are specified (type or limit) for the premises or for a specified process.
Specifications on Product or Materials	Where pathogen or contamination limits are specified in products, or specifications are required for materials (e.g. dust extinguishment moisture levels for bulk commodities).

28. DER will set conditions to give effect to determined regulatory controls. Conditions will be applied in accordance with the *Guidance Statement: Setting Conditions*.
29. Where regulatory controls include applicant controls, DER will set conditions reflecting appropriate applicant controls in the instrument.

Review of Risk

30. Once the risks have been determined and instrument granted, DER will undertake periodic reviews of the risks of a prescribed premises when appropriate to do so, having regard to relevant matters including:
 - (a) incident or event reporting under section 72 of the EP Act;
 - (b) relevant reporting and information submitted in accordance with regulatory instruments;
 - (c) the period since the last review of the prescribed premises;
 - (d) new information which is relevant to the risk assessment for the prescribed premises;
 - (e) compliance inspections;
 - (f) complaints received; and
 - (g) enforcement action taken.
31. In undertaking a review of risks, DER acknowledges that risk assessments are point in time assessments, and additional information may become available which further informs the risk assessment. In undertaking a review, DER:
 - (a) may change controls to ensure that they remain effective and efficient in both design and operation;
 - (b) may require further information from the instrument holder;
 - (c) may identify additional risks; or
 - (d) may identify changes to the context or risks, which may result in a revision of risk ratings and regulatory controls.
32. DER may give effect to a review of risks of prescribed premises by amendments to the instrument or other actions.

Implementation

DER's risk-based approach to assessments will be implemented in accordance with this Guidance Statement for all:

- new reviews; and
 - new applications accepted,
- after the date of commencement.

The CEO may also apply this Guidance Statement to existing matters as the CEO considers appropriate, having regard to ensuring an orderly transition.

Commencement

This Guidance Statement is to take effect from 10 November 2016.

Review

This Guidance Statement is to be reviewed no later than as soon as practicable following the fifth year of its commencement.

Appendix 1 – Specific Consequence Criteria

DER may have regard to the following published documents in determining appropriate Specific Consequence Criteria for public health and environment impacts:

- ANZECC & ARMCANZ (2000), [Australian and New Zealand Guidelines for Fresh and Marine Water Quality](#), which provides for water quality guidelines on a range of toxicants for the protection of fresh and marine waters based on the desired level of protection;
- NHMRC & ARMCANZ (2011), [Australian Drinking Water Guidelines](#), which provides for a range of water quality parameters for the protection of drinking water source areas for public health;
- NHMRC & ARMCANZ (2006), Australian Guidelines for Water Recycling Managing Health and Environmental Risk;
- DoH (2012), Western Australian guidelines for biosolids management;
- DoH (2014), [Contaminated Sites Ground and Surface Water Chemical Screening Guidelines](#);
- [National Environment Protection \(Ambient Air Quality\) Measure](#);
- National Environment Protection (Air Toxics) Measure; and
- [Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales](#) (Department of Environment and Conservation (DEC) NSW, 2005).