Government of **Western Australia**
Department of **Water and Environmental Regulation**

Guideline

Risk assessments

Part V, Division 3, *Environmental Protection Act 1986*

February 2017

(Plain English version, December 2020)

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Contents

1. Objective

This guideline describes how the Department of Water and Environmental Regulation applies regulatory controls for works approvals and licences granted under Part V, Division 3 of the *Environmental Protection Act 1986* (EP Act).

We will apply a risk-based approach to our regulatory functions to prevent an unacceptable risk of harm to public health or the environment. We will make licensing and approval decisions, including any conditions we attach to a works approval or licence, in proportion to the level of risk (likelihood and consequence) that the activity poses to public health and the environment.

2. Background

The department undertakes regulatory functions under Part V of the EP Act. The *Guideline: Regulatory principles* sets out how we will apply the principles of good regulatory practice.

We have designed our risk assessment process to ensure we assess risk and apply regulatory controls in proportion to the risk. The regulatory controls guide us to set appropriate conditions for works approvals and licences.

We have used the following Australian/New Zealand Standards to help develop our risk assessment process:

- AS/NZS ISO 31000:2009 Risk management – principles and guidelines
- AS/NZS 4360:2004 Risk management
- HB 203:2012 Managing environment-related risk.

3. Legislation and other guidelines

This guideline principally relates to the department's responsibilities under Part V, Division 3 of the EP Act. You should read this guideline together with the department's *Guideline: Decision making.*

4. Scope

This guideline describes the department's risk-based approach for assessing prescribed premises under Part V, Division 3 of the EP Act.

5. Guideline role

Overview of risk assessment process

1. The department will assess the risks of emissions from prescribed premises and identify the potential source, pathway and impact to receptors.
2. Figure 1 shows our process for assessing those risks, in which we:

a. establish the context of the risk
b. identify emissions
c. identify risk events through source-pathway-receptor analysis
d. apply a risk rating using consequence and likelihood criteria
e. determine the risk rating
f. determine the regulatory controls.

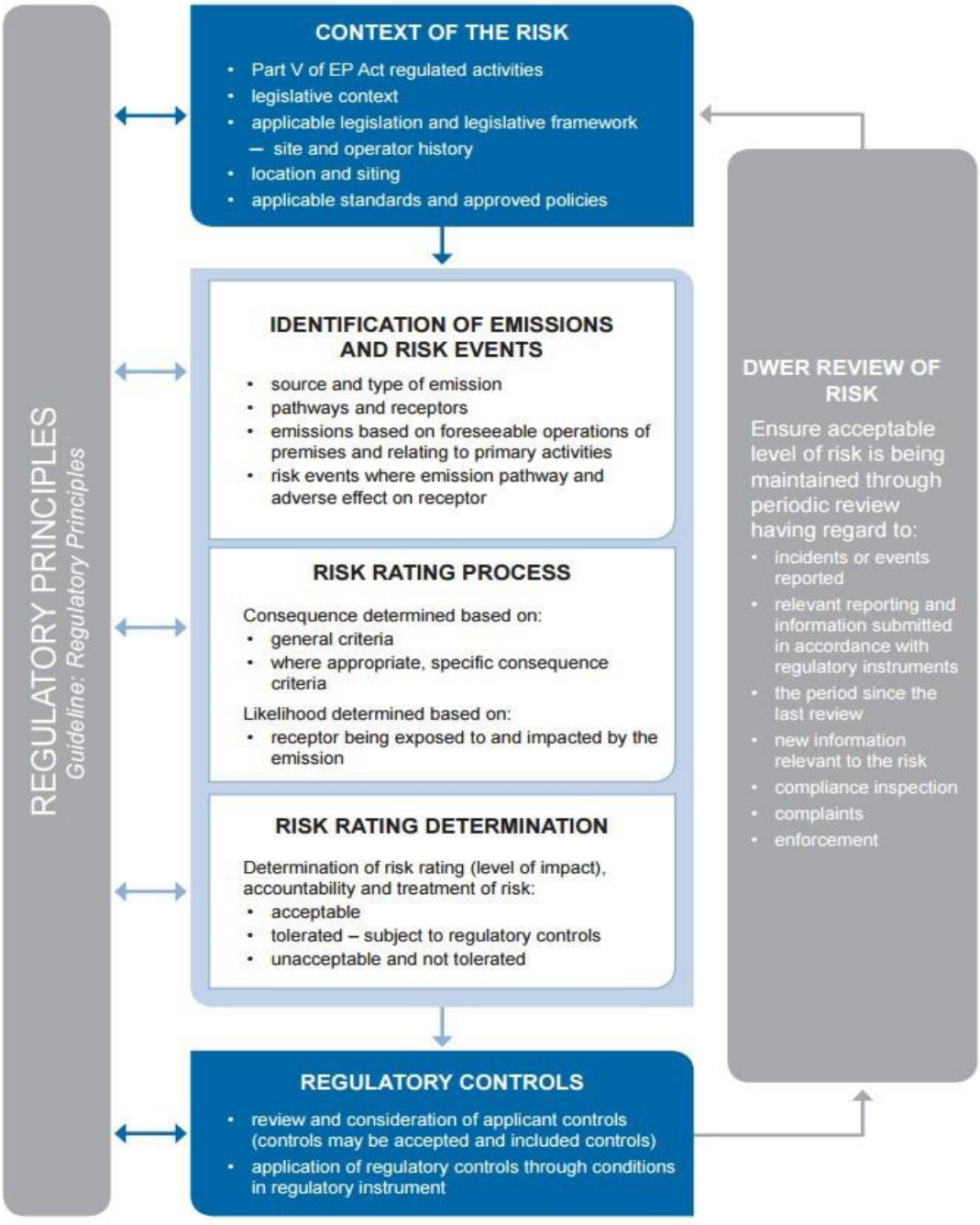

Figure 1: Our risk assessment process

3. From time to time we will review a site's risk and whether the controls applied to regulatory instruments remain appropriate. We will base the timing of these reviews on the relative risk of the site.
4. We will do our risk assessment:
   a. in line with the *Guideline: Environmental siting*
   b. for specific categories of prescribed premises or types of emissions, in accordance with the relevant Environmental Standards
   c. for other emissions, following the relevant guideline on emissions
   d. taking advice from relevant internal and external experts.

Context of the risk

5. To establish the context of the risk, the department will identify:
   a. the legislative context for the premises including relevant statutory approvals, such as Ministerial Statements issued under Part IV of the EP Act
   b. the relevant Environmental Standards, Prescribed Standards and/or policies
   c. site and operator history under Part V of the EP Act for existing prescribed premises
   d. the location of the prescribed premises
   e. the environmental features of the site including topography, geology and soils
   f. the meteorological conditions of the site.

Identify emissions from prescribed premises

6. The department will identify the emissions from the prescribed premises and the sources of those emissions. To do this we will use information in the application, conduct site inspections (for existing premises), compare similar premises and access any available monitoring data.
7. We will identify the type, volume, concentration and duration of the emissions.
8. We will determine likely emissions arising from:
   a. the expected operations and infrastructure of the prescribed premises in its particular site context
   b. the foreseeable operations and expected infrastructure, equipment and operational failures at the prescribed premises which may, from time to time, cause higher emission levels or different emissions than those of normal operations (e.g. because of plant start-up or shutdown for maintenance)
   c. the primary activities which fall into the category of prescribed premises in Schedule 1 of the Environmental Protection Regulations 1987 and may have specific conditions in regulatory instruments (primary activities include directly related activities that cause emissions and discharges).

Identify pathways and receptors

9. To identify pathways, we will take into account the site's topography and any other relevant information such as meteorological data..
10. We will consider separation and environmental siting factors to determine how much emissions may impact on a receptor.
11. When we look at potential receptors, we exclude employees, visitors or contractors of the licence holder. This is because other state legislation protects them from exposure risks and mandates prevention strategies.

Risk events

12. The department will identify the following risk events:
    a. The occurrence of an emission.
    b. The exposure of a receptor to the emission through an identified actual or likely pathway.
    c. Potential adverse effects to the receptor from exposure to the emission.
13. If the prescribed premises is in an area with geological or meteorological conditions of concern (e.g. known flooding potential), we will consider this context to identify risk events.
14. We will consider risk events that are reasonably foreseeable, including risk events which are outside normal operating parameters.
15. We will exclude rare or unforeseeable risk events and those that arise from an intervening cause. The general provisions of the EP Act may apply to any such events.
16. For risk events that may impact on public health, the department:
    - may ask the Department of Health (DoH) for advice
    - may consult DoH's published guidance on health risk and impact assessment.

Consequence and likelihood of the risk event

17. We will use Table 1: Risk criteria to assess the consequence and likelihood of the risk event.
18. To determine the consequence and likelihood of a risk event, we take into account any controls the applicant has proposed. Where those controls lower the likelihood or consequence of a risk event, we will include the controls in conditions in the regulatory instrument.

Table 1: Risk criteria

Consequence		
The department will use the following criteria to assess the consequences of a risk event occurring:		
	Environment	Public health* and amenity (such as air and water quality, noise and odour)
Severe	• Onsite impacts**: catastrophic** • Offsite impacts local scale**: high level or above** • Offsite 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**	• **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	• Onsite impacts**: high level** • Offsite impacts local scale**: mid level** • Offsite 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**	• 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	• Onsite impacts**: mid level** • Offsite impacts local scale**: low level** • Offsite impacts wider scale**: minimal** • **Specific Consequence Criteria (for environment) are at risk of not being met**	• 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	• Onsite impacts**: low level** • Offsite impacts local scale**: minimal** • Offsite impacts wider scale**: not detectable** • **Specific Consequence Criteria (for environment) likely to be met**	• **Specific Consequence Criteria (for public health) are likely to be met** • Local scale impacts: **low level impact to amenity**
Slight	• Onsite impact**: minimal** • **Specific Consequence Criteria (for environment) met**	• Local scale**: minimal impacts to amenity** • **Specific Consequence Criteria (for public health) criteria met**

Likelihood	
The department will use the following criteria to assess the likelihood of a 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**

^ For areas of high conservation value or special significance, we will use the *Guideline: Environmental siting* to inform our decision

* In applying public health criteria, we may use the Department of Health's *Health risk assessment (scoping) guidelines*

'Onsite' means within the prescribed premises boundary

Consequence rating of risk event

19. The department will rate the consequence of a risk event using the:
    a. general consequence criteria set out in Table 1: Risk criteria, or
    b. specific criteria for consequences to the environment or public health (Specific Consequence Criteria). When we use these criteria, we will give our reasons in the decision documentation.
20. To determine Specific Consequence Criteria, we will:
    a. apply the Prescribed Standards and approved policies under the EP Act
    b. consider the relevant published documents set out in Appendix 1
    c. conduct a site assessment
    d. consider information from the applicant, including any Specific Consequence Criteria derived from baseline data or reference sites.
21. To determine the consequence rating of a risk event, we will apply consequence criteria:
    a. at the receptor most affected by the emission and considering the nature, value and sensitivity of the receptor
    b. where possible, using baseline and reference data that represent the receiving environment.

Likelihood rating of risk event

22. The department will rate the likelihood of a risk event using the likelihood criteria in Table 1: Risk criteria.
23. To determine the likelihood criteria, we may consider:
    a. the applicant's compliance and operational history
    b. records of historical events
    c. monitoring data
    d. expert opinions and published research
    e. any previous experience of similar activities
    f. predictive modelling that uses detailed mathematical models (e.g. groundwater models, surface water models, noise models and air dispersion models).

Determine a risk rating

24. The department will determine a risk rating (level of impact) for the risk event using Table 2: Risk rating matrix.

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

Risk event acceptability and treatment

25. The department will determine:

    a. whether a risk event is acceptable and tolerable, or unacceptable and not tolerable

    b. the appropriate treatment and degree of regulatory control

    in accordance with Table 3 – Risk treatment.

Table 3 – Risk treatment

Rating of risk event	Acceptability	Treatment
Extreme	Unacceptable	Risk event will not be tolerated. We may refuse the application.
High	May be acceptable subject to multiple regulatory controls	Risk event may be tolerated. We may apply multiple regulatory controls, including both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls	Risk event is tolerable. We may apply some regulatory controls, including outcome-based conditions where practical and appropriate.
Rating of risk event	Acceptability	Treatment
Low	Acceptable, generally not controlled	Risk event is acceptable. Generally we will not apply regulatory controls.

26. When we determine regulatory controls, we will consider the adequacy of those the applicant has proposed. Regulatory controls may include applicant controls.
27. We will determine regulatory controls appropriate for the risk event using the categories of controls in Table 4. These categories are not the only ones we use and other types of controls may be appropriate in the circumstances.

Table 4: Regulatory controls

Control	Description of regulatory control
Siting of infrastructure	Where we specify the location of infrastructure to avoid or minimise the impact of emissions on receptors.
Infrastructure design or construction requirements	Where we specify an engineering or construction standard for the design and construction of infrastructure or equipment to prevent, control, abate or mitigate pollution or environmental harm.
Emissions limits	Where we state limits that cannot be exceeded for specific emissions to air, land, surface and groundwater.
Monitoring	Where we require monitoring to validate performance within limits or the effectiveness of other controls (e.g. infrastructure requirements), or to obtain baseline data to support our ongoing assessment of the risk.
Requirements for operation of infrastructure	Where we state how the applicant should operate and/or maintain infrastructure (e.g. freeboard, storage volumes, physical or chemical parameters of abatement equipment) to control emissions.
Specified actions	Where we ask the applicant to take specific, short term or one-off actions (e.g. collect data, install additional controls).
Volume/scale limits	Where we put constraints on production, throughput or acceptance.
Restriction on input	Where we specify the inputs (e.g. feedstock) for the activity (type or limit) for the premises or a specified process.
Specifications on product or materials	Where we give pathogen or contamination limits for products, or specifications for materials (e.g. dust extinguishment moisture levels for bulk commodities).

28. We will set conditions to give effect to determined regulatory controls. To do so, we will use the *Guideline: Setting conditions.*
29. Where regulatory controls include applicant controls, we will set conditions that are appropriate applicant controls in the instrument.

Review of risk

30. After the department has determined the risks and granted the instrument, we will periodically review the risks. We will consider all relevant matters including:
    a. incident or event reporting under section 72 of the EP Act
    b. reporting and information submitted in accordance with regulatory instruments
    c. the period since the last review of the prescribed premises
    d. new information
    e. compliance inspections
    f. complaints received
    g. enforcement action taken.
31. When reviewing risks, we acknowledge that risk assessments are point-in-time assessments, and additional information may become available that further informs our assessment. In undertaking a review, we may:
    a. change controls to ensure they remain effective and efficient in both design and operation
    b. require further information from the instrument holder
    c. find additional risks
    d. identify changes to the context or risks, which may result in a revision of risk ratings and regulatory controls.
32. Our review may result in amendments to the instrument or other actions for the prescribed premises.

6. Implementation

The department will use the risk-based approach to assessments in this guideline for all reviews and applications we receive after its start date.

7. Start date

This guideline takes effect from 10 November 2016.

8. Review

We will review this guideline as soon as practicable after the fifth year of its inception.

Appendix 1 – Specific consequence criteria

The department may use the following published documents to decide on 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.
- DEC 2012, *Western Australian guidelines for biosolids management*.
- DEC (NSW) 2005, *Approved methods for the modelling and assessment of air pollutants in New South Wales*.
- DoH 2014, *Contaminated sites ground and surface water chemical screening guidelines*.
- 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*.
- National Environment Protection (Ambient Air Quality) Measure.
- National Environment Protection (Air Toxics) Measure.