Environment Protection Authority

Guidance on using the risk assessment tool

Risk-based licensing

Published by:
NSW Environment Protection Authority
4 Parramatta Square
12 Darcy Street, Parramatta NSW 2150
Locked Bag 5022, Parramatta NSW 2124

Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask
for 131 555
Speak and listen users:
phone 1300 555 727, then ask for 131 555

Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@epa.nsw.gov.au
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1. Introduction

1.1. About this document

This guidance document has been developed by the Environment Protection Authority (EPA) to assist holders of environment protection licences in using the risk-assessment tool and understanding the process, enabling them to produce consistent results. It is important to note an assessment is a snapshot in time and that risk profiles may change with periodic review.

Terms used in this document are defined in the Glossary.

1.2. Overview of the EPA's risk-based licensing system

The *Protection of the Environment Operations Act 1997* (POEO Act) establishes the regulatory and licensing framework for controlling the localised, cumulative and acute impacts of pollution in New South Wales.

The EPA's risk-based licensing system aims to ensure that all environment protection licensees receive an appropriate level of regulation based on the level of risk they pose to human health and the environment. The EPA will assess site-specific risks posed by the activities at a premises and identify any environmental issues the licensee needs to address.

1.2.1. Risk assessment

The EPA's risk-assessment tool has been developed to evaluate the impacts associated with a licensed premises and the likelihood of environmental harm occurring. It follows the principles outlined in the Australian Standard AS/NZS ISO 31000–2009, *Risk Management*.

The process considers the following components:

- the day-to-day operations at the site, including the type (air, including odour; water; and noise) and nature of emissions from the premises
- the risk of a pollution incident, by examining the pollution-control measures in place at the premises, the premises' proximity to sensitive environments and receptors, and the environments' or receptors' sensitivity
- the licensee's environmental management performance.

1.2.2. Regulatory priority

The first two components of the risk-assessment, will result in a regulatory priority level being allocated for each of the environmental media (air, water and noise emissions) and the pollution incident risk. The overall regulatory priority for the licence is then determined by the following rules:

- High: if any element is allocated a high regulatory priority.
- Low: if all elements are allocated a low regulatory priority.
- Moderate: all elements are moderate or if a mixture of moderate and low regulatory priorities are allocated.

Regulatory priorities for each of the environmental media are calculated by considering the residual risks that activities pose for the environment and for human health, after pollution-control and mitigation measures have been taken into account.

1.2.3. Environmental management category

The third component of the risk assessment examines the environmental management performance of a licensee at the licensed premises and results in the allocation of an environmental management category (A, B, C, D or E), which takes into account:

- a licensee's compliance history, and regulatory actions undertaken by the EPA in response to any incidents and non-compliances
- the management systems and practices a licensee has in place to control and mitigate environmental risks
- environment improvement programs the licensee has initiated.

The environmental management category is also used in calculating the licence administrative fee. (See section 3, *Environmental management category*.)

1.2.4. Overall environmental risk level

The matrix below outlines how the results from the three components of the assessment are used to determine the overall environmental risk associated with the licensed activity. Level 1 indicates the lowest risk and Level 3 the highest.

Table 1 Calculation of overall environmental risk

Environmental management category	Low overall regulatory priority	Moderate overall regulatory priority	High overall regulatory priority
E	Level 2	Level 3	Level 3
D	Level 2	Level 3	Level 3
C	Level 1	Level 2	Level 3
B	Level 1	Level 2	Level 3
A	Level 1	Level 1	Level 2

Risk assessments using the tool are undertaken by EPA officers in direct consultation with licensees. This provides an opportunity to discuss the environmental issues at the premises and how operations might be improved if needed.

This process also informs the EPA's level of regulation of the activity; for example, a higher risk level may result in more focused regulatory intervention, including monitoring and reporting.

The overall environmental risk level for the licence is published on the EPA's Public Register. This gives the community more information about environmental risks, the performance of individual licensees and the EPA's regulatory activities.

1.2.5. Reviews of licence risk levels

As described above, overall environmental licence risk levels are determined by considering the regulatory priorities for air (including odour), water, noise and risk of a pollution incident and environmental management performance associated with the licensed activity. Regulatory priorities will usually be reviewed by the EPA every five years, though reviews may be undertaken more regularly as a result of:

- licence variation
- non-compliances reported in annual returns
- completion of pollution-reduction programs (PRPs)

- an environmental incident.

The EPA assesses environmental management categories once a year when the licensee submits their annual return. The category is based on the licensee's regulatory performance at their premises over a three-year period. A change in the environmental management category can lead to a change in the overall environmental licence risk level.

2. Environmental risk assessment

2.1. Assessment of air impacts

This section provides guidance on assessing site-specific risks that may result in an impact on air quality arising from day-to-day activities ('typical operations') only.

The POEO Act requires industry to comply with air emission standards and protect against adverse impacts on air quality in the area surrounding the premises.

AIR Question 1: Are there any air emissions?

Identify the source of air emissions

This question relates to point-source and fugitive emissions, but does not include odour emissions, which are addressed separately in AIR Questions 6–10.

Point-source air emissions include emissions from licensed discharge points and other confined, identifiable points, such as a stack or chimney.

Fugitive air emissions are air pollutants not released via a stack or chimney, and generally not controlled. They are often not identified on the licence, but must be considered. They include equipment leaks, evaporative losses and spills, and releases from building ventilation systems. Activities that may result in fugitive emissions include:

- chemical storage
- use or handling of solvents, paints, inks and varnishes
- metal coating
- use and handling of volatile organic compounds (VOCs)
- extractive industries – that is, activities disturbing land on a large scale
- crushing and grinding plants.

Further guidance on identifying the source of air emissions can be found in:

- National Pollutant Inventory emission estimation technique manuals for specific industries
- European Union BREFs (reference documents on best available techniques) for specific industries
- USEPA AP42 Compilation of Air Pollution Emission Factors.

AIR Question 2: Are there any pollution controls prior to discharge to air?

Identify pollution controls

For the purposes of the risk assessment it is important to consider control techniques for both fugitive and point source emissions, including: avoidance techniques, such as undertaking activities in accordance with best practice and cleaner production management; dispersion; and pollution-control devices.

Air pollution control techniques used at the premises include: infrastructure, equipment, management processes and plans in place to minimise the release of pollutants to the air.

Online sources of further guidance on pollution controls are provided at AIR Question 1.

Examples of pollution controls include:

- avoidance
  - best management practices
  - cleaner production management
- dispersion
  - stack height and separation
  - high discharge velocity
- pollution control devices
  - activated carbon beds
  - afterburners
  - air scrubbers
  - baghouses
  - biofiltration
  - cyclones
  - direct condensation and recovery
  - electrostatic precipitators
  - flares
  - inertial separators
  - water dust suppression sprays.

AIR Question 3: How well are the controls and management measures operated and maintained?

The POEO Act specifically requires that industry must not cause air pollution by failing to operate or maintain plant, carry out work or deal with materials in a proper and efficient manner.

When answering this question it is necessary to focus on the highest risk component on the site, in order identify activities that need to be addressed as a priority.

Step 1: Determine the highest-risk component or activity

Many sites will have multiple emission sources utilising a variety of pollution-control techniques with varying efficiencies. To identify the highest-risk component or activity for a premises, you must identify the pollutants that have a major impact on the environment and/or human health, and examine the controls and management measures at the source of those pollutants.

To determine the highest-risk source:

- identify the types and loads of air pollutants
- consider their toxicity
- identify the sources where there are minimal, poor or no controls in place, and those with controls that are the least effective relative to the toxicity of emissions.

Step 2: Identify controls for the highest-risk component or activity

Consider the following issues:

- whether proven, established controls are used
- the age of the premises – newer premises may have more reliable controls
- whether the controls operate effectively, and as designed to minimise environmental risk

- whether there is sound knowledge of the pollution controls and their maintenance systems
- whether there are documented procedures for operation and maintenance
- whether there are thorough and regular maintenance schedules
- whether there are records of inspection and maintenance
- whether there is an allocation of responsible staff to demonstrate accountability
- whether there are performance-monitoring or alarm systems that alert operators to problems.

Step 3: Select the manner in which controls are operated and maintained

To indicate how well controls and management measures are operated and maintained, select one of the following responses:

- good
- fair
- attention required.

Table 2 shows how the EPA defines each of these responses for the purposes of this question. **All three** reasons listed under 'good' must apply for this category to be selected. 'Attention required' must be selected if **one or more** of the reasons listed under 'attention required' apply.

Table 2 Definitions of 'good', 'fair' and 'attention required' for AIR Question 3

Category	Definition
Good	• Effective pollution controls and/or mitigation measures are in place, addressing all major issues. • Equipment is well-operated and maintained, with an evident routine maintenance schedule in place. • Effective and reliable operational programs are in place as a pollution mitigation strategy. **All** of the above attributes must apply for this category to be allocated.
Fair	• Effective pollution controls and/or mitigation measures are in place, but they address only some issues, not all major issues. • Pollution control equipment has a satisfactory maintenance schedule. • Operational programs are in place as a pollution mitigation strategy but their effectiveness is not wholly reliable.
Attention required	• There are no effective pollution controls and/or mitigation measures to address major issues. • There is no routine or reliable maintenance schedule. • Operational programs are ineffective at mitigating emissions. This category is applicable if **one or more** of these attributes apply.

AIR Question 4: Select the pollutants discharged from the activity (major emissions only).

Identify the air pollutants emitted from the premises

It is not necessary to list all air pollutants being emitted from the premises. Focus on the major air emissions: those having adverse impacts on the environment or human health.

Step 1: Determine major sources of air discharges

To define a major air emission, focus on pollutants that have a major impact on the environment or human health, and look at controls and management measures for these sources. Consider toxicity and load when identifying relevant air pollutants.

To determine which air emissions should be identified as major, consider air emissions that are:

- more significant and/or have a greater load
- problematic, and need to be addressed. (These might not be the emissions with the highest load.)

Step 2: Identify major air pollutants

Any major air pollutants are likely to be:

- included for monitoring or setting of limits on the licence under NSW clean air legislation
- identified under load-based licensing (LBL) or National Pollutant Inventory (NPI) requirements.

Once a major air pollutant has been identified, it should be selected from the drop-down menu.

AIR Question 5: What is the premises' ozone-forming potential?

This question relates to the ozone-forming potential of a premises located within the greater metropolitan region (GMR).[1]

In the presence of sunlight, oxides of nitrogen (NOx) and volatile organic compounds (VOC) undergo a series of complex reactions that cause photochemical smog (i.e. NOx and VOCs are photochemical smog precursors). Ground-level ozone (O_3) is an indicator of photochemical smog. Concentrations of O_3 in urban areas may exceed national standards.

The EPA has used data collected from licensed premises within the GMR, as part of the air emissions inventory, to prioritise each premises according to its total ozone-forming potential (low, intermediate or high). The latest data available was collected by the EPA during 2013.

Check the EPA licensed premises ranking

If the premises is located in the GMR, then contact the EPA at riskbased.licensing@epa.nsw.gov.au to determine if it has a low, intermediate or high priority ozone-forming potential. For a small number of premises the EPA will need information on the annual emissions of NOx and VOC to be supplied before it can calculate the priority.

If the premises is located outside the GMR, select 'Not in the GMR and/or has no NOx and VOC emissions'.

[1] The Greater Metropolitan Region (GMR) comprises three urban areas (Newcastle, Sydney and Wollongong) as well as the surrounding non-urban areas defined in the *Air Emissions Inventory for the Greater Metropolitan Region in New South Wales 2013*, Executive Summary, p. 5 (https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/19p1918-air-emissions-inventory-2013-summary.pdf?la=en&hash=59CF67ACA719CD8E06B34356C35A7C172B43640F).

For further information, refer to the EPA's advice on ozone-forming potential.

AIR Question 6: Are there any odorous activities?

This question assesses whether activities at the premises have the potential to generate odours. While odour-emitting activities are notable for their nuisance value and the number of complaints they generate, those detected from biological processes may also indicate contamination of the air by pathogens.

Section 129 of the POEO Act prohibits the emission of any 'offensive odour' from a licensed premises.

Identifying the sources of odours

Consider any activities that have the potential to generate odours, such as:

- handling, use or storage of human or animal waste or waste products
- VOCs (paints, varnishes, inks)
- effluent irrigation
- sludge, anaerobic or wastewater ponds
- leachate management and disposal
- chemical storage facilities, especially petroleum products.

AIR Question 7: Are there any odour controls or management measures at the premises?

Identifying odour controls

To identify controls or management measures for odours consideration should be given to the activities that have the potential to generate odours.

Many control methods – equipment and management techniques – can be used to minimise odour emissions. These can be in the form of control equipment or management practices.

Examples of methods for controlling odours in a gas stream include:

- dispersion
- wet scrubbing
- afterburner (direct or catalytic)
- carbon adsorption
- mist filter
- best management practices
- masking odour
- biological filtration
- condensers.

More than one technique may be needed to control odours completely.

AIR Question 8: How well are these controls or management measures operated and maintained?

For this question you need to assess how odour controls or management measures are operated and maintained at the premises. Operating equipment competently, maintaining equipment in a good working condition and employing best management practices will reduce odour emissions.

Select one of the following responses:

- good
- fair
- attention required.

Table 3 shows how the EPA defines each of these responses for the purposes of this question. All three reasons listed under ‘good’ must apply for this category to be selected. ‘Attention required’ must be selected if one or more of the reasons listed under 'attention required’ apply.

Table 3 Definitions of ‘good’, ‘fair’ and ‘attention required’ for AIR Question 8

Category	Definition
Good	• Effective pollution controls and/or mitigation measures are in place, addressing all major issues. • Equipment is well-operated and maintained, with an evident routine maintenance schedule in place. • Effective and reliable operational programs are in place as a pollution mitigation strategy. **All** of the above attributes must apply for this category to be allocated.
Fair	• Effective pollution controls and/or mitigation measures are in place, but they address only some issues, not all major issues. • Pollution control equipment has a satisfactory maintenance schedule. • Operational programs are in place as a pollution mitigation strategy but their effectiveness is not wholly reliable.
Attention required	• There are no effective pollution controls and/or mitigation measures to address major issues. • There is no routine or reliable maintenance schedule. • Operational programs are ineffective at mitigating emissions. This category is applicable if **one or more** of these attributes apply.

AIR Question 9: Are there any offensive odour issues or any verified odour complaints (past 12 months)?

Complaints of odour at a premises can indicate there is a problem. The EPA does not take regulatory action based on these complaints alone, as there may be many potential odour sources at a location, but they can help the EPA target its investigations.

When complaints are received, it is important that the source of the odour is verified, so that only odours directly attributed to activities at specific licensed premises are considered in the risk assessment. Odour complaints may be verified by the EPA, council officers or the licensee.

This question (AIR Question 9) refers to the 12 months before the risk assessment is undertaken.

Offensive odour is defined under the POEO Act as:

a. that, by reason of its strength, nature, duration, character or quality, or the time at which it is emitted, or any other circumstances

i. is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
ii. interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or

b. that is of a strength, nature, duration, character or quality prescribed by the regulations or that is emitted at a time, or in other circumstances, prescribed by the regulations.

AIR Question 10: Are there multiple verified odour complaints by different complainants (past 12 months)?

If there are multiple complainants this may indicate that odour issues at a premises are having a wider impact. If multiple odour complaints have been received, consider whether the complaints have been made by different complainants or one regular complainant.

AIR Question 11: How far away is the nearest sensitive receiver?

The closer the nearest sensitive receiver (or 'sensitive receptor') is to a premises, the higher the risk posed from air and odour emissions.

The EPA document Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales defines a sensitive receiver as a location where people are likely to work or live, such as a home, school, hospital, office or public recreation area.

If the location of the nearest sensitive receiver is unknown, an aerial view of the site (such as from Google Maps) may help to establish its location.

When answering this question, also consider:

- **hours of operation at the premises**. Neighbouring businesses should not be ignored, as they may be at greater risk from the impacts of air emissions during business hours
- **proximity** should be measured from the main impact source on site, to the sensitive receiver. This is particularly important for large and/or complex sites. For a fugitive source, measure the distance from the part of the premises' boundary that is closest to the sensitive receiver.

Select the appropriate distance range from the drop-down list. The ranges are:

- 0–100 metres
- 101–250 metres
- 251–500 metres
- 501–1000 metres
- >1000 metres.

AIR Question 12: What is the density of human occupation within a 1 kilometre radius?

Questions 12 and 13 relate to local air quality, for which it is necessary to consider both the population density and whether there are any particularly sensitive receivers nearby. As population density increases, so will the number of sensitive individuals and the risk posed to human health from air and odour emissions.

Choose one of the following definitions to describe the population density:

- **high density** is typically flats, units or apartments
- **medium density** is typically semi-detached, townhouses, terraces and industrial estates
- **low density** is typically single dwellings, houses
- **rural** is typically an agricultural, recreational or wilderness area, or a national park.

If two or more densities exist within the one-kilometre radius, then choose the higher: for example, if there is a mix of medium and low density, then select the former. This ensures that the assessment takes into account any sensitive receivers located within the area.

AIR Question 13: Are there any of the following sensitive receivers within a 500-metre radius?

If there are any schools, childcare centres, hospitals or aged-care facilities within the area, then this question must be answered 'yes'. These types of receivers are particularly sensitive to air and noise emissions.

AIR Question 14: What LGA is the activity located in?

This section identifies local government areas (LGAs) sensitive to photochemical smog. If the LGA of the premises is not included in the drop-down menu of the tool, then select the option, 'All other LGAs in NSW'.

2.1.1. Worked example: wood and timber milling premises

A premises is licensed as a 'wood or timber milling works' and has two licensed discharge points for air emissions. The licence includes limit conditions for opacity and for particulate matter, which is required to be monitored at the identified discharge points.

Identifying potential sources of air emissions

The first step is to identify activities where potential air emissions may occur as a result of the licensed activity. Potential air pollutants from wood processing can include particulates from stockpiles and nitrogen oxides (NOx), volatile organic compounds (VOC) and sulphur oxides (SOx) from the boilers.

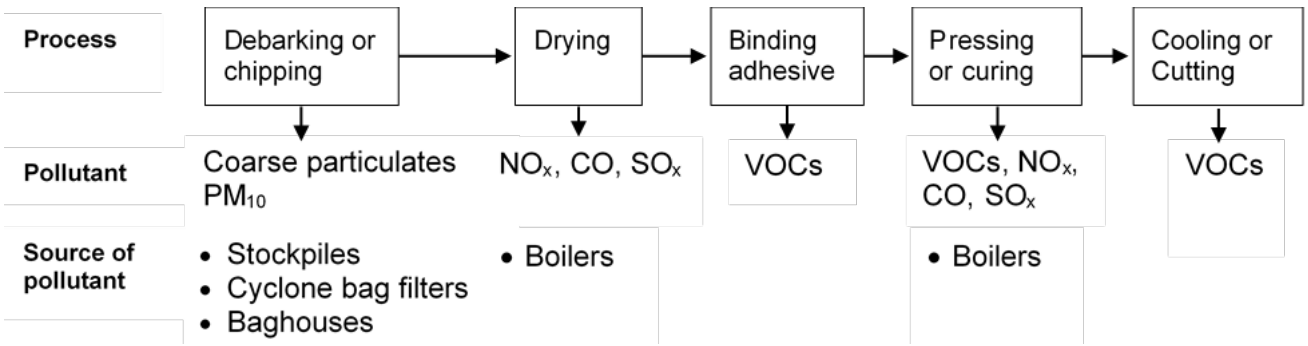

Figure 1 Potential sources of air emissions from wood and timber milling premises

Identifying major and minor sources of air emissions

Next, consider the risk to the environment posed by the air pollutants. For example, the pollutants, their source and any controls available to mitigate risks may be listed. This information can be used to classify these emissions into major or minor sources, as in Table 4, and will assist in focusing on the major air emissions that pose the highest risk to the environment.

Table 4 Classification of pollutants for worked example

Pollutant or emission	Possible sources	Controls	Major or minor source	Comments
Coarse particulates	Stockpiles	No controls	Major	Fugitive emissions, source of complaints, covered by licence condition.
PM_{10}	Cyclone bag filters Baghouses	Well understood and maintained controls	Major	Point emission, performance fairly reliable, covered by licence condition.
VOCs	Pressing, curing and cooling	No controls	Minor	Fugitive emission. Not in GMR where VOC impacts are significant.
NO_x	Boilers	No controls	Minor	Fugitive emission. Not in GMR where NO_x impacts are significant.
SO_x	Boilers	No controls	Minor	Fugitive emission. Not in GMR where SO_x impacts are significant.
CO	Boilers	No controls	Minor	Fugitive emission; however, small quantities emitted, which pose a low impact on the airshed.

2.2. Assessment of water

This section provides guidance on assessing site-specific risks to water quality. The assessment focuses on impacts from day-to-day activities only ('typical operations').

Water uses include drinking, industrial activities and irrigation, and to preserve the health of the environment. The EPA needs to consider all these uses when it assesses how an activity may impact a waterway.

WATER Question 1: Does the activity have any direct discharges to waters?

Identifying direct discharge to waters

This question relates to direct discharges to waters and does not include diffuse discharges, which are addressed separately in WATER Questions 4–6.

'Waters' is defined in the POEO Act as the whole or any part of:

a. any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including the sea), or
b. any water stored in artificial works, any water in water mains, water pipes or water channels, or any underground or artesian water.

Direct discharges are point-source discharges, such as from a pipe or outfall, and can be intermittent or continuous. They are generally (though not always) defined in the POEO licence document. When answering this question, consider:

- any licensed wastewater discharges
- any other discharges that may not appear on the licence

- any uncontrolled stormwater discharges associated with construction or operational activities. If stormwater run-off is likely to be contaminated from operations on the site and there are no controls to manage it, it is considered a direct discharge.

WATER Question 2: Are there any pollution controls prior to discharge to waters?

Identifying pollution controls

For the purposes of the risk assessment, water-pollution control techniques at a premises could include infrastructure, equipment, management processes and plans to minimise the release of pollutants to waters.

There is a wide range of pollution controls available for direct discharges to waters, such as:

- primary, secondary, tertiary wastewater treatment
- oil and water separators
- erosion and sediment controls
- sedimentation basins
- dissolved air flotation tanks (DAFTs)
- chemical dosing (e.g. for removing phosphorous).

Further guidance on water pollution controls can be found on the EPA's website.

WATER Question 3: How well are the controls and management measures operated and maintained?

Operating controls competently, maintaining equipment in a good working condition and employing best management practices will reduce the potential impact of pollution on waterways.

When answering this question, focus on identifying the highest-risk components or activities on the site with the potential to discharge to waters, to identify aspects of the activity or activities that should be addressed as a priority.

Step 1: Determine the highest-risk component or activity

Many sites will have multiple discharge points, utilising a variety of pollution-control techniques with varying efficiencies. To identify the highest-risk component or activity, the pollutants that have a major impact on the environment or human health must be identified, and the controls and management measures at the source examined.

To determine the highest-risk discharge point:

- identify the types and loads of water pollutants being discharged
- consider the toxicity of water pollutants identified
- identify the discharge points where there are minimal, poor or no controls in place, and those with controls that are least effective relative to the toxicity of the emissions.

Step 2: Identify controls for the highest-risk component or activity

The following issues should be considered:

- whether proven, established controls are used
- the age of the premises – newer premises may have more reliable controls
- whether the controls operate effectively, and as designed to minimise environmental risk
- whether there is sound knowledge of the pollution controls and their maintenance systems
- whether there are documented procedures for operation and maintenance

- whether there are records of inspections and maintenance
- whether there are thorough and regular maintenance schedules
- whether there is an allocation of responsible staff to demonstrate accountability
- whether there are performance-monitoring or alarm systems that alert operators to problems.

Step 3: Select the manner in which controls are operated and maintained

Select one of the following responses:

- good
- fair
- attention required.

Table 5 shows how the EPA defines each of these responses for the purposes of this question. **All three** reasons listed under 'good' must apply for this category to be selected. 'Attention required' must be selected if **one or more** of the reasons listed under 'attention required' apply.

Table 5 Definitions of 'good', 'fair' and 'attention required' for WATER Question 3

Category	Definition
Good	• Effective pollution controls and/or mitigation measures are in place, addressing all major issues. • Equipment is well-operated and maintained, with an evident routine maintenance schedule in place. • Effective and reliable operational programs are in place as a pollution mitigation strategy. **All** of the above attributes must apply for this category to be allocated.
Fair	• Effective pollution controls and/or mitigation measures are in place, but they address only some issues, not all major issues. • Pollution control equipment has a satisfactory maintenance schedule. • Operational programs are in place as a pollution mitigation strategy but their effectiveness is not wholly reliable.
Attention required	• There are no effective pollution controls and/or mitigation measures to address major issues. • There is no routine or reliable maintenance schedule. • Operational programs are ineffective at mitigating emissions. This category is applicable if **one or more** of these attributes apply.

WATER Question 4: Does the activity have any diffuse discharges to waters?

Identifying diffuse discharge

As diffuse discharges causing water pollution arise from many different sources that do not always have an obvious discharge point, they are less commonly recognised than those from a point source.

Diffuse discharges are typically due to stormwater run-off from construction sites, or irrigation activities that can have the potential to discharge indirectly to waters following a rainfall event or as a result of poor operational practices.

Even where facilities have spill-containment measures in place (i.e. bunds), during wet weather these controls may not be able to contain all potentially contaminated run-off and discharge (i.e. discharge to the council stormwater system).

Examples of diffuse discharges include:

- discharges from effluent irrigation areas due to excessive wet weather or poor management practices
- discharges or over-topping from sedimentation basins or wastewater storage/treatment ponds
- stormwater discharges from sites that store chemicals, which have spill-containment measures but excessive rain has caused over-topping or bypassing of these containment structures
- sewer overflows due to excessive wet weather.

Note that clean rainwater released through first-flush systems that are operating effectively and as designed, run-off from clean hardstand areas or clean stormwater run-off from industrial premises (where there is a very low likelihood of contaminants being present) are minor discharges and are not related to the day-to-day operations of the activity.

WATER Question 5: Are there any controls to prevent or treat diffuse discharges to waters?

Identifying pollution controls

There are a wide range of pollution controls available to control diffuse discharges.

Examples of controls include:

- effluent treatment/holding ponds
- stormwater detention ponds
- containment structures (i.e. bunded areas), shut-off valves
- irrigation or utilisation areas
- erosion and sediment controls
- sedimentation basins.

When considering management and controls for irrigation activities, refer to the EPA's environmental guidelines, Use of effluent by irrigation. Licensees may find it useful to refer to the Effluent reuse management review report, a review based on compliance audit findings and research into best environmental management practices for effluent re-use.

WATER Question 6: How well are the controls and management measures operated and maintained? (diffuse discharges)

Operating controls competently, maintaining equipment in a good working condition and employing best management practices will reduce the potential impact of water pollution on receiving waterways.

Many sites will have multiple sources of diffuse discharges utilising a variety of pollution control techniques with varying efficiencies to prevent or treat water pollutants.

The risk assessment should consider the entire site, while focusing on the highest-risk component or activity to identify discharge points that should be addressed as a priority.

In summary, to answer this question the following steps should be undertaken:

- determine the highest-risk component or activity
- identify controls for the highest-risk component or activity
- select the manner in which controls are operated and maintained.

For further guidance on assessment methodology, please refer to the guidance for WATER Question 3 in this section.

WATER Question 7: Select the pollutants discharged from the activity – focus on major emissions only (point and diffuse sources)

Identify the pollutants that are discharged to water from the premises

It is not necessary to list all pollutants being emitted from the premises via point and diffuse discharges when completing this question. Focus on the major water emissions having the greatest impact on the environment.

Step 1: Determine major sources of discharges to waters (point and diffuse)

To determine a major emission source, focus on pollutants that have a major impact on the environment or human health, and look at controls and management measures for these sources. Consider scale and load when identifying relevant pollutants as part of the risk-assessment process.

Step 2: Identify major pollutants

To determine which pollutants/discharges should be identified as a major source, consider:

- discharges that are more significant and/or have a greater load
- discharges that are problematic and need to be addressed/mitigated. These are not necessarily the discharges with the highest load.

Information on the types of water discharges from the site can be obtained from sources including:

- water monitoring/limit conditions on the licence
- load-based licensing (LBL) data
- National Pollutant Inventory data (NPI)

After identifying the water discharges, select the pollutants discharged from the drop-down menu on the online tool.

WATER Question 8: How far away is the nearest surface water?

For the purposes of this risk assessment, the definition of surface waters includes:

- natural rivers, creeks, lagoons, wetlands and lakes (whether permanent, temporary, ephemeral or seasonal), and estuarine and marine waters
- artificial structures such as reservoirs and lakes, where these have community value for aquatic ecosystems or for human uses.

It does not include waters that have no environmental value or waters in some artificial works, including:

- sewer systems, or
- operational works that occur within the premises and have no community value for aquatic ecosystems or human uses.

Where a site discharges directly to surface waters it represents the highest risk, and the smallest distance category should be selected (i.e. 0–10 metres).

If there are no direct discharges, identify the nearest surface water with the potential for receiving irrigation or stormwater run-off. In this instance, the proximity to surface waters is measured from the boundary of the irrigation area or of the site that is closest to surface waters, as this is the point of highest risk.

If the location of the nearest surface water is unknown, you may be able to determine the distance from the premises from:

- aerial photographs (e.g. in Google Maps)
- street maps on which surface waters are usually identified.

WATER Question 9: Nature of the pathway

When identifying the nature of the pathway from the premises to the nearest waterway, keep in mind that vegetation can provide a physical barrier between discharged pollutants and the waterway, thereby reducing risk.

Select the appropriate pathway for the premises from the drop-down menu.

If a site directly discharges to a waterway or to a stormwater channel that flows to a waterway, then select the option ‘Site slopes towards the nearest surface water/ or pathway surface is smooth and impervious and/or direct discharge’.

If a site has many barriers to prevent or reduce the water pollutants contained in the discharge (e.g. a well-vegetated pathway, with a physical barrier between the waterway and the discharge location), then select ‘Site slopes away from the nearest surface water/ or pathway surface is well vegetated’.

If the nature of the pathway does not fit with the two other options or does not affect the risks posed to the waterway, then select ‘not applicable’.

WATER Question 10: What is the receiving water type(s)? (More than one receiving water type can be selected)

This section identifies the sensitivity of the receiving water to particular pollutants. The sensitivity is highly dependent on the water type, the state of the catchment and the pollutants discharged. For example, inland rivers are highly sensitive to discharges of phosphorous but open oceans are not as sensitive.

From large sites, there may be discharges to different types of receiving waters with varying levels of sensitivity. The assessment tool allows multiple water types to be selected for each pollutant:

- open ocean
- shoreline
- major estuary – including predominantly saline wetlands, intermittently closed and open lakes and lagoons (ICOLLs) and saline coastal rivers
- inland river – including wetlands and coastal rivers that are predominantly freshwater (i.e. west of the Great Dividing Range)
- groundwater.

If a site discharges to a stormwater channel or other pipeline, then the end receiving water type must be selected.

The list of pollutants selected at Question 7 will automatically appear at Question 10. The relevant receiving water types must be selected for each pollutant.

WATER Question 11: Are any of the receiving water types a potable water supply?

Discharges into potable (drinkable) water supplies pose a higher risk to human health than those to other types of receiving waters.

To help identify whether the receiving water is a potable supply, refer to the NSW Water Quality Objectives (WQOs). These objectives generally apply to all licensed off-take points for town water supplies, as well as to specific sections of rivers that contribute to drinking water storages or are immediately upstream of town water off-take points. They also apply to sub-catchments or groundwaters used for town water.

It is important to consider the nature of discharges (e.g. types of pollutants, point source or diffuse, volume and frequency of discharge, and river flow/dilution) and areas formally protected or recognised as contributing to the drinking water source.

Worked example: a cattle feedlot

For this example, we consider a licensed cattle feedlot that can accommodate over 10,000 head of cattle at any one time, and which includes effluent-holding ponds that collect contaminated stormwater from the site. Effluent is irrigated on site and crops are grown occasionally.

Identifying potential sources of water pollution

There are no continuous direct discharges to waters, but there is an overflow point from the effluent ponds to the river.

Monitoring of effluent is required if a discharge occurs (i.e. during wet weather events). There is potential for diffuse discharges to waters (from the irrigation area, wastewater drains, effluent ponds and carcass burial area). Contaminated stormwater from the cattle pens and manure storage areas is directed to effluent ponds. There is potential for groundwater pollution from the effluent ponds if the pond leaks.

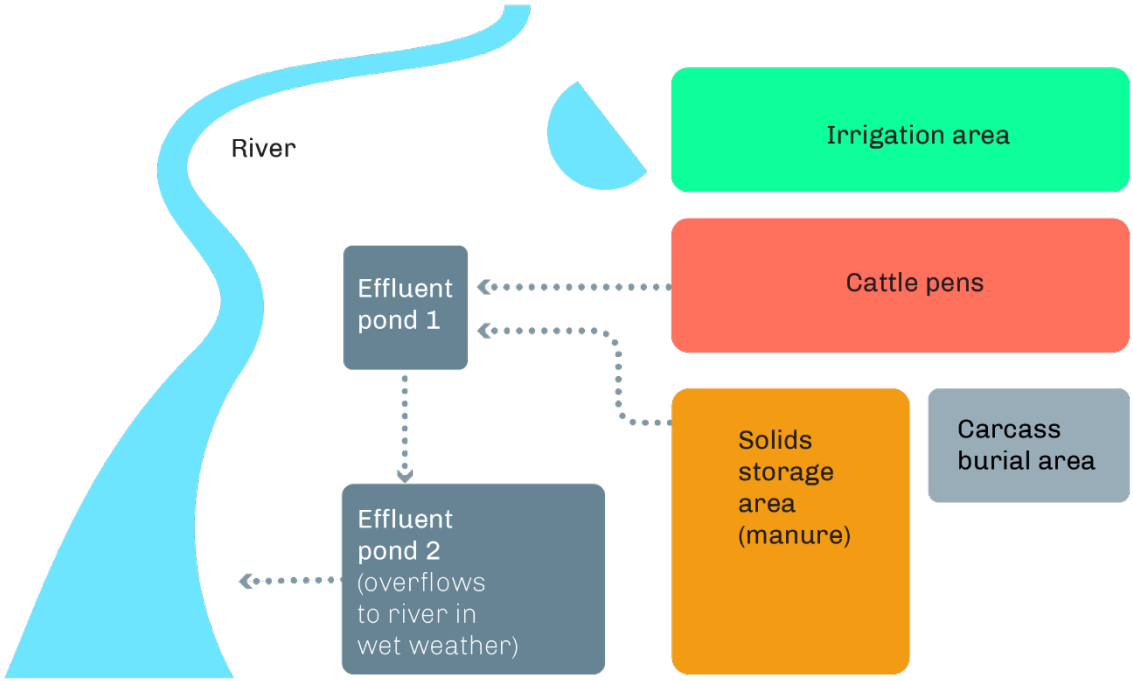

Figure 2 Site layout for cattle feedlot

Pollutants: Nutrients, BOD, pH, TSS/TDS, salts, bacteria and pathogens.

Identifying major and minor water discharges

Table 6 Pollutant and emissions sources from cattle feedlot

Pollutant or emission	Possible sources	Controls	Major or minor source	Comments
Nutrients, BOD, pH, TSS/TDS, salts, bacteria and pathogens	Manure (solids) storage area and cattle pens	• Pen base and storage area is compacted to prevent infiltration • Effluent drainage system to effluent ponds	Minor	Well-established controls are available to capture all run-off, reducing potential risks to the receiving environment.
Nutrients, BOD, pH, TSS/TDS, salts, bacteria and pathogens	Effluent ponds	• Impermeable high-density PVC liner on pond base and wall • Sufficient storage capacity • Effluent pond management – de-sludge effluent ponds once capacity has been reduced by 20% • Containment measures on downslope of ponds to prevent effluent overflow reaching the river during wet weather events	Minor	Well-established controls are available to reduce any potential risks to the receiving environment. The implementation of management plans to maintain sufficient capacity within ponds also reduces the risk posed to the receiving environment.

Nutrients, BOD, pH, TSS/TDS, salts, bacteria and pathogens	Irrigation area	• Containment and drainage systems for potential run-off • Holding ponds • Wet-weather irrigation plans • Management plans for adequate uptake of nutrients • Soil monitoring	Major	Crops unreliable for uptake of nutrients. No management practices in place to cease irrigation during wet weather. Soil monitoring should be undertaken to determine uptake of nutrients.
Nutrients, BOD, pH, TSS/TDS, salts, bacteria and pathogens	Carcass disposal area	• Lining of burial pits to reduce potential groundwater pollution • Management plans and maintenance of pits	Major	Controls are available but not implemented, increasing the risk to groundwater. No management plan in place to control rainwater infiltration of the burial pits, increasing the risk of contaminated run-off into surface waters.

2.3. Assessment of noise impacts

This section provides guidance on how to assess the site-specific risk posed by the effect of noise on the local environment and community.

Noise can be annoying, interfere with communication, disturb sleep or interfere with work. Prolonged exposure to loud noise can also cause increased heart rate, anxiety, hearing loss and other health effects. Noise pollution is regulated through the POEO Act.

NOISE Question 1: Are any activities conducted outside of the following times?

This question assesses the impact an activity is having on the surrounding environment and the community outside of standard hours, when there will be a greater sensitivity to noise (particularly among local residents) and a higher potential for nuisance.

Table 7 Standard hours

Category	Days	Standard hours
Standard operating hours	Monday to Saturday	7 am–6 pm
	Sundays and public holidays	8 am–6 pm
Standard construction hours	Monday to Friday	7 am–6 pm
	Saturday	8 am–1 pm
	Sundays	No work allowed

NOISE Question 2: Are there any activities, machinery, plant or vehicles on site that are noisy?

If any activity on the site is identified as having the potential to be 'noisy', then the answer to this question should be 'yes'. You should consider both mobile and stationary noise sources on the site. Typical noise sources on industrial sites include:

- engines
- exhausts
- fans
- transport of materials, such as on conveyors and trucks
- milling and stamping (metal works)
- sawing and debarking (wood mills)
- processors, such as those used in crushing and separating
- pumps and compressors
- whistles and alarms
- the dumping and scraping of materials
- electrical transformers and switching equipment.

More information from the EPA on determining noisy activities and machinery can be found at:

- Noise Policy for Industry
- Interim Construction Noise Guideline.

The issues of noise levels and sensitive receivers are considered in later questions.

NOISE Question 3: Are there any noise mitigation measures?

Identify any noise-management measures at the premises that prevent or mitigate the effects of noise.

The main areas where mitigation measures can be applied are:

- control at the source – for example, an enclosed building or barriers
- control of transmission – for example, barriers (natural or built) or noise buffers
- control at the receiver – for example, insulation or double glazed windows
- consultation – for example, a letterbox drop, community consultation or information hotline.

The EPA's Noise Policy for Industry lists additional mitigation measures for noises specific to particular industries.

NOISE Question 4: Are there any noise issues, or any verified noise complaints (past 12 months only)?

Complaints are an indicator of noise issues at a premises and can help the EPA target its investigations. However, the EPA does not take regulatory action based on these complaints alone, as there may be a range of potential sources at a particular location.

It is important that the source of the noise is verified, to ensure that only complaints directly attributed to the specific licensed premises are considered in the risk assessment. Noise complaints may be verified by the EPA, council officers or the licensee.

This question refers to the 12 months prior to the risk assessment being undertaken.

NOISE Question 5: Are there multiple verified noise complaints by different complainants (past 12 months only)?

Multiple complaints may indicate that noise from a premises is having a wide impact. If multiple noise complaints have been received, consider whether they have been made by different complainants or one regular complainant.

NOISE Question 6: What is the noise level at the boundary nearest to sensitive receivers?

This question is designed to assess the level of nuisance caused to the nearest sensitive receiver by noise from activities undertaken at the premises.

Step 1: Identify the nearest sensitive receiver

You need to understand the area around the site to be able to identify the nearest sensitive receivers. These are typically residences, schools, childcare centres, aged-care facilities and hospitals but they could also be neighbouring businesses.

If the location of the nearest sensitive receiver is unknown, you may be able to identify it by:

- reviewing the Environmental Impact Statement for the licence
- using a local street map
- viewing an aerial photograph of the site (e.g. from Google Maps).

Step 2: Assess the dominance of the noise from the activities at the nearest sensitive receivers

Noise levels must be assessed at the boundary of the nearest sensitive receiver.

Compare the noise from the premises with background noise. The surrounding traffic noise will give an indication of the dominance of the background noise levels and whether this will mask noise from the site.

You will need to assess whether the noise from activities at the premises is loud in absolute terms or just loud relative to other noises in the area.

If noise from the activity on the premises cannot be heard at the boundary of the nearest sensitive receiver, then select the option, ‘Activity is relatively quiet to inaudible’ from the drop-down list on the assessment tool.

If the activity can be heard above all other noise, then choose ‘Activity is the dominant noise’.

NOISE Question 7: Is the dominant noise intermittent or steady?

This question is only applies if the answer to Question 6 is ‘Activity is the dominant noise’.

To answer this question you need to understand the range of noises typical of the activities, plants and equipment in the premises, but the only characteristic you need determine for the risk assessment is whether the noise is steady or intermittent.

Sources of industrial noise (with their characteristics) include:

- heating, ventilating and air conditioning (HVAC) equipment (steady, though it should be noted that air conditioning can cycle on or off)
- rotating machinery (steady or intermittent)
- impacting mechanical sources (intermittent)
- other mechanical equipment such as conveyors (steady or intermittent)
- air compressors that cycle on and off (intermittent)
- mobile sources, such as draglines and haul trucks, confined to a particular location (intermittent).

NOISE Question 8: What is the surrounding environment?

This question will only activate if noise-sensitive receivers are located within one kilometre of the premises' boundary (based on the answer given earlier to AIR Question 11). The EPA considers this a sound approach, as sensitive receivers are similar for both odour and noise issues.

Population density, traffic movements, the type of road and the presence of mass transportation in the surrounding environment will influence the background noise levels at the receiver. Rural environments generally have low levels, so are likely to have greater sensitivity and, therefore, are at higher risk from the impact of noise than an urban environment.

Select the most appropriate type of receiver area in the drop-down menu on the tool: rural, suburban, urban or industrial, as defined in Table 8.

Table 8 Definitions of acoustic environments

Category	Definition
Rural	An area with an acoustic environment that is dominated by natural sounds, having little or no road traffic noise and generally characterised by low background noise levels. Settlement patterns would be typically sparse.
Suburban	An area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has evening ambient noise levels defined by the natural environment and human activity.
Urban	An area with an acoustic environment that: • is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources • has through-traffic with characteristically heavy and continuous traffic flows during peak periods • is near commercial districts or industrial districts • has any combination of the above.
Industrial	An area defined as an industrial zone on a local environment plan. For isolated residences within an industrial zone the industrial amenity level would usually apply.

Note: The definitions of receiver-area types come from the EPA's NSW Industrial Noise Policy.

If the surrounding environment has more than one type of receiver area, then the most sensitive – the one with the lowest levels of background noise – should be selected. For example, if characteristics of both rural and suburban environments are present, then the former should be selected. This will ensure that all sensitive receivers are adequately represented.

NOISE Question 9: Is the nearest sensitive receiver beyond a 3km radius from the premises?

This question will only activate if noise-sensitive receivers are located within one kilometre of the premises' boundary (based on the answer given earlier to Air Question 11) and if:

- the licensed premises operates outside of the standard operating hours (i.e. 'Yes' was selected at NOISE Question 1), and
- noisy activities are conducted on site (i.e. Yes was selected at NOISE Question 2).

If the above applies, it will be necessary to identify if there are any sensitive receivers within a three-kilometre radius of the premises. In rural settings, noise is likely to travel further than other settings if the premises is operating outside of standard hours. If the nearest sensitive receiver is located beyond three-kilometre from the premises there is less likely to be an impact from the noise.

2.4. Assessment of impacts from incidents and/or unplanned events

This section comprises a series of questions that relate to a licensee's pollution incident response management plan (PIRMP). Part 5.7A of the POEO Act requires all licensees to prepare, keep, test and implement a PIRMP. The aim of this section is to confirm that licensees have met the requirements related to preparing and implementing their plans.

INCIDENTS Question 1: Does the licensee have a pollution incident response management plan (PIRMP)?

You need to confirm that a PIRMP has been prepared in accordance with Part 5.7A of the POEO Act. The preparation and implementation of a PIRMP is a legislative requirement. Plans must include the information detailed in section 153C of the POEO Act and be in the form required by the POEO General Regulation (clause 98B).

Failure to comply with any of these requirements is an offence, and may result in regulatory action by the EPA.

One of the objectives of these plans is to identify, minimise and control the risk of a pollution incident or unplanned event at the facility. If there is PIRMP in place that identifies all the potential incidents at a premises, and has planned actions in place to minimise and manage those risks, then the impacts from incidents and/or unplanned events is likely to be lower.

For further information on PIRMP guidelines, refer to the Guideline: Pollution Incident Response Management Plans.

If the answer to Question 1 is 'no', go to INCIDENTS Question 1a, 2a, 4a: Does the licensee have pollution mitigation measures to minimise incident-related pollution?.

INCIDENTS Question 2: Does the PIRMP address potential incidents associated with any hazardous materials or dangerous goods stored, used or handled on site? Or, there are no hazardous materials or dangerous goods stored, used or handled on site.

If either these two statements is correct, then select 'yes'.

For the first statement to be correct, it is necessary to confirm that the PIRMP addresses potential incidents associated with hazardous materials or dangerous goods stored, used or handled on site. Matters it should cover include:

- storage of chemicals
- waste materials
- wastewater, effluent or contaminated stormwater
- failure of containment tanks
- uncontrolled release of gas
- flooding of effluent storage dams.

For sites that do not store, use or handle hazardous materials or dangerous goods, you must select 'yes' for this question. If the answer is 'no', go to INCIDENTS Question 1a, 2a, 4a: Does the licensee have pollution mitigation measures to minimise incident-related pollution?.

INCIDENTS Question 3: Does the licensee have a management plan in place that also addresses potential incidents associated with other materials or discharges (e.g. dust emissions from stockpiles, contaminated stormwater run-off, etc.)?

The EPA audited the PIRMPs of selected licensees in depth, focusing on their adequacy. It found that most plans addressed potential incidents associated with hazardous materials, but did not cover less obvious ones such as:

- chemicals used in cleaning or production processes
- fuels and lubricants used for equipment or machinery
- gas cylinders
- waste materials or wastewater
- effluent and sediment contaminated stormwater
- dust from stockpiles.

INCIDENTS Question 4: Has the PIRMP been tested or reviewed as per the guidelines (i.e. at least every 12 months or within 1 month of any pollution incident)?

Indicate whether the PIRMP has been tested or reviewed as set out in the Guideline: Pollution Incident Response Management Plans.

Testing is to be carried out in a way that ensures that the information included in the plan is accurate and up to date, and that the plan can be implemented in a workable and effective manner. Testing may include desktop simulations and/or practical exercises or drills.

Select 'yes' if the PIRMP has been in place less than 12 months, as the requirement to review the plan does not apply.

INCIDENTS Question 1a, 2a, 4a: Does the licensee have pollution mitigation measures to minimise incident-related pollution?

While a PIRMP addresses the risks associated with pollution incidents, you must also examine the physical controls and management measures in place to address pollution, should a pollution incident occur. These controls and measures might include:

- diversion of clean rainwater away from contaminated/disturbed areas
- erosion and sediment controls

- secondary containment systems (bunds, encasements, grading of sealed surfaces to form a contained area)
- leak-detection systems
- isolation or shut-off systems
- overfill protection, alarms and level indicators
- moisture sensors for irrigation areas
- groundwater monitoring wells
- maintenance, regular inspection schedules and staff training
- best practice for chemical storage, including
    - compatible storage of chemicals
    - adequate separation distances of tanks from boundaries and ignition sources
    - proper stacking of containers
    - clear labelling
    - proper placarding and treatment of used containers.

INCIDENTS Question 1b, 2b, 4b: How well are the controls and management measures operated and maintained?

You need to identify how the pollution control or management measures to minimise incident-related pollution are operated and maintained. Controls operated competently, equipment maintained in good working condition and the use of best management practices will all reduce the impact of a pollution incident.

Select one of the following responses:

- good
- fair
- attention required.

Table 9 shows how the EPA defines each of these responses for the purposes of this question. **All three** reasons listed under 'good' must apply for this category to be selected. 'Attention required' must be selected if **one or more** of the reasons listed under 'attention required' apply.

Table 9 Definitions of 'good', 'fair' and 'attention required' for INCIDENTS questions 1b, 2b and 4b

Category	Definition
Good	• Effective pollution controls and/or mitigation measures are in place, addressing all major issues. • Equipment is well-operated and maintained, with an evident routine maintenance schedule in place. • Effective and reliable operational programs are in place as a pollution mitigation strategy. **All** of the above attributes must apply for this category to be allocated.
Fair	• Effective pollution controls and/or mitigation measures are in place, but they address only some issues, not all major issues. • Pollution control equipment has a satisfactory maintenance schedule. • Operational programs are in place as a pollution mitigation strategy but their effectiveness is not wholly reliable.

Attention required	• There are no effective pollution controls and/or mitigation measures to address major issues. • There is no routine or reliable maintenance schedule. • Operational programs are ineffective at mitigating emissions. This category is applicable if **one or more** of these attributes apply.

INCIDENTS Question 5: Is the site situated on a floodplain?

A floodplain is an area of land that has been formed by flooding over time and is still subject to periodic inundation. A **100-year flood** is a flood event that has a 1% chance of occurring in any given year. This is the level commonly used in flood-risk management studies, and should be used when answering this question.

In some cases only a portion of a licensed premises is situated on a floodplain. Consider whether operational or highest-risk areas of the site are flood-prone.

Most licensees would know if their site is located on a floodplain. If this is not the case, then local councils can provide this information, as they are responsible for planning and managing land in accordance with its risk of flooding. Under the *Environmental Planning and Assessment Act 1979*, it is necessary for section 149 planning certificates to specify any flood information relating to a property. Some councils have also published flood studies on their websites.

INCIDENTS Question 6: Are there any chemicals/materials stored on or in land (e.g. above ground or underground storage tanks)?

Indicate whether there are any chemicals/materials stored on or in land, for example in above ground or underground storage tanks.

Chronic, long-term leaks and spills from chemicals or materials stored in above-ground or underground tanks can have an impact on groundwater, which is specifically considered in the incident-potential worksheet, as it is not normally associated with day-to-day operations.

INCIDENTS Questions 6a or 6b: Is the activity located within a groundwater-sensitive zone?

If you need help to answer this question, refer to the environmentally sensitive zone maps generated for the assessment of determining whether a site is located in a groundwater sensitive zone. Environmentally sensitive zones (identified through a risk-based approach to protect these receptors) are shaded in green. Premises within these areas are likely to have a higher risk of contaminating groundwater (due to geology or groundwater properties) or are in close proximity to receptors vulnerable to contaminated groundwater (such as national parks, groundwater bores, rivers and lakes).

If you use other sources of information to determine whether the activity is located in a groundwater-sensitive zone, reference them so that the EPA can discuss them with you.

Proximity to sensitive receivers

The information for ‘Proximity to sensitive receivers’ (i.e. schools, childcare centres, etc.) is taken directly from AIR Question 10.

INCIDENTS Question 7: Is there potential for highly significant environmental harm as a result of a major pollution incident occurring or possibly occurring on the site?

This question relates to a limited number of premises that have the potential to cause highly significant harm to neighbouring communities and/or the environment as a result of an incident on site.

Generally this will be limited to facilities that are designated as major hazard facilities (MHF) or any premises that process and/or store large quantities of hazardous chemicals that have the potential to cause **highly significant harm** to neighbouring communities and/or the environment as a result of an incident.

Highly significant harm means that the impact is very high and could be local and/or regional. Prosecution for the incident is likely. The environmental damage is long term or serious.

In assessing the potential for 'highly significant environmental harm', consider the premises' proximity to sensitive environments or receivers.

3. Environmental management category

The environmental management category (EMC) assessment is the third component of the risk-assessment process.

The EMC is also used to calculate the licence administrative fee. Only the EMC influences the licence administrative fee: the risk level and regulatory priority levels for a licence have no impact on licence fees.

3.1. Determining the EMC

A series of questions has to be answered to allow the EMC to be calculated. The method for calculating an EMC for a licence is set out in the Environmental Management Calculation Protocol (the Protocol).

The determination takes into consideration a licensee's environmental performance at the premises, including any regulatory and enforcement actions undertaken by the EPA, and how long ago they occurred.

It considers the environmental management weighting that corresponds to each EPA action as well as trends in performance over the past three years. (Detailed information on both of these considerations is provided in the Protocol.)

Credit is given to licensees for any environmental management systems and practices in place at a premises, as well as any environmental improvement programs initiated by the licensee.

The determination leads to one of five EMC categories – A, B, C, D or E – being allocated to each licensed premises. Category A represents the best environmental performers and category E the poorest.

The Appendix: Determining the environmental management category and calculating administrative fees – a worked example has a worked example showing how an EMC is determined.

3.2. EMC and calculation of licence administrative fees

Licence administrative fees are calculated from a premises' EMC and the type and scale of fee-based activity undertaken. Table 10 shows the environmental management factors (each corresponding to an environmental management category) used to calculate fees.

Administrative fee payable = Administrative fee unit amount x Number of administrative fee units x Environmental management factor

Table 10 Environmental management factors

Environmental management category	Environmental management factor
A	0.95
B	1
C	1.3
D	1.6
E	2

Please refer to the appendix for a worked example of the determination of the EMC and the calculation of administrative fees under the risk-based licensing system.

4. Complex and large geographical sites

4.1. Complex sites

For several questions in the risk assessment you have to identify the major emission sources posing the highest risk to the environment. This may be hard to do if the premises have multiple emission sources.

4.1.1. Multiple emission sources

Many sites have multiple sources, utilising different control techniques with varying efficiencies. Consider the entire site, keeping in mind the range and complexity of the sources, and then determine the major sources from among the higher-risk activities or components. (For guidance on major sources, see AIR Questions 4 and 14, WATER Question 7 and the worked example at 2.2.1.)

Focusing on the higher-risk components or activities will help you identify aspects that should be addressed as a priority. You should consider:

- toxicity of the pollutant
- load of the pollutant
- receiving environment
- insufficiency of knowledge on an issue
- lack of effective controls
- lack of monitoring of the effectiveness of any controls.

Site operators are likely to know which parts of the site represent the highest risk of air or water emissions. This enables the assessment process to focus on these activities, the controls available and will drive decision-making in relation to questions regarding the adequacy of pollution controls and the proximity to sensitive receivers.

Licensees should consider documenting their decision-making processes, especially in relation to identifying the highest-risk component or activity on a site. Documentation should outline which component of the facility the assessment is based on, and why. This information will be important if the licensee's risk assessment is compared with one made by the EPA.

4.2. Large sites

This section outlines approaches to assessing sewage treatment systems (STS) and road construction projects. It could also be applied to other licensed activities covering a large geographical area or with multiple discrete operational sites.

4.2.1. Sewage treatment systems

The licensing framework set out by Schedule 1 of the POEO Act applies to both the sewage treatment plant and reticulated sewer system, so the risk assessment must consider the entire system and focus on the area or point with the highest risk. Use the following approach:

- When **determining the point or area of highest risk**, both the plant and reticulation systems need to be considered.
- When determining **air emissions**, recognise that VOCs and ammonia are emitted from wastewater treatment, collection and storage systems through the volatilisation of compounds at the liquid interface. Some larger STSs have significant point-source emissions from cogeneration facilities, and other emissions directed through air 'scrubbers'. Some plants emit

combustion substances to air from gas flaring. You will need to consider how significant the air emissions are when completing the air emission questions.

- **Odour emissions** are considered separately to 'air pollutant' emissions. Odour issues are typically prevalent from the sewage treatment plant, although you should also consider emissions from other points in the reticulation system.
- **Direct discharges** to water are considered to be:
  - the point source of sewage outlets
  - sewer overflows not associated with wet weather (i.e. the sewage discharge is untreated and not diluted with rainfall).
- **Diffuse discharges** to water can be
  - sewer overflows associated with wet weather conditions (these may occur at multiple points throughout the reticulation system and are highly diluted with rainfall)
  - overflows of back-up storage or sewage treatment ponds during wet weather
  - overflows/discharges from effluent re-use areas during wet weather
  - discharges from sludge-drying beds.
- **Noise emission** sources are likely to be at the treatment plant and but they can also be at sewage pumping stations.

4.2.2. Railway activities

Schedule 1 of the POEO Act defines railway activities to include:

- the operation of rolling stock on track
- the installation, on-site repair, maintenance or upgrading of track
- construction or significant alteration of any ancillary works.

When undertaking a risk assessment, consider all aspects of the rail network covered by the licence, including the impact of rolling stock operating on the premises.

The recommended approach includes the following.

Air/odour assessment

- **Air emissions** should be assessed by identifying the highest-risk component. In many cases this will be diesel emissions from locomotives or dust from construction activities. Pollution controls considered as part of the risk assessment could include air-emission control equipment fitted to locomotives, dust-monitoring networks or environmental management plans for the regular servicing of locomotives or rail tracks.
- **Proximity to sensitive receivers** should be assessed by identifying the area where there is the potential for highest impact. This may be residences closest to the rail track, locations where rolling stock idles for extended periods of time, maintenance areas, or high-traffic areas.
- **Density of human occupation** should be assessed by identifying the high risk/impact areas (usually where sensitive receivers are located). Although much of the rail network may be sparsely populated, the risk assessment should consider the density around identified high-impact areas.

Water assessment

- **Water emissions** should be assessed by identifying the highest-risk component of the activity, which may be chemical storage areas, stormwater run-off from construction sites or leaks from locomotives.
- **Direct discharges** may include those from sediment basins or groundwater treatment systems. The highest-risk component of the activity should be considered.

- **Diffuse discharges** to water may include stormwater run-off due to wet weather events causing failure of sediment controls or stormwater management infrastructure. For more detail regarding what constitutes direct or diffuse discharges, refer to section 2.2.
- **Proximity to nearest surface water** can be identified by looking at the entire rail network covered by the licence.
- **Nature of the pathway** – as the rail network covers a large area with varying landscapes, select 'not applicable'.

Noise assessment

- **Noise emissions** should be assessed by identifying the highest-risk component of the activity.
    - Operational rail noise sources include locomotive engine noise, track maintenance works and wheel squeal.
    - Rail construction noise sources include jack hammering, rock profiling, grinding and tunnel boring.
    - Operational rail pollution controls considered as part of the risk assessment could include wayside noise monitoring, locomotive noise emission control equipment and regular track or locomotive maintenance schedules.
    - Rail construction pollution controls considered as part of the risk assessment could include community consultation programs, noise walls, low-noise plant (including low-frequency reversing beepers) and alternative accommodation procedures.
- **Noise level at the boundary of the nearest sensitive receiver** should be assessed by identifying the area where there is highest impact (for instance, where rolling stock idles for extended periods of time, maintenance areas or high-traffic areas).
- **The surrounding environment** should be assessed by identifying the high-risk or most-affected areas. These are usually where sensitive receivers are located, although the rail network may cover a wide range of environments.

Pollution from incidents assessment

- The **complete rail network system** covered by the licence should be considered, including the rolling stock operating on the network.
- The **site is considered as being situated on a floodplain** if any part of the network runs through one.
- **Chemicals/materials are deemed as being stored on or in the land** if they are transported by rolling stock operating on the premises.

Consideration of the entire system as it exists under the licence will ensure that the highest element of risk in the operation will be reflected in the profile resulting from the assessment.

Glossary

Day	The period from 7 am to 6 pm, Monday to Saturday, or 8 am to 6 pm on Sundays and public holidays.
Diffuse (discharge)	Diffuse discharges to waters occur through stormwater run-off on construction sites, or through irrigation activities that also have the potential to indirectly discharge to waters following a rainfall event or as a result of poor operational practices.
Direct (discharge)	A point-source discharge into waters (e.g. a pipe, outfall, etc.). Direct discharge points are usually (although not always) licensed and defined in the POEO licence document.
Evening	The period from 6 pm to 10 pm.
Floodplain	An area of land surrounding surface waters that stretches from the banks of its channel to the base of the enclosing valley walls, and which experiences flooding during periods of high rain and discharge.
Fugitive (emissions)	Uncontrolled releases as a result of handling, use or storage of materials, e.g. emissions from handling chemicals, wind-blown dust, emissions from doorways and openings, and emissions from the transfer of chemicals.
Groundwater	Water located beneath the Earth's surface in soil pore spaces and in the fractures of rock formations.
Hazardous	Considers the ignitability, corrosiveness, reactivity and toxicity of a substance. If any of these factors is triggered when considering the nature of the substance it is considered hazardous.
Indirect (discharge)	A discharge to land via irrigation. Proper operation and maintenance should prevent any discharges to waters; however, during rainfall periods or on poorly operated sites (e.g. where there is insufficient land area), wastewater may run off the land into nearby waters or seep into groundwater (especially if the groundwater is close to the surface).
Industrial (noise)	An area defined as an industrial zone on an LEP. For isolated residences within an industrial zone, the industrial amenity criteria (as set out in the *NSW Noise Policy for Industry*) would usually apply.
Inland river(s)	A natural watercourse, usually freshwater, flowing towards an ocean, a lake, a sea or another river. In a few cases, a river simply flows into the ground or dries up completely before reaching another body of water.
Intermittent (discharges)	Occurring irregularly, such as odours associated with irrigation activities, dust emissions related to weather conditions, indirect discharges from irrigation areas during or after rainfall events, wet-weather overflows, discharges associated with sediment and erosion controls, first-flush systems, or any licensed discharge that occurs when a licensee nominates.
Intermittent (noise)	Occurs at irregular intervals or is characterised by significant fluctuations in volume.
Major emissions	These are the typical and expected emissions for a particular activity, as well as emissions that are more significant and have a greater load (problematic emissions).
Major estuary	A body of water formed where freshwater from rivers and streams flows into the ocean, mixing with the seawater.
Night-time	The period from 10 pm to 7 am.

Noisy activity	Noisy activities include but are not limited to: • blasting • vehicle movements, trucks and locomotives • vehicle-reversing beepers • pumps, transformers and machinery • construction activities – jackhammering, impact piling, tunnelling.
Offensive odour	An odour that, by reason of its strength, nature, duration, character or quality, or the time at which it is emitted, or any other circumstances: • is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or • interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted. • is prescribed by the regulations, or that is emitted at a time, or in other circumstances, prescribed by the regulations..
Open ocean	A body of saline water beyond the shoreline.
Point (emissions)	Controlled releases from a stack or vent.
Pollution controls	Infrastructure, equipment, management processes and plans in place to minimise the release of pollutants to air, water and land or the minimisation of noise nuisance.
Pollution incident	An incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of noise.
Pollution incident response management plan (PIRMP)	Every licensee is required to have a pollution incident response management plan. The objectives of these plans are to: • ensure comprehensive and timely communication about a pollution incident to staff at the premises, the EPA, other relevant authorities specified in the POEO Act (such as local councils, NSW Health, and Fire and Rescue NSW) and people outside the facility who may be affected • minimise and control the risk of a pollution incident at the facility by requiring identification of risks, and the development of planned actions to minimise and manage those risks • ensure that the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability.
Population density	**High density** typically includes high rises, flats, units or apartments in an urban setting near commercial centres with major roads (through traffic that is heavy and continuous in peak periods). **Medium density** typically includes semi-detached dwellings, townhouses, terraces and single dwellings (houses) with limited commerce and industry in a suburban setting with largely local roads. **Low density** typically consists of single dwellings only, with local roads with intermittent traffic flow. **Rural** (from the perspective of population density) consists of single dwellings in a rural setting, large lot sizes, with roads with little or no traffic.
Receiver environment	The noise-sensitive land use at which noise from a development can be heard.

Sensitive receivers	Typically residences, schools, childcare centres, aged-care facilities or hospitals; however, the nearest sensitive receiver can be a neighbouring business.
Shoreline	Fringe of land at the edge of a large body of water, such as an ocean or sea.
Steady (noise)	Constant or continuous.
Surface waters	A watercourse, lake or wetland, and any water flowing over or lying on land after having precipitated naturally, or after having risen to the surface naturally from underground (groundwater). Types of surface water include: • permanent (perennial) water bodies – waters are present all year round and are usually in the form of waterholes, lagoons, springs and swamps. Water table is maintained by the groundwater table • semi-permanent (ephemeral) water bodies – only hold water for part of the year • manmade water bodies – held in manmade structures such as river dams • rain-catching dams.

Appendix: Determining the environmental management category and calculating administrative fees – a worked example

The following worked example shows how the environmental management category (EMC) is determined and its effect on a licence administrative fee under the risk-based system.

For detailed information on the calculation method for determining a licensee's EMC, including weightings, thresholds, formulas and definitions, refer to the Environmental Management Calculation Protocol.

Worked example of the calculation of the EMC and administrative fee

A paper production company, Paper Limited, holds an environment protection licence. The details are as follows:

Licence anniversary date

5 February

Activity

Paper or pulp production

Scale of activity

Not more than 150,000 tonnes

Number of administrative fee units

65

Calculation of EMC for the 2020–21 reporting period

Table 11 shows the EPA regulatory actions Paper Limited was subject over the past three years.

Table 11 Regulatory actions for Paper Limited

Reporting period	Regulatory action	Number of actions
5 February 2017 to 4 February 2018 (Year 3)	Incident-related site inspection	2
	Pollution-reduction program	1
5 February 2018 to 4 February 2019 (Year 2)	Incident-related site inspection	1
	Formal warning	1
5 February 2019 to 4 February 2020 (Year 1)	Incident-related site inspection	2
	Penalty notice – category 1	1

Paper Limited also had the following environmental improvement programs and environmental management systems/practices in place during this reporting period:

Environmental management system (Certified ISO14001).

On its anniversary date of 5 February 2020, Paper Limited's EMC was calculated using the following formula, as set out in the Environmental Management Calculation Protocol.

Environmental management score (based on enforcement history and regulatory actions)	**–**	**Total environmental management score reduction** (based on environmental management systems or practices and environmental improvement plans)	**=**	**Total environmental management score**

Table 12 shows how the **total environmental management score** for Paper Limited was calculated.

Table 12 Environmental management category assessment for 2019–20 licence period

Year considered / environmental management system or practice in place	Regulatory actions taken	Number of actions	Score
Year 1 (5 Feb 2019 – 4 Feb 2020)	Incident-related site inspection	2	40
	Penalty notice – category 1	1	120
Year 2 (5 Feb 2018 – 4 Feb 2019)	Incident-related site inspection	1	10
	Formal warning	1	20
Year 3 (5 Feb 2017 – 4 Feb 2018)	Incident-related site inspection	2	4
	Pollution-reduction program	1	7
Environmental management system	Certified ISO14001 or demonstrated equivalent system	Yes	-80
Total environmental management score	**-**	**-**	**121**
Environmental management category	**-**	**-**	**C**

Table 13 shows how the total environmental management score determines the licensee's environmental management category.

Table 13 Environmental management categories

Total environmental management score	Environmental management category
0–5	A
6–60	B
61–180	C
181–400	D
401+	E

Paper Limited's total environmental management score of 121 falls into environmental management category C.

Calculation of the 2020–21 licence administrative fee

The 2020–21 administrative fee for Paper Limited is calculated as follows.

Administrative fee = Administrative fee unit amount (for 2020–21) x number of administrative fee units x environmental management factor (from Table 10)

= $136 x 65 x 1.3

= $11,492

The administrative fee for 2020–21 is $11,492.