

1.5 EPA PROPOSED SEPARATION DISTANCE GUIDELINE AND LANDFILL BUFFER GUIDELINE

Responsible Director: Peter Panagakos

RECOMMENDATION

That Council:

- 1. Notes that the EPA commenced public consultation on 7 December 2022 for two draft guidelines, Separation Distance Guideline and Landfill Buffer Guideline (Guidelines), prepared by the Environment Protection Agency and consultation on these documents closes on 17 February 2023.*
- 2. Endorses the draft officer submission as detailed in the report.*
- 3. Directs the Director City Development to finalise and lodge Council's submission generally in accordance with the position outlined in Attachment 4 to this report.*

INTRODUCTION

The purpose of this report is to inform Council of the EPA's draft Separation Distance Guideline and draft Landfill Buffer Guideline (Guidelines), which are currently out for consultation, and to consider and endorse the draft officer submission on the Guidelines.

BACKGROUND

The EPA has invited feedback on two draft guidelines:

- Separation Distance Guideline, EPA Publication 1949, December 2022 (Separation Distance)
- Landfill Buffer Guideline, EPA Publication 1950, December 2022. (Landfill Buffer)

The consultation period runs from 7 December 2022 to 17 February 2023.

The purpose of the proposed Guidelines is to support land use and development decisions that:

- protect human health and amenity from the effects of pollution and waste associated with industry and landfills and
- protect industry and landfills from inappropriate land use and development nearby that may constrain operations.

The draft Separation Distance Guideline, EPA Publication 1949, December 2022 will replace 'Publication 1518: Recommended Separation Distances for Industrial Residual Air Emissions – Guideline, March 2013'.

The draft Landfill Buffer Guideline, EPA Publication 1950, December 2022 will replace sections 5.1.5, 8.2.1 and 8.2.2 of 'Siting, design, operation and rehabilitation of landfills (Landfill BPEM) (EPA publication 788), August 2015' and publication '1642: Assessing planning proposals within the buffer of a landfill, October 2017'.

The EPA have advised that they are updating their guidance as:

- Current EPA guidance on separation distances and landfill buffers was written some time ago.
- Recent in-field experience and evidence-based research by scientific experts indicates current guidance is out of date.
- The Victorian State Government supported the recommendation of the Independent Inquiry into the EPA to develop strengthened land use planning mechanisms that establish and maintain buffers.

In addition, Separation Distance Guidelines now more explicitly cover odour, noise and air pollution whereas the current guideline focusses on air emissions only.

DISCUSSION

The update of the guidelines is supported given the age of the documents they are replacing and the up-to-date evidence-based research that the EPA is including the new Guidelines.

However, it is important to note that the Guidelines are policy documents that fulfil a different role to threshold distance permit trigger contained in planning schemes at Clause 53.10 - Uses and Activities with Potential Adverse Impacts. The draft EPA Guidelines are a matter for consideration and, as a general rule, cannot be used in a directive or prescriptive manner.

Whilst they are more comprehensive than the existing guidelines there are several areas for potential improvement in the guidelines or the overall approach to separation distances in Victoria. These issues are set out briefly in this report and in more detail in the draft submission at Attachment 4.

Issue 1 – Whole of government approach

As noted above the Guidelines are not incorporated in planning schemes in Victoria. The Guidelines are instead listed as policy consideration matters under particular State policy. This can weaken the awareness of the Guidelines and reduces their relevance in the decision-making process.

It is acknowledged that the purpose of the proposed guidelines is to:

- support land use and development decisions protect human health and amenity from the effects of pollution and waste associated with industry and landfills; and
- protect industry and landfills from inappropriate land use and development nearby that may constrain operations.

However, there remains some concern about how these Guidelines “fit” into the decision-making process, particularly where for the most part the zoning of land is established and many uses that may be covered by the Guidelines do not require approval unless they do not comply with the Threshold Distances outlined in Clause 53.10 of the Monash Planning Scheme.

It is recommended that the EPA collaborate with the Department of Transport and Planning (DTP) (formerly DELWP) to provide a holistic and integrated approach in order to ensure that the Guidelines have a more prominent and appropriately weighted role in land use and development in Victoria.

Issue 2 – Specific comments on the 2 Guidelines

In collaboration with Maddocks and officers, a review of the draft guidelines has been undertaken and detailed feedback on the draft Landfill Buffer Guideline is provided in the **Attachment 4** submission.

The revised Separation Distance Guideline is based on scientific research undertaken by the EPA and is considered appropriate. (Noting that a significant number of the land uses listed are unlikely to seek to establish in Monash). A table comparing the existing and proposed separation distances is provided at **Attachment 3**. Some detailed comments to this guideline have also been included in the draft submission at **Attachment 4**.

POLICY IMPLICATIONS

Given that the proposed Guidelines are an update and replacement of existing policy documents there are considered to be no policy implications at this point in time.

CONSULTATION

Consultation is being undertaken by the EPA. Interested members of the community who wish to be involved can make a submission directly to the EPA. The closing date for submissions is 17 February 2023.

SOCIAL IMPLICATIONS

The draft Guidelines should result in positive environmental, social and/or economic impacts when implemented. The purpose of the guidelines is to support land use and development decisions that:

- protect human health and amenity from the effects of pollution and waste associated with industry and landfills; and
- protect industry and landfills from inappropriate land use and development nearby that may constrain operations.

HUMAN RIGHTS CONSIDERATIONS

It is considered there will not be any human rights implications as a result of the review.

GENDER EQUITY ASSESSMENT

Under the *Gender Equality Act 2020*, Council is obliged to undertake a gender impact assessment of all new policies, programs and services, as well as those up for review, if they have a 'direct and significance' impact on the public.

The proposed draft guidelines out for consultation have been prepared by the EPA and have not been drafted by Council.

FINANCIAL IMPLICATIONS

There are no immediate or direct financial impacts as a result of the draft guidelines.

CONCLUSION

It is appropriate the EPA are updating the Guidelines based on more up to date information.

There is the opportunity to improve Guidelines and how separation distances are considered and applied as set out in the draft submission.

ATTACHMENTS

Attachment 1: Separation Distance Guideline, EPA Publication 1949, December 2022

Attachment 2: Landfill Buffer Guideline, EPA Publication 1950, December 2022

Attachment 3: Guide to separation distance and landfill buffer changes

Attachment 4: Submission Letter



Separation distance guideline

/ Publication 1949 / December 2022



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DRAFT

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1. Introduction

Separation of incompatible land uses is an important consideration to protect the community from industries and activities that pose health, safety and amenity risks. Separation distances are often used as a planning tool to manage and mitigate these risks by keeping conflicting land uses apart.

Environment Protection Authority Victoria (EPA) has prepared the *Separation distance guideline* to support state agencies, local government, community and industry to make informed land use decisions under the *Planning and Environment Act 1987* (P&E Act) and the *Environment Protection Act 2017* (EP Act).

This includes statutory and strategic planning decisions, as well as EPA decisions on licences, permits, registrations and applications for new or expanding developments in Victoria. It is essential to address land use compatibility early in the land use planning process to minimise potential conflicts after planning and other approvals.

This guideline is organised into two environmental categories:

1. Odour
2. Dust

Each of these categories includes:

- information about their potential risks and impacts
- recommended separation distances between industries and sensitive land uses
- an overview of the separation distance decision-making process
- references to the relevant assessment methodology and tools.

A recommended separation distance may be varied by using the decision-making process and considering environmental and site-specific factors detailed in this guideline.

Note: For information about recommended separation distances for landfills, please see *Landfill buffer guideline* (EPA publication 1950).

1.1. Purpose of this guideline

The purpose of this guideline is to support land use and development decisions that:

- protect the community from human health and amenity risks associated with unintended offsite odour and dust impacts generated by industry
- protect industry from inappropriate land use and development nearby that may constrain operations.

This guideline is intended for planning authorities, responsible authorities, industry, developers, the community and EPA. It provides guidance on what to consider when preparing and assessing planning scheme amendments, planning permits and EPA permissions applications.

The guideline supports decision makers to direct land use and development to the most appropriate locations based on the level of risk. It also supports planning decision makers to prevent underuse of land adjacent to industrial land uses by identifying compatible land uses within a separation distance.

This guideline contributes to the **state of knowledge** (www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance) – the general body of knowledge about the harm or risks of harm to human health and the environment, including the controls for eliminating or reducing those risks. It is expected that the state of knowledge will improve over time as new knowledge and opportunities to better manage risk are established.

1.2. Why separation distances are necessary

Separation distances are necessary to account for potential unintended offsite emissions expected as part of the day-to-day operation of industrial land uses. Such emissions may occur due to:

- the nature of the operation
- slight changes in weather conditions
- minor accidents
- minor equipment failure.

Unintended offsite emissions may still occur even when an industrial land use is operating in accordance with all relevant statutory obligations, including minimising the risk of harm to human health or the environment from pollution and waste so far as reasonably practicable.

Separation distances allow unintended emissions to disperse, and in doing so, minimise human health and amenity risks for any nearby sensitive land uses.

Separation distances are not to be used by duty holders as an alternative to controlling offsite impacts or meeting legal obligations.

The use of separation distances can:

- prevent land use conflict
- help protect the health and amenity of sensitive land uses
- minimise risks and mitigate odour and dust impacts from certain industries and activities
- help protect industrial and commercial land uses and activities
- provide local government, industry, developers and the community with some certainty about future land use.

1.3. Scope

This guideline applies to offsite odour and dust emissions from industrial uses and activities that have the potential to impact human health and wellbeing, local amenity and aesthetic enjoyment. Ambient (or criteria air pollutants) and hazardous air pollutants are not included in the scope of these guidelines.

While some odorous or particulate substances are also hazardous air pollutants, this guideline only considers substances in relation to their odorous or nuisance dust impacts. Hazardous air pollutants are considered in *Guideline for assessing and minimising air pollution in Victoria* (publication 1961).

Recommended separation distances in this guideline do not account for upset conditions such as major abnormal weather conditions, major accidents or major equipment failure. Unlike emissions under normal operating conditions, upset conditions are often irregular or sporadic and impacts can extend beyond the distance for unintended emissions. Upset conditions should be managed by implementing reasonably practicable contingency measures.

Compliance with this guideline does not constitute compliance with the EP Act, including the general environmental duty (GED).

This guideline is not to be used retrospectively to require an existing industry operating in accordance with all relevant statutory obligations to comply with a separation distance listed. However, it may be used to determine an applicable separation distance to support land use and development decisions surrounding an existing industry, or to assess proposed expansion of an existing industry.

Decision makers (planning authorities, responsible authorities and state agencies) and applicants should review all relevant regulations, policies and guidance to ensure that other human health and amenity issues have also been appropriately considered and all other requirements under other legislation are met. This includes clause 53.10 (Uses and activities with potential adverse impacts) of the VPP and the supporting Planning Practice Note 92 *Managing buffers for land use compatibility* (PPN92).

This guideline should be read in conjunction with:

- General environmental duty: www.epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty
- [Implementing the general environmental duty: A guide for licence holders](http://www.epa.vic.gov.au/for-business/find-a-topic/environment-protection-laws-and-regulations/implementing-the-general-environmental-duty---a-guide-for-licence-holders) (www.epa.vic.gov.au/for-business/find-a-topic/environment-protection-laws-and-regulations/implementing-the-general-environmental-duty---a-guide-for-licence-holders)
- [Environment Reference Standard](https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard): <https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard>
- [Self-assessment tool for small business](http://www.epa.vic.gov.au/about-epa/publications/1812) (publication 1812) (www.epa.vic.gov.au/about-epa/publications/1812)
- [Industry guidance: supporting you to comply with the general environmental duty](http://www.epa.vic.gov.au/about-epa/publications/1741-1) (publication 1741) (www.epa.vic.gov.au/about-epa/publications/1741-1)
- [Assessing and controlling risk: A guide for business](http://www.epa.vic.gov.au/about-epa/publications/1695-1) (publication 1695) (www.epa.vic.gov.au/about-epa/publications/1695-1).
- State of knowledge and industry guidance: www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance
- [Reasonably practicable](http://www.epa.vic.gov.au/about-epa/publications/1856) (publication 1856) (www.epa.vic.gov.au/about-epa/publications/1856)
- [Fact sheet: Engaging consultants](http://www.epa.vic.gov.au/about-epa/publications/1702) (publication 1702) (www.epa.vic.gov.au/about-epa/publications/1702)

- Odour advice for businesses (www.epa.vic.gov.au/for-business/find-a-topic/odour/advice-for-businesses)
- Dust advice for businesses: (<https://www.epa.vic.gov.au/for-business/find-a-topic/dust/advice-for-businesses>)
- *Landfill buffer guideline* (publication 1950)
- [Clause 53.10 of the VPP](https://planning-schemes.app.planning.vic.gov.au/Victoria%20Planning%20Provisions/ordinance/53.10) (<https://planning-schemes.app.planning.vic.gov.au/Victoria%20Planning%20Provisions/ordinance/53.10>)
- [Buffers and land use compatibility](https://www.planning.vic.gov.au/policy-and-strategy/buffers-and-land-use-compatibility), Department of Environment, Land, Water and Planning (<https://www.planning.vic.gov.au/policy-and-strategy/buffers-and-land-use-compatibility>).

The recommended separation distances listed in this guideline were derived from:

- a review of *Recommended separation distances for industrial residual air emissions (2013)* (EPA publication 1518) while considering EPA's experiences and research, including a review of separation distances recommended by similar jurisdictions in Australia
- a review of clause 53.10 of the VPP¹ commissioned by the Department of Environment, Land, Water and Planning
- empirical assessments of industrial sites and activities by EPA scientists and officers
- EPA industry-specific guidance for wastewater treatment plants and composting industries
- other guidelines and codes if relevant to the industry.

¹ Review of Clause 53.10 Uses with Adverse Amenity Potential in the Victoria Planning Provisions, Jacobs Group Australia, June 2019

2. Legislative framework

The P&E Act and the VPP provide the basis for the regulation of land use planning and development. Separation distances are a preventative tool to manage land use conflicts. EP Act intent is embedded in the VPP through consideration of the risks and impacts of use and development on human health and the environment.

The EP Act provides a statutory framework for industry and a preventative approach to protecting human health and the environment from the impacts of pollution or waste. Information about the EP Act including the [general environmental duty](https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty) (GED) (<https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty>), [state of knowledge](https://www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance>) and what [reasonably practicable](https://www.epa.vic.gov.au/about-epa/laws/new-laws/what-is-reasonably-practicable) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/what-is-reasonably-practicable>) means can be found on the [EPA website](https://www.epa.vic.gov.au/about-epa/laws/new-laws/new-environmental-laws-for-all-victorians) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/new-environmental-laws-for-all-victorians>).

Appendix A includes more detail about the relevant planning policy references for separation distances for odour and dust.

2.1. The difference between separation distances, buffers and threshold distances

This guideline provides recommended separation distances specifically for odour emissions and dust emissions for different industry categories. Some of these industries may also be listed at clause 53.10 of the VPP.

There is often confusion about how the terms separation distance, threshold distance and buffer are used. While they are similar in concept, they have specific meanings and are different for key reasons as set out in Table 1.

Table 1: Definitions of separation distance, threshold distance and buffer

	Description	Policy reference
Separation distance	<ul style="list-style-type: none"> • a distance between incompatible land uses where there is potential for adverse human health or amenity impacts • typically occurs between an industrial (or sometimes commercial) land use and a sensitive land use • used as a tool to determine whether the siting of a proposed land use or development is suitable in the context of surrounding land uses • should be measured according to section 4 in this guideline. 	<p>This guideline sets out recommended separation distances for odour and dust for industries listed in Table 2 and Table 4.</p>
Threshold distance	<ul style="list-style-type: none"> • a trigger for further detailed assessment of potential adverse offsite impacts via a planning permit • based on a broader range of risks than those covered in this guideline (odour and dust). For example, noise and hazardous air pollutants. 	<p>Clause 53.10 of the VPP sets out the threshold distances for different types of uses and activities with potential adverse impacts.</p> <p>Referral to EPA is triggered under Section 55 of the P&E Act if a threshold distance is not met or an industry is listed with no threshold distance specified.</p>
Buffer	<ul style="list-style-type: none"> • land used to separate or manage incompatible land uses, often industrial uses and sensitive uses, to ensure land use compatibility and avoid land use conflict • may contain multiple separation distances that respond to various risks to human health and amenity - for example, where a buffer is made up of separation distances that respond to odour, dust and landfill gas migration, the buffer will extend to the largest of these separation distances. • does not need to stop the use and development of land – instead, it ensures land use and development responds to the risks posed and allows for a transitional area of land between two distinct land uses to lessen the risk of harm posed by one land use type on another. 	<p>PPN92 provides guidance on the planning provisions in the VPP relating to buffer management, including the Buffer Area Overlay.</p>

2.2. EPA's role in land use planning

Land use planning has an important role in achieving the purpose of the EP Act - the protection of human health and the environment from pollution or waste. However, land use and development within separation distances is not controlled by EPA. Planning and responsible authorities determine permitted land use and development through implementing the planning scheme, including within separation distances. Separation distances are implemented through appropriate planning policies and controls (including zones and overlays), and by making decisions on individual planning permit applications.

EPA's involvement in land use planning occurs through both statutory and strategic planning mechanisms:

- EPA is a statutory referral authority for some land use planning proposals under the P&E Act. EPA may be a determining or recommending authority as set out in clause 66 of the VPP. Where EPA is a determining referral authority and objects to a proposal, the responsible authority must refuse to grant the permit. In instances where EPA specifies conditions, these must be included on any permit granted.
- Ministerial Direction 19 requires planning authorities to seek early advice from EPA when undertaking strategic planning processes and preparing planning scheme amendments that may significantly impact Victoria's environment, amenity or human health due to pollution and waste.
- EPA also has a role in proposals to apply the Buffer Area Overlay. PPN92 sets out the steps to be taken when considering its application.

This guideline informs EPA's response to statutory and strategic planning matters where separation distances are relevant. EPA uses its environmental expertise to assist planning and responsible authorities with understanding the environmental risks associated with certain planning and development decisions.

EPA can assist with land use and development decisions by providing information on the best available techniques and technologies. EPA can provide guidance for environmental protection and apply regulatory interventions where appropriate.

EPA also has a role in assessing applications for new and amended permissions for industry under the EP Act. Depending on the risk and type of activity this may be a licence, permit or registration. There are some instances where a proposal may require both a planning permit and EPA permission. While EPA's assessment for both will consider the impact and risk of harm from pollution and waste, the planning assessment focuses on the land use being proposed, whether it is sited appropriately and compatible with surrounding uses. The permission assessment focuses on the design and operation of the activity. The triggers for assessment are also under different Acts – the EP Act and the P&E Act.

3. When to consider separation distances

3.1. Agent of change principle

The agent of change principle requires the person or entity proposing a land use or development (new or expanding, modified or varied) that may give rise to conflicting land uses to provide evidence to the decision maker that variation from a specified separation distance is appropriate. The agent of change has the responsibility to:

- consider their obligations under the GED, including the risks of harm to human health or the environment from pollution or waste from the proposed activity
- avoid land use conflict
- ensure potential impacts on nearby land uses are appropriately mitigated and managed.

The agent of change principle applies to both individual applications as well as strategic planning matters. Depending on the proposal, the agent of change could be either the industry or the sensitive use/development.

The following are examples of proposed sensitive land use or development as the agent of change:

- Planning permit applications for a sensitive land use or development.
- Strategic planning matters involving a new residential, education, mixed use or other zone or precinct permitting sensitive land uses.
- Development of a local land use policy/strategy.

The following are examples of proposed industrial use or development as the agent of change:

- Planning permit applications for industrial land use or development (including any listed at clause 53.10 of the VPP).
- Strategic planning matters involving an existing or proposed employment or industrial precinct/use.
- Development of a local land use policy/strategy relating to industry.
- Applications for permissions under the EP Act, including development licences, operating licences, permit activities and registrations.

Agent of change example scenarios:

A landowner owns an abandoned light manufacturing site located near a train station. Thinking the site would be perfect for apartments and small retail, the landowner proposes to rezone and develop the land for sensitive uses. However, the manufacturing site is near other factories and odour-emitting industries. It is the responsibility of the landowner to demonstrate that the proposed land use will not be at risk of harm from the nearby incompatible land uses.

OR

A paint manufacturing company intends to expand their operations and add a new odour-emitting facility on their land to increase the levels of paint production. For this to happen, the site will be introducing a new source of odour that will require a separation distance. The proposed facility is located near the boundary of their land and is within proximity to well

established homes. It is the responsibility of the company to demonstrate that the proposed development will not have a risk of harm on the nearby sensitive land uses.

In these scenarios:

- the land use or development proposal triggers the need to consider separation distances and
- the proponent of the development proposal is the agent of change.

3.2. How to measure separation distances

3.2.1. Odour and dust

Separation distances for odour and dust should be determined by measuring from the activity boundary of the industrial land use to the nearest sensitive land use. The activity boundary of the industrial activity is the area that includes all current or proposed industrial activities (including plants, buildings or other sources) from which odour or dust emissions may arise (including stockpiles, windrows, leachate ponds, unsealed surfaces and pollution control equipment).

If an industry changes its use or moves an activity within the property boundary, the requirement for a planning permit or development licence may trigger reassessment of adequate separation distances.

Certain industries may have other guidelines and codes that specify how to measure separation distances. Where these exist, the specific approach outlined in those guidelines and codes should be adopted. However, *Guidance for assessing odour* (EPA publication 1883) should be used for assessing separation distances for odour where other guidance is inconsistent with the EPA methodology.

Two methods to measure separation distances for odour and dust are provided below to allow consideration of sensitive land uses in different geographical contexts – ‘urban’ versus ‘rural’. These methods differ in the measurement point for the nearest sensitive land use.

3.2.2. Method 1: the urban method

Method 1 measures the separation distance from the activity boundary of the industry to the property boundary of the nearest sensitive land use, as illustrated in Figure 1.

Method 1 should be applied where the nearest sensitive land use is either:

- in an urban area or township; or
- on a site less than 4,000 m²; or in a zone allowing subdivision to less than 4,000 m².

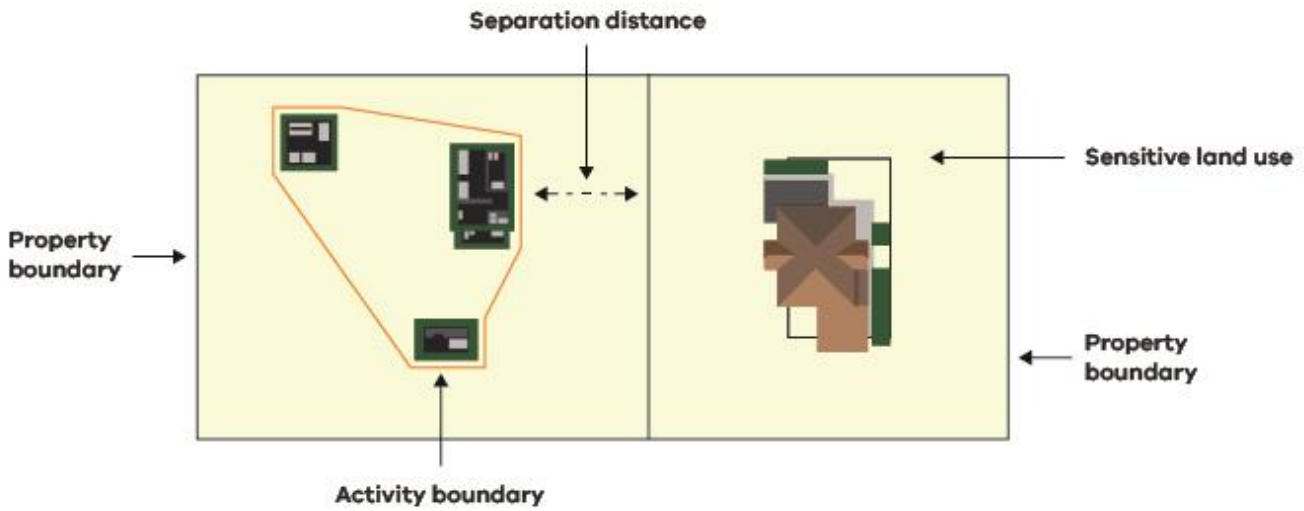


Figure 1. Measuring separation distances using Method 1: the urban method

3.2.3. Method 2: the rural method

Method 2 measures the separation distance from the activity boundary of the industry to the activity boundary of the sensitive land use, as illustrated in Figure 2. The activity boundary of the sensitive land use is the area (within a convex polygon) that includes all current or proposed sensitive uses (including residences, garages and carports, barbecue areas, clotheslines and swimming pools).

Method 2 should be applied where the nearest sensitive land use is both:

- not in an urban area or township; and
- on a site at least 4,000 m², or in a zone requiring subdivision to at least 4,000 m².

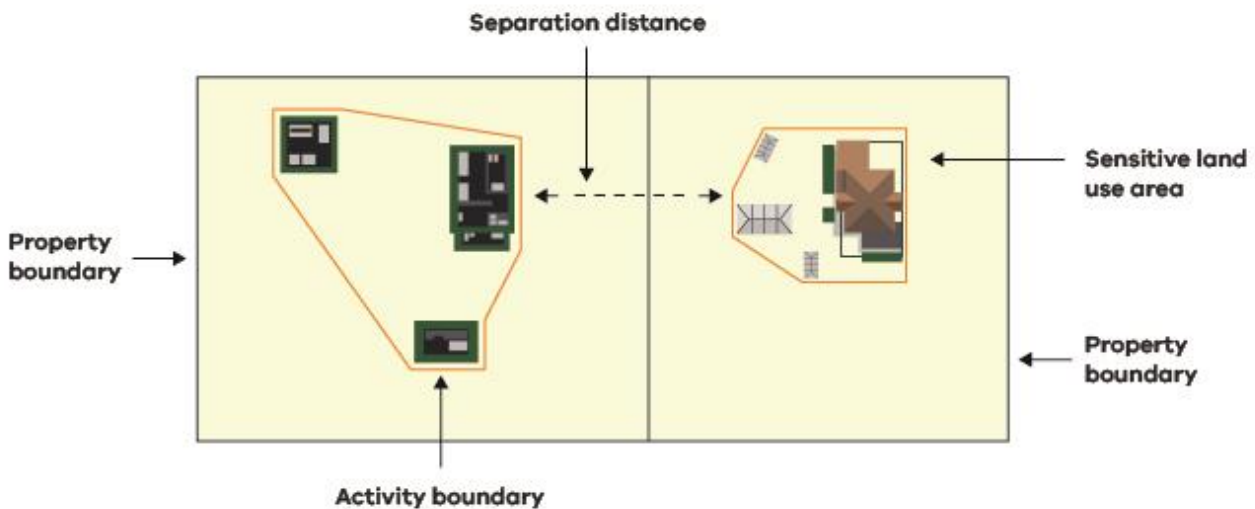


Figure 2. Measuring separation distances using Method 2: the rural method

4. Decision-making process for separation distances – odour and dust

The decision-making process to appropriately consider a separation distance between an odour or dust emitter and sensitive land use is categorised into the following three stages:

- Stage 1 - Does a recommended separation distance apply?
- Stage 2 - Is the recommended separation distance met?
- Stage 3 - Is the recommended separation distance acceptable?

Each of these stages contains a series of steps and questions that will help the user identify the information and actions required to understand the risks and impacts of their proposed activity. As every development proposal will be different, the opportunity to seek a variation to a recommended separation distance should only be determined by following this decision-making process.

The flowcharts in Figure 5 and Figure 6 provide an overview of the decision-making process to apply depending on the development scenario. In Figure 5, the proponent of an industrial use/development is the agent of change, whereas in Figure 6 the agent of change is the proponent of a sensitive land use/development.

Sections 4.2– 4.4 provide further detail for each of the steps outlined in the flowcharts.

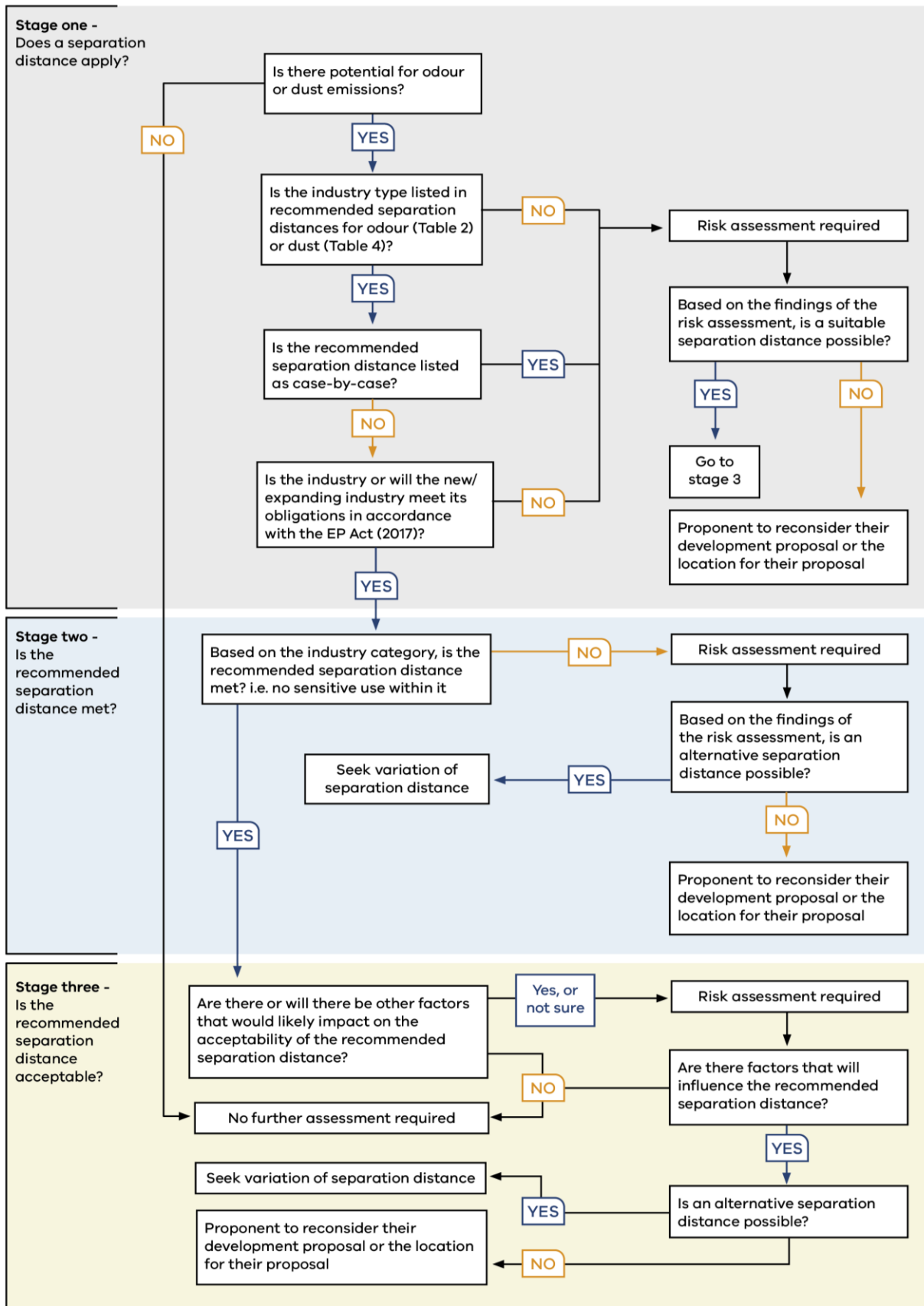


Figure 5. Separation distance decision-making process for odour or dust – proposed industrial use/development

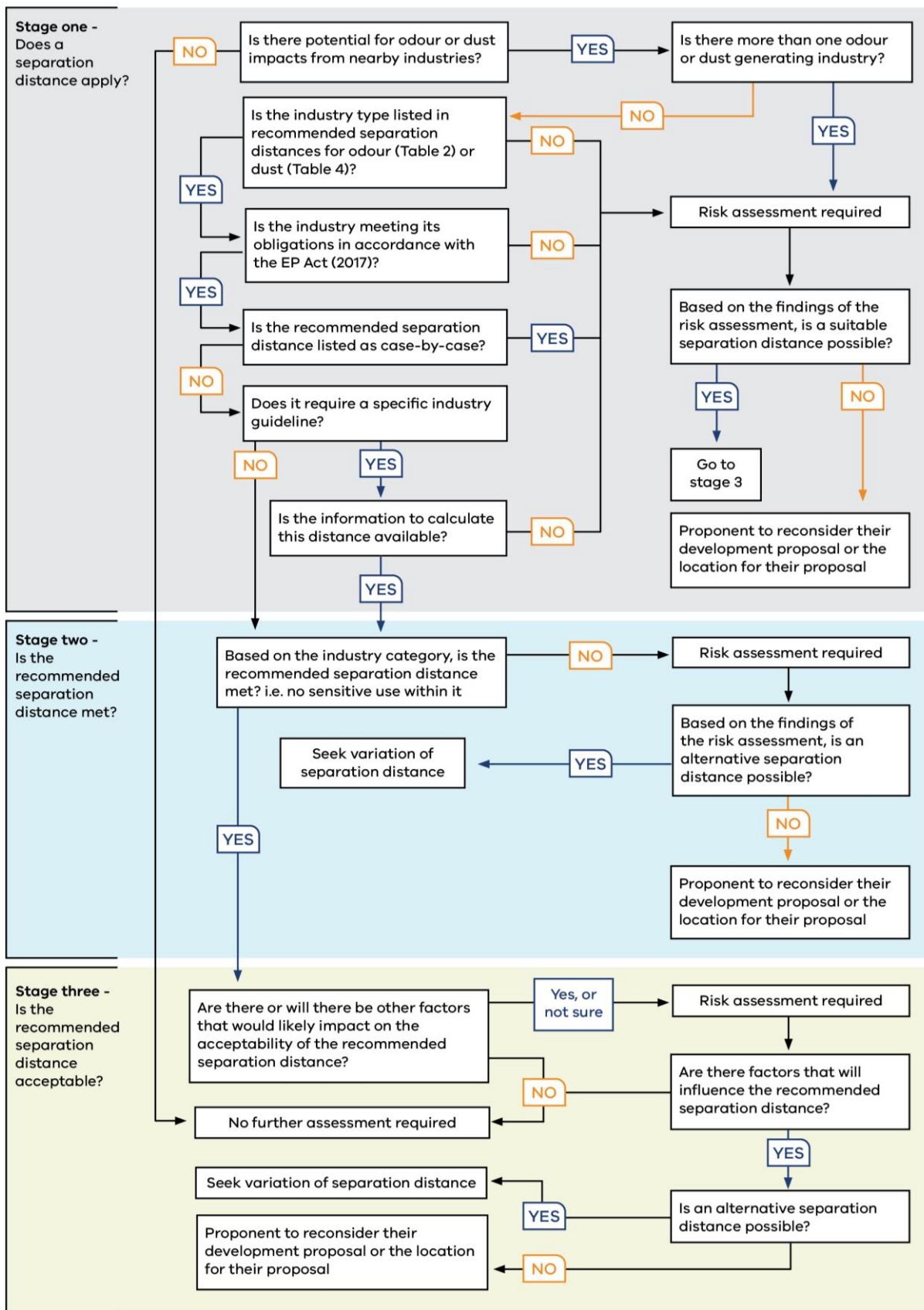


Figure 6. Separation distance decision-making process for odour or dust – proposed sensitive use/development

4.1. What is a risk assessment?

A risk assessment identifies and evaluates the impacts and risks associated with an activity that may cause harm to human health or the environment. As shown in the decision-making process, a proponent may be recommended to submit a risk assessment with their development proposal to the decision maker (planning authority, responsible authority or state agency).

The purpose of a risk assessment is to show a clear understanding of the potential impacts of the activity source (whether it be odour or dust) on sensitive land uses. The findings of a risk assessment will assist in determining if a variation to a recommended separation distance is possible and appropriate.

EPA recommends that the risk assessment be to the satisfaction of the decision maker and should follow the guidelines set out in EPA publications relevant to the activity source:

- For an **odour** risk assessment, refer to *Guidance for assessing odour* (EPA publication 1883)
- For a **dust** risk assessment, refer to *Guidance for assessing nuisance dust* (EPA publication 1943).

EPA recommends that a suitably qualified environmental consultant prepares a risk assessment and uses this guideline and any other relevant EPA publications.

EPA also recommends that a risk assessment uses a variety of assessment tools noted in relevant EPA publications to identify key elements that may affect the risks of odour or dust emissions from the source. Each tool has its strengths and limitations. A combination of tools can assist in providing a practical and compelling risk assessment.

A decision maker may seek an independent environmental consultant to review the risk assessment and advise on the land use or development proposal. The decision maker may contact EPA for further guidance and input if evaluating the proposal is complex and challenging, based on the risk assessment.

In certain circumstances, the findings of a risk assessment may result in EPA recommending the need for a greater separation distance than the distance listed in this document, due to the characteristics of the source or the environment.

4.2. Stage 1 – Does a separation distance for odour or dust apply?

This section describes the steps in Figure 5 and Figure 6 to determine whether a separation distance applies to the land use or development that is being proposed.

4.2.1. Identify possible odour or dust emissions and impacts

The first step is to identify whether the proposal may emit, generate or be impacted by odour or dust:

- For an industrial land use or development – will the proposal have odour or dust emissions?
- For a sensitive land use or development – will the proposal be in the vicinity of nearby industries with existing or potential odour or dust emissions?

A definition of industrial land use and sensitive land use in the context of odour and dust emissions can be found in Appendix D.

4.2.2. Identify whether the industry has a recommended separation distance

The next step is to identify whether the industry type is listed in Table 2 (for odour) or Table 4 (for dust) of this guideline.

In some circumstances, an industry may not have a recommended separation because:

- The recommended separation distance listed in Table 2 or Table 4 is noted as case by case, or
- The industry is not listed in Table 2 or Table 4 but has the potential to generate odour or dust.

In these circumstances, the proponent should provide a risk assessment to understand the proposal's potential odour or dust impacts. Depending on the findings of the risk assessment, the proponent may seek to determine a suitable separation distance.

The depth of analysis and process to determine a suitable separation distance is the same as to vary a recommended separation distance. Refer to Sections 5.2 (for odour) and 6.2 (for dust) for further details about varying a recommended separation distance.

4.2.3. Identify whether the industry is meeting its obligations in accordance with the EP Act

The recommended separation distances listed in this guideline assume that the industry is meeting the obligations of the GED. The GED requires a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste to minimise those risks so far as reasonably practicable (relevant to odour or dust emissions). EPA recommends that evidence to demonstrate this has been assessed should be provided in support of an application.

Odour and dust can be produced at multiple points within the business process. Understanding individual risks and available prevention measures is the only way to prevent odour or dust pollution. See further guidance in *Assessing and controlling risk: A guide for business* (EPA publication 1695.1), <https://www.epa.vic.gov.au/about-epa/publications/1695-1>.

Risk prevention measures will depend on the business type, and therefore the source that needs to be managed. Where engineering solutions are not reasonably practicable, for example, large area sources, effective site planning and management practices should be implemented.

For proposed industry encroaching on existing sensitive uses, EPA recommends that the proponent identify whether best available techniques and technology are being used to manage emissions, citing relevant industry regulations, standards, permissions or guidance. Refer to *Demonstrating best practice* (EPA publication 1517), <https://www.epa.vic.gov.au/about-epa/publications/1517-1>. If this information is not provided or is not known, then a risk assessment should be undertaken.

For proposed sensitive land uses encroaching on existing industry, EPA recommends that the agent of change provide evidence to demonstrate that risks of harm to human health or the environment from pollution or waste have been minimised so far as reasonably practicable as part of the application.

There are no statutory obligations on an industry to supply information about its operation to third parties in relation to separation distances. However, industries are encouraged to support separation distance assessments, either by supplying data to third parties or doing their own assessment of their operations.

4.3. Stage 2 – Is the recommended separation distance for odour or dust met?

The next step is to determine whether the proposal meets the recommended separation distance.

Compare the recommended separation distance for the type of industrial land use with the measured distance to the nearest sensitive land use. This assessment is undertaken regardless of any characteristics or specificities of the source of odour, dust or the environment.

- If the measured distance to the nearest sensitive land use is greater than the recommended separation distance listed in these guidelines, then the separation distance is met.
- If the measured distance to the nearest sensitive land use is less than the recommended separation distance listed in this guideline, then the separation distance is not met. A risk assessment is recommended in this scenario, and possibly an application to seek a variation of the separation distance.

In some instances, although a separation distance may be met, it may not be acceptable due to other factors listed in Section 4.4 of these guidelines.

4.4. Stage 3 – Is the recommended separation distance for odour or dust acceptable?

Even though a proposal may meet a recommended separation distance, there could be factors that may result in the recommended distance being unacceptable.

Factors that can impact the acceptability of a recommended separation distance for odour include:

- cumulative impacts
- interface land uses
- the scale and configuration of the operation
- the environment surrounding the odour emitter.

Factors that can impact the acceptability of a recommended separation distance for dust include:

- size of the source
- type of dust emission

- meteorology
- terrain and interface land use
- the sensitivity of the receptor (existing and/or proposed)
- historical context
- cumulative impacts.

If these factors influence the acceptability of a recommended separation distance, EPA recommends a risk assessment be prepared to demonstrate that either the recommended separation distance is acceptable or the recommended separation distance can be varied.

Further detail on environmental and site-specific factors is provided in Section 5.3 (for odour) and 6.2 (for dust).

Consideration of these factors is generally a prerequisite for site-specific variation, but not a guarantee that a variation is justified.

5. Odour

Odour from industry is one of the largest sources of complaints received by EPA. Odour can affect people differently depending on their level of sensitivity. Some people are naturally tolerant to odour. In contrast, others react significantly to the slightest concentrations of odour. Despite the range in reactions to odour, pollution from odour can cause harm to the environment and communities. The potential impacts of odour can negatively affect people's quality of life, human health, and public amenity.

Unpleasant odours come from many industrial processes including landfilling, food processing, animal husbandry, composting, and sewage treatment. People often complain about odours emitted from these sources, describing them as offensive.

People who are affected by odour often need to adjust their day-to-day activities. For instance, they may need to reduce time outdoors, refrain from opening windows or schedule activities to certain times of the day to avoid odour.

Repeated exposure to nuisance levels of odour can negatively affect people's quality of life as it may cause frustration, stress, discomfort or annoyance. It can also lead to health problems such as headaches, nausea and vomiting.

5.1. Separation distances for odour

Table 2 lists the industries with recommended separation distances for odour. The table contains a definition of each industry and, in some cases, information on the throughput or specifications of the industry.

Where the table specifies 'case by case', the separation distance should be determined based on a risk assessment, following the assessment guidance that is provided in *Guidance for assessing odour* (EPA publication 1883).

If the industry is a likely odour generator and not listed in the table, a risk assessment should be undertaken by the proponent unless written advice is provided by EPA.

Table 2: Recommended separation distances for odour

Industry type	Industry activity/definition	Scale and description	Recommended separation distance (m)	Further guidelines, references and exceptions
Agriculture				
Cattle or dairy intensive farming or feedlot	Where animals are confined for agricultural production; beef or dairy	Beef	See further guidelines	<i>National Guidelines for Beef Cattle Feedlots in Australia – 3rd Edition (2012)</i>
		Dairy	Case by case	
Fish farming	Fish farming (land-based aquaculture)	Pond culture	100	
		Recirculating aquaculture systems (RAS – tanks in sheds)	150	
		Pump-ashore (coastal flow through)	200	
Grain and stock feed mill and handling facility	Receiving, storing, fumigating, bagging, transporting and loading grain or stock feed	> 20,000 t/yr, without meat or meat by-products incorporated in feed	250	
		> 20,000 t/yr, with meat or meat by-products incorporated in feed	500	
Intensive animal industries	All other species not listed below		Case by case	
Intensive sheep or goat feeding systems	Where sheep or goats are confined indoors or at high density for agricultural production		See further guidelines	<i>National procedures and guidelines for intensive sheep and lamb feeding systems (2011)</i>
Mushroom farm	Using blended solids or compost to produce mushrooms		Case by case	
Piggery	Where pigs are kept for agricultural production	Indoors	See further guidelines	<i>National Environmental Guidelines for Indoor Piggeries (2018)</i>
		Outdoors	See further guidelines	<i>National Environmental Guidelines for Rotational Outdoor Piggeries – Revised (Tucker and O’Keefe, 2013)</i>

Poultry	Egg, meat and bird production, including quails, ducks, turkeys, geese and chickens	For meat	See further guidelines	<i>Planning and environment guideline for establishing meat chicken farms (Guide 1 – Assessment guide) (2021)</i> Use EPA publication 1883 to assess special classes and farm cluster
		For free range meat	Case by case	
		Hatcheries	Case by case	
		For eggs (including free range)	See further guidelines	<i>Egg Industry Environmental Guidelines – Edition II (2018)</i>
Soil blending, conditioning and mixing applied to farms or market gardens	Using pasteurised compost, biosolids or animal manures and litter		500	
Stock sale yard	Where, cattle and or sheep or other stock are temporarily confined for sale, transport or processing (in head of sheep equivalent, 1 cow = approx. 5 sheep, pigs or goats)	> 500 head p/w	500	
		> 10,000 head p/w	1,000	
		> 30,000 head p/w	2,000	
Basic metal products				
Metal casting	Metal products formation by casting of molten metal	Die casting (no sand)	100	
		Sand casting, < 500 kg/cycle	500	
		Sand casting, > 500 kg/cycle	1,000	
Chemical, petroleum and coal products				
Biocide production	Production of biocides	> 2,000 t/yr	1,000	
Chemical blending or mixing	Premises on which chemicals or chemical products are mixed, blended or packaged in a manner that causes or is likely to cause a discharge of waste into the environment	50 to 500 t/yr	300	
		> 500 t/yr	500	
	Chemical blending or mixing not causing discharge	> 5,000 t/yr	300	
Coke production	Premises on which coke is produced, quenched, cut, crushed or graded from coal or petroleum	> 100 t/yr	Case by case	

Cosmetic and toiletries production	Production of cosmetics or toiletries	> 2,000 t/yr	300	
Fertiliser production	Production of inorganic fertilisers	> 2,000 t/yr	1,000	
Hydrocarbon and coal products and derivatives production	Production of hydrocarbon products from petrol or coal, (solvents, briquettes, oil blends etc.)	> 2,000 t/yr	500	
Industrial gas production	Production of industrial gases	> 2,000 t/yr	Case by case	
Other organic and inorganic chemical production	Production of chemicals	> 2,000 t/yr	Case by case	
Paint and ink production	Production of paint or ink	> 2,000 t/yr	500	
Petroleum refinery	Refining oil or gas, producing hydrocarbon fractions or liquefying gas		2,000	
Pharmaceutical and veterinary product production	Production of pharmaceutical or veterinary products	> 2,000 t/yr	500	
Plastics manufacture and or recycling	Conversion of raw plastic materials into finished products	> 2,000 t/yr	200	
Rubber, polyester and synthetic resins production	Production of rubber, polyester or synthetic resins or polymers	> 2,000 t/yr	500	
Rubber products production, using either organic solvents or carbon black	Production of rubber products using organic solvents or carbon black	> 2,000 t/yr	250	
Soap and detergent production	Production of soap or detergent	> 2,000 t/yr	500	

Food, beverages and manufacturing

Abattoir - no rendering	Abattoirs with outdoor or exposed animal holding and loading areas (in head of sheep equivalent, 1 cow = approx. 5 sheep, pigs or goats)	< 12 head/day	See note below	
		> 12 head/day	500	
		> 6,000 head/day	1,000	
	Poultry processing works with no outdoor or exposed animal holding and loading areas	< 200 t/yr	See note below	
		> 200 t/yr	500	

Alcoholic beverage manufacturing	Breweries, wineries etc.	< 2,000 litres/day	See note below	
		> 2,000 litres/day and < 5,000 litres/day	250	
		> 5,000 litres/day	500	
Bakery	Production of baked products	< 200 t/yr	See note below	
		> 200 t/yr	100	
		> 200 t/yr, where heat is used to clean baking equipment	Case by case	
Coffee roasting	Roasting of coffee beans	< 200 t/yr	See note below	
		> 200 t/yr	250	
Malt works	Production of malt	< 200 t/yr	See note below	
		> 200 t/yr	250	
Milk products	Production of milk or dairy products	< 200 t/yr	See note below	
		> 200 t/yr	100	
Pet food	Production of pet food	< 200 t/yr	See note below	
		> 200 t/yr	500	
Produce processing works	Deep fat frying, roasting or drying	< 200 t/yr	See note below	
		> 200 t/yr	500	
Rendering and casings works	Abattoirs, knackereries or poultry processing works involving rendering	< 200 t/yr	See note below	
		> 200 t/yr	1,000	
Seafood	Processing of seafood	< 200 t/yr	See note below	
		> 200 t/yr	500	
Smallgoods	Preserving or drying smallgoods	< 200 t/yr	See note below	
		> 200 t/yr	500	
Vegetable oil and fat production using solvents	Producing edible oils or fats using seed crushing, solvent extraction or fat deodorising	< 200 t/yr	See note below	
		> 200 t/yr	500	

Note: No separation distances are specified for:

- Abattoirs processing less than 12 head (of sheep equivalent) per day
- Alcoholic beverage manufacturing producing less than 2,000 litres of product per day
- Other food and beverage manufacture producing less than 200 tonnes of product per year

For these cases, EPA recommends there is no visible discharge of dust or emissions of odours offensive to the senses of human beings, beyond the boundary of the premises.

Mining and extractive industry				
Gas and oil extraction	Natural gas or oil production wells including tight, shale and coal seams		Case by case	
Miscellaneous manufacturing				
Hot dip galvanising	Galvanisation – the process of applying zinc to metal resulting in a protective zinc coating to prevent rusting		400	
Manufacture of products using fibreglass and resin	Manufacturing products using fibreglass or resin	> 250 t/yr	500	
Manufacture of tanned leather and artificial leather products	Processing leather by tanning or dressing	> 250 t/yr	250	
Printing	Printing works emitting volatile organic compounds (i.e., flexographic printing)	Emitting > 100 kilograms per day of VOCs	500	
Skin and hide processing	Premises on which animal skins or hides are dried, cured or stored		500	
Spray painting	Spray painting of vehicle and marine body parts and other metallic or wooden products etc.	< 100 litres/day	100	
		> 100 litres/day	300	
Storage of wet-salted and unprocessed hides	Storing packaged wet-salted or unprocessed hides		100	
Surface coating (including drum coating)	Commercial electroplating, electrolysis plating, anodising (chroming, phosphating and colouring), chemical etching or milling, application of paints or coatings to surfaces using solvents, or printed circuit board manufacture		200	
Non-metallic mineral products				
Asphalt plant	Production of asphalt	> 100 tonnes per week, new plant	500	
		> 100 tonnes per week, existing plant	1,000	For existing asphalt plants in the case of sensitive use applications or relocation of plant.

Brick, tile, pipe, ceramics and refractory manufacturing	Production of bricks, tiles, pipes, pottery goods or refractories, processed in dryers or kilns	> 10,000 t/yr	250	
Cement manufacturing	Production of cement from clays or limestone in either a furnace or a kiln to produce cement clinker	< 5,000 t/yr	250	
		5,000 to 150,000 t/yr	500	
		> 150,000 t/yr	1,000	
Paper and paper products				
Paper and paper pulp manufacture	Processing wood, wood products, wastepaper or other cellulose materials to form pulp, paper or cardboard	Using semi-processed or recycled materials	500	
		Using sulphur containing materials (i.e. Kraft process)	5,000	
		By other methods	Case by case	
Storage and transport				
Bulk storage of chemicals	Bulk storage of volatile odorous chemicals	> 1,000 t in total	1,000	
Chemical storage and warehousing facilities	Smaller scale storage where odorous chemicals are transported, unloaded and stored	Storage only	100	
Storage of petroleum and hydrocarbon products	Storage of petroleum products or crude oil in tanks	> 2,000 t in total, floating roof	100	
		> 2,000 t in total, fixed roof	500	Reduced to 250 m if pressurised with nitrogen (N ₂).
Textiles				
Dyeing or finishing of cotton, linen and woollen yarns and textiles	Laminating, printing, dyeing etc.		100	
Production of artificial fibres and textiles	Textile manufacturing and processing including synthetic fibres or textiles		500	
Treatment and production of textiles – using chemicals or heat	Textile manufacturing and processing with textile finishing work using chemical or heat treatment		250	
Wool scouring	Textile manufacturing and processing including wool scouring		200	

Waste management				
Advanced resource recovery technology facility	Waste treatment facility for the immobilisation, thermal degradation, chemical conversion, biological oxidation (aerobic or anaerobic), incineration, gasification or other treatment of solid waste		Case by case	
Biosolids application areas	Application of biosolids (post processing) at farms, or for soil reconditioning etc.	> 1,000 t/yr	1,000	
		< 1,000 t/yr, spreading biosolids on land	500	
		< 1,000 t/yr, spreading septage on land	1,000	
Chemical or oil recycling	Recycling and purification of waste oils (mineral oils, grease trap waste, tallow etc.)	> 1,000 m ³ total capacity	500	
Composting facility	Receiving, storing temporarily and transferring putrescible solid and green waste		See further guidelines	See <i>Designing, constructing and operating composting facilities</i> (EPA publication 1588) and Appendix C for new and emerging composting technologies and feedstocks.
Container, tanker or drum washing /reconditioning	Involves the washing and cleaning out of used drums, IBCS, tankers etc. involving the removal of chemical residues		500	
Incineration	Complete destruction of wastes by high temperature incineration	Destruction of chemical wastes	500	
		Destruction of medical wastes	500	
		Destruction of solid municipal waste	500	
	Disposal of human and animal remains by cremation	Cremation	150	
Landfill			See further guidelines	See <i>Landfill buffer guideline</i> (EPA publication 1950)
Liquid waste facility	Recycling, processing and transfer of liquid waste including sludges	> 1,000 m ³ total capacity	500	

Materials recovery and recycling facility	Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials	Accepting scrap metal	500	
Permanent contaminated soil treatment facility	Permanent facility for the temporary storage, processing and treatment of contaminated soil. Excludes onsite (temporary or mobile) contaminated site soil treatment		500	
Priority industrial waste treatment facility	Storage, treatment, reprocessing, containment or disposal facilities handling any priority industrial waste not generated at the premises		500	
Transfer station	Collecting, consolidating, temporarily storing, sorting or recovering refuse or used materials before transfer for disposal or use elsewhere	Accepting green waste/putrescible waste (e.g., FOGO)	500	
Waste to energy plant	Facilities where waste streams are converted to energy by pyrolysis, combustion, fluidised bed systems etc.		Case by case	
Wastewater treatment plant	Premises on or from which sewage (including sullage) effluent, is treated, discharged or deposited	Exceeding a design or actual flow rate of 5,000 litres per day	See further guidelines	See Appendix B of this guideline.
Wood, wood products and furniture				
Manufacture of wood-fibre or wood-chip board	Manufacture of particleboard, plywood, MDF or chipboard		1,000	
Sawmill	Sawing, milling, chipping, debarking and hogging		500	
	Handling, cutting and processing logs into timber, including timber drying/seasoning		200	
Timber preserving works	Treating or preserving timber using odorous chemical substances (creosote etc.)	> 10,000 cubic metres of timber per year	250	

5.2. Variation of recommended separation distances for odour

If a proponent wishes to seek a variation of a recommended separation distance for odour from a decision maker, they should complete a risk assessment in support of their application. EPA recommends that a proponent only seek to vary a recommended separation distance if the risk assessment determines that an alternate separation distance is appropriate, based on the factors detailed in the decision-making process (Figures 5 and 6) and the relevant EPA guidance for assessing odour (EPA publication 1883).

To seek a variation of a recommended separation distance, the proponent should:

- provide a risk assessment that details the factors and risks associated with the odour source
- based on the findings of the risk assessment, propose an alternative separation distance, and
- based on the factors outlined in this section, demonstrate the proposed separation distance poses a low risk of odour impact.

Depending on the factors identified in the risk assessment, the proponent may be recommended to engage a suitably qualified environmental consultant to do further work to demonstrate that an alternate separation distance is possible and appropriate.

Evidence that the proposed separation distance poses a low risk of odour may include an assessment of the presence, intensity, duration, and frequency of odour at the sensitive land use. EPA expects applications to include the use of site-specific data where possible. Tools that utilise observational/empirical data are generally of higher value than theoretical approaches.

The decision to vary a recommended separation distance and the conditions relevant to the development proposal is ultimately up to the decision maker. If the decision maker is unable to decide whether to vary a recommended separation distance after receiving information from the proponent, they may contact EPA for assistance.

5.3. Key assessment factors

The three key assessment factors that EPA recommends are taken into consideration when considering an application to vary a recommended separation distance for odour are:

- environmental and site-specific factors
- management practices and
- engineered controls.

As the management practices and engineering controls of every source of odour are unique, this section will only provide a general overview of the environmental and site-specific factors.

Environmental and site-specific factors that may influence the variation of or determine the acceptability of a recommended separation distance include the following:

5.3.1. Cumulative odour impacts

Cumulative odour impacts refer to odour impacts at a specific sensitive use from different sources. This guide does not address cumulative odour impacts from multiple sources. Instead, this document considers the potential impacts from a single source. Therefore, the onus will be on the agent of change to ensure that all likely odour generating industries have been identified and considered as part of the overall assessment provided to the decision maker.

The most common situation is an industrial precinct with several industries close to each other. Those industries are generally related to different activities and will in most circumstances emit odours which have different characteristics. In some instances, industries may be the same type or involve similar processes. In both scenarios, their respective separation distances may overlap, and it will be necessary to conduct an odour risk assessment.

Incompatibility example one

A proponent is seeking a location to build their new food manufacturing factory. The proponent will need to consider if the location of the food manufacturing factory is in proximity to facilities for the manufacture, production or storage of wastes, or chemical works. Emissions from these uses have the potential to affect food manufacturing processes.

5.3.2. Potential for inter-industry incompatibility

Certain industries are intrinsically incompatible and should not be co-located. This is often the case when industrial uses are near commercial or business uses. These situations are best addressed early at the planning phase to avoid land use conflict later in the development stages.

The reason for incompatibility is often quite particular and should be addressed on a case-by-case basis to ensure that appropriate planning solutions are reached.

Planning authorities should ensure that their strategic land use plans, policies and controls are appropriately framed for managing incompatible inter-industry uses. Designation of sub-precincts that are dedicated to certain industrial activities, within a larger industrial precinct, is an effective way to prevent and manage incompatible industries.

Incompatibility example two

A developer proposes establishing a business park near a meatworks factory that consists of an abattoir and a meat rendering plant.

Although the business park's proposed location would meet the recommended separation distance from the meatworks factory, odour exposure from the meatworks factory may affect certain types of uses within the business park.

Depending on the proposed zoning and planning controls, the business park may contain land uses sensitive to odour impacts such as gymnasiums, outdoor eating areas or cafes.

If the odour exposure is significant, this can affect the potential commercial viability of the businesses in the park and place an unreasonable constraint on the meatworks factory.

5.3.3. Interface land uses

Interface land uses are those that can be located within separation distances between industrial land uses and sensitive land uses. Interface land uses neither generate significant odour emissions, nor warrant protection from them.

Table 3 provides examples of activities and their suitability as interface land uses. This is not intended to be an exhaustive list of all activities. Other activities not listed should be assessed in accordance with the principles contained in this document.

Table 3: Suitable activities as interface land uses within an odour separation distance

Suitability	Land use
To be encouraged	Agriculture, car parks, emergency services facilities, natural systems, service stations, garden supplies, plant nursery, veterinary centre.
To be considered (subject to assessment)	Industry with no adverse amenity potential/risk of harm to human health and the environment, utilities (except for sewage works) offices, research centres, retail premises, informal outdoor recreation.
To be prevented	Land uses sensitive to odour and dust - including dwellings, hospitals, aged care facilities, education centres, childcare centres, places of worship, corrective institutions.

Note: Specific guidance for uses within odour separation distances for landfills is included in *Landfill buffer guideline* (EPA publication 1950).

5.3.4. Land use transition

Land use transition is also a factor to consider in determining whether a recommended separation distance is acceptable. This can include development of strategic land use plans to transition areas to a new land use or formal indication that an industry will transition out of an area over a specified timeframe.

5.3.5. Other site-specific factors

The recommended separation distances listed in Table 2 may not be appropriate in some instances due to:

- industries being unusually large and/or complex when compared to other similar operations or
- having unique configurations of odour sources or advanced control technologies when compared to other similar operations

It is the responsibility of the agent of change to identify such situations and provide details that will be considered in an odour risk assessment.

5.3.6. Topography

Specific topographic features, such as valleys and hills, are a common factor that may influence the risk of odour impacts.

Incompatibility example

A proposed industrial facility has a recommended separation distance of 1,000 metres, and sensitive uses are located 1,300 metres from the site.

The proposal meets the recommended separation distance.

The sensitive uses are located down a valley with respect to the proposed facility.

There is a potential for odour plumes emitted from the facility to disperse towards the sensitive land use in the valley, resulting in odour impacts.

The proponent, being the agent of change, engages a suitably qualified environmental consultant to undertake an odour risk assessment and finds that the separation distance of 1,000 metres is not acceptable.

5.3.7. Meteorology

Another common factor that can impact the acceptability of a recommended separation distance is the occurrence of prevailing winds which can transport odour plumes towards sensitive receptors. A risk assessment may be recommended to consider the frequency of the wind direction towards these sensitive receptors to confirm the acceptability of the recommended separation distance or the need for a more suitable distance to protect sensitive receptors.

Incompatibility example

A developer is preparing a proposal for the development of several residential dwellings that are located 600 metres from an existing industrial facility. The recommended separation distance from this facility is 500 metres.

The area experiences frequent strong winds and odour complaints have been received from community members located near the 500-metre separation distance. For the development proposal to continue, the developer needs to better understand the risks of the odour impacts on the proposed sensitive use and engages a suitably qualified environmental consultant to undertake an odour risk assessment.

Although the proposal can meet the recommended separation distance, the odour assessment finds that a separation distance of 600 metres is not acceptable for the following reasons:

- the prevailing winds are mostly light to moderate in the direction of the sensitive land use from the industry.
- the source of the odour is frequent and continuous, predominantly at ground level.

6. Dust

Dust is a common air pollutant that can result in unsightly soiling of surfaces, create visible plumes and reduce visibility. All of these are amenity impacts that can affect people's wellbeing. Repeated exposure to these nuisance levels of dust can negatively affect people's quality of life as it may cause frustration, stress, discomfort, or annoyance. Dust can also have adverse effects on human health, particularly for people who already have respiratory conditions, such as asthma.

Dust particles vary in size from coarse (non-inhalable), to fine (inhalable), to very fine (respirable). Coarse dust particles generally only reach as far as the inside of the nose, mouth, or throat. Smaller or fine particles, however, can get much deeper into the sensitive regions of the respiratory tract and lungs. These small dust particles have a greater potential to cause serious harm to human health.

Commonly, particles in airborne dust tend to be coarse or non-respirable and do not pose a serious health threat to the public. However, people with respiratory conditions, may experience difficulties. The separation distances in this guideline apply to nuisance dust in this context.

For applications where air pollution rather than nuisance dust needs to be assessed or managed refer to *Guidance on assessing and managing air pollution in Victoria* to (EPA [publication 1961](#)).

6.1. Separation distances for dust

Table 4 lists the industries with recommended separation distances for dust as they arise from normal operating conditions. The table contains a definition of each industry and, in some cases, information of the throughput or specifications of the industry.

If the industry is a likely dust generator but is not listed in this table, a risk assessment should be undertaken by the proponent unless written advice is provided by EPA.

Table 4: Recommended separation distances for dust

Industry type	Industry activity/definition	Scale and description	Recommended separation distance (m)	Further guidelines, references and exceptions
Food, beverages and manufacturing				
Flour mill	Production of flour	> 200 t/yr	250	
Mining and extractive industry				
Coal handling and storage without mining	Crushing, milling, stockpiling and transferring extracted coal	< 1 tonne per day or a storage capacity up to 50 tonnes	500	
		> 1 tonne per day or a storage capacity greater than 50 tonnes	1,000	
Mine for other minerals	Crushing, screening, stockpiling and conveying of other minerals		250*	EPA publication 1961 <i>Guideline for Assessing and Minimising Air Pollution in Victoria</i>
Open cut coal mine	Harvesting, crushing, screening, stockpiling and conveying of coal		2,000*	EPA publication 1961 <i>Guideline for Assessing and Minimising Air Pollution in Victoria</i>
Quarry	Quarrying, crushing, screening, stockpiling and conveying of rock	Without blasting	500	Can be reduced to 250 m if activity is substantially below ground level (> 10 m) EPA publication 1961 <i>Guideline for Assessing and Minimising Air Pollution in Victoria</i>
		With blasting	500	EPA publication 1961 <i>Guideline for Assessing and Minimising Air Pollution in Victoria</i>
		With respirable crystalline silica	500	EPA publication 1961 <i>Guideline for Assessing and Minimising Air Pollution in Victoria</i>
*Mining and extractive industry separation distances marked with an asterisk are minimum distances and should not be varied.				
Miscellaneous manufacturing				
Abrasive blasting	Blasting of metal objects in the open	Wet abrasive cleaning	300	
		Dry abrasive cleaning	500	
	Blast cleaning cabinets	< 5 m ³ in volume or totally enclosed	50	
		> 5 m ³ in volume	100	

Non-metallic mineral products				
Cement clinker grinding	Grinding of cement clinker, clays or limestone materials	< 150,000 t/yr	250	
		> 150,000 t/yr	500	
Concrete and stone article manufacture	Production of finished concrete or stone products	> 5,000 t/yr	100	
Concrete plant	Production of concrete	> 5,000 t/yr	100	<i>Planning guidance for concrete batching</i> (EPA publication 1751)
Glass, glass products and rock wool manufacturing	Manufacturing glass, glass products, glass wool or rock wool		500	
Plaster and plaster article manufacture	Production of finished plaster products	> 5,000 t/yr	100	
Waste management				
Landfill			See further guidelines	See <i>Landfill buffer guideline</i> (EPA publication 1950)
Materials recovery and recycling facility	Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials		250	
Transfer station	Collecting, consolidating, temporarily storing, sorting or recovering refuse or used materials before transfer for disposal or use elsewhere		250	
Wood, wood products and furniture				
Sawmill	Sawing, milling, chipping, debarking and hogging		500	
	Handling, cutting and processing logs into timber, including timber drying/seasoning		200	

Note: The set separation distance applied to the processing area for tunnel boring machine spoil is set out in the Environment Protection (Management of Tunnel Boring Machine Spoil) Regulations 2020. The separation distances listed in this guideline are not applicable.

6.2. Variation of recommended separation distances for dust

If a proponent wishes to seek a variation of a recommended separation distance for dust from a decision maker, they should complete a risk assessment in support of their application. EPA recommends a proponent only seek to vary a recommended separation distance if the risk

assessment determines that an alternate separation distance is appropriate, based on consideration of the factors in *Guidance for assessing nuisance dust* (EPA publication 1943).

To seek a variation of a recommended separation distance, the proponent should:

- provide a risk assessment based on the source, pathway, receptor model, considering cumulative impacts where relevant
- based on the findings of the risk assessment, propose an alternative separation distance, and
- demonstrate that the proposed separation distance poses a low risk of dust impact.

Depending on the factors identified in the risk assessment, the proponent may be recommended to engage a suitably qualified environmental consultant to do further work to demonstrate that an alternate separation distance is possible and appropriate.

Evidence that the proposed separation distance poses a low risk of harm from dust may include an assessment of the size of the dust source, the type of dust emission, the frequency, intensity and duration of the dust emission and the level of dust control implemented.

If the decision maker is unable to decide after receiving additional information to vary a recommended separation distance, they may contact EPA for assistance. The decision to vary a recommended separation distance and the conditions relevant to the development proposal is ultimately up to the decision maker.

Bibliography

The following documents have been referenced while preparing this guideline.

AS/NZS 3580 series. Methods of sampling and analysis of ambient air; Standards Australia, Sydney.

AS/NZS 4323.1:1995. Stationary source emissions - Selection of sampling positions, Standards Australia, Sydney.

AS/NZS 4323.3:2001. Stationary source emissions Part 3: Determination of odour concentration by dynamic olfactometry; Standards Australia, Sydney.

Bull et al (2018). IAQM Guidance on the assessment of odour for planning – version 1.1, Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/odour-guidance-2018

Bydder, C & Demetriou, J, Establishing the extent of odour plumes and buffers for waste handling facilities, Waste Management, Vol 95, pp 356–364 June 2019.

Clean Air Strategic Alliance (CASA). Good Practices Guide for Odour Management in Alberta, From Prevention and Mitigation to, Assessment and Complaints., 2015, Edmonton.

Department of Environment, Land, Water and Planning; Clause 52.10 Uses with Adverse Amenity Potential, Victoria Planning Provisions,

Department of Primary Industries, Victorian Code for Broiler Farms 2009,

Department of Water and Environmental Regulation (Western Australia) Guideline: Odour emissions (June 2019).

Environment Protection Authority (South Australia) Evaluation distances for effective air quality and noise management (August 2016)

EPA Victoria. Assessing planning proposals within the buffer of a landfill (EPA publication 1642)

EPA Victoria. Best Practice Environmental Management for Siting, design and rehabilitation of landfills (EPA publication 788.3)

EPA Victoria. Designing, constructing and operating composting facilities (EPA publication 1588)

EPA Victoria. Recommended separation distances for industrial residual air emissions (EPA publication 1518)

National Guidelines for Beef Cattle Feedlots in Australia Appendix B. – Separation distance guidelines –

National Odour Guideline for Piggeries (2010) Australian Pork.

New Zealand Ministry for the Environment Good Practice Guide for Assessing and Managing Odour. 2016, Wellington:

Victorian Government, State Environment Protection Policy (Air Quality Management) (SEPP(AQM))

Williams, & Schiffman. (2005). Science of Odour as a Potential Health Issue. J. Environ. Qual., 34, 129-138.

Appendix A: Planning context

Planning and Environment Act 1987

The P&E Act establishes the legislative framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians.

Section 4A of the P&E Act provides for the preparation of the Victoria Planning Provisions (VPP), a state-wide template for all Victorian planning schemes to ensure that consistent provisions for various matters are maintained across Victoria and that the construction and layout of planning schemes is always the same.

A planning scheme is subordinate legislation which sets out objectives, policies and provisions relating to the use, development, protection and conservation of land in the area to which it applies. A planning scheme regulates the use and development of land through planning provisions to achieve these objectives and policies.

When preparing a planning scheme or planning scheme amendment, the P&E Act requires a planning authority to consider any significant effects this scheme or amendment might have on the environment (Section 12 P&E Act).

Section 60 also requires the responsible authority, before deciding on a planning permit application, to consider any significant effects which the responsible authority considers the use or development may have on the environment or which it considers the environment may have on the use or development. These 'significant effects' include odour and dust emissions as well as landfill gas migration.

Victoria Planning Provisions (VPP)

The VPP ensure a consistent approach for land use planning across Victoria. Several clauses within the VPP refer to the need to separate incompatible land uses, including:

- Clause 13.06-1S (Air quality management) relates to protection of air quality by ensuring, wherever possible, suitable separation between land uses that reduce amenity and sensitive land uses.
- Clause 13.07-1S (Land use compatibility) seeks to protect community amenity, human health and safety while facilitating appropriate commercial, industrial, infrastructure or other uses with potential adverse off-site impacts. To achieve this, the use of land use separation is included as a relevant strategy.
- Clause 53.10 (Uses and activities with potential adverse impacts) includes a list of uses or activities which if not appropriately designed and located may cause offence or unacceptable risk to the neighbourhood. This clause specifies threshold distances applicable for various industry types.
- Clause 17.03-1S (Industrial land supply), clause 17.03-2S (Sustainable industry) and clause 17.03-3S (State significant industrial land) deal with industry operation and availability of land for industry. These clauses include strategies to ensure appropriate buffer areas can be provided to sensitive land uses and to protect industrial uses from encroachment of sensitive land uses which would adversely affect the industry's viability.

- Clause 44.08 Buffer Area Overlay is a tool that can be used to identify areas where there is the potential for offsite impacts on safety and human health or significant offsite impacts on amenity.
- Clause 65.01 requires that, before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate, the effect on the environment, human health and amenity of the area.
- Clause 66 sets out the kinds of applications that must be referred under section 55 of the P&E Act, or for which notice must be given under section 52(1)(c). EPA is a determining referral authority for a range of planning applications, including any proposal for land use or development which requires approval and licensing under the EP Act.
- Clause 66.02 -7 requires any proposal to use land for an industry, utility installation or warehouse for a purpose listed in clause 53.10, with no threshold distance specified or if the threshold distance is not to be met, to be referred to EPA under section 55 of the P&E Act as a determining referral authority. These circumstances indicate that an increased level of assessment is required, hence the statutory referral to EPA.

Appendix B: Separation distances for odour emissions from wastewater treatment plants

Wastewater treatment plants are linked to the size of the population that they serve. Generally, if the population that the infrastructure serves grows, then the size of the separation distance will need to increase. The exception to this is if the treatment process is upgraded, for example from the use of facultative ponds to an aerobic pondage system.

The recommended separation distance for wastewater treatment plants should be determined in consultation with EPA. Wind regimes, topography, waste-loading, treatment/disposal methods and design capacity should be considered.

The equations and distances shown in Table 5 should be used when considering proposals for new and existing wastewater treatment plants.

Table 5: Recommended separation distances for wastewater treatment plants (in metres)

Type of installation	Separation distance in m (n = equivalent population) ²
Mechanical/biological wastewater plants	$= 10n^{1/3}$
Aerobic pondage systems	$= 5n^{1/2}$
Facultative ponds	$= 10n^{1/2}$
Disposal areas for secondary treated effluent by spray irrigation	200
Disposal areas for secondary treated effluent by flood irrigation	50

Example of how to use this table:

What is the recommended separation distance for an aerobic pondage system serving an equivalent population of 10,000 people?

$$\text{Distance} = 5n^{1/2} \text{ (where } n=10,000\text{)}$$

$$\text{Distance} = 5 \times (10,000)^{1/2}$$

$$\text{Separation distance} = 500 \text{ m}$$

² Equivalent population is defined in terms of the biological oxygen demand on the wastewater being treated, one-person equivalent is eq

- *Code of practice for small wastewater treatment plants* (EPA publication 500), which states a typical biological oxygen demand (BOD) load of 50 g BOD/person/day
- *Code of practice onsite wastewater management* (EPA publication 891) Table 4 suggests an organic material loading rate of 60 g BOD/person/day.

Appendix C: Separation distances for composting operations

[Designing, constructing and operating composting facilities](#) (EPA publication 1588)

(<https://www.epa.vic.gov.au/about-epa/publications/1588-1>), is the main point of reference for composting applications requiring EPA approval except where separation distances as identified in Table 6 apply. EPA is preparing planning guidance on assessing an application for a composting facility that will provide information for smaller facilities not requiring EPA approval. Although composting facilities will emit nuisance dust, odour is the determining factor with respect to separation distances.

Publication 1588 provides separation distances for two examples of composting facilities, Therefore, the separation distances in this appendix cover a larger range of technologies and are based on feedstocks, process design and site capacity. Table 6 provides a list of separation distances for composting facilities based on feedstock, technology used, and the amount of material processed each year.

The technology listed is the recommended minimum technology appropriate to handle the waste type it is listed against. Where a separation distance cannot be achieved, a higher order technology is recommended. For example, if the technology from reference facility 3 was used to process low risk feedstocks, it would have the separation distances quoted for reference facility 3 and require the shorter separation distance than reference facility 1.

Table 6: Recommended separation distances for reference composting facilities

No.	Types of feedstock acceptable (See publication 1588)	Technology	Size of the plant (tonnes/year)	Recommended separation distance (metres)
1	Lowest risk wastes	<ul style="list-style-type: none"> Open air receipt Open turned windrow Open air maturation 	1200	400
			5000	650
			12000	1100
			20000	1500
			36000	2000
			50000	2200
			> 50000	Case by case
2	Up to medium risk waste	<ul style="list-style-type: none"> Outdoor covered windrows Continuous aeration Open air maturation 	1200	400
			5000	600
			12000	850
			20000	1100
			36000	1400
			50000	1600
			> 50000	Case by case
3	Up to high-risk wastes		1200	200

No.	Types of feedstock acceptable (See publication 1588)	Technology	Size of the plant (tonnes/year)	Recommended separation distance (metres)
		<ul style="list-style-type: none"> • Receival directly to processing bunkers • Outdoor covered windrows in bunkers, semi-permeable covers (i.e., PTFE) • SCARTA controlled aeration • Open air maturation 	5000	400
			12000	600
			20000	750
			36000	950
			50000	1000
			> 50000	Case by case
4	Up to highest risk wastes	<ul style="list-style-type: none"> • Under cover receival • Enclosed aerobic composting • Under cover air maturation with • Odour capture and treatment equipment. 	1200	200
			5000	350
			12000	430
			20000	500
			36000	550
			50000	600
			> 50000	Case by case
Note: open air static pile composting is not encouraged except for low volumes (< 1200 t/yr) of low-risk wastes.				

Appendix D: Land use definitions

Table 7: Land use definitions

Land use	Definition
Industrial land use	Any land that is used for, or is identified in a planning scheme or through a planning permit as being suitable for, industrial uses / activities listed in Tables 2 and 4 of this guideline.
Sensitive land use in the context of odour and dust emissions	<p>Any land use that requires a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment.</p> <p>Examples* of such sensitive land uses include, but are not limited to:</p> <ul style="list-style-type: none"> • dwellings and private open space (including detached dwellings, multiple dwellings, flat/apartment buildings, row dwellings and semi-detached dwellings) • accommodation (excluding caretaker's residence) • child care centres • education centres • informal outdoor recreation that is adjacent to residential zones • camping and caravan parks • indoor recreation facility • medical centres • hospitals • residential aged care facility and retirement villages • outdoor recreation facility, open sports grounds, (regular public use, for example sporting fields) adjacent to residential zones.

***Note:** examples are based on the land use terms defined in clause 73.03 (land use terms) of the VPP. If the terms in the VPP do not correspond with this list, contact EPA for advice. For this guideline, the term sensitive land use includes sensitive receptors.



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1. Introduction

1.1. Purpose

The purpose of this guideline is to support land use and development decisions that:

- protect human health and amenity from the effects of pollution and waste associated with operating and closed landfills
- protect landfills from inappropriate land use and development nearby that may constrain operations.

This guideline is intended for planning authorities, responsible authorities, industry, developers, the community and Environment Protection Authority (EPA). It provides guidance on what to consider when preparing and assessing planning scheme amendments and planning permit applications for landfills, or those that would lead to use or development within the buffer of an operating or closed landfill.

EPA will have regard to this guideline when assessing EPA permissions applications for landfills, including for development and operating licences and permits. More information about EPA permissions, including for landfills, is available on the [EPA website](https://www.epa.vic.gov.au/for-business/permissions) (<https://www.epa.vic.gov.au/for-business/permissions>).

The guideline is intended to provide all relevant information about buffers for landfills. The guideline sets out:

- human health and amenity risks posed by landfills
- separation distances for landfills
- appropriate land uses within landfill buffers.

It also sets out a process to determine the level of assessment a decision maker (planning authority, responsible authority or state agency) should require to inform their decision, and recommends a staged, risk-based approach.

This guideline contributes to the **state of knowledge** (www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance) – the general body of knowledge about the harm or risks of harm to human health and the environment, including the controls for eliminating or reducing those risks. It is expected that the state of knowledge will improve over time as new knowledge and opportunities to better manage risk are established.

The information in this guideline replaces sections 5.1.5, 8.2.1 and 8.2.2 of [Siting, design, operation and rehabilitation of landfills](https://www.epa.vic.gov.au/about-epa/publications/788-3) (Landfill BPEM) (EPA publication 788) (<https://www.epa.vic.gov.au/about-epa/publications/788-3>).

Note: For information about recommended separation distances for other uses/activities, please see *Separation distance guideline* (EPA publication 1949).

1.2. Scope

This guideline is intended to support land use and development decisions for and around landfills under the *Planning and Environment Act 1987* (P&E Act) and the *Environment Protection Act 2017*

(EP Act). Compliance with this guideline does not constitute compliance with the EP Act, including the general environmental duty.

This guideline does not include advice relating to the day-to-day operation and management of a landfill. This advice is contained within the Landfill BPEM.

This guideline is not to be used retrospectively to require an existing landfill operating in accordance with all relevant statutory obligations to comply with a buffer listed. However, it may be used to determine a buffer to inform land use and development decisions surrounding an existing landfill, or to assess a proposed expansion of an existing landfill.

1.3. Definitions

<p>Separation distance</p>	<p>A separation distance:</p> <ul style="list-style-type: none"> • is a distance between incompatible land uses where there are likely to be adverse human health or amenity impacts • typically occurs between an industrial (or sometimes commercial) land use and a sensitive land use • is used as a tool to determine whether the siting of a proposed land use or development is suitable in the context of surrounding land uses.
<p>Buffer</p>	<p>A buffer:</p> <ul style="list-style-type: none"> • is land used to separate or manage incompatible land uses, often industrial uses and sensitive uses, to ensure land use compatibility and avoid land use conflict • may contain multiple separation distances that respond to various risks to human health and amenity <p><i>For landfills, the buffer is made up of separation distances responding to multiple risks, including landfill gas, odour and dust. The landfill buffer will extend to the largest of these separation distances.</i></p> <ul style="list-style-type: none"> • does not need to stop the use and development of land – instead, it ensures land use and development responds to the risks posed and allows for a transitional area of land between two distinct land uses to lessen the risk of harm posed by one land use type on another. <p>Refer to Planning Practice Note 92: <i>Managing buffers for land use compatibility</i> for further information.</p>

<p>Sensitive land use</p>	<p>Whether a land use is deemed sensitive depends on the particular risk posed.</p> <p>In the context of landfill gas:</p> <ul style="list-style-type: none"> any building or structure including underground infrastructure such as pipelines is considered sensitive, because of the risk of explosion or asphyxiation. <p>In the context of human health and amenity impacts from landfills (which may include odour, dust, noise and litter):</p> <ul style="list-style-type: none"> any land use or zone that requires a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment is considered sensitive. <p>Examples of sensitive land uses include, but are not limited to:</p> <ul style="list-style-type: none"> dwellings and private open space (including detached dwellings, multiple dwellings, flat/apartment buildings, row dwellings and semi-detached dwellings) accommodation (excluding caretaker's residence) child care centres education centres informal outdoor recreation, adjacent to residential zones camping and caravan parks indoor recreation facility medical centres hospitals residential aged care facility and retirement villages outdoor recreation facilities, open sports grounds, (regular public use, for example sporting fields) adjacent to residential zones. <p>Note: The above land use terms are based on those defined in clause 73.03 (land use terms) and clause 73.04 (nesting diagrams) of the VPP. If the terms in the VPP do not correspond with this list, contact EPA for advice.</p> <p>Examples of zones that require a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment include but are not limited to:</p> <ul style="list-style-type: none"> Activity Centre Zone Capital City Zone Commercial 1 Zone Docklands Zone residential zones Rural Living Zone.
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2. Legislative framework

The P&E Act and the VPP provide the basis for the regulation of land use planning and development. Separation distances are a preventative tool to manage land use conflicts. EP Act intent is embedded in VPP through consideration of the risks and impacts of use and development on human health and the environment.

The EP Act provides a statutory framework for industry and preventative approach to protecting human health and environment from the impacts of pollution or waste. Information about the EP Act including the [general environmental duty](https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty) (GED) (<https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty>), [state of knowledge](https://www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/state-of-knowledge-and-industry-guidance>) and what [reasonably practicable](https://www.epa.vic.gov.au/about-epa/laws/new-laws/what-is-reasonably-practicable) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/what-is-reasonably-practicable>) means can be found on the [EPA website](https://www.epa.vic.gov.au/about-epa/laws/new-laws/new-environmental-laws-for-all-victorians) (<https://www.epa.vic.gov.au/about-epa/laws/new-laws/new-environmental-laws-for-all-victorians>).

EPA has specific guidance available for landfills, which contributes to the state of knowledge. This includes (but is not limited to) the following:

- [Best practice environmental management – Siting, design, operation and rehabilitation of landfills](https://www.epa.vic.gov.au/about-epa/publications/788-3) (Landfill BPEM, publication 788) (<https://www.epa.vic.gov.au/about-epa/publications/788-3>)
- [Best practice guidelines for landfills accepting Category C prescribed industrial waste](https://www.epa.vic.gov.au/about-epa/publications/1208) (publication 1208) (<https://www.epa.vic.gov.au/about-epa/publications/1208>)
- [Waste disposal categories – characteristics and thresholds](https://www.epa.vic.gov.au/about-epa/publications/1828-2_) (publication 1828) (https://www.epa.vic.gov.au/about-epa/publications/1828-2_)
- [Landfill licensing guidelines](https://www.epa.vic.gov.au/about-epa/publications/1323-3) (publication 1323) (<https://www.epa.vic.gov.au/about-epa/publications/1323-3>)

For further information:

- Appendix 1 includes a summary of the relevant planning policy references for separation distances for landfill buffers.
- Appendix 2 includes more detail about where to find information about landfills.

3. EPA's role in land use planning for landfills

Land use planning has an important role in achieving the purpose of the EP Act - the protection of human health and the environment from pollution or waste. However, land use and development within separation distances or buffers is not controlled by EPA. Planning and responsible authorities determine permitted land use and development through implementing the planning scheme, including within separation distances. Separation distances are implemented through appropriate planning policies and controls (including zones and overlays), and by making decisions on individual planning permit applications.

EPA's involvement in land use planning occurs through both statutory and strategic planning mechanisms:

- EPA is a statutory referral authority for some land use planning proposals under the P&E Act. EPA may be a determining or recommending authority as set out in clause 66 of the VPP. Where EPA is a determining referral authority and objects to a proposal, the responsible authority must refuse to grant the permit. In instances where EPA specifies conditions, these must be included on any permit granted.
- Ministerial Direction 19 requires planning authorities to seek early advice from EPA when undertaking strategic planning processes and preparing planning scheme amendments that may significantly impact Victoria's environment, amenity or human health due to pollution and waste.
- EPA also has a role in proposals to apply the Buffer Area Overlay (BAO). Planning Practice Note 92: *Managing buffers for land use compatibility* sets out the steps to be taken when considering its application.

This guideline informs EPA's response to statutory and strategic planning matters where landfill buffers are relevant. EPA uses its environmental expertise to assist planning and responsible authorities with understanding the environmental risks associated with certain planning and development decisions.

EPA can assist with land use and development decisions by providing information on the best available techniques and technologies. EPA can provide guidance for environmental protection and apply regulatory interventions where appropriate.

EPA also has a role in assessing applications for new and amended permissions for industry under the EP Act. Depending on the risk and type of activity this may be a licence, permit or registration. There are some instances where a proposal may require both a planning permit and EPA permission. While EPA's assessment for both will consider the impact and risk of harm from pollution and waste, the planning assessment focuses on the land use being proposed, whether it is sited appropriately and compatible with surrounding uses. The permission assessment focuses on the design and operation of the activity. The trigger for the assessment is also under different Acts – the EP Act and the P&E Act.

4. Why are risks from landfills an important planning consideration?

Landfills are an important part of Victoria's waste management infrastructure. However, they can also have impacts on the surrounding environment and community during operation and long after they have closed. In particular:

- **Operating** landfills can discharge landfill gas, offensive odour, noise, litter and dust.
- **Closed** landfills can discharge landfill gas for more than 30 years after they last accept waste.

At the time of publication, Victoria has more than 80 operating landfills and more than 200 closed landfills. It is also worth noting, there are inactive and informal or legacy landfills across Victoria with little or no historical information publicly available. These are difficult to manage through the planning process. If an applicant or council is aware of such cases, the assessment process below can be used to determine the appropriate level of assessment.

Landfill buffers are used to separate landfills and sensitive land uses and to manage the risk of:

- landfill gas migration from operating and closed landfills
- human health and amenity impacts from operating landfills, including odour, noise, dust and litter.

Landfill buffers are not an alternative to landfill operators meeting their statutory obligations, including controlling offsite impacts. Landfill buffers recognise that even when landfills are operating in accordance with all relevant statutory obligations, there will still be offsite impacts. Landfill buffers are an important tool to protect both the continued operation of the landfill, as well as to protect the health and amenity of the surrounding community.

Protection of landfill buffers is particularly important given that landfill gas can be discharged for at least 30 years after waste is last accepted. The exact amount of time varies for each landfill and depends on a range of operational and environmental conditions.

5. Human health and amenity risks posed by landfills

5.1. Landfill gas

Landfill gas is primarily generated by the decomposition of organic waste in a landfill. It poses a human health and amenity risk for operating and closed landfills.

The amount of landfill gas generated depends on the size and age of the landfill and the type of waste within it. Putrescible waste (such as household waste) degrades more quickly than solid inert waste (such as construction waste) and produces more landfill gas.

Landfill gas continues to generate within a landfill for many years after the landfill stops accepting waste. Peak production of landfill gas generally occurs one to two years after waste is last placed, but production can continue for over 30 years.

Landfill gas can be flammable, explosive, toxic, corrosive, odorous and present an asphyxiation (suffocation) hazard.

The risk posed by landfill gas to nearby development depends on the:

- source and magnitude of the gas hazard
- pathway (likelihood of gas reaching the development and accumulating in such volumes and concentrations to become dangerous)
- receptor (sensitivity of the development).

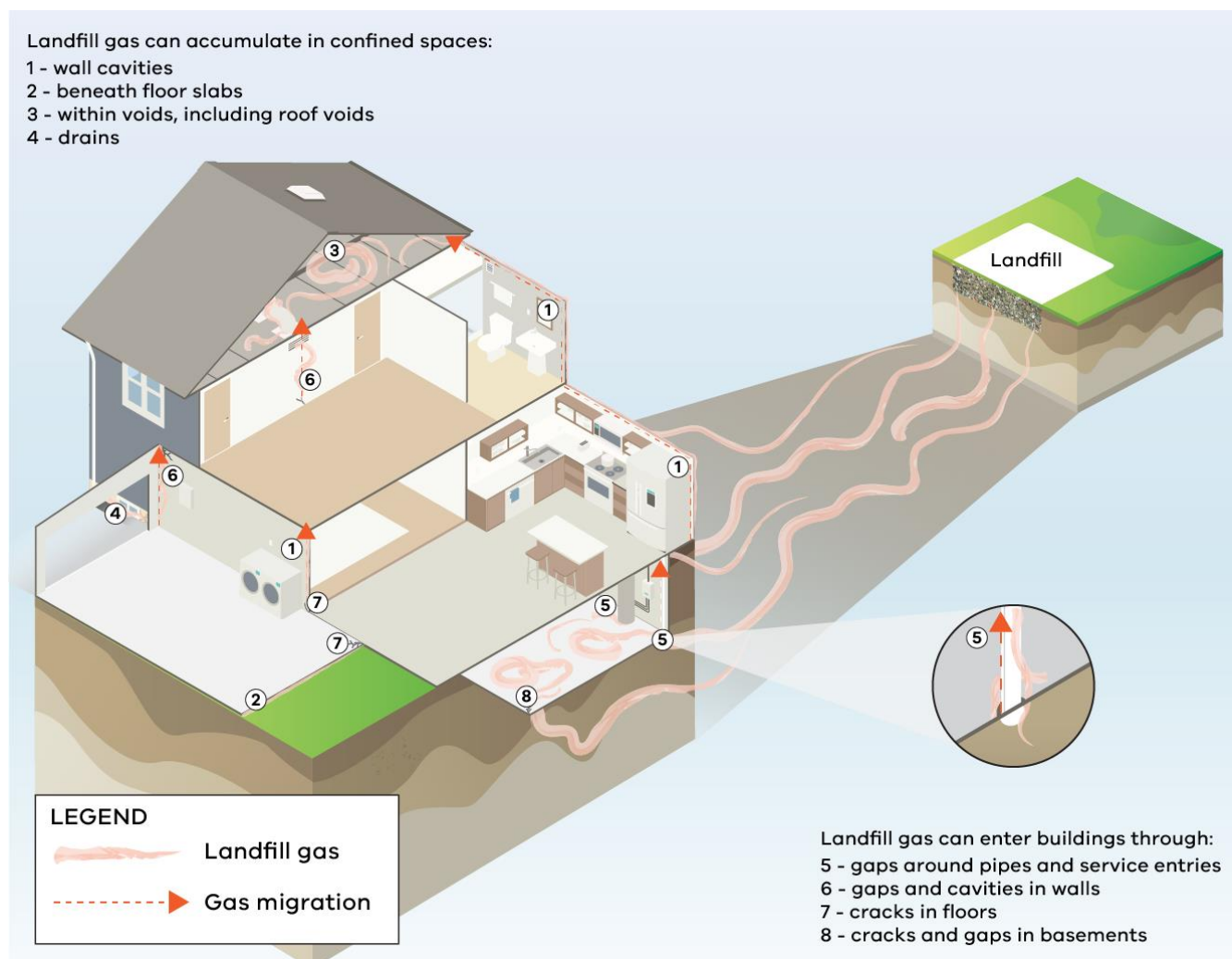


Figure 1. Examples of landfill gas exposure pathways

Source:

If there is a build-up of landfill gas pressure in a landfill, the gas can move outward and upward. The risk is influenced by the extent/size of the gas hazard.

Pathway:

The landfill gas pathway will be affected by:

- the design of the landfill – best practice landfill design includes landfill liners, leachate collection systems, landfill gas extraction and treatment systems and landfill caps to reduce the risk of vertical landfill gas migration
- the geology of the subsurface between the landfill and the receptor – permeable geologies such as sands and fractured rock allow landfill gas to migrate more easily than less permeable geology such as clay.

Receptor:

Landfill gas accumulation in buildings and structures poses a risk to human health.

Underground service utilities in proximity to landfills can also be preferential pathways for landfill gas.

Gas can enter buildings through:

- gaps around pipes and service entries
- gaps and cavities in walls
- cracks in floors
- cracks and gaps in basements.

Gas can accumulate in confined spaces, such as:

- wall cavities
- beneath floor slabs
- within voids, including roof voids
- drains.

5.2. Odour

Odour from an operating landfill can be caused by a range of operational issues, but generally falls into three categories:

1. fresh waste odour
2. landfill gas odour
3. other odours, such as from sub-surface hotspots.

Landfill owners and operators are required to take all reasonably practicable measures to minimise odour impacts from their operations, however there will be instances where odour issues will occur even when all reasonably practicable controls are in place.

The primary causes of **fresh waste odour** are:

- lack of a cover over the waste at the end of the day's operations. It may not be deep enough to cover the waste, or an inappropriate type of material has been used
- poor tip face management, resulting in an excessively large area of fresh waste being exposed at the end of the day
- poor acceptance procedure, which fails to identify highly odorous loads that need to be covered immediately.

The primary causes of **landfill gas odour** are more complex but at a high level include:

- poorly performing or lack of a landfill gas collection system
- inadequate capping – this could contribute to landfill gas coming through the cap or limit the ability to draw gas from the waste mass

- poor leachate management – leachate can be an odour source in itself and also lead to the gas extraction system becoming flooded and limiting its ability to remove gas from the waste mass.

The primary causes of **hotspot odour**:

- hotspots are generally formed when air enters the waste mass through the over-abstraction of landfill gas, open leachate sumps or areas of the landfill with thin cover material. They can also occur through the burial of hot loads and by chemical reactions.
- hotspots typically occur in operating landfills. Once established they can be difficult to extinguish and can result in offsite odour for several months to years.

5.3. Noise

Noise from an operating landfill can be caused by:

- trucks, including engine and exhaust noise and reversing 'beepers'
- communications systems, such as PA systems and external telephone bells
- machinery and equipment used for resource recovery operations, for example concrete crushing equipment.

5.4. Litter

Litter, such as plastic bags, may be carried by the wind and impact areas near the landfill.

Offsite litter impacts are influenced by:

- weather – greater impacts may be expected on windy days
- orientation and elevation of the tipping area in the landfill
- the litter control strategy of the landfill, which may include measures such as litter screens and fencing.

5.5. Dust

Dust can be generated by traffic associated with the landfill, earth stockpiles at the landfill or the delivery of dusty loads.

Dust impacts are influenced by:

- weather – greater impacts may be expected on windy days
- presence of natural or constructed wind breaks
- dust suppression activities (sprinklers etc.)
- if the roads within/to the landfill are sealed/unsealed.

6. Landfill buffers

6.1. Classifying landfills

Landfills are classified according to the type of waste they accept. Different default buffers apply depending on the type of waste accepted by the landfill.

This guideline includes recommended buffers for Type 2 and 3 landfills (see Table 1 below).

These types of landfills may accept the following waste:

- putrescible (municipal) waste, such as household wastes
- category C priority waste as defined in the *Environment Protection Regulations 2021*
- solid inert waste, such as construction wastes
- fill material.

Table 1. Classification of landfills

Type	Waste accepted	Description
1	<p>Priority waste including Category B waste as defined in Schedule 6 of the <i>Environment Protection Regulations 2021</i></p> <p><u>Waste disposal categories – characteristics and thresholds</u> (publication 1828) (https://www.epa.vic.gov.au/about-epa/publications/1828-2)</p>	<p>Contact EPA for advice.</p> <p>Type 1 landfills are complex and are not covered in this guidance.</p>
2	<p>Putrescible (municipal) waste, solid inert waste and fill material.</p> <p>Some sites may also be licensed to receive specific types of priority wastes (category C, asbestos etc)</p>	<p>Reflects the best available technology for a municipal landfill in siting, design, construction, operation, maintenance and after-care.</p> <p>Operated in accordance with an appropriate management system that ensures adequate supervision, control on waste receipt, safe handling, record keeping and placement of prescribed waste in accordance with the requirements for that waste.</p>
3	<p>Solid inert waste, fill material.</p>	<p>Reflects best available technology for a municipal landfill in siting, design, construction, operation, maintenance and after-care.</p>

6.2. Default buffers

Table 2 below summarises the default buffers for different landfill types. This includes separation distances to account for:

- landfill gas migration
- human health and amenity risks (odour, dust, noise, litter)
- safety considerations including bird strike
- protection of surface waters.

The buffers should be applied to a new, expanding or varied landfill, and to new or varied use or development seeking to establish in proximity to a landfill. Section 8 provides detailed information on how to measure buffers for both closed and operating landfills.

Table 2. Landfill buffers

Landfill type	Buffers
<p>Landfill accepting municipal (putrescible) waste (Type 2)</p> <p>Tip face up to 500 m²</p>	<p>Landfill gas:</p> <ul style="list-style-type: none"> • 500 metres from buildings or structures <p>Human health and amenity impacts:</p> <ul style="list-style-type: none"> • 500 metres from sensitive land uses <p>Water quality:</p> <ul style="list-style-type: none"> • 100 metres from surface waters <p>Bird strike:</p> <ul style="list-style-type: none"> • 1,500 metres from an aerodrome for piston-engine propeller-driven aircraft* • 3,000 metres from an aerodrome for jet aircraft*
<p>Landfill accepting municipal (putrescible) waste (Type 2)</p> <p>Tip face greater than 500 m²</p>	<p>Landfill gas:</p> <ul style="list-style-type: none"> • 500 metres from buildings or structures <p>Human health and amenity impacts:</p> <ul style="list-style-type: none"> • 1,500 metres from sensitive land uses. This may be varied to a minimum of 1,000 metres with an appropriate odour risk assessment that demonstrates an alternative buffer is acceptable (refer to <i>Guidance for assessing odour</i> EPA publication 1883). <p>Water quality:</p> <ul style="list-style-type: none"> • 100 metres from surface waters <p>Bird strike:</p> <ul style="list-style-type: none"> • 1,500 metres from an aerodrome for piston-engine propeller-driven aircraft* • 3,000 metres from an aerodrome for jet aircraft*

<p>Landfill accepting solid inert waste (Type 3)</p>	<p>Landfill gas:</p> <ul style="list-style-type: none"> • 200 metres from buildings or structures <p>Human health and amenity impacts:</p> <ul style="list-style-type: none"> • 500 metres from uses sensitive to odour • 200 metres from uses sensitive to dust <p>Water quality:</p> <ul style="list-style-type: none"> • 100 metres from surface waters <p>Bird strike:</p> <ul style="list-style-type: none"> • 1,500 metres from an aerodrome for piston-engine propeller-driven aircraft* • 3,000 metres from an aerodrome for jet aircraft*
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* A lesser distance may apply subject to the approval of the relevant aviation authority.

6.3. Buffer for Type 2 putrescible landfills with a tip face greater than 500 m²

Recent studies (Bydder & Demetriou, 2019) have shown that operating landfills with a licensed tip face of greater than 500 m² require a larger human health and amenity buffer than the 500 metres specified in earlier guidance, including the Landfill BPEM. Figure 2 below shows that as the tip face size increases, so does the distance of the odour plume.

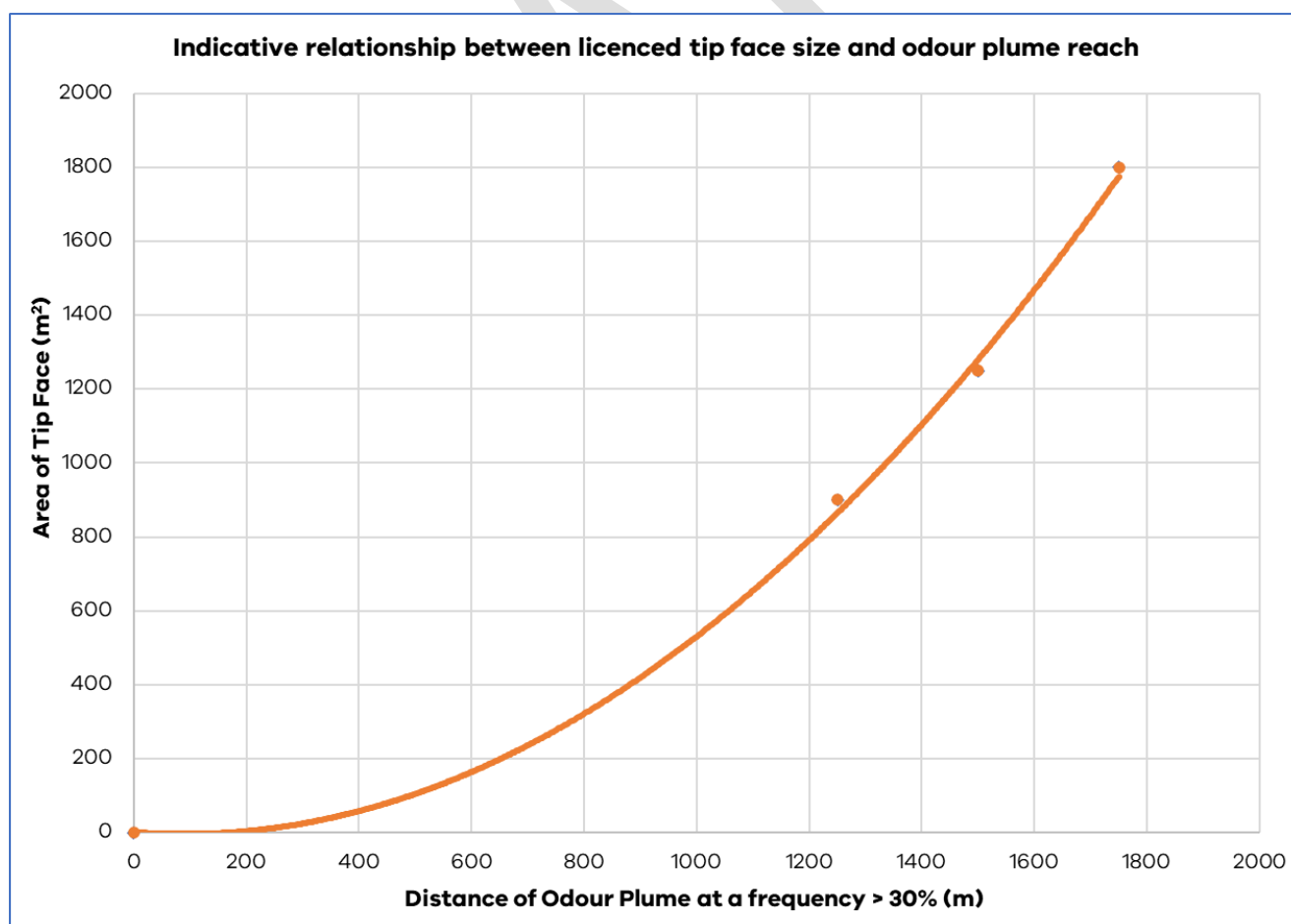


Figure 2. Correlation between the area of the tip face and extent of odour plume from a landfill

Odour impacts from Type 2 putrescible landfills with a tip face greater than 500 m² can be significant. Because of this, the default human health and amenity buffer as listed in Table 2 is 1,500 metres.

A proponent may seek to vary this distance if they can provide the decision maker with a risk assessment that demonstrates that an alternative buffer is acceptable.

Table 3 below provides information on the suitability of sensitive land uses within the buffer.

Table 3. Suitability of sensitive uses within the buffer of a Type 2 operating landfill with a tip face greater than 500 m²

Buffer for a Type 2 operating landfill with a tip face greater than 500 m²	Are sensitive uses suitable?
Up to 1,000 metres	No. Evidence shows that sensitive uses are not suitable within the 1,000-metre distance due to offsite odour impacts even when a landfill is operating in accordance with all relevant statutory obligations.
1,000 – 1,500 metres	May be considered with appropriate assessment to justify suitability. Sensitive land uses may be suitable subject to a risk assessment. Impacts may be variable within this distance and therefore not all uses are appropriate.
Greater than 1,500 metres	Yes. At distances greater than 1,500 metres, the human health and amenity risk is low and therefore all uses may be considered.

6.4. Odour separation distance for Type 3 solid inert landfills

Recent experience has shown that subsurface hotspots can develop in operating solid inert landfills and generate odour that can be detected up to and beyond 500 metres from the landfill.

EPA has determined that because of this risk, solid inert landfills accepting construction and demolition waste require separation from sensitive uses greater than the 200 metres prescribed for dust impacts only. This has been reflected in the default 500-metre odour separation distance for solid inert landfills (Table 2).

The potential offsite odour impacts from a closed landfill are significantly less than those of an operating landfill. Therefore, the odour separation distance for closed, solid inert landfills does not need to accommodate for hotspots as the rehabilitation process will address any such risks.

7. When to consider landfill buffers

Landfill buffers should be considered when preparing or assessing:

- planning scheme amendments, planning permit applications and EPA permissions applications for new, expanded or varied landfills
- planning scheme amendments and planning permit applications that would lead to use or development within the buffer of an operating or closed landfill

Section 9 of this guideline includes information to assist planning and responsible authorities to assess planning proposals within the buffer of a landfill.

7.1. Agent of change principle

The agent of change principle requires the person or entity proposing a land use or development (new or expanding, modified or varied) that may give rise to conflicting land uses, to provide evidence to the decision maker that any variation from a specified separation distance is appropriate. The agent of change has the responsibility to:

- consider their obligations under the GED including the risks of harm to human health or the environment from pollution or waste from the proposed activity
- avoid land use conflict
- ensure potential impacts on nearby land uses are appropriately mitigated and managed.

The agent of change principle applies to both individual applications as well as strategic planning matters. Depending on the proposal, the agent of change could be either the industry or the sensitive use/development.

It is the responsibility of the agent of change to review and understand this guideline and provide evidence to the relevant planning and/or responsible authorities that the landfill buffer has been considered appropriately.

The following are examples of proposed sensitive land use or development as the agent of change:

- planning permit applications for a sensitive land use or development within proximity of an operating, closed or proposed landfill
- strategic planning matters involving a new residential, education, mixed use or other zone or precinct permitting sensitive land uses within proximity of an operating, closed or proposed landfill
- development of a local land use policy/strategy within proximity of an operating, closed or proposed landfill.

The following examples demonstrate situations where the proposed use or development of industry is the agent of change:

- planning permit applications for a proposed new or expanding landfill
- strategic planning matters involving an existing or proposed waste and resource recovery precinct/use

- development of a local land use policy/strategy relating to waste and resource recovery
- development licences/operating licences for proposed or expanding an existing landfill.

Agent of change principle example:

A landowner owns a large parcel of land that has been used for farming on the outskirts of a township. Thinking that the site would be perfect for residential development, the landowner proposes to rezone and develop the land for sensitive uses. However, the farm is within the buffer of a closed landfill. It is the responsibility of the landowner to demonstrate that the proposed land use will not be subject to risk of harm by the landfill gas risk posed by the former landfill.

In these circumstances:

- the development proposal triggers the need to consider the landfill buffer
 - the proponent of the development proposal is the 'agent of change.'
-

8. How to measure landfill buffers

8.1. Operating landfills

For operating landfills, the separation distances that make up the buffers should be measured from the outer boundary of the landfill activity that poses a landfill gas or amenity risk, such as a landfill cell (closed, active or future) or leachate pond, to:

- the nearest sensitive land use (for odour and dust)
- the nearest building or structure (for landfill gas migration).

The figures below show the various methods for measuring separation distances that make up landfill buffers. For further information, refer to *Separation distance guideline* (EPA publication 1949).

8.1.1. Odour and dust - the urban method

The urban method measures the separation distance from the activity boundary of the landfill activity posing the amenity risk to the property boundary of the nearest sensitive land use, as illustrated in Figure 3.

The urban method should be applied where the nearest sensitive land use is either:

- in an urban area or township; or
- on a site less than 4,000 m²; or
- in a zone allowing subdivision to less than 4,000 m².

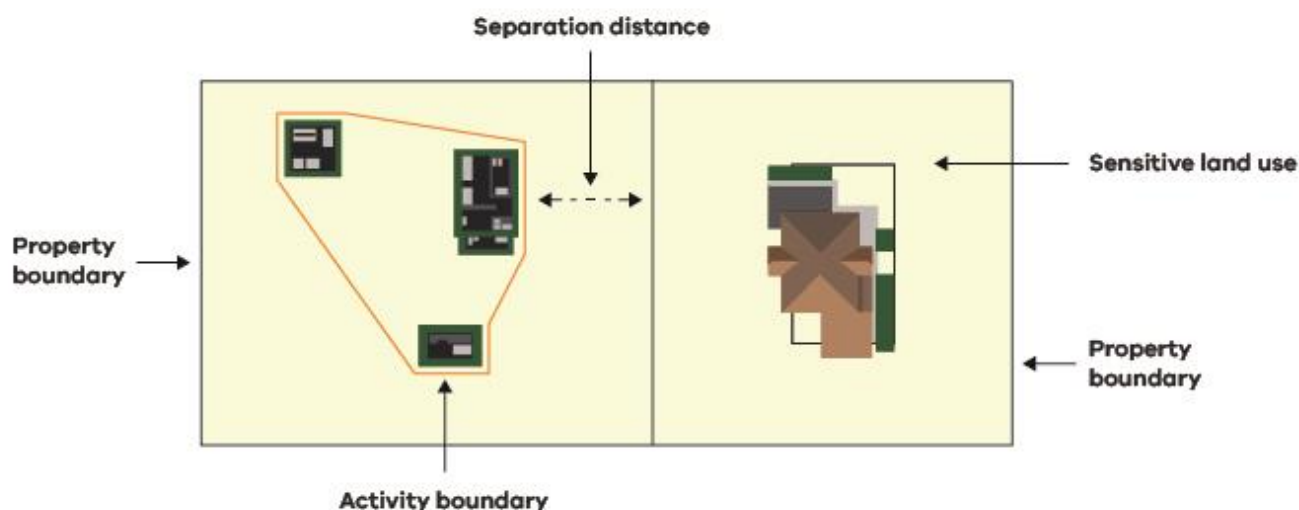


Figure 3. Measuring separation distances for odour and dust - the urban method

8.1.2. Odour and dust - the rural method

The rural method measures the separation distance from the activity boundary of the landfill activity posing the amenity risk to the activity boundary of the sensitive land use, as illustrated in Figure 4. The activity boundary of the sensitive land use is the area (within a convex polygon) that includes all current or proposed sensitive uses (including residences, garages and carports, barbecue areas, clotheslines and swimming pools).

The rural method should be applied where the nearest sensitive land use is both:

- not in an urban area or township, and
- on a site at least 4,000 m², or in a zone requiring subdivision to at least 4,000 m².

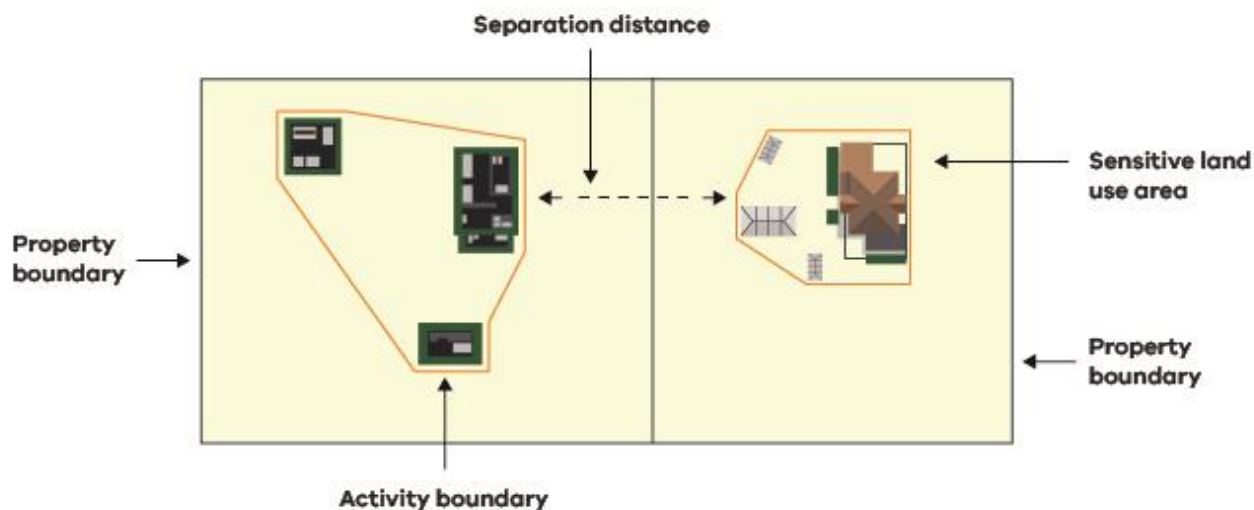


Figure 4. Measuring separation distances for odour and dust - the rural method

8.1.3. Landfill gas migration

For operating landfills, separation distances for landfill gas should be measured from the outer boundary of the landfill cells to the nearest building or structure (Figure 5). This includes active, closed and future cells.

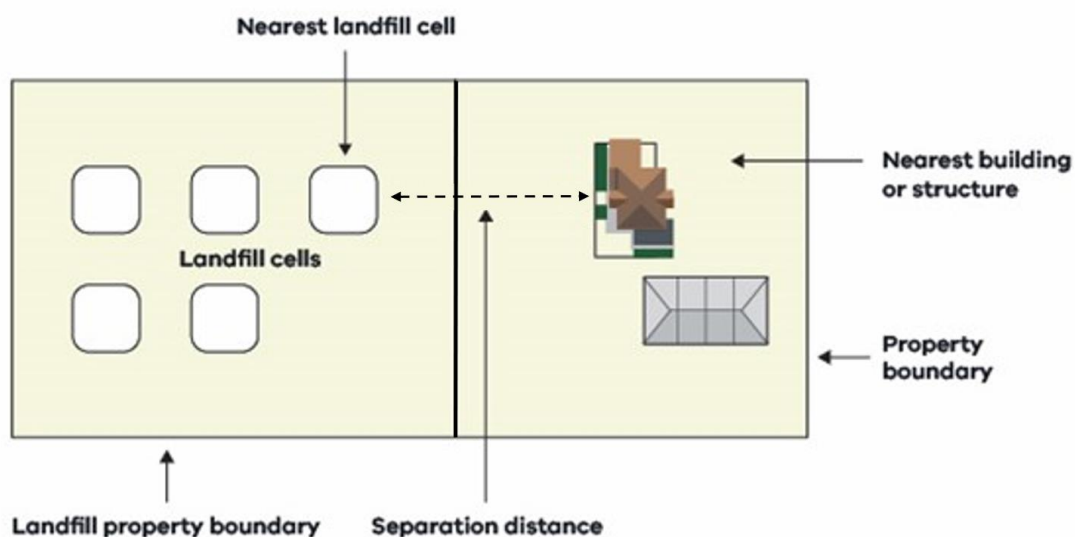


Figure 5. Measuring landfill gas migration separation distances for operating landfills

For closed landfills, only the separation distance for landfill gas migration makes up the buffer. This distance should be measured from the outer boundary of the closed landfill cells to the nearest building or structure.

If the landfill cell locations are unknown, the boundary of the landfill premises should be used instead.

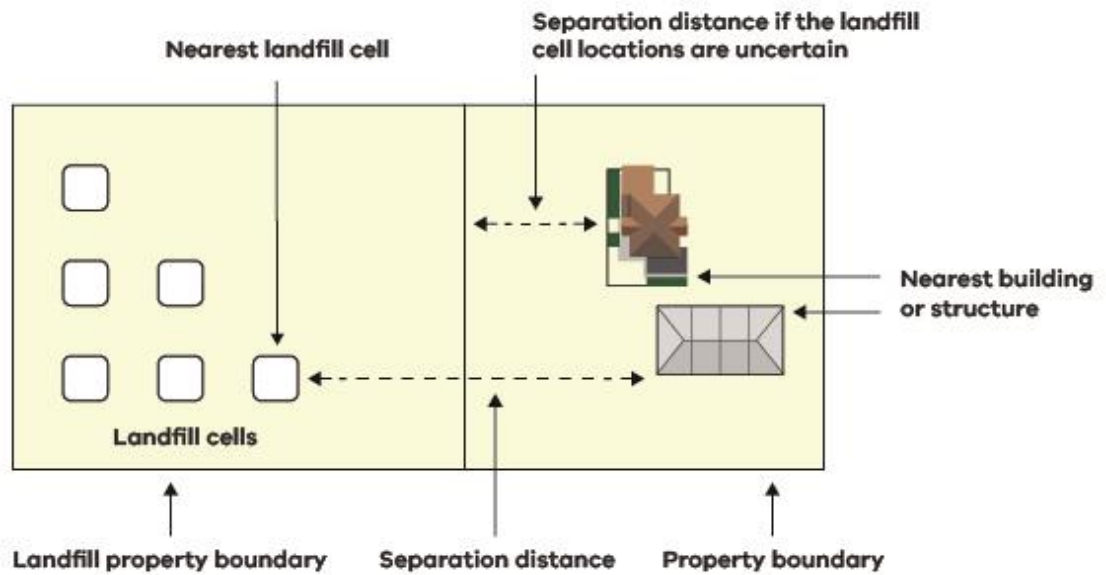


Figure 6. Measuring separation distances for closed landfills

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9. Assessing planning proposals within the buffer of a landfill

Protecting landfill buffers for operating and closed landfills from the encroachment of sensitive land uses is critical to protect human health and amenity. This is relevant in greenfield areas, but also in the context of infill development in existing residential areas.

For **operating landfills**: failure to preserve appropriate buffers and maintain compatible land uses within the buffer may result in unacceptable offsite impacts. These impacts may affect the health and amenity of the surrounding community and limit future landfill development. The risks include odour, dust, noise and landfill gas migration.

For **closed landfills**: failure to preserve an appropriate buffer may result in serious landfill gas impacts, including potentially life-threatening risks, such as explosion and/or asphyxiation.

When development is proposed around landfills, the following risks must be considered:

- landfill gas (from operating and closed landfills)
- human health and amenity impacts, such as odour, dust and noise (from operating landfills).

When assessing a planning permit application for use, development or subdivision within a landfill buffer, or a planning scheme amendment that would allow use or development within a landfill buffer, EPA recommends that responsible and planning authorities:

- require an environmental audit be conducted in accordance with Part 8.3 of the EP Act, that is scoped to assess the risk of harm to human health or the environment from the landfill in the context of impacts on the proposed use, development, land to be subdivided or amendment area; or
- use relevant information, where it is sufficient, from a previous assessment or audit.

This advice also applies to proposals to increase the extent of development within an already encroached buffer area.

However, a risk-based approach to this advice is recommended when:

- managing encroachment into the buffer of a closed landfill, or
- considering a proposal within the buffer of an operating landfill that is not sensitive to human health and amenity impacts.

The process set out in Figure 7 shows an overview of the recommended approach for assessing planning proposals within the buffer of a closed or operating landfill. It steps through questions about the proposal to determine the level of risk and the type of assessment recommended.

Note: where a BAO (or other planning control that includes requirements for assessment of risk) applies to land in a landfill buffer, planning permit applications and planning scheme amendments must assess risk in accordance with the requirements of that control.

Note: for landfills with an anticipated lifespan exceeding 10 years, an analysis should be conducted of the anticipated changes in the zoning or land use of the surrounding area during the life of the facility. Failure to preserve an appropriate buffer and maintain compatible land uses within the buffer may result in unacceptable offsite impacts that limit future operation of the landfill.

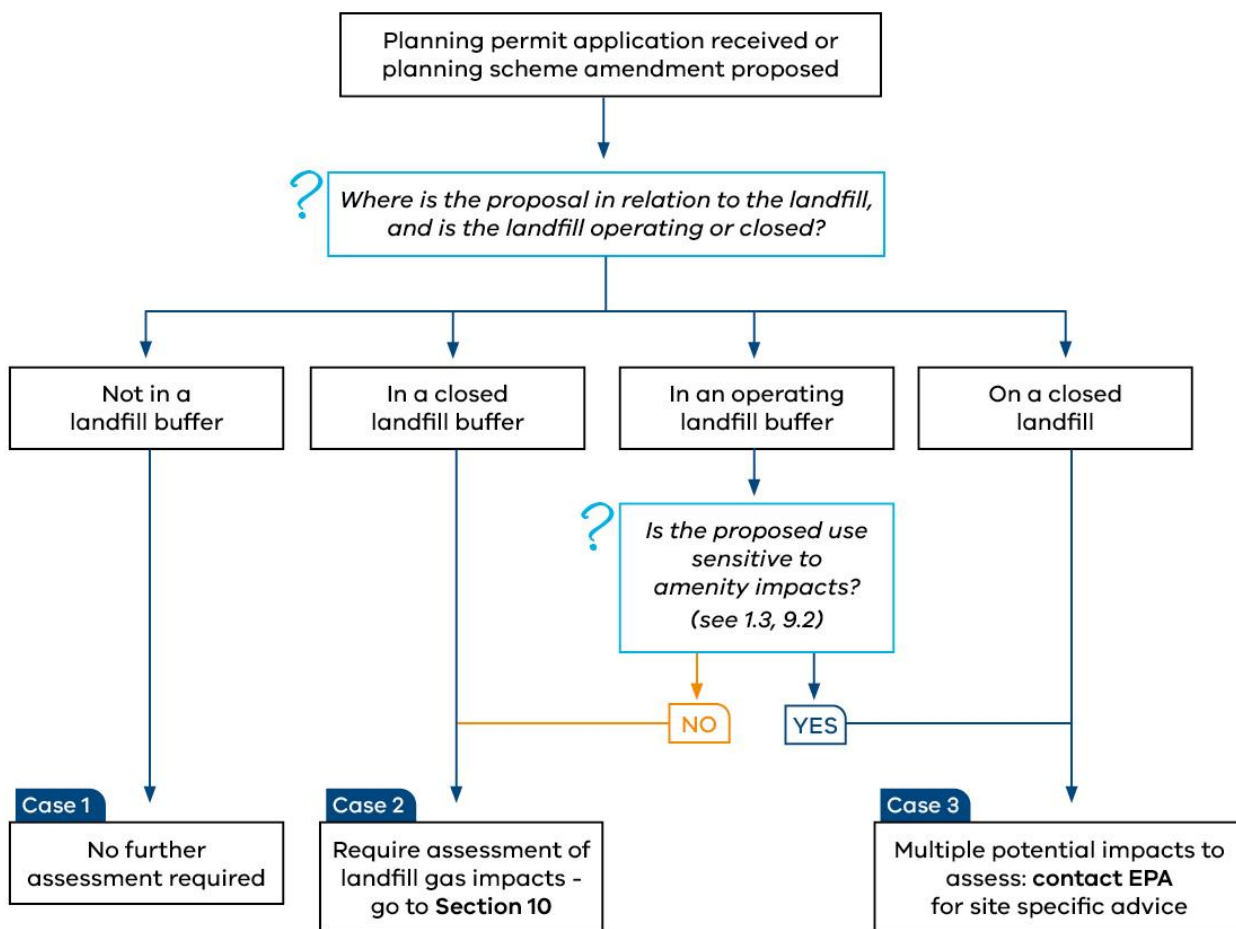


Figure 7. Recommended approach to assess planning proposals within the buffer of a landfill

To begin the assessment process, the applicant should address the following questions:

1. Does the planning proposal fall within a landfill buffer? If so;
2. Is the landfill operating or closed?

9.1. Does the planning proposal fall within the landfill buffer?

To work out whether a planning proposal falls within a landfill buffer, consider that the landfill buffer may be either:

- the default buffer set out in this guideline; or
- a site-specific buffer determined by council (which may be represented by a BAO).

Councils may determine, in accordance with a risk assessment/audit, site-specific buffers that reflect the risk posed by individual landfills. For example, buffers for closed landfills can often be reduced as the risk decreases over time. This determination relates to all the land surrounding the landfill, not just one site.

Providing guidance on site-specific buffers is not within the scope of this guideline. Planning

Practice Note 92: *Managing buffers for land use compatibility* includes detailed information about applying the BAO. Councils can also request EPA's advice on developing an appropriate process to determine site-specific buffers in their municipality. Generally, this involves gathering and assessing site-specific landfill information with the assistance of a professional environmental consultant with demonstrated experience in assessing risks to developments from landfills.

If the proposal **does not** fall within the landfill buffer, no further assessment relating to the potential impacts of that landfill is required. (**Case 1**)

If the proposal **does** fall within the landfill buffer, **proceed to section 9.2.**

Appendix 2 provides guidance on where to find landfill information, such as an EPA licence and approvals, the EPA Public Register and other useful links.

9.2. Is the landfill operating or closed?

9.2.1. Closed landfill

If the buffer is for a **closed landfill**, the assessment of whether a planning proposal may be appropriate can be limited to the risk of landfill gas impacts only. (**Case 2**)

This does not mean there is no risk of human health and amenity impacts from a closed landfill. For instance, there may be landfill gas type odour before a landfill has been capped. However, the potential odour impacts from a closed landfill are significantly less than those of an operating landfill, so it is appropriate for the assessment within a closed landfill buffer to be based solely on landfill gas migration.

For the recommended approach to assessing planning proposals within a closed landfill buffer, refer to **Section 10**.

If the proposal is **on the site of a closed landfill** (not just in the buffer), the applicant should contact EPA for advice (**Case 3**). There are many variables that influence the risks associated with building on a closed landfill and EPA can assist with site-specific advice.

9.2.2. Operating landfill

If the buffer is for an **operating landfill**, the risk of landfill gas as well as human health and amenity impacts should be assessed. The type of assessment recommended will depend on whether the proposed use is sensitive to human health and amenity impacts as defined in Section 1.3 of this document:

- where the proposed use is not sensitive to human health and amenity impacts (**Case 2**) - go to Section 10.
- where the proposed use is sensitive to human health and amenity impacts (**Case 3**) - the planning authority and responsible authority is recommended to refer the application to EPA for site-specific advice.

The assessment of proposed sensitive use within the buffer of operating landfills is complex and while ultimately the planning and responsible authority are the statutory decision makers, if advice from EPA is sought, it generally does not recommend sensitive land uses within the buffer of an operating landfill for the following reasons:

- Operating landfill risks may change with time. This can be because of upset operating conditions, the changing location of the tipping face within the landfill, or if the landfill expands in the future.
- Landfill gas risk will continue to change as new cells are filled with waste and long after the landfill has closed.
- If amenity impacts occur at a development site, there may be no way to mitigate these through protective design measures at the development.

Section 13 of this document provides guidance on non-sensitive land uses that may be suitable within the buffer of an operating landfill.

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10. Assessing the risk of landfill gas impacts

This section of the guideline provides a standard, risk-based approach for planning and responsible authorities to determine the appropriate level of assessment for landfill gas risks. Section 9 above specifies when this approach should be applied.

This approach applies to planning proposals within the buffer of a closed landfill, or for planning proposals that are not sensitive to human health and amenity risks within the buffer of an operating landfill. In these cases, landfill gas risk is the primary concern (defined as **Case 2** in Figure 7).

The approach outlined below should only be applied for Case 2 planning proposals (refer to Figure 7).

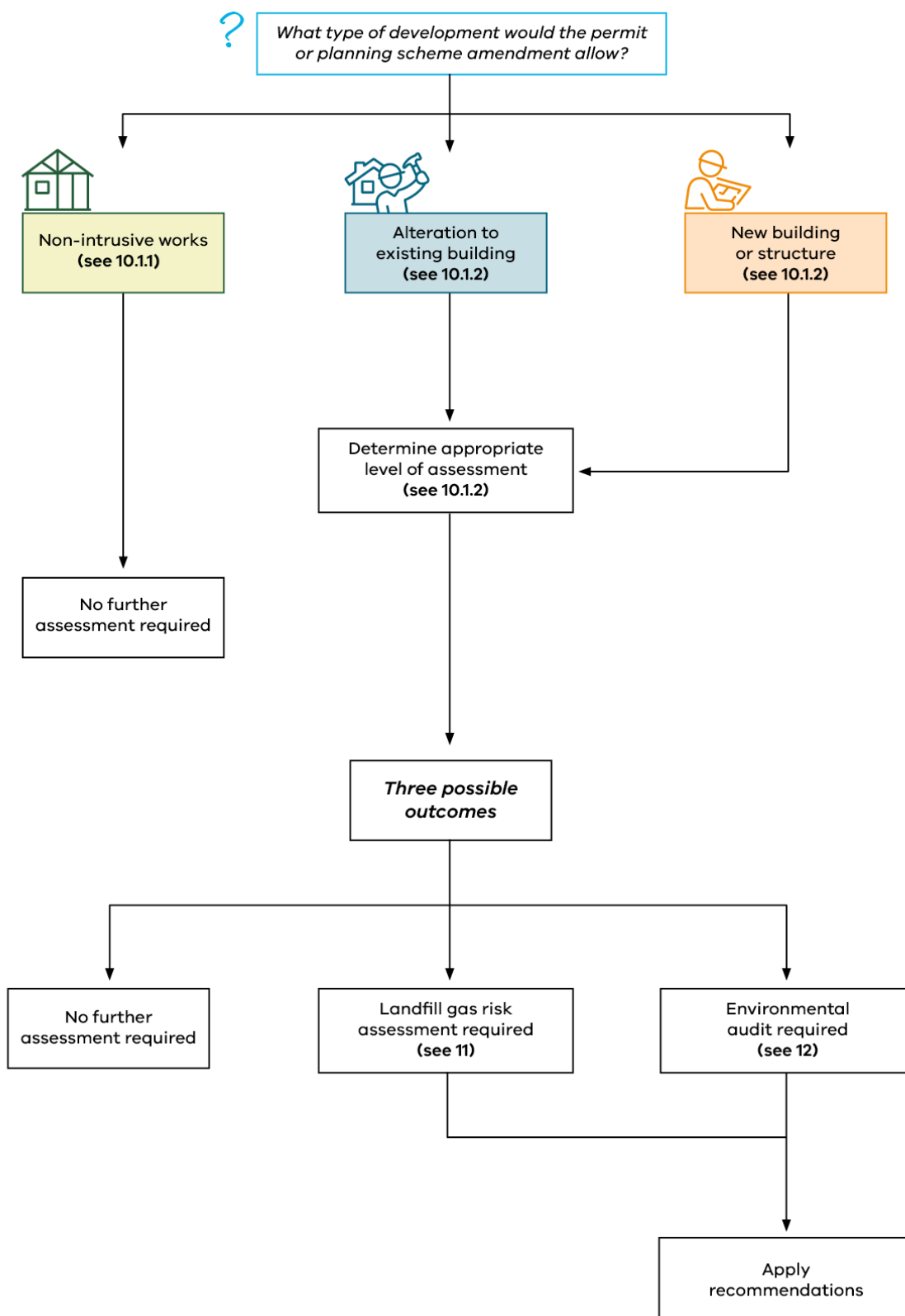


Figure 8. Recommended approach for assessing the risk of landfill gas impacts

10.1. What type of development will the proposal allow?

The level of assessment depends on the type of development the proposal will allow and whether there are intrusive or non-intrusive works involved.



10.1.1. Development proposing non-intrusive works

Proposals for 'non-intrusive works' do not need to be assessed for risk of landfill gas impacts.

Definition: Non-intrusive works

Non-intrusive works are those that do not involve enclosed structures, excavation or significant ground disturbance. They include, but are not limited to:

- alterations to buildings and structures that do not require ground disturbance
- fencing
- street and park furniture
- vehicle crossovers
- satellite dishes
- minor signage.



10.1.2. Development proposing alterations to existing building or new building or structure



EPA recommends that planning and responsible authorities use the following four-step approach to determine what level of assessment of the risk of landfill gas impacts is required, if any:

Step 1: Assign a proposal score

Step 2: Assign a landfill score

Step 3: Use the proposal score and landfill score to calculate an overall score

Step 4: Determine the level of assessment required.

Step 1: Assign a proposal score

Step 1 involves reviewing the planning permit application or planning scheme amendment and assigning the proposal a score using Table 4 below.

Table 4. Proposal scores

Score	Proposal type
1	Alterations to an existing building using similar construction style and standards (excluding below ground structures)
2	Buildings and structures that exclude below ground structures, such as basements or lift shafts

3	Buildings and structures that include below ground structures, such as basements or lift shafts
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Note 1: For **planning scheme amendments**, a planning authority should consider what type of development the amendment would allow, either as of right or with a planning permit. A precautionary approach should be taken. For example, if land is proposed to be rezoned from Farming Zone to General Residential Zone, the amendment would have the effect of allowing further development and that development may foreseeably include below ground structures, so a score of 3 should be applied. If additional measures are imposed to preclude below ground structures, a score of 2 should be applied.

Note 2: For **subdivision applications**, a responsible authority should consider what type of development the subdivision would allow, either as of right or with a planning permit. If the subdivision would result in lots that could subsequently be developed as of right, the subdivision stage is the last opportunity in the planning process to require appropriate consideration of the landfill gas risk. If the subdivision would result in lots for which a permit would be required to develop, it is nevertheless appropriate for the risk of landfill gas to be assessed at the earliest available opportunity. For subdivision applications, a score of 3 should be applied unless measures are imposed to preclude below ground structures, in which case a score of 2 should be applied.

Step 2: Assign a landfill score

Step 2 involves reviewing the information available to identify the key characteristics of the landfill, namely its:

- size (the volume of the landfill in m³)
- type (the predominant type of waste disposed in the landfill)
- age (from the approximate date waste was last disposed at the site).

Appendix 1 to this guideline sets out potential sources of information on these criteria.

Table 5 below should then be used to calculate an aggregate landfill source score by adding the scores for each of the size, type and age criteria.

Table 5. Landfill scores

Score	Landfill size
1	Less than 50 m ³
2	51 to 500,000 m ³
3	500,001 to 2,000,000 m ³
4	2,000,001 to 5,000,000 m ³
5	More than 5,000,000 m ³ or unknown size

Score	Landfill type
1	Soil
3	Solid inert waste
5	Putrescible waste or unknown type
Score	Landfill age
1	More than 50 years since waste last placed
2	30 to 50 years since waste last placed
3	10 to 30 years since waste last placed
4	Fewer than 10 years since waste last placed
5	Operating landfill or unknown age

Step 3: Use the proposal score and landfill score to calculate an overall score

Step 3 is to multiply the proposal score by the landfill score to calculate an overall score.

Overall score: proposal score x landfill score (landfill size + type + age)

Step 4: Determine the level of assessment required

Step 4 is to apply the overall score to Table 6 to determine the level of assessment.

Table 6: Determining the level of assessment

Overall score	Level of assessment
1–8	No further assessment
9–25	Require a landfill gas risk assessment (see section 11)
26–45	Require an environmental audit (see section 12)

Note 3: If the overall score determines that a landfill gas risk assessment or environmental audit is required, the assessment or audit should be done at the beginning of the planning process. Although there is no statutory trigger for this upfront assessment, EPA recommends the assessment be done as early in the process as practical. If it is not possible, a risk assessment or environmental audit may also be required through planning permit conditions or planning controls implemented as part of a planning scheme amendment. Example planning permit conditions are set out in Appendix 4.

Note 4: Where the development also relates to potentially contaminated land and an environmental audit requirement already applies, it may be possible to incorporate landfill gas assessment into this process. In these circumstances, a separate landfill gas risk assessment would not be necessary. Contact EPA for advice.

11. Landfill gas risk assessment

11.1. Who can conduct a landfill gas risk assessment?

A landfill gas risk assessment should be conducted by a suitably qualified environmental consultant with demonstrated experience in conducting landfill gas risk assessments for developments near landfills. The planning permit applicant or planning scheme amendment proponent should engage this person. EPA has guidance about engaging environmental consultants - <https://www.epa.vic.gov.au/for-business/find-a-topic/environmental-consultants>

11.2. What is a landfill gas risk assessment?

A landfill gas risk assessment should include:

1. A conceptual site model, based on the characteristics of the landfill and proposal and the likely pathways of gas migration and exposure at the proposed development site.
2. Sufficient environmental monitoring from the proposal site to inform the assessment and enable the environmental risks to be characterised (magnitude and likelihood of hazard).
3. An assessment of the environmental risk posed by the landfill to the proposed development site in accordance with a recommended methodology (see below).
4. Site-specific recommendations for further action (including mitigation measures for the buildings and structures at the proposed development site, if necessary).

11.3. The landfill gas risk assessment process

EPA recommends that landfill gas risk assessments follow the methodology in either:

- *Assessing risks posed by hazardous ground gases to buildings* (Construction Industry Research and Information Association (CIRIA), publication 665:2007); or
- *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings* (British Standard 8485:2015+A1:2019).

11.4. The potential outcomes of a landfill gas risk assessment

A landfill gas risk assessment should recommend:

1. what, if any, mitigation measures are required
2. what, if any, further assessment is required (such as monitoring or the need for an environmental audit to be conducted).

11.5. How long a landfill gas risk assessment should take?

A landfill gas risk assessment will typically take one to 24 months (as outlined in the relevant standards CIRIA publication 665:2007). The time required will depend on the type and frequency of environmental monitoring required to inform the assessment.

11.6. EPA's role in landfill gas risk assessment

EPA has a statutory role in regulating gas emissions from landfills via development and operating licences and notices under the EP Act. EPA also administers the environmental audit system under Part 8.3 of the EP Act.

A planning or responsible authority can request EPA's advice on specific planning proposals by providing notice to EPA of relevant planning scheme amendments or planning permit applications under the P&E Act.

EPA's role in providing advice on planning proposals does not extend to the review of individual landfill gas risk assessments on behalf of council. Where an independent review of a landfill gas risk assessment is warranted, council may choose to arrange for a peer review of the report by a suitably qualified environmental consultant with demonstrated experience in conducting landfill gas risk assessments for developments near landfills.

12. Environmental audit

12.1. Who can conduct an environmental audit?

EPA appoints auditors under the EP Act and regulates their conduct. Environmental audits under the EP Act can only be undertaken by an EPA-appointed auditor. The auditor should be engaged by the planning permit applicant or planning scheme amendment proponent.

12.2. What is an environmental audit?

An environmental audit (Part 8.3 EP Act) assesses the risk of harm to human health or the environment from contaminated land, waste, pollution or any other activity. It is undertaken by an EPA-appointed environmental auditor and on completion an environmental audit statement and environmental audit report are prepared.

The purpose of an environmental audit is:

- a) to assess the nature and extent of the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity
- b) to recommend measures to manage the risk of harm to human health or the environment from contaminated land, waste, pollution or any activity
- c) to make recommendations to manage the contaminated land, waste, pollution or activity.

Environmental audits are scoped by the auditor according to the site and the risks posed.

12.3. The environmental audit process for landfill gas

First, a landfill gas risk assessment should be undertaken in accordance with the steps described in section 11 above.

Second, an audit that considers the risk assessment should be undertaken in accordance with the EP Act and should include the following:

1. client engages auditor to conduct an environmental audit
2. client and auditor define and agree on the audit scope and objectives¹
3. audit scope is submitted to EPA
4. auditor reviews existing information, including landfill gas risk assessment
5. auditor collects and verifies evidence to support findings relating to audit criteria
6. auditor evaluates data to determine compliance with audit criteria
7. auditor prepares audit report stating auditor's professional opinion on the risk of harm posed by the activity to human health or the environment, with justification
8. auditor provides copy of the environmental audit statement and environmental audit report to client and EPA. Details of the statement will be made available on the EPA public register.

12.4. The outcome of an environmental audit

At the end of the audit, the auditor must prepare an environmental audit statement accompanied by an environmental audit report. Section 211 of the EP Act sets out what must be included in an environmental audit statement.

¹ Where the risk of odour impacts also needs to be assessed, this can be included within the scope of the environmental audit. This may be more cost-effective than conducting a separate odour assessment.

For an audit scoped to assess the landfill gas risk, the audit report would include conclusions on whether a landfill gas migration risk exists at the audit site and, if so, recommendations for mitigation measures. It will not include a statement about the suitability of the land for a proposed use at the audit site.

12.5. How long an environmental audit takes

Based on audits conducted to date, an environmental audit to assess landfill gas risk will typically take two to 24 months. The time required will depend on the type and frequency of environmental monitoring required to inform the assessment in addition to the review undertaken by the environmental auditor.

13. Landfill gas mitigation measures

13.1. What mitigation measures are

Landfill gas mitigation measures can significantly reduce the risk of ground gases moving into buildings and accumulating to dangerous levels.

Mitigation measures can be passive or active.

13.1.1. Passive mitigation measures

Passive mitigation measures are incorporated into a building during construction and require little or no maintenance. They include but are not limited to:

- reinforced building floor construction with concrete slabs and gas-resistant membranes
- underfloor venting
- in-ground vertical venting wells to create a preferential pathway for gas to escape before reaching a building.

Refer to the *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (BS8485:2015+A1:2019)* for further detail.

Care should be taken that passive mitigation measures incorporated into the building are not breached by construction work.

13.1.2. Active mitigation measures

Active mitigation measures control the migration of landfill gas by:

- extraction from the ground; or
- maintaining a positive pressure of air to prevent gas from entering under or within a building.

Active mitigation measures need to be operated and maintained over the life of the building, unless risks have been subsequently demonstrated to be below the level requiring active mitigation and the system can revert to passive venting, and this has been verified by a suitably qualified professional. They are more expensive than passive measures.

13.2. What mitigation measures should be required

If a landfill gas risk assessment or environmental audit has been completed, any resulting recommendations about mitigation measures should be implemented. The recommendations must be implemented for the site to be suitable for its proposed use. Therefore, a planning or responsible authority should be satisfied that the mitigation measures will be implemented as part of the development or use allowed under the planning scheme, to ensure that the effects of the environment on the use or development are fully considered (under sections 12(2)(b) and 60(1)(e) of the P&E Act).

The planning or responsible authority should consider any recommendations in an environmental audit statement and:

- where recommendations relate to design or construction, include provisions in a planning scheme amendment or conditions in a planning permit that reflect the recommendations in the statement
- require the applicant to demonstrate that the applicable recommendations included in the statement have been or will be met before the use commences
- for planning scheme amendments, the audit recommendations may inform the drafting of planning provisions including schedules, overlays to give effect to and address the outcomes of the environmental audit statement.

The responsible authority should satisfy themselves that all recommendations as part of an environmental audit statement have been met. The responsible authority may require written confirmation of compliance by an environmental auditor or suitably qualified environmental consultant.

13.3. Design and verification

All gas mitigation measures (whether passive or active) are site-specific. They need to be designed:

- to a level that will protect against the risk of ground gas
- to work in combination with the ground floor and service entry designs of each building.

All gas mitigation measures should also be verified to ensure they are fit for purpose and have been installed correctly. This involves:

1. before installation, review of mitigation designs by a professional environmental consultant with demonstrated experience in gas mitigation measure design
2. before the building is occupied, written confirmation that measures have been installed in accordance with the manufacturer's instructions by a professional environmental consultant with demonstrated experience in gas mitigation measure installation, or the supplier.

Further information on the installation and testing of mitigation measures is set out in BS 8485:2015+A1:2019 and CIRIA 665:2007. Note that BS 8485:2015+A1:2019 also contains information on verification of installed mitigation measures.

14. Appropriate land uses within the buffer of operating landfills

Operating landfills present a higher risk than closed landfills because risks are not confined solely to landfill gas, but also include health and amenity risks such as odour, dust, noise and litter. While landfill gas risks may be mitigated through design measures in buildings, there may be no way to mitigate health and amenity impacts within the buffer of an operating landfill.

It is also important to note that for operating landfills, the extent of health and amenity impacts to the landfill buffer area may change over time as the landfill continues to operate. This can be due to:

- changes to the location of the tipping face
- landfill expansion
- upset conditions
- changes to waste acceptance.

This means a 'point in time' assessment, such as an audit, will not be sufficient to inform a planning decision. Future risks must also be considered.

For operating landfills, there is likely to be a lot of existing information available that could inform an assessment of the extent of impacts from the landfill on the buffer. This will include information from the operating licence of that landfill. However, this may not be in the public domain, and it may be difficult to gather information from a landfill operator where a proposal will encroach on an existing landfill.

This section provides information and advice on land uses EPA considers to be compatible with the risks posed by operating landfills. It is relevant to:

- operating landfills accepting municipal (putrescible) waste (type 2)
- operating landfills accepting solid inert waste (type 3).

It is important to note that this table does not replace the recommendation that decision makers consult with EPA when assessing a planning proposal within the buffer of an operating landfill. There may be site-specific considerations or EPA may have additional information to inform an assessment. The table provides a guide as to the uses EPA considers suitable based on both landfill gas and human health and amenity risks. These risks remain variable until such time as a landfill is closed and capped.

The table is based on default distances, not site-specific buffers.

14.1. Table of land uses

The table below is provided as a guide to help determine suitable land uses within the buffer of an operating landfill.

The buffer is broken into intervals based on landfill type and size, with land uses assigned according to the landfill gas risk as well as sensitivity to human health and amenity impacts.

The land uses are based on those listed within the nesting categories and diagrams at clause 73.04 of the VPP. If the terms in the VPP do not correspond with this table, contact EPA for advice.

For operating putrescible landfills (Type 2) with a tip face up to 500 m², only Column A applies.

For operating putrescible landfills (Type 2) with a tip face greater than 500 m², Columns A, C and D apply.

For operating solid inert (Type 3) landfills, Columns A and B apply.

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
73.04-1 Accommodation group	Not suitable No buildings	<i>Consider:</i> Caretaker's house	<i>Consider:</i> Caretaker's house	<i>Consider:</i> Any use within accommodation group with assessment (Permit required)
73.04-2 Agriculture group	<i>Allow:</i> Any use within Agriculture group <i>WITH:</i> Limits on the type of structures i.e., open sided sheds only etc. (permit requirement for buildings and works)	<i>Allow:</i> Any use within Agriculture group	<i>Allow:</i> Any use within Agriculture group	<i>Allow:</i> Any use within Agriculture group
73.04-3 Agriculture group (sub-group of Animal production)	<i>Allow:</i> Any use within Agriculture group (sub-group of Animal production) <i>WITH:</i>	<i>Allow:</i> Any use within Agriculture group (sub-group of Animal production)	<i>Allow:</i> Any use within Agriculture group (sub-group of Animal production)	<i>Allow:</i> Any use within Agriculture group (sub-group of Animal production)

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
	Limits on the type of structures i.e., open sided sheds only etc. (permit requirement for buildings and works)			
73.04-4 Education centre group	Not suitable	Not suitable	Not suitable	<i>Consider:</i> Any use within Education centre group with assessment (Permit required)
73.04-5 Industry group	<i>Allow:</i> Materials recycling Refuse disposal Transfer station Sawmill No fixed enclosed structures	<i>Allow:</i> Materials recycling Refuse disposal Transfer station Sawmill Abattoir Car wash Motor repairs Panel beating Service industry	<i>Allow:</i> Materials recycling Refuse disposal Transfer station Sawmill Abattoir Car wash Motor repairs Panel beating Service industry Rural industry	<i>Allow:</i> Any use within Industry group

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
		Rural industry Industry No uses involving food manufacturing <i>Consider:</i> Dry cleaner	Industry No uses involving food manufacturing <i>Consider:</i> Dry cleaner	
73.04-6 Leisure and recreation group	<i>Allow:</i> Informal outdoor recreation (bike path, bushwalking etc.) not adjacent to residential zones) Golf course (no fixed enclosed structures) Paintball games facility (no fixed enclosed structures) Motor racing track (no fixed enclosed structures)	<i>Allow:</i> Informal outdoor recreation (bike path, bushwalking etc.) not adjacent to residential zones) Open sports ground Golf course Golf driving range Paintball games facility Motor racing track	<i>Allow:</i> Informal outdoor recreation (Bike path, bushwalking etc.) Not adjacent to residential zones) Open sports ground Golf course Golf driving range Paintball games facility Motor racing track	<i>Allow:</i> Major sports and recreation facility Racecourse Dance school Amusement park Indoor recreation facility Restricted recreation facility

	Suitable land uses			
	Column A: 0-500 m	Column B: 200-500 m	Column C: 500-1000 m	Column D: 1,000-1,500 m
Nesting category VPP	<p>Landfill gas and human health and amenity buffer</p> <p>Type 2 landfills</p> <p>Column A: 0-200 m</p> <p>Landfill gas and human health and amenity buffer</p> <p>Type 3 landfills</p>	<p>Human health and amenity buffer</p> <p>Type 3 landfills</p>	<p>Human health and amenity buffer</p> <p>Type 2 landfills with tip face > 500 m²</p>	<p>Human health and amenity buffer</p> <p>Type 2 landfills with tip face > 500 m²</p>
		<p>Outdoor recreation facility</p> <p>Minor sports and recreation facility</p> <p>Zoo</p> <p><i>Consider:</i></p> <p>Informal outdoor recreation (picnic tables, BBQs, playgrounds etc.)</p>	<p>Outdoor recreation facility</p> <p>Minor sports and recreation facility</p> <p>Zoo</p> <p><i>Consider:</i></p> <p>Informal outdoor recreation (picnic tables, BBQs, playgrounds etc.)</p>	
73.04-7 Earth and energy resources industry group	<i>Consider:</i> Any use within Earth and energy resources industry group	<i>Allow:</i> Any use within Earth and energy resources industry group	<i>Allow:</i> Any use within Earth and energy resources industry group	<i>Allow:</i> Any use within Earth and energy resources industry group
73.04-8 Office group	Not suitable	<i>Consider:</i> All uses (permit required) Will depend on design and mitigation measures	<i>Consider:</i> All uses (permit required) Will depend on design and mitigation measures	<i>Allow:</i> Any use within Office group

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
73.04-9 Place of assembly group	Allow: Carnival (no fixed enclosed structures) Circus (no fixed enclosed structures)	Allow: Carnival Circus	Allow: Carnival Circus	Allow: Amusement parlour Cinema Drive in theatre Nightclub Place of worship Cinema-based entertainment facility Consider: Art gallery Museum Function centre Conference centre Reception centre Hall Library Restricted place of assembly Exhibition centre
73.04-10	N/A	N/A	N/A	N/A

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
Recreational boat facility group				
73.04-11 Retail premises group	<p><i>Allow:</i></p> <p>Landscape gardening supplies Garden supplies Plant nursery Primary produce sales Trade supplies Timber yard (with no fixed enclosed structures)</p>	<p><i>Allow:</i></p> <p>Landscape gardening supplies Garden supplies Plant nursery Primary produce sales Trade supplies Timber yard</p> <p><i>Consider:</i></p> <p>Manufacturing sales Market Motor vehicle, boat, or caravan sales Car sales</p>	<p><i>Allow:</i></p> <p>Landscape gardening supplies Garden supplies Plant nursery Primary produce sales Trade supplies Timber yard</p> <p><i>Consider:</i></p> <p>Manufacturing sales Market Motor vehicle, boat, or caravan sales Car sales</p>	<p><i>Allow:</i></p> <p>Gambling premises Betting agency Gaming premises Manufacturing sales Market Motor vehicle, boat or caravan sales Car sales</p> <p><i>Consider:</i></p> <p>Food and drink premises Convenience restaurant Hotel Restaurant Take away food premises</p>

	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
				Food and drink premises
73.04-12 Retail premises group (sub-group of shop)	Not suitable	<i>Consider:</i> Any use within Retail premises group	<i>Consider:</i> Any use within Retail premises group	<i>Allow:</i> Any use within Retail premises group
73.04-13 Transport terminal group	Not suitable	<i>Allow:</i> Transport terminal Bus terminal Railway station Road freight terminal	<i>Allow:</i> Transport terminal Bus terminal Railway station Road freight terminal	<i>Allow:</i> Any use within Transport terminal group (excluding Airport and Heliport)
73.04-14 Utility installation group	<i>Consider:</i> Any use within Utility installation group Would require assessment given underground infrastructure	<i>Allow:</i> Any use within Utility installation group	<i>Allow:</i> Any use within Utility installation group	<i>Allow:</i> Any use within Utility installation group

Nesting category VPP	Suitable land uses			
	Column A: 0-500 m Landfill gas and human health and amenity buffer Type 2 landfills Column A: 0-200 m Landfill gas and human health and amenity buffer Type 3 landfills	Column B: 200-500 m Human health and amenity buffer Type 3 landfills	Column C: 500-1000 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²	Column D: 1,000-1,500 m Human health and amenity buffer Type 2 landfills with tip face > 500 m ²
73.04-15 Warehouse group	Not suitable	<i>Allow:</i> Any use within Warehouse group	<i>Allow:</i> Any use within Warehouse group	<i>Allow:</i> Any use within Warehouse group
73.04-16 Renewable energy group	<i>Consider:</i> Renewable energy facility Solar energy facility Would require assessment given underground infrastructure. Wind energy facility not suitable given bird risk from landfill.	<i>Consider:</i> Energy generation facility Renewable energy facility Solar energy facility Waste to energy facility Wind energy facility would require further assessment given bird risk from landfill.	<i>Allow:</i> Energy generation facility Renewable energy facility Solar energy facility Waste to energy facility Wind energy facility would require further assessment given bird risk from landfill.	<i>Allow:</i> Energy generation facility Renewable energy facility Solar energy facility Waste to energy facility Wind energy facility would require further assessment given bird risk from landfill.
73.04-17 Land use terms that	<i>Allow:</i> Car park (no fixed enclosed structures)	<i>Allow:</i> Brothel Car park	<i>Allow:</i> Brothel Car park	<i>Allow:</i> Art and craft centre Funeral parlour

	Suitable land uses			
	Column A: 0-500 m	Column B: 200-500 m	Column C: 500-1000 m	Column D: 1,000-1,500 m
Nesting category VPP	<p>Landfill gas and human health and amenity buffer</p> <p>Type 2 landfills</p> <p>Column A: 0-200 m</p> <p>Landfill gas and human health and amenity buffer</p> <p>Type 3 landfills</p>	<p>Human health and amenity buffer</p> <p>Type 3 landfills</p>	<p>Human health and amenity buffer</p> <p>Type 2 landfills with tip face > 500 m²</p>	<p>Human health and amenity buffer</p> <p>Type 2 landfills with tip face > 500 m²</p>
are not nested	<p>Saleyard (no fixed enclosed structures)</p> <p>Tramway</p> <p>Natural systems</p> <p>Sign</p>	<p>Cemetery</p> <p>Crematorium</p> <p>Emergency services facility</p> <p>Freeway service centre</p> <p>Natural systems</p> <p>Service station</p> <p>Veterinary centre</p> <p><i>Consider:</i></p> <p>Funeral parlour</p> <p>Research centre</p>	<p>Cemetery</p> <p>Crematorium</p> <p>Emergency services facility</p> <p>Freeway service centre</p> <p>Natural systems</p> <p>Service station</p> <p>Veterinary centre</p> <p><i>Consider:</i></p> <p>Funeral parlour</p> <p>Research centre</p>	<p>Research centre</p> <p>Winery</p> <p><i>Consider:</i></p> <p>Display home centre</p> <p>Home based business</p> <p>Hospital</p> <p>Helicopter landing site (need to consider bird strike risk from landfill)</p>

Appendix A: Planning context

Planning and Environment Act 1987 (P&E Act)

The purpose of the P&E Act is to establish a framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians.

A planning scheme is a statutory document which sets out objectives, policies and provisions relating to the use, development, protection and conservation of land in the area to which it applies. A planning scheme regulates the use and development of land through planning provisions to achieve these objectives and policies.

When preparing a planning scheme or planning scheme amendment, the P&E Act requires a planning authority to consider any significant effects this scheme or amendment might have on the environment or which it considers the environment may have on any use of development envisaged in the scheme or amendment (Section 12).

Section 60 also requires the responsible authority, before deciding on a planning permit application, to consider any significant effects which the responsible authority considers the use or development may have on the environment or which it considers the environment may have on the use or development. These 'significant effects' include human health and amenity impacts associated with landfills such as odour, dust, noise and landfill gas.

Victoria Planning Provisions (VPP)

The VPP ensure a consistent approach for various land use planning matters across Victoria. Several of the clauses within the VPP refer to issues relating to landfills and the need to separate incompatible land uses:

- Clause 13.06-1S (Air quality management) relates to protection of air quality by ensuring, wherever possible, suitable separation between land uses that reduce amenity and sensitive land uses.
- Clause 13.07-1S (Land use compatibility) seeks to protect community amenity, human health and safety while facilitating appropriate commercial, industrial, infrastructure or other uses with potential adverse offsite impacts. To achieve this, the use of land use separation is included as a relevant strategy.
- Clause 53.10 (Uses and activities with potential adverse impacts) includes a list of uses or activities which if not appropriately designed and located may cause offence or unacceptable risk to the neighbourhood. This clause specifies the minimum threshold distances applicable for various industry types. Landfill is shown with no distance specified, which means it must be referred to EPA under section 55 of the P&E Act.
- Clause 17.03-1S (Industrial land supply), clause 17.03-2S (Sustainable industry) and clause 17.03-3S (State significant industrial land) deal with industry operation and availability of land for industry. These clauses include strategies to ensure appropriate buffer areas can be provided to sensitive land uses and to protect industrial uses from encroachment of sensitive land uses which would adversely affect the industry's viability.
- Clause 19.03-5S (Waste and resource recovery) includes strategies to protect waste and resource recovery infrastructure against encroachment from incompatible land uses and to ensure waste and resource recovery facilities are sited, designed, built and operated to minimise impacts on surrounding communities and the environment.

- Clause 44.08 Buffer Area Overlay is a tool that can be used to identify areas where there is the potential for offsite impacts on safety, human health or significant offsite impacts on amenity.
- Clause 65.01 requires that, before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate, the effect on the environment, human health and amenity of the area.
- Clause 66 of the VPP sets out the kinds of applications that must be referred under section 55 of the P&E Act, or for which notice must be given under section 52(1)(c). EPA is a determining referral authority for a range of planning applications, including any proposal for land use or development that requires approval and licensing under the EP Act.
- Clause 66.02 -7 requires any proposal to use land for an industry, utility installation or warehouse for a purpose listed in the table to clause 53.10, with no threshold distance specified or if the threshold distance is not to be met, to be referred to EPA as a determining referral authority. These circumstances indicate that an increased level of assessment is required, hence the statutory referral to EPA.

Appendix B: Sources of landfill information

Key sources of reliable and publicly available landfill information are available via:

- EPA's website (www.epa.vic.gov.au)
 - [development and operating licences](https://www.epa.vic.gov.au/for-business/find-a-topic/licences) (<https://www.epa.vic.gov.au/for-business/find-a-topic/licences>)
 - [EPA's public registers](https://www.epa.vic.gov.au/about-epa/public-registers) (<https://www.epa.vic.gov.au/about-epa/public-registers>) – provide access to information about licensed businesses, court proceedings, environmental audits and other regulatory information.
 - [Victorian Landfill Register](https://www.epa.vic.gov.au/for-community/environmental-information/waste/landfills/victorian-landfill-register) (<https://www.epa.vic.gov.au/for-community/environmental-information/waste/landfills/victorian-landfill-register>)
 - [EPA Priority Sites Register](https://www.epa.vic.gov.au/for-community/environmental-information/land-groundwater-pollution/priority-sites-register) (<https://www.epa.vic.gov.au/for-community/environmental-information/land-groundwater-pollution/priority-sites-register>).
- Relevant councils:
 - records of council-operated landfills
 - planning records.
- DELWP's website
 - Victoria Unearthed (<https://www.environment.vic.gov.au/sustainability/victoria-unearthed>).
- Land Use Victoria website (www.propertyandlandtitles.vic.gov.au)
 - aerial photographs
 - historical maps and plans
 - survey information
 - title searches.

If there is insufficient or unreliable information to determine the size, type or age of the landfill, these should be considered 'unknown' for the purpose of using Table 5.

Appendix C: Sample planning permit conditions

The sample planning permit conditions below correspond to the level of assessment potentially required as an outcome of the process set out in section 10 of this guideline. A responsible authority may use the corresponding conditions below and adapt them as required by the relevant circumstances.

Note that where a planning application also refers to potentially contaminated land, modifications to these conditions will be required. Contact EPA for further advice.

Requiring a landfill gas risk assessment

1. Prior to the commencement of the use or buildings and works associated with the use (or the certification or issue of a statement of compliance under the *Subdivision Act 1988*), the permit holder must, to the satisfaction of the responsible authority:
 - a) engage a professional environmental consultant with demonstrated experience in the assessment of landfill gas risks to assess the potential for landfill gas to impact on the development and prepare and submit to the responsible authority the scope of the proposed risk assessment.
 - b) upon approval of the scope of the risk assessment by the responsible authority, have the consultant conduct the risk assessment and prepare a report to be submitted to the responsible authority which contains the consultant's opinion as to any potential risk associated with landfill gas beneath the land and any recommendations for the management or monitoring of the gas. The consultant must provide an opinion on whether further investigation is required, in particular, whether such further investigation should consist of an environmental audit under Part 8.3 of the *Environment Protection Act 2017*.
 - c) if the risk assessment report, or responsible authority recommends an audit under Part 8.3 of the *Environment Protection Act 2017*:
 - i. engage an environmental auditor appointed (or taken to be appointed) under the *Environment Protection Act 2017* to prepare and submit to the satisfaction of the responsible authority a scope of the proposed audit which includes consideration of both landfill gas and odour risk; and
 - ii. have the environmental auditor conduct an audit under part 8.3 of the *Environment Protection Act 2017* in accordance with the agreed scope.
2. Prior to commencement of use or occupation of the development, the permit holder must:
 - a) implement all recommendations in an environmental audit statement to the satisfaction of the responsible authority; and
 - b) where the recommendations require verification of works or compliance, provide written confirmation of compliance from a suitably qualified environmental professional or other suitable person acceptable to the responsible authority. Compliance sign-off must be in accordance with any requirements in the conditions or recommendations regarding verification of works.

[Where there are conditions of an environmental audit statement or recommendations of the risk assessment report or environmental audit statement that require significant ongoing maintenance and/or monitoring at the site, the following condition might also be used:]

- c) the permit holder must enter into a section 173 Agreement under the *Planning and Environment Act 1987*. The Agreement must be executed on the title of the relevant land prior to the commencement of the use and prior to the issue of a Statement of Compliance under the *Subdivision Act 1987*. The permit holder must meet all costs associated with drafting and execution of the Agreement, including those incurred by the responsible authority.

Requiring an environmental audit to assess landfill gas risk

1. Prior to the commencement of the use or buildings and works associated with the use (or the certification or issue of a statement of compliance under the *Subdivision Act 1988*) the permit holder must, to the satisfaction of the responsible authority:
 - a) engage an environmental auditor appointed (or taken to be appointed) under the *Environment Protection Act 2017* to prepare and submit to the satisfaction of the responsible authority a scope of the proposed audit which includes consideration of both landfill gas and odour risk;
 - b) have the environmental auditor conduct an audit under part 8.3 of the *Environment Protection Act 2017* in accordance with the agreed scope.
2. Prior to commencement of use or occupation of the development, the permit applicant must:
 - a) implement all recommendations in an environmental audit statement to the satisfaction of the responsible authority;
 - b) where the recommendations require verification of works or compliance, provide written confirmation of compliance from a suitably qualified environmental professional or other suitable person acceptable to the responsible authority. Compliance sign-off must be in accordance with any requirements in the conditions or recommendations regarding verification of works.

[Where there are conditions of an environmental audit statement or recommendations of the environmental audit statement that require significant ongoing maintenance and/or monitoring at the site, the following condition might also be used]:

- c) The permit holder must enter into a section 173 Agreement under the *Planning and Environment Act 1987*. The Agreement must be executed on the title of the relevant land prior to the commencement of the use and prior to the issue of a Statement of Compliance under the *Subdivision Act 1987*. The permit holder must meet all costs associated with drafting and execution of the Agreement, including those incurred by the responsible authority.



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Guide to separation distance and landfill buffer changes

The following tables outline changes to recommended separation distances and landfill buffers in the proposed *Separation distance guideline* and *Landfill buffer guideline*, compared with current guidance. The tables only include information on proposed separation distances and landfill buffers that have increased, reduced, been introduced or been removed.

Note that the proposed *Separation distance guideline* sets out separate separation distances for odour and dust, unlike EPA publication 1518.

Bold text indicates where a separation distance/landfill buffer for a sub-section of industry or landfills has been introduced or changed.

Table 1: Odour (Separation distance guideline)

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Agriculture			
Cattle or dairy intensive farming or feedlot; dairy	5,000 metres	Case by case	Modified to case by case because separation distances for dairy farms are highly design and size dependent.
Fish farming	N/A	100/150/200 metres (depending on type)	Introduced to account for odour from fish farming.
Grain and stockfeed mill and handling facility; with meat or meat by-products incorporated in feed (> 20,000 t/year)	250 metres	500 metres	New sub-section introduced to account for odour where meat or meat by-products are incorporated in feed.
Intensive sheep or goat feeding systems	N/A	See further guidelines	Introduced to account for odour from emerging intensive farming.
Piggery; outdoors	N/A	See further guidelines	Introduced to account for odour from outdoor piggeries.
Soil blending, conditioning and mixing applied to farms or market gardens	N/A	500 metres	Introduced to account for the rise in application of manures, biosolids etc. to farms and market gardens.
Stock sale yard; > 10,000 head per week	500 metres	1,000 metres	New sub-sections introduced to adopt a flexible scale for sale yards based on size/head of stock.

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Stock sale yard; > 30,000 head per week	500 metres	2,000 metres	
Basic metal products			
Metal casting	Various	100/500/1,000 metres (depending on type and scale)	Large scale smelters are not expected to be developed in Victoria in future (and if they were, would always trigger a full risk assessment). Basic metal products category changed to take into account odour from more common metal casting and foundries using sand and die casting.
Chemical, petroleum and coal products			
Briquette (coal) production (> 2,000 t/year)	250 metres	N/A (500 metres under 'hydrocarbon and coal products and derivatives production')	Briquette (coal) production no longer requires a separate category based on current knowledge of the sector, instead included in 'hydrocarbon and coal products and derivatives production'.
Coke production (> 100 t/year)	N/A	Case by case	Introduced to account for odour from premises on which coke is produced, quenched, cut, crushed or graded from coal or petroleum
Chemical blending or mixing	N/A	300/500 metres (depending on type and scale)	Introduced to account for odour from premises that blend or mix chemicals.
Cosmetic and toiletries production (> 2,000 t/year)	100	300	Distance increased based on recent field experience for these types of facilities and peer review from technical experts within EPA.
Formaldehyde production (> 2,000 t/year)	250 metres	N/A (Case by case under 'other organic and inorganic chemical production')	Formaldehyde production no longer requires a separate category based on current knowledge of the sector, instead included in 'other organic and inorganic chemical production'.

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Industrial gas production (> 2,000 t/year)	1,000 metres	Case by case	Modified to case by case as these facilities are typically fully enclosed and 1,000 metres is considered excessive for odour emissions.
Plastics manufacture and or recycling (> 2,000 t/year)	N/A	200 metres	Introduced to account for odour from manufacture of plastic products from raw or recycled plastic material, distinct from synthesis and production of plastic precursors (polymers and resins).
Rubber, polyester and synthetic resins production (> 2,000 t/year)	1,000 metres	500 metres	Distance reduced to reflect modern pollution control equipment available.
Food, beverages and manufacturing			
Abattoir – no rendering; > 6,000 head/day	500 metres	1,000 metres	Size-specific distances adopted for abattoirs. Size thresholds now determined by number of head per day processed (in head of sheep equivalent).
Alcoholic beverage manufacturing	N/A	250/500 metres (depending on throughput)	Introduced to account for the growth in the alcoholic beverage manufacturing industry in Victoria.
Bakery; where heat is used to clean baking equipment (> 200 t/year)	100 metres	Case by case	New sub-section introduced to account for odour from bakeries where heat is used to clean baking equipment, as this is a more odorous activity.
Produce processing works (> 200 t/year)	N/A	500 metres	Introduced to account for odour from production of finished foods and the recent development of manufacturing-only restaurants.
Mining and extractive industry			
Gas and oil extraction	250 metres	Case by case	Modified to case by case as it is anticipated that a risk assessment would be required for any proposal of this type.

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Miscellaneous manufacturing			
Hot dip galvanising	N/A	400 metres	Introduced to account for odour from hot dip galvanising operations.
Manufacture of products using fibreglass and resin (> 250 t/year)	250 metres	500 metres	Distance increased based on experience that these operations are highly odorous and establishing at larger scales.
Skin and hide processing	N/A	500 metres	Introduced to account for odour from premises on which animal skins or hides are dried, cured or stored.
Spray painting	N/A	100/300 metres (Depending on throughput)	Introduced to account for odour from spray painting operations.
Storage of wet-salted and unprocessed hides	250 metres	100 metres	Distance reduced to reflect current experience with these premises.
Surface coating (including drum coating)	N/A	200 metres	Introduced to account for odour from surface coating operations.
Non-metallic mineral products			
Asphalt plant; > 100 tonnes per week, existing plant	500 metres	1,000 metres	Two categories created for asphalt plants to account for agent of change situations where there is encroachment of older plants. Control technology of newer plants is expected to be of a higher order.
Paper and paper products			
Paper or paper pulp production; using semi-processed or recycled materials	100 metres	500 metres	Distance increased based on recent experiences in this sector in Victoria, where odour plumes have been recorded multiple times at long distances from the sources.
Storage and transport			
Bulk storage of chemicals etc.	N/A	1,000 metres	Introduced to account for odour from bulk chemicals storage.
Chemical storage and warehousing facilities	N/A	100 metres	Introduced to account for odour from smaller scale chemical storage and warehousing.

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Storage of petroleum and hydrocarbon products; > 2,000 t in total, fixed roof	250 metres	500 metres	Distance increased for fixed roofed storage of petroleum and hydrocarbon products to align with relevant distance for major hazard facilities. The 250-metre distance still applies where nitrogen pressurisation is used.
Textiles			
Dyeing or finishing of cotton, linen and woollen yarns and textiles	250 metres	100 metres	Distance reduced as technology has evolved in expectation of odour control.
Treatment and production of textiles – using chemicals or heat	500 metres	250 metres	Carbon disulphide removed from title and distance reduced given carbon disulphide is no longer used in textile manufacturing in Victoria.
Wool scouring	250 metres	200 metres	Distance reduced to be consistent with clause 53.10 of the Victoria Planning Provisions.
Waste management			
Biosolids application areas	N/A	500/1,000 metres (depending on type and throughput)	Introduced to account for odour from biosolids application areas.
Chemical or oil recycling (> 1,000 m ³ :total capacity)	N/A	500 metres	Introduced to account for odour from chemical or oil recycling.
Composting facility	See further guidelines (superseded)	See further guidelines	Updated to reference current guidance (EPA publication 1588) and Appendix C of the proposed <i>Separation distance guideline</i> , which includes a broader range of separation distances covering a wider range of composting technologies.
Container, tanker, or drum washing /reconditioning	N/A	500 metres	Introduced to account for odour from container, tanker, or drum washing/reconditioning.
Incineration	N/A	150/500 metres (depending on type)	Introduced to account for odour from incineration.

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Landfill	See further guidelines (Landfill BPEM)	See further guidelines (<i>Landfill buffer guideline</i>)	Updated to refer to new guidance on landfill buffers. <i>For more information about changes to landfill buffers in the Landfill buffer guideline, see Table 3 below.</i>
Liquid waste facility (> 1,000 m ³ total capacity)	N/A	500 metres	Introduced to account for odour from liquid waste facilities.
Materials recovery and recycling; accepting scrap metal	Case by case	500 metres	Distance adjusted to only reflect scrap metal materials recovery and recycling processes. Other materials recovery and recycling only requires a separation distance for dust (see Table 2).
Transfer station; accepting green waste/putrescible waste (e.g., FOGO)	250 metres	500 metres	Distance increased and only applied to transfer stations accepting green waste or putrescible waste. 250-metre separation distance for nuisance dust still applied to all transfer stations.
Waste to energy plant	N/A	Case by case	Introduced to account for odour from waste to energy plants, as an emerging industry.
Wood, wood products and furniture			
Manufacture of wood-fibre or wood-chip board	250 metres	1,000 metres	Distance increased based on in-field experience with odour from milling and stockpiles.
Sawmill; sawing, milling, chipping, debarking and hogging	250 metres	500 metres	Distance increased for these typically larger sawmills.
Sawmill; handling, cutting and processing logs into timber, including timber drying/seasoning	250 metres	200 metres	Distance reduced for these typically smaller sawmills.
Timber preserving works (> 10,000 cubic metres of timber per year)	100 metres	250 metres	Distance increased based on more odorous treatment agents used (compared with older facilities) such as creosote.

Table 2: Dust (Separation distance guideline)

Industry type	Current distance (EPA pub. 1518)	Proposed distance (draft EPA pub. 1949)	Reason
Mining and extractive industry			
Open cut coal mine	1,000 metres	2,000 metres	Distance increased based on the size and nature of these premises.
Coal handling and storage without mining	N/A	500/1,000 metres (depending on throughput)	Introduced to account for dust from coal handling and storage without mining. Coal can easily be broken down into finer particles during handling and in transit, posing a risk of dust emissions.
Quarry; without blasting	250 metres	500 metres	Based on recent experience with these facilities. The distance can be reduced to 250 metres if activity is substantially below ground level (> 10 metres).
Miscellaneous manufacturing			
Abrasive blasting	N/A	50/100/300/500 metres (depending on type and throughput)	Introduced to account for dust from abrasive blasting.
Waste management			
Landfill	See further guidelines (Landfill BPEM)	See further guidelines (<i>Landfill buffer guideline</i>)	Updated to refer to new guidance on landfill buffers. <i>For more information about changes to landfill buffers in the Landfill buffer guideline, see Table 3 below.</i>
Materials recovery and recycling facility	Case by case	250 metres	Distance adjusted to reflect processes used, which are largely similar to those used at quarries (without blasting). Distance aligns with current 250-metre separation distance for quarries (without blasting).
Wood, wood products and furniture			
Sawmill; sawing, milling, chipping, debarking and hogging	250 metres	500 metres	Distance increased for these typically larger sawmills.
Sawmill; handling, cutting and processing logs into timber, including timber drying/seasoning	250 metres	200 metres	Distance reduced for these typically smaller sawmills.

Table 3: Human health and amenity impacts (Landfill buffer guideline)

Landfill type	Current buffer (Landfill BPEM)	Proposed buffer (draft EPA pub. 1950)	Reason
Landfill accepting municipal (putrescible) waste (Type 2); tip face greater than 500 m²	500 metres	1,500 metres	<p>EPA's position on landfill buffers has evolved as a result of in-field experience and evidence published in a recent study by Bydder and Demetriou (July 2019) in the International Journal of Integrated Waste Management, Science and Technology 'Establishing the extent of odour plumes and buffers for waste handling facilities'.</p> <p>The current buffer of 500 metres as prescribed in the Landfill BPEM is out of date and inadequate to address human health and amenity impacts, in particular odour emissions. The study also found that the 500-metre buffer may not account for routine odour emissions from larger putrescible landfills, even when operating at best practice.</p> <p>The 1,500-metre buffer may be varied to a minimum of 1,000 metres with an appropriate odour risk assessment that demonstrates an alternative buffer is acceptable.</p>
Landfill accepting solid inert waste (Type 3)	200 metres	500 metres (for odour)	Recent experience has shown that subsurface hotspots and landfill gas generation in leachate can develop in operating solid inert landfills and generate odour that can be detected up to and beyond 500 metres from the landfill.

XX January 2023

Environment Protection Authority Victoria
Submit: Engage Victoria Online Submission

Dear Mr Miezis,

SUBMISSION - EPA PROPOSED SEPARATION DISTANCE GUIDELINE AND LANDFILL BUFFER GUIDELINE

We welcome the opportunity to provide feedback to the EPA during the consultation period for the Separation Distance Guideline, EPA Publication 1949, December 2022 and the Landfill Buffer Guideline, EPA Publication 1950, December 2022.

We have divided our submission into three, with the first heading relating to both guidelines and then we have divided the feedback under each relevant guideline.

Overall comments applying to both guidelines

The update of the guidelines is supported given the age of the documents they are replacing and the up-to-date evidence-based research that the EPA is including the new Guidelines.

It is acknowledged that the purpose of the proposed guidelines is to:

- support land use and development decisions, protect human health and amenity from the effects of pollution and waste associated with industry and landfills; and
- protect industry and landfills from inappropriate land use and development nearby that may constrain operations.

However, it is important to note that the Guidelines are policy documents that fulfil a different role to threshold distance permit trigger contained in planning schemes at Clause 53.10 - Uses and Activities with Potential Adverse Impacts. The draft EPA Guidelines are a matter for consideration and, as a general rule, cannot be used in a directive or prescriptive manner.

Whilst they are more comprehensive than the existing guidelines, there are several areas for potential improvement in the guidelines or the overall approach to separation distances in Victoria.

It is recommended that a whole of government approach is taken. The current guidelines to be replaced are not referenced or incorporated in planning schemes across Victoria. It is recommended that the EPA collaborate with the Department of Transport and Planning (DTP) (formerly DELWP) to provide a holistic approach whereby the guidelines form part of the Victoria Planning Provisions.

Currently the existing and proposed guidelines lack visibility in the development process and this lack of presence dilutes and undermines their use and applicability in developments where landowners and developers are unaware of them.

Incorporating the guidelines into planning schemes will improve transparency, applicability and enforceability. Without the guidelines being clearly linked to the planning scheme, the objectives of the guidelines will not be achieved and enforcement opportunities will be limited.

Separation Distance Guideline, EPA Publication 1949, December 2022

It is recommended that the EPA collaborate with the Department of Transport and Planning (DTP) (formerly DELWP) to provide a holistic and integrated approach in order to ensure that the Guidelines have a more prominent and appropriately weighted role in land use and development in Victoria. It is also recommended that a diagram be added that could clearly explain the differences between the definitions of separation distances, threshold distances and buffers. Further clarity around small operations without a recommended separation distance with a more objective measure of odours offences to human beings.

Landfill Buffer Guideline, EPA Publication 1950, December 2022.

General comments on guideline

Council does not prefer this broad approach. As the regulator in this area, planning and responsible authorities heavily rely on the EPA for its expertise, guidance and advice. Council's expectation is that there be more guidance on how to approach the non-default buffer process and a higher level of involvement from the Department of Transport and Planning (DTP), Department of Energy, Environment and Climate Action (DEECA) and the EPA.

It would also be helpful if EPA would make an online mapping system available that shows the default buffer distances across *all* municipalities. Such a centralised system would be beneficial for where buffers overlap municipal boundaries.

The guideline appears to encourage that an EPA appointed auditor be engaged in every stage / process, which we consider neither practical nor realistic due to limited availability of auditors and the high cost involved. This also seems to be contrary to the idea of shifting away from the previous audit framework known to be a "one size fits all" approach.

It seems that the EPA still expects the planning authorities and proponents to incur the cost of and to utilise their own resources. For example, section 11.6 provides that “EPA’s role in providing advice on planning proposals does not extend to the review of individual LGRAs on behalf of Council...” Whilst 11.6 raises the issue of a peer review, unlike Practice Note 30: Potentially contaminated land (PPN30), it does not stipulate that the peer review can be at the cost of the proponent. This might be remedied by an appropriately worded condition. It is recommended that a condition is included to clarify this.

We have provided the following comments in relation to specific sections in the guidelines:

Section 11

- Section 11 deals with landfill gas risk assessments (LGRA) and Section 12 deals with the environmental audit system (similar to Section 6 in the current EPA 1642 guideline). On reading of these sections, it appears there is an inconsistency between them.
- Section 11 provides for, among other things, what an LGRA should include. The section then goes on to provide what the LGRA should recommend whether an audit is required. This implies that the EPA expects that the scope of the LGRA should include whether an environmental audit is required or not. Council would no doubt wish to rely on the outcome of the LGRA. If the LGRA recommends that an audit is not required, Council would consider this to be the end of the matter and that there be no ongoing or further requirement for Council to consider whether an audit should/must be done.
- It is recommended that the guideline is updated to resolve this matter.

Section 12

- Section 12.3 states that a 2 step process be adopted, whether or not the LGRA recommends an audit is required. Section 12.3 requires:
 - a. first, undertake a LGRA in accordance with section 11; and
 - b. secondly, conduct an audit.
- The above 2 step approach seems to be reflected in the first sample conditions 1 and 2 at Appendix C.
- The above section 12.3 needs to be amended to reflect that if LGRA recommends that an audit be conducted, then an audit should be done – but importantly that both steps are not required if the LGRA does not recommend an audit be done.
- In relation to the first set of sample conditions 1 and 2 at Appendix C, the condition 2 should be amended to make clear that condition 2 can be added if LGRA recommends that an audit be done.

Appendix C

- In relation to the first condition 1 in Appendix C, 1c) should be amended to remove “or responsible authority recommends an audit” as it is questionable in what circumstances the RA would not recommend an audit be done. Also, the RA will typically rely on a proper assessment or report be done that informs whether an audit be done or not.
- Cross referencing commentary on Section 12, in relation to the first set of sample conditions 1 and 2 at Appendix C, the condition 2 should be amended to make clear that condition 2 can be added if LGRA recommends that an audit be done.
- Cross referencing commenting below, re recommendation for additional condition and cost of works undertaken by proponent not Council. Whilst 11.6 raises the issue of a peer review, unlike PPN30, it does not stipulate that the peer review can be at the cost of the proponent. This might be remedied by an appropriately worded condition. It is recommended that a condition is included to clarify this.

We thank you for taking the time to consult with the community and should you wish to liaise with Council further on our comments or on future iterations of the draft guidelines, we would be pleased to assist. Please contact Catherine Sherwin, Manager City Planning if you have any questions or wish to discuss at Catherine.Sherwin@monash.vic.gov.au.

Yours sincerely

PETER PANAGAKOS
Director City Development