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Separation distance guideline

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Contents

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 (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
- *Self-assessment tool for small business* (publication 1812) (www.epa.vic.gov.au/about-epa/publications/1812)
- *Industry guidance: supporting you to comply with the general environmental duty* (publication 1741) (www.epa.vic.gov.au/about-epa/publications/1741-1)
- *Assessing and controlling risk: A guide for business* (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* (publication 1856) (www.epa.vic.gov.au/about-epa/publications/1856)
- Fact sheet: Engaging consultants (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)
- 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 VPP [1] 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 (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) and what 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).

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	• 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.	This guideline sets out recommended separation distances for odour and dust for industries listed in Table 2 and Table 4.
Threshold distance	• 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.	Clause 53.10 of the VPP sets out the threshold distances for different types of uses and activities with potential adverse impacts. 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.
Buffer	• 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.	PPN92 provides guidance on the planning provisions in the VPP relating to buffer management, including the Buffer Area Overlay.

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 m^2; or in a zone allowing subdivision to less than 4,000 m^2.

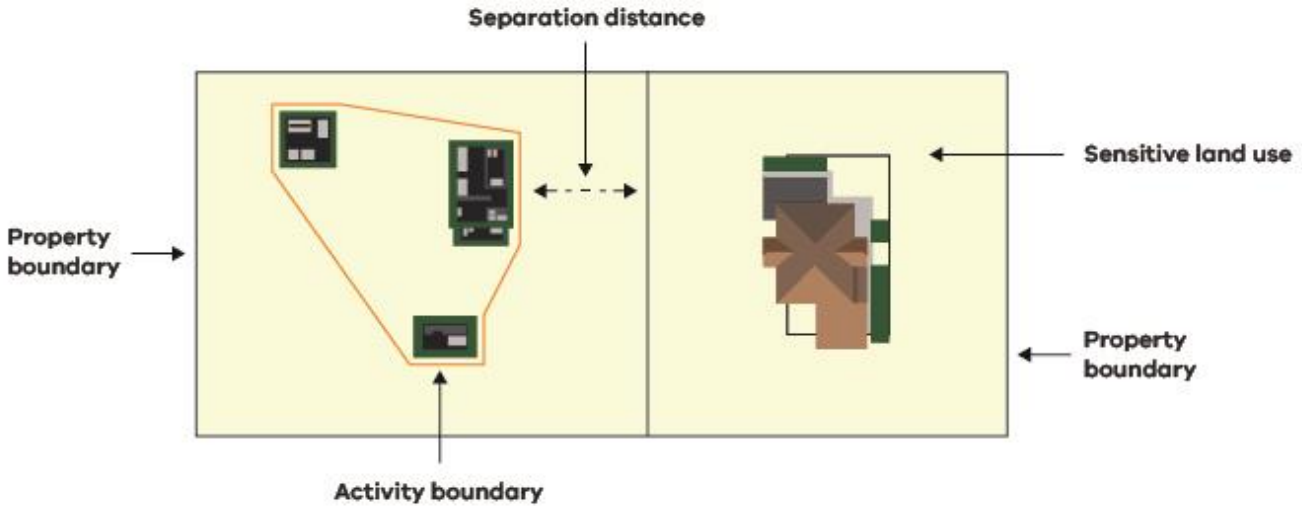

Figure 1. Measuring separation distances using Method 1: the urban method

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 m^2, or in a zone requiring subdivision to at least 4,000 m^2.

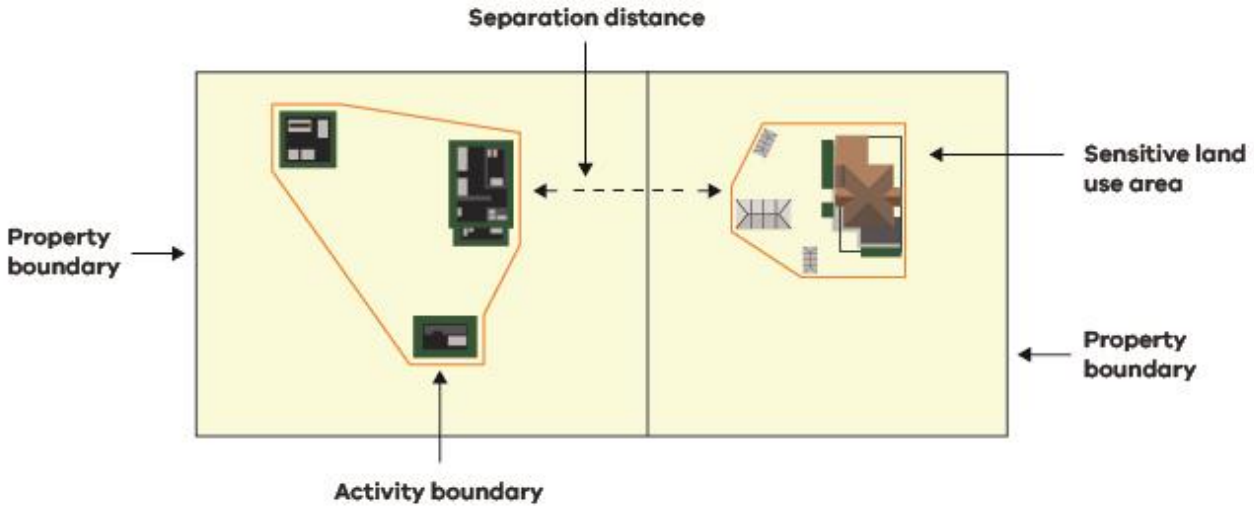

Figure 2. Measuring separation distances using Method 2: the rural method

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.

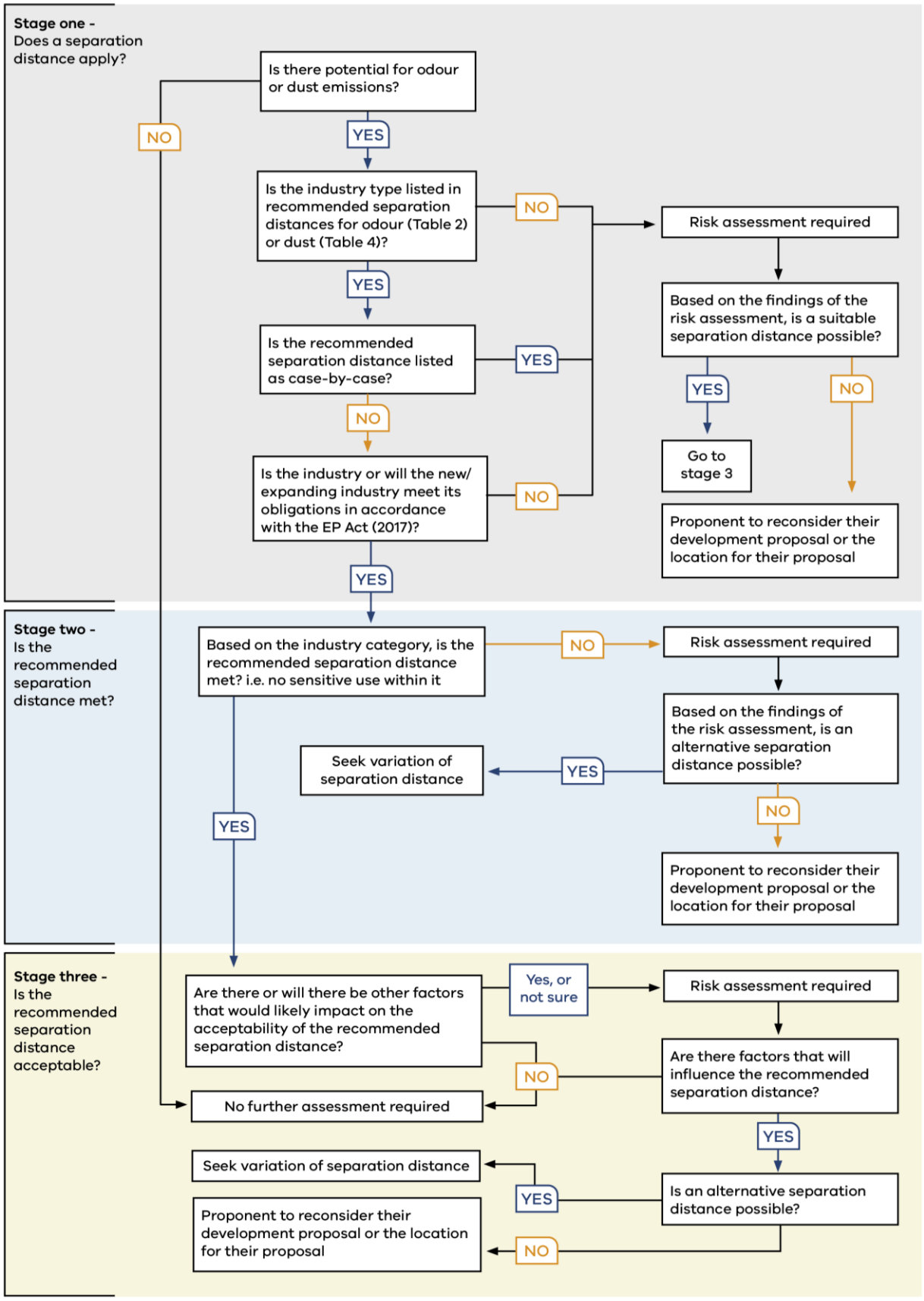

Figure 5. Separation distance decision-making process for odour or dust – proposed industrial use/development

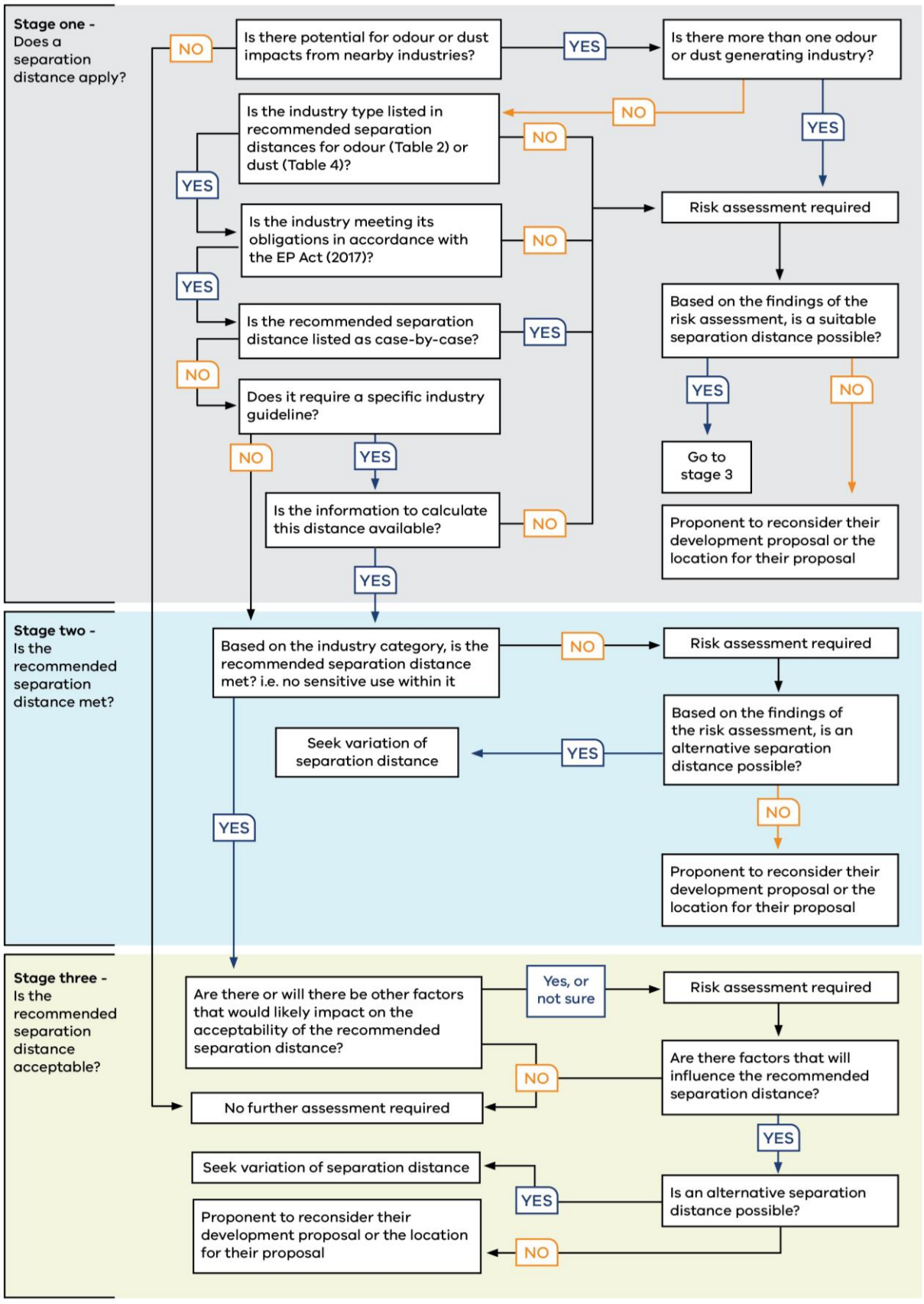

Figure 6. Separation distance decision-making process for odour or dust – proposed sensitive use/development

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	*National Guidelines for Beef Cattle Feedlots in Australia – 3rd Edition* (2012)
		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	*National procedures and guidelines for intensive sheep and lamb feeding systems* (2011)
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	*National Environmental Guidelines for Indoor Piggeries* (2018)
		Outdoors	See further guidelines	*National Environmental Guidelines for Rotational Outdoor Piggeries – Revised* (Tucker and O'Keefe, 2013)

Poultry	Egg, meat and bird production, including quails, ducks, turkeys, geese and chickens	For meat	See further guidelines	*Planning and environment guideline for establishing meat chicken farms (Guide 1 – Assessment guide)* (2021) 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	*Egg Industry Environmental Guidelines* – Edition II (2018)
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, knackeries 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 oxidisation (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 $m^{3\pm}$ total capacity	500	
Composting facility	Receiving, storing temporarily and transferring putrescible solid and green waste		See further guidelines	See *Designing, constructing and operating composting facilities* (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 *Landfill buffer guideline* (EPA publication 1950)
Liquid waste facility	Recycling, processing and transfer of liquid waste including sludges	> 1,000 $m^{3\pm}$ 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 *Guideline for Assessing and Minimising Air Pollution in Victoria*
Open cut coal mine	Harvesting, crushing, screening, stockpiling and conveying of coal		2,000*	EPA publication 1961 *Guideline for Assessing and Minimising Air Pollution in Victoria*
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 *Guideline for Assessing and Minimising Air Pollution in Victoria*
		With blasting	500	EPA publication 1961 *Guideline for Assessing and Minimising Air Pollution in Victoria*
		With respirable crystalline silica	500	
*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	*Planning guidance for concrete batching* (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 *Landfill buffer guideline* (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?

Distance = $5n^{1/2}$ (where n=10,000)
Distance = 5 x $(10,000)^{1/2}$
Separation distance = 500 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	• Open air receival • 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	• 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)
		• 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	• 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	Any land use that requires a focus on protecting human health and wellbeing, local amenity and aesthetic enjoyment. Examples* of such sensitive land uses include, but are not limited to: • 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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