Recommended separation distances for industrial residual air emissions

Guideline

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1 Introduction

This guideline provides advice on recommended separation distances between industrial land uses that emit odour or dust, and sensitive land uses. It is written for:

- planning authorities, responsible authorities, Environment Protection Authority (EPA), industry, developers and the community, to be used in the preparation and consideration of planning scheme amendments and planning permit applications
- industry, EPA and the community, to be used in the application for, and consideration of, works approvals and licences for scheduled premises.

This guideline aims to support effective decision making regarding land uses, to:

- protect human health and wellbeing, local amenity and aesthetic enjoyment
- protect existing industry from encroachment by sensitive uses
- prevent land adjacent to industry from being underutilised.

The importance of separation distances

When there is an inadequate separation distance between an industry and sensitive land uses, subsequent remedial action to alleviate off-site effects may be uneconomic. Accordingly, the viability of the industry is jeopardised and the off-site effects are not alleviated. Providing adequate separation distances seeks to avoid these potential lose/lose situations.

This guideline contains a list of recommended minimum separation distances that aims to minimise the off-site impacts on sensitive land uses arising from unintended, industry-generated odour and dust emissions. In some instances, the appropriate separation distance may vary from that recommended in this guideline as a result of site-specific operational or environmental conditions. In such cases, a detailed assessment and a resultant proposal that satisfies EPA will be required before a variation can be given planning approval.

In the past, the terms 'buffer' and 'separation distance' have been used interchangeably. This document uses the term 'separation distance' to mean the space between industrial land uses and sensitive land uses.

This guideline replaces EPA Publication AQ 2/86, *Recommended Buffer Distances for Industrial Residual Air Emissions 1990*.

Environment Protection Authority's role in land use planning

Land use planning is important in achieving the broader purpose of the *Environment Protection Act 1970* (EP Act) of ecologically sustainable development and pollution prevention. EPA also has statutory referral powers for some land use planning proposals under the *Planning and Environment Act 1987*.

EPA also uses its environmental expertise to assist planning authorities and other responsible authorities in understanding environmental risks associated with certain planning and development decisions. In particular, EPA can improve the quality of a land use and development decision by:

- highlighting significant environmental impacts likely to occur from the proposed use or development
- recommending or requiring solutions to address environmental risks
- providing information on best practice techniques for environmental protection
- applying regulatory interventions where appropriate.

2 Purpose of this guideline

This guideline provides recommended minimum separation distances between odour- or dust-emitting industrial land uses and sensitive land uses.

Accordingly, this guideline aims to:

- provide clear direction on which land uses require separation
- inform and support strategic land use planning decisions and the consideration of planning permit applications
- prevent new sensitive land uses from impacting on existing industrial land uses
- prevent new or expanded industrial land uses from impacting on existing sensitive land uses
- identify compatible land uses that can be established within a separation distance area.

3 Legal status of this guideline

This guideline includes a summary of the key principles and environment protection requirements of the EP Act and subordinate legislation. The technical details in this guideline provide measures for meeting these requirements.

4 Scope of this guideline

This guideline applies only to off-site residual odour and dust emissions from industries which have the potential to impact on human health and wellbeing, local amenity and aesthetic enjoyment. Noise, vibration, ambient and hazardous air pollutants have not been considered in the development of this guideline.

Accordingly, decision-makers and applicants should review all relevant regulations, policies and guidance to ensure that other amenity-reducing issues have been appropriately taken into account (for example threshold distances listed in the Victoria Planning Provisions).

While some odorous substances are also ambient or hazardous air pollutants, this guideline only considers these substances in relation to their odorous impact, and only for off-site residual odour and dust emissions.

Other regulations, policies and guidance relevant to the consideration of land use separation for environmental protection include:

- *State Environment Protection Policy (Air Quality Management)*
- *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1*
- *Noise from Industry in Regional Victoria*, EPA Victoria, 2011
- *Land Use Planning Near Major Hazard Facilities*, WorkSafe, 2010
- *Victoria Planning Provisions*, Department of Planning and Community Development.

Planning authorities should be consistent with this guideline when making strategic land use decisions. It is important that responsible authorities address the separation of land uses at the strategic planning stage to minimise potential conflicts during the subsequent planning permit approvals.

Responsible authorities should also be consistent with this guideline when assessing planning permit applications to avoid potentially conflicting land uses.

5 Policy basis

The EP Act and the Victoria Planning Provisions (VPPs) provide the policy basis for the regulation and management of separation distances for odour- and dust-emitting industries.

5.1 *Environment Protection Act 1970*

The EP Act creates the legislative framework for the protection of the environment in Victoria, having regard to the principles of environment protection which are set out in sections 1B to 1L of the EP Act. Section 1B is particularly relevant to land use planning and states, in part, 'sound environmental practices and procedures should be adopted as a basis for ecologically sustainable development for the benefit of all human beings and the environment. This requires the effective integration of economic, social and environmental consideration in decision-making processes with the need to improve community health and wellbeing and the benefit of future generations.'

State environment protection policies (SEPPs) are subordinate legislation made under the EP Act. They set environmental objectives to protect the beneficial uses of the environment and establish programs to meet these objectives.

SEPP Air Quality Management (SEPP AQM) is directly relevant to this guideline. SEPP AQM establishes a framework for managing air emissions and a program for achieving air quality objectives (including for odour and dust). It contains principles, approaches and measures for managing air quality at a local, regional and state level. It requires government agencies to apply the policy when making decisions, formulating strategies and implementing programs. SEPP AQM also states that it is EPA's role to develop and employ mechanisms to separate sources of air emissions from sensitive land uses.

For the purposes of this guideline the term 'sensitive land uses' encompasses land uses which require a particular focus on protecting the beneficial uses of the air environment relating to human health and wellbeing, local amenity and aesthetic enjoyment.

The *Public Health and Wellbeing Act 2008* also provides for protection from nuisance, including from emissions that are or are liable to be 'dangerous to health or offensive'.

The EP Act provides for regulations to be made to prescribe 'scheduled premises'.

'Scheduled premises' are premises which are considered to pose a significant threat to the environment, and occupiers are required to hold an EPA licence and seek prior works approval from EPA before undertaking new and/or altered activities. EPA licences can specify operating parameters, resource efficiency requirements, waste discharge limits and monitoring/reporting requirements.

Other premises not prescribed by the regulations are still required to comply with legislative provisions preventing pollution and with the relevant SEPPs. Most of these premises are categorised as small-medium enterprises and are dealt with by EPA on an 'as needs' basis, primarily if considered to have caused or be likely to cause pollution or an environmental hazard. EPA can serve pollution abatement notices on such premises if considered necessary to control activities and reduce risk to the environment.

Given these 'non-scheduled' premises do not need prior approval from EPA, it is important that their potential impact on sensitive land uses is considered by responsible authorities at the planning stage.

5.2 *Planning and Environment Act 1987*

The *Planning and Environment Act 1987* provides for the preparation of a set of standard provisions for planning schemes called the Victoria Planning Provisions (VPPs). The VPPs form a state-wide reference document and template for all planning schemes. The VPPs provide the framework, standard provisions and State planning policy. The VPPs also have reference to a number of documents which are incorporated documents, common to all planning schemes.

Planning schemes set out policies and provisions for the use, development and protection of land for an area.

Both the *Planning and Environment Act* and the VPPs contain requirements that air quality issues must be considered in planning decisions.

When preparing a planning scheme or planning scheme amendment, the *Planning and Environment Act* requires a planning authority to take into account any significant effects which it considers the scheme or amendment might have on the environment (section 12).

Section 60 also requires the responsible authority, before deciding on a planning permit application, to consider any significant effects on the environment the responsible authority considers the use or development may have.

More specifically, clause 13.04-2 of the VPPs relates to protection of air quality by ensuring, wherever possible, suitable separation between land uses that reduce amenity and sensitive land uses.

Clause 52.10 of the VPPs deals with those uses which have adverse amenity potential, and specifies the minimum threshold distance for various industry types between the proposed use and a sensitive land use zone (for example residential).

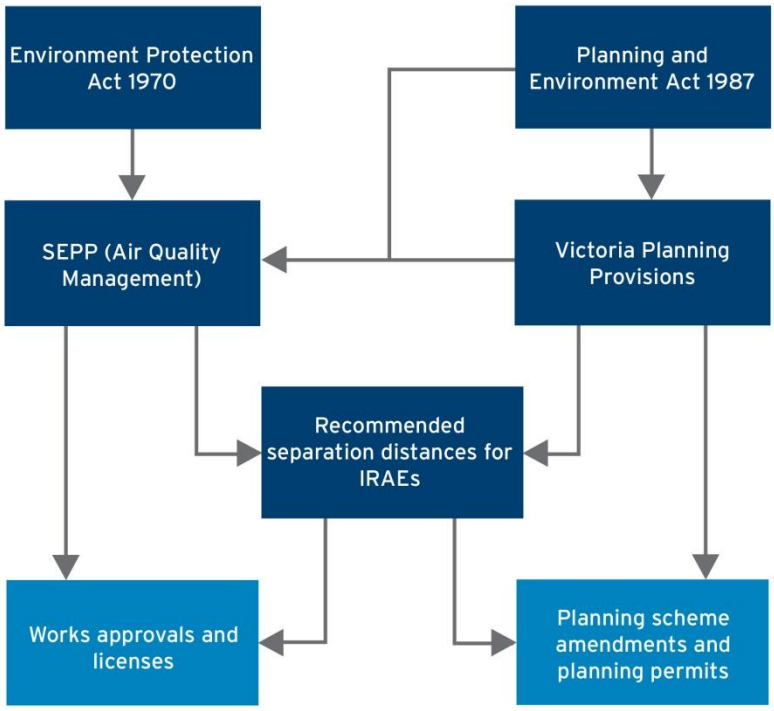
Clause 17.02 of the VPPs deals with industrial land development and outlines various strategies relating to ensuring appropriate threshold distances to sensitive land uses, and protecting industrial uses from encroachment of sensitive land uses which would adversely affect the industry viability.

Clauses 13.04-2, 17.02-1 and 17.02-2 of the VPPs all require that planning must consider EPA's recommended minimum separation distances.

Clause 66 of the VPPs relates to the referral of planning applications to particular authorities under section 55 of the *Planning and Environment Act 1987*. EPA is a referral authority for a range of planning applications, including any proposal for land use or development which requires works approval, a licence or a licence amendment under the *Environment Protection Act 1970*, (essentially this means those land uses and developments which are 'scheduled premises' under the *Environment Protection Act 1970* and regulations).

Clause 66.02-7 also requires referral to EPA of any proposal for an industry or warehouse for a purpose listed in clause 52.10, if the threshold distance is not met or is shown with a Note 1 (Note 1 of the table states that the threshold distance is variable dependent on the processes to be used and the materials to be processed or stored). These circumstances indicate that an increased level of assessment is required, hence the statutory referral to EPA.

Figure 1: Overview of the policy basis for this guideline



6 Separation distances and why they are needed

It needs to be recognised that where there are industrial air emissions from premises, even with good pollution control technology and practice, there may still be unintended emissions which must be anticipated and allowed for. While it is an objective of SEPP (AQM) that such emissions should be eliminated, it is recognised that even 'state of the art' facilities are not always guaranteed to achieve this goal 100 per cent of the time. Equipment failure, accidents and abnormal weather conditions are among the causes that can lead to emissions affecting sensitive land uses beyond the boundary of the source premises.

Unlike routine emissions, unintended emissions – industrial residual air emissions (IRAEs) – are often intermittent or episodic and may originate at or near ground level. Separation distances seek to avoid the consequence of IRAEs. An adequate separation distance should allow IRAEs to dissipate without adverse impacts on sensitive land uses.

However, the recommended separation distances provided in this guideline are not an alternative to source control. In preparing this guideline, EPA is not condoning uncontrolled off-site air emissions in contravention of SEPP (AQM) requirements. Rather, this guideline acknowledges that SEPP (AQM) objectives might not always be met, and the beneficial uses specified in the SEPP (AQM) might not always be protected in the vicinity of a premises.

In addition, if a premises has been located on a site with an inadequate separation distance, subsequent remedial action to alleviate off-site effects, either within or beyond the separation distance, will be required if IRAEs occur. However it should be realised that such action may require costly, high technology solutions, which may not be economically feasible or fully effective, thus jeopardising the economic viability of the industry and potentially not alleviating off-site effects. This is a lose/lose situation which needs to be avoided.

Responsible planning therefore needs to take these issues into account by considering the potential impacts the proposed development might have on its surroundings, and the potential impacts that surrounding land uses might have on the proposed development. This guideline seeks to protect sensitive land uses from odour and dust by taking into account the potential impacts of industry encroaching on sensitive uses *and* the potential impacts of sensitive uses encroaching on industry.

In addition, under the VPPs, industrial land uses have use rights which enable the industry to operate, provided they comply with relevant regulations. Accordingly, planning authorities and other responsible authorities need to carefully consider the appropriate separation of industrial land uses from sensitive land uses. When strategic land use plans are being developed for a precinct that has been identified for transition from an industrial land use to sensitive land uses, the planning authority should consult with potentially affected industries in order to develop a staged implementation plan that allows for the smooth transition of land uses over a period of time.

7 Recommended separation distances

Recommended minimum separation distances are contained in the attached *Index of Industry Categories* (the Index) which:

- defines the industries requiring a separation distance
- lists and assigns recommended separation distances between industrial land uses and sensitive land uses
- references other guidelines and codes if they are relevant to particular industries.

The recommended separation distances listed in this guideline have been arrived at following a review of Publication AQ 2/86, for technical adequacy and the consideration of empirical evidence of the performance of the recommended separation distances specified in Publication AQ 2/86.

The Index contains a definition of each industry and, in some cases, a description of the industry or information of the scale of the industry. The recommended separation distances assume that the industry is operating in compliance with relevant statutory rules and policies. However, the recommended separation distances are not based on any further or particular assumptions about the industry, the likelihood of IRAEs or the environment surrounding the industry. Rather, the recommended separation distances are EPA's default minimum in the absence of a detailed, site-specific assessment for a proposed industrial or sensitive land use.

Where the Index specifies 'case-by-case', the separation distance should be determined to the satisfaction of the EPA.

Where the Index refers to other guidelines and codes relevant to particular industries, this guideline recommends adopting the approach outlined in those other guidelines and codes in respect to separation distances.

Recommended separation distances for industrial residual air emissions

Table 1: Index of Industry Categories

Industry type	Industry activity/definition	Scale and industry description	Recommended separation distance (metres)	Further guidelines
Agriculture				
Grain and stockfeed mill and handling facility	Receiving, storing, fumigating, bagging, transporting and loading grain or stock feed	>20,000 tonnes per year	250	
Mushroom farm	Using blended solids or compost for the production of mushrooms		(Case by case)	
Piggery	Where pigs are confined indoors for the purpose of agricultural production		(See further guidelines)	*Code of Practice Piggeries*, Department of Primary Industries, Victoria, 1992
Poultry	Egg, meat and bird production, including quails, ducks, turkeys, geese and chickens	For meat	(See further guidelines)	*Victorian Code for Broiler Farms*, Department of Primary Industries, 2009
		For free range meat	(See further guidelines)	*Applying for a planning permit to farm chickens*, Practice Note 63, Department of Planning and Community Development, 2012
		For eggs (including free range)	(See further guidelines)	*Environmental Guidelines for the Australian Egg Industry*, Australian Egg Corporation Limited, 2008
Stock feedlot	Where animals are confined for the purpose of agricultural production; beef or dairy	Beef	(See further guidelines)	*Victorian Code for Cattle Feedlots*, Department of Primary Industries, 1995
		Dairy	*5,000*	
Stock saleyard	Where pigs, cattle or other stock are temporarily confined for sale, transport or processing	>500 head	500	
Basic metal products				
Iron and steel production	Processing smelt ores or ore concentrates to produce metal, and metal melting in furnaces, including by an electric arc	<1,000,000 tonnes per year	500	
		>1,000,000 tonnes per year	1,000	
Non-ferrous metal production	Processing, smelting or melting non-ferrous metals or ores using furnaces, ovens or electrolysis	<100 tonnes per year	100	
		100 to 2,000 tonnes per year	250	
		>2,000 tonnes per year	500	
		Aluminium by electrolysis	2,000	

Recommended separation distances for industrial residual air emissions

Chemical, petroleum and coal products				
Biocide production	Production of biocides	>2,000 tonnes per year	1000	
Briquette (coal) production	Production of briquettes	>2,000 tonnes per year	250	
Cosmetic and toilet preparation production	Production of cosmetics or toilet preparations	>2,000 tonnes per year	100	
Fertiliser production	Production of inorganic fertilisers	>2,000 tonnes per year	1000	
Formaldehyde production	Production of formaldehyde	>2,000 tonnes per year	250	
Industrial gas production	Production of industrial gases	>2,000 tonnes per year	1000	
Other hydrocarbon production and refining	Production of other petroleum or coal products/derivatives	>2,000 tonnes per year	500	
Other organic and inorganic chemical production	Production of chemicals	>2,000 tonnes per year	2,000	
Paint and ink production	Production of paint or ink	>2,000 tonnes per year	500	
Petroleum refinery	Refining oil or gas, producing hydrocarbon fractions or liquefying gas		2000	
Pharmaceutical and veterinary product production	Production of pharmaceutical or veterinary products	>2,000 tonnes per year	500	
Rubber, polyester and synthetic resins production	Production of rubber, polyester or synthetic resins	>2,000 tonnes per year	1000	
Rubber products production, using either organic solvents or carbon black	Production of rubber products using organic solvents or carbon black	>2,000 tonnes per year	250	
Soap and detergent production	Production of soap or detergent	>2,000 tonnes per year	500	
Food, beverages and manufacturing				
Abattoir - no rendering	Abattoirs or poultry processing works	>200 tonnes per year	500	
		<200 tonnes per year	(See note*)	
Bakery	Production of baked products	>200 tonnes per year	100	
		<200 tonnes per year	(See note*)	
Coffee roasting	Roasting of coffee beans	>200 tonnes per year	250	
		<200 tonnes per year	(See note*)	
Flour mill	Production of flour	>200 tonnes per year	250	
		<200 tonnes per year	(See note*)	
Malt works	Production of malt	>200 tonnes per year	250	
		<200 tonnes per year	(See note*)	
Milk products	Production of milk or dairy products	>200 tonnes per year	100	
		<200 tonnes per year	(See note*)	
Pet food	Production of pet food	>200 tonnes per year	500	
		<200 tonnes per year	(See note*)	

Recommended separation distances for industrial residual air emissions

Rendering and casings works	Abattoirs, knackeries or poultry processing works involving rendering	>200 tonnes per year	1000	
		<200 tonnes per year	(See note*)	
Seafood	Processing of seafood	>200 tonnes per year	500	
		<200 tonnes per year	(See note*)	
Smallgoods	Preserving or drying smallgoods	>200 tonnes per year	500	
		<200 tonnes per year	(See note*)	
Vegetable oil and fat production using solvents	Producing edible oils or fats using seed crushing, solvent extraction or fat deodorising	>200 tonnes per year	500	
		<200 tonnes per year	(See note*)	
*Note: For food and beverage manufacturing producing less than 200 tonnes of product per year, no separation distances are specified. 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				
Open cut coal mine	Harvesting, crushing, screening, stockpiling and conveying of coal		1000	
Gas and oil extraction	All natural gas or oil production wells including tight, shale and coal seams		250	
Mine for other minerals	Crushing, screening, stockpiling and conveying of other minerals		250	
Quarry	Quarrying, crushing, screening, stockpiling and conveying of rock	Without blasting	250	
		With blasting	500	
		With respirable crystalline silica	500	
Miscellaneous manufacturing				
Manufacture of products using fibreglass and resin	Manufacturing products using fibreglass or resin	>250 tonnes per year	250	
Manufacture of tanned leather and artificial leather products	Processing leather by tanning or dressing	>250 tonnes per year	250	
Printing	Printing works emitting volatile organic compounds	Emitting >100 kilograms per day	500	
Storage of wet-salted and unprocessed hides	Storing packaged wet-salted or unprocessed hides		250	
Non-metallic mineral products				
Asphalt plant	Production of asphalt	>100 tonnes per week	500	
Brick, tile, pipe, and refractory manufacturing	Production of bricks, tiles, pipes, pottery goods or refractories, processed in dryers or kilns	>10,000 tonnes per year	250	
Cement manufacturing	Production of cement from clays or limestone in either a furnace or a kiln to produce cement clinker	<5,000 tonnes per year	250	
		5,000 to 150,000 tonnes per year	500	
		>150,000 tonnes per year	1,000	
Cement clinker grinding	Grinding of cement clinker, clays or limestone materials	<150,000 tonnes per year	250	
		>150,000 tonnes per year	500	

Recommended separation distances for industrial residual air emissions

Concrete and stone article manufacture	Production of finished concrete or stone products	>5,000 tonnes per year	100	
Concrete plant	Production of concrete	>5,000 tonnes per year	100	
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 tonnes per year	100	
Paper and paper Products				
Paper and paper pulp manufacture by other methods	Processing wood, wood products, waste paper or other cellulose materials to form pulp, paper or cardboard.	Using semi-processed materials	100	
		Using cellulose and rags	250	
		Using sulphur containing materials	5000	
		By other methods	(Case by case)	
Storage and transport				
Storage of petroleum and hydrocarbon products	Storage of petroleum products or crude oil in tanks	Tanks exceeding 2000 tonnes		
		Floating roof	100	
		Fixed roof	250	
Textiles				
Dyeing and finishing of cotton, linen and woollen yarns and textiles, and production of carpet backing with latex	Textile manufacturing and processing including dyeing or finishing cotton, linen, woollen yarns or textiles		250	
Production of artificial fibres and textiles - other synthetic fibres and textiles	Textile manufacturing and processing including synthetic fibres or textiles		500	
Production of artificial fibres and textiles - cellulose nitrate, viscose fibre, cellophane or artificial rubber	Textile manufacturing and processing including cellulose nitrate, viscose fibre, cellophane or artificial rubber		1000	
Treatment and production of textiles - using carbon disulphide	Textile manufacturing and processing with textile finishing work using a chemical treatment (carbon disulphide)		500	
Wool scouring	Textile manufacturing and processing including wool scouring		250	
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)	

Recommended separation distances for industrial residual air emissions

Green waste composting facility	Receiving, storing temporarily and transferring putrescible solid and green waste		(See further guidelines)	*Separation distances for large composting facilities*, EPA Publication 1495, 2012 *Draft guidelines for separation distances for composting facilities,* EPA Publication 1445, 2012
Landfill	Landfills used for the discharge or deposit of solid wastes (including solid industrial wastes) onto land, except premises with solely land discharges or deposits, used only for the discharge or deposit of mining wastes, and in accordance with the *Extractive Industries Development Act 1995* or the *Mineral Resources (Sustainable Development) Act 1990*		(See further guidelines)	*Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills*, EPA Publication 788.1, 2010
Materials recovery and recycling facility	Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials		(Case by case)	
Permanent contaminated soil treatment facility	Permanent facility for the temporary storage, processing and treatment of contaminated soil. Excludes on-site (temporary or mobile) contaminated site soil treatment.		500	
Prescribed industrial waste treatment facility	Storage, treatment, reprocessing, containment or disposal facilities handling any prescribed industrial waste not generated at the premises		500	
Sewerage 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 Section 11 of this guideline pg. 15)	
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				
Manufacture of wood-fibre or wood-chip board	Manufacture of particleboard, plywood, MDF or chipboard		250	
Sawmill	Handling, cutting and processing logs into timber, including timber drying/seasoning		250	
Timber preserving works	Treating or preserving timber using hazardous or toxic chemical substances	>10,000 cubic metres of timber per year.	100	

8 How to measure separation distances

Separation distances should be determined by measuring from the 'activity boundary' of the industrial activity to the nearest sensitive land use. The activity boundary of the industrial activity is the area (within a convex polygon) that includes all current or proposed industrial activities (including the plants, buildings or other sources) from which IRAEs may arise (including stockpiles, windrows, leachate ponds and odour-control equipment).

Measuring from the activity area allows for any separation that is provided within the property boundary of the industry site to be considered. If an industry changes its use or moves a relevant activity within the property boundary, the requirement for a planning permit and/or works approval should trigger reassessment of adequate separation distances.

Where other guidelines and codes relevant to particular industries recommend a particular method, and are referred to in the Index, then the approach outlined in those other guidelines and codes should be adopted.

Two methods to measure separation distances are provided below. These methods differ in the way the measurement point for the nearest sensitive land use is determined.

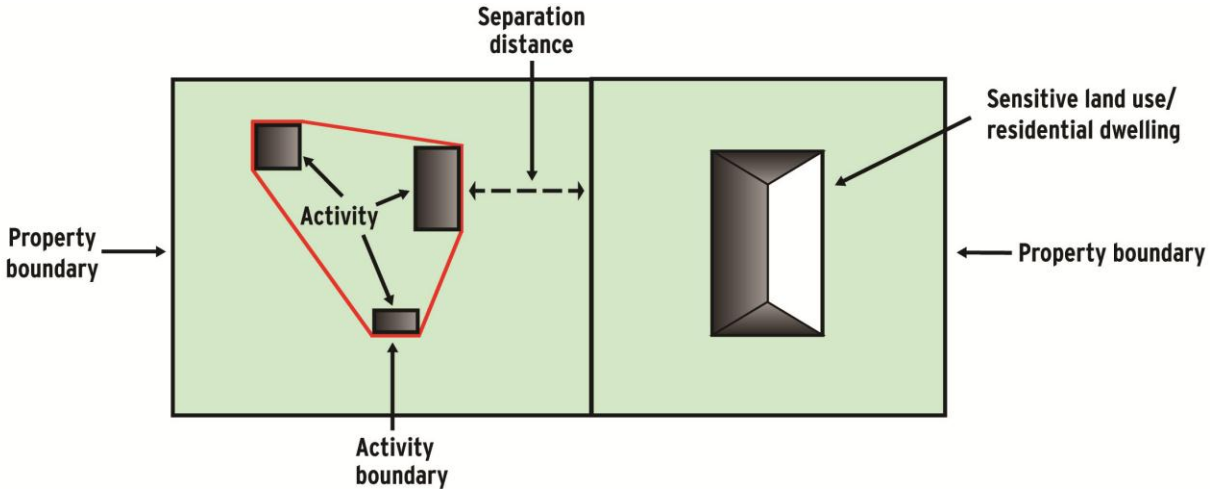
8.1 Method 1 - Activity boundary to property boundary (the 'urban' method)

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 2.

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

- in an urban area or township
- on a site less than 0.4 hectares, or in a zone allowing subdivision to be less than 0.4 hectares.

Figure 2: Method 1



8.2 Method 2 - Activity boundary to activity boundary (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 3. 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, BBQ 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
- on a site at least 0.4 hectares, or in a zone requiring subdivisions to be at least 0.4 hectares.

Irrespective, where off-site effects may be experienced, the industry producing any IRAEs should be separated as far as possible from the nearest sensitive land use.

Figure 3: Method 2

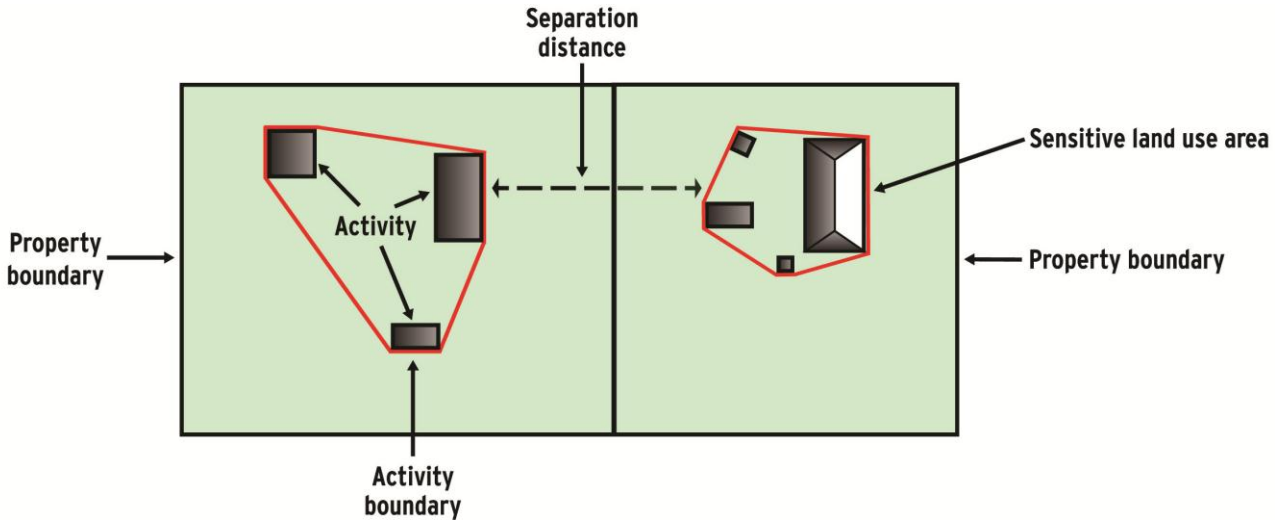


Table 1 below illustrates which method should be used for measuring separation distances in different circumstances.

Table 2: Selection of measurement method

		Site area or subdivision requirements	
		Less than 0.4ha	At least 0.4ha
Urban area or township	Yes	Method 1	Method 1
	No	Method 1	Method 2

9 Variation from a recommended separation distance

Where a variation from the recommended separation distance is sought, approval should not be given by the planning authority or other responsible authority until the relevant land use separation issues have been resolved to the satisfaction of EPA.

In most cases, the party seeking variation from the recommended separation distance will be the proponent of the proposed land use change, and that proponent will be seeking to reduce the separation distance.

Nevertheless, situations may arise where another party, including the planning authority or other responsible authority, might seek to vary the recommended separation distance – including increasing the recommended separation distance – to better account for the specific circumstances of the site.

9.1 Agent of change

It should be the responsibility of the 'agent of change' to provide evidence to the planning authorities or other responsible authorities that a variation from the recommended separation distances is appropriate. For the purposes of this guideline, the 'agent of change' is the proponent of the proposed land use that will give rise to the consideration of separation distances. Table 2 below illustrates the different proposed land uses and the 'agent of change' in each case.

Table 3: Agent of change

Proposal	Agent of change
New or expanded industrial land use is proposed	Industry
Sensitive land use is proposed	Proponent of the proposed development

Where both an industrial land use *and* a sensitive land use are proposed that give rise to the consideration of separation distances between them, then both can be considered the 'agent of change'. Where this is the case, and where a variation to the recommended separation distances is sought, the planning authority or other responsible authority should consider where the onus of proof lies, having regard to this guideline.

When seeking to prove that a recommended separation distance should be varied, the 'agent of change' must take into account the principles contained in this guideline, the modelling protocol set out in schedule C to SEPP (AQM) and any other guideline or code that is applicable to the industry in question.

There are no statutory obligations on an industry to supply information about its operations to third parties in respect to separation distances. However, industries are encouraged to support separation distance assessments, either by supplying modelling input data to third parties or undertaking their own assessments of their operations. Where the 'agent of change' is a new industrial land use within the separation distance around an existing industry, it may be in the interests of the existing industry to undertake its own assessment.

9.2 Considerations for site-specific variation

Separation distances seek to mitigate the consequences of IRAEs. Any proposal to vary from a recommended separation distance should detail why the consequences of IRAEs are such that variation from the recommended separation distances is justified.

Table 4 provides a guide to the criteria that must be considered during the assessment of site-specific variation to the recommended separation distances. Consideration of these criteria is a prerequisite for site-specific variation, but not a guarantee that a variation is justified. Additional information may be required in many cases, including sufficiently detailed data to enable dispersion modelling.

Table 4: Criteria for site-specific variation

Criteria	Explanation
Transitioning of the industry	Existing industry has formally indicated that it will transition out of an area and over a specified timeframe.
Plant equipment and operation	The industrial plant and equipment have an exceptionally high standard of emission control technology.
Environmental risk assessment	An environmental risk assessment of IRAEs has been completed that demonstrates a variation is justified.
Size of the plant	The plant is significantly smaller or larger than comparable industries.
Topography or meteorology	There are exceptional topographic or meteorological characteristics which will affect dispersion of IRAEs.
Likelihood of IRAEs	Particular IRAEs are either highly likely or highly unlikely to occur.

10 Further considerations

10.1 Cumulative impacts

This guideline does not seek to recommend specific separation distances for any cumulative impacts resulting from the co-location of like industries. However, where a cluster of industries of the same type exists or is proposed, consideration of cumulative impacts may be necessary. Advice from EPA is recommended when all of the following conditions arise:

- An existing or proposed industrial development occurs within the proximity of the same type of industrial development.
- The industry will have or has overlapping separation distances.
- The combined capacity of the individual industries is in excess of the 'scale of operations' listed in the Index.

10.2 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 IRAEs, nor warrant protection from them. Interface land uses typically include zones that are for business, agricultural/rural activity, recreation and conservation, are public open spaces, and other special purpose zones, except where sensitive land uses are permitted.

Table 4 provides examples of activities and their suitability as interface land uses. Table 4 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 5: Examples of interface land uses and their suitability

Suitability	Examples of interface land use
To be encouraged	Agriculture, car parks, cinema-based entertainment facilities, emergency services facilities, natural systems, offices, research centres, service stations and veterinary clinics.
To be considered (subject to assessment)	Light industry with no adverse amenity potential and utilities (except for sewage works).
To be prevented	Sensitive land uses and industrial land uses that require separation distances as listed in the Index.

10.3 Inter-industry separation distances

Certain industries are incompatible and their locations with respect to each other should be carefully considered. 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.

For example, the location of a food manufacturing industry requires consideration where it is proposed to be located in close proximity to or downwind from the manufacture, production or storage of wastes, and/or extraction of minerals or stone. Odour and dust from such industries have the potential to affect food manufacturing processes, resulting in food contamination or inconsistent food taste or smell.

Planning authorities need to 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 particular types of industrial activities, within a larger industrial precinct, is an effective means of preventing and managing incompatible industries.

11 Separation distances for sewage treatment plants

Sewage 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 sewage treatment plants should be determined in consultation with EPA. Wind regimes, topography, waste-loading, treatment/disposal methods and design capacity should be taken into account.

The equations and distances shown in table 5 below should be used when considering proposals for new and existing sewage treatment plants.

Table 6: Separation distances for sewage treatment plants (in metres)

Type of installation	Separation Distance (n = equivalent population)
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	200m
Disposal areas for secondary treated effluent by flood irrigation	50m

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 = $5(10,000)^{1/2}$
Separation distance = 500m

12 Examples of how to apply this guideline

Figure 4 and figure 5 show an existing industry that has a 1000 metre separation distance from an existing sensitive land use in an urban area or township. A new industry is proposed that has a recommended separation distance of 200 metres. As the examples are in an urban area, Method 1 is appropriate for determining the measurement point for the nearest sensitive land (property boundary).

In Figure 4figure 4, the proposed industry is located more than 200 metres from the sensitive land use, which is consistent with this guideline.

In figure 5, the proposed industry is less than 200 metres from the sensitive land use, which is inconsistent with this guideline. The proposed development should be refused unless the proponent of the new industry demonstrates to EPA's satisfaction that the separation distance is adequate to propose no risks.

Figure 4: Adequate separation distance for a proposed industrial land use

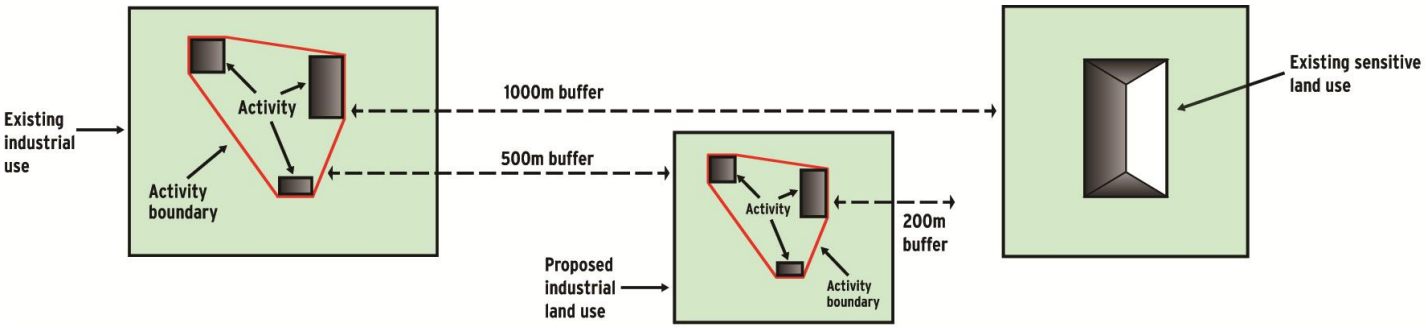


Figure 5: Inadequate separation distance for a proposed industrial land use

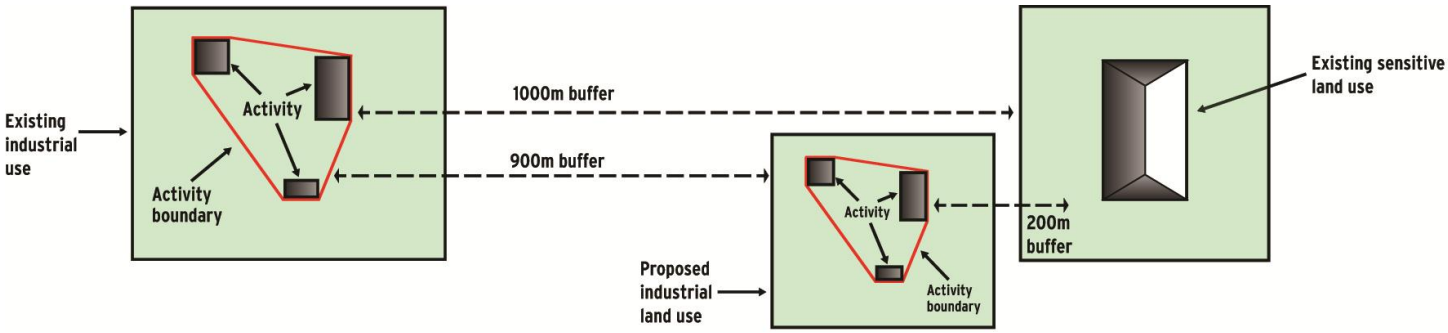


Figure 6 and figure 7 show an existing sensitive land use in an urban area or township located 1000 metres from an existing industry that requires a 1000 metre separation distance.

In figure 6, the proposed sensitive land use is located outside of the separation distance specified by this guideline.

In figure 7, the proposed sensitive land use is located within the separation distance specified by this guideline. The proposed development should be refused unless the proponent of the new sensitive use demonstrates to EPA's satisfaction that reduction in the recommended separation distance is appropriate.

Figure 6: Adequate separation distance for a proposed sensitive land use

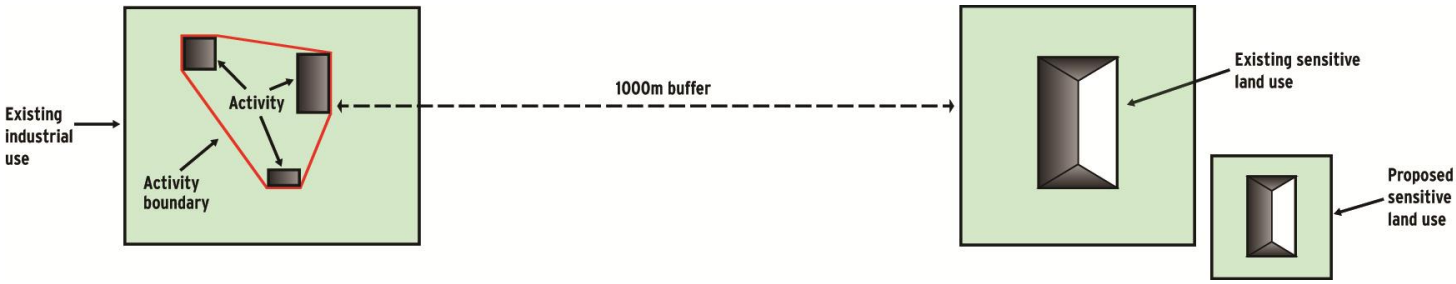
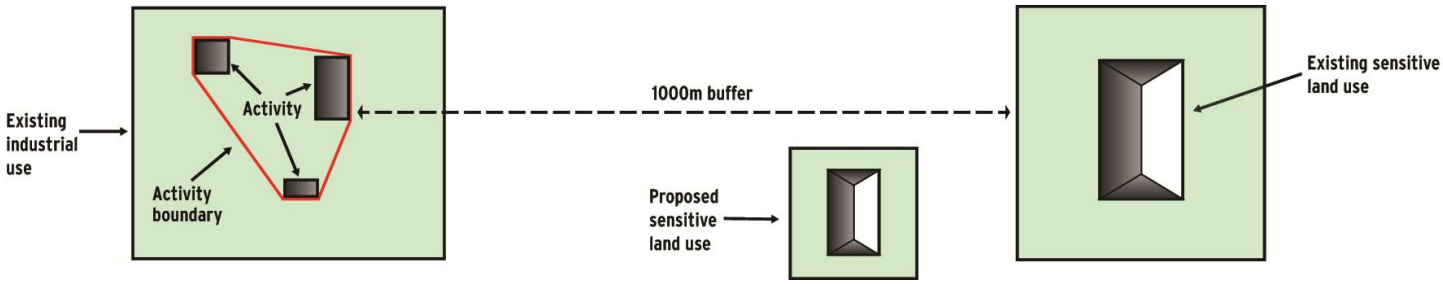


Figure 7: Inadequate separation distance for a proposed sensitive land use



13 Definitions

Term	Definition
Best practice	The best combination of eco-efficient techniques, methods, processes or technology used in an industry sector or activity that demonstrably minimises the environmental impact of a generator of emissions in that industry sector or activity. EPA provides guidance on demonstrating best practice in Publication 1517.
Hazardous air emissions	A hazardous substance that may threaten the beneficial uses of the air environment by virtue of its toxicity, bio-accumulation or odorous characteristics.
Industrial land use	Any land that is currently used for, or is identified in a planning scheme or through a planning permit as being suitable for, factories, warehouses, infrastructure, intensive animal agricultural farms, mining and extractive industries, workshops, processing and storage sites, or any other industrial activity.
Sensitive land use	Any land uses which require a particular focus on protecting the beneficial uses of the air environment relating to human health and wellbeing, local amenity and aesthetic enjoyment, for example residential premises, child care centres, pre-schools, primary schools, education centres or informal outdoor recreation sites.
To the satisfaction of the EPA	In accordance with either specific written advice from EPA relating to a specific planning decision, recent written advice from EPA related to a similar planning decision, or general advice published by EPA.
Urban area or township	As used or defined by the Victoria Planning Provisions.
Unintended emissions	Emissions emanating from an industrial site as a result of non-routine events, including equipment failure, accidents and abnormal weather conditions.