

# Separation Distances for Industry

A discussion document



**Prepared for Auckland Council**

**9 July 2012**

**Author:** Louise Wickham  
**Organisation:** **Emission Impossible Ltd**  
**Date:** 9 July 2012

**Reviewed by:** Rachael Nicoll

**Acknowledgements:**

Kevin Mahon, Mahon Consulting Ltd, for comments on the final draft  
Janet Petersen and Herb Familton, Auckland Council, for comments on drafts  
Mike Power, Tasmania EPA, for status updates

**Recommended Citation:**

Wickham, L (2012). Separation Distances for Industry, A discussion document prepared for Auckland Council, July 2012. Prepared by Emission Impossible Ltd



## Executive Summary

This report investigates the use of air quality separation distances (buffer zones), for industry in the Auckland Unitary Plan (currently under preparation).



Planning policy in Auckland is based on the separation of certain classes of activity by using land-use zones to achieve a number of desired outcomes. Included in these outcomes, is the protection of amenity of Urban Air Quality Management Areas and the unhindered operation of industry in Industrial Air Quality Management Areas. The idea behind the use of separation distances with respect to industrial areas is to:

- Avoid locating incompatible activities next to each other;
- Minimise reverse sensitivity issues and provide industry with some level of certainty for future use; and
- Manage risk.

International best practice includes the use of separation distances in planning. In particular, a number of Australian states specify separation distances for industry and we reviewed these approaches as they are considered the most relevant for New Zealand.

Of those reviewed, we were most impressed with the South Australia EPA approach because it was very clear. We recommend adopting the following SA EPA design principles for separation distances in the Auckland Unitary Plan; requiring that they be:

- **Simple** for all parties e.g. applicant, consultants and the general public: to be able to easily determine compliance;
- **Transparent**: separation distances are reproducible and consistent for all proposals with similar configurations;
- Generally **more conservative** than the separation distances predicted by air pollution modelling for a high percentage of proposals.

First and foremost, however, the use of separation distances should not undermine assessment of environmental effects and the use of best practice for emission control. The proposed separation distances deal primarily with avoiding or mitigating amenity issues such as dust and odour. As such, separation distances are complimentary, rather than an alternative, to existing RMA processes which address **all** emissions and impacts on the environment.

We recommend using the activity classes provided in Schedule 3 of the Auckland Regional Plan: Air, Land and Water and augmenting this, as necessary, with industry classifications from other jurisdictions. We have further provided a number of operational recommendations based on existing Council policy with, what we believe to be, the best approaches of other jurisdictions as appropriate for Auckland.

Recommended separation distances are provided in Appendix 1. These are generally based on (in order of preference) existing provisions in the Auckland Regional Plan: Air, Land and Water (**first choice**), South Australia EPA recommended separation distances (**second choice**) and/or Victoria, West Australia Tasmania EPA recommended separation distances.

Exceptions to the above were made for distances that we considered insufficient to protect amenity. For these exceptions, either another jurisdictions recommended separation distance was selected or we provided a new recommendation based on our own experience with these industries.

## Contents

<b>Executive Summary</b> .....	<b>i</b>
<b>1. Problem Definition</b> .....	<b>1</b>
1.1 Not in my back yard (NIMBY) .....	1
1.2 Industry in Auckland .....	2
1.3 All about amenity .....	2
1.4 What is a sensitive land use?.....	3
<b>2. Regulatory Framework</b> .....	<b>4</b>
2.1 Auckland Regional Policy Statement .....	4
2.2 Auckland Regional Plan: Air, Land and Water .....	5
2.3 Auckland Council Policy .....	9
<b>3. Jurisdictional Review</b> .....	<b>13</b>
3.1 New Zealand .....	13
3.2 South Australia .....	13
3.3 Victoria.....	15
3.4 West Australia .....	15
3.5 Tasmania.....	16
<b>4. Recommendations</b> .....	<b>18</b>
4.1 Principles.....	18
4.2 Industry Classification.....	19
4.3 Operational Recommendations.....	19
4.4 Separation Distances .....	21
4.5 Amendments to Separation Distances .....	22
<b>5. References</b> .....	<b>24</b>
Appendix 1 Recommended Separation Distances .....	26
Appendix 2 Excluded Industrial Activities .....	37

# 1. Problem Definition

## 1.1 Not in my back yard (NIMBY)

Nimbys are a well-documented phenomenon. In some cases the opposition to the location of new activities is clear cut and quite reasonable. After all, who wants the smell of a petroleum refinery wafting in whilst having your cornflakes?

Other cases are, however, not quite so straight forward. Is it fair for a resident in a brand new subdivision to complain about the abattoir next door that has been operating for 30 years?

Development planning policy in Auckland is based on the separation of certain classes of activities by using land-use zones to achieve a number of desired outcomes. Included in these outcomes, is the protection of the amenity of Urban Air Quality Management Areas and the unhindered operation of industry in Industrial Air Quality Management Areas (more on these later).

The idea behind the use of separation distances with respect to industrial areas is to:

- Avoid locating incompatible activities next to each other;
- Minimise reverse sensitivity issues and provide industry with some level of certainty for future use; and
- Manage risk.

The objective of this project is to investigate the use of air quality separation distances (buffer zones), for industry in the Auckland Unitary Plan (currently under preparation).

This report classifies the industry in question and develops principles for creating separation distances to achieve the above outcomes. It further summarises the current planning framework and builds on previous work to provide clear recommendations on the use of separation distances for industry for input into The Auckland Unitary Plan.



## 1.2 Industry in Auckland

Emissions from industry are highly specific to the industry in question. To characterise emissions from industry, therefore, we first have to classify industry.

Schedule 3 of the Auckland Regional Plan: Air, Land and Water (ARP: ALW) contains a comprehensive industrial classification list for stormwater management. We thought the most practical approach therefore, would be to use this existing industrial classification as a starting point.

We augmented the ARP: ALW list with industry classifications, from other jurisdictions, for which we considered a separation distance was potentially useful for Auckland. Based on our experience with complaints at the Auckland Regional Council, we also added one new activity – coffee roasters (without afterburner).<sup>1</sup>

The full list of industry activities are provided in Appendix 1. Appendix 1 is colour coded for each jurisdiction.

Activities that we did not consider needed separating, and were excluded from further consideration, are provided in Appendix 2.

We note that not all of these industries are currently located in Auckland – the intent of this list is to future proof proposed separation distances for future industry.

## 1.3 All about amenity

The intent of this report is for separation distances to deal primarily with avoiding or mitigating amenity issues such as dust and odour.

In addition to this, however, a number of activities are included to mitigate risk. These have not been subject to any formal hazard operational analyses. Rather they are our ‘best guess’ to prudently manage the location of new industrial activities in relation to sensitive land uses based on;

- other jurisdiction approaches; and
- our knowledge of the process itself.

Some jurisdictions include separation distances based on noise, however, we are not qualified to assess these and they have **not** been included in this report.

---

<sup>1</sup> Coffee roasters with an afterburner need no separation distance

## 1.4 What is a sensitive land use?

Residential and sensitive land uses include:

- Childcare centres, schools, educational facilities
- Hospitals, nursing homes, aged care
- Hotels, motels, caravan parks, tourist accommodation
- Offices, consulting rooms, gyms, fitness centres, marae and community centres
- Residential
- Parklands, playgrounds, recreation areas or reserves

Sensitive commercial activities include:

- Car saleyards (odour and dust)
- Warehouses with goods, e.g. dairy products, all clothing (odour and dust)
- Electronic industries (dust).

Of all the above, the following are considered the **most sensitive** and in need of the most protection:

- Childcare centres and schools
- Hospitals, in-patient care\*
- Residential (including marae)

\*e.g., maternity, aged care





## 2. Regulatory Framework

This section outlines the current planning framework with respect to separation distances for Auckland. We think the current framework works well and recommend adopting existing policy for **reverse sensitivity**, **air quality management zones** and **separation distances** within the new Auckland Unitary Plan.

One area that currently lacks in practice, however, is consent given under the District Plan not taking into account the requirements of the ARP: ALW. For example, a district or city council may still grant consent for a sensitive land use (e.g. early childhood education centre) in an Industrial Air Quality Management Area. This is where the new Auckland Unitary Plan will have significant advantages over previous, multiple plans – provided that existing policy and proposed separation distances are adopted as recommended.

### 2.1 Auckland Regional Policy Statement

Policy 10.4.7.4 of the Auckland Regional Policy Statement discusses the necessity of minimising the effects of reverse sensitivity as follows:

*“Adequate separation distances shall be maintained between industrial or trade premises that discharge, or have the potential to discharge, noxious, dangerous, offensive or objectionable contaminants to air and adjacent land uses.”*

This is expanded on in Section 10.4.9 Reasons, which advises:

*“Where sensitive land uses are not sufficiently separated from industries, amenity and quality of life in the adjacent area may be reduced due to odour or dust emissions. Good pollution control technology and sound practice is not an adequate substitute for buffer distances to segregate noxious and offensive industry from other sensitive land uses. Equipment failure, accidents and unusual weather conditions can lead to emissions affecting properties beyond the boundaries of the source premises. Also, costs of control equipment can sometimes be prohibitive. Provision of an adequate separation or buffer distance allows uncontrolled episodic emissions (which occasionally occur despite consent conditions and pollution control technology) to dissipate without adverse effects on sensitive land uses. **Such buffer distances must be preserved after the industry has been built.**”*



## 2.2 Auckland Regional Plan: Air, Land and Water

The Auckland Regional Plan: Air, Land and Water (ARP: ALW) acknowledges reverse sensitivity issues as the primary driver for the creation of Air Quality Management Areas. The purpose of these areas is to integrate the management of land use planning, set out in the district plans, and air quality in terms of Council's responsibilities. These are discussed in more detail below. All types of AQMA recognise that conflicts along boundaries, where expectations of amenity levels are likely to differ, need to be managed.

### *Industrial Air Quality Management Areas*

The purpose of the Industrial Air Quality Management Areas is to integrate the management of land use planning, set out in the district plans, and air quality in terms of Council's responsibilities so as to:

- Avoid reverse sensitivity issues arising by minimising the inappropriate location of conflicting activities next to each other;
- Protect suitable industrial zoned land for industrial activities in a manner that recognises that there may be unanticipated discharges to air;
- Recognise that several district plans make provisions for reduced amenity and restrict sensitive land uses in heavy industrial areas; and
- Encourage industrial intensification in such areas.<sup>2</sup>

To achieve this, the Industrial Air Quality Management Areas are based on land use zonings established in the district plans. To 'encourage' industrial activities to locate within these zones Council has adopted a **'less stringent' consenting and policy regime for activities that discharge contaminants into air within the Industrial Air Quality Management Areas.**

In some cases business or commercial areas have **not** been included in the Industrial Air Quality Management Area. This is because underlying zoning permits a range of sensitive activities rather than supporting reduced amenity (so as to promote industrial intensification). The intent is further to 'discourage' activities that are sensitive to heavy industry, being established inside the Industrial Area Quality Management Areas.

Examples of activities that are sensitive to heavy industry include early childhood education centres and elderly care facilities. In practice, however, if the district plan has no specific provision for consideration of air quality, activities sensitive to heavy industry may still be inappropriately located.

---

<sup>2</sup> Decision Notice 26 – Chapter 3 – Air Quality Management Areas, Auckland Regional Council, October 2004.

It is important to note that if the Air Quality Management Area approach is undermined the result will be that there are no suitable areas for heavy industry.

### Best Practice Case Study – Mangere Wastewater Treatment Plant



The Mangere Wastewater Treatment Plant provides an excellent case study of a fully integrated planning approach. The plant, including an odour boundary, is classified as an Industrial Air Quality Management Area in the ARP: ALW and is further designated in the Operative Manukau District Plan for plant operation. This is to avoid other industrial activities unrelated to wastewater treatment locating within this area and to preserve the odour boundary.

### Urban Air Quality Management Areas

The purpose of Urban Air Quality Management Areas is to ensure a high level of amenity and to protect human health, particularly for sensitive sectors of the population from the adverse effects of air discharges. Accordingly the ARP: ALW requires that existing industrial activities located in Urban Air Quality Management Areas manage their effects in a manner commensurate with their receiving environment.

### Rural Air Quality Management Areas

The purpose of Rural Air Quality Management Areas is to maintain levels of amenity while enabling appropriate 'rural' activities to exist. These activities include pastoral and horticultural activities as well as intensive farming such as poultry and piggery type activities, forestry and quarrying.

A key difference between Rural and Urban Air Quality Management Areas is that outdoor burning is permitted in rural areas. Discharges to air from the type of industrial activities expected within the Industrial AQMAs are generally **not** considered appropriate within Rural Air Quality Management Areas due to the potential adverse effects on human health and amenity. Quarrying is a unique activity because it has no choice in terms of location, relying on the presence of natural resources.

Industrial Air Quality Management Areas inside Rural Air Quality Management Areas may be a future compromise to allow industry in to the area, whilst not adding to the (generally already overallocated) Urban Air Quality Management Area.

## **Coastal Marine Air Quality Management Areas**

The Coastal Marine Air Quality Management Area applies to the coastal marine area of the Auckland Region. Given there are very few discharges of contaminants into air in the coastal marine area and the nature of the area, the management approach is to maintain existing high levels of amenity. Unlike the other Air Quality Management Areas, there are no specific provisions for separation distances that apply to the coastal marine area.

### **Objectives and Policies**

With respect to reverse sensitivity and separation distances, the ARP: ALW specifies the following **objectives**:

4.3.2 *To avoid, remedy or mitigate significant adverse effects from the discharge of contaminants into air on human health, amenity and the environment. In particular:*

...

b. *To maintain or enhance existing amenity within the Urban Air Quality Management Areas; and*

c. *To maintain existing levels of amenity within Industrial and Rural Air Quality Management Areas...*

4.3.5 *To avoid reverse sensitivity conflict from the discharge of contaminants into air where sensitive activities that have differing air quality expectations are located in close proximity to activities that discharge contaminants into air.*

This is given effect to through the following **policies**:

4.4.7 *To avoid or minimise adverse effects from competing and incompatible land uses, including reverse sensitivity, activities shall:*

a. *Locate within the Air Quality Management Area suitable to the nature of the activity; and/or*

b. *Manage the effects of their discharges of contaminants into air in a manner that is commensurate with the receiving environment (including the relevant provisions of the underlying District Plan zones); and/or*

c. **Maintain adequate separate distances.**

4.4.8 *Potential conflicts between incompatible land uses along the boundaries of Air Quality Management Areas shall be minimised. This should be undertaken through **the use of zoning and development controls in District Plans** and the **provision of buffer distances or notional boundaries** where necessary for activities requiring air discharge consents.*

- 4.4.25 *Significant adverse effects, in particular effects on human health, and/or reduced amenity, from the discharges into air of odour, dust, particulate, smoke, ash, hazardous air pollutants, overspray or visible emissions in an Urban Air Quality Management Area shall be **considered inappropriate**.*
- 4.4.27 *In assessing the effects of discharges into air of odour, dust, particulate, smoke, ash, hazardous air pollutants, overspray or visible emissions **in an Industrial Air Quality Management Area** recognition shall be given to the nature of activities usually associated with industrial processes and the intrinsic character of industrial areas, and that **a lower level of amenity can be expected** than that expected in Urban Air Quality Management Areas.*
- 4.4.28 *In assessing the effects of discharges into air of odour, dust, particulate, smoke, ash, hazardous air pollutants, overspray or visible emissions in a Rural Air Quality Management Area **recognition shall be given to the nature of activities associated with the primary production sector** and the rural character of rural areas.*

Policy 4.4.30 even goes so far as to provide a case study example of how the Air Quality Management Areas provide for certain activities with notional odour boundaries (refer section 2.3 for an explanation of a notional odour boundary).

- 4.4.30 *The discharge of contaminants into air from a waste management process shall generally be considered appropriate where:*
- a. *The process is located outside an Urban Air Quality Management Area; and*
  - b. *The process encourages the reduction, reuse or recycling of waste materials that may discharge contaminants into air; and*
  - c. *The composting of waste is fully enclosed;*
  - d. *Or, notwithstanding (a) to (c) above, it is within an existing notional odour boundary determined through designation or an instrument registered against a land title.*

Similarly, the explanation to the General/Permitted Activity Rule specifically provides that what may be considered offensive or objectionable in an Urban Air Quality Management Area, may not necessarily be considered offensive or objectionable in a Rural Air Quality Management Area.

## Separation Distances in the Auckland Regional Plan

Table 1 lists separation distances specified in the Auckland Regional Plan: Air, Land and Water.

**Table 1** Separation Distances in the Auckland Regional Plan

Industry/Activity	Separation distance	Additional conditions
<b>Mineral, ores and/or aggregates:</b> Open cast extraction Quarrying Mining Crushing Screening Mineral processing	<b>200 m</b>	Controlled activity Premises located outside an Urban Air Quality Management Area Specified dust controls in place. Dust management plan
<b>Green waste collection station</b> ( $< 500 \text{ m}^3$ ) <b>Refuse transfer station</b> ( $> 30 \text{ m}^3$ )	<b>300 m</b>	Controlled activity Premises located in an Industrial or Rural Air Quality Management Area. Minimum notional odour boundary of 300 m.
<b>Landfill</b> (domestic and industrial waste)	<b>1,000 m</b>	Minimum notional odour boundary of 1,000 m <i>*still under appeal (June 2012)</i>
<b>Intensive livestock farming</b> ( $>10,000$ chickens $< 180,000$ )	<b>400 m</b>	Minimum notional odour boundary of 400 m.

### 2.3 Auckland Council Policy

Auckland Council policy on reverse sensitivity and separation distances is summarised and discussed in a 2002 technical publication 152 – *Assessing Discharges of Contaminants into Air – Draft*. The relevant sections are summarised as follows.

Reverse sensitivity occurs when sensitive activities including residential properties, light commercial activities, places of assembly or places where children or the elderly may be present, are allowed to locate where they may be adversely affected by heavy industrial or noxious activities. This has the adverse effect of limiting the ability of the heavy industry or noxious activity to operate efficiently and in a climate of long-term certainty. Allowing sensitive activities in close proximity to noxious, dangerous, offensive or objectionable industries or activities may not only have adverse effects on the health, safety or amenity values of people but may also adversely affect the economic and safe operations of such industries or activities. Therefore, existing areas of industrial and business activity should not be compromised by the introduction of incompatible uses.



Existing Council policy is that the main way of minimising the effects of reverse sensitivity is through the use of separation distances (buffers).

Council strongly encourages separation distances (buffers) to minimise adverse effects on the surrounding environment, particularly with respect to odours (odour buffer) and other amenity impacts, such as dust. Separation distances to sensitive uses such as residential properties can be undertaken in several ways:

- Graduated zoning from non-sensitive uses (e.g. from heavy industry) through to slightly sensitive uses and finally to highly sensitive uses (e.g. residential);
- By owning the potentially affected area; or
- By using notional boundaries (see below).

Council policy is that effects should be measured from the source/s – not the boundary of the premises. This includes sources that move, e.g. landfill working faces or quarry faces. In such cases, the separation distance should be determined from the shortest possible distance (e.g. the edge of the predicted landfill footprint or quarry extraction area).

For new or greenfield sites, Council recommends the purchase of sufficient additional land surrounding the operation to ensure encroachment of sensitive uses cannot occur.

Council further notes that when assessing discretionary activities, consideration will be given to whether there are any sensitive uses, now or in the future, within the relevant buffer area. For example, if sensitive uses are likely to locate within a predicted distance then the buffer will generally be considered to cease at the start of where the sensitive activities do, or are likely to, locate. Even in industrial air quality management areas (IAQMA's), industries should locate far enough within the zone to ensure their buffer does not extend beyond the IAQMA.

The 2002 policy recommends using the 2001 Victorian EPA Buffer Guidelines to calculate separation distance (refer section 3.1).

### ***Notional Boundaries***

A notional boundary allows the assessment of compliance with any criteria to be shifted from the immediate premise boundary to the boundary of the nominated area (notional boundary). A notional boundary therefore, is put in place by establishing controls over the potentially affected area. Controls may be restrictions on surrounding properties by agreements or covenants with the relevant property owners or, in some instances, designations within a district plan.

Notional boundaries are **not** a licence to pollute to the new boundary and are only appropriate for:

- Activities using best practice and emissions minimisation; and
- Amenity issues like dust and odour only (i.e. notional boundaries are **not** suitable for activities emitting hazardous air pollutants).

Council generally supports the inclusion of roads within notional boundaries. People generally use roads for a short period of time (i.e. they are passing through) therefore, the duration of any adverse impact is likely to be low. Exceptions to this are:

- Where the notional boundary finishes at the road and it is highly likely that the effect will progress well beyond the road; and
- It is likely that the duration of adverse impacts is high (e.g. the road is used for recreational purposes such as Tamaki Drive on Auckland's waterfront).

### **Permitted Baseline**

In *Wilson v Waikato District Council* (Decision A138/2001), the Environment Court determined that the:

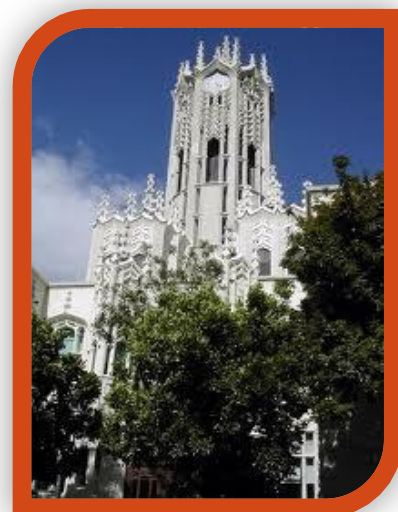
*consent authority must compare the effects of the proposal with those of what is being done lawfully on the land, and with effects of activities permitted as of right on the land under the district plan unless in all the circumstances such permitted activities would be fanciful.*

This has become known as the **permitted baseline test** and has been held to be required to be carried out for substantive decisions pursuant to Sections 104 and 105, including applications for non-complying activities.

### **What is the relevance of this for proposed separation distances?**

When assessing applications for industrial consent, consideration needs to be given to what reasonably (and not fancifully) could be in that area in the future – not just what currently exists. Examples of sensitive activities that are typically permitted in most zones and often overlooked by industry include:

- cafes and restaurants
- car yards
- churches
- early childhood education centres
- electronics manufacturing
- high quality surface finishing plant (e.g. furniture polishing, sheet metal fabrication)
- offices
- warehousing for food and/or fabrics





The opposite also holds true, i.e. when assessing applications for **sensitive** land use consent, consideration needs to be given to what industry may reasonably be located in that area in the future.

### 3. Jurisdictional Review

Our review focused primarily on Australia because a number of states have done a significant amount of work in this area. The following sections summarise the guidance issued by the Ministry for the Environment (New Zealand), South Australian, Victorian and West Australian EPAs respectively.

New South Wales does not specify separation distances but rather specifies a formulaic approach (including an online odour assessment calculator) (Department of Environment and Conservation NSW, 2006). This rather complex approach is not considered suitable for New Zealand and is not discussed further.

Queensland refers to the Victorian EPA buffer guidelines which are discussed below in Section 3.2.

All other Australian jurisdictions (Australian Capital Territory, Commonwealth of Australia and Northern Territory) do not have specified separation distances.

We have not reviewed all regional approaches in New Zealand in this report. Further, given the wealth of data from Australia and the similarities with New Zealand we did not feel a wider literature review for industry was necessary.

#### 3.1 New Zealand

The national good practice guide for odour refers, in turn, to the following guidelines for separation distances (Ministry for the Environment, 2003):

- EPA Victoria information bulletin Recommended Buffer Distances for Industrial Residual Air Emissions published in July 1990 (EPA Victoria, 1990 discussed below in Section 3.3); and
- Auckland Regional Council draft technical publication 152 Assessing Discharges of Contaminants to Air published in 2002 (Auckland Regional Council 2002, discussed above in Section 2.3).



#### 3.2 South Australia

South Australia has possibly the best guidance for separation distances of those reviewed (South Australia EPA, 2007) in terms of clarity of design and application. The distances quoted are recommended separation distances between various industrial uses and sensitive land uses. The guidelines further include a mechanism for a developer to

demonstrate that a separation distance, other than the recommended distances, is appropriate.

Key design features of the guidelines were that they be:

- **Simple** for all parties e.g. proponent, community and local government: to be able to easily determine compliance;
- **Transparent**: separation distances are reproducible and consistent for all proposals with similar configurations;
- **Quick and cost effective**: expert air quality or noise advice should not be required; and
- Generally **more conservative** than the separation distances predicted by air pollution [or noise] modelling for a high percentage of proposals.

We think these have been achieved.

The recommended separation distances are based on the assumption that Best Available Technology Economically Achievable (BATEA) is implemented. BATEA involves the use of emission control technology, which, although representing a significant financial cost, will not be such that the viability of the enterprise is threatened. The guidelines are clear that separation distances are not an alternative to source control and cleaner production methods.

The recommended separation distances apply to the location of new industry only. The SA separation distances are measured from the activity boundary (i.e., the location of the activity within the site). This is consistent with Auckland Council policy.

The SA separation distances further require the use of a surface roughness factor and a terrain weighting factor. Such factors would not be suitable for Auckland because:

- Auckland has strong coastal meteorological influences which would outweigh terrain and/or surface roughness impacts on overall dispersion;
- Auckland has complex terrain which similarly lessens the primacy of these factors.

### 3.3 Victoria

The Victorian guidelines for separation distances are the oldest of all reviewed, being published in 1990 (EPA Victoria, 1990).

The Victorian guidelines for separation distances are unusual in that they may be applied to existing industry and are not limited to new industry only. They refer to 'industrial residual air emissions' (IRAEs)

these being unintended or accidental emissions from industry despite the use of good pollution control technology and practice.

The guidelines are intended to address reduced amenity on the air environment only. This means that effects from noise, vibration, hazards and so on have not been considered.

We have some concerns that there have been significant changes in both industry best practice and emissions control technology since these guidelines were published. In addition to this, other jurisdictions have published more recent guidelines that we felt were more up to date. Accordingly, the Vic EPA recommendations were not our first or second choice of recommendation.



### 3.4 West Australia

The West Australian guidelines have been provided to assist proponents, consultants, responsible authorities and the general public with *information on the EPA's thinking in relation to aspects of the Environmental Impact Assessment process* (West Australia EPA, 2005). The intent of the recommended separation distances is to avoid or minimise the potential for land use conflict.

The recommended separation distances are intended to assist the location of new industry in the vicinity of existing sensitive land uses and similarly, new sensitive land uses in the vicinity of existing industry.

Key items to note:

- Separation distances are measured from the activity boundary.
- The guidelines require consideration of future expansion (e.g. expanding residential areas encroaching on industrial areas).
- The guidelines are a one-stop shop, incorporating a number of environmental codes of practice and management guidelines by State Government agencies (including Western Australian Planning Commission Statement of Planning Policy *State Industrial Buffer Policy*, 1997).

- Proponents or agencies wishing to deviate from the guidelines must provide a “well-researched, robust and clear justification arguing the need for that deviation”.

The WA EPA guidelines appear to be the most comprehensive of those jurisdictions reviewed, with an extremely detailed industrial classification system. Processes for which separation distances are recommended include drycleaners and catteries all the way up to crude oil extraction and petroleum refining.

The WA EPA recommended separation distances are generally less specific than other jurisdictions. Often a range of distances is specified that, in turn, are dependent on size, process, product and/or location. This does not provide a lot of certainty for industry or the general public.

What is clear, however, is the justification for each recommendation is based on impacts from:

- Gaseous and particulate emissions;
- Noise;
- Dust; and/or
- Odour.

The guidelines further note that they do **not** take into account:

- Cumulative impacts;
- Non-typical emissions;
- The protection of natural resources and significant elements of the natural environment; and
- Potential health impacts from emissions.

### 3.5 Tasmania

The Tasmania EPA has a list of standard recommended attenuation distances (SRADs) between various industries and sensitive land uses that were prescribed in 1996 (Tasmania DELM, 1996). These have recently updated in draft form as the *Attenuation Distances and Air Quality Code* (Tasmania Planning Commission, 2011). The Tasmania EPA kindly provided the updated draft guidance in confidence to the Auckland Council for the purposes of this project.

Attenuation distances are intended to avoid nuisance from activities with the potential to emit ground vibration, shock waves, light pollution, electromagnetic radiation, noise, odour or other air pollution. Distances are measured from each property boundary (excepting telecommunications towers and wind turbines which are measured from the actual facility).

The draft code applies (only) to Level 1 and 2 activities under the *Environmental Management and Pollution Control Act 1994* as follows:

- Level 1 activities: These activities may cause environmental harm to a less significant degree and are assessed and regulated by local government.
- Level 2 activities: These activities are more environmentally significant and are assessed and regulated by EPA Tasmania.

The draft code also prescribes development standards based on performance criteria and acceptable solutions.

## 4. Recommendations

### 4.1 Principles

We were impressed with the South Australia EPA approach because it was very clear. We recommend adopting the SA EPA design principles for separation distances in the Auckland Unitary Plan requiring that they be:

- **Simple** for all parties e.g. applicant, consultants and the general public: to be able to easily determine compliance;
- **Transparent**: separation distances are reproducible and consistent for all proposals with similar configurations;
- Generally **more conservative** than the separation distances predicted by air pollution modelling for a high percentage of proposals.

We note the attractiveness of another design principle that separation distances be:

- **Quick and cost effective**: expert air quality or noise advice should **not** be required.

This has obvious benefits for industry but first and foremost, the use of separation distances should not undermine assessment of environmental effects and the use of best practice for emission control. As such, that separation distances are complimentary, rather than an alternative, to existing RMA processes which address **all** emissions and impacts on the environment. The primary role of separation distances is for unforeseen fugitive and emergency discharges.

We further recommend specifying the basis for each recommended separation distance, i.e.:

- Odour;
- Dust;
- Risk; and/or
- Specific chemical (e.g. benzene).



## 4.2 Industry Classification

We recommend using the classification provided in Schedule 3 of the ARP: ALW (for stormwater management) as a starting point for classifying industrial activities in Auckland.

We further recommend augmenting this list with industry classifications, for which we consider separation distances may be potentially useful for Auckland, from other jurisdictions. Based on our experience with complaints at the Auckland Regional Council, we also added one new activity – coffee roasters.

A recommended list of industry activities are shown in Appendix 1. Activities that we did not consider needed separating, and were excluded from further consideration, are provided in Appendix 2.

We assume that the Auckland Council will consult publicly on the Auckland Unitary Plan and this will provide a good opportunity for review of the industry classification. Inevitably, however, industries may seek to locate in Auckland that do not have a specified separation distance. The Unitary Plan could make provision for consideration of separation distances for these industries. Alternatively, they may be dealt with on a case-by-base basis.

## 4.3 Operational Recommendations

The following recommendations are operational recommendations for separation distances, as opposed to the aspirational principles expressed above. These recommendations combine existing Council policy with, what we believe to be, the best approaches of other jurisdictions as appropriate for Auckland.

- Separation distances be established to recognise that unintended or accidental emissions from industry may occur despite the use of best practice emissions control. It should be noted that these may not be not illegal discharges and cannot be prosecuted if they are unforeseen.
- The name ‘separation distances’ or ‘buffer distances’ be adopted instead of ‘buffer zones’. This will avoid confusion with the use of the word ‘zone’ in a planning context.
- Recommended separation distances are the minimum distances that should be provided between a new industry and existing, or future zoned, commercial, and residential and other sensitive land uses.
- The following land uses are considered **highly sensitive** and in need of protection:
  - Childcare centres and schools
  - Hospitals, in-patient care (e.g., maternity, aged care)
  - Residential (including marae)



- The intent of separation distances is to:
  - **protect Industrial Air Quality Management Areas against encroachment** by residential and other sensitive land uses;
  - protect Rural Air Quality Management Areas against encroachment by both industry and residential and other sensitive land uses;
  - protect the amenity of Urban Air Quality Management Areas from discharges to air from industry and Rural Air Quality Management Areas; and
  - provide guidance when seeking to create new Industrial Air Quality Management Areas within Auckland.
- Separation distances are **for new industry only** and should not to be applied retrospectively to existing industrial operations. Existing industry may, however, use separation distances as indicative areas for notification purposes when applying for resource consent. Separation distances can also serve as a warning for industries to protect their existing buffer area from encroachment. This requires industry to be vigilant and using their legal right to submit against new sensitive activities which are proposing to locate too close to existing operations.
- Equally separation distances are **for sensitive activities** seeking to locate near to Industrial Air Quality Management Areas. This is why sensitive activities have been included in Appendix 1.
- **Best practice emissions control should still be required** for new industry establishing within a recommended separation distance – even inside an Industrial Air Quality Management Area.
- Separation distances are indicative, **not absolute criteria**, and may be adjusted having regard to specific site circumstances. In such circumstances applicants should provide a robust, clear and compelling justification for amending the recommended separation distances.
- A buffer area is the area within the separation distance of an activity boundary. While a separation distance is recommended for an industry, this buffer area can still be used for other compatible land uses.
- **Notional boundaries may be used.** A notional boundary is a boundary that extends beyond the site and contains restrictions on surrounding properties. Such



restrictions may be through agreements or covenants with the relevant property owners or a designation in the district or city plan.<sup>3</sup>

Separation distances should be noted as **not** addressing the following:

- circumstances where there is a direct health issue;
- major hazards such as fire or explosion;
- noise or vibration;
- occupational health and welfare issues; or
- spray drift (agricultural).

## 4.4 Separation Distances

Recommended separation distances are provided in Appendix 1. These are based on, in the following order of preference:

- existing provisions in the ARP: ALW (**first choice**);
- South Australia EPA recommended separation distances (**second choice**); \*
- EPA Victoria recommended separation distances; and/or
- West Australia EPA recommended separation distances; and/or
- Tasmania EPA recommended separation distances.

Exceptions to the above were made for distances that we considered insufficient to protect amenity in which case either:

- We selected a specific number (from the range provided by South Australia EPA or another agency);
- Another jurisdiction's recommended separation distance was selected; or
- We provided a new recommendation.

\*We do not recommend the additional surface roughness and terrain weighting factors used by the SA EPA in conjunction with their recommended separation distances for the following reasons:

- Auckland has strong coastal meteorological influences which would outweigh terrain and/or surface roughness impacts on overall dispersion;

---

<sup>3</sup> It may be noted that these are not foolproof. Complaints may still occur (e.g. from visitors to the site or when there is a change in the discharge).

- Auckland has complex terrain which similarly lessens the primacy of these factors.

This lack of additional weighting has been taken into consideration when selecting factors (hence recommendations for more generous separation distances).

Additionally, we have recommended separation distances developed specifically for Auckland (Golder Kingett Mitchell, 2007) for poultry farming. These have been selected in preference to Appendix 2 of the SA EPA guidelines.

Finally, in addition to the above and to provide some future proofing for zoning in the Unitary Plan **we recommend that industrial areas be located a minimum of 500 m from other sensitive land uses** (i.e. at least 500 m between the edge of the heavy industry zone and any sensitive use). This could also be the default minimum separation distance for unlisted activities.

This recommendation is based on consideration of all separation distances for all industrial activities in Appendix 1 as follows:

- average separation distance is 545 m
- the 75<sup>th</sup> percentile separation distance is 575 m
- **the 50<sup>th</sup> percentile separation distance is 500 m**

From a planning perspective, every metre counts. The choice of 500 m is therefore considered a reasonable (as opposed to an overly conservative) approach.

## 4.5 Amendments to Separation Distances

We have further adapted the South Australia EPA approach (SA EPA, 2007) to amending separation distances as follows.

If site specific circumstances appear to indicate a reason for departing from the recommended separation distance (e.g. scale of operation, local topography, state of the art technology, etc.), a separation distance different from the recommended distances may be able to be justified.

The onus will be on the party seeking an amendment to the recommended distance to *demonstrate* that the designated separation distance is inappropriate for the particular situation.

As a guide, the following criteria should be addressed when seeking a site-specific variation from the recommended separation distance:

- the scale of operation of the proposal (e.g. the proposed plant is significantly smaller than the normal operation for that activity and it will produce substantially lower emissions)

- the standard of emission control technology to be used (e.g. will have a standard of emission control technology significantly better than the good level of control normally applied to that activity, i.e. Best Available Technology, rather than BATEA)
- evidence of the effectiveness of the proposed technology
- an environmental audit of residual emissions (air, water, noise, waste) from an existing plant, on the proposed site or a similar plant at another site that has been carried out and made available to the Council
- details of how the residual emissions will be addressed
- details of any history of complaints arising from residual emissions from an existing plant, on the proposed site or a similar plant at another site
- existence of new applicable research

The applicant should reference the MfE good practice guides:

- Good Practice Guide for Assessing Discharges to Air from Industry (MfE, 2008)
- Good Practice Guide for Atmospheric Dispersion Modelling (MfE, 2004)
- Good Practice Guide for Assessing and Managing Odour in New Zealand (MfE, 2003)

The applicant should further consider relevant Auckland Council guidance documents.<sup>4</sup>

Requests for amendments to the recommended separation distances should be included by proponents as part of their development application and address the criteria outlined above. It is suggested that proponents seeking an amendment to recommended separation distances will need to engage the services of experienced and appropriately qualified environmental consultants.

---

<sup>4</sup> For example, *Use of Background Air Quality Data in Resource Consent Applications* (pending).

## 5. References

Auckland Regional Council, (1998). *Regional Growth Forum – Natural & Physical Resource Constraints: Stage 2 Evaluation*, Auckland Regional Council, June 1998.

Auckland Regional Council, (2002). *Technical Publication 152 - Assessing Discharges of Contaminants into Air (Draft)*, Auckland Regional Council, April 2002.

Auckland Regional Council, (2004). *Proposed Auckland Regional Plan: Air, Land and Water Decision Notice 26 Chapter 3 – 3.10 Industrial Air Quality Management Areas, 3.11 Urban Air Quality Management Areas, 3.12 Rural Air Quality Management Areas, and 3.13 Coastal Marine Air Quality Management Areas*, Auckland Regional Council, October 2004.

Auckland Regional Council, (2010). *Auckland Regional Plan: Air, Land and Water*, Auckland Regional Council, October 2010. Available at: [http://www.arc.govt.nz/plans/regional-policy-and-plans/auckland-regional-plan-air-land-and-water/auckland-regional-plan-air-land-and-water\\_home.cfm](http://www.arc.govt.nz/plans/regional-policy-and-plans/auckland-regional-plan-air-land-and-water/auckland-regional-plan-air-land-and-water_home.cfm)

Department of Environment and Conservation NSW, (2006). *Technical Notes: Assessment and management of odour from stationary sources in NSW*, Department of Environment and Conservation NSW, November 2006.

EPA Victoria, (1990). *Recommended Buffer Distances for Industrial Residual Air Emissions*, Environment Protection Authority Victoria, July 1990. Available at: <http://epanote2.epa.vic.gov.au/EPA%5Cpublications.nsf/PubDocsLU/AQ2-86?OpenDocument>

Golder Kingett Mitchell, (2007). *Review of Rules and Management Practices Relating to Intensive Poultry Farming*, prepared for the Auckland Regional Council, September 2007.

Ministry for the Environment, (2003). *Good Practice Guide for Assessing and Managing Odour in New Zealand*, Ministry for the Environment, 2003.

Ministry for the Environment, (2004). *Good Practice Guide for Atmospheric Dispersion Modelling*, Publication Number ME522, Ministry for the Environment, June 2004.

Ministry for the Environment, (2008). *Good Practice Guide for Assessing Discharges to Air from Industry*, Publication Number ME880, Ministry for the Environment, May 2008.

South Australia EPA, (2007). *Guidelines for Separation Distances*, South Australia Environment Protection Authority, December 2007. Available at: [http://www.epa.sa.gov.au/xstd\\_files/Industry/Guideline/sepguidepcd.pdf](http://www.epa.sa.gov.au/xstd_files/Industry/Guideline/sepguidepcd.pdf)

Tasmania DELM, (1996). *Environmental Assessment Manual*, Department of Environment and Land Management, 1996.

Tasmania Planning Commission, (2011). *Attenuation Distances and Air Quality Code* (working draft) supplied in confidence to Auckland Council by Department of Primary Industries, Parks, Water and Environment, personal comm Mike Power July, 2012.

West Australia EPA, (2005). *Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986) Separation Distances between Industrial and Sensitive Land Uses No. 3*, Western Australia Environmental Protection Authority, June 2005.



## Appendix 1 Recommended Separation Distances

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Agricultural support industries	Inorganic fertiliser manufacture, storage or handling	1000	Odour, dust, risk	Vic/WA EPAs
Animal feedstuffs	Stock food manufacture storage or handling	500	Odour	WA EPA
	Pet food manufacture	500	Odour	WA EPA
Automotive spray painting <sup>2</sup>		200	Odour, overspray	WA EPA
Briquette manufacture <sup>2</sup>		300 - 500	Dust	WA EPA, range depending on size
Carpet backing <sup>2</sup>		500	Odour	WA EPA
Ceramics works <sup>3</sup>		500	Dust	SA EPA
Chemical and associated product manufacturing	Batteries	500	Lead	SA EPA
	Cosmetics, toiletry, soap and other detergents	500	Odour	SA EPA
	Explosives and pyrotechnics	500	Risk	SA EPA
	Fungicides, herbicides, pesticides, timber preservatives and related products	500	Risk	SA EPA
	Industrial gas	500	Risk	SA EPA

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan, > 5t/hr < 200 t/hr for minerals, ores and/or aggregates

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Chemical and associated product manufacturing	Medicinal, pharmaceutical or veterinary products	500	Risk	SA EPA
	Paint, pigment, inks and dyes	500	Odour	SA EPA
	Polishes, adhesives or sealants	500	Odour	SA EPA
	Solvents	500	Odour	SA EPA
	Synthetic Resins	500	Odour	SA EPA
	Acids, alkalis or heavy metals	500	Risk	SA EPA
	Other chemical products (e.g. plastics manufacturing)	500	Odour, risk	SA EPA
Coal handling and storage <sup>3</sup>		500 / 1000	Dust	SA EPA, < / > 50 tonnes capacity
Commercial livestock processing industries	Slaughter	500	Odour	SA/WA/Vic/Tas EPAs
	Manufacture, store or handle products derived from animal slaughter (e.g. gelatin, fertiliser or meat products)	500	Odour	New recommendation
	Scouring or carbonising greasy wool or fleeces	500	Odour	SA EPA
	Tanneries or Fellmongeries	500	Odour	SA EPA
Commercial livestock processing industries	Rendering or fat extraction	1000	Odour	SA/WA/Vic/Tas EPAs

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification



Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Crematoria <sup>2</sup>		300	Odour, dust, mercury	Vic, WA/Tas EPAs (SA EPA recommendation not considered sufficient based on experience of authors)
Drycleaners <sup>2</sup>		100	Odour, VOCs	WA/Vic/Tas EPAs
Dying / finishing <sup>3</sup>		100	Odour	SA EPA, NB: Potentially sensitive land use, can be incompatible with other industrial activities
Electronics	Circuit board manufacturing (excluding assembly only)	100	Risk	SA EPA
Fibre reinforced plastics manufacturing <sup>3</sup>		300	Odour	SA EPA
Fibreglass manufacturing <sup>4</sup>		200	Odour	Vic EPA
Foam product manufacturing <sup>2</sup>		500	Odour	WA EPA
Food or beverage manufacturing or handling	Bakery product manufacturing and/or handling	100	Odour	SA/Vic/Tas EPAs - NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Breweries	500/1000	Odour	SA EPA > 2,000 (litres/day) / > 5,000 (litres/day)
	Coffee roasters (w/o after burner)	300	Odour	New recommendation. NB Lesser distance (compared with coffee manufacture) reflects prevalence of coffee roasters in Auckland.

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Food or beverage manufacturing or handling	Flour mill or cereal foods	300	Odour, dust, risk	SA/Vic/Tas EPAs - NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Meat and meat product manufacture and/or handling (including fish)	500	Odour	Vic/WA/Tas EPAs (SA EPA recommendation not considered sufficient based on experience of authors)
	Oil or fat product manufacturing or handling	300	Odour	Vic EPA
	Processed dairy foods manufacturing and/or handling	100	Odour, dust	SA/Vic/Tas EPAs - NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Wine manufacturing	300 - 1000	Odour	SA EPA range depending on throughput NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Other foodstuffs manufacturing and/or handling	150	Dust, odour	New recommendation NB: Potentially sensitive land use - can be incompatible with other industrial uses
Formaldehyde manufacture <sup>2</sup>		500	Odour	WA EPA
Fuel burning <sup>3</sup>		300	Products of combustion, odour	SA EPA, > 5MW or all stove enamel or to bake or dry any substance that on heating releases dust or air impurities
Gas distribution works <sup>3</sup>		300	Odour	SA EPA
Gas odourising with mercaptans <sup>4</sup>		1000	Odour	Vic EPA

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Incineration <sup>3</sup>		150 - 1000	Products of combustion	SA EPA, range depending on process
Intensive livestock farming <sup>1a</sup>	Poultry	500 / 700	Odour	New recommendation based on Golder Kingett Mitchell, (2007) < 100,000 / <180,000 chickens
	Poultry w automated shed ventilation and manure conveyors, weekly manure removal	350	Odour	New recommendation based on Golder Kingett Mitchell, (2007) < 180,000 chickens
	Other	500/1,000	Dust, odour	SA EPA Rural / Town NB: New recommendation to replace 400 m required in ARP: ALW
Landfills <sup>1a</sup>		1,000	Odour	<b>ARP: ALW</b>
Machinery or equipment manufacturing	Industrial machinery or equipment	100		Vic EPA
	Motor vehicles or parts	100 / 500	Odour, VOCs	SA EPA: < / > 2,000 vehicles/yr
Metal coating - industrial spray painting <sup>2</sup>		200 / 500	Odour, overspray	WA EPA, Inside spray booth / open (SA EPA not considered sufficient)
Metal processing, metallurgical works or metal finishing	Metal plating, anodising, polishing or galvanising	100	Dust, odour	SA EPA
	Metal blasting or coating (excluding spray painting)	100 / 500	Dust	SA EPA: Inside / Outside
	Refinement of ores	2000	Dust	SA/Tas EPAs

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Metal processing, metallurgical works or metal finishing	Processing of metals (e.g. smelting, casting)	100 - 1000	Dust, risk	WA EPA: range depending on process
Metal product manufacturing	Sheet and structural metal products	500 / 1000	Dust	Vic/WA EPAs: < / > 1Mt/yr NB: Potentially sensitive land use - can be incompatible with other industrial uses
Mineral wool, ceramic fibre or rock wool <sup>2</sup>		500	Dust	WA, Vic EPAs (SA 500 m ceramic works)
Mineral, ores and/or aggregates <sup>1a</sup>	Blasting	2000	Dust	Tas EPA (Level 1 activity)
	Crushing/Grinding	750	Dust	Tas EPA (Level 1 activity) Regional Plan distance (200 m) not considered sufficient
	Mining	site specific	Dust	New recommendation Regional Plan distance (200 m) not considered sufficient
	Quarrying	300	Dust	Tas EPA: no blasting, crushing or vibratory screening (Level 1 activity) Regional Plan distance (200 m) not considered sufficient
	Materials handling	500	Dust	Tas EPA (Level 1 activity) Regional Plan distance (200 m) not considered sufficient
Motor vehicle services facilities	Service stations	100	Odour, benzene	New recommendation (refer Separation Distances for Roads report).

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Mushroom farm <sup>2</sup>		500 - 1000	Odour	WA EPA, range depending on size
Non-metallic mineral product manufacturing	Cement, lime, plaster and concrete products	1000	Dust	SA/Tas EPAs
	Concrete batching plants	300	Dust	WA EPA
Non-metallic mineral product manufacturing	Glass	500	Dust	Vic / WA EPA
Petroleum or coal product manufacturing	Bitumen/asphalt premix or hot mix	1000	Odour, dust	SA, WA EPA
Petroleum or coal product manufacturing	Coal products	site specific	Dust, odour	New recommendation
	Petroleum refining	2000	Odour, risk	SA/Vic/WA/Tas EPAs
	Petroleum hydrocarbon, oil or grease manufacturing	1500	Odour, risk	SA EPA
Power	Electricity generation	site specific	Dust, risk	Covered by normal RMA processes. Depends on fuel source (e.g. coal or gas)
Product storage or handling centres	Bulk chemicals	500	Odour, risk	SA EPA
Product storage or handling centres	Bulk hydrocarbons (non-service station)	1500	Odour, benzene, risk	SA EPA
Recycling, recovery, reuse or disposal	Automotive dismantling	500	Dust	SA EPA
	Batteries	500	lead	New recommendation
	Chemicals	300	Odour, risk	SA EPA

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Recycling, recovery, reuse or disposal	Composting (green waste)	500	Odour	Tas EPA (SA EPA not considered appropriate for Auckland)
	Composting (animal or human wastes)	1500	Odour	Tas EPA (SA EPA not considered appropriate for Auckland)
	Crushing, grinding or separation works other than sand, gravel, rock or mineral (e.g. slag, road base, demolition material)	500	Dust	New recommendation: NB: Auckland Regional Plan specifies 200 m
	Hazardous materials storage or treatment	site specific	Odour, risk	Depends on chemicals - may not be necessary
		1000	Dust, odour, risk	<b>ARP: ALW</b>
	Metals (crushing, grinding, sorting or storage)	500	Dust	SA EPA
	Non-metal recycling (glass, paper or paper board)	100		New recommendation
	Oil, petroleum hydrocarbon wastes	1500	Odour, benzene, risk	SA EPA
	Chemical containers cleaning, reconditioning or recycling	100	Odour, risk	SA EPA
	Sewage solids treatment or storage facilities	150 / 100	Odour	population < 1,000 (facultative lagoons / other)

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
	Sewage solids treatment or storage facilities	350 / 200	Odour	1,000 > population < 5,000 (facultative lagoons / other)
Recycling, recovery, reuse or disposal	Sewage solids treatment or storage facilities	700 / 300	Odour	5,000 > population < 15,000 (facultative lagoons / other)
	Sewage solids treatment or storage facilities	site specific	Odour	population > 15,000
	Tyres	300	Risk	SA EPA
	Waste transfer stations	300	Odour, dust	<b>ARP: ALW</b>
Rope, cord and twine manufacturing <sup>3</sup>		100	Odour, dust	SA EPA
Rubber industries	Tyre manufacturing or re-treading	300	Dust, odour	SA EPA
Rubber industries	Synthetic rubber manufacturing	1000	Odour, dust	Vic EPA
Sale yards <sup>3</sup>		500	Odour, dust	SA, Vic/Tas EPAs
Sensitive activities	Childcare centres, schools	500	Reverse sensitivity	New recommendation (distance to heavy industry)
	Hospitals, nursing homes, aged care	500	Reverse sensitivity	New recommendation (distance to heavy industry)
	Residential (including marae)	500	Reverse sensitivity	New recommendation (distance to heavy industry)
Sewage treatment and handling		site specific	Risk	New recommendation
Starch manufacturing <sup>2</sup>		500	Odour	WA, Vic EPAs

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Sugar milling or refining <sup>2</sup>		1000/1500	Odour, dust, products of combustion	WA EPA Depends on size and type of wastewater treatment
Surface coating <sup>3</sup>		100 - 300	Odour, dust	SA EPA, range depending on throughput NB: Potentially sensitive land use, can be incompatible with other industrial activities
Textile production & operations <sup>2</sup>		200 - 1000	Odour	WA EPA, range depending on process
Transport and related activities	Boat or ship construction, repair or maintenance	300 / 500	Dust, odour	Tas EPA with / without organotin compounds used or removed from vessels
	Bus Depots	200	Vehicle emissions	WA EPA
	Commercial airports other than Auckland International Airport Limited	site specific	Aviation risk	Already addressed in Regional Plan, NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Auckland International Airport Limited	site specific	Aviation risk	Already addressed in Regional Plan, NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Heliports	site specific	Aviation risk	Already addressed in Regional Plan, NB: Potentially sensitive land use - can be incompatible with other industrial uses
	Road freight transport depot (bulk chemical)	200	Vehicle emissions, risk	New recommendation, based on WA EPA bus/'transport vehicles depot separation distance

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification



Industry <sup>1</sup>	Activity <sup>1</sup>	Recommended Separation Distance (m)	Amenity / Issue	Notes:
Transport and related activities	Commercial ports	500	SO <sub>2</sub> , dust	New recommendation. Less than ideal but still hard to achieve in practice given scarcity of land at most ports.
	Existing or new trucks refuelling facilities	200	Odour, benzene, risk	WA EPA
Wood or paper product storage, manufacturing or fabrication	Plywood or veneer manufacturing	500	Dust	WA EPA
	Particle board or other wood panel manufacturing	1500	Dust, odour, formaldehyde	New recommendation based on WA EPA and authors experience
	Pulp, paper or paper board manufacturing	2000	Dust, VOCs, odour	New recommendation based on SA EPA and authors experience NB: Kraft pulping prohibited activity
	Timber treatment	300	Dust, VOCs	SA EPA

<sup>1</sup> Unless otherwise stated, industry activity classification from Schedule 3 ARP: ALW

<sup>1a</sup> Chapter 4 Regional Plan (> 5t/hr < 200 t/hr for minerals, ores and/or aggregates)

<sup>2</sup> West Australia EPA industry classification

<sup>3</sup> South Australia EPA industry classification

<sup>4</sup> EPA Victoria industry classification

<sup>5</sup> Tasmania EPA industry classification

## Appendix 2 Excluded Industrial Activities

The following activities listed in Schedule 3 of the ARP: ALW (stormwater) have been excluded for consideration of separation distances:

Industry	Activity
Research or defence	Research establishments
	Naval and air force defence activities
Machinery or equipment manufacturing	Other machinery or equipment
Motor Vehicle services facilities	Mechanical servicing of motor vehicles
Power	Electrical substations
Transport and related activities	Shipping container reconditioning (not located at port areas)
Wood or paper product storage, manufacturing or fabrication	Treated timber storage

Similarly, the following activities were excluded for consideration of separation distances from the relevant jurisdictions for the reasons listed below:

Industry/Activity	Reason for exclusion
<b>SA EPA Development Regulations Scheduled Activities</b>	
Aquaculture	Not considered necessary
Charcoal manufacturing	NA for Auckland and unlikely to be so in future
Curing or drying works	Covered elsewhere
Dairies	Covered elsewhere
Dog kennels	Non industrial
Dredging	Not considered necessary
Earthworks drainage	Non industrial
Hot-dip galvanising	Covered elsewhere
Maritime construction works	Non industrial
Motor racing or testing venues	Non industrial
Produce processing	Covered elsewhere
Shooting ranges	Non industrial
<b>WA EPA Industrial Classification</b>	
Aluminium production	NA for Auckland and unlikely to be so in future
Ammonia importation	NA for Auckland and unlikely to be so in future
Ammonium nitrate import/export	NA for Auckland and unlikely to be so in future
Animal feedlots	Covered elsewhere
Calcium-based compounds production, other than lime	NA for Auckland and unlikely to be so in future
Catteries	Non industrial
Carbon stripping	NA for Auckland and unlikely to be so in future



Industry/Activity	Reason for exclusion
Chlor-alkali works	NA for Auckland and unlikely to be so in future
Clay bricks or ceramic/refractory products works	Covered elsewhere
Coke production	NA for Auckland and unlikely to be so in future
Crude oil extraction	NA for Auckland and unlikely to be so in future
Extractive industries - hard rock, Darling Scarp	Covered elsewhere
Fly ash disposal	Not considered necessary
Fuel importation	Covered elsewhere
Gasworks	NA for Auckland and unlikely to be so in future
Gold ore grinding, milling works	NA for Auckland and unlikely to be so in future
Gold roaster	NA for Auckland and unlikely to be so in future
Grain cleaning	Covered elsewhere
Grain elevator	Covered elsewhere
Greenhouse / hothouse	Non industrial
Hay processing plant	Covered elsewhere
Heavy industrial site (greenfield)	Covered by RMA
Horse stables	Non industrial
Iron ore smelting	NA for Auckland and unlikely to be so in future
Joinery and wood working (furniture, etc.)	Non industrial
LPG retail	Non industrial
Market gardens	Non industrial
Metal leaching - extraction from ore with chemical solution	Not considered necessary for Auckland
Mine dewatering	NA for Auckland and unlikely to be so in future
Mineral sands	NA for Auckland and unlikely to be so in future
Motor body works	Covered elsewhere
Nurseries	Non industrial
Orchards	Non industrial
Rabbitries	Non industrial
Silicon refining	NA for Auckland and unlikely to be so in future
Small goods	Covered elsewhere
Smoking, drying or curing operations	Covered elsewhere
Sodium cyanide manufacturing	NA for Auckland and unlikely to be so in future
Sodium silicate manufacturing	NA for Auckland and unlikely to be so in future
Solar salt manufacturing	NA for Auckland and unlikely to be so in future
Straw pulp and paper mill	NA for Auckland and unlikely to be so in future
Tailings disposal	NA for Auckland and unlikely to be so in future
Textile operations	Covered elsewhere



Industry/Activity	Reason for exclusion
Titanium dioxide pigment plant	NA for Auckland and unlikely to be so in future
Tyre storage	Covered elsewhere
Vanadium mine	NA for Auckland and unlikely to be so in future
Wastewater pumping stations	Covered elsewhere
Wastewater tanking manhole	Covered elsewhere
<b>Vic EPA Industrial classification</b>	
Extraction - natural gas	NA for Auckland and unlikely to be so in future
Non-ferrous metal production	Covered elsewhere
Storage of wet-salted or unprocessed hides	Covered elsewhere
Temporary storage of industrial wastes	Covered elsewhere
Tobacco & cigarette factories	NA for Auckland and unlikely to be so in future
Treatment of aqueous waste	Covered elsewhere
Treatment of organic waste	Covered elsewhere
<b>Tas EPA Industrial</b>	
Milking shed (e.g. dairy farms)	Non industrial
Wind powered electricity generation	Noise not included in this assessment
Woodchip mill	Covered elsewhere

