



Environmental Protection Authority

# 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

June 2005

Western Australia

## FOREWORD

The Environmental Protection Authority (EPA) is an independent statutory authority and is the key provider of independent environmental advice to Government.

The EPA's objectives are to protect the environment and to prevent, control and abate pollution and environmental harm. The EPA aims to achieve some of this through the development of environmental protection Guidance Statements for the environmental impact assessment (EIA) of proposals and schemes.

This document is one in a series being issued by the EPA to assist proponents, consultants, responsible authorities and the public generally to gain additional information about the EPA's thinking in relation to aspects of the EIA process. The series provides the basis for the EPA's evaluation of, and advice on, development proposals and schemes subject to the EIA process. The Guidance Statements are one part of assisting proponents and responsible authorities in achieving an environmentally acceptable outcome. Consistent with the notion of continuous environmental improvement and adaptive environmental management, the EPA expects proponents and responsible authorities to take all reasonable and practicable measures to protect the environment and to view the requirements of this guidance as representing the **minimum** necessary process to achieve an appropriate level of environmental protection.

This document provides advice on the use of generic separation distances (buffers) between industrial and sensitive land uses to avoid conflicts between incompatible land uses.

This Guidance Statement has the status of "**Final**" which means it has been reviewed by stakeholders and the public. The EPA has signed off the Guidance Statement and published it although it will be updated regularly as new information come to hand.

I am pleased to release this document which now supersedes the draft version.



**Walter Cox**  
CHAIRMAN  
ENVIRONMENTAL PROTECTION AUTHORITY

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## Guidance Statement No. 3

# SEPARATION DISTANCES BETWEEN INDUSTRIAL AND SENSITIVE LAND USES

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**Key Words:** buffer, industrial land use, sensitive land use, separation distance

## 1 PURPOSE

Guidance Statements generally are developed by the EPA to provide advice to proponents, responsible authorities<sup>1</sup>, stakeholders and the public, about the minimum requirements for environmental management which the EPA would expect to be met when the Authority considers a proposal or scheme<sup>1</sup> during the EIA process. The generic process for Guidance Statements is set out in Appendix 2.

This Guidance Statement is termed “Final”, and thus the EPA expects that proponents will give full attention to the information provided when they submit proposals for assessment.

This Guidance Statement replaces the draft Guidance Statements “Industrial-Residential Buffer Areas (Separation Distances)” released in July 1997, and “Separation Distances between Industrial and Sensitive Land Uses” released in June 2004. It specifically addresses generic separation distances between industrial and sensitive land uses to avoid conflicts between these land uses. It takes into account protection of the environment as defined by the *Environmental Protection Act 1986* (EP Act) with a focus on protecting sensitive land uses from unacceptable impacts on amenity that may result from industrial activities, emissions and infrastructure.

During the EIA process the EPA principally considers impacts to the physical and/or biological environment. In association with the Department of Health, it also considers health risk assessment from predicted emissions under normal operations. Industrial activities may also lead to increased levels of individual risk of fatality. The EPA currently considers off-site individual risk, as outlined in the EPA Guidance Statement No. 2 *Risk Assessment and Management: Off-site*

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<sup>1</sup> This term is used in this Guidance Statement in the same way as it is defined in the *Environment Protection Act 1986* (see Section 7 Definitions).

*individual risk from Hazardous Industrial Plant*, when assessing new hazardous plant. The EPA seeks technical advice regarding off-site individual risk from the Department of Industry and Resources (DoIR), where the proposal relates to petroleum or major hazard facilities under DoIR's statutory regulation. Public risk assessment and management in Western Australia is undergoing review to ensure public safety issues are appropriately addressed by Government. It is expected that this Guidance Statement will need to be updated once the risk review and the legislative amendments to empower the responsible authority(s) has been completed.

Proponents and responsible authorities are encouraged to consider their proposals and schemes in the light of the guidance given. A proponent or responsible authority wishing to deviate from the advice in this Guidance Statement would be expected to put a well-researched, robust and clear justification arguing the need for that deviation.

This document provides the generic buffer (separation) distances referred to in the State Industrial Buffer Policy (Government of Western Australia 1997).

## **2 THE ISSUE**

A number of emissions are generated by industrial, commercial and rural activities and infrastructure. These include noise and air emissions (gases, dust and odours). The levels of emissions may at times exceed amenity levels considered acceptable in residential areas and at other sensitive land uses.

In line with the requirements of the EP Act, it is necessary for individual industrial developers to take all reasonable and practicable measures to prevent or minimise emissions from their premises. It is generally expected that, through appropriate site layout, design of facilities, and the implementation of engineering and process controls, emissions from an individual industrial land use can be prevented from causing an adverse environmental impact beyond the boundaries of the particular site or beyond the boundaries of an industrial estate.

Generally, but not always, impacts on the environment decrease with increasing distance from the source of the emission. If the impacts from a particular industry or industrial estate are considered to be unacceptable at the boundary of the site or estate, then there is usually a need for a buffer area to separate industrial land use and sensitive land use.

The determination of the buffer area is necessary in many situations to avoid or minimise the potential for land use conflict. While not replacing the need for best practice approaches to emission management, the use of buffers is a useful tool in achieving an acceptable environmental outcome.

The EPA's preferred hierarchy for the management of industrial emissions is:

- avoidance of impacts;
- minimise the creation and discharge of waste by implementing best practice (see EPA Guidance Statement 55, *Implementing Best Practice in proposals submitted to the Environmental Impact Assessment process*); or
- ensure environmental impacts from industrial emissions are acceptable and meet the relevant regulations and health criteria beyond the boundary of the site, industrial estate or buffer area.

The area that may be adversely affected by industrial emissions will depend on site- and process-specific factors such as the scale of the operation, plant processes and emission controls, storage of raw material and waste, local wind patterns and topography. The possibility of future expansion will also be relevant in the consideration of an appropriate separation distance.

A sound site-specific technical analysis is generally found to provide the most appropriate guide to the separation distance that should be maintained between an industry or industrial estate and sensitive land use.

However, in recognition that a site-specific study may not be necessary in all situations, generic separation distances have been developed. The generic separation distances in Appendix 1 are based on the experience of the Department of Environment (DoE) and other regulatory authorities (e.g. Environmental Protection Authority, Victoria) and limited site-specific quantitative scientific assessment. The table in Appendix 1 includes industries that historically have been associated with amenity impacts from gaseous, dust, noise and odorous emissions, as well as with elevated levels of off-site risk to the public. For some industries, separation distance ranges are specified. For others, generic distances are not applicable and separation distances need to be determined case by case.

This Guidance Statement provides advice on the use of the generic separation distances that have been developed by the DoE for a range of industrial land uses. The use and application of the generic separation distances is explained in more detail in Section 4 of this Guidance Statement.

## **2.1 Types of industrial land uses**

For the purposes of this Guidance Statement, "industrial land use" is used in a general way to encompass a range of industrial, commercial and rural activities, and infrastructure, associated with off-site emissions that may affect adversely the amenity of sensitive land uses.

The term includes:

- general industry;
- light industry;
- service industry;
- some commercial activities, e.g. service stations;
- rural industry and some forms of agriculture;
- rural intensive land use;
- resource processing industry;
- hazardous industry;
- noxious industry;
- extractive industry;
- technology parks;
- freight terminals;
- waste water treatment plants;
- power generation facilities;
- power distribution terminals and substations;
- solid waste disposal sites;
- resource recovery plants; and
- gas and petroleum pipelines.

The table in Appendix 1 includes a variety of land uses that may require consideration of buffers to manage off-site impacts on the environment. However, the list is not definitive. Other land uses where buffers need to be considered include airports and major sporting facilities, e.g. speedway racing, football and soccer. The principles in Section 4.1 apply to these land uses as well as to those listed in Appendix 1.

## **2.2 Types of industrial emissions**

The generic separation distances are based on the consideration of typical emissions that may affect the amenity of nearby sensitive land uses. These include:

- gaseous and particulate emissions;
- noise;
- dust; and
- odour.

The generic separation distances table also identifies a range of industrial land uses associated with higher levels of risk of injury or death from accidents.

### **2.3 Types of sensitive land uses**

Land uses considered to be potentially sensitive to emissions from industry and infrastructure include residential developments<sup>2</sup>, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered “sensitive land uses”. Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing facilities.

## **3 SCOPE OF THE GUIDANCE**

This Guidance Statement is intended to provide advice on generic separation distances between specific industry and sensitive land uses to avoid or minimise the potential for land use conflict. The distances outlined in Appendix 1 are not intended to be absolute separation distances, rather they are a default distance for the purposes of:

- identifying the need for specific separation distance or buffer definition studies; and
- providing general guidance on separation distances in the absence of site-specific technical studies.

The separation distances are intended to be used as a tool, supplemented by other appropriate techniques, to assist in the assessment of:

- new individual industries, infrastructure and estates, in the vicinity of existing/proposed sensitive land uses; and
- new individual sensitive land uses or estates, in the vicinity of existing/proposed industry and infrastructure.

The separation distances are also intended to provide assistance to strategic planning studies and processes.

The separation distances outlined are not intended to replace the need for proponents and relevant authorities to take all reasonable and practicable measures to minimise emissions and off-site impacts.

To ensure an appropriate environmental outcome, the generic separation distances will need to be complemented by other assessment tools and the consideration of the full range of environmental factors.

The reader should be aware that the generic distances do not take into account:

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<sup>2</sup> Residential development in a planning sense can also mean subdivision.

- cumulative impacts;
- non-typical emissions;
- the protection of natural resources and significant elements of the natural environment; and
- potential health impacts from emissions.

As part of comprehensive environmental impact management, the EPA expects that these will also be considered and managed as appropriate.

### **3.1 Relationship of the separation distances to codes of practice and management guidelines**

A number of environmental codes of practice and management guidelines issued by State Government agencies provide advice on separation distances between specific industries, other land uses and natural resources. The DoE for example has issued codes of practice on turf farms, piggeries, cattle feedlots, the poultry industry, vineyards and dairies. This Guidance Statement has attempted to incorporate advice relating to separation distances from the various codes and guidelines to provide a comprehensive overview.

Some codes and guidelines may contain more detailed information on buffers that may be relevant to the achievement of an acceptable environmental outcome.

### **3.2 Relationship of the separation distances to the State Industrial Buffer Policy**

The Western Australia Planning Commission has prepared a Statement of Planning Policy entitled *State Industrial Buffer Policy* (Government of Western Australia 1997). This is a statutory policy prepared pursuant to the *Town Planning and Development Act 1928*. The Policy is intended to provide a consistent Statewide approach to the definition and securing of buffers for industry and infrastructure, protect industry and infrastructure from the encroachment of incompatible landuses, provide for the safety and amenity of land uses surrounding industry and infrastructure, and provide for the protection of the interests of both landowners affected by buffers, and industry and infrastructure encroached upon by sensitive land uses.

A role of this Guidance Statement is to complement and assist the implementation of the Western Australian Planning Commission's *State Industrial Buffer Policy*. The Policy makes specific reference to the generic buffer (or separation) distances developed by the DoE. At the time of publication of this Guidance Statement, the table in Appendix 1 lists the Department's and the EPA's generic separation distances.

## **4 THE GUIDANCE**

#### **4.1 The EPA approach to protecting the amenity of sensitive land uses from emissions from industrial land uses**

As stated in Section 2, the EPA's preferred hierarchy for the management of industrial emissions is:

- avoidance of impacts;
- minimise the creation and discharge of waste by implementing best practice (see EPA Guidance Statement 55, *Implementing Best Practice in proposals submitted to the Environmental Impact Assessment process*); or
- ensure environmental impacts from industrial emissions are acceptable and meet the relevant regulations and health criteria beyond the boundary of the site, industrial estate or buffer area.

To ensure an appropriate level of environmental protection, the EPA expects that individual industrial developers will take all reasonable and practicable measures to prevent or minimise emissions from their premises. This entails not only compliance with all recognised environmental protection criteria but also the adoption of best practicable measures for prevention or minimisation of adverse environmental impacts.

Wherever practicable, it is expected that adverse environmental impacts should not extend beyond the boundary of a particular industrial site. Where this is not possible, adverse environmental impacts should not extend beyond the boundaries of a buffer area, which should contain only compatible land uses. New sensitive land uses are not appropriate in the buffer.

Where a buffer has been agreed to by the relevant authorities, the EPA expects that effective measures will be applied, generally through the land use planning process, to ensure that only compatible land uses are allowed in the buffer area. The EPA also expects that appropriate management and monitoring of industries and the buffer area will be implemented to ensure that emissions do not exceed acceptable levels at the outer boundary of the buffer.

Generally, protection of sensitive land uses from industrial emissions is assisted by the identification of suitable buffers at the strategic and structure planning stages of the land use planning process, and in the early project formulation stages in the case of individual projects.

A sound site-specific technical analysis will provide the most appropriate guide to the separation distance that should be maintained between a particular industry and sensitive land uses, or between industrial precincts and sensitive land uses, to avoid or minimise land use conflicts.

Where a site-specific study is carried out, it should generally include a technical analysis and report on the nature and level of the possible emissions from the

industry, the site context, predicted impacts, acceptable criteria, and proposed management. Guidance on appropriate technical studies for particular circumstances is available from a range of sources including the DoE, other government agencies and the EPA, in the case of proposals and schemes subject to the EIA process.

A site-specific technical study to determine separation distances is generally expected in the case of a major heavy industrial estate, or a general industrial estate where emissions may result in cumulative impacts.

Where a proposal or scheme subject to the EIA process involves industrial development near sensitive development, the EPA will take into account the likelihood of industrial emissions that may affect the amenity of the sensitive land use, the management measures (including monitoring), and the separation proposed. Where separation is proposed, the EPA will consider the ability to apply effective mechanisms for establishing and enforcing the separation distance or buffer area.

Generally, the EPA expects the potential for land use conflicts to be resolved through the land use planning process, following consideration of adequate technical information and advice from the relevant agencies.

Generic separation distances have been developed by the EPA in recognition that a site-specific study to determine a buffer may not always be necessary, and that generic guidelines are a useful tool at the design and planning stages. The generic separation distances are included in this Guidance Statement in Appendix 1.

#### **4.2 When to use the generic separation distances**

The generic separation distances are a tool to assist in the determination of suitable distances between industry and sensitive land uses where industry may have the potential to affect the amenity of a sensitive land use.

The data is helpful in the following instances:

- to identify the need for specific buffer definition studies where:
  - a new industrial land use is proposed near an existing or proposed sensitive land use; or
  - a new sensitive land use is proposed near an existing or proposed industrial land use; and
- to provide general guidance on separation distances in the absence of site-specific technical studies, or, where only an estimation of the area that could be subject to land use conflicts is required.

It is not appropriate to use the generic separation distances where the industry involved is very large, utilises non-typical technology, or in some other way the circumstances are not typical.

Further, the separation distances should be used with caution in strategic and structure planning exercises, and in situations where cumulative impacts may result from the co-location of many industries.

#### **4.3 Risk and the generic separation distances table**

For some industries, the table indicates the possibility of risk, in the sense of risk of an accident or incident causing injury or death to the public. This is provided for general information only. The EPA's current approach to risk is to identify whether a proposal for a new hazardous plant meets the EPA's off-site individual risk criteria (EPA 2000). The EPA seeks technical advice from DoIR for proposals under DoIR's statutory responsibility.

#### **4.4 How to use the generic separation distances in Appendix 1**

The generic separation distances for a range of industrial land uses are listed in Appendix 1. This section addresses the use of the table in the following instances.

##### **4.4.1 A new industrial land use is proposed near existing or proposed sensitive development, OR sensitive development is proposed near an existing/proposed industry**

Where the separation between the industrial and sensitive land uses is **greater** than the generic distance, there will not usually be a need to carry out site-specific technical analyses to determine the likely area of amenity impacts due to emissions from the industry. The need for technical analyses is likely to be limited to such instances as major industrial developments, industries using new or non-typical processing techniques, or areas subject to cumulative impacts.

Where the separation distance is **less** than the generic distance, a scientific study based on site- and industry-specific information must be presented to demonstrate that a lesser distance will not result in unacceptable impacts.

If the distance from the industrial land use to the sensitive land use is less than the recommended separation distance, and it cannot be demonstrated that unacceptable environmental impacts are likely to be avoided, then other options should generally be pursued.

These may include:

- modifying the project to reduce emissions via engineering controls such as process design, process enclosure or other means; and
- pursuing land use planning and management controls (e.g. land acquisition, rezoning) to reduce environmental impacts to acceptable levels.

For proposals and schemes subject to the EIA process, where it cannot be demonstrated that there will be acceptable emission levels at present and future residences and other sensitive premises, the EPA is likely to recommend that the proposal or scheme is not environmentally acceptable.

If a referral is made to the EPA, information that will assist the EPA to set an appropriate level of assessment includes information on the location of existing industrial and sensitive premises, land zoning and scheme provisions, the results of any site-specific studies and consultation, and the proposed planning and environmental management measures.

#### **4.4.2 General guidance is required on separation distances in the absence of site-specific technical studies, OR an estimation of the area that could be subject to land use conflicts is required**

In most cases, land use conflicts resulting from industrial emissions are not expected where the generic separation distances are maintained. Further investigations should be carried out, however, in non-typical situations, and where cumulative impacts may occur.

Where a separation under consideration is less than in the table, it is recommended that a new project does not proceed in the absence of site-specific investigations and a report demonstrating that the separation distance will meet acceptability criteria and that enforceable management techniques will be applied to ensure an appropriate environmental outcome.

## **5 APPLICATION**

### **5.1 Area**

This Guidance Statement applies to all proposals and schemes subject to the EIA process throughout the State of Western Australia.

### **5.2 Duration and Review**

The duration of this Guidance Statement is for five years unless some unforeseen circumstances require it to be revised earlier.

## **6 RESPONSIBILITIES**

### **6.1 EPA responsibilities**

The EPA will apply this Guidance Statement to proposals and schemes that are subject to the EIA process under Part IV of the EP Act.

### **6.2 DoE responsibilities**

The DoE will assist the EPA in applying this Guidance Statement to the EIA of proposals and schemes, and in conducting its functions under Part V of the EP Act.

### **6.3 Proponent and responsible authority responsibilities**

Where proponents and responsible authorities demonstrate to the EPA that the requirements of this Guidance Statement are incorporated into proposals and schemes in a manner which ensures that they are enforced and audited, the assessment of such proposals and schemes is likely to be assisted.

## **7 DEFINITIONS**

In this Guidance, the terms listed have the following definitions.

**Amenity** – factors which combine to form the character of an area and include the present and likely future amenity. For the purpose of this Guidance Statement, consideration of loss of amenity is limited to unreasonable impact on a person from gaseous, dust, noise and odorous emissions and risk.

**Buffer** – all the land between the boundary of the area that may potentially be used by an industrial land use, and the boundary of the area within which unacceptable adverse impacts due to industrial emissions on the amenity of sensitive land use are possible. This may be represented by the separation distance.

**Emission** – discharge of waste, emission of noise, odour or electromagnetic radiation or transmission of electromagnetic radiation.

**Industrial land use, industry** – a general term used in this Guidance Statement to encompass a range of industrial, commercial and rural land uses and infrastructure associated with emissions that may affect the amenity of sensitive land uses.

**Residential development** – any permanent structure whose primary use is as a dwelling place.

**Responsible authority** – as defined in the *Environmental Protection Act 1986*, and

generally, the authority responsible for:

- a town planning scheme, a regional planning scheme, a redevelopment scheme, or an amendment to any of the above;
- a statement of planning policy, or amendment to such a statement; or
- a subdivision or strata plan.

**Scheme** – as defined in the *Environmental Protection Act 1986*, and generally:

- a town planning scheme, a regional planning scheme, a redevelopment scheme, or an amendment to any of the above; or
- a statement of planning policy or an amendment to such a statement.

**Sensitive land use** – land use sensitive to emissions from industry and infrastructure. Sensitive land uses include residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered “sensitive land uses”. Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing.

**Separation distance** – the shortest distance between the boundary of the area that may potentially be used by an industrial land use, and the boundary of the area that may be used by a sensitive land use.

## 8 REFERENCES

Environmental Protection Authority 1997 *Industrial-Residential Buffer Areas (Separation Distances)* Draft Guidance No. 3, Environmental Protection Authority, Perth Western Australia

Environmental Protection Authority 2000 *Guidance for Risk Assessment and Management: Offsite individual risk from Hazardous Industrial Plant* Guidance No. 2, Environmental Protection Authority, Perth Western Australia

Environmental Protection Authority 2004 *Separation Distances between Industrial and Sensitive Land Uses* Draft Guidance No. 3, Environmental Protection Authority, Perth Western Australia

Western Australian Planning Commission 1997 *State Industrial Buffer Policy: Statement of Planning Policy No. 4* Government of Western Australia, Perth Western Australia

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## Appendix 1: Separation Distances between Industrial and Sensitive Land Uses

### Note:

These generic guidelines 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.

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Abattoir</b>	killing of animals for human consumption or pet food – no rendering	√ (15) (Reg. 1)	DAWA, WRC, local gov't	CoP - Aug 1996. Regs. in Sept 1996		√	√	√		500-1000, depending on size
<b>Abrasive blasting operations</b>	metal or other material is cleaned or abraded by blasting with any abrasive material	√ (Reg. 5)	local gov't	CoP - 1993. Regs. in Sept 1996		√	√			case by case
<b>Aluminium production</b>	using electrolytic fusion technique	√ (44)	DoIR		√	√	√		√	1500-2000

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Ammonia importation</b>	unloading ammonia from ships and storage		DoIR, DPI		√ NH <sub>3</sub>				√	case by case
<b>Ammonium nitrate import/export</b>	transfer of chemical from ship to land-based transport and vice versa	√ (58, 86)	DoIR, DPI						√	case by case
<b>Ammunition production</b>	includes explosives and fireworks		DoIR						√	1000
<b>Animal feed manufacturing</b>	manufacture of animal feed from grain and other food products	√ (23)	DAWA, local gov't			√	√	√		500
<b>Animal feedlot</b>	intensive rearing of cattle (in rural zone, away from towns)	√ (1, 68)	DAWA, WRC, local gov't	Cattle Feedlots Guidelines - 2002		√	√	√		1000-2000, depending on size
<b>Animal feedlot</b>	other intensive rearing, e.g. sheep (in rural zone, away from towns)	√	DAWA, WRC, local gov't			√	√	√		1000-2000, depending on size

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Aquaculture</b> – ponds or tanks & natural waters included	propagation or rearing of aquatic fauna, with supplementary feeding	√ (3, 4)	Fisheries, WRC, local gov't	Fisheries, & WRC guidelines		√		√		100-300, depending on size
<b>Asphalt works</b>	asphalt is mixed and prepared	√ (35)	local gov't	CoP - 1991		√	√	√		1000
<b>Automotive spray painting</b>	liquid paint is directed onto automotive surfaces by airless, compression, electrostatic or other methods		local gov't	CoP - Oct 1997		√	√	√		200
<b>Bakeries</b>	day-time operations		local gov't			√		√		100-200, depending on size
	large night-time operations		local gov't			√		√		500
<b>Bauxite refining</b>	premises on which alumina is produced	√ (46)	DoIR			√	√	√		case by case

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Beverage manufacturing</b> – alcoholic	alcoholic beverages are manufactured – brewery, distillery or winery	√ (25)	WRC		√	√	√	√		200-500, depending on size & type of product
– non-alcoholic	non-alcoholic beverages are manufactured, processed or packaged	√ (24)	WRC			√	√	√		200-500, depending on size
<b>Boat building and maintenance</b> – vessels are built,	organotin compounds <b>are not</b> used or removed from vessels	√ (82)	DPI, local gov't		√	√	√	√		200-500, depending on size
maintained or refurbished	organotin compounds <b>are</b> used or removed from vessels	√ (49)	DPI, local gov't		√	√	√	√		500-1000, depending on size
<b>Briquettes manufacture</b>	compressed coal-dust or wood-dust production		local gov't			√	√	√		300-500, depending on size

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Bulk material loading or unloading</b>	clinker, coal, ore, ore concentrate or any other bulk granular material is loaded/unloaded from vessels	√ (58, 86)	DoIR, DPI			√	√		√	1000-2000
<b>Calcium-based compounds production, other than lime</b>	calcium compounds are produced, mixed, blended or packaged (see cement works for lime manufacture)	√ (31, 33, 72, 74, 75)	DoIR, WRC		√	√	√	√	√	500-1000, depending on size & type of product
<b>Carbon stripping</b>	reprocessing of carbon granules (gold extraction)	√ (79)	local gov't		√ acid fume			√		200-300
<b>Carpet backing</b>	process using latex		local gov't		√	√		√		500
<b>Cattery zones</b>	in urban areas		local gov't			√		√		200
<b>Cement product manufacturing works</b>	concrete or cement is mixed, prepared or treated – up to 5000 tonnes per year	√ (77)	DoIR, WRC, local gov't	√		√	√			300-500, depending on size

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
	concrete or cement is mixed, prepared or treated – from 5000 to 150 000 tonnes per year	√ (77)	DoIR, WRC, local gov't	√		√	√			500-1000, depending on size
	concrete or cement is mixed, prepared or treated – greater than 150 000 tonnes per year	√ (77)	DoIR, WRC	√		√	√			1000-1500, depending on size
<b>Cement or lime manufacturing works</b> – use of furnace or kiln	Production of cement clinker or lime or cement clinker, clay, limestone or similar is ground or milled	√ (43)	DoIR, WRC, local gov't		√	√	√	√		1000-2000, depending on size
<b>Ceramic goods manufacturing</b>	premises on which ceramic kitchen or table ware or other non-refractory ceramic products are made	√ (76)	DoIR, WRC, local gov't		√	√	√	√		300-500, depending on size

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Charcoal production</b>	wood, carbon material or coal is charred to produce a fuel or material of enriched carbon content	√ (37)	DoIR, local gov't		√	√	√		√	1000
<b>Chemical blending or mixing</b>	chemicals or chemical products are blended, mixed or packaged	√ (33, 74, 75)	DoIR, WRC, local gov't	draft - on hold	√	√	√	√	√	300-500, depending on size & type of chemicals involved
<b>Chemical fertilizers</b>	manufacture of artificial fertilizers	√ (31, 72)	DoIR, WRC, Water Corp.		√ HF, NH <sub>3</sub> , SO <sub>2</sub>	√	√	√	√	1000-2000, depending on size
<b>Chemical manufacturing</b>	chemical products are manufactured by a chemical process	√ (31, 72)	DoIR, WRC, Water Corp.		√	√	√	√	√	300-1000, depending on size & type of chemicals involved
	inorganic industrial chemical manufacture (other than listed elsewhere)	√ (31, 72)	DoIR, WRC, local gov't		√	√	√	√		300-1000, depending on size & type of chemicals involved

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					Gaseous	Noise	Dust	Odour	Risk	
	organic industrial chemical manufacture (other than listed elsewhere)	√ (31, 72)	DoIR, WRC, local gov't		√	√	√	√	√	500-1500, depending on size & type of chemicals involved
<b>Chemicals – non-industrial</b>	production – other than listed elsewhere		WRC, Water Corp.			√	√			300-1000, depending on size & type of chemicals involved
<b>Chemical or oil recycling</b>	waste liquid hydrocarbons or chemicals are refined, purified, reformed, separated or processed	√ (39)	DoIR, WRC, Water Corp.		√ VOCs			√	√	500-1000, depending on size
<b>Chemicals storage – minor</b>	non-bulk storage of chemicals	√	WRC, Water Corp.	draft in preparation	√			√	√	200-300
– bulk/major	bulk storage of acids, alkalis or chemicals	√ (73)	DoIR, WRC, Water Corp.		√				√	500-1000, depending on size

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Chlor-alkali works</b>	manufacture of caustic soda and chlorine	√ (31, 72)	DoIR, WRC		√ Cl <sub>2</sub>	√		√	√	2000-3000
<b>Clay bricks or ceramic/refractory products works</b>	premises on which fired-clay bricks, tiles, pipes or pottery are manufactured	√ (41)	DoIR, DAWA, WRC		√ HF, HCl, SO <sub>2</sub>	√	√	√		300-1000, depending on size
<b>Clay extraction or processing</b>	Mining, extraction or processing of clay	√ (80)	DoIR, WRC			√	√			500-1000, depending on size & processing
<b>Coal mine</b>	extraction of coal – open cut method	√ (9)	DoIR, WRC			√	√			1000-2000
<b>Coke production</b>	coke is produced, quenched, cut, crushed and graded	√ (38)	DoIR, WRC		√	√	√	√	√	1000-2000

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Composting facility</b>	outdoor uncovered, regularly turned windrows	√ (67A)	WRC, local gov't	draft Organic Wastes Guidelines - Dec 1997		√	√	√		1000 for manures, mixed food/putrescible & vegetative food waste; 500 for biosolids & 150 for green waste
	outdoor covered, turned windrows	√ (67A)	WRC, local gov't	draft Organic Wastes Guidelines - Dec 1997		√	√	√		750 for manures, mixed food/putrescible & vegetative food waste; 250 for biosolids & 150 for green waste
	outdoor covered windrows with continuous aeration	√ (67A)	WRC, local gov't	draft Organic Wastes Guidelines - Dec 1997		√	√	√		500 for manures, mixed food/putrescible & vegetative food waste; 250 for biosolids & 150 for green waste

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	enclosed windrows with odour control	√ (67A)	WRC, local gov't	draft Organic Wastes Guidelines - Dec 1997		√	√	√		250 for manures, mixed food/putrescible & vegetative food waste; 150 for biosolids
	in-vessel composting with odour control	√ (67A)	WRC, local gov't	draft Organic Wastes Guidelines - Dec 1997		√	√	√		150 for manures, mixed food/putrescible & vegetative food waste; 150 for biosolids
<b>Concrete batching plant or cement products (bricks) manufacture</b>	concrete is made (batched) and loaded for transport or cement products are made	√ (77)	local gov't	CoP - 1991. Regs. 1998		√	√			300-500, depending on size
<b>Cosmetics production</b>	manufacture of cosmetics and toiletries		local gov't			√		√		100
<b>Crematoria</b>			local gov't		√	√			√	200-300

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Crude oil extraction</b>	oil or gas production from wells	√ (10)	DoIR		√	√		√	√	case by case
<b>Crushing of building material</b>	crushing or cleaning of waste building or demolition material	√ (13)	local gov't			√	√			1000
<b>Dairies</b>	milking shed operations		DAWA, WRC, local gov't	CoP - March 1998		√	√	√		500
<b>Dog kennels</b>	in rural zones		local gov't			√		√		500
	in or near urban areas		local gov't			√		√		1000
<b>Dry-cleaners</b>	dry-cleaning operations		local gov't			√		√		100
<b>Edible oil or fat processing (vegetable oil production)</b>	vegetable oil, oil seed or animal fat is processed – includes seed crushing and use of solvents to refine oils	√ (19)	WRC, Water Corp., local gov't			√	√	√		500

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Electric power generation</b>	generating electricity – 20 megawatts or more (total) for natural gas & 10 megawatts or more (total) for other fuels	√ (52)	DoIR, WRC		√ NO <sub>x</sub> , SO <sub>x</sub>	√	√			3000-5000, depending on location & size
	natural gas-fuelled electricity production – more than 10, but less than 20, megawatts total	√ (84)	DoIR, WRC		√ NO <sub>x</sub>	√				2000-3000
<b>Extractive industries</b> – hard rock, Darling Scarp	quarrying (including blasting), crushing and screening	√ (5, 12, 70)	DoIR, WRC	CoP - 1990, revised in 1995		√	√		√	1000
– not hard rock	blasting, grinding and milling works – material processed by grinding, milling or separated by sieving, aeration etc	√ (5, 12, 70)	DoIR, WRC	CoP - 1990, revised in 1995		√	√		√	case by case

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– no blasting conducted	grinding and milling works – material processed by grinding, milling or separated by sieving, aeration etc	√ (5, 12, 70)	DoIR, WRC	CoP - 1990, revised in 1995		√	√			case by case
– sand and limestone extraction	no grinding or milling works		WRC, local gov't			√	√			300-500, depending on size
<b>Fellmongering</b>	animal skins or hides are dried, cured or stored	√ (83)	WRC, Water Corp., local gov't			√		√		500
<b>Fibreglass reinforced plastic manufacturing</b>	using Low Styrene Emission (LSE) resins	√ (Reg. 3)	DoIR, local gov't	CoP - 1993. Regs. in Sept 1996			√	√		200
	using non-LSE resins	√ (Reg. 3)	DoIR, local gov't	CoP - 1993. Regs. in Sept 1996			√	√		500
<b>Flour mill</b>	grain or seed milling premises		local gov't			√	√			300-500, depending on size

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Fly ash disposal</b>	premises on which fly ash is disposed	√ (53)	WRC, local gov't				√			case by case
<b>Foam products manufacturing</b>	resin is used to prepare or manufacture plastic foam or foam products using MDI or TDI	√ (51)	DoIR, local gov't		√			√	√	500
<b>Food processing</b>	fruit, vegetables or meat is cooked, dried, preserved, bottled, canned or processed	√ (18)	WRC, Water Corp., local gov't			√	√	√		200-500 for fruit & vegetables, 500 for meat
<b>Food or beverage products</b>	manufacture of food and beverage products not categorised	√ (18, 24, 25)	WRC, local gov't			√		√		100-300, depending on size & type of product
<b>Formaldehyde</b>	Formaldehyde production	√ (31)	DoIR, local gov't		√	√		√	√	500
<b>Foundries – metal melting or casting</b>	ferrous metals (alloys)	√ (45)	DoIR, local gov't	CoP - 1992		√	√	√		300-500, depending on size

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					Gaseous	Noise	Dust	Odour	Risk	
	non-ferrous, aluminium	√ (45)	DoIR, local gov't	CoP - 1992		√	√	√		300-500, depending on size
	non-ferrous, other than aluminium	√ (45)	DoIR, local gov't	CoP - 1992	√ fume	√	√	√	√	500-1000, depending on metal & size
<b>Fuel burning</b>	any boiler(s) capable of consuming 500 kg or more per hour of combustible material, either alone or aggregate, for the supply of steam or in power generation equipment	√ (67, 87)	DoIR, WRC		√ NO <sub>x</sub> , SO <sub>x</sub>	√	√	√	√	200-500, depending on type of fuel used & size
<b>Fuel importation</b>	fuel unloading from ships, storage and despatching		DoIR, DPI						√	1000

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<b>Fuel storage –</b> crude oil and petroleum products in tanks or vessels exceeding 2000 tonnes capacity	Fixed Rooves	√ (73)	DoIR	draft in house				√	√	300-500, depending on type of fuel stored & size
	Floating Rooves	√ (73)	DoIR	draft in house				√	√	200-1000, depending on fuel stored & size
<b>Gas distribution</b>	works to supply mains		Alinta Gas					√	√	300
<b>Gasworks</b>	premises on which coal, coke and oil (mixtures or derivatives of) are processed to produce combustible gas	√ (11, 34)	DoIR		√	√	√	√	√	1000-2000, depending on raw materials used, odorising process used & size
<b>Glass or glass fibre works</b>	premises on which glass or glass fibre is produced	√ (40)	DoIR, local gov't		√	√	√			500

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Gold ore</b>	grinding and milling works – rocks ore etc processed by grinding, milling or separated by sieving, aeration etc	√ (5, 12, 70)	DoIR, WRC			√	√			1000-2000, depending on location, process used & size
<b>Gold roaster</b>	gold extraction from sulphide ores	√ (44)	DoIR		√ SO <sub>2</sub>	√	√	√		5000
<b>Grain cleaning (no milling)</b>	premises on which grain or seed is cleaned, graded, sorted or processed		local gov't			√	√	√		300-500, depending on size
<b>Grain elevator</b>	grain transfer using conveyor belts etc		local gov't			√	√		√	500
<b>Greenhouse/ hothouse</b>	using manure		local gov't			√		√		200-300
	using compost		local gov't			√		√		200-300
<b>Hay processing plant</b>	hay processing, handling or storage premises		local gov't			√	√	√	√	500-1000, depending on size

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<b>Heavy industrial site</b>	proposals for "greenfield" sites	√ various	√ various		√	√	√	√	√	case by case
<b>Horse stables</b>	keeping horses		local gov't	draft in preparation		√	√	√		100-500, depending on size
<b>Incineration</b>	for biomedical, chemical or organic waste	√ (59, 60)	local gov't		√	√	√	√	√	500-1000, depending on size
	for plastic or rubber waste	√ (60)	local gov't		√	√	√	√		1000
	for waste wood	√ (60)	local gov't			√	√	√		300
<b>Industrial gases</b>	production, processing, refining or storage of industrial gases	√ (31, 72)	DoIR, local gov't		√	√		√	√	500-1000, depending on size & type of gases
	commercial/retail outlets		local gov't		√	√			√	50
<b>Iron ore smelting</b>	production of iron from iron ore	√ (44)	DoIR		√	√	√	√		1000

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Joinery &amp; wood working premises</b>	production of wooden furniture & household items such as doors, kitchen fittings, flooring & mouldings		local gov't	CoP - 1995, being revised		√	√	√		100-300, depending on size
<b>Liquid Petroleum (LP) gas retailing</b> – above ground tanks	LP gas storage & handling at automotive retail outlets – up to 8000L tank – 8000L to 16 000L tank		DoIR, local gov't	AS 1596 Supplement No.1 - 1994				√	√	55 for sensitive uses & up to 8000L tank, 85 for sensitive uses & from 8000L to 16 000L 15 for residential uses
– underground tanks	LP gas storage & handling at automotive retail outlets – up to 65 000L tank		DoIR, local gov't	AS 1596 Supplement No.1 - 1994				√	√	55 for sensitive uses & 15 for residential uses
<b>Livestock saleyard or holding pen</b>	holding of live animals pending sale, shipment or slaughter	√ (55)	DAWA, WRC, local gov't			√	√	√		at least 1000, depending on size
<b>Malt-works</b>	malt production from grain		local gov't			√	√	√		500

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<b>Market gardens</b>	broad-scale operations		WRC, local gov't	draft in house	√	√	√	√		300-500, depending on size
<b>Metal coating</b>	metal products are powder-coated or enamelled	√ (81)	local gov't	Powder coating - July 1994. Regs. 1998		√	√	√		200
<b>Metal coating – industrial spray-painting</b>	site on which spray-painting is conducted inside a spray booth	√ (81)	local gov't	CoP - Sept 1995. Regs. 1998		√	√	√		200
	work is conducted in the open (no spray booth)	√ (81)	local gov't	CoP - Sept 1995. Regs. 1998		√	√	√		500
<b>Metal fabrication</b>	sheet metal, structural metal and iron and steel products – up to 50 000 tonnes per year		DoIR, local gov't			√	√			500-1000, depending on size
<b>Metal finishing</b>	galvanizing	√ (48A)	DoIR, WRC, local gov't		√ acid fume	√	√	√		500

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	other than galvanizing	√ (48)	DoIR, WRC, local gov't		√ acid fume	√	√	√		200
<b>Metal leaching – vat or <i>in situ</i></b>	metal extraction from ore with a chemical solution	√ (7)	DoIR, WRC			√	√	√		500
<b>Metal smelting, refining, melting, casting, fusing, roasting or processing works</b>	where metal, metal ores, concentrates or wastes are treated to produce metal (other than iron & aluminium)		DoIR, local gov't							
	• up to 100 tonnes per year				√	√	√	√		100-200
	• between 100 & 1000 tonnes per year	√ (45)			√	√	√	√		300-500
	• greater than 1000 tonnes per year	√ (44)			√	√	√	√	case by case, depending on process	

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<b>Milk processing</b>	milk is separated, evaporated or a dairy product is manufactured	√ (17)	WRC, local gov't			√		√		200-500, depending on size, wastewater treatment & disposal system
<b>Mine dewatering, tailings or residue disposal</b>	water extracted and discharged to allow mining of ore; or mining or processing of ore occurs and tailings or residue are discharged into a dam	√ (6)	DoIR, WRC			√	√			case by case
<b>Mineral sands – dry processing only</b>	grinding and milling works – material processed by grinding, milling or separated by sieving, aeration etc	√ (8)	DoIR		√ H <sub>2</sub> S	√	√	√		1000-2000
– secondary treatment plant	treatment of primary concentrate from mine – zircon, rutile/leucoxene and ilmenite	√ (8)	DoIR, WRC			√	√	√		1000-2000

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– synthetic rutile plant	mining of mineral sands and processing to produce concentrate	√ (8)	DoIR, WRC		√ H <sub>2</sub> S SO <sub>2</sub>	√	√	√		3000-5000
<b>Mineral wool or ceramic fibre</b>	manufacture of mineral wool or ceramic fibre	√ (42)	DoIR, WRC		√	√	√	√		500
<b>Motor body works</b>	including panel beaters		local gov't	CoP - Oct 1997		√	√	√		200
<b>Mushroom farm</b>	using on-site blended soils or compost	√ (67A)	WRC, local gov't			√		√		500-1000, depending on size
<b>Nurseries</b>	no composting		local gov't			√				100
<b>Oil or gas extraction from land or offshore</b>	production from wells involving primary separation or treatment	√ (10)	DoIR, DPI		√	√		√	√	2000
<b>Oil or gas production (other)</b>	production of oil or gas, including gas reforming	√ (11)	DoIR		√	√		√	√	2000
<b>Oil or gas refineries</b>	crude oil or condensate is refined or processed	√ (34)	DoIR		√	√		√	√	2000

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<b>Open cut mining (large operations)</b>	other than coal	√ (5, 6, 12, 70)	√ various	√		√	√		√	1500-3000
<b>Orchards</b>	broad-scale operations		DAWA, local gov't		√	√				500
<b>Paints and inks</b>	blending and mixing	√ (33, 74)	WRC, Water Corp.		√ VOCs	√		√		200 for water-based, 300 for solvent-based
	manufacturing	√ (31, 72)	DoIR, WRC, Water Corp.		√ VOCs	√		√	√	500 for water-based, 1000 for solvent-based
<b>Pesticides manufacturing</b>	herbicide, insecticide or pesticide manufacture by a chemical process	√ (32)	DoIR, WRC, Water Corp.		√	√	√	√	√	300-1000, depending on size
<b>Pharmaceuticals</b>	Production – including veterinary products	√ (31, 72)	WRC, Water Corp.			√		√	√	300-1000, depending on size

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<b>Piggery – intensive,</b> – 5000 pigs or more – 500 to 5000 pigs – 50 to 500 pigs – less than 50 pigs	premises on which pigs are fed, watered and housed in indoor pens	√ (2, 69)	DAWA, WRC, local gov't	DAWA Guidelines for New & Existing Piggeries - May 2000		√		√		5000 for piggeries with more than 5000 pigs, 3500 for piggeries with 500 to 5000 pigs, 2000 for piggeries with 50 to 500 pigs, and 500 for piggeries with less than 50 pigs
<b>Piggery – extensive</b> (all premises)	premises on which pigs are fed, watered and housed in outside paddocks or enclosures		DAWA, WRC, local gov't	DAWA Guidelines May 2000			√	√		1000 for all extensive piggeries
<b>Plaster manufacturing</b>	plaster, plasterboard, gyprock or other products comprised wholly or mostly of gypsum are made	√ (78)	local gov't			√	√		√	200

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					Gaseous	Noise	Dust	Odour	Risk	
<b>Ports</b>	bulk material that is loaded or unloaded onto a vessel		local gov't			√	√		√	case by case
<b>Poultry industry</b>	intensive farming		DAWA, WRC, local gov't	CoP - 1999		√	√	√		300-1000, depending on size
<b>Pulp, paper or paperboard manufacturing</b>	manufacture of paper pulp, wood pulp, kraft paper, kraft paperboard, cardboard paper or paperboard	√ (30)	DoIR, WRC, Water Corp.		√ H <sub>2</sub> S, SO <sub>2</sub>	√	√	√		1000-1500, depending on process used, wastewater treatment system & size
<b>Quicklime plant</b>	clay, limesand or limestone material fired in a furnace or kiln to produce quicklime	√ (43)	DoIR, local gov't		√	√	√			500 for no quarrying on the premises, 1000 if quarrying is conducted
<b>Rabbitries</b>	intensive husbandry		local gov't	1995 flyer			√	√		500
<b>Raceways for motor vehicles</b>	Speedways and drag strips	√	local gov't	draft in preparation		√	√			case by case

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Rendering works</b>	animal matter is processed or extracted for use as fertilizer, stock food or other purposes	√ (16)	WRC, Water Corp., local gov't	CoP - 1991, revised in Oct 1995		√		√		1000-1500, depending on wastewater treatment/disposal system, location & size
<b>Resins manufacturing</b>	polyester resins manufacture	√ (31, 72)	DoIR		√	√	√	√	√	500-1000
<b>Resins manufacturing</b>	rubber & synthetic resins manufacture	√ (31, 72)	DoIR		√	√	√	√	√	1000
<b>Rockwool manufacturing</b>	mineral wool or ceramic fibre manufacture	√ (42)	DoIR, WRC			√	√	√		500
<b>Rubber products manufacturing</b>	using either organic solvents or carbon black		DoIR, local gov't		√ VOCs	√	√	√		300-500
<b>Sawmill</b>	timber (tree) milling		local gov't			√	√			500-1000, depending on location & size

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Scrap metal recycling works</b>	scrap metal is fragmented or melted to recover metal (including lead battery reprocessing)	√ (45, 47)	DoIR, WRC, local gov't	CoP - 1992		√	√	√		300-500
<b>Screening works</b>	screening or sieving of sand, rocks, chemicals and minerals	√ (12, 70)	DoIR, local gov't			√	√			500
<b>Seafood processing</b>	fish or other seafood is processed or packaged	√ (22)	WRC, Water Corp., local gov't					√		500
<b>Service stations, involving vehicle cleaning/detailing facilities &amp; the retailing of spare parts &amp; foodstuffs</b>	for premises operating during normal hours, i.e. Monday - Saturday from 0700-1900 hours		DoIR, local gov't	draft in house	√	√		√	√	50
	freeway service centre (24 hour operations)		DoIR, local gov't		√	√		√	√	100

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
	all other 24 hour operations		DoIR, local gov't	draft in house	√	√		√	√	200
<b>Silicon refining</b>	silicon smelter operations	√ (44)	DoIR		√	√	√		√	1500-2000
<b>Smallgoods</b>	not including abattoir facilities or rendering works		Water Corp., local gov't			√		√		100
<b>Smoking, drying or curing operations</b>	meat or other edible products are smoked, dried or cured	√ (Reg. 2)	Water Corp., local gov't	Regs. in Sept 1996	√	√		√		200-300, depending on size
<b>Sodium cyanide manufacturing</b>	production of sodium cyanide	√ (31, 72)	DoIR		√ HCN, NO <sub>x</sub>	√	√		√	1000-2000
<b>Sodium silicate manufacturing</b>	production of sodium silicate	√ (31, 72)	DoIR			√	√	√	√	1000
<b>Solar salt manufacturing</b>	salt is produced by solar evaporation	√ (14)	DoIR			√	√			1000

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Starch manufacturing</b>	starch or gluten is manufactured	√ (20)	WRC, local gov't			√	√	√		300-500, depending on size
<b>Straw pulp and paper mill</b>	processing cereal straw and mixing with waste paper to produce container board	√ (30)	WRC, local gov't		√ H <sub>2</sub> S, SO <sub>2</sub>	√		√		1000-1500, depending on process used, wastewater disposal system & size
<b>Sugar milling or refining</b>	sugar cane is crushed or sugar is refined	√ (21)	DoIR, WRC			√	√	√		1000-1500, depending on wastewater disposal system & size
<b>Sulphuric acid plant</b>	production of sulphuric acid	√ (31, 72)	DoIR, WRC		√ SO <sub>2</sub> , SO <sub>3</sub>	√	√	√		2000-3000
<b>Tailings disposal</b>	containing cyanide	√ (5)	DoIR, WRC				√	√	√	case by case
	not containing cyanide – (fly ash, red mud)	√ (5)	DoIR, WRC				√	√		case by case

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Tannery</b>	treatment and drying of animal skins, leather and artificial leather – using sulphide process	√ (50)	WRC, Water Corp., local gov't		√ H <sub>2</sub> S	√		√		1000-2000, depending on process used, wastewater treatment system & location
<b>Tannery</b>	treatment and drying of animal skins, leather and artificial leather – small premises, non-sulphide	√ (50)	WRC, Water Corp., local gov't			√		√		200-300, depending on size & wastewater treatment & disposal system
<b>Textile production</b> – artificial & synthetic fibre manufacturing or treatment	cellulose nitrate, viscose fibre, cellophane, artificial rubber or other man-made textiles manufacture	√ (26, 31, 72)	DoIR, local gov't			√	√	√		500

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
– carpet making & other forms of manufacturing, ginning, milling or production of natural fibres	manufacture, bleaching, dyeing or finishing of cotton, linen, woollen yarns & other natural textiles	√ (26)	DoIR, WRC, Water Corp.			√		√		200-300, depending on type of fibre & wastewater treatment & disposal system
<b>Textile operations</b> – chemical or physical processes	using carbon disulphide (CS <sub>2</sub> ) as a solvent	√ (26, 31, 72)	WRC, Water Corp., local gov't		√ CS <sub>2</sub>	√		√		500-1000, depending on wastewater treatment & disposal system
– chemical or physical processes	using other substances	√ (26, 31, 72)	WRC, Water Corp., local gov't			√		√		200-500, depending on process used & wastewater treatment & disposal system
<b>Timber preserving premises</b>	timber preservation by chemical means, including chromated copper arsenate (CCA)	√ (29)	WRC, local gov't			√	√	√		300-500, depending on size

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Titanium dioxide pigment plant</b>	production of titanium dioxide (Cl <sub>2</sub> process)	√ (31, 72)	DoIR, WRC		√ Cl <sub>2</sub> , TiCl <sub>4</sub>	√	√	√	√	2000-3000
<b>Transport vehicles depot</b>	buses, trucks and other heavy vehicles depot		DoIR, local gov't		√	√	√	√		200
<b>Turf farms and lawns</b>	broad-scale turf production		WRC, local gov't	Guidelines - Dec 2001		√	√	√		500
<b>Used tyre storage</b> – general – tyre fitting	premises on which used tyres are stored	√ (56, 57)	WRC, local gov't				√		√	100-200, depending on size
– recycling	premises on which used tyres are crumbed, granulated or shredded	√ (56, 57)	WRC, local gov't		√	√	√	√	√	500-1000

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Vanadium mine</b>	extraction and processing of vanadium	√ (5, 12, 70)	DoIR		√	√	√	√	√	1500-3000
<b>Vineyards (viticulture)</b>	broad-scale operations (including winery)	√ (25)	DAWA, WRC, local gov't	CoP - 2002	√	√	√	√		500
<b>Waste disposal industrial liquid waste</b>	site on which liquid waste from other premises is stored, reprocessed, treated or irrigated/discharged	√ (61)	DoH, WRC, local gov't			√		√		case by case
inert landfill site (Class 1)	site only accepting inert waste, contaminated solid waste (meeting criteria for Class 1), special wastes (type 1), as specified, for burial	√ (63)	WRC, local gov't	Draft CoP - May 1997. Guidelines for Acceptance of Solid Waste to Landfill - Jan 2001		√	√			150 for residential uses & an internal buffer of 25 from boundary

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
putrescible landfill site (Class 2 & 3)	site accepting inert, putrescible, contaminated solid waste (meeting criteria for Class 2 & 3), special wastes (type 1 & 2), as specified, for burial	√ (64, 89)	WRC, local gov't	Guidelines for Acceptance of Solid Waste to Landfill - Jan 2001.  Regs (Rural Landfill) 2002.  Draft Rural Landfill Management CoP	√	√	√	√		500 for sensitive uses (subdivisions), 150 for single residences & an internal buffer of 35 from boundary
secure landfill site (Class 4)	site accepting inert waste, contaminated solid waste (meeting criteria for Class 2, 3 & 4) and special wastes (type 1 & 2), as specified, for burial	√ (65)	DoH, WRC, local gov't	Guidelines for Acceptance of Solid Waste to Landfill - Jan 2001	√	√	√	√	√	case by case

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
intractable waste landfill site (Class 5)	site only accepting intractable waste, as specified, for burial	√ (66)	DoH, WRC, local gov't	Guidelines for Acceptance of Solid Waste to Landfill - Jan 2001		√	√	√	√	case by case
waste depot	premises on which waste is stored or sorted, pending final disposal or re-use	√ (62)	DoH, WRC, local gov't	Guidelines for Acceptance of Solid Waste to Landfill - Jan 2001		√	√	√		200
waste – resource recovery plant	premises on which solid waste is stored, reprocessed, treated or discharged	√ (60, 61A, 67)	DoH, WRC, local gov't		√	√		√	√	case by case

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Wastewater treatment plant</b>	sewage treatment facility (including Mechanical/Biological and Pond Systems and Facultative Pond Systems) 20-100 m <sup>3</sup> per day >100 m <sup>3</sup> per day	√  (85) (54)	Water Corp., Fisheries, WRC, local gov't		√	√		√	√	buffer studies in progress to determine appropriate separation distances
<b>Wastewater disposal site (treated sewage)</b>	site from which treated sewage is discharged (including by Spray irrigation and Flood/Channel Irrigation): 20-100 m <sup>3</sup> per day >100 m <sup>3</sup> per day	√  (85) (54)	Water Corp., Fisheries, WRC, local gov't DoH					√	√	case by case
<b>Wastewater pumping stations</b>	vacuum pumping station		local gov't	√	√	√		√	√	20
	wastewater pumping station (</= 40L/s)		local gov't	√	√	√		√	√	10

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
	wastewater pumping station (</= 90L/s)		local gov't	√	√	√		√	√	20
	wastewater pumping station (</= 180L/s)		local gov't	√	√	√		√	√	30
	wastewater pumping station (</= 350L/s)		local gov't	√	√	√		√	√	50
	wastewater pumping station – major		Water Corp., WRC		√	√		√	√	150
<b>Wastewater tanking manhole</b>	used as a temporary measure – buffer primarily for visual amenity		Water Corp., local gov't	√	√			√	√	100
oxygen injection site	with a storage tank		DoIR			√			√	10 (under review)
oxygen injection site	with an on-site generator		DoIR			√				20 (under review)

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
odour control facility	varying process		DoIR			√				30 (under review)
<b>Water treatment plants</b>	including chemical dosing facilities for potable water	√ (Reg. 4)	DoIR, WRC	Regs. in Sept 1996	√	√		√	√	case by case – (under review)
<b>Water pumping stations</b>	minor		local gov't	√		√				20 (under review)
	major		local gov't	√		√				25 (under review)
<b>Water supply regulating valves</b>	>/= 300mm diameter		local gov't	√		√				16 (under review)
<b>Cathodic protection ground beds</b>	induced electrical current to protect pipes from corrosive soils		local gov't	√					√	case by case – (under review)
<b>Wood-board manufacturing – (including MDF plants)</b>	premises on which particleboard or chipboard is fabricated or manufactured	√ (28)	DoIR, WRC			√	√	√		1000-2000, depending on size and location

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts					Buffer distance in metres and qualifying notes
					Gaseous	Noise	Dust	Odour	Risk	
<b>Woolscouring</b>	scouring and primary treatment of wool	√ (27)	DoIR, WRC			√	√	√		500-1000, depending on wastewater treatment & disposal system & size
<b>Wreckers (automotive)</b>	vehicle parts recycling		local gov't	CoP - Oct 1997		√	√			300

## Notes on table

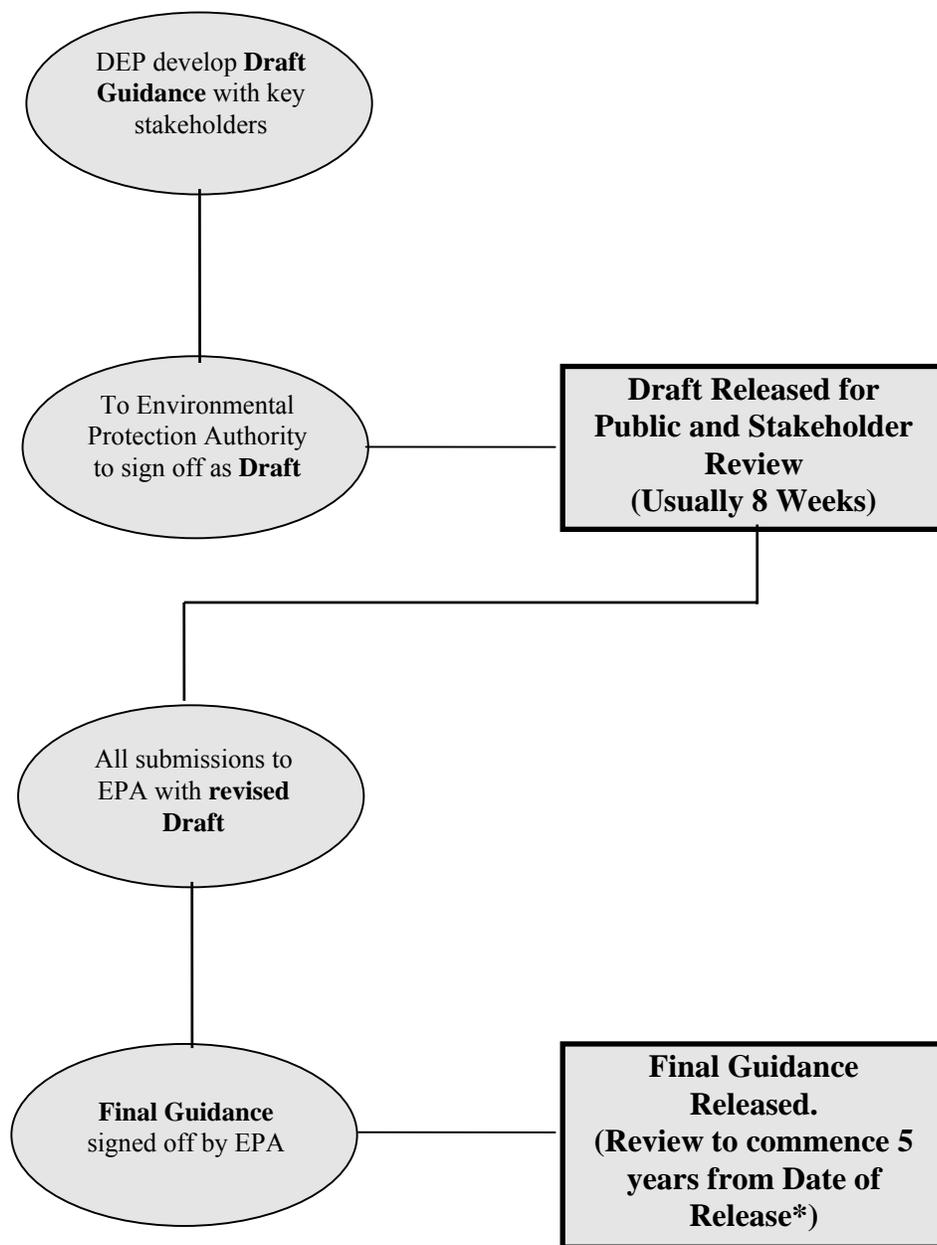
DAWA	Department of Agriculture Western Australia
DoE	Department of Environment
DoH	Department of Health
DoIR	Department of Industry and Resources
DPI	Department for Planning and Infrastructure
Fisheries	Department of Fisheries
WRC	Water and Rivers Commission (to become the Department of Environment)

\* Certain industries with the potential to pollute the environment (prescribed premises) must hold a Works Approval (for construction) and a Licence or Registration (for operation) under the *Environmental Protection Act 1986*. The *Environmental Protection Regulations 1987* set out the categories for prescribed premises.

Prescribed premises must hold a Works Approval prior to commencing any work or construction on a premises that would cause the premises to become prescribed. Prior to operating these premises a Licence must be obtained for some categories of prescribed premises (covered under Schedule 1, Part 1 of the Regulations). The remainder of the categories of prescribed premises may be registered instead of holding a Licence but still require a Works Approval to construct (Schedule 1, Part 2). A further five categories of premises require a registration only and do not require a Works Approval (Schedule 2).

The Department of Environment can refer any proposal that needs a Works Approval, Licence or Registration to the EPA. Usually the Department refers a proposal to the EPA if it has the potential to cause significant environmental impacts. This is generally the case if the siting is inappropriate, i.e. too close to residential areas, coastal areas, wetlands or areas protected by Environmental Protection Policies.

## Appendix 2: Generic Flow Diagram for the Guidance Statement Process



\* Guidance may be reviewed earlier if circumstances require it.