



Northern Territory
Environment Protection Authority

Draft Guideline Recommended Land Use Separation Distances

DRAFT

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Acknowledgement

To assist in the formulation of this document a review and synthesis was undertaken giving consideration to various guidelines, legislative frameworks and research papers within other jurisdictions.

The Northern Territory Environment Protection Authority (NT EPA) acknowledges in particular the contributions from the following:

- Environment Protection Authority Victoria's Publication 1518 – Recommended Separation Distances for Industrial Residual Air Emission – Guideline (2013)
- Government of Western Australia, Department of Environment Regulations, Draft Separation Distances – Guidance statement (2015)
- Environment Protection Authority South Australia, Guidelines for Separation Distances (2007).
- Rob Learmonth, Rik Whitehead, Bill Boyd, Stephen Fletcher, Living and Working in Rural Areas: A Handbook for Managing Land Use Conflict Issues on the NSW North Coast, NSW Department of Primary Industries, Wollongbar 2007.

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1 Introduction

The development, growth and evolving character of a locality can bring together land uses which are incompatible due to the external effects of one land use over another. Conflict can arise because of off-site emissions such as noise, dust, vibration, smoke or fumes and odour.

The separation of certain classes of activities by using land-use zones and associated development controls (as per the NT Planning Scheme) is an important mechanism to protect the amenity of residential areas and the unhindered operation of businesses in industrial and commercial areas. Just as important are the pollution control regulation and cleaner production methodologies applied to activities through the *Waste Management and Pollution Control Act* (WMPC Act) to ensure off-site emissions are minimised.

Separation distances can be used support these approaches and reduce the effects of residual emissions on sensitive land uses. By separating potentially incompatible land uses separation distances can reduce conflict and the resulting complaints. When there is an inadequate separation distance between an activity with off-site emissions and sensitive land uses, subsequent remedial action to alleviate off-site effects may be uneconomic. Accordingly, the viability of the activity is jeopardised and the off-site effects are not alleviated. Adequate separation distances seek to avoid these land use conflict situations.

To support the growth and development of the Northern Territory this Guideline introduces suggested separation distances for different land use activities which may potentially establish in the Northern Territory. The long term growth of the Northern Territory will see growing demand for industrial land uses, support services (such as transport and infrastructure), agricultural industries as well as residential development. The Guideline will support land use planning and environmental protection regulation as an additional means to minimise potential for conflict between land use activities with the potential for off-site emissions and adjacent sensitive uses.

2 What are the objectives of this guideline?

The Guideline seeks to achieve the following objectives:

- provide consistency of advice to land use planners, development and environmental assessment officers and proponents
- minimise the overall potential for conflict between land use activities with off-site emissions and receptors within more sensitive land uses
- ensure the amenity and functional activities of competing land uses are not compromised
- reduce environmental complaints regarding adverse impacts to the amenity of an area caused by activities that emit offensive or unreasonable odour, noise, smoke, dust or fumes off-site; which subsequently can reduce the need for expensive remedial action.

The separation distances recommended in this Guideline are intended to provide greater certainty for all persons that may be involved in approving or undertaking activities that may be incompatible with existing land uses, and those persons who may be impacted by these types of activities, about the NT EPA's expectations and approaches to managing complaints resulting from incompatible land uses. The Guideline is not intended to replace site-specific assessments or the consideration of site-specific

circumstances which may result in a requirement for a separation distance which is larger or smaller than the distance proposed in this Guideline.

3 Scope of this guideline

The Guideline considers only the off-site emissions of offensive odour, noise, smoke, dust or fumes generated through activities which may have the potential to cause environmental harm or environmental nuisance (in line with the legislative framework of the WMPC Act).

4 Why separation distances are needed?

In an attempt to reduce the potential for conflict caused by competing land uses this Guideline seeks to inform existing and emerging activity proponents, and sensitive land uses that neighbouring land uses may change in future. Therefore there is a need to consider contingencies to deal with the likely environmental harm that any off-site emissions caused by odour, noise, smoke, dust or fumes may have on existing land uses or likely future land uses.

Separation distances are not intended to replace effective source control technology and practices and are to be used in conjunction with best practice environmental management. However, the use of separation distances acknowledges that for some industry/ land use types residual emissions (once best practice environmental management techniques have been applied) may have the potential to cause impact on adjacent, sensitive land uses if located too closely. Separation distances seek to avoid the consequence of residual emissions of odour, noise, smoke, dust or fumes, by allowing adequate time for the emissions to dissipate without causing environmental harm (including nuisance) for adjacent sensitive land uses.

In preparing this guideline, the NT EPA is not condoning uncontrolled off-site emissions. Rather, this Guideline acknowledges that there is the potential for some activities to cause environmental nuisance and, at times, environmental harm off-site if incompatible land uses are allowed to locate in adjacent areas.

5 Policy basis

Managing land use conflict and interface issues requires land managers, planners and regulators to have access to a range of tools and methods.

5.1 Land use planning

Land use planning has the unique and important role of being able to manage land use to allow the best use of any part of the landscape. It allows strategies to be put in place that will help avoid conflicts between different types of land use. It does this through:

- planning for future settlement by identifying and planning for the location of future rural and urban settlements
- establishing land use zones to facilitate control of the development and use of land
- articulating permissible land uses in each land use zone
- defining the rules for each land use zone, such as how land can be subdivided into smaller parcels
- putting in place guidelines to guide planning and development decisions.

In the Northern Territory this planning framework is set out in the *NT Planning Act* and the NT Planning Scheme.

The NT Planning Scheme applies to the whole of the NT apart from those areas covered by the Jabiru Town Plan. It includes the following:

- statements about land use policy
- development controls that allow, prohibit or put conditions on a use or development of land
- instructions, guidelines and assessment criteria to help the Development Consent Authority to assess and decide on development applications.

Regional and Subregional Land Use Plans and Area Plans establish policy to guide future development. NT Planning Scheme zones control and manage the development and use of land. Each zone is supported by zoning tables which describe a zone's purpose and lists potential land uses that are permissible (can occur without requiring development consent), discretionary (development consent is required) or prohibited.

The preparation of Regional Land Use Plans and Area Plans establishing policy for future development, and amendments to zones create the main opportunities within the NT for consideration of appropriate separation of potentially conflicting land uses.

This Guideline can establish a framework to inform future policy plans and amendments to zones to ensure appropriate consideration of separation distances between land use zones.

5.2 Development control

If consent is required for the use or development of land an application is made to the consent authority. Uses identified as discretionary (or discretionary by virtue of being undefined within the NT Planning Scheme) as well as subdivisions require the consent of the Development Consent Authority (DCA). The DCA is a panel of five members appointed by the Minister.

The *Planning Act* establishes the matters the DCA must take into account in considering any application including the provisions of the Planning Scheme, and a range of other issues including but not limited to land capability, environmental, infrastructure and amenity. The DCA may issue a Development Permit which may have conditions attached to it.

Planning principles and policies included in the NT Planning Scheme guide the DCA's interpretation of the NT Planning Scheme. Decisions are required to advance or ensure consistency with these planning principles.

The need for consent for a particular land use may provide an additional opportunity to consider potential land use conflicts depending on the development provisions within the Scheme relevant in the circumstances.

This Guideline can be used as a reference to advise on adequate separation distances to minimise the potential for land use conflicts.

5.3 Environmental assessment

Projects that have the potential for a significant impact on the environment are assessed under the *Environmental Assessment Act* by the NT EPA, usually in the form of an Environmental Impact Statement (EIS). This process allows the review and assessment of any potential off-site impacts associate with a project, including emissions likely to

cause environmental harm and/ or nuisance on surrounding land uses. Through the Minister for Natural Resources and Environment, the NT EPA is able to make recommendations to the approving Minister (the Minister responsible for issuing approval for a development) about the proposal, including recommendations to minimise off-site emissions and impacts. This Guideline can assist the NT EPA in its assessment role and when making recommendations to ensure potential land use conflicts are minimised.

In the event that an EIS has been required and the NT EPA has prepared an assessment report and the project requires development consent, the DCA is required to consider the outcomes of the assessment in its decision making. This provides a mechanism in which a consent could consider the application of separation distances.

5.4 Environmental regulation

Section 12 of the WMPC Act requires land managers who conduct an activity that has the potential to cause pollution resulting in environmental harm (including environmental nuisance) or waste to take measures to prevent, minimise or reduce the potential pollution and/ or waste (referred to as a general environmental duty). The general environmental duty operates to manage and minimise off-site emissions which have the potential to cause land use conflicts. Being guided by these Guidelines and undertaking site planning to put in place separation distances assists an operator to demonstrate compliance with Section 12 of the WMPC Act.

Section 83 of the WMPC Act sets out general environmental offences for environmental harm, including s83(5) *a person must not cause an environmental nuisance*.

Section 84 sets out the defence provisions to general environmental offences, specifically for offences relating to environmental harm.

The general offences provide the incentive to ensure off-site emissions are not causing environmental harm or nuisance in terms of creating land use conflicts with a sensitive land use. This Guideline supports a proponent to plan their use to ensure adequate separation distances are in place minimising the chance of causing environmental harm or nuisance. Compliance with the Guideline will assist an operator to demonstrate reasonable diligence (providing a defence for the environmental offence).

The WMPC Act also establishes a licensing regime for some industry types in the Northern Territory. The NT EPA grants environment protection approvals and licences for activities listed in Schedule 2 of the WMPC Act. These activities are associated with:

- Disposal of waste by burial.
- Listed Waste collection, transport, storage, re-cycling, treatment or disposal.
- Processing hydrocarbons so as to produce, store and/or despatch liquefied natural gas or methanol.

Waste discharge licences under section 74 of the *Water Act* are regulatory instruments used to regulate the quality and quantity of waste discharged to water in the Northern Territory. Waste discharge licenses are most commonly granted for waste discharges associated with the following activities:

- Sewage treatment or wastewater treatment plants.
- Aquaculture.
- Mining.

- Dredged material (spoil) disposal.

Licences are a tool to ensure that an operator applies best practice environmental management to their activity, minimising residual emissions and associated potential conflict with adjacent land uses.

6 Application of this guideline

This Guideline can be applied in a number of settings:

- a tool for industry proponents in planning proposals and amendments to existing development plans (i.e. operation expansions), as part of their general environmental duty obligations
- a tool for development proponents in planning proposals and amendment to existing development plans where their development has the potential of locating a sensitive land use near an existing industry
- a guide for land use planners when developing Area Plans and associated zoning tables
- a basis for advice and input by the NT EPA (as a service authority) when providing comment on development consent applications
- a guide for the review and assessment of environmental impact assessment documents, as well as the preparation of environmental assessment reports by the NT EPA
- assessing a proponent's compliance with the general environmental duty provisions of the WMPC Act in the event of an environmental nuisance or harm event
- assessing a defence claim by a proponent against a potential environmental offence under the WMPC Act.

This Guideline is intended to provide a guide only. In some instances, as a result of site-specific operational or environmental conditions, the appropriate separation distance will be larger or smaller than the distance proposed in this Guideline.

7 When to consider separation distances

7.1 The agent of change principle

The proponent of any new development that may give rise to land use conflicts has the onus to avoid land use conflict in their site planning.

The new development is the trigger for considering and applying separation distances (regardless of whether the development requires development consent). The proponent for the new development needs to draw on this Guideline to inform site design and planning.

The agent of change may be a proponent of a (for example) new industrial land use, or expansion or change to an existing industrial land use, or it may be the proponent of a proposed sensitive land use.

7.2 Greenfield site

An area of undeveloped land earmarked for commercial, residential (including rural living and rural residential) or industrial development is known as a greenfield site.

Separation distances are best put in place during the land use and site planning stage of a greenfield site development. For example:

- area planning and associated land use zoning of large mixed use development sites (which may include residential, commercial, light industry, utilities etc)
- site planning of a new industrial estate within a General Industry or Development zone, adjacent to zonings where sensitive uses are permissible
- site planning of an agricultural industry in an area of rural living and rural residential
- subdivision, planning and development of a residential estate adjacent to industrial or rural zonings.

7.3 Brownfield site

An area of land or a premises which has previously been used or developed and is not currently fully in use, although it may be partially occupied or utilised, is known as a brownfield development site. Brownfield land may also be vacant, derelict or contaminated. Separation distances can be applied when developing brownfield sites, as follows:

- area planning and associated land use zoning where a large brownfield site is being re-developed for an alternative land use (for example, the development of Kitchener Bay (the Darwin Waterfront) from industry to a mix of residential and commercial uses)
- site planning of a new activity as part of the in-fill development of a brownfield site (for example a new industry establishing or an existing industry expanding on vacant, derelict or underutilised land)
- site planning of a new activity that will result in a change in land-use, creating a mix of uses within a broader brownfield site (for example, redeveloping a tract of land for residential purposes).

7.4 Existing interfaces

This Guideline cannot be applied to existing interfaces between current activities and sensitive land uses where those sensitive land uses are located within land that would be part of the separation distance.

In these circumstances the NT EPA manages potential impacts under existing authorisations and general environmental duty provisions within the WMPC Act.

8 How to measure separation distances

Separation distances should be determined by measuring from the 'activity boundary' of a land use that has the potential for off-site emissions to the nearest sensitive land use. The activity boundary is the area that includes all current or proposed activities (including the plants, buildings or other sources) from which off-site emissions of offensive or unreasonable odour, noise, smoke, dust or fumes may arise (including but not limited to stockpiles, windrows, leachate ponds and odour-control equipment). The activity boundary is not the property boundary of the activity.

Measuring from the activity area (rather than the property boundary) ensure that any separation provided within the property boundary is considered. If an activity changes its use or moves a functional activity within the property boundary, these changes may need to reconsider the adequacy of separation distances.

Two methods to measure separation distances are provided below however, method one is the expected method to be applied. Method two is provided as an alternate approach that will require information demonstrating it is appropriate in the circumstance.

8.1 Method One – Activity boundary to property boundary

Method one measures the separation distance from the activity boundary of a potentially impacting activity to the property boundary of the nearest sensitive land use. This method is to be used in most circumstances.

Method one allows the property owners/ users of the sensitive use to utilise their whole property for any purpose that is permissible within the zoning.

8.2 Method Two – Activity boundary to activity boundary

Method two measures the separation distance from the activity boundary of the potentially impacting activity to the edge of a circular two hectare area on the sensitive land use (not the property boundary of the sensitive land use). The sensitive land use includes all current or proposed sensitive uses (including but not limited to residences, garages and carports, BBQ areas, clotheslines, playgrounds and swimming pools).

Method two should only be used in the following circumstances:

- the nearest sensitive use is located on a site more than 2 hectares¹ in size
- there is documented evidence demonstrating agreement for the property of the sensitive use to make up part of the separation distance
- the potentially impacting activity is using best practice environmental management and can demonstrate that residual emissions do not have the potential to cause significant impact on the property of the sensitive land use (that is, environmental harm or impact to human health).

Irrespective of where off-site effects may be experienced, an industry with the potential for producing any odour or dust emissions should be separated as far as possible from the nearest sensitive land use.

9 Interface land uses

Interface land uses are those that can be located within separation distances between potentially impacting activities and sensitive land uses. The inclusion of and planning for interface land uses can occur when planning for and developing a greenfield site (either through land use planning and associated zoning or in site plans for large subdivisions and associated development). Interface land uses can only occur if the zoning allows for the use.

Interface land uses neither generate significant off-site emissions caused by odour, noise or hazardous pollutants, nor warrant protection from them. Interface land uses typically include zones that are for the purpose of agricultural/rural activity and light industry.

¹ Two hectares reflects the minimum lot size for the Rural Living zone

Table 1 below provides examples of activities and their suitability as interface land uses. The examples provided in Table 1 are not intended to be an exhaustive list of all activities.

Table 1. Examples of interface land uses and their suitability

| Suitability | Examples of interface land use |
|-----------------------------------|--|
| Encouraged | Light industry with no adverse amenity potential, agriculture, car parks. |
| Potential (subject to assessment) | Utilities (except for sewage works), offices, natural systems, conservation zones, recreational zones, service stations, and research centres. |
| Prohibited | Sensitive land uses and industrial land uses that require separation distances as listed in the Index. |

10 Proposed separation distances

The proposed minimum separation distances are stipulated in the Index of Activities (the Index) found in Appendix A. The Index:

- broadly defines the activity types requiring a separation distance
- lists and assigns proposed separation distances between identified activities and sensitive land uses
- references other guidelines if they are relevant to particular industries.

The Guideline distances are based upon separation distances used in other Australian jurisdictions, but recognise local conditions.

10.1 Limitations

The NT EPA recognises that the separation distances in this guideline are based on generality. It is consequently important when determining separation distances to consider the key parameters that influence emission dispersion including local meteorology (i.e. wind speed, wind direction, intensity of rainfall, seasonality, cloud cover, solar exposure and atmospheric stability) and topography. Industry air emissions and sensitivity to the particular emissions can be variable.

Table 2 provides some of the criteria to be considered during the assessment of site-specific variation to the recommended separation distances.

Table 2. Criteria for site-specific variation

| Criteria | Explanation |
|-------------------------------|---|
| Transitioning of the activity | Existing activity has formally indicated that it will transition out of an area over a specified timeframe. |
| Plant equipment or operation | The plant and equipment have an exceptionally high standard of emission control technology. |

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| | |
|--------------------------------------|---|
| Size of plant and scale of operation | The plant is significantly smaller or larger than comparable industries. |
| Topography or meteorology | There are exceptional parameters that affect emission dispersion including local meteorology (i.e. intensity of rainfall, seasonality, cloud cover, solar exposure, wind speed, wind direction and atmospheric stability) and topography. |
| Likelihood of emission | Particular emissions are either highly likely or highly unlikely to occur. |

10.2 Cumulative impacts

Cumulative effects are those individually minor but collectively significant effects that result from an activity in combination with other projects and activities. Cumulative impacts are potentially more difficult to predict than other impacts on the environment.

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

- an existing or proposed potentially impacting activity occurs in the proximity of the same type activity
- the activity and its associated functional activities will have, or has overlapping separation distances
- the combined capacity of the individual activities is in excess of the 'scale of operations' listed in the Index.

This can occur, for example, in the event that a new industrial development is proposed or an existing industry plans to expand (placing the onus on the proponent of the new or expanding industry to account for separation distances) or when a proponent of a sensitive land use proposes a development nearby to a cluster of industries (placing the onus on the proponent of the sensitive land use to account for separation distances).

Appendix A: Index of Activity Types

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|--------------------|--|---|-------------------------------|--|
| Agriculture | | | | |
| 1. | Grain and stockfeed mill, and handling facility. | Receiving, storing, fumigating, bagging, transporting, and loading grain or stock feed. | ≥ 20,000 tonnes per year | 250 |
| 2. | Piggery | Premises pigs are fed, watered and confined in pens for the purpose of agricultural productions. | ≥ 1,000 head | 1,000 <i>Refer to National Environmental Guidelines for Piggeries (Australian Pork Limited, 2010).</i> |
| 3. | Stock feedlot | Premises where animals are confined for the purpose of agricultural production; beef, dairy, buffalo or bison. | Beef or buffalo ≥ 500 head | 1,000 <i>Refer to National Guidelines for Beef Cattle Feedlots in Australia (Meat and Livestock Australia, 2012).</i> |
| | | | Dairy | 500 |
| 4. | Livestock saleyard or holding pen | Premises where pigs, cattle or other stock are temporarily confined for sale, transport, processing or slaughter. | < 10,000 head per year | 500 |
| | | | ≥ 10,000 head per year | 1,000 |

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) | |
|-----------------------|----------------------------|---|---|----------------------------------|-----|
| Metal products | | | | | |
| 5. | Metal coating | Premises on which metals products (excluding vehicles) are spray painted, powder coated or enamelled. | ≥ 1,000 litres of paint or powder per year | | |
| | | | Spray painted is conducted inside a spray booth | | 200 |
| | | | Work is conducted in the open (no spray booth) | | 500 |
| | | | Metal products are powder-coated or enamelled | | 200 |
| 6. | Metal finishing | Premises which metals are chemically cleaned or metals, plastic products are plated, electroplated, anodized, coloured or otherwise coated or finished. | | 200 | |
| | | | Iron or steel is galvanised | 500 | |
| 7. | Metal melting or casting | Process where metal or scrap metal is melted in furnaces or cast. | ≥ 100 tonnes per year | 500 | |
| 8. | Metal smelting or refining | Process where metal ore, metal ore concentrates or metal waste is smelted, fused, roasted, refined or processed. | ≥ 1,000 tonnes per year | Case by case | |
| 9. | Scrap metal recovery | Premises on which metal scrap is fragmented or melted, including premises on which lead acid batteries are reprocessed. | ≥ 100 tonnes per year | 500 | |

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|--|-----------------------------|---|--|----------------------------------|
| Chemical, petroleum and coal products | | | | |
| 10. | Biocide production | Production of biocides. | ≥ 2,000 tonnes per year | 1,000 |
| 11. | Bulk storage of chemicals | Storage of acids, alkalis or chemicals that contain at least one carbon to carbon bond and are liquid in standard temperature and pressure (STP). | ≥ 1,000 cubic metres in aggregate | 1,000 |
| 12. | Carbon stripping | Reprocessing carbon granules from a gold extraction process located external to the site. | ≥ 100 tonnes per year | 300 |
| 13. | Chemical blending or mixing | Premises on which chemicals or chemical products are mixed, blended or packaged. | Dependent on size and type of chemicals involved | 300-500 |
| 14. | Chemical manufacturing | Manufacturing chemical products (other than those mentioned within this index) by a chemical process. | ≥ 1,000 tonnes per year | 1,000 |
| 15. | Fertiliser production | Production of inorganic fertilisers. | ≥ 2,000 tonnes per year | 1,000 |
| 16. | Formaldehyde production | Production of formaldehyde. | ≥ 2,000 tonnes per year | 500 |
| 17. | Industrial gas production | Production of industrial gases. | ≥ 2,000 tonnes per year | 1,000 |
| 18. | Oil or gas refining | Refining oil or gas, producing hydrocarbon fractions or liquefying gas. | ≥ 2,000 tonnes per year | 2,000 |
| 19. | Paint and ink production | Production of paint or ink. | | 500 |

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| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|---|--|---|---|----------------------------------|
| 20. | Pesticides manufacturing | Manufacturing by a chemical process herbicides, insecticides or pesticides. | | 1,000 |
| 21. | Pharmaceutical and veterinary product production | Production of pharmaceutical or veterinary products. | ≥ 2,000 tonnes per year | 500 |
| 22. | Recycling of chemicals or oil | Premises on which waste liquid hydrocarbons or chemicals are refined, purified, reformed, separated or processed. | | 1,000 |
| 23. | Rubber, polyester and synthetic resins production | Production of rubber products, polyester or synthetic resins. | ≥ 2,000 tonnes per year | 1,000 |
| 24. | Rubber products production, using either organics solvents or carbon black | Production of rubber products using organic solvents or carbon black. | ≥ 2,000 tonnes per year | 250 |
| 25. | Soap and detergent production | Production or soap or detergent. | ≥ 2,000 tonnes per year | 500 |
| Food, beverage and manufacturing | | | | |
| 26. | Abattoir | Premises on which animals are slaughtered – no rendering. | ≥ 200 tonnes per year With wastewater treatment ponds | 1,000 |
| | | | ≥ 200 tonnes per year Without wastewater treatment ponds | 500 |
| 27. | Alcoholic and non-alcoholic | Premises on which an alcoholic or non- | ≥ 200 kilolitres | 500 |

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| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|-----|--------------------------------|---|-------------------------|----------------------------------|
| | beverage manufacturing | alcoholic beverage is manufactured. | | |
| 28. | Edible oil or fat production | Premises on which vegetable oil, or oil seed or animal fat is processed using seed crushing, solvent extraction or fat deodorising. | ≥ 200 tonnes per year | 500 |
| 29. | Food processing of small goods | Premises on which vegetables are, or fruit or meat is, preserved, cooked, dried canned, bottled or processed. | ≥ 200 tonnes per year | 500 |
| 30. | Milk products | Processing of milk or dairy products which; Milk is separated or evaporated (other than a farm); or Evaporated or condensed milk, butter, ice cream, cheese or any other product is manufactured. | ≥ 100 tonnes per year | 500 |
| 31. | Pet food production | Production or manufacturing of animal food. | ≥ 100 tonnes per year | 500 |
| 32. | Rendering and casings works | Abattoirs, knackereries or poultry processing works involving rendering. | ≥ 200 tonnes per year | 1,000 |
| 33. | Seafood | Premise (other than fish wholesalers) on which fish or other seafood is processed. | ≥ 200 tonnes per year | 500 |
| 34. | Starch manufacturing | Premises on which starch or gluten is manufactured. | ≥ 200 tonnes per year | 500 |
| 35. | Sugar milling or refinery | Premises on which sugar cane is crushed or sugar is refined. | ≥ 1,000 tonnes per year | 1,500 |

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|---------------------------------------|------------------------------------|--|------------------------------------|----------------------------------|
| Mining and extractive industry | | | | |
| 36. | Gas and oil extraction | All natural gas or oil production wells including tight, shale and coal seams. | Single well | 500 |
| | | | Multiple well | 2,000 |
| 37. | Mine dewatering | Premises which water is extracted from ore with a chemical solution. | ≥ 50,000 tonnes per year | 500 |
| 38. | Mineral sands mining or processing | Premises on which mineral sands ore is mined, screened, separated or otherwise processed. | < 5,000 tonnes per year | 500 |
| | | | ≥ 5,000 tonnes per year | 2,000 |
| 39. | Oil or gas production | Whether on land or offshore, via wells or other mechanisms, premises on which: crude oil, natural gas or condensate is extracted from below the surface of the land or the seabed, as the case requires, and is treated or separated to produce stabilised crude oil, purified natural gas or liquefied hydrocarbons gases; or, commercial production of oil or gas occurs (including the reforming of hydrocarbon gas). | ≥ 5,000 tonnes per year | 2,000 |
| 40. | Quarry | Quarrying, crushing, screening, stockpiling and conveying or rock. | Without blasting | 250 |
| | | | With blasting | 500 |
| | | | With respirable crystalline silica | 600 |

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| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|------------------------------------|---|--|--|----------------------------------|
| 41. | Screening etc. of materials | Premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated. | ≥ 5,000 but less than < 50,000 tonnes per year | 500 |
| | | | ≥ 50,000 tonnes per year | 1,000 |
| 42. | Processing or beneficiation of metallic or non-metallic ore | Premises on which: metallic or non-metallic ore is crushed, ground, milled or otherwise processed; or, tailings from metallic or non-metallic ore are reprocessed; or, tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam. | ≥ 50,000 tonnes per year | 2,000 |
| 43. | Vat or in <i>situ</i> leaching of metal | Premises which metal is extracted from ore with a chemical solution. | ≥ 5,000 tonnes per year | 500 |
| Miscellaneous manufacturing | | | | |
| 44. | Boat building and maintenance | Building or maintenance of vessels for commercial sale. | | 500 |
| | | Where organotin compounds are used or removed from vessels. | | 1,000 |
| 45. | Foam products manufacturing | Resin based preparation or manufacturing of plastic foam or plastic foam products using MDI (diphenylmethane di-iso-cyanate) or TID | ≥ 1 tonnes per year | 500 |

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| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|--------------------------------------|---|---|----------------------------------|----------------------------------|
| | | (toluene-2, 4-di-iso-cyanate). | | |
| 46. | Manufacture of products using fibreglass and resin | Manufacturing products using fibreglass or resin. | ≥ 250 tonnes per year | 250 |
| 47. | Manufacturing or tanned leather and artificial leather products | Processing leather by tanning or dressing. | ≥ 250 tonnes per year | 250 |
| 48. | Printing | Printing works emitting volatile organic compounds. | Emitting ≥ 100 kilograms per day | 500 |
| 49. | Solar salt manufacturing | Premises on which salt is produced by solar evaporation. | | 500 |
| 50. | Fellmongering | Drying, storing, curing packaging of animal skins or hides | ≥ 1,000 skins | 500 |
| 51. | Tannery | Premises on which animal skins or hides are tanned, dressed, finished or dyed. | ≥ 1,000 skins | 2,000 |
| Non-metallic mineral products | | | | |
| 52. | Asphalt plant | Premises which hot or cold mix asphalt is produced using crushed or ground rock aggregates mixed with bituminous or asphaltic materials for use external to the premises. | | 1,000 |
| 53. | Bitumen manufacturing | Premises on which bitumen is mixed or prepared for use external to the premises. | | 1,000 |

**Guideline:
Recommended Land Use Separation Distances**

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|---------------------------------|--|---|---------------------------|----------------------------------|
| 54. | Brick, tile, pipe and refractory manufacturing | Production of bricks, tiles, pipes, pottery goods or refractories, processed in dryers or kilns. | ≥ 10,000 tonnes per year | 1,000 |
| 55. | Cement manufacturing | Production of cement form clays, or limestone in either a furnace or kiln to produce cement clinker. | < 150,000 tonnes per year | 500 |
| | | | ≥ 150,000 tonnes per year | 1,000 |
| 56. | Cement clinker grinding | Grinding or cement clinker, clays or limestone materials. | ≥ 150,000 tonnes per year | 2,000 |
| 57. | Ceramic goods manufacturing | Premises on which ceramic kitchen or table ware or other non-refractory ceramic products are manufactured. | ≥ 200 tonnes per year | 500 |
| 58. | Concrete batching plant or, concrete and stone article manufacturing | Premises where finished concrete or stone products are manufactured. | ≥ 5,000 tonnes per year | 500 |
| 59. | Glass or glass fibre manufacturing | Premises where glass, glass products or glass fibre is manufactured. | ≥ 1,000 tonnes per year | 500 |
| 60. | Other non-metallic mineral processing | Premises on which non-metallic minerals are crushed, ground, milled or separated. | ≥ 100 tonnes per year | 200 |
| 61. | Plaster and plaster article manufacturing | Premises where plaster products, plaster board, gyprock or products comprised wholly or primarily of gypsum are manufactured. | ≥ 5,000 tonnes per year | 200 |
| Paper, textiles and wood | | | | |
| 62. | Textile operations | Textiles manufacturing and processing including bleaching, dyeing or finishing cotton, | ≥ 1,000 tonnes per year | 500 |

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|--|---|--|-------------------------|----------------------------------|
| | | linen, cotton ginning or milling, woollen yarns, carpet or textiles. | | |
| 63. | Timber preserving | Premises on which timber is preserved for commercial purposes by the use of chemicals | | 500 |
| 64. | Mineral wool or ceramic fibre manufacturing | Manufactured mineral wool or ceramic fibre is. | | 500 |
| 65. | Paper and paper pulp manufacture by other methods | Premises on which paper pulp, wood pulp, kraft paper, kraft paperboard, cardboard, paper or paperboard is manufactured. | ≥ 5,000 tonnes per year | 1,500 |
| 66. | Wood board manufacturing | Premises on which particleboard or chipboard is fabricated or manufactured. | ≥ 500 tonnes per year | 2,000 |
| Storage, transport and waste management | | | | |
| 67. | Biomedical waste incineration | Premises on which: <ul style="list-style-type: none"> • infectious or potentially infectious waste produced by health care systems, or by pathology, dental, or veterinary practices, or by laboratories, is incinerated; or • quarantine waste is incinerated; or • cytotoxic waste is destroyed, but not including facilities used exclusively for human or animal cremation. | ≥ 2 tonnes per day | 200 |
| | | | ≥ 5 tonnes per day | 500 |
| | | | ≥ 5 tonnes per day | 1,000 |

**Guideline:
Recommended Land Use Separation Distances**

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|-----|--------------------------------------|--|--|----------------------------------|
| 68. | Bulk material loading or unloading | Premises on which clinker, coal, ore, ore concentrate or any other bulk granular material (other than salt) is loaded onto or unloaded from vessels by a materials loading system. | ≥ 100 tonnes per day Open material loading system | 2,000 |
| | | | ≥ 100 tonnes per day Closed material loading system | 300 |
| 69. | Contaminated soil treatment facility | Permanent facility for the temporary storage, processing and treatment of contaminated soil. | | Case by case |
| 70. | Fuel burning | Process of which gaseous, liquid or solid fuel is burnt in a boiler for the supply of steam or in power generation equipment. | Aggregate fuel ≥ 500 but < 2,000 kilograms per hour with sulphur content < 0.25% | 300 |
| | | | Aggregate fuel ≥ 500 kilograms per hour with fuel sulphur content >0.25% | 500 |
| | | | Aggregate fuel ≥ 2,000 kilograms per hour with sulphur content < 0.25% | 500 |
| 71. | Incineration | Premises on which waste is incinerated (excluding clean paper cardboard and biomedical waste). | ≥ 100 kilograms per day | 1,000 |
| 72. | Landfill site facility | Landfills used for the discharge, or deposit of solid wastes onto land. | From surface waters | 100 |
| | | | In or adjacent to areas zoned SD, MD, MR, HR, CV, CL RR, | 500 |

**Guideline:
Recommended Land Use Separation Distances**

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|----------------------------|---|---|---|----------------------------------|
| | | | RL or R | |
| | | | From an aerodrome for piston engine propeller driven aircraft | 1500 |
| | | | From an aerodrome for jet aircraft | 3000 |
| 73. | Liquid waste facility | Premises on which liquid waste (other than sewerage waste) is stored, reprocessed, treated or irrigated. | < 1,000 tonnes per year | 200 |
| | | | ≥ 1,000 tonnes per year | 1,000 |
| 74. | Materials recovery and recycling facility | Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials. | | Case by case but generally ≥ 150 |
| 75. | Solid waste depot/transfer station | Premises on which solid waste is stored, or sorted, pending transfer final disposal or re-use. | ≥ 500 tonnes per year | 250 |
| 76. | Solid waste facility | Premises on which solid waste produced externally is stored, reprocessed, treated or discharged onto land (excluding fuel burning). | ≥ 1,000 tonnes per year | 500 |
| 77. | Used tyre storage | Premises on which used tyres are stored in connection with a tyre fitting business. | ≥ 100 tyres or more | 200 |
| Power and utilities | | | | |
| 78. | Electric power generation | Electrical power generation using fuel. | ≥ 20 megawatts (MW) in aggregate using natural gas | 1,000 |

Guideline:
Recommended Land Use Separation Distances

| No. | Activity type | Activity description | Scale | Proposed separation distance (m) |
|-----|-------------------------|--|---|---|
| | | | ≥ 10 megawatts (MW) in aggregate using fuel other than natural gas | |
| | | Commercial generation of electrical power using natural gas as fuel. | ≥ 10 but < 20 megawatts (MW) in aggregate | 500 |
| 79. | Sewage facility | Facility in which sewage is treated as per the description in the <i>NT Code of Practice for Small on-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent</i> . | As per the <i>NT Code of Practice for Small on-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent</i> . | As per the <i>NT Code of Practice for Small on-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent</i> . |
| 80. | Sewage pumping station | Premises on which sewage is pumped (excluding the pumping to and from septic tanks). | Dependent on capacity | 25-150 |
| 81. | Sewage treatment plants | Mechanical/biological wastewater plants | | 10 (EP) ^{0.5} |
| | | Facultative ponds | | 10 (EP) ^{0.5} |
| | | Aerated ponds | | 5 (EP) ^{0.5} |
| | | Disposal areas for secondary treated effluent by spray irrigation | | 200 |
| | | Disposal areas for secondary treated effluent by flood irrigation | | 50 |

Abbreviations

| | |
|-----------------|---|
| DCA | Development Consent Authority |
| EIS | Environmental Impact Statement |
| NT EPA | Northern Territory Environment Protection Authority |
| WMPC Act | <i>Waste Management and Pollution Control Act</i> |

Glossary of terms

| Term | Definition |
|---|--|
| Activity ² | means a current or proposed activity and includes a current or proposed process, operation, project, venture or business. |
| Amenity ³ | In relation to locality or building, means any quality, condition or factor that makes or contributes to making the locality or building harmonious, pleasant or enjoyable. |
| Best Practice Environmental Management ⁴ | The management of an activity or premises in a cost-effective manner that, having regard to national or international practices for management of activities or premises of the same kind, ensures the continued minimisation of the actual or potential environmental impact of the activity or premises. |
| Environment ⁵ | means land, air, water, organisms and ecosystems and includes: <ul style="list-style-type: none"> (a) the well-being of humans; (b) structures made or modified by humans; (c) the amenity values of an area; and (d) economic, cultural and social conditions. |
| Environmental harm ⁶ | Means: <ul style="list-style-type: none"> any harm to or adverse effect on the environment; or any potential harm (including the risk of harm and future harm) to or potential adverse effect on the environment, of any degree or duration and includes environmental nuisance. |

² As defined by the NT *Waste Management and Pollution Control Act*.

³ As defined by the NT *Planning Act*.

⁴ As defined by the NT *Waste Management and Pollution Control Act*.

⁵ As defined by the NT *Waste Management and Pollution Control Act*.

⁶ As defined by the NT *Waste Management and Pollution Control Act*.

Guideline:
Recommended Land Use Separation Distances

| Term | Definition |
|-------------------------------------|---|
| Environmental Nuisance ⁷ | Means: <ol style="list-style-type: none"> a) an adverse effect on the amenity of an area that: <ol style="list-style-type: none"> i. is caused by noise, smoke, dust, fumes or odour; and ii. unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in the area; or b) an unsightly or offensive condition caused by contaminants or waste. |
| EP | Equivalent population (in terms of biochemical oxygen demand [BOD] load) |
| Off-site emissions | Pollutants emitted from an activity that are not contained within the property boundary of the activity. |
| Pollute ⁸ | Means: <ul style="list-style-type: none"> • emit, discharge, deposit, or disturb, directly or indirectly, a contaminant or waste; or • cause, permit, or fail to prevent, directly or indirectly, the emission, discharge, deposition, disturbance or escape of a contaminant or waste. |
| Potentially impacting Activity | An activity with the potential to pollute. |
| Residual emissions | Pollutants from an activity emitted after the application of best practice environmental management. |
| Sensitive land uses | Any land uses which require a particular focus on protecting the health and well-being of humans, and the amenity values of an area from emissions of an activity. For example sensitive land uses may include but are not limited to residential premises, accommodation, childcare centres, schools and some outdoor recreation facilities. |
| Separation distances | The estimated distances proposed to an activity and its emissions from sensitive land uses |

⁷ As defined by the NT *Waste Management and Pollution Control Act*.

⁸ As defined by the NT *Waste Management and Pollution Control Act*.