

AUSTRALIA and NEW ZEALAND

- ▶ Australia (AU)
- ▶ New Zealand (NZ)



AUSTRALIA AND NEW ZEALAND

- ▶ Odours are the largest source of air pollution complaints in Australia (AU) and New Zealand (NZ).
- ▶ In AU and NZ, odour is managed and legislated similar to other noxious pollutants such as SO₂ and NO_x.
- ▶ Odour is controlled under the Protection of the Environment Operations Act 1997 in AU, and, the 1991 Resources Management Act of New Zealand and the Resource Management Regulations of 2004.
- ▶ Strict odour assessment criteria exist in both countries

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- ▶ Odour assessment criteria are used to compare odour concentration from dispersion model outputs in ou/m^3 .
- ▶ The assessment criteria take into account the following:
 - Percentile limits of 100%, 99.9%, 99.5%
 - Odour assessment criteria from 0.5 to 7 ou/m^3 in AU, from 1 to 10 ou/m^3 in NZ.
- ▶ The aim of AU and NZ guidelines and Odour Assessment is to provide a framework for effective project planning and a regulatory regime for odour emitting activities.

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- ▶ Peak to mean ratio. PtMr varies for source characteristics, distance from the source and atmospheric stability. PtMr are applied to the emission rates or odour concentrations. (In some states of AU and NZ the PtMr is included in the odour assessment criteria).
- ▶ Odour guidelines accompany all states in AU and NZ. It is emphasised that the guidelines and Odour Assessment criteria therein are not meant to be interpreted as a 'pass or fail' test. The aim of the guidelines is to provide a framework for effective project planning and a regulatory regime for odour emitting activities.

PEAK to MEAN RATIOS

Peak to Mean values used in New South Wales, Australia

Source Type	Stability Class (Unstable and Neutral) A, B, C, D	Stability Class (Stable) E, F
Area	2.5	2.3
Wake-affected Point	2.3	2.3
Wake-free Point	12	25 D
Volume	2.3	2.3

Notes:

- For unstable and neutral atmosphere, 'near-field' area sources use a peak to mean value of 2.5 and for 'far-field' a peak to mean value of 2.3.
- For stable atmosphere, 'near-field' area sources use a peak to mean ratio of 2.3 and for 'far-field' a peak to mean value of 1.9.
- The New South Wales defines near and far-field as 'less than' and 'greater than' ten times the largest source dimension.
- The peak to mean values do not take into account the frequency of odour peaks within the hour.

NEW ZEALAND

GOOD PRACTICE GUIDE FOR ASSESSING AND MANAGING ODOUR IN NZ (2003), (2016)

In New Zealand, odours are managed under the Resource Management Act, 1991 and, sometimes Health Act

RMA recognises the complex nature of Odour Management and the conflict that it can cause amongst various parties.

The Good Practice Guide for Assessing and Managing Odours in NZ is a national approach to assessing and managing odours.

The guide includes advice on:

- how to assess the odour effect, what is 'offensive' or not
- how to monitor the effects of odour through community survey
- provides case law developed under RMA relating to odour management
- when to use dispersion modelling
- how to manage odour emissions including some mitigation options

The recommendations in the guide are not legislative requirements under the RMA or any other legislation, they are based on expert advice.

NEW ZEALAND

GOOD PRACTICE GUIDE FOR ASSESSING AND MANAGING ODOUR IN NZ (2003), (2016)

Under the RMA, regional councils are responsible for managing discharges of contaminants into the air. Councils are responsible for monitoring compliance with resource consent conditions applied to odour discharges and for responding to complaints.

Local authorities are responsible for controlling land use and must consider the effect of land use decisions on amenity values when planning and making decisions on resource consents. They are also responsible for preventing nuisances under the Health Act and can monitor and take enforcement action to abate any nuisance.

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GOOD PRACTICE GUIDE FOR ASSESSING AND MANAGING ODOUR IN NZ (2003), (2016)

Dischargers

- must comply with the requirements of the RMA (incl Sect 17) which is they have a general duty to avoid, remedy or mitigate adverse effects).
- Have a duty to ensure they are not adversely affecting people in the community
- Demonstrate they are taking appropriate action to comply with council requirements
- Must COMMUNICATE with the community
- Must involve the community

When uncertainty and conflict increase between industry and community, time and cost increase too

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ODOUR ASSESSMENTS

Odour assessments can be categorised as being needed for one of 5 reasons:

1. Investigating odour complaints
2. Resource consent applications or consent review to renew an existing activity
3. Resource consent to modify an existing activity
4. Resource consent for a proposed activity
5. Monitoring compliance with resource consent conditions

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WHAT INFORMATION IS REQUIRED FOR AN OA

- Odour complaint history
- Experience with the discharge and past compliance
- Community consultation
- Odour diaries, community surveys, field investigations
- Dynamic dilution Olfactometry
- Dispersion modelling
- Site management and contingency plans and whether best practicable option is being applied
- Process controls and design, including records of emission control improvements undertaken/proposed and engineering risk assessment for system failures
- Analysis of site specific wind and topographical features
- Experience and knowledge from other sites of a similar nature, scale and location

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Table 2.2: Examples of sensitivity for different land uses

Land use type	Sensitivity classification			Comments and reasons for classification
	High	Mod	Low	
Residential/ living (high-density residential)	✓			<p>People of high sensitivity to odours can be exposed.</p> <p>People can be present at all times of day and night, both indoors and outdoors.</p> <p>Visitors to the area who are unfamiliar with an odour are likely to raise awareness of a problem.</p> <p>In cases of mixed land uses, where the residences are present with industry, the use may be judged to have the same sensitivity as residential depending on the circumstances.</p>
Rural residential (low-density residential, minimum property size around 1 ha)	✓		✓	<p>Lower population density, therefore less opportunity for exposure to odour.</p> <p>People of high sensitivity can be exposed at all times of the day and night.</p> <p>Rural-type background odours may be present but are usually lower intensity than in a rural zone.</p> <p>Residents tend to work in cities and return home at night or weekends and may not be desensitised to rural-type odours.</p> <p>Can be sensitive to non-rural-type odours (e.g. rendering plant or landfill odours).</p> <p>Overall high or low sensitivity, depending on the circumstances of the particular area.</p>
Rural	✓		✓	<p>Low population density means low opportunity for exposure to odour.</p> <p>People living in and visiting rural areas generally have a high tolerance for rural-type odours.</p> <p>May be highly sensitive to non-rural type odours (e.g. rendering plant or landfill odours).</p>

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Table 4.6: Recommended odour-modelling guideline values

Sensitivity of the receiving environment (refer to Table 2.2)	Concentration	Percentile
High (worst-case impacts during unstable to semi-unstable conditions)	1 OU/m ³	0.1% and 0.5%
High (worst-case impacts during neutral to stable conditions)	2 OU/m ³	0.1% and 0.5%
Moderate (all conditions)	5 OU/m ³	0.1% and 0.5%
Low (all conditions)	5–10 OU/m ³	0.5%

- Atmospheric stability accounted for in high-sensitivity receiving environments
- The percentile allows for a small level of exceedance
- The ‘baseline’ percentile is 0.5%, although 0.1% will also be used to assist in evaluation of model results depending on type of source and consistency of emission data
- Concentration components in table include the peak-to-mean ratio adjustment for all source types
- To be used for 1 hour average concentrations

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Table 11: Odour Assessment Criteria for New Zealand and Australian States: New South Wales, Queensland, Victoria, South Australia, Canberra and Tasmania.

Odour Assessment Criteria	New South Wales Australia	Western ^{*1} Australia	ACTEW and South Australia	Queensland Australia	Victoria Australia	Tasmania Australia	New Zealand
Impact assessment Criteria	2.0 – 7.0 ou Log scale based on population density	2.0 and 4.0 ou 1 st criteria is generally met if 2 nd is met. (4.0 ou required to accommodate source which emit for a fraction of year)	2.0 – 7.0 ou Log scale based on population density	0.5 – 2.5 ou For wake free and ground and wake affected stacks respectively	1.0 ou	2.0 ou	1.0 – 10.0 ou Depends on the sensitivity of receiving environment
Percentile Value	99 th or 100 th Depends on the quality of Met and Emission Data	99.5% and 99.9%	99.9%	99.5%	99.9%	99.5% or 99.9% For unknown and known mixture, respectively Or, 100% if good quality Met and Emissions	99.5% and 99.9%
Averaging period	1 second	3-minute	3-minute	1 hour	3-minute	1-hour	1 hour
Peak to Mean Ratio	Peak to mean ratio applied by user to 1-hour averaged conc.	No peak to mean value applied but conc. must be scaled to 3 minute using power law equation	No peak to mean value applied but conc. must be scaled to 3 minute using power law equation	Peak to mean ratio of 10:1 and 2:1 for wake free and wake affected + ground sources is included in assessment criteria	No peak to mean applied but conc. must be scaled to 3-minute using power law equation		Peak to mean ratio is included in odour assessment criteria
Assessed	At nearest existing or likely future offsite sensitive receptors	At nearest existing or likely future offsite sensitive receptors	At nearest existing or likely future offsite sensitive receptors	At most exposed existing or likely future sensitive receptors	At and beyond site boundary	At and beyond site boundary	At and beyond site boundary

*1. Western Australia, Department of Environment and Conservation has withdrawn their Odour Performance Criteria guideline document No 47. Guidance for the Assessment of Environmental Factors – Assessment of Odour Impacts from New Proposals (2002). There is no replacement as yet. These standards are represented in Table 11.

VARYING ASSESSMENT for POPULATIONS

Odour assessment criteria range according to population numbers in SA, NSW and ACT.
In NZ the odour assessment criteria varies according to Landuse type and activity.

South Australia (3-min average at 99.9%)		
		ou
Number of People	2000 or more	2
	350 or more	4
	60 or more	6
	12 or more	8
	Single Residence	10
New South Wales (1-second* ¹ average 99.9%)		
Number of People	2000 or more	2
	Approx. 500	3
	Approx. 125	4
	Approx. 30	5
	Approx 10	6
Single Residence		7
ACTEW		
Number of people	High Density	2
	300 or more	3
	50 or more	5
	10 or more	6
	Less than 10	7
New Zealand (1-hour average 99.5%)		
	1 person or 2000 persons	1 – 10