



GUIDELINES

NOISE FROM INDUSTRY IN REGIONAL VICTORIA

RECOMMENDED MAXIMUM NOISE LEVELS FROM COMMERCE, INDUSTRY AND TRADE PREMISES IN REGIONAL VICTORIA

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WHAT PUBLICATIONS COVER INDUSTRY NOISE IN VICTORIA?

Figure 1 illustrates the suite of publications setting or offering guidance on industry noise levels and limits in Victoria. In addition to this publication (the highlighted box in the figure), they are:

- *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1* ('SEPP N-1')
- *Applying NIRV to proposed and existing industry* (EPA publication 1413 – 'the Applying NIRV guide')
- *SEPP N-1 and NIRV explanatory notes* (EPA publication 1412 – 'the explanatory notes')

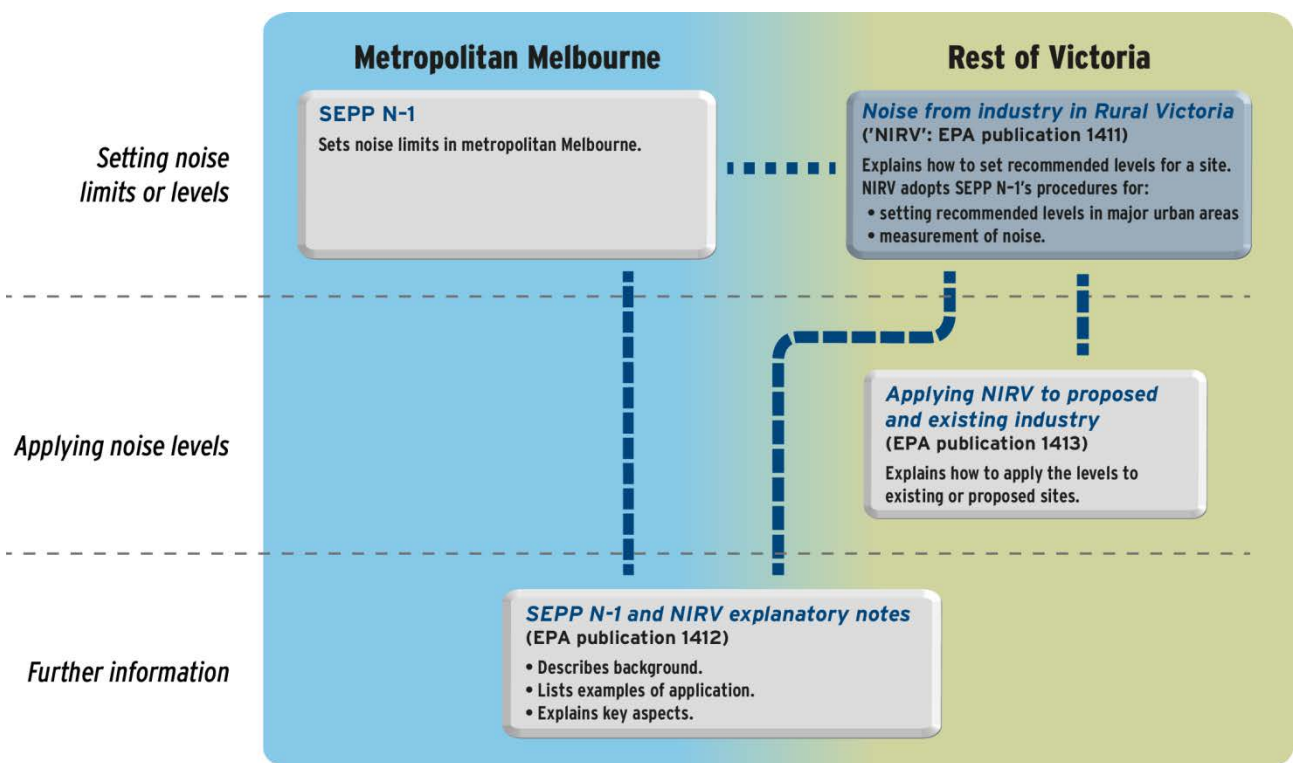


Figure 1: The publications covering noise levels and limits in Victoria

WHAT IS IN THESE GUIDELINES?

These guidelines provide recommended maximum noise levels for industry in regional Victoria. They have four parts:

- Part 1 describes the areas where these guidelines apply, and the premises and noise sources they address.
- Part 2 sets out advice for regulators applying these guidelines.
- Parts 3 and 4 are for industry, acoustic consultants and regulators, to determine the recommended levels.

PART 1: OVERVIEW

These guidelines provide the methods to set noise levels for industry in regional Victoria. They provide a balance between protecting community wellbeing and amenity near industrial premises and supporting the social and economic value of industry in regional Victoria.

The guidelines set out recommended maximum noise levels ('recommended levels'), which can be applied to manage the impacts of noise on the community.

The recommended levels provide different degrees of amenity protection in different land-use zones. Overall, they balance the need for operation of industry with the protection of sensitive uses. The recommended levels promote normal domestic use of the home and sleep at night.

Land zoning will affect the level of protection provided to sensitive uses, particularly where residential areas are adjacent to heavy industrial or business zones. See section 3 of the explanatory notes).

Who should use these guidelines

These guidelines are mainly intended for government regulators and industry, as well as acoustic consultants and engineers.

'Regulators' include a range of government bodies that issue statutory approvals or have compliance powers relating to the environment, such as planning authorities, EPA and the Department of Primary Industries. Regulators include 'approval bodies' such as planning authorities issuing a planning permit, or EPA issuing a works approval.

'Industry' includes a range of businesses (see 'The premises these guidelines apply to').

Individuals seeking a general overview of recommended levels in regional Victoria, these guidelines and how they were developed should consult the explanatory notes, sections 1 and 3.

The premises these guidelines apply to

The recommended levels apply to noise from all scales of 'commercial, industrial and trade premises'.¹ This includes factories, businesses, farming, mines and quarries. It does not include noise from traffic on road and rail corridors, or noise from residential premises. Within these guidelines, the term 'industry' means 'commercial, industrial or trade premises'.

Industry should apply the recommended levels when choosing a site, constructing new or expanded plant, or responding to noise issues.

How regulators should apply these guidelines

As this document is a non-statutory guideline, the recommended levels are only legally binding when applied through statutory instruments, such as a planning permit or notice. Regulators need to follow the Applying NIRV guide when applying the recommended levels to proposed or existing industry.

In most situations, regulators should adopt the recommended levels as the criteria for their approvals (e.g. permit requirements) and compliance tools (e.g. notices). The levels should not generally be deviated from.

There may be exceptions in rural areas where it may be impractical to meet the recommended levels – for example, a large, location-constrained, resource-based industry. The Applying NIRV guide sets out procedures to assess and manage noise impacts in these exceptions.

Planning zones and noise levels

The recommended levels are based on land-use zoning and are applied to control noise from identified industry sites. Land rezoning will change the levels of noise allowed in an area. See the Applying NIRV guide for advice on land zoning and noise.

Key messages for industry

When responding to community concerns about noise, or designing new works, you may need to refer to Parts 3 and 4 of these guidelines to determine the recommended levels that apply to your premises.

You can also refer to the Applying NIRV guide to understand how government regulators will apply noise levels to your current or planned premises, and relevant processes you may need to follow.

The area where these guidelines apply

SEPP N-1 sets noise limits for industry in the Melbourne 'metropolitan region'. This area covers much, but not all of the greater Melbourne area (see Figure 2).

These guidelines apply in all locations in Victoria outside of the SEPP N-1 area. Within the SEPP N-1 area, SEPP N-1 is law and must be used.

Noise not covered by this document

Consistent with SEPP N-1, the following types of noise emitted from industry are not assessed by these guidelines:

- music²
- voices

¹ SEPP N-1 defines 'commercial, industrial and trade premises'.

² See *State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2*.



- noise from firearms
- noise from lawnmowing
- noise from construction or demolition activities on building sites
- noise from sporting events³
- noise from audible intruder, emergency or safety alarms
- noise from aircraft, except for ground maintenance activities
- noise from mobile farm machinery
- noise from scare guns⁴ and anti-hail guns
- noise from livestock on a farm or in a saleyard
- noise from a fire pump used in an emergency
- noise from non-commercial vehicles, except for maintenance activities.

The following noise sources are also not addressed:

- frost fans⁵
- wind turbines at wind energy facilities.⁶

³ Noise from motorsports vehicle testing at a motorsport venue may be assessed under these guidelines.

⁴ Noise from electronic bird-scaring devices may be assessed under these guidelines.

⁵ See *Guidelines on noise from frost fans* (EPA publication 1043).

⁶ Noise from substations and transmission infrastructure may be assessed under these guidelines. For wind turbine noise, see the Department of Planning and Community Development publication *Policy and planning guidelines for development of wind energy facilities in Victoria*, August 2011.

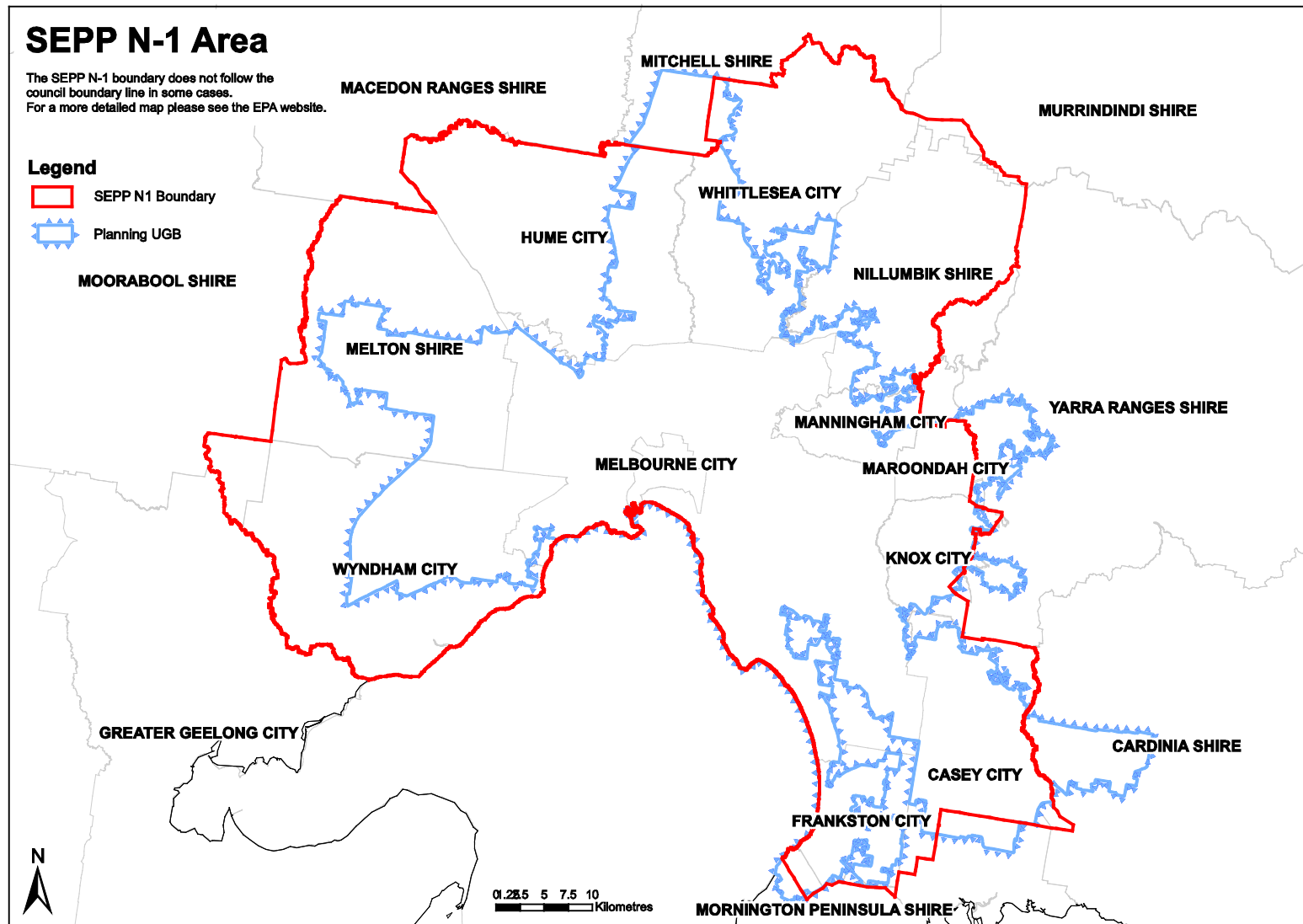


Figure 2: Area covered by SEPP N-1.

PART 2: GUIDANCE FOR REGULATORS

Before applying the recommended levels, regulators need to consider the following:

- These guidelines are non-statutory. The Applying NIRV guide should be followed before applying recommended levels (see box on page 2).
- The recommended levels do not protect parks or other natural areas.
- Rural areas in Victoria are typically quiet. New industrial uses in these contexts will often be audible and can change the local soundscape.
- In some cases, the planning scheme might emphasise that protection of existing quiet is especially important. In these cases, an approving body may decide to apply more stringent levels or not approve a proposal.
- Noise from multiple sites should be accounted for during approvals and compliance decisions.
- Some types of noise are not subject to the recommended levels but also need to be considered in approvals and compliance decisions.

2.1 Consider the effects of noise on quiet rural areas

The following considerations are relevant to approvals for new uses, or changes to operating conditions or hours for existing uses.

Areas not protected by the recommended levels

The recommended levels apply in noise-sensitive areas (generally accommodation uses). In some environments, sound may broadcast into parks, nature reserves and areas used for quiet rural recreation. The recommended levels will not maintain the existing tranquillity in these areas.

Introducing noise to quiet rural environments

For new uses or for extended hours for existing uses, meeting the recommended levels will usually change the sound of the local environment. Noise at the recommended levels will be audible at sensitive areas.

In quiet rural environments, industry noise meeting the recommended levels might not match the expectations associated with some types of current uses – for example, bed and breakfast accommodation where tranquillity is an asset. Accordingly, approving a use that meets the recommended levels might also reduce the range of viable options for future sensitive land-use development in the area.

Where the recommended levels may not be appropriate

The recommended levels are intended to provide reasonable protection in a situation of land-use change, but there may be some rural areas where such change is inappropriate and the acoustic environment should be preserved. For example, this could be where

an area's quiet is emphasised in the local planning policy framework.

This consideration might also be relevant in a significant environment or landscape⁷ if the noise would significantly diminish or impair environmental conservation or recreation values.

When in the opinion of the approving body a particular quiet area should be preserved, it may decide not to approve the proposal.

Alternatively, if the approving body has decided that the recommended levels are not adequate to preserve existing values, more stringent levels may be applied.

This should be done as follows:

- Consideration for applying more stringent levels is typically made during environmental effects statements, EPA works approvals or other proposals with EPA input.
- The approval process should explore the possibilities of applying commonly available technology⁸ to attain the lowest achievable noise outcome.
- The aim should be to meet linear 'octave-band' levels of the background level plus five to 10 decibels.
- Where this design outcome would be substantially below accepted hearing thresholds for low frequencies (e.g. 16 Hz, 32 Hz), a higher level at these frequencies may be acceptable, provided there is proper consideration of the variability in people's hearing sensitivities.
- A suitably protective design will also need to consider whether modulation is a character of the low-frequency elements of the noise. This octave-band approach would be used as an alternative to the recommended levels determined in Part 3.

2.2 Manage noise from multiple sites

Consistent with the requirements of SEPP N-1, clause 18, the recommended levels apply to the total of all industrial noise emissions affecting a noise-sensitive area. A site may need to meet lower levels when more than one industry contributes or will contribute to the total noise level affecting a noise-sensitive area. See the Applying NIRV guide, section 5.

2.3 Apply suitable controls for noise not addressed by the recommended levels

Some noise sources are not assessed under SEPP N-1 and these guidelines (see Part 1). The exclusions reflect the fact that some sources are not suited to assessment under the SEPP N-1 measurement method,

⁷ See clause 12.04 of the Victoria Planning Provisions.

⁸ Commonly available technology can include enclosures, lagging, shielding and silencers.

or should be managed by other means. It does not mean that those noise types do not risk causing unreasonable impacts. They may still need to be considered during approvals or investigations of noise complaints.

Short-term noises at night can also unreasonably impact communities. These are noises from recurring operations or activities that cause brief, high-noise emissions (such as vehicle movements, steam releases, loading, unloading or impact activities). These types of noise may cause sleep disturbance to residents, but are not well represented by the SEPP N-1 measurement method applied under these guidelines. The noise should be eliminated during the night period, preferably by noise control at the source. Where such noise emissions are unavoidable, emissions should be minimised by best-practice noise control/operational measures.

Where noise limits are developed (for example, in a statutory approval) to control short-term event noise, they are usually set as an LA_{Max} level. The LA_{Max} levels for short-term events would be applied separately and in addition to the recommended levels in these guidelines.⁹

Some major premises, such as some power generation facilities and major utilities, can generate significant low-frequency noise energy. Risks of intrusive low-frequency noise should be considered during approval of such operations.

While limits for these kinds of noise are not specifically addressed in these guidelines, if these general noise issues are not addressed during approvals, future noise problems might require action under s31A of the *Environment Protection Act 1970*, the nuisance provisions of the *Public Health and Wellbeing Act 2008* or the planning scheme.

Those applying to establish industry with potential for brief, high noise emissions or low frequency noise should therefore explain in their proposals how they will manage the impacts of these types of noise.

⁹ The LA_{Max} should not be confused with the 'recommended maximum noise levels' in this document, which are an adjusted LA_{eq} (an energy average measurement).

PART 3: RECOMMENDED MAXIMUM NOISE LEVELS

This part provides recommended maximum noise levels ('recommended levels'). Regulators need to consider the advice in Part 2 before applying the recommended levels. This part is set out according to the type of premises being assessed or approved:

- **general commerce, industry or trade** (see Part 1 introduction for description), with variations for utilities
- **earth resources** industries (e.g. mines and quarries).

Part 4 provides limited variations to the recommended levels for mines, quarries or land filling.

Those concerned with **landfills** and **earth resources** industries should use Part 3.1 and 3.2 respectively to determine their recommended levels, and Part 4 to see if variations may apply to their levels.

For noise from standby generators and boilers and fire pumps, apply the adjustments from SEPP N-1 Schedule B4.

In subsections 3.1 and 3.2, recommended levels are described for different periods of the day. These periods are defined in SEPP N-1, and are as follows.

Day	0700–1800 Monday–Friday 0700–1300 Saturdays
Evening	1800–2200 all days 1300–1800 Saturdays 0700–1800 Sundays and public holidays
Night	2200–0700

Major urban and rural areas

For the purposes of this document, areas outside the SEPP N-1 area of application (see Part 1 and Figure 2 map) are categorised as either 'major urban' or 'rural' areas.

A major urban area is:

- the part of Melbourne that extends beyond the SEPP N-1 area (see page 1), but is within the Melbourne Urban Growth Boundary – for example, parts of Pakenham, Belgrave, Mount Evelyn, Mount Eliza, Beveridge and Lilydale
- land within the 'Urban Centre boundary' (as defined by the Australian Bureau of Statistics) of an Urban Centre with a population greater than 7000.

For an Urban Centre with a population greater than 7000, where a Residential Zone, Industrial Zone, Business Zone or Urban Growth Zone¹⁰ is crossed by

the Urban Centre Boundary, then the whole of that zone shall be considered as being within the major urban area.

A rural area is land that is not within a major urban area. It includes land in cities or towns with population below 7000, and rural locations outside major urban areas.

The Urban Growth Boundary and Urban Centre Boundaries are those that are in effect at the time of publication of this document, or as varied by EPA from time to time.

Where either the noise emitter or the noise receiver are within a major urban area, the major urban area approach applies.

Resources to decide which type of area a site falls within, including maps and population references, are available on the EPA website at <http://www.epa.vic.gov.au/noise> or by calling the EPA information line on 1300 EPA VIC.

The following sections describe how to determine the recommended levels for different types of industry.

Taking reasonable opportunities to reduce noise

In addition to meeting the recommended levels, industry should take reasonable opportunities to further reduce noise.

SEPP N-1, clause 19 advises that, when equipment is to be replaced or new equipment installed, the quietest equipment available should be used where a significant reduction in noise exposure can be expected to result. This obligation also applies under this document.

Industry should also apply routine noise control measures where these will have a demonstrable reduction in noise at sensitive areas. See the explanatory notes, Section 4 on best-practice noise control measures.

3.1 Recommended maximum noise levels – general commerce, industry and trade

In major urban areas, the recommended levels are determined following procedures in SEPP N-1.

In rural areas, follow the steps below. The recommended levels are determined at the conclusion of Step 3, 4 or 5, as appropriate (depending on the influence of background noise). Regulators need to consider Part 2 of these guidelines before applying the recommended levels.

Consult Figure 3 in the explanatory notes for a flowchart overview of the following steps.

¹⁰ Residential, Industrial and Business Zones as specified in Victoria Planning Provisions clauses 32, 33, and 34 respectively (all of their Zone types

inclusive, e.g. R1Z, R2Z, LDRZ, MUZ, TZ, R3Z). The Urban Growth Zone is specified in clause 37.07.

Step 1 – Zone Levels

Determine the Zone Level in Table 1 for each of the day, evening and night periods. The land-use zones in Table 1 are defined in the relevant planning scheme.

The 'generating zone' is the land-use zone in which the noise emitter is located. The 'receiving zone' is the land-use zone in which the noise-sensitive area is located.

Refinement of the non-specific zones

The Special Use Zone, Comprehensive Development Zone and Priority Development Zone are non-specific zones that can have a diversity of uses specified in a schedule to the zone. Note that these zones (marked as ‡) have default generating-zone classifications in Table 1:

- The Comprehensive Development Zone and Priority Development Zone default to the equivalent of a Mixed Use Zone.
- The Special Use Zone defaults to the equivalent of Industrial 3. This default would only be used in cases where the zone provides for general commercial or industrial uses.

These classifications should be varied if it is justifiable to do so, considering the uses allowed and the zone purposes. For example, where the purpose of an SUZ is for agriculture, the zone could be assigned the Table 1 noise emitter values of the Farming Zone (FZ).

The CDZ generally incorporates a development plan that may comprise of a mixture of different uses. Where available, this should be used for determining Zone Levels.

Where the purpose of an SUZ is for industrial use(s) that have a likely total mechanical power rating greater than 25 MW, then the zone should be considered equivalent to Industrial 1. However, the Latrobe City Planning Scheme SUZ1, which also provides for brown coal mining and uses that protect brown coal resources, is equivalent to INZ3.

Table 1: Zone Levels – must only be applied in conjunction with steps 2 to 5

Planning zone for noise-receiving location

Receiving zone → Generating Zone ↓	<input type="checkbox"/> Green Wedge A GWAZ <input type="checkbox"/> Rural Conservation RCZ <input type="checkbox"/> Rural Living RLZ	<input type="checkbox"/> Low Density Residential LDRZ <input type="checkbox"/> Public Conservation and Resource PCRZ <input type="checkbox"/> Public Park and Recreation PPRZ <input type="checkbox"/> Public Use 2,5 PUZ <input type="checkbox"/> Urban Floodway UFZ	<input type="checkbox"/> Farming FZ† <input type="checkbox"/> Green Wedge GWZ <input type="checkbox"/> Residential 1 R1Z <input type="checkbox"/> Residential 2 R2Z <input type="checkbox"/> Residential 3 R3Z <input type="checkbox"/> Township TZ <input type="checkbox"/> Urban Growth UGZ‡	<input type="checkbox"/> Business 1 B1Z <input type="checkbox"/> Business 2 B2Z <input type="checkbox"/> Business 5 B5Z <input type="checkbox"/> Comprehensive Development CDZ‡ <input type="checkbox"/> Mixed Use MUZ <input type="checkbox"/> Priority Development PDZ‡ <input type="checkbox"/> Public Use 1,3,4,6,7 PUZ <input type="checkbox"/> Road RDZ	<input type="checkbox"/> Industrial 3 IN3Z <input type="checkbox"/> Special Use SUZ‡	<input type="checkbox"/> Business 3 B3Z <input type="checkbox"/> Business 4 B4Z	<input type="checkbox"/> Industrial 1 IN1Z <input type="checkbox"/> Industrial 2 IN2Z
	▶ Low Density Residential LDRZ ▶ Public Conservation and Resource PCRZ ▶ Public Park and Recreation PPRZ ▶ Residential 1 R1Z ▶ Residential 2 R2Z ▶ Residential 3 R3Z ▶ Urban Floodway UFZ	Day: 45 Evening: 37 Night: 32	Day: 45 Evening: 39 Night: 34	Day: 45 Evening: 40 Night: 35	Day: 47 Evening: 42 Night: 37	Day: 48 Evening: 43 Night: 38	Day: 50 Evening: 45 Night: 40
▶ Business 5 B5Z ▶ Farming FZ† ▶ Green Wedge GWZ ▶ Green Wedge A GWAZ ▶ Public Use 2,5 PUZ ▶ Rural Activity RAZ ▶ Rural Conservation RCZ ▶ Rural Living RLZ ▶ Urban Growth UGZ‡	Day: 45 Evening: 38 Night: 33	Day: 45 Evening: 40 Night: 35	Day: 46 Evening: 41 Night: 36	Day: 48 Evening: 43 Night: 38	Day: 50 Evening: 45 Night: 40	Day: 52 Evening: 47 Night: 42	Day: 54 Evening: 49 Night: 44
▶ Business 1 B1Z ▶ Business 2 B2Z ▶ Comprehensive Development CDZ‡ ▶ Mixed Use MUZ ▶ Priority Development PDZ‡ ▶ Public Use 1,3,4,6,7 PUZ ▶ Road RDZ ▶ Township TZ	Day: 45 Evening: 40 Night: 35	Day: 47 Evening: 42 Night: 37	Day: 48 Evening: 43 Night: 38	Day: 50 Evening: 45 Night: 40	Day: 52 Evening: 47 Night: 42	Day: 53 Evening: 48 Night: 43	Day: 55 Evening: 50 Night: 45
▶ Industrial 3 IN3Z ▶ Special Use SUZ‡	Day: 46 Evening: 41 Night: 36	Day: 49 Evening: 44 Night: 39	Day: 50 Evening: 45 Night: 40	Day: 52 Evening: 47 Night: 42	Day: 53 Evening: 48 Night: 43	Day: 55 Evening: 50 Night: 45	Day: 56 Evening: 51 Night: 46
▶ Business 3 B3Z ▶ Business 4 B4Z	Day: 48 Evening: 43 Night: 38	Day: 50 Evening: 45 Night: 40	Day: 52 Evening: 47 Night: 42	Day: 54 Evening: 49 Night: 44	Day: 55 Evening: 50 Night: 45	Day: 56 Evening: 51 Night: 46	Day: 57 Evening: 52 Night: 47
▶ Industrial 1 IN1Z ▶ Industrial 2 IN2Z	Day: 50 Evening: 45 Night: 40	Day: 52 Evening: 47 Night: 42	Day: 53 Evening: 48 Night: 43	Day: 55 Evening: 50 Night: 45	Day: 56 Evening: 51 Night: 46	Day: 57 Evening: 52 Night: 47	Day: 58 Evening: 53 Night: 48

† In the Farming Zone, where the noise-emitting subject agricultural activity is 'intensive', then an adjustment of +3 dB should be applied to the determined Zone Levels to reflect amenity expectations of locally intense farming activities. Intensive farming activities are agricultural activities under the planning scheme (Clause 74), including horticulture and timber production, but not:

- 'extensive animal husbandry'
- 'apiculture'
- other 'crop raising'.

‡ For Special Use, Comprehensive Development and Priority Development, see notes in previous page.

Note: The UGZ designation should be used prior to incorporation of the Precinct Structure Plan (PSP) for the zone. When incorporated, the PSP will outline the different land uses planned for the zone. It should be used for determining Zone Levels.

Note: The public-use zones are grouped into two categories and include: Service & Utility (PUZ1), Health & Community (PUZ3), Transport (PUZ4), Local Government (PUZ6), Other Public Use (PUZ7), Education (PUZ 2), Cemetery/Crematorium (PUZ 5).

Step 2 – Distance-adjusted levels

Adjust the Step 1 Zone Levels, accounting for the distance between the zone where the noise emitter is located and the location of the noise receiver (the noise-sensitive area):

- Where the noise generator and receiver are covered by the same contiguous zone, the distance adjustment is 0.
- Where the noise generator and receiver are not within the same zone classification/type, subtract one decibel for every 100 metres of ‘receiver distance.’
- Where the noise generator and receiver are in the same zone classification/type with an intervening zone that is not for a road or railway line, subtract one decibel for every 100 metres of ‘receiver distance.’

Rules:

- ‘Receiver distance’ is the shortest distance from the noise-sensitive area (see Glossary) to the boundary of the zone in which the noise emitter is located.
- If there is a zone for a road or a railway line that divides a noise-emitting zone, this road/railway zone would be ignored (i.e., the zone should be treated as one contiguous zone for the receiver distance adjustment).
- The distance adjustment shall be made up to a maximum subtraction of nine decibels
- The distance adjustment should be applied to each of the day, evening and night levels.

See Appendix D in *SEPP N-1 and NIRV explanatory notes* for examples.

Step 3 – Base noise level check

Check the distance-adjusted levels from Step 2 against the following ‘base noise levels’ for each period of the day:

Day	Evening	Night
45 dB(A)	37 dB(A)	32 dB(A)

For each period, adopt the greater of the distance-adjusted level and base noise level.

Step 2 and 3 variations for utilities

Utilities are both major and minor utilities, as defined in the Victoria Planning Provisions.

1: Where a utility is located in a Road Zone (such as a pole mounted transformer):

- Apply Steps 1 and 2.
- Check the Step 2 levels against the Table 1 Zone Levels that would apply if the utility was in the same zone as the receiver (e.g. R1Z emitter to R1Z receiver).
- Adopt the lower of the Step 2 level and Zone Level that would apply when the emitter is in the noise receiver’s zone.
- Continue with Step 3.

2: Where the utility is in an FZ, RAZ or GWZ and the Step 2 distance adjustment is 0, then take the following levels to Step 4:

Day	Evening	Night
45 dB(A)	39 dB(A)	34 dB(A)

Step 4 – Background level check and adjustment

Conduct a background level assessment¹¹ in ‘background-relevant areas’. Otherwise, apply the levels derived in Step 3 as the recommended levels.

The decision to undertake a background level assessment should be based on a site visit or existing knowledge of the local acoustic environment, at periods relevant to the premises’ operation.

‘Background-relevant area’ means a noise-sensitive area where background levels may be higher than usual for a rural area. This includes areas where freeway or highway traffic is a significant audible background noise source. It also includes coastal areas, where representative background levels are elevated by surf.

Assessment may also be conducted where the receiver is further than 600 metres from the industrial premises’ zone boundary. This is because, at these locations, the Step 2 or 3 levels may approach or be lower than the background levels.

Take the levels from Step 3 and compare them to the background levels, adopting the following for each period:

Day – the greater of –

- the distance-adjusted level or base noise level
- the day background level plus 8

Evening – the greater of –

¹¹ The background level should be assessed following the procedures of SEPP N-1, Schedule C, C3.

- the distance-adjusted level or base noise level
- the evening background level plus 5

Night – the greater of –

- the distance-adjusted level or base noise level
- the night background level plus 5.

For existing industry, and new industry where Step 5 does not apply, the results of the above comparison become the recommended levels.

Note: An assessment of the background level will only either increase the recommended level or leave it unchanged. Background measurements may not be necessary for simple situations where the noise from the industry will easily meet the level from Step 3.

Step 5 – High traffic-noise areas

This step applies to background-relevant areas affected by high traffic-noise levels. It applies to new industry only. It applies where the noise-sensitive area is not in an IN1Z, IN2Z, IN3Z, B3Z, B4Z or an SUZ (with accommodation a prohibited use in that SUZ). Compare the Step 4 level(s) against the following reference values.

Day	Evening	Night
55 dB(A)	50 dB(A)	45 dB(A)

Consult the Table 2 to determine the recommended levels, considering each period separately.

Table 2: Determining recommended levels for high traffic-noise areas

Result of comparing Step 4 level to reference value	Figure to apply as recommended level
Step 4 level is lower than the reference value	The Step 4 level
Step 4 level is equal to or greater than the reference value	The reference value
Step 4 level is greater than the reference value, and traffic noise LA _{eq} equals or is greater than the reference value +10	The lower of: <ul style="list-style-type: none"> • the Step 4 level • the traffic noise LA_{eq} level -10

3.2 Recommended maximum noise levels – earth resources and variations

The following levels apply to earth resources sites such as mines and quarries, and ancillary infrastructure (such as an evaporation pond facilities, ventilation shafts, tailings dams or pumping stations) located within the site’s approved working area.

The levels do not apply to blasting activities. Blasting activities should follow the guidelines *Ground vibration and airblast limits for blasting in mines and quarries*, available from the Department of Primary Industries.

In Major Urban areas, the recommended levels are determined following procedures in SEPP N-1. Then

consider the variations for mines, quarries and landfilling in Part 4.

In rural areas, follow the steps below. The recommended levels are determined at the conclusion of Step E1, E2 or E3, as appropriate (depending on the influence of background noise). After following these steps, consider the variations for mines, quarries and landfilling in Part 4. Regulators need to consider Part 2 of these guidelines before applying the recommended levels.

Consult Figure 3 the explanatory notes for a flowchart overview of the following steps.

Earth resources Step E1 – Earth resources levels

Use the following levels where the noise receiver is in a GWAZ, RCZ or RLZ (consult Table 1 for full zone terms):

Day	Evening	Night
45 dB(A)	38 dB(A)	33 dB(A)

Use the following levels where the noise receiver is in an IN3Z or SUZ (only where accommodation, other than caretaker’s house, is prohibited in the SUZ):

Day	Evening	Night
51 dB(A)	46 dB(A)	41 dB(A)

Use the following levels where the noise receiver is in an IN1Z, IN2Z, B3Z or B4Z:

Day	Evening	Night
56 dB(A)	51 dB(A)	46 dB(A)

Use the following levels in all other situations:

Day	Evening	Night
46 dB(A)	41 dB(A)	36 dB(A)

No distance adjustment applies in any of the above situations.

Earth resources Step E2 – Background levels check and adjustment

Conduct a background level assessment in ‘background-relevant areas.’ Otherwise, apply the relevant earth resources levels as the recommended levels, considering the variations for mines, quarries and landfilling in Part 4.

‘Background-relevant area’ means a noise-sensitive area where background levels may be higher than usual for a rural area. This includes areas where freeway or highway traffic is a significant audible background noise source. It also includes coastal areas, where representative background levels are elevated by surf.

Take the earth resources levels from Step E1 and compare them to the background levels, adopting the following for each period:

Day – the greater of –

- the distance-adjusted level or base noise level
- the day background level plus 8

Evening – the greater of –

- the distance-adjusted level or base noise level
- the evening background level plus 5

Night – the greater of –

- the distance-adjusted level or base noise level
- the night background level plus 5.

For existing earth resources, and new earth resources where Step E3 does not apply, the results of the above comparison become the recommended levels.

Note: An assessment of the background level will only either increase the recommended level or leave it unchanged. Background measurements may not be necessary for simple situations where the noise from the industry will easily meet the level from Step E1.

Earth resources Step E3 – High traffic-noise areas

This step applies to background-relevant areas affected by high traffic-noise levels. It applies where the noise-sensitive area is not in an IN1Z, IN2Z, IN3Z, B3Z, B4Z or an SUZ (with accommodation a prohibited use in that SUZ). Compare the Earth resources Step E2 level(s) against the following reference values.

Day	Evening	Night
55 dB(A)	50 dB(A)	45 dB(A)

Consult the Table 3 to determine the recommended levels, considering each period separately (with consideration for the Mines, Quarries and Landfilling variations in Part 4).

Table 3: Determining recommended levels for high traffic-noise areas for earth resources sites

Result of comparing Step 4 level to reference value	Figure to apply as recommended level
Step E2 level is lower than the reference value	The Step E2 level
Step E2 level is equal to or greater than the reference value	The reference value
Step E2 level is greater than the reference value, and traffic noise LA _{eq} equals or is greater than the reference value +10	The lower of <ul style="list-style-type: none"> • The Step E2 level • The traffic noise LA_{eq} level -10

PART 4: VARIATIONS TO THE RECOMMENDED LEVELS FOR MINES, QUARRIES OR LANDFILLS

Limited variations may apply

The recommended levels for earth resources are set by following Part 3.2, steps E1 to E3. The recommended levels for landfills are set following Part 3.1, steps 1 to 5. These recommended levels apply to general mine, quarry or landfill operations, including overburden removal and depositing, any activity occurring below the natural surface at a mine or quarry, and the handling or disposal of waste material (including tailings at a mine or quarry and waste received at a landfill).

Potential variations to the recommended levels may be applied to particular open-air activities, as described in Table 4. These variations can be considered where there is significant open-air surface activity during site preparation, particular operational activities, or rehabilitation associated with earth resources industries or landfills.

Apply best practice before considering variations

The variations must not be applied when the recommended levels can be achieved by best-practice measures. Such measures could include early establishment of external bund walls combined with careful work-staging or erection of temporary noise barriers, or optimal noise buffering through careful design of waste dumps. See the document series *Leading Practice in Sustainable Development Handbooks*, produced by the Commonwealth Department of Resources, Energy and Tourism.

Applying variations

Table 4 sets out the exceptions to normal operations where noisier work might be considered necessary and variations from the recommended levels can be justified. A project might present other exceptional circumstances that make noise above the recommended levels necessary. These circumstances may also be considered by the approval body as potential variations from Table 4, provided that the outcomes are controlled by an approval document, they are reasonable and noise is appropriately constrained.

See Appendix E of the explanatory notes for examples of variations.

Table 4 – Mine, quarry and landfill variations

Process	Variations to recommended levels	Limitations to applying variations
<p>Installation of constructed noise-control works</p> <p>'Constructed noise-control works' are works specifically targeted to a noise-control purpose.</p> <p>They can include walls or fences; or earth mounds or bunds, constructed in particular circumstances (see 'Limitations to applying variations').</p> <p>They are not mining or quarrying works carried out during the project that have a coincidental, secondary noise-control benefit (e.g. general overburden stockpiling).</p> <p>'Constructed noise-control works' does not refer to building construction or demolition. SEPP N-1 and this document do not apply to building construction or demolition (e.g. construction of industrial premises, including ore-processing plants). <i>Noise control guidelines</i> (EPA publication 1254) apply.</p>	<p>During installation of constructed noise-control works (in the circumstances described under 'Limitations to applying variations') the noise from the activity may be exempted from recommended levels during the Day period.</p>	<ul style="list-style-type: none"> • The exemption should only be provided for noise-control works that are necessary for the site to meet the recommended levels.¹ • The exemption is primarily intended for structures such as walls that are specifically for a noise-control purpose. • The exemption might also be applied to construction of earth mounds or bund walls (such as from soil or overburden) at the start of the project, where their primary purpose is noise control to meet the recommended levels. • In limited cases, the approved work plan may provide an exemption for noise control works at a later stage in the project. • Later project exemptions should only be applied to noise-control works that are to prevent new/different noise-sensitive areas from being exposed to noise above the recommended levels (e.g. where extraction works take place in a different part of a large site). • Where noise-control works employ soil or overburden, site operations should give priority to the noise-control benefits, above general stockpiling benefits. • The approved work plan should define the exemptions and constrain the periods to which the exemption applies. <p>See Part 4 introductory notes – do not apply variations where recommended levels can be achieved by best practice.</p>
<p>Site clearing and preparation</p> <p>'Site clearing and preparation' means vegetation removal, topsoil removal, subsoil removal, road construction and civil works such as site drainage.</p>	<p>During site clearing and preparation, the noise from the activity may be exempted from recommended levels during the Day period.</p>	<ul style="list-style-type: none"> • The exemption can only be applied where the activity will happen before acoustic mounds can feasibly be constructed. • The exemption does not include overburden removal. <p>See Part 4 introductory notes – do not apply variations where recommended levels can be achieved by best practice.</p>

¹ Part 1 of this document ('How regulators should apply these guidelines') has provisions for projects in rural areas that cannot meet the recommended levels. For these situations, the Applying NIRV guide sets out a process for assessing proposals and choosing to apply alternative noise outcomes to the recommended levels. If these alternative noise outcomes apply, the exemption for 'Constructed noise-control works' could still be applied in the approval, following the 'Limitations to applying variations' principles.



Table 4 (continued) – Mine, quarry and landfill variations

Process	Variations to recommended levels	Limitations to applying variations
<p>Final site rehabilitation, short projects and necessary unshielded work</p> <p>'Final site rehabilitation' means any activity related to site closure occurring at the final surface level after normal operations have ceased. It does not include backfilling of a pit. 'Short projects' are sites where the time between first and last earthmoving works of the entire operation is three months or less. 'Necessary unshielded work' includes waste dump extensions (at a mine or quarry), tailings dam construction or final landform construction. It includes work that is necessary but cannot practicably be shielded by barriers, landforms or natural topography.</p>	<p>In these situations, the approval body may allow works during the Day period to be up to 10 decibels greater than the recommended level, to a maximum of 68 dB(A). This allowance should be based on the details provided during project work planning and be documented in the approval.</p>	<ul style="list-style-type: none"> • This allowance should be approved for a limited period of exposure for each noise-sensitive area. The operator should specify indicative working periods (start and finish dates), which they should communicate to affected neighbours. • Where the project continues over a significant number of years, an allowance for multiple, well separated periods may be given (e.g. initial works and final site rehabilitation). • An allowance period (e.g. three months) is counted as the total period, from start to finish, in which the noisier works are programmed. • Weather conditions that increase noise at sensitive areas to make it above the recommended levels (propagation conditions 'favourable to noise propagation') should be assumed for noise modelling and works programming, regardless of the actual conditions when the works occur. <p>See Part 4 introductory notes – do not apply variations where recommended levels can be achieved by best practice.</p>

GLOSSARY

Measurement procedures and definitions of terms are as prescribed by SEPP N-1. Also see *A guide to the measurement and analysis of noise* (EPA publication IB280).

LA_{Max} – the A-weighted maximum sound pressure level, measured using the 'F' time response. The LA_{Max} should not be confused with the 'recommended maximum noise levels' in this document, which are an adjusted LA_{eq} (an energy average measurement).

Recommended level/recommended maximum noise level – the noise levels advised in this guideline that should not be exceeded at noise-sensitive areas.

Noise-sensitive area – these are mainly homes, but can include, for example, motels and tourist establishments. They do not include schools. The noise is assessed in outdoor locations at these premises. For full definition, see SEPP N-1.

SEPP N-1 – *State Environment Protection Policy (Control of Noise from Commerce Industry and Trade) No. N-1* (SEPP N-1).

Metropolitan region – the SEPP N-1 area of application, as defined in SEPP N-1. It covers much of, but not all of the current greater Melbourne area. See map in Figure 2.

Background level – is the sound of the normal quiet state of the area without the presence of intrusive, man-made noise sources. Distant traffic is included in the background because it is so widespread.

Background level assessments may need to be conducted early in project planning to determine the recommended levels. They are required in major urban areas, and may be applied in 'background-relevant areas'.

Octave-band levels – the pitch or frequency of sound, divided into octave bands for the purposes of design and assessment. Each octave band represents a frequency range, from low to high. A design based on octave-band criteria enables more targeted control of low-frequency noise.