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# Noise and Air Emissions Assessment

Appendix G

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#### Montagu Street, Invermay

Noise and Air Emissions Assessment

Prepared for LPD Developments Pty Ltd

Client representative Rowan Larissey

Date 16 March 2023

Rev 01



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#### **Revision History**

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1	Updated site plan & parking	A Seen	D Fotheringham	A Turner	16/03/2023

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### **Executive Summary**

LPD Developments Pty Ltd (LPD) are proposing an amendment to the Local Provisions Schedule (LPS) of the *Tasmanian Planning Scheme – Launceston* (the planning scheme), and a planning permit application for a proposed light industrial development. This report considers the potential noise and air emissions that may arise from land, which is to be rezoned to Light Industrial, and demonstrates that:

- The proposed rezoning of land to Light Industrial and to General Residential meets the requirements of Part D2.1.1 of the Northern Regional Land Use Strategy (NRLUS), which requires consideration of the potential for land use conflict and an assessment of environmental hazards;
- The proposed light industrial development (Storage use) Storage use satisfies Performance Criteria P1 under Clause C9.5.1 of the planning scheme's Attenuation code.

The area is currently predominantly zoned "General Residential" under the planning scheme with an area currently zoned as "Light Industrial" at 30 Montagu Street. It is located adjacent to an existing Light Industrial zone in northern Invermay, approximately 150 metres West of the East Tamar Highway and 240 metres North of Forster Street.

Noise logging was carried out at 23 Howard Street between the 1<sup>st</sup> and 9<sup>th</sup> of December 2022 to characterise the existing ambient noise environment.

The proposed 5 lot light industrial development could house a range of different activities and noise sources. An estimate of the potential noise emissions at the nearby sensitive uses from the proposed development was made using SoundPLAN 8.2 environmental noise modelling software. Equipment data from the SoundPLAN reference library was used to characterise a range of noise sources operating on the site.

The results of the noise assessment indicate that noise emissions from the proposed development are sufficiently low as to have no adverse impact on any nearby potential or existing sensitive receptors.

Light industrial activities typically have only a modest potential to generate offensive odours or particulate emissions. Minor odour and particulate emissions from potential activities at the development are expected to disperse rapidly and not be detectable beyond the boundary of the site.

At these levels, noise and air emissions from the activity are unlikely to cause environmental harm or adversely impact on environmental amenity at any residences in the region. Noise emissions should be sufficiently low as to create a negligible change to the total noise emissions generated within the surrounding area.

### 1. Introduction

LPD Developments Pty Ltd (LPD) are proposing an amendment to the Local Provisions Schedule (LPS) of the *Tasmanian Planning Scheme – Launceston* (the planning scheme), and a planning permit application for a proposed light industrial development. This report considers the potential noise and air emissions that may arise from land, which is to be rezoned to Light Industrial, and demonstrates that:

- The proposed rezoning of land to Light Industrial and to General Residential meets the requirements of Part D2.1.1 of the Northern Regional Land Use Strategy (NRLUS), which requires consideration of the potential for land use conflict and an assessment of environmental hazards;
- The proposed light industrial development (Storage use) use satisfies Performance Criteria P1 under Clause C9.5.1 of the planning scheme's Attenuation code.

The proposal is to:

- Rezone the following land from General Residential Zone to Light Industrial Zone:
  - Southern portion of 69A Mayne Street, Invermay
  - o 26 and 28 Montagu Street, Invermay; and
  - o 14, 16 & 18 Howard Street, Invermay.
- Rezone the northern portion of 30 Montagu Street from Light Industrial to General Residential; and
- Seek a planning permit for a light industrial development (with the Storage land use) on 14, 16 & 18 Howard Street, 26, 28 & 30 Montagu Street and 69A Mayne Street.

An overview of the proposal is shown in Figure 1. The proposed plans are included in Appendix A.

The rezoning proposal is combined with a planning permit application for a proposed new light industrial development. As shown in Figure 1, this development will be located in the existing and the proposed Light Industrial Zone. The proposed land use is Storage.

The overview plan in Figure 1 demonstrates that 1½ 'potential dwelling' footprints are on the land to be rezoned to General Residential, along with another potential 3½ 'potential dwellings' on the adjoining property to the south, all of these potential dwellings are part of a future staged development accessed from Mayne Street and are not proposed as part of the rezoning or permit application. The purpose of showing the potential dwellings is to demonstrate that it is feasible for residential development to be staged and consolidated from the Mayne Street access point. This potential residential development is assessed in Sections 6 and 7 below, to help demonstrate that proposed rezoning to General Residential meets the requirements of the NRLUS.

The area is currently predominantly zoned "General Residential" under the *Tasmanian Planning Scheme – Launceston, 2022,* with an area currently zoned as "Light Industrial" at 30 Montagu Street. It is located adjacent to an existing Light Industrial zone in northern Invermay, approximately 150 metres West of the East Tamar Highway and 240 metres North of Forster Street, as shown in Figure 2 below.

The "Light Industrial" zone to the West is currently used for a number of varying activities, with the area to the North, East and Southeast currently zoned as General Residential. Several residential dwellings are located adjacent to the proposed development area.



Figure 1: Overview of the proposal



Figure 2 – Proposed light industrial development (Cyan), Future potential dwellings (Red) and Noise Logger Location (Yellow) Location (Based on image from LISTmap)

### 2. Development Description

As shown in Figure 3, the proposed light industrial development will create a light industrial building with 5 tenancies. While five potential future residential dwellings are shown to help demonstrate that a future residential component, accessed from Mayne Street, can be achieved, these are not included as part of the planning permit application. A 1.8m high, solid colorbond fence is proposed on the eastern, northern and western boundaries that adjoin existing and future residential land.



Figure 3 - Site Plan (extracted from the proposed plans, which are appended to the planning report, which supports the rezoning and permit application)

For the purposes of the planning permit application, the proposed land use is 'Storage'. However, to assist with the proposed rezoning assessment, a range of Light Industrial uses are considered in the assessment below. These uses are as listed in Table 18.2 of the planning scheme, reproduced below.

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Permitted Uses	Discretionary Uses			
Emergency Services	Bulky Goods Sales. If for:			
Equipment and Machinery Sales and Hire	(a) a supplier for Extractive Industry, Resource Development or			
Manufacturing and Processing	Resource Processing;			
Port and Shipping	(b) a garden and landscaping materials, trade or hardware supplier; or			
Recycling and Waste Disposal	(c) a timber yard.			
Research and Development	Community Meeting and Entertainment			
Service Industry	Crematoria and Cemeteries			
Storage	Domestic Animal Breeding, Boarding or Training			
Transport Depot and Distribution	Educational and Occasional Care. If for alterations or extensions to existing			
Utilities	Educational and Occasional Care.			
Vehicle Fuel Sales and Service	Food Services			
	General Retail and Hire If for alterations or extensions to existing General			
	Retail and Hire.			
	Recycling and Waste Disposal If for a scrap yard or waste transfer station.			
	Resource Processing			
	Sports and Recreation			
	Vehicle Parking			

Once the light industrial development is fully occupied a variety of different businesses and uses are likely to be present. The lot size will likely favour small to medium warehousing and logistics operations and small manufacturing or contractor's workshops. Figure 4 below shows the utilisation of similar existing blocks to the west of the site.



Figure 4 - Aerial photography of several nearby sites, showing typical uses and site layouts.

#### Traffic Noise

The proposed layout of the site features 20 car parking spaces. In addition, a number of light and heavy vehicle movements are expected each day. The additional traffic volume unlikely to be sufficient to cause a noticeable increase in the traffic noise generated in the area.

### 3. Emissions Assessment Criteria

#### Planning Scheme

Future uses of each tenancy will be assessed and approved under the *Tasmanian Planning Scheme – Launceston*. The Attenuation Code C9 will apply to many of the activities which are eligible for permit in the proposed light industrial development, including the proposed Storage use. Where the attenuation zone for a proposed activity includes an existing sensitive use such as a residence, or land within a residential zone, Performance Criteria P1 of Clause C9.5.1 reproduced below, applies.

Objective:						
That an activity with potential to cause emissions is located so that it does not cause an unreasonable impact on an existing sensitive use.						
Acceptable Solutions	Performance Criteria					
A1	P1					
<ul> <li>The attenuation area of an activity listed in Tables C9.1 or C9.2 must not include:</li> <li>(a) a site used for a sensitive use which is existing;</li> <li>(b) a site that has a planning permit for a sensitive use; or</li> <li>(c) land within the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone.</li> </ul>	<ul> <li>An activity listed in Tables C9.1 or C9.2 must not cause:</li> <li>(a) an unreasonable loss of amenity or unreasonable impacts on health and safety of a sensitive use which is existing, or has a planning permit; or</li> <li>(b) unreasonable impacts on land within the relevant attenuation area that is in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone, having regard to: <ol> <li>operational characteristics of the activity;</li> <li>scale and intensity of the activity;</li> <li>degree of hazard or pollution that may be emitted from the activity;</li> <li>hours of operation of the activity;</li> <li>existing emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste;</li> <li>existing emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste; and</li> <li>measures to eliminate, mitigate or manage emissions from the activity.</li> </ol> </li> </ul>					

#### C9.5.1 Activities with potential to cause emissions

#### EPP

The planning scheme does not contain any quantitative criteria for evaluating noise levels, however the *Tasmanian Environmental Protection Policy (Noise) 2009,* the 'EPP", provides a table of acoustic guideline indicator levels which may be used to assess the likely impact of environmental noise on various activities.

The guideline levels for avoidance of sleep disturbance are an Leq and Lmax of 45 and 60dB(A) respectively, measured outside an open bedroom window. This reduces to 30 and 45 dB(A) respectively, when measured inside a bedroom. It also provides measures for avoiding "Moderate Annoyance" and "Serious Annoyance" for people engaged in for "outdoor daytime living" activities in their yards, of Leq equals 50dB(A) and 55dB(A) respectively. Leq is the "equivalent continuous noise level" which can be through of as the average noise level over a specific period of time<sup>1</sup>. Lmax is the maximum noise level recorded in a specific period of time. These measures relate to the combined total noise level experienced at a location, which is made up of noise from the activity being considered as well as noise from all other sources in the area, such as traffic and other activities, etc.

<sup>&</sup>lt;sup>1</sup> Noise levels measured in decibels are averaged logarithmically.

#### Intrusiveness

A commonly used measure of the level of impact of noise from a new industrial activity is that if the level of the noise emissions from the new activity is more than 5 dB(A) higher than the existing background noise level, the noise is considered to be "Intrusive". This measure has been adopted in the NSW noise policy for industry and in some planning schemes, although it has not been specifically incorporated in Tasmanian state noise policy. The background noise level, also known as the "L90", is defined as the noise level in a specific period of time, that is exceeded by 90% of the noise levels measured in that time.

### 4. Existing Ambient Noise Environment

Existing ambient noise at the nearest residences was characterised from noise logging undertaken between the 1<sup>st</sup> and 9<sup>th</sup> of December 2022, at 23 Howard Street, Invermay (518385E, 5269344N). Several residences in this area directly adjoin proposed development. During this period the weather was generally fine, with light winds and moderate temperatures between 4 and 28°C as recorded at the Bureau of Meteorology weather station at Ti Tree Bend, Launceston. There were some periods of stronger wind notably on the 5<sup>th</sup> and 6<sup>th</sup> of December.

Figure 5 shows the continuous equivalent noise levels (L<sub>Aeq,10min</sub>), background noise levels (L<sub>A90,10min</sub>) and short duration maximum noise levels (L<sub>Amax,fast</sub>) recorded during this time. Table 2 presents the aggregated day, evening and night-time L<sub>eq</sub> and L<sub>90</sub> results, from which periods of strong winds have been filtered out. Ambient noise at these residences is generally comprised of activity in the light industrial sites along Montagu Street and further to the south and traffic along Howard, Montagu and Goderich Streets. Background noise levels follow a typical pattern of rising sharply between 4am and 5am, then slowly increasing to a peak level between 3pm and 6pm, before slowly decreasing overnight until 4am.



Figure 5 - Noise Logger Results. Periods of wind above 20km/h shaded.

Table 2 -	Agaregated	Noise	Loaaina	Results
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Time of Day	L <sub>Aeg</sub>	L <sub>A90</sub>	L <sub>Amax</sub>
Day 7am – 6pm	55.1	40.7	99.9
Evening 6pm – 10pm	56.0	41.3	100.8
Night 10pm – 7am	47.3	35.1	96.7

### 5. Noise Sources

Due to the wide variation in activities that may be developed on the proposed light industrial development in the future it is not possible to definitively identify the noise sources that will operate on the site. In order to carry out this noise assessment it has been assumed that all sites are occupied by a combination of logistics/warehousing and small metal fabrication or similar workshops.

For the purpose of noise modelling a daytime and evening case is identified containing a continuous truck movement, one external forklift movement across the five tenancies and a noise source such as an angle grinder, forklift or idling truck inside of each lot has been assumed. An exhaust fan is assumed to be located on the roof of each unit. It is assumed that two light vehicle movement occur within the staff parking area. In addition assessment is made of a night-time case similar to that of the daytime case with reduced truck movements of 6 per hour and no external forklift movements.

For warehousing and metal fabrication activities, the noise that is generated inside buildings is greatly reduced by the building walls and roof and has a negligible impact on outside noise levels compared with on-site vehicle noise or power tools being used outside.

Where future users of individual tenancies wish to establish activities which have more intensive noise emissions that those described above, a noise assessment will be required to support their development application, and where needed specific noise mitigation measures included in that development's design.

Details of the noise sources included in this assessment are listed in Table 3 below and shown in Figure 6. All noise sources have been characterised using reference data from the SoundPLAN noise modelling software reference library.

	Daytin	ne/Evening	Night-time		
Noise Source	Qty	Sound Power Level dB(A)	Qty	Sound Power Level dB(A)	
Angle grinders or similar power tools (Internal)	2	80	2	80	
Electric Forklift (Internal)	2	53	2	53	
Electric Forklift (External)	1	53	0	-	
Trucks (Arriving/ Departing lots at low speed)	Continuous	61/m	6/hr	31.8/m	
Trucks (Idling - Internal)	1	80	0	-	
Onsite car manoeuvres	2	47	2	47	
Exhaust Fan	5	70.3	5	70.3	

Table 3 – Noise Source Details

#### Intrusive or Dominant Noise Characteristics

Various characteristics of noise can increase the level of annoyance that it causes. These include Tonality, Impulsiveness, Modulation and Low Frequency content. Tonality is where particular frequency bands or "Tones" are present within the noise, such as the "whine" of a circular saw. Impulsiveness is where noise has rapid large changes in amplitude such as gunshots or jackhammers. Modulation is where the noise level cycles up and down rapidly. Low frequency noise is considered a problem when there is significant energy in the 20Hz to 250Hz frequency range.

The existing ambient noise in nearby residential areas is dominated by traffic noise. Traffic noise is relatively free from these characteristics, although low levels of tonality and low frequency noise are likely to be present. The noise emissions from the proposed subdivision will be mostly due to the combination of ventilation equipment, power tools and vehicles from multiple sites. The reference data used to characterise these noise sources does not have sufficient frequency resolution (i.e. it is single rather than one third octave band) to enable a formal assessment for these characteristics to be made, however in practice this type of equipment is generally relatively "broadband" in frequency distribution and continuous in operating level, and does not strongly exhibit intrusive characteristics.

### 6. Noise Modelling

#### 6.1 Methodology and Assumptions

Noise modelling was carried out in accordance with the Tasmanian DEPHA *Noise Measurement Procedures Manual*, 2008. Noise level calculations were implemented using SoundPLAN 8.2 environmental noise modelling software. Modelling assumptions and settings include:

- The ISO 9613-2 noise calculation standard was used within SoundPLAN. This standard predicts noise levels, taking into account meteorological conditions that are generally favourable to maximum propagation of noise from the source to the receiver. This includes assuming there is a light wind blowing from the sources to the receivers or equivalently that there is a "well developed, moderate ground-based temperature inversion present."
- Existing buildings, roads and other permanent structures and features were included within the model. All building footprints were sourced from theList.
- Existing terrain topography was obtained from 2 metre LIDAR data sourced from the ELVIS online elevation database.
- Ground absorption factors were set to 60% hard throughout the entire model, accounting for the mixture of soft and hard surfaces in the area.
- A 1.8 metre high solid boundary fence (as identified within the project drawings) is included along all three site side boundaries.
- Two scenarios have been modelled one representative of daytime activity levels and one representative of lower levels of activity during the evenings and overnight.
- All predicted noise results are free field, with no corrective factors applied.

Figure 6 below shows the SoundPLAN Model for the area surrounding the proposed light industrial development. Yellow dots are noise receiver locations. Green dots are noise receivers attached to houses, red and blue dots indicate the location of internal and external noise sources and red lines indicate the locations of moving noise sources included within the noise model.



Figure 6 - SoundPlan Model Layout. Base map source: Nearmap

#### 6.2 Results

The noise levels predicted by the SoundPLAN noise modelling are shown in Table 4 below for the two scenarios modelled. The predicted daytime and evening/night-time noise emissions from the development at all nearby residences are all lower than the existing ambient noise level and the  $L_{90}$  + 5dB(A) intrusiveness criterium level.

The existing daytime / night-time ambient noise levels measured at Howard Street were  $L_{eq}$  55.1 and 47.3 dB(A) respectively. These levels already exceed the respective EPP indicator levels of 50 for outdoor living (applicable during daytime/evening) and the 45 dB(A) for sleep disturbance (applicable during the night). The predicted noise emissions from the development are significantly below these levels and will result in a negligible variation to the existing levels.

Figure 7 below shows noise grid maps generated in SoundPLAN for the area surrounding the proposed subdivision for each scenario.

Note that the proposed houses shown in the model as R5, R6 and R7 (30a, 30b and 30c Montague Street) are indicative only and are included to represent possible future dwellings on these blocks that have not been designed at the time of this assessment.

Locatio	n	Receiver Level	Daytime Noise	Evening/Night-time	
			Level L <sub>Aeg</sub> dB(A)	Noise Level L <sub>Aeg</sub> dB(A)	
R1	12 Howard St	Ground Floor	28.9	28.8	
R2	10 Howard St	1 <sup>st</sup> Floor	26.0	25.6	
R3	71 Mayne St	Ground Floor	32.5	29.0	
R4	7 Keith St	Ground Floor	26.2	25.8	
R5	30a Montagu St (proposed)	1 <sup>st</sup> Floor	44.8	38.1	
R6	30b Montagu St (proposed)	1 <sup>st</sup> Floor	38.0	32.0	
R7	69a Mayne St (proposed)	1 <sup>st</sup> Floor	31.2	29.3	
R8	21 Howard St	Ground Floor	28.7	28.5	
R9	23 Howard St	Ground Floor	29.2	28.0	
R10	25 Howard St	Ground Floor	26.2	26.1	





Figure 7 – SoundPLAN Noise contour map of predicted Daytime/Evening (Left) and Night-time (Right) noise emissions.

### 7. Mitigation Measures

The results of the noise assessment indicate that for the expected development activity types, no specialised noise mitigation measures are required. Note that the modelling includes the effect of the 1.8m high solid "Colorbond" boundary fence, shown on the proposed plans on the eastern, northern and western boundaries that adjoin existing and future residential land. The fence will be free from any gaps or cracks.

Future development activities that might generate higher levels of noise emissions that those allowed for in this noise assessment may need to implement noise control measures that specifically address the plant, equipment and operational details of that particular activity.

Future noise assessments of particular activities may determine that a greater level of noise attenuation, such as noise attenuating enclosures or other noise control measures may be required for specific noise sources.

"Good practice" noise mitigation measures aimed at minimising unnecessary noise should also be observed on the site, including;

- An on-site speed limits of 20kmh or similar.
- All equipment noise control devices (such as exhaust mufflers) to be maintained in good condition at all times.
- Maintain all mechanical equipment in good condition, with correct lubrication and alignment adjustments, and attend to noisy fault conditions (such as damaged bearings) as soon as possible.
- Use of broad band style reversing beacons on forklifts and other mobile plant.
- Avoid unnecessarily "dropping loads" on the ground.

In addition outside of daytime operating hours additional measures should be observed including:

- No external forklift movements or noise generating activities
- No idling of vehicles during loading or unloading and
- Tenancy doors to be kept closed whenever possible.

### 8. Ground Vibration

Permissible land uses within the proposed Light Industrial Zone will operate within the confines of relatively small tenancies (each floor area is 451.75m<sup>2</sup>), and will not utilise heavy plant or equipment capable of generating ground vibration with sufficient magnitude to be detectable beyond the boundary of the site.

### 9. Air Assessment

Light industrial activities typically have only a modest potential to generate offensive odours or particulate emissions. Some odour and particulates are emitted from painting, use of forklifts, handling of stored goods and small scale metal fabrication works. Typically all of these operations will be conducted inside the workshop, with some limited truck or forklift movements outside. The odour and particulate emissions sources have low intensities and small emissions rates. They will disperse rapidly such that odour or particulate emissions will not be detectable beyond the boundary of the site. As such no loss of amenity is likely to occur as a result of odour or particulate emissions from the proposed development.

Similarly, most light industrial activities do not generate significant emissions to air of toxic chemicals or other pollutants of concern that are regulated under the Air Toxics NEPM, the Ambient Air Quality NEPM or the Tasmanian Environmental Protection Policy (Air Quality). If an activity is proposed in the future that does have a potential to generate such emissions, an air assessment would be required to demonstrate that air emissions have been controlled appropriately.

### 10. Conclusion

The results of this noise and air assessment indicates that for the most likely pattern of utilisation of the proposed development, with the recommended noise mitigation measures in place, noise, ground vibration and air emission levels from the proposed development are sufficiently low as to have no adverse impact on any nearby potential or existing sensitive receptors.

At these levels, noise and air emissions from the activity are unlikely to cause environmental harm or adversely impact on environmental amenity at any residences in the region. Noise emissions should be sufficiently low as to create a negligible change to the total noise emissions generated within the surrounding area.

Given the above mentioned matters:

- The noise and air emissions assessment meets the requirements of Part D2.1.1 of the NRLUS to provide an assessment of environmental hazards, and demonstrates that the proposed rezoning will not result in land use conflict between the proposed Light Industrial Zone and adjacent existing and future residential development, which includes future development on the land that is proposed to be rezoned to General Residential; and
- The proposed Storage use satisfies Performance Criteria P1 under Clause C9.5.1 of the planning scheme's Attenuation Code.

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#### Montagu St, Invermay

Noise and Air Assessment

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