

# ViridIFC

## Proposed Abattoir capacity increase The Local Meat Co Pty Ltd 1178 Claude Road, TAS Noise Assessment

DRAFT

*Prepared for The Local Meat Co Pty Ltd*

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## Terms and abbreviations

| Abbreviation  | Definition of term   |
|---|--|
| 'A' weighted  | A frequency adjustment which represents how humans hear sounds.  |
| Ambient noise level   | The all-encompassing sound associated with an environment or area.   |
| dB / dBA  | Decibel / 'A' weighted decibel   |
| Facade affected   | A monitoring location which is influenced by facade reflections. Measurements at facades are typically taken at a distance of 1 m away and the measured noise level generally regarded as being +2.5 dB higher than 'free field'.  |
| Free field  | A monitoring location where the microphone is positioned sufficiently far from nearby surfaces for the measured data to not be influenced by reflected noise.  |
| L <sub>90</sub> , L <sub>10</sub> , etc.                                | Statistical exceedance levels, where LN is the sound pressure level exceeded for N% of a given measurement period.   |
| L <sub>AE</sub> (or SEL)  | Sound Exposure Level. This is the constant sound level that has the same amount of energy in one second as the original noise event.   |
| L <sub>Aeq</sub>  | The 'A' weighted equivalent noise level. It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.   |
| L <sub>Amax</sub>   | The 'A' weighted maximum sound pressure level of an event.   |
| Low frequency   | Noise containing energy in the low frequency range.  |
| LP or SPL   | Sound Pressure Level   |
| Lw or SWL   | Sound Power Level  |
| Noise logger  | A self-contained, battery powered item of equipment that is used to measure noise levels over several days.  |
| Noise reduction   | The difference in sound pressure level between any two areas.  |
| NR noise rating   | Single number evaluation of the background noise level in a space. The NR level is typically around 5 to 6 dB below the 'A' weighted noise level.  |
| Octave-band   | A frequency band where the highest frequency is twice the lowest frequency.  |
| Offensive noise   | Noise that is considered harmful or which interferes unreasonably with affected receivers.   |
| Rating background level (RBL)   | The overall single-figure background level representing each assessment period (for example, Standard hours, Non-Standard hours).  |
| Rw  | Weighted Sound Reduction Index of a building element. That is, the laboratory tested (or theoretically calculated) sound insulation performance of a single element.   |
| Sound Insulation  | A reference to the degree of acoustical separation between any two areas.  |
| Steady state noise  | Noise which remains relatively constant in level over time, as opposed to time-varying noise which fluctuates over time.   |
| Time weighting  | Sound level meters can be set to 'fast' or 'slow' response. 'Fast' corresponds to a 125 ms time constant and 'slow' corresponds to a 1 second time constant.   |
| Transmission loss (or sound transmission loss or sound reduction index) | A test which rates the sound transmission properties of a wall, floor or roof construction.  |
| Habitable Rooms   | According to the "Building Code of Australia" a Habitable Room is: " a room used for normal domestic activities and includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre, and sunroom, but excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods." |

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# 1 Introduction

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## 1.1 Project overview

The Local Meat Co ('the proponent') has commissioned Virid IFC Pty Ltd (Virid IFC) to conduct a noise impact assessment for the capacity increase of an existing abattoir ('the proposed development'). The proposed development would be located at 1178 Claude Road, TAS and is situated within the Kentish Local Government Area (LGA). It has been designed to increase the permitted capacity of the Claude Road abattoir from its 100 tonnes limit to 500 tonnes per annum.

This noise impact assessment report prepared by Virid IFC for the project being assessed in Tasmania by the boards of the Environmental Protection Authority (EPA) and forms a part of the Environmental Effects Report (EER) for the Designated Development application.

The key requirements outlined in the ERR guidelines for The Local Meat Co Pty Ltd Claude Road Abattoir Capacity Increase, with respect to assessment of noise impacts from the proposed development on the existing environment (including cumulative impacts if necessary), include:

- A description of all potential noise and vibration sources during operation, including the size and sound power level, noise attenuation and hours of operation for each main piece of equipment.
- A description of the potential impacts of noise generated by the activity.
- A noise and vibration assessment in accordance with the relevant Environment Protection Authority Guidelines.
- A description and appraisal of noise and vibration mitigation and monitoring measures.

### 1.1.1 Limitations

The limitations of this report are as follows:

- Publicly available terrain data by Elvis was used as inputs to the noise models developed for this assessment. Various assumptions were made, and these are provided as part of the assessment methodology

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## 2 Existing site

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The proposed development site is located 1178 Claude Road, TAS within the Kentish Council LGA.

Land use surrounding the proposed development site is largely grazing / pasture lands. The Dasher River is to the North of the abattoir site. There are scattered residential dwellings surrounding the development site and the township of Gowrie Park is approximately 3km from the nearest boundary of the proposed development site.

The existing land use in the immediate surrounds of the proposed development is mostly classified as *Rural Residential*. The existing site is shown in Figure 1.

### 2.1 Noise-sensitive receivers

Noise-sensitive land uses have the potential to be impacted by noise from the operation of the facility. Vibration-sensitive receivers

Due to the proposed operations (discussed further in Section 3.1), as well as the distances between the proposed development and nearby receptors, vibration from the operation of the abattoir is not expected to cause impacts at nearby receivers. As such, operational vibration impacts have not been considered as part of this assessment.

## 3 Proposed development

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As per the information provided to Virid IFC, the development involves no construction of new buildings or infrastructure or plant. The proposed development is expected to process up to 500 tonnes of live weight per year using the existing infrastructure. The proposed design plans are shown in Figure 1.

### 3.1 Proposed operations

A brief overview of the proposed operations at the proposed development site is presented below:

- The design is to process 500 tonnes of live weight per year.
- The butchering, sizing, and packaging operations are conducted in an enclosed building. Effluent generated from the butchering and packaging operations is collected in a storage tank, which is inside the building. Collected waste is sent off-site via waste disposal trucks on a fortnightly basis.
- The carcass is cut into half using carcass splitter, which is then washed and weighed, before being stored in the cool room.
- The loading bay will be utilised for the collection and pump-out of the wastewater collection/storage system.

The operational hours of the facility are expected to be 7 am to 3 pm, Monday to Friday. Refrigeration and waste-water plant is expected to be operational all day, however. The site plan of the abattoir is given in Figure 1.

## 3.2 Identified noise sources

Based on the proposed operations of the facility, the main sources of noise from the proposed development are expected to be:

- The electric saw within the abattoir
- Cool room refrigeration plant
- Truck loading/unloading activities
- Truck movements through the site
- WWTP mechanical plant, including the aeration blower.
- Rifle or captive bolt gun
- Carcase Splitter
- Vacuum sealer

These are discussed further in Section 6.

Figure 1



## 4 Background noise measurements

Noise monitoring data was reported between 2 November and 9 November 2023 to determine the background noise level – used for calculating the assessment criteria. An ARL-Ngara Type 1 (serial: 878214) noise logger was used for the monitoring. The noise monitor was installed at a height of 1.8m above ground level in the centre of the proposed development site. The measurement data is attached as in the submission as a CSV file. The calibration certificate for the monitoring equipment is attached in the submission as a PDF file.

### 4.1 Meteorological conditions

The meteorological conditions were obtained a weather monitoring station obtained from near the site. The weather station was installed at a height of 1.8m.

Monitoring should not be conducted, or monitoring data must be excluded when average wind speeds are greater than five (5) metres per second at microphone height or during the periods of rainfall. As such no periods were excluded due to inclement weather (i.e., wind speeds > 5m/s):

The weather monitoring data is attached to the submission as CSV file.

### 4.2 Monitoring results

The background noise levels were used to derive the criteria for the assessment, in accordance with the criteria of background (ABL) + 5. The Rating Background Levels (RBLs) are presented in **Table 1** below. The assessment periods are taken to be day (7am to 6pm), evening (6pm to 10pm), and night (10pm to 7am), as per the NPfl.

**Table 1. Calculated ABLs and RBLs**

| Time of Day         | Date       | Leq (day)<br>dB(A) | Rating Background Noise<br>Level (RBL) |
|---------------------|------------|--------------------|--|
| Day (7am – 6<br>pm) | 02/11/2023 | 55.0               | 34                                     |
|                     | 03/11/2023 | 54.6               |  |
|                     | 04/11/2023 | 54.9               |  |
|                     | 05/11/2023 | 53.2               |  |
|                     | 06/11/2023 | 55.2               |  |
|                     | 07/11/2023 | 55.1               |  |
|                     | 08/11/2022 | 56.4               |  |
|                     | 09/11/2022 | 55.3               |  |

## 5 Noise Assessment Criteria

### 5.1 Noise Criteria

The criteria in Tasmania are background (RBL) + 5dB.

The proponent commissioned a background monitoring November 2023.

The monitoring measured ambient noise using a sound level meter installed on the site following:  
TABLE 2: AMBIENT NOISE Period Times Ambient noise LAeq, 10min (dBA)

$$L_{Aeq,15min} = \text{Rating Background Level} + 5 \text{ dB}$$

The policy defines minimum RBLs to be applied. These results in a minimum intrusiveness noise level as shown in **Table 2**.

**Table 2. Project intrusiveness minimum levels**

| Time of Day   | Measured RBL (dB(A)) | Noise level +5 ( $L_{Aeq,15min}$ dB(A)) |
|---------------|----------------------|---|
| Day (7am-6pm) | 34                   | 39                                      |

## 6 Operational noise assessment

The following describes the details of the operational noise assessment conducted, including the construction of the noise model as well as details of the modelled noise sources and the proposed abattoir facade construction.

### 6.1 3-D noise model

A 3D noise model was built in SoundPLAN v8.2. The digital terrain data (representative of the year 2012) was sourced from the NSW Government's Spatial Services. The sourced digital elevation model (DEM) has a resolution of 1m. The data was imported into SoundPLAN as elevation heights, allowing SoundPLAN's triangulation algorithms to generate a digital ground model (DGM).

The location, footprint, and height of all buildings within the study area were digitised using high-resolution imagery in ArcGIS and was imported as shapefiles to SoundPLAN. The horizontal accuracy of the dataset is typically within  $\pm 0.1\text{m}$ . Building heights and storeys were estimated based on a combination of aerial imagery and street-view imagery.

The SoundPLAN model was used to predict noise propagation from the identified sources to the nearest noise-sensitive land-uses.

### 6.2 Abattoir façade construction

The proposed abattoir is fully enclosed. The general external construction of the proposed development is expected to be similar to that of the Rose Valley facility. The construction details of the primary facades, including the 'weighted sound reduction index' (i.e.,  $R_w$ ) for each façade are presented in **Table 3** below. The abattoir will house the electric saw and has been modelled as an industrial building with each façade assigned an  $R_w$  21 to ensure a conservative assessment.

**Table 3: Proposed External Facade Construction ( $R_w$ )**

| Building Element | Proposed Construction  | Minimum $R_w$ |
|------------------|--|---------------|
| External wall    | External Colorbond cladding with internal 100 mm thick compressed foam | 21            |
| Roof and ceiling | External Colorbond roof with internal 100 mm thick compressed foam     | 21            |

### 6.3 Electric saw

The electric saw was modelled as a point source inside the abattoir. It was assumed to operate only during the operational hours (i.e., 7 am to 3 pm).

At this stage, the type and model of the electric saw is unknown, hence no manufacturers noise data is available for the electric saw. A single sound spectrum was assumed based on measured values presented in in the SoundPLAN directory for an electric saw. This may be reviewed once the final saw selection is known. Upon final saw selection, if significant differences in noise levels are predicted based on manufacturer's data or measured levels at the site, then further assessment may be required.

The A-weighted sound power spectrum utilised in the assessment is provided below in **Table 4**.

**Table 4: A-weighted sound power spectrum for the electric saw**

| Overall (dBA) | 630 Hz | 800 Hz | 1 KHz | 1.25 kHz | 1.6 kHz | 2 kHz | 2.5 kHz | 3.15 kHz | 4 kHz | 5 kHz | 6.3 kHz | 8 kHz | 10 kHz |
|---------------|--------|--------|-------|----------|---------|-------|---------|----------|-------|-------|---------|-------|--------|
| 91.32         | 71.5   | 77.0   | 72.5  | 73.0     | 73.5    | 80.50 | 83.5    | 82.0     | 78.5  | 78.5  | 79.5    | 89.5  | 72.5   |

### 6.4 Cool room

The cool room is used to preserve the freshly cut beef before being sent off for commercial purposes. The cool room is expected to be served by a refrigerant compressor, which has been modelled as a point source outside the abattoir, against the façade. The plant is assumed and modelled to be working 24 hours, 7 days a week to manage the temperature within the room.

No measured octave or 1/3 octave spectrum was available for this assessment, so a measured octave band spectrum was obtained for a similar compressor. The A-weighted sound power spectrum utilised in the assessment is provided below in **Table 5**.

**Table 5: A-weighted sound power spectrum for compressor**

| Overall (dBA) | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz | 16 kHz |
|---------------|-------|--------|--------|--------|-------|-------|-------|-------|--------|
| 73.95         | 56    | 61     | 64     | 63     | 62    | 72    | 60    | 53    | 38     |

## 6.5 Truck movement

As per the traffic impact assessment, five (5) truck movements are expected per week. Trucks will access the site from Claude Road between 7am and 3 pm.

The following vehicle movements are assumed as a result of the proposed development:

- All medium/heavy rigid/tray trucks for deliveries, Truck movements range from 1 to 2 per day: 1 on Monday, Wednesday, and Thursday, and 2 on Friday. Offal/solid waste collection, on average once per fortnight.

For this assessment, a worst-case scenario of two (2) truck movements for a 1-hour period were modelled. The modelled noise power spectrum for the truck movements were sourced from similar measurements, and modelled as a moving point source, at a speed of 20 km/hr

The corrected, A-weighted sound power spectrum (per metre of modelled source line) utilised in the assessment is provided below in **Table 6**.

**Table 6: Corrected, A-weighted sound power spectrum (per metre of modelled line source) for truck movements**

| Overall (dBA) | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|---------------|-------|--------|--------|--------|-------|-------|-------|-------|
| 62            | 43.55 | 47.55  | 51.55  | 54.55  | 57.55 | 55.55 | 50.55 | 45.55 |

## 7 Results

**Table 7** below shows the predicted, cumulative  $L_{Aeq,15min}$  noise impacts at the closest noise sensitive noise receptors (highest impact) from the noise sources, as discussed in Section 5. Only calculations for the day period have been provided, as the facility doesn't operate in the evening or night time periods.

**Table 7: Cumulative noise impacts**

| Receiver         | Assessment period | Project trigger noise level<br>$L_{A,eq,15min}$ dB(A) | Cumulative noise impact<br>$L_{A,eq,15min}$ dB(A) |
|------------------|-------------------|---|---|
| 1230 Claude Road | Day               | 39  | 27.4  |
| 1116 Claude Road | Day               | 39  | 27.0  |

No exceedances of the assessment criteria are predicted at either of the closest noise sensitive receptors. As such, no mitigation measures are recommended for the proposed development.

While compliance is predicted at surrounding land uses, some best management practices have been identified to further reduce the noise impacts to surrounding land uses.

- Siting noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas to achieve the maximum attenuation of noise.
- Keeping equipment well-maintained and operating it in a proper and efficient manner.

### 7.1 Limitations

There are some limitations to the assessment which may be reviewed upon final saw/plant selection. These limitations and potential impacts are discussed below:

- The source noise levels for the modelled plant/electric saw were sourced from similar equipment to what is expected at the proposed development. If the final plant/saw selection noise levels are significantly different, additional plant is required, or the plant locations differ from what was modelled as part of this assessment, then additional assessment and/or noise mitigation may be required.
- No allowances for noise characteristics (primarily tonality and impulsiveness) have been made as part of this assessment. These noise characteristics can cause additional annoyance, with penalties (dB added on as a correction) usually applied in their presence. Additional assessment may be required if, upon final saw/plant selection and use, these noise characteristics are determined to be present.

## 8 Conclusion

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The Local Meat Co has commissioned Virid IFC Pty Ltd (Virid IFC) to conduct a noise impact assessment for the operation of a upgrading abattoir. The proposed development would be located at 1178 Claude Road, TAS and is situated within the Kentish Local Government Area (LGA). It has been designed to process 500 tonnes of throughput per year

An acoustic assessment of the proposed development has been carried out in accordance with the requirements of the NPfl.

Background noise measurements were conducted to assist in deriving the project intrusiveness noise levels. The project trigger levels were then selected as the minimum of the project intrusiveness and project amenity noise levels.

A 3D SoundPLAN noise model was then constructed utilising digitised terrain and buildings. This model was used to calculate the predicted noise impacts from the abattoir, truck movements, and mechanical plant across the proposed development.

The predicted cumulative noise impacts show compliance at both the identified sensitive receptors when assessed against the derived project trigger noise levels. As such, no noise mitigation measures are recommended for the proposed development.

While compliance is predicted at surrounding land uses, some best management practices have been identified to further reduce the noise impacts to surrounding land uses.

- Siting noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas to achieve the maximum attenuation of noise.
- Keeping equipment well-maintained and operating it in a proper and efficient manner.