Pro-Pine Sawmill

238 Old Esk Road, Taromeo, QLD 4306

Noise Impact Assessment
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Role	Name	Position	Signature	Date Signed
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1 Introduction

Pro-Pine Pty Ltd ('proponent') has commissioned ViridAU to conduct a noise impact assessment for a Material Change of Use (MCU) Development Application (DA) to increase timber processing capacity for an existing sawmill at 256 Old Esk Road, Taromeo, QLD 4306 ('the facility') on Lots 228 & 229 on SP136942.

The site is currently approved for ERA 47 – Timber milling wood chipping (b) – Milling, in a year, the following total quantity of timber – more than 10,00 tonnes per annum (tpa) but not more than 20,000 tpa. The proponent is seeking approval to increase timber processing capacity under the following ERAs:

a) ERA 47 – Timber milling and woodchipping (c) – Milling, in a year, the following total quantity of timber – more than 20,000 tpa annum (tpa) but not more than 100,000 tpa; and

b) ERA 33 – Crushing, milling, griding or screening -crushing, grinding, milling or screening more than 5,000 tpa of material.

The proponent has proposed to increase the timber processing capacity to 60,000 tpa ('proposed increased throughput') with no changes to the existing infrastructure. The following products will be obtained from the proposed increased throughput operations:

- Landscaping bark products
- Sawdust
- Timber board
- Woodchip
- Soft fall woodchip products
- Boards and trim slab products
- Bark products; and
- Ground wood products.

This noise impact assessment was undertaken to address the following and support the combined MCU DA and site-specific Environmental Authority (EA) amendment application:

- Performance Outcome 1 (PO1) of the Rural Zone Code under the *South Burnett Planning Scheme 2017* (v2.0)
- *Environmental Protection (Noise) Policy 2019* (EPP Noise 2019)
- Department of Environment, Tourism, Science and Innovation (DETSI) Publication – *Application requirements for activities with noise impacts* (ESR/2015/1838).

1.1 Limitations

Publicly available data/design information provided by the Queensland Government, Geoscience Australia, and PSMA Australia Ltd were 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.

This assessment was based on best practice methodologies at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this document. Where this document indicates that information has been provided by third parties, no independent verification of this information has been completed except as stated. No liability is assumed for any inaccuracies in, or omissions to, that information. Furthermore, this assessment should be read in its entirety. No responsibility is accepted for use of any part of this document in any other context or for any other purpose or by third parties.

N

Legend

Site Layout

Subject land parcel

DCDB

0 70 140 210 280 Meters

V25-147 Taromeo Sawmill - Figure 1

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
21st August 2025

2 Existing environment

2.1 Existing land use

The Pro-Pine sawmill is located at 256 Old Esk Road, Taromeo QLD 4306 ('the site') on Lots 228 & 229 SP136942. As per the information provided to ViridAU, the site contains a timber sawmill and a bark processing area. The site is zoned as Rural according to the *South Burnett Planning Scheme 2017* (v2.0). Surrounding the site the zoning and land uses include Environmental Management and Conservation (production and plantation forestry) as well as Rural grazing areas.

2.2 Existing and proposed operations

Existing operations consist of logs being transported to the sawmill by contractors which are then unloaded by Pro-Pine staff using a front-end loader. The logs are then fed into the debarking machine then transported to the mills, where the logs get processed further into centre cants and wing boards. These are then refined further into timber boards which are treated and prepared for transportation.

The proponent has proposed to increase the timber processing capacity to 60,000 tpa with no changes to the existing infrastructure. The proposed increase in production would be facilitated by more frequent log deliveries and an increased throughput from the existing plant and equipment.

2.3 Hours of operation

The site operates from 6:00 am to 4:00 pm, Monday to Friday. Heavy vehicle and light vehicles access from 6:00 am to 7:00 am. No timber milling, wood chipping or maintenance works are undertaken during this period. From 7:00 am to 4:00 pm the site is in full operation.

2.4 Noise sensitive receptors

The nearest noise sensitive receptors are shown below in Figure 2 and are described in Table 1. The closest receptor is a residential property located at 601 Williams Road, Benarkin North (R1), the closest noise source, the 'Big Chipper' being approximately 360 m to the east.

Table 1: List of sensitive receptors

Receptor	Address
R1	601 Williams Rd, Benarkin North QLD 4314
R2	603 Williams Rd Benarkin North, QLD 4314
R3	595 Williams Rd, Benarkin North QLD 4314
R4	581 Williams Rd, Benarkin North QLD 4314
R5	330 Old Esk Rd, Benarkin North QLD 4314
R6	571 Williams Rd, Benarkin North QLD 4314
R7	343 Old Esk Rd, Benarkin North QLD 4314
R8	350 Old Esk Rd, Benarkin North QLD 4314

N

0 40 80 120 160 Meters

Legend

Site Layout

- Subject land parcel
- DCDB
- Residential Receptor
- Shed or Garage
- Attended noise monitoring location

V25-147 Taromeo Sawmill - Figure 2

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
Sensitive receptors and attended monitoring location
21st August 2025

3 Noise assessment criteria

3.1 Rural Zone Code

All noise emissions from the proposed development must comply with the Rural Zone Code of the *South Burnett Planning Scheme 2017* (v2.0). PO1 of the Rural Zone Code is presented in Table 2.

Table 2: PO1 of the Rural Zone Code

Rural Zone Code	
PO1 Development Maintains rural amenity and character	AO1.1 Building are set back 20m from any collector or higher order road and 10m from any other road frontage and AO1.2 The use does not cause odour, noise or air emissions in excess of the prescribed limits in the *Environmental Protection (Air) Policy 2019* or the *Environmental Protection (Noise) Policy 2019*.

AO1.2 requires developments to achieve the Acoustic Quality Objectives (AQOs) provided at Schedule 1 of the EPP Noise 2019.

3.2 Environment Protection (Noise) Policy 2019

All noise emissions, from the facility, must comply with the EPP Noise 2019 AQOs in order to satisfy the acoustic requirements of the Rural Zone Code. The EPP Noise 2019 objectives are as follows:

- *Prevent adverse noise impacts upon sensitive receptors in the vicinity of the activity, and,*
- *Prevent, or minimise, background noise creep (i.e., the gradual increase in the total amount of background noise in the area)*

The AQOs, for various sensitive receptors and for different periods of the day are provided in Schedule 1 of the EPP Noise 2019. The relevant AQOs for this assessment, are provided below in Table 3.

Table 3: EPP Noise 2019 acoustic quality objectives

Sensitive Receptor	Time of Day	Acoustic Quality Objectives (measured at the receptor) dB(A)			Environmental Values
		$L_{Aeq, adj, 1hr}$	$L_{A10, adj, 1hr}$	$L_{A1, adj, 1hr}$	
Residence (for outdoors)	Daytime and evening	50	55	65	Health and wellbeing
Residence (for indoors)	Daytime and evening	35	40	45	Health and wellbeing
	Night-time	30	35	40	Health and wellbeing in relation to the ability to sleep

3.3 Sleep disturbance

The Rural Zone Code and the EPP Noise 2019 do not specifically consider criteria for the sleep disturbance. The *Planning for noise control guideline* (EPA now DES, 2004) provide guidance and stipulates a noise level of 45 dB(A) L_{Amax} indoors to achieve a good sleep over eight hours.

4 Unattended noise measurements

An unattended noise ambient noise survey was conducted by Range Environmental Consultants between the 22nd and 29th May 2024. These measurements were undertaken in accordance with Australian Standard *AS1055:2018-Acoustic-Description and measurement of environmental noise* and the Department of Environment and Science (DES) *Noise Measurements Manual v4.01*.

4.1 Description

Unattended noise monitoring was conducted in a free-field position at 601 Williams Road (R1).

The microphone was positioned 1.5 meters above ground level. The calibration was checked on-site during setup and decommission. No drift greater than +/-0.5 dB was noted.

4.2 Noise monitoring equipment

A Larson Davis LxT sound level meter was used for the unattended survey. Weather conditions during the survey were recorded with a Davis Vantage Vue weather station.

The following instrument settings were used for the attended noise measurements:

- 'A' frequency weighting
- 'Fast; time weighting
- 15-minute sample integrated time.

4.3 Weather conditions

Overall weather conditions during the measurement period were suitable for noise monitoring, i.e. wind speed lower than 5 m/s and no rainfall greater than 0.2 mm/h.

4.4 Monitoring results

The ambient noise survey data is detailed in Table 4.

Table 4: Unattended noise levels

Time of day	L_{Amax}, dB(A)	$L_{A1,15min}$, dB(A)	$L_{A10,15min}$, dB(A)	$L_{Aeq,15min}$, dB(A)	$L_{A90,15min}$, dB(A)
Daytime 7:00 am to 6:00 pm	64	52	44	43	35
Evening 6:00 pm to 10:00 pm	47	40	33	32	27
Night-time 10:00 pm to 7:00 am	44	37	32	30	26

The dominant existing noise source in the local area surrounding the noise logger location was timber milling and woodchipping noise from the site. The site's operations during the unattended monitoring period were typical of standard operations, i.e. no abnormal operating hours, shutdowns, etc.

5 Attended noise measurements

5.1 Saw mill source measurements

Operator attended noise measurements were conducted at the saw mill site by an experienced ViridAU acoustic consultant on the 3rd July 2025. These measurements were undertaken in accordance with Australian Standard *AS1055:2018-Acoustic-Description and measurement of environmental noise* and the Department of Environment and Science (DES) *Noise Measurements Manual v4.01*.

5.1.1 Description

Noise measurements of each plant/equipment were captured in a 30 to 60 second recording at 1 m away (or as close as safely possible) to capture a full event.

A background validation measurement was undertaken in a free-field position on the boundary of 601 Williams Road (R1). This measurement was used to validate the predicted noise levels at the nearest sensitive receptor.

The microphone was positioned 1.5 meters above ground level for each measurement. The calibration was checked on-site during setup and decommission. No drift greater than +/-0.5 dB was noted.

Measurements of the following plant/equipment were captured to represent the proposed timber milling and wood chipping operations:

- Big chipper
- Debarking (including kick off)
- Dip Tank
- Docking and shaping equipment
- Forklift
- Compact wheel loader
- Mill 1 façade breakout (north, east, south and west)
- Small chipper
- Trommel
- Semi truck
- Mill 2 façade breakout (measured on the 12th August as not operational on the 3rd July).

5.1.2 Noise monitoring equipment

The equipment used on-site is listed in Table 5.

Table 5: Noise monitoring equipment

Equipment	Make	Type	Serial Number	Calibration Date
Sound level meter (logger)	NTi Audio	XL2	A2A-25780-E1	22/05/2025
Calibrator	Svantek	SV-36	106881	18/02/2025

The following instrument settings were used for the attended noise measurements:

- ‘A’ frequency weighting
- ‘I’ frequency weighting
- ‘Fast; time weighting
- 30 to 60-second sample integrated time (measuring equipment/plant)
- 15-minute sample integrated time (prediction validation).

5.1.3 Weather Conditions

The overall weather conditions during the measurement period were suitable, sunny and clear skies. No rain and an average windspeed of 2 m/s recorded in Taromeo on the 3rd July 2025.

5.2 Residential receptor R1 sound insulation measurements

Sound insulation testing was completed at the nearest residential receptor R1 by two experienced ViridAU acoustic consultants on the 12th August 2025. These measurements were undertaken in general accordance with *ISO 16283-3:2016 Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 3: Façade sound insulation*.

5.2.1 Description

The determination of specific outdoor to indoor sound transmission losses of the identified project sensitive receptor dwellings are required to demonstrate compliance with the Residence (for indoors) AQOs.

A review of the nearest residential receptors on Williams Road and Old Esk Road conducted from the road during the site inspection on the 12th August 2025 indicated that all buildings constructions appear to be similar, i.e. timber cladding or brick veneer external layer with stud walls and plasterboard or timber panels indoors with insulation in the cavity.

Sound insulation measurements were conducted to characterise the outdoor to indoor transmission losses of the most affected room (the master bedroom) of the most affected receptor R1.

A broadband white noise source was generated in the master bedroom using a 2500W loudspeaker and noise measurements were conducted both in the emitting room (the master bedroom) and the receiving space (outdoor at 1 m from the façade under investigation). Noise measurements were conducted with the windows closed and opened to assess both situations.

5.2.2 Noise monitoring equipment

The equipment used on-site for this component is listed in Table 6.

Table 6: Noise monitoring equipment

Equipment	Make	Type	Serial Number	Calibration Date
Sound level meter (logger)	NTi Audio	XL2	A2A-25780-E1	22/05/2025
Sound level meter (logger)	NTi Audio	XL2	A2A-25781-E1	22/05/2025
Calibrator	Svantek	SV-36	106881	18/02/2025
Loudspeaker	Alto	TS415	-	-

The following instrument settings were used for the attended noise measurements:

- ‘A’ frequency weighting
- ‘Fast; time weighting
- 30 second sample integrated time.

5.2.3 Weather Conditions

The overall weather conditions during the measurement period were considered suitable, sunny and clear skies. No rain and windspeed lower than 1 m/s were recorded in Taromeo on the 12th August 2025.

5.3 Monitoring results

5.3.1 Noise sources characterisation

All attended measurements conducted at the saw mill to characterise the sources were corrected to account for tonality adjustments and impulsive adjustments as follows. Combined adjustments for tonality and impulsive noise in total should not exceed 10 dB.

5.3.1.1 Tonality adjustments

Tonal noise is defined as having a prominent frequency and characterised by a defined pitch. A tonal characteristic can be identified objectively in accordance with the method in Australian Standard *AS1055.2018 Acoustics - Description and measurement of environmental noise*. The method involves comparing noise levels in adjacent one-third octave bands as follows:

- Confirm the A-weighted 1/3rd octave band exceeds the neighbouring bands by 5 dB
- Add 5 dB to the tonal 1/3rd octave band
- Logarithmically sum all A-weighted 1/3rd octave bands, including the adjusted band
- The arithmetic difference between the log sum determined in (3) and the original overall A-weighted level becomes the tonal correction.

5.3.1.2 Impulsive adjustments

Impulse noise can be defined as having a high peak of short duration or a sequence of such peaks (bangs, clicks, clatters, or thumps). To determine if an adjustment is necessary, both A-weighted Fast response and Impulse response are to be measured. If the difference in A-weighted maximum noise levels between Fast response and Impulse response is greater than 2 dB, then apply difference in measured levels as the correction up to a maximum of 5 dB. The impulse adjustment should then be added to the component level (LAeq or LAmax) and should not exceed 5dB.

5.3.1.3 Results

Sound power levels for equipment at the saw mill are listed in Table 7.

5.3.2 Sound insulation

The outdoor to indoor transmission losses for the most exposed facades of the most exposed habitable space of the most exposed receptor are listed in Table 8.

Table 7: Sound power levels – corrected for tonality and impulsiveness

Equipment	Sound Power Levels, Octave Band, dB(A)								L_{Aeq}, dB(A)	L_{Amax}, dB(A)	Tonal	Impulsive
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz				
Big chipper	67	82	89	93	93	94	90	82	99	103	Y	Y
Bobcat	57	69	83	80	77	75	70	64	86	90	Y	Y
Debarking	79	89	98	102	105	104	102	97	110	113	N	Y
Debarking kick off	80	90	98	101	103	105	101	93	109	116	N	Y
Dip tank (air pumps)	66	77	85	90	97	104	109	107	112	130	N	Y
Docking	51	66	82	89	99	100	94	93	104	112	N	Y
Forklift	63	68	75	78	76	76	69	62	83	87	N	Y
Loader	82	81	83	86	88	88	80	68	93	103	N	Y
Mill one breakout - Eastern façade	69	86	96	101	104	104	102	96	109	120	N	Y
Mill one breakout - Northern façade	63	75	83	88	89	90	86	78	95	101	N	Y
Mill one breakout - Southern façade	68	79	88	91	94	94	93	85	100	108	N	Y
Mill one breakout - Western façade	64	80	89	94	96	96	93	84	101	110	N	Y
Shaper	66	76	95	91	91	90	89	87	99	104	Y	Y
Small chipper	59	90	94	103	106	109	103	92	112	115	Y	Y
Trommel	82	97	92	100	110	108	96	89	113	110	Y	Y
Truck (single semi)	64	77	73	80	86	85	80	68	90	96	Y	Y
Mill two breakout - Eastern façade	61	75	82	92	93	94	91	86	99	113	N	Y
Mill two breakout - Southern façade	66	78	87	92	94	98	95	92	102	107	N	N
Mill two breakout - Western façade	67	80	88	91	96	98	90	85	101	107	N	N

Table 8: Outdoor to indoor transmission losses

Facade	Windows / Doors	Transmission losses, dB							
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
North-east façade	Closed	18	23	25	29	30	30	32	33
South-east façade		19	24	25	33	34	36	37	42
South-west façade		10	19	27	28	34	34	39	38
North-east façade	Open	14	19	18	22	19	20	21	19
South-east façade		19	19	17	21	22	22	23	21
South-west façade		14	19	19	19	21	22	22	21

6 Noise modelling

6.1 Noise model and propagation algorithm

The noise model was developed using SoundPLAN v8.2, an environmental noise modelling software suite from SoundPLAN GmbH. SoundPLAN facilitates the development of detailed 3D models comprising ground contours, noise sources, building footprints and heights and other factors that influence the emission and propagation of noise.

The model considered noise sources, receivers and the effect of distance, ground topography, ground absorption, atmospheric attenuation, and obstacles such as barriers and buildings. To predict noise emissions, SoundPLAN implements the international standard ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*.

6.2 Calculation parameters and assumptions

When predicting the noise level at any given point, the study accounted for:

- The contribution of any noise sources within 1,000 m of each point.
- The contribution of any acoustic waves reflected off surfaces either:
  - Within 200 m of each point, or
  - Up to 50 m from the source.

Noise contours were interpolated from a 5 m grid. Noise levels were calculated with a tolerance of ±0.1 dB. Additionally, all noise predictions takes façade correction into account.

6.3 Terrain

A terrain model based on light detection and ranging (LiDAR) was sourced from the Intergovernmental Committee on Surveying and Mapping (ICSM). This bald earth digital elevation model (DEM) represents ground surface topography excluding vegetation features. With 1-meter contours and a resolution of 30 meters. This DEM is considered to be representative of the study area's current terrain, dated 2009.

6.4 Buildings

The location, footprint, and height of all buildings within the study area were sourced from Nearmap aerial photography dated April 2023. A manual process was used to extract and orthogonalize buildings based on roof outlines. The horizontal and vertical accuracy of these images are typically within ±1.0 m.

All buildings within the study area were imported into the SoundPLAN noise model. A review of the buildings layer against the DGM was completed to ensure that no buildings were incorrectly located within the road corridor, and to identify and correct if required, any building heights that were clearly incorrect when compared to the surrounding structures.

6.5 Ground absorption and vegetation

The site and the surroundings were digitised from aerial photography. A large area of forest around the site was modelled as acoustically absorptive (ground factor of 1). The site itself was modelled as partially absorptive (ground factor of 0.5).

6.6 Modelled scenario

For the purposes of this assessment, the following activities representing a typical worst-case cumulative operational scenario are considered as follows and in accordance with the *DETSI's Application requirements for activities with noise impacts* (ESR/2015/1838).

6.6.1 Daytime

These activities are predicted to happen at anytime between 7:00 am and 4:00 pm.

- Mills one and two operating continuously
- Small and big chippers operating continuously
- Docking and shaping equipment operating continuously
- Trommel equipment operating continuously
- Debarking equipment operating continuously
- Forklift, bobcat and loader operating continuously at 10 km/h
- Dip tank (air pumps) used for 6 minutes per hour
- 13 truck movements at 10 km/h.

6.6.2 Night-time

These activities are predicted to happen at anytime between 6:00 am and 7:00 am.

- 13 truck movements at 10 km/h
- 27 light vehicles movements at 10 km/h
- Forklift, bobcat and loader operating continuously at 10 km/h.

6.6.3 Model verification

The model verification scenario is as per the daytime scenario, with the following exceptions:

- No truck movements
- Mill two not operating.

6.7 Equipment

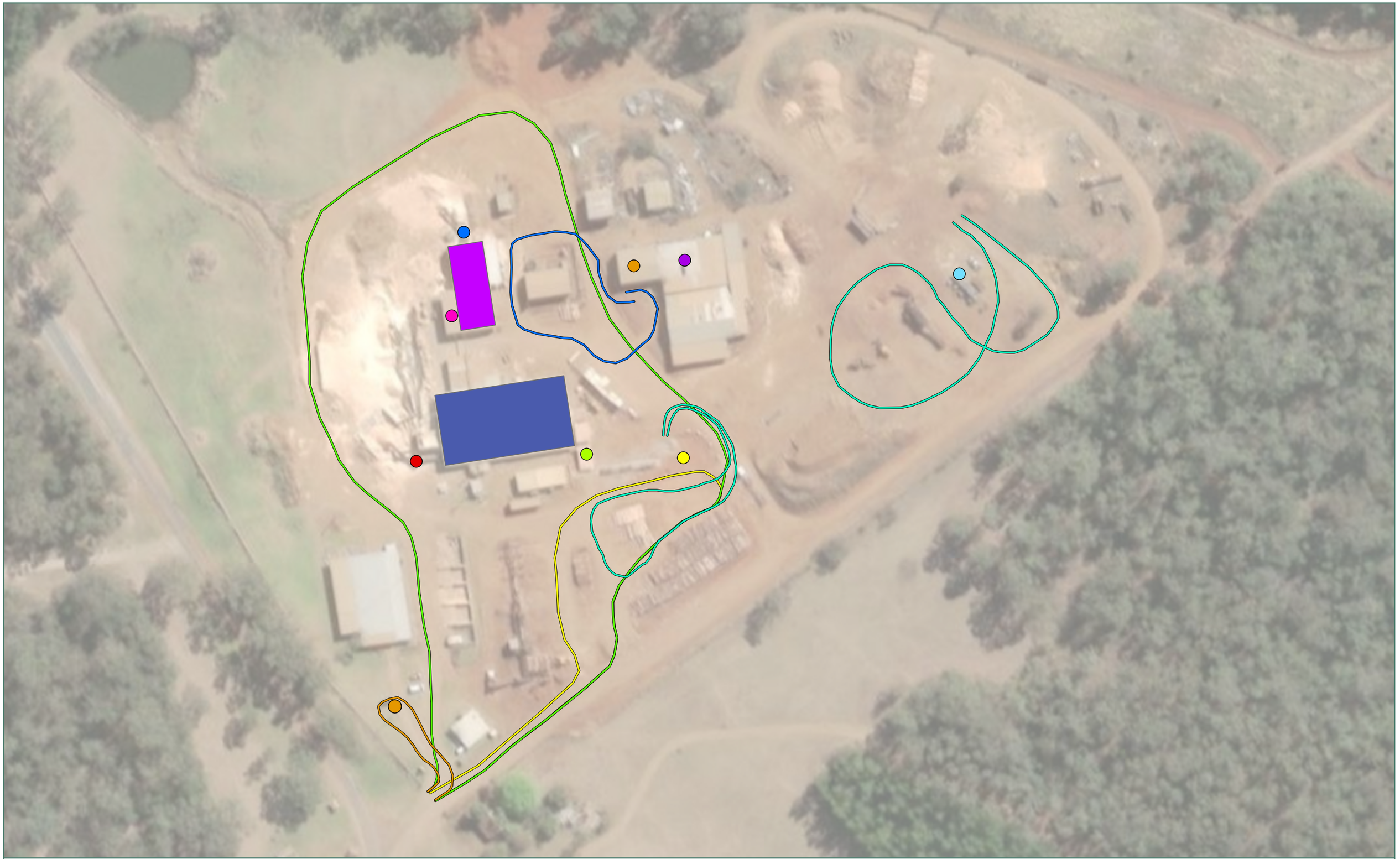
The sound power levels for the proposed equipment were measured on-site and are presented in Section 5.3.1.3. The locations of the sources are shown in Figure 3.

6.8 Model verification

Predicted and measured level at the attended measurement location in the driveway of receptor R1 are listed in Table 9. Predicted levels are identical to the measured levels and the model is considered suitable for purpose.

Table 9: Model verification

Location	Measured $L_{Aeq,15min}$, dB(A)	Predicted $L_{Aeq,15min}$, dB(A)	Verified
Driveway R1	51	51	Yes



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0 15 30 45 60 Meters

Legend

Plant/Equipment

- Big Chipper (7am-4pm)
- Dip Tank (7am-4pm)
- Shaper (7am-4pm)
- Docking (7am-4pm)
- Trommel (7am-4pm)
- Small Chipper (7am - 4pm)
- Debarking (7am - 4pm)
- Debarking Kick-off (7am - 4pm)
- Car door slam (6am-7am)
- Sawmill One (7am - 4pm)
- Sawmill Two (7am-4pm)
- Compact Wheel Loader (6am - 4pm)
- Log Haul Route (6am - 4pm)
- Wood Chip Haul Route (6am - 4pm)
- Forklift Route (6am - 4pm)
- Light Vehicle Route (6am-7am)

V25-147 Taromeo Sawmill - Figure 3

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
Site layout including plant/equipment measured with hours of operation
25st August 2025

7 Results

The predicted noise levels at the nearest residential receptors are shown in Table 10. Predicted noise levels are at 1 m from the most exposed façade, at a height of 1.8 m, and include façades reflections.

Table 10: Predicted noise levels - outdoor

Receptor	Predicted noise levels, dB(A)			Criteria
	Daytime $L_{Aeq,1hr}$	Night-time $L_{Aeq,1hr}$	Night-time L_{Amax}	
R1	50	36	38	Daytime: 50 dB(A) $L_{Aeq,1hr\ outdoor}$
R2	45	29	34	
R3	42	28	33	
R4	40	26	31	
R5	44	27	31	
R6	35	23	27	
R7	39	27	31	
R8	38	23	26	

Predicted noise levels at the most exposed façade of the nearest residential receptors are predicted to comply with the outdoor noise criterion of 50 dB(A) $L_{Aeq,1hr}$ during daytime.

The most impacted receptor is R1 and internal noise levels will be calculated for the most exposed room (i.e. the east facing master bedroom). Predicted octave band levels outdoor and indoor are detailed in Table 11. As a worst-case scenario, the outdoor transmission of the weakest façade with the window open is considered, which achieved a façade transmission loss of -17 to -19 dB.

Table 11: Façade transmission loss calculation

Predicted noise levels, dB(A)	Location	Octave band, dB(A)								Over-all, dB(A)	Loss, dB(A)
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz		
Daytime $L_{Aeq,1hr}$	Outdoor, 1 m from the most exposed facade	28	30	32	40	47	47	34	34	**50**	-
Night-time $L_{Aeq,1hr}$		26	20	16	23	29	27	11	11	**33**	-
Night-time L_{Amax}		31	25	21	28	35	32	16	16	**38**	-
Weakest façade, window open		14	19	18	22	19	20	21	19	-	-
Daytime $L_{Aeq,1hr}$	Indoor	14	11	14	18	28	27	13	15	**31**	**-19**
Night-time $L_{Aeq,1hr}$		12	<5	<5	<5	10	7	<5	<5	**15**	**-18**
Night-time L_{Amax}		17	6	<5	6	16	12	<5	<5	**21**	**-17**

Predicted indoor noise levels are shown in Table 12. It is noted that levels at receptors R2 to R8 are estimated based on a visual inspection conducted from the road indicating that all buildings constructions appear to be similar to R1 (i.e. timber cladding or brick veneer external layer with stud walls and plasterboard or timber panels indoors with insulation in the cavity). A conservative 5 dB sensitivity risk factor is considered for other receptors.

Table 12: Predicted noise levels - indoor

Receptor	Predicted noise levels, dB(A)			Criteria
	Daytime $L_{Aeq,1hr}$	Night-time $L_{Aeq,1hr}$	Night-time L_{Amax}	
Transmission loss outdoor to indoor at R1	**-19**	**-18**	**-17**	
Transmission loss outdoor to indoor at R2 - R8	**-19 to -14**	**-18 to -13**	**-17 to -12**	
R1	31	15	21	Daytime: 35 dB(A) $L_{Aeq,1hr\ indoor}$ Night-time 30 dB(A) $L_{Aeq,1hr\ indoor}$ 45 dB(A) $L_{Amax\ indoor}$
R2	26 to 31	11 to 16	17 to 22	
R3	23 to 28	10 to 15	16 to 21	
R4	21 to 26	8 to 13	14 to 19	
R5	25 to 30	9 to 14	14 to 19	
R6	16 to 21	<10	10 to 15	
R7	20 to 25	9 to 14	14 to 19	
R8	19 to 24	<10	9 to 14	

Predicted noise levels indoors at the nearest residential receptors are predicted to comply with the indoor noise criteria of 35 dB(A) $L_{Aeq,1hr}$ during daytime, 30 dB(A) $L_{Aeq,1hr}$ and 45 dB(A) L_{Amax} during night-time.

8 Recommendations

The following key noise management measures are recommended to minimise noise emissions from the operation of the site:

- All plant and equipment associated with timber milling, woodchipping and maintenance works shall be restricted to the daytime period (7:00 am to 4:00 pm). The only noise sources that shall be operational during the night-time period (6:00 am to 7:00 am) are light and heavy vehicles, 30t excavator, wheeled loader and mini loader.
- Maintain plant and equipment in accordance with the manufacturer's requirements to minimise noise emissions. When purchasing new equipment, models with low noise emissions shall be preferred where practicable.
- No unnecessary revving or idling of engines on mobile and stationary machines and shut down any equipment not in use.
- Minimise the drop height of materials when transferring as far as reasonably practicable (e.g., loading and unloading vehicles).
- Note - Ongoing noise monitoring is not required for the following reasons:
    - Sleep disturbance at nearby sensitive receptors is a low risk due to the daytime operating hours of the timber milling and woodchipping activities.
    - There is no history of noise complaints at the nearest and most sensitive receptor (Receptor 1).
    - The predicted cumulative noise levels complied with the relevant noise assessment criteria.
    - Pro-Pine shall proactively manage noise emissions as outlined above.

9 Conclusion

ViridAU was commissioned by Pro-Pine to conduct a noise impact assessment for a Material Change of Use application to increase timber processing capacity for an existing sawmill at 256 Old Esk Road, Taromeo, QLD 4306.

The site is currently approved for up to 20,000 tpa and Pro-Pine has proposed to increase the timber processing capacity to 60,000 tpa with no changes to the existing infrastructure.

The nearest residential receptors are located between 360 and 900 m to the west and north-west of the site.

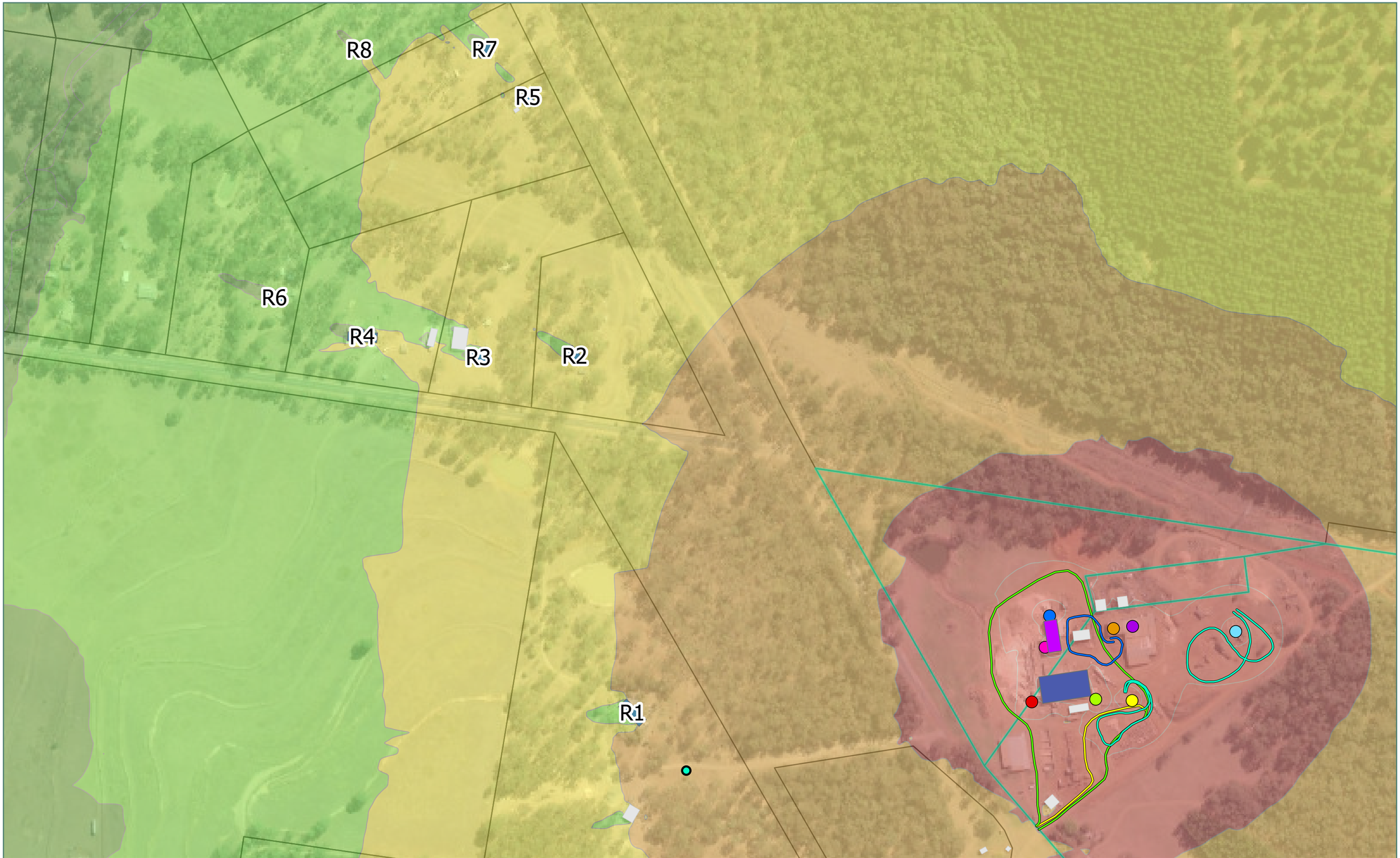
Worst-case operations for daytime and night-time were modelled in SoundPLAN. Sound power levels for all noise sources were derived from on-site noise measurements and were corrected to account for tonality and impulsiveness. The model was verified with attended measurements in the driveway of the most affected receptor.

The predicted noise levels at all residential receptors comply with the outdoor Acoustic Quality Objectives in the Environment Protection (Noise) Policy 2019.

Sound insulation testing was conducted at the most exposed receptor to derive specific outdoor to indoor transmission losses with the windows open. Predicted internal noise levels calculated with the measured outdoor to indoor sound transmission losses comply with the indoor Acoustic Quality Objectives in the Environment Protection (Noise) Policy 2019 for the daytime and night-time period, and with the sleep disturbance criterion.

The proposed increase of the timber processing capacity to 60,000 tpa is predicted to achieve compliance with the relevant noise criteria.

Appendix A. Noise Contour Maps



VividAU

N

0 40 80 120 160 Meters

Legend

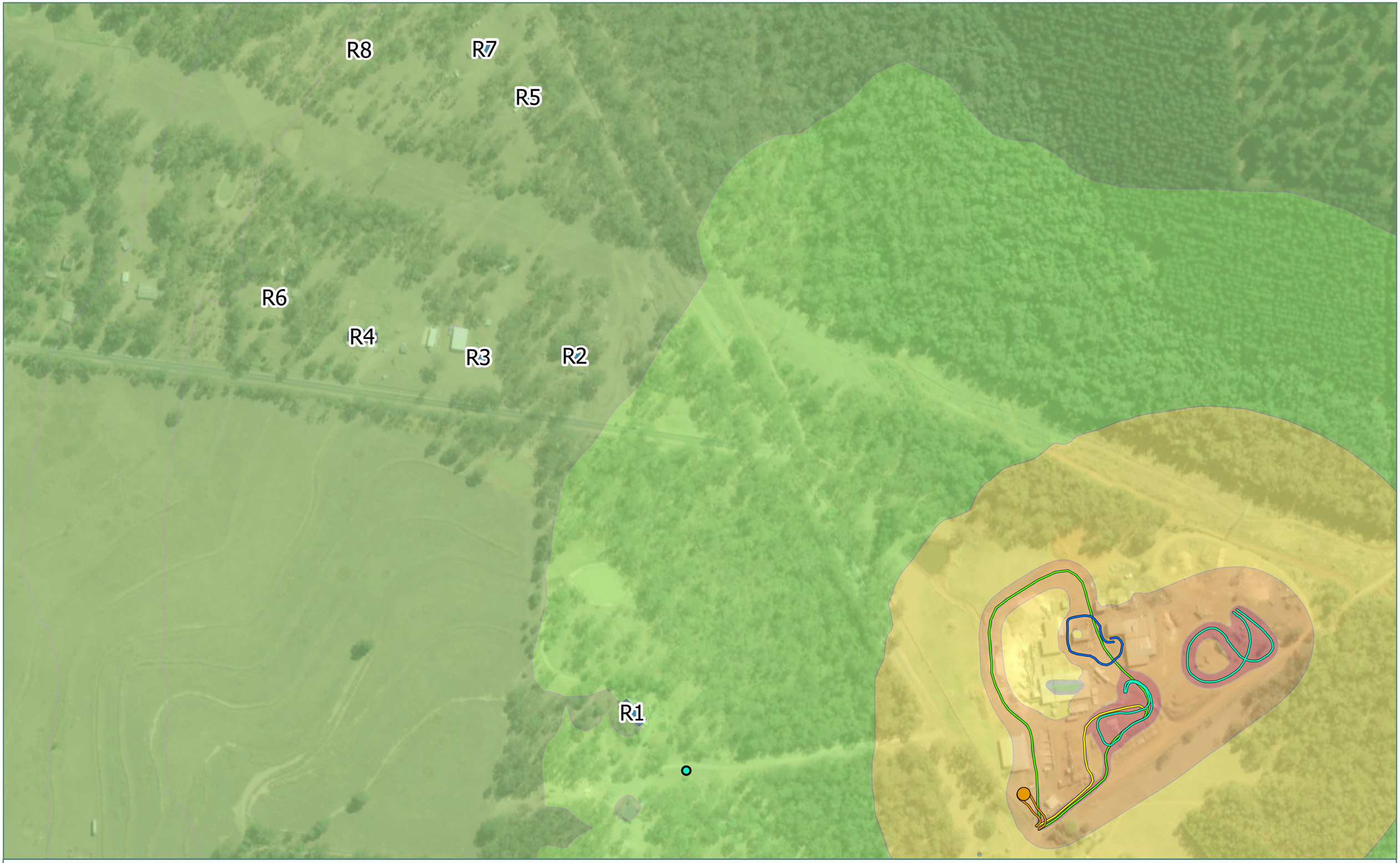
Calculated LAeq 1 hour noise level
- Above 60 dB(A)
- 50 to 60 dB(A)
- 40 to 50 dB(A)
- 30 to 40 dB(A)
- Below 30 dB(A)

Active Plant/Equipment
- Big Chipper
- Dip Tank
- Shaper
- Docking
- Trommel
- Small Chipper
- Debarking
- Debarking Kick-off
- Sawmill One
- Sawmill Two
- Compact Wheel Loader
- Log Haul Route
- Wood Chip Haul Route
- Forklift Route

Project Information
- Subject land parcel
- DCDB
- Attended monitoring location
- Residential Receptor
- Shed or Garage

V25-147 Taromeo Sawmill, Daytime Noise Environment, LAeq - Figure 4

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
LAeq 1 hour daytime (7am-6pm) noise contours calculated at 1.8m
21st August 2025



V25-147 Taromeo Sawmill, Nighttime Noise Environment, LAeq - Figure 5

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
LAeq 1 hour Nighttime (6am-7am) noise contours calculated at 1.8m
25st August 2025

R8
R7
R5
R6
R4
R3
R2
R1

ViridAU

N

0 40 80 120 160 Meters

Legend

Calculated LAmax noise level
- Above 60 dB(A)
- 50 to 60 dB(A)
- 40 to 50 dB(A)
- 30 to 40 dB(A)
- Below 30 dB(A)

Active Plant/Equipment
- Vehicle Door Slams
- Light Vehicle Route
- Compact Wheel Loader
- Log Haul Route
- Wood Chip Haul Route
- Forklift Route

Project Information
- Subject land parcel
- DCDB
- Attended monitoring location
- Residential Receptor
- Shed or Garage

V25-147 Taromeo Sawmill, Nighttime Noise Environment, LAmax - Figure 6

Land parcel for development (228-229/SP136942), 238 Old Esk Rd, Taromeo QLD 4306
V25-147 Taromeo Sawmill Noise Impact Assessment
LAmax Nighttime (6am-7am) noise contours calculated at 1.8m
25st August 2025

Appendix B. Calibration certificates

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **XL2 Audio and Acoustic Analyzer**
- Serial Number: **A2A-25780-E1**

- Certificate Issued: **22 May 2025**
- Certificate Number: **45799-A2A-25780-E1**

- Results: **PASSED**
  (for detailed report see next page)

Tested by: M. Frick

Signature:

Stamp:

NTi Audio AG
Im alten Riet 102
LI - 9494 Schaan
www.nti-audio.com

Calibration of: XL2 Audio and Acoustic Analyzer
Serial Number: A2A-25780-E1
Date: 22 May 2025

- Detailed Calibration Test Results:

		reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty[2]
RMS Level @ 1kHz, XLR Input		0.1	**0.100**	V	≤0.1%	±0.5%	±0.10%
		1	**0.999**	V	-0.1%	±0.5%	±0.09%
		10	**9.984**	V	-0.2%	±0.5%	±0.09%
Flatness, XLR Input[1]	20 Hz	1	**0.995**	V	-0.5%	±1.1%	±0.09%
	20 kHz	1	**1.003**	V	0.3%	±1.1%	±0.09%
Frequency		1000	**999.99**	Hz	≤0.003%	±0.003%	±0.01%
Residual Noise	XLR		**< 2 uV**			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input			**-100.1**	dB		typ. -100 dB	±0.50%

- Test Conditions: Temperature: **23.6** °C
  Relative Humidity: **45** %

- Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
  Last calibration: 01.10.2024, Next calibration: 01.10.2025
  Calibrated by ELCAL to the national standards maintained
  at Swiss Federal Office of Metrology. SCS 0002

- FX100 Audio Analyzer, Serial No. 10408
  Last Calibration: 11.10.2024, Next Calibration: 11.10.2025
  Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
  Last Calibration: 04.06.2024, Next Calibration: 04.06.2025
  which is calibrated by ELCAL to national standards maintained
  at Swiss Federal Office of Metrology. SCS 002

[1] The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

[2] The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **XL2 Audio and Acoustic Analyzer**
- Serial Number: **A2A-25781-E1**

- Certificate Issued: **22 May 2025**
- Certificate Number: **45799-A2A-25781-E1**

- Results: **PASSED**
  (for detailed report see next page)

Tested by: M. Frick

Signature:

Stamp:

NTi Audio AG
Im alten Riet 102
LI - 9494 Schaan
www.nti-audio.com

Calibration of: XL2 Audio and Acoustic Analyzer
Serial Number: A2A-25781-E1
Date: 22 May 2025

- Detailed Calibration Test Results:

		reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty[2]
RMS Level @ 1kHz, XLR Input		0.1	**0.100**	V	≤0.1%	±0.5%	±0.10%
		1	**0.998**	V	-0.2%	±0.5%	±0.09%
		10	**9.970**	V	-0.3%	±0.5%	±0.09%
Flatness, XLR Input[1]	20 Hz	1	**0.994**	V	-0.6%	±1.1%	±0.09%
	20 kHz	1	**1.002**	V	0.2%	±1.1%	±0.09%
Frequency		1000	**1000.00**	Hz	≤0.003%	±0.003%	±0.01%
Residual Noise	XLR		**< 2 uV**			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input			**-100.5**	dB		typ. -100 dB	±0.50%

- Test Conditions: Temperature: **23.6** °C
  Relative Humidity: **44.8** %

- Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
  Last calibration: 01.10.2024, Next calibration: 01.10.2025
  Calibrated by ELCAL to the national standards maintained
  at Swiss Federal Office of Metrology. SCS 0002

- FX100 Audio Analyzer, Serial No. 10408
  Last Calibration: 11.10.2024, Next Calibration: 11.10.2025
  Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
  Last Calibration: 04.06.2024, Next Calibration: 04.06.2025
  which is calibrated by ELCAL to national standards maintained
  at Swiss Federal Office of Metrology. SCS 002

[1] The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

[2] The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.