

Noise Impact Assessment

Commercial Development

1604 Wynnum Road, Tingalpa

Wylde Co Pty Ltd


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Executive Summary

ATP Consulting Engineers was engaged to prepare a noise impact assessment (NIA) report in support of development application to Brisbane City Council for establishment of the proposed commercial development at 1604 Wynnum Road in Tingalpa.

Detailed noise propagation modelling was carried out considering all potential noise emissions from the development including staff and visitor car parking, heavy and light vehicle movements on site, noise breakout from the mechanical plant area, and outdoor patron noise from the outdoor food and beverage areas.

This is the Issue 2 of the assessment, updated to include the noise impacts from two outdoor food and beverage areas located to the south and west of the proposed commercial development.

The calculated operational noise levels were assessed against the relevant noise criteria from *Centre and mixed use code* under Brisbane City Plan 2014.

The results of the operational noise assessment indicate that the noise emissions from the proposed commercial development once fully established will comply with the noise criteria from the Brisbane City Plan 2014, provided the recommended noise mitigation measures are fully implemented.

To ensure ongoing protection of the noise amenity at the nearest noise sensitive receivers, the following noise mitigation measures are recommended:

- The operating hours of the proposed commercial development must be limited between 6:00am to 9:00pm.
- Refuse collection must be carried out during daytime (7:00am to 6:00pm) only.
- Deliveries must be carried out during daytime (7:00am to 6:00pm) only.
- ATP recommends construction of a 1.8m high noise barrier fence (acoustic fence) along the western boundary of the development, extending to the full extent between Units 16 and 21 of 1600 Wynnum Road, as shown in Figure 6.1, to prevent the operational noise intrusion to the adjoining residential premises.
- The acceptable form of construction for the noise barrier fence is as follows:
 - The noise barrier fence must be constructed of a material with minimum superficial mass of 12.5kg/m², such as concrete blockwork, brick, autoclaved aerated concrete, minimum 9mm thick compressed fibre cement sheeting, minimum 25mm thick overlapping timber palings or approved modular wall system by Modular Walls, Poly-Tek or equivalent.
 - There shall be no gaps on the surface and at the base of the noise barrier fence.

- All mechanical plant (air-conditioning condenser units and the refrigeration condenser unit) must be located within the dedicated mechanical plant area. Should there be a need to locate the mechanical plant to a location other than the dedicated mechanical plant area or should the breakout sound pressure level of the plant, measured at 1m from the acoustic louvered fencing, be greater than those presented in the Table 5.2, then the mechanical plant and equipment needs to be designed to comply with the noise criteria presented in Section 4 and an assessment by a qualified consultant should be conducted prior to installation. The assessment should include verification that the plant and equipment installed complies with the criteria as stated above.
- Lastly, the following general recommendations must be considered for the design and installation of all mechanical equipment:
 - Select equipment with low sound power level;
 - Provide acoustic lining to inside of ventilation ducts and/or provide duct silencers;
 - Where equipment has directional noise characteristics, point equipment away from the noise sensitive areas;
 - Construct solid acoustic screens or enclosures around equipment to screen it from noise sensitive areas;
 - Wherever possible, the mechanical plants should be operated on a timer to limit noise emissions during evening and night-time; and
 - The mechanical plants must be isolated from the building structure using appropriate vibration isolation mounts to mitigate structure borne noise

Provided the noise mitigation measures recommended in this report are fully implemented in the detailed design and construction, there are no further acoustic constraints on the establishment of the proposed commercial development at 1604 Wynnum Road in Tingalpa.

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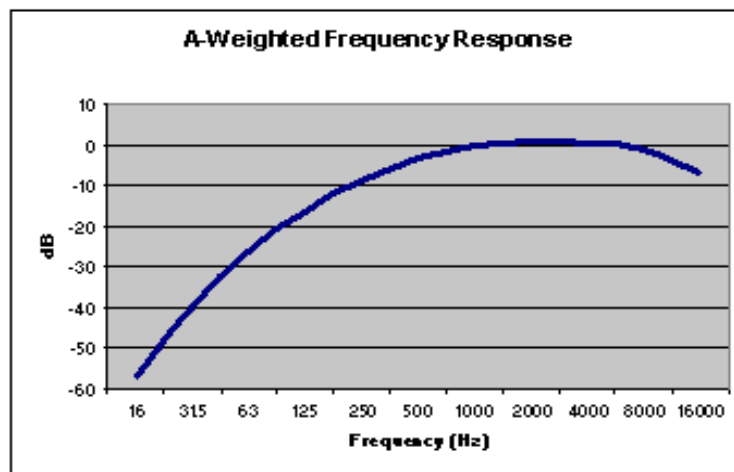
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Acoustics Glossary

A-weighting

The A-weighting filter suppresses low frequency sounds and some of the higher frequency sounds to which the human ear is less sensitive. It is a correction to sound pressure levels to mimic the response of the human ear at low sound pressure levels. The A-weighted sound pressure level correlates well with the perceived loudness at low sound levels. The A-weighted sound pressure level is used extensively for general purpose noise measurements.



AADT

Annual average daily traffic. The total traffic flow over a 24-hour period along a specific segment of road.

Broadband sound

Sound distributed across the whole audible frequency range.

dB(A)

The A-weighted sound pressure level.

Decibel (dB)

(1) Degree of loudness (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level. A unit used to express relative difference in power or intensity, between two acoustic signals, equal to ten times the common logarithm of the ratio of the two levels, one of which is a standard reference value.

Façade adjusted

The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the building's façades are "façade-adjusted".

Fast time-weighting

The Fast ("F") time-weighting is defined in AS 1259.1-1990. Instruments with F time weighting use a time constant of 125 milliseconds in their exponential averaging circuit.

Hz (Hertz)

Hertz is the standard measure of the frequency of oscillations in a wave motion. The frequency is most often measured in cycles per second (cps) or Hertz (Hz). Frequency of 1 Hz is one cycle per second.

Impulsive noise and impulsiveness adjustment

Noise having a high peak of short duration or a sequence of such peaks. Impulsive noise is present if the difference in A-weighted maximum noise levels between fast response and impulse response is greater than 2dB. Impulsiveness adjustment (penalty) of up to 5dB should be applied to the component noise level.

L_{Aeq,T}	“Average-energy” sound level used in situations where sound varies over time. L _{Aeq,T} is the A-weighted sound pressure level that has the same energy as the fluctuating sound over the time period T sec.
L_{A01,T}	Measure of the maximum sound level. L _{A01,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 1% of the measurement time T.
L_{A10,T}	L _{A10,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 10% of the measurement time T.
L_{A10,18hr}	The arithmetic average of the 18 individual L _{A10,1hr} values between 6:00am and 12:00am (midnight). It is a derived descriptor which is used as a main traffic noise descriptor in the Calculation of Road Traffic Noise (CoRTN) procedure developed by the UK Department of Environment, Welsh Office, HMSO, 1988
L_{A90,T}	Background sound level. L _{A90,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T.
L_{Amax,T}	Maximum A-weighted sound pressure level, measured using Fast time constant (125 ms), over the measurement time T.
Noise	Unwanted sound.
Octave bands and 1/3 octave bands	<p>A range of frequencies whose upper frequency limit is twice that of its lower frequency limit. In acoustics, the audible spectrum (20Hz to 20kHz) is divided into 10 parts (octaves) with centre frequencies of 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.</p> <p>For more detailed frequency analysis, octave bands are further divided into more discrete bands. For examples, 1/3 octaves bands are where each octave band is divided into three parts.</p> <p><small>IEC 61260:1995, <i>Electroacoustics — Octave-band and fractional-octave band filters</i></small></p>
Rating Background Level (RBL)	Lowest tenth percentile of the L _{A90,T} background noise levels over an assessment period.
Single Event Maximum (SEM)	The arithmetic average of L _{AFmax} levels from the highest 15 single events (i.e. rolling stock passby) over a given 24-hour period.
Sound power	The sound energy radiated per unit time by a sound source in all directions, measured in Watts (W).
Sound Power Level, L_w (SWL)	The sound power level in decibels (dB) is 10 times the base 10 logarithm of the ratio of the sound power in W to the reference sound power of 1 x 10 ⁻¹² W (hearing threshold).
Sound pressure	The difference between the pressure caused by a sound wave and the ambient pressure of the medium the sound wave is passing through. Measured in Pascals (Pa).
Sound Pressure Level, L_p (SPL)	The sound power level in decibels (dB) is 20 times the base 10 logarithm of the ratio of the sound pressure in Pa to the reference sound pressure of 2 x 10 ⁻⁵ Pa (hearing threshold).

**Tonal noise,
tonality and
tonality
adjustment**

Tonal noise is characterised by one or more distinct frequency components (“tones”) that emerge audibly from the total sound. For example, distinct tones may be emitted by fans, saws, grinders and other equipment. Tonal noise is generally far more annoying than non-tonal noise. Presence of tonal sound (“tonality”) can be identified by analysing the sound levels in adjacent 1/3 octave bands.

AS1055.1-1997 and the DES Noise Measurement Manual 2013 provides guidance on how tonality should be assessed. If tonal components are clearly audible and they can be detected by 1/3 octave analysis (1/3 octave band exceeds neighbouring bands by at least 5dB), tonality adjustment (penalty) of up to 5dB should be applied to the component noise level.

**Weighted Sound
Reduction Index
(R_w)**

A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies.

1. Introduction

1.1 Project Background

ATP Consulting Engineers was engaged to prepare a noise impact assessment (NIA) report in support of a development application to Brisbane City Council (BCC) for establishment of the proposed commercial development at No. 1604 Wynnum Road in Tingalpa.

The purpose of this report is to assess potential noise impacts from the activities of the proposed development to the nearest noise sensitive receivers and is prepared in support of a Development Application (DA) to BCC.

This assessment is carried out in accordance with Brisbane City Plan (BCP) 2014.

This is the issue 2 of the assessment, prepared in response to an information request from Brisbane City Council (BCC), dated 12 March 2026. Summary of the information request by the BCC planning team and the responses by ATP area presented in Table 1.1.

Table 1.1 Summary of Response to BCC Information Request

Information Request from BCC	Response
Provide further information to clarify if the proposed food and drink outlets are likely to provide external dining areas and if so, provide details on how the amenity impacts will be mitigated as per AO7/PO7 of the Centre or mixed use code.	The Noise Impact Assessment report was amended to assess the potential noise impacts of the outdoor dining and beverage areas in accordance with Tables 9.3.3.3.F and 9.3.3.3.H of Centre and mixed use code from the <i>BCP2014</i> to demonstrate the compliance of AO7/PO7.

1.2 Study Objectives

Study objectives are as follows:

- Establishment of operational noise criteria as per BCP2014 through undertaking noise logging at the site to ascertain existing background noise levels and ambient noise level trends.
- Preparation of a 3D operational noise propagation model using SoundPLAN, to carry out calculations of the noise emissions from the activities associated with the proposed commercial development.
- Assessment of the operational noise levels against the noise criteria established as per BCP2014.
- Recommendation of noise mitigation measures to prevent noise impacts on the nearest noise sensitive places.

1.3 Proposed Development

The proposed commercial development is to be constructed at Lot 1 on RP64573, No. 1604 Wynnum Road in Tingalpa, which is zoned as Emerging Community under BCP2014.

The location of the proposed commercial development is presented in Figure 1.1.

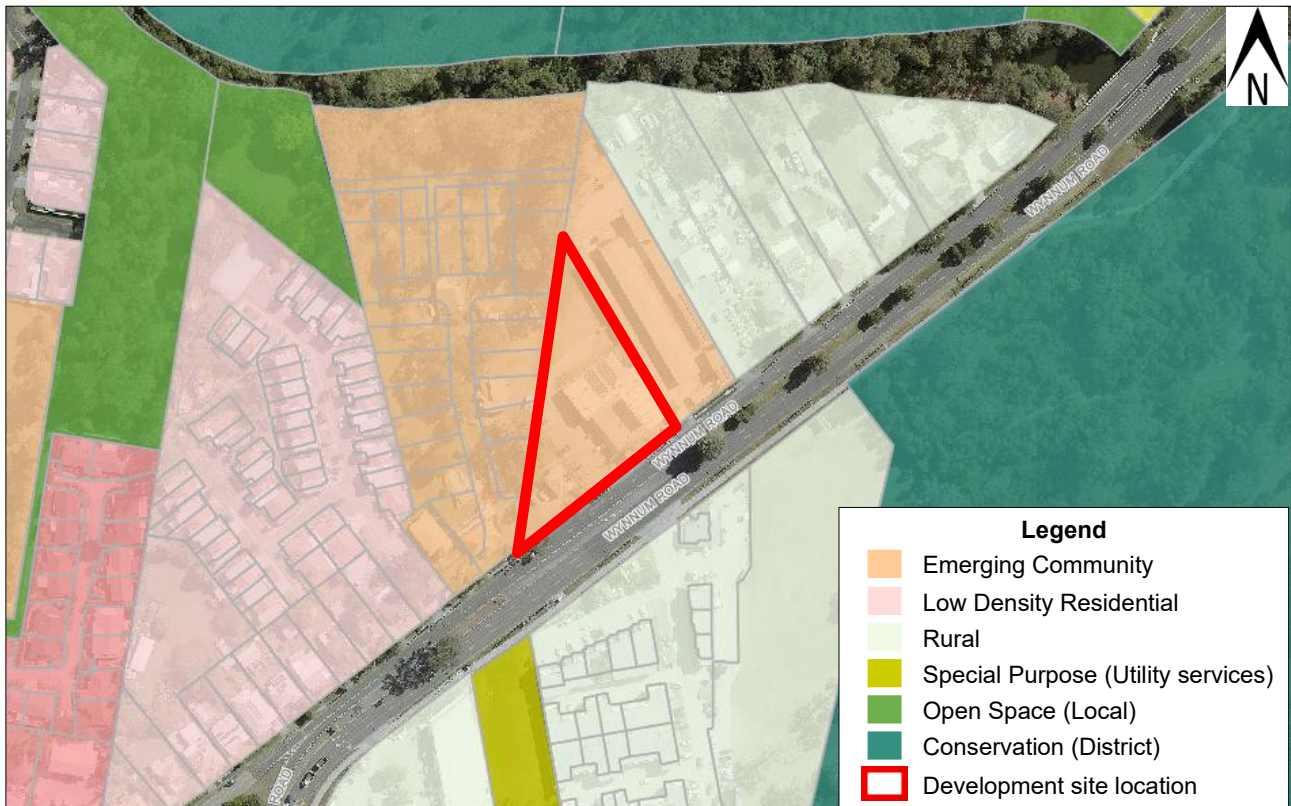


Figure 1.1 Site location

The proposed commercial development will consist of the following:

- 52 outdoor parking spaces.
- Single-storey commercial building with 777 m² total GFA.
 - Tenancy 01: 427 m² GFA;
 - Tenancy 02: 100 m² GFA; and
 - Tenancy 03: 100 m² GFA.
- Outdoor mechanical plant area.
- Two (2) outdoor food and beverage area.
- Services/loading area for waste collection/deliveries.

The proposed development layout is presented in Appendix A of the report.

The proposed commercial development is intended to operate between 6:00am to 9:00pm.

2. Existing Noise Amenity

2.1 Noise Measurement Location

Noise measurements were carried out to obtain information about the existing background noise levels at the proposed development site. The noise measurement methodology is summarised in Table 2.1.

Table 2.1 Background noise levels

Relevant legislation, standards, and guidelines	<p>The noise measurements were carried out in accordance with:</p> <ul style="list-style-type: none"> • Australian Standard AS 1055-2018 (<i>Acoustics – Description and measurement of environmental noise</i>); and • DES <i>Noise Measurement Manual</i> V4.01 (10 March 2020)
Measurement location	<p>Background noise measurements were carried out at the western boundary of the proposed development site, as presented in Figure 2.1.</p> <p>Photos showing the noise measurement location are presented in Appendix B.</p>
Measurement period	<p>Continuous unattended background noise measurements were carried out 24 hours a day from 12 to 20 November 2025.</p>
Measurement equipment	<p>The following sound measurement equipment was used:</p> <ul style="list-style-type: none"> • Environmental noise logger – EL315 (serial no. 15-203-537); and • Calibration – Pulsar Model 105 (serial no. 78352). <p>The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A).</p>
Meteorological conditions	<p>The weather conditions during the monitoring period were mostly fine. However, significant rainfall was recorded on 14 and 15 November 2025, and the data from these days were excluded from the assessment.</p> <p>Full meteorological data¹ for the monitoring periods are presented in Appendix C.</p>
Analysis of data	<p>The noise measurement data was analysed to determine the following traffic and operational noise descriptors:</p> <ul style="list-style-type: none"> • L_{Aeq,T}: “Average-energy” sound level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am); • L_{A90,T}: Background noise level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am); and • RBL: Rating Background Level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am). The RBL was calculated from the L_{A90,15min} noise levels using the procedure described in the Noise impact assessment planning scheme policy under BCP2014.

¹ Bureau of Meteorology (BoM) daily weather observations as recorded at the Brisbane Aero meteorological station (040842).



Figure 2.1 Noise measurement location

2.2 Unattended Noise Measurement Results

The results of the unattended noise measurements undertaken from 12 to 20 November 2025, are presented in Table 2.2.

Table 2.2 Measured background noise levels

Date	Background noise levels dB(A)						Assessment Background Levels (ABL) dB(A)		
	L _{eq,11hr} Day	L _{eq,4hr} Evening	L _{eq,9hr} Night	L _{90,11hr} Day	L _{90,4hr} Evening	L _{90,9hr} Night	L _{90,11hr} Day	L _{90,4hr} Evening	L _{90,9hr} Night
12 Nov 2025 (Wed)	—	60	51	—	47	40	—	43	35
13 Nov 2025 (Thu)	62	56	50	51	48	41	48	42	36
14 Nov 2025 (Fri)	61	61	53	51	53	42	49	46	39
15 Nov 2025 (Sat)	59	58	51	49	53	41	48	48	39
16 Nov 2025 (Sun)	57	55	51	47	46	43	44	45	40
17 Nov 2025 (Mon)	60	59	54	52	49	46	50	47	40
18 Nov 2025 (Tue)	59	57	52	51	47	42	50	43	38
19 Nov 2025 (Wed)	58	56	51	50	46	42	48	44	37
Arithmetic average	59	57	52	50	47	42	—	—	—
Rating Background Level (RBL)							48	43	38

 Rainfall recorded on this day. Data measured during periods of inclement weather was disregarded in the determination of background noise levels.

3. Nearest Noise Sensitive Places

The nearest noise sensitive places to the proposed commercial development at No. 1604 Wynnum Road in Tingalpa are presented in Table 3.1.

Table 3.1 Nearest noise sensitive places

Street Address	Zone	Use
Unit 1, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 15, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 16, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 17, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 18, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 19, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 20, No. 1600 Wynnum Road	Emerging Community	Residential
Unit 21, No. 1600 Wynnum Road	Emerging Community	Residential

Please note that No. 1631 Wynnum Road, located to the south of the proposed site, is a retail plaza situated within *Rural* zone, which is therefore not considered as a noise sensitive receiver under the definition of BCP2014.

The nearest noise sensitive premises are identified in Figure 3.1, overlaid over the zoning map from the BCP2014.



Figure 3.1 Nearest noise sensitive places

4. Noise Criteria – BCP2014

As per Centre or mixed use code under BCP2014, there is a requirement for consideration of the potential noise impacts from the proposed commercial development to the nearby noise sensitive receivers.

The relevant performance outcomes and acceptable outcomes from the Table 9.3.3.3.A of the Centre or mixed use code for the development under BCP2014 are presented in Table 4.1 below.

Table 4.1 Performance outcomes & acceptable outcomes

Performance outcomes	Acceptable outcomes
<p>PO1 Development:</p> <ul style="list-style-type: none"> a. has hours of operation which are controlled so that the use does not detrimentally impact on the amenity of adjoining residents; b. does not result in noise emissions that exceed the noise (planning) criteria in Table 9.3.3.3.F, low frequency noise criteria in Table 9.3.3.3.G and night-time noise criteria in Table 9.3.3.3.H in a sensitive zone or a nearby sensitive use, except music noise where located in a Special entertainment precinct identified in a neighbourhood plan. <p><i>Note – A noise impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.</i></p>	<p>AO1.1 Development:</p> <ul style="list-style-type: none"> a. for accommodation activities, dwelling unit or emergency services has unlimited hours of operation; b. for a club, if licensed, bar, function facility, hotel or nightclub entertainment facility does not generate noise which is clearly audible and detectable, or impacts on the amenity of a resident, in a dwelling or other sensitive use; <p><i>Note – Development for a club, if licensed, bar, function facility, hotel or nightclub entertainment facility is not expected to achieve this outcome.</i></p> <ul style="list-style-type: none"> c. for any other use: <ul style="list-style-type: none"> i. where in the Principal centre zone or Major centre zone has unlimited hours of operation; ii. where in the District centre zone, Neighbourhood centre zone or Mixed use zone: <ul style="list-style-type: none"> A. has hours of operation, including for deliveries, which are limited to 6am to 10pm; or B. does not generate noise which is clearly audible and disturbing in a dwelling or other sensitive use; iii. where in any other zone: <ul style="list-style-type: none"> A. has hours of operation, including for deliveries, which are limited to 6am to 8pm; or B. does not generate noise which is clearly audible and disturbing in a dwelling or other sensitive use. <p>AO1.2 Development ensures mechanical plant or equipment is acoustically screened from an adjoining sensitive use.</p> <p><i>Note – Mechanical plant includes generators, motors, compressors and pumps e.g., air-conditioning, refrigeration or cold room motors</i></p>

<p>PO7</p> <p>Development mitigates impacts on residential amenity in or adjoining the building through:</p> <ol style="list-style-type: none"> a. providing an outdoor dining area that is appropriately located; b. ensuring external dining and entertainment areas are visually and acoustically screened from an adjoining dwelling. 	<p>AO7</p> <p>Development provides for external dining or entertainment areas to be:</p> <ol style="list-style-type: none"> a. located in or directly adjacent to the public realm; b. visually and acoustically screened from an adjoining dwelling.
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To demonstrate the compliance of PO1, which is presented in Table 4.1, the relevant noise criteria including Table 9.3.3.3.F – Noise (planning) criteria, and Table 9.3.3.3.H – Night-time noise criteria are presented in Tables 4.2 and 4.3.

To demonstrate the compliance of PO7, the noise impacts from the outdoor dining and beverage areas have been assessed, together with other noise sources, against the criteria outlined in Tables 4.2 and 4.3 of this report.

According to SC6.21 – *Noise impact assessment planning scheme policy* of BCP2014, a low-frequency noise assessment is often not required where there is no significant contribution from low-frequency noise sources associated with the proposed development. As such, Table 9.3.3.3.F – Low-frequency noise criteria will not be assessed in this case.

4.1 BCP2014 – Noise (planning) Criteria

The noise criteria from the Table 9.3.3.3.F – Noise (planning) criteria of *Centre or mixed use code* assessable at the boundary and façades of relevant zones are presented in Table 4.2.

Table 4.2 Noise (planning) criteria – BCP2014

Criteria location	Time period	Noise criteria	Noise limits
			$L_{Aeq,adj,T}$
Emerging community zone boundary	Day 7am – 6pm	$L_{Aeq,adj,T} \leq RBL \text{ plus } 5dB(A)$, and $L_{Aeq,adj,T} \leq 55$	53
	Evening 6am – 10pm	$L_{Aeq,adj,T} \leq RBL \text{ plus } 5dB(A)$, and $L_{Aeq,adj,T} \leq 50$	48
	Night 10pm – 7am	$L_{Aeq,adj,T} \leq RBL \text{ plus } 5dB(A)$, and $L_{Aeq,adj,T} \leq 45$	43

4.2 BCP2014 – L_{max} Noise Criteria

The noise criteria from the Table 9.3.3.3.H – Night-time noise criteria of *Centre or mixed use code* assessable at the boundary of relevant zone are presented in Table 4.3.

Table 4.3 Night-time noise (L_{Amax}) criteria – BCP2014

Criteria location	Conditions	Criteria	
	Where the existing L _{Aeq,9hr} night at the criteria location is:	Average of the highest 15 single L _{Amax} events over a given night (10pm-7am) period Night	The absolute highest single L _{Amax} event over a given night (10pm-7am) period
Emerging community zone boundary	< 45dB(A)	≤ 50dB(A)	≤ 55dB(A)
	≥ 45dB(A), and ≤ 60dB(A)	≤ L _{Aeq,9hr} (night) + 5dB(A)	≤ L _{Aeq,9hr} (night) + 10dB(A)
	> 60dB(A)	≤ 65dB(A)	≤ 70dB(A)

Based on the results of the background noise measurements, the existing L_{Aeq,9hr} during night-time at the proposed site location is approximately equal to 52dB(A). As such, the project specific L_{Amax} noise criterion is presented in Table 4.4.

Table 4.4 Project specific L_{Amax} criteria

Criteria location	Conditions	Criteria
	Existing L _{Aeq,9hr} night at the criteria location is:	The absolute highest single L _{Amax} event over a given night (10pm-7am) period
Emerging community zone boundary	52dB(A)	≤ 62dB(A) (52 + 10)

5. Noise Propagation Modelling

5.1 Modelling Methodology

A 3D model of the site and surroundings was developed using SoundPLAN noise propagation software considering the proposed activities at the development and location relative to the nearest noise sensitive places.

The calculations were carried out as per the procedures specified in the International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*).

The calculation method for a single frequency is as follows:

$$L_S = [L_W + K_0] - [A_{di} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}]$$

Where:	L_S	Sound pressure for a single frequency
	L_W	Sound power of source
	K₀	Correction for propagation in limited spatial angle
	A_{DI}	Mean directivity correction
	A_{div}	Mean attenuation due to geometrical spreading
	A_{gr}	Mean attenuation due to ground effect
	A_{bar}	Mean attenuation due to screening
	A_{atm}	Mean attenuation due to air absorption
	d_{Lrefl}	Level increase due to reflections
	d_{Lw}	Correction due to source operation time

The noise propagation losses are calculated as a combination of distance attenuation (geometrical spreading), screening, ground attenuation and other factors.

The assumptions and data used in development of the operational noise propagation model are presented in Table 5.1.

Table 5.1 Data and assumptions – Operational noise model

Terrain	<ul style="list-style-type: none"> Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre data was used to determine the elevation of the development relative to the surrounds. Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas.
Buildings	<ul style="list-style-type: none"> The plan of the proposed commercial development is presented in Appendix A.
Noise sources	<ul style="list-style-type: none"> Refer to Sections 5.2 and 5.3 of this report.
Receivers	<ul style="list-style-type: none"> Free field: Receivers were placed at a height of 1.5m above ground level along the applicable lot boundaries at 5m intervals. Noise contour maps: 1m grid spacing was used for calculation of noise contour maps.
Noise mitigation measures	<ul style="list-style-type: none"> The recommended noise control measures are discussed in Section 6 of this report.
Distance attenuation	<ul style="list-style-type: none"> 3D model of the subject site and surroundings was developed using cadastral and survey data using SoundPLAN software. The source-receiver distances and geometrical spreading are automatically calculated in Sound PLAN to a high level of accuracy in accordance with the ISO9613 procedure. Separation distances and distance attenuation values are presented in Appendix E.
Barrier attenuation / screening	<ul style="list-style-type: none"> Screening by walls and roofs was considered in the model. The screening was calculated in Sound PLAN in accordance with the ISO9613 procedure. Barrier attenuation / screening values are presented in Appendix E.
Ground attenuation	<ul style="list-style-type: none"> Sound reflecting surfaces such as pavement are modelled with ground absorption coefficient of 0 (no absorption). Grassed and vegetated areas were modelled with ground absorption coefficient of 1 (100% absorption) in accordance with ISO9613. Ground attenuation values are presented in Appendix E.

5.2 Operational Noise Sources – L_{eq}

Details of the noise sources associated with the proposed development are presented in Table 5.2.

Table 5.2 Details of operational noise sources

Operational noise source	Location	Sound power level dB(A) (re $10^{-12}W$)	Operational scenario ²	Tonality/ impulsiveness
Car parking noise emissions	Carpark	SoundPLAN calculates noise emissions from parking areas based on the number of parking bays, surface type, and the type of parking lot, and considers the impact noise of a car door closing – ‘slam’. Data inputs for car parks are as specified below: Surface Type: Concrete paving Parking bays: 52	<u>6am to 7am:</u> – 0.5 car movement per parking bay per hour. <u>7am to 6pm:</u> – 1 car movement per parking bay per hour. <u>6pm to 9pm:</u> – 0.5 car movement per parking bay per hour.	+5 dB for impulsiveness (e.g. car doors closing)
Patron noise	Outdoor dining and beverage areas	83.5dB(A) for a crowd of 20 people ATP Library: Raised Voices – Hayne, 20 people talking	<u>6am to 7am:</u> – 10 people talking. <u>7am to 7pm:</u> – 15 people talking per hour. <u>7pm to 9pm:</u> – 10 people talking per hour	n/a
Delivery Truck				
Truck movements	Carpark	101 dB(A) ATP Library: Pkw (car) slowly accelerating 20km/h (line source)	<u>7am to 6pm:</u> – 2 truck movements in total.	n/a
Truck idling	SRV parking bay	91 dB(A) ATP Library: Heavy vehicle – idling engine (point source)	<u>7am to 6pm:</u> – 2 trucks in total with each idling for 3 minutes.	+5 dB for tonality
Truck refrigeration plant	SRV parking bay	70 dB(A) ATP Library: Refrigeration condenser	<u>7am to 6pm:</u> – 2 trucks in total with each emitting noise for 15 minutes.	+5 dB for tonality
Reversing beeper	SRV parking bay	92 dB(A) ATP Library: Reversing alarm.	<u>7am to 6pm:</u> – 2 trucks in total with each emitting noise for 10 seconds.	+5 dB for tonality

² Conservative estimates considered in model based on ATP Consulting's extensive experience with similar scenarios.

Refuse Collection				
Refuse collection – Loading	RCV parking bay	92 dB(A) ATP Library: Truck loading (low-lift)	<u>7am to 6pm:</u> – 1 truck loading for 15 seconds	+5 dB for impulsiveness (e.g. bins dropping)
Refuse collection – Truck movements	Carpark	101 dB(A) ATP Library: Pkw (car) slowly accelerating 20km/h (line source)	<u>7am to 6pm:</u> – 1 truck.	n/a
Refuse collection – Truck idling	RCV parking bay	91 dB(A) ATP Library: Heavy vehicle – idling engine (point source)	<u>7am to 6pm:</u> – 1 truck idling for 3 minutes	+5 dB for tonality
Reversing beeper	RCV parking bay	92 dB(A) ATP Library: Reversing alarm.	<u>7am to 6pm:</u> – 1 truck emitting noise for 10 seconds.	+5 dB for tonality
Mechanical Plant				
Mechanical plant	Outdoor mechanical plant area	<p>Cumulative noise of the mechanical plant, including:</p> <ul style="list-style-type: none"> • 3 x air conditioning condenser units; and • 1 x refrigeration condenser unit. <p>Total sound power level when all equipment operating in 100%: 85 dB(A)</p> <p>Breakout sound pressure level measured at 1m away from the acoustic louvered fencing when all equipment operating in 100%: 69 dB(A)</p> <p>The minimum sound reduction in dB of the acoustic louvered fencing is presented in Table 5.3.</p>	<p><u>6am to 9pm:</u> – 3 x AC condenser units – 100% – 1 x refrigeration condenser unit – 100%</p> <p><u>9pm to 6am:</u> – 3 x AC condenser units – 0% – 1 x refrigeration condenser unit – 60%</p>	+5 dB for tonality

The minimum sound reduction in dB of the acoustic louvered fencing for the proposed mechanical plant area is presented in Table 5.3 below.

Table 5.3 Minimum sound reduction of the acoustic louvered fencing

R _w	Hz	63	125	250	500	1000	2000	4000	8000
10dB	–	5	4	5	6	9	13	14	13

An excerpt from the Sound PLAN 3D noise propagation model is presented in Figures 5.1 and 5.2.

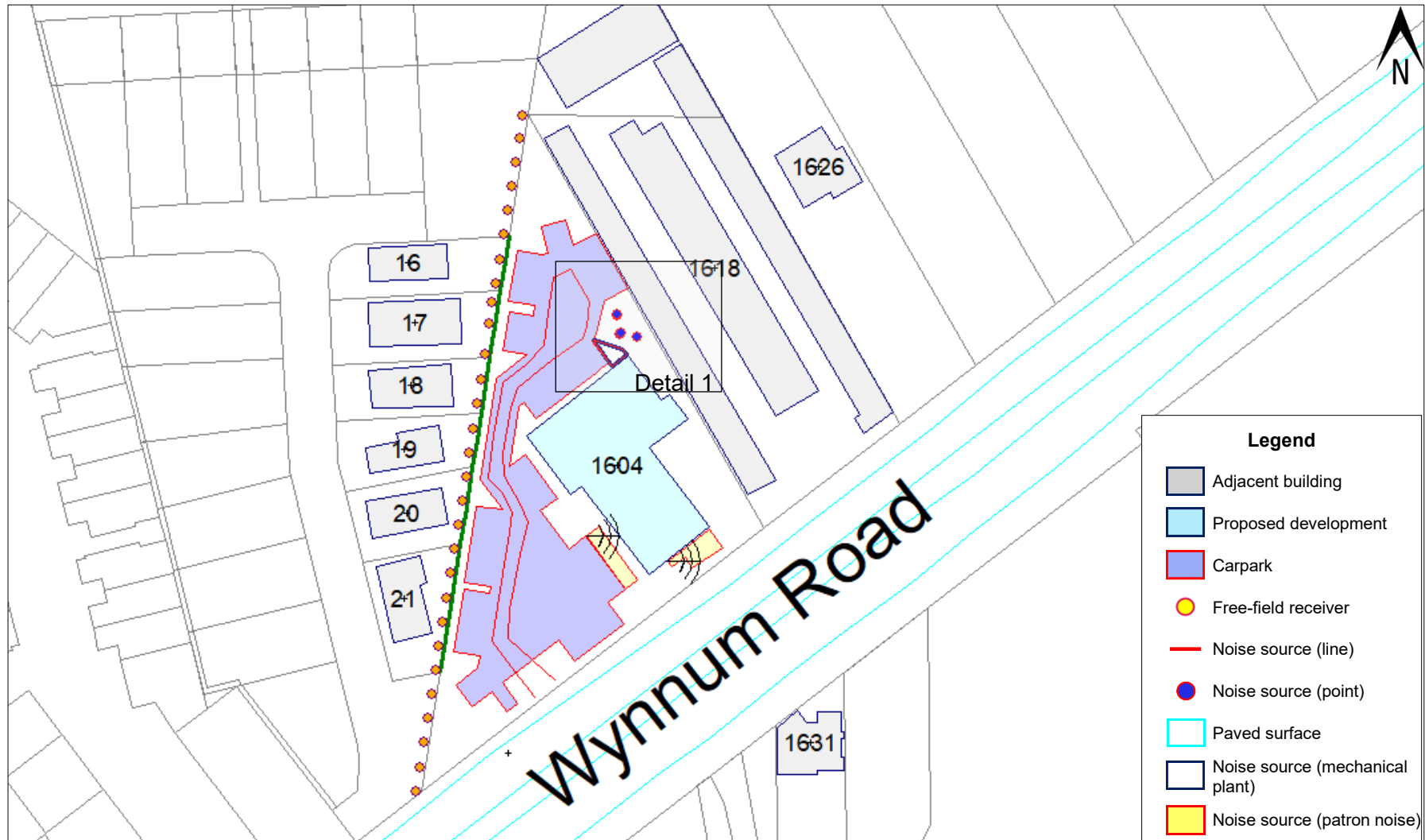


Figure 5.1 SoundPLAN operational noise model – L_{eq}

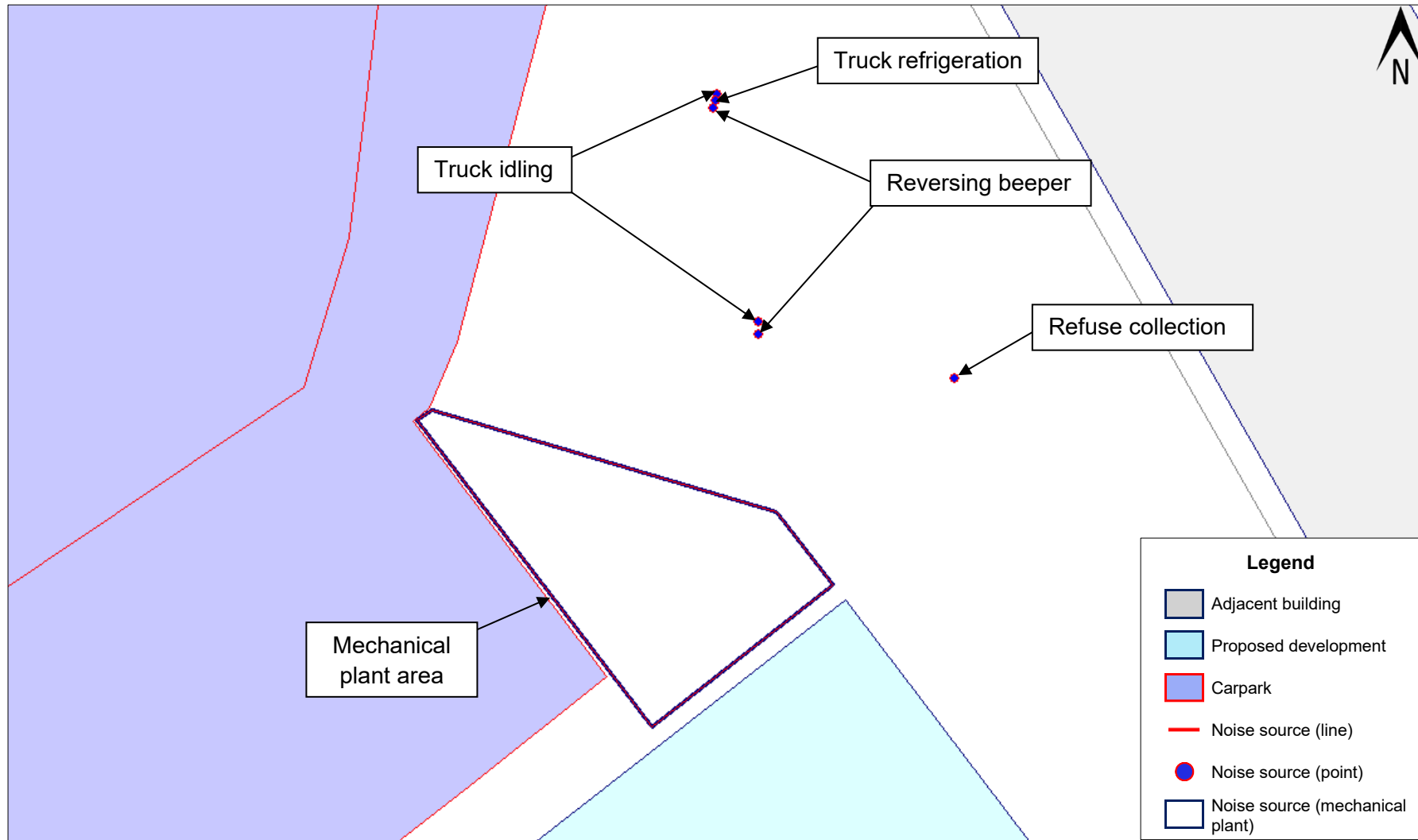


Figure 5.2 SoundPLAN operational noise model – L_{eq} – Detail 1

5.3 Operational Noise Sources – L_{max}

Details of the noise sources associated with the proposed development by conservatively considering the loudest event occurs during the night-time (10pm to 7am) that were considered in the SoundPLAN model are presented in Table 5.4.

Table 5.4 Details of operational noise sources

Operational noise source	Location	Sound power level dB(A) (re 10 ⁻¹² W)	Operational scenario	Tonality
Vehicle door slam	Carpark	98 dB(A) ATP Library: Car door slamming	Events happen at night-time (10pm to 7am)	n/a

The loudest noise source associated with the use of the subject site is vehicle door slam at the carpark of the development with an adjusted noise level of 98dB(A) L_{max}.

An excerpt from the L_{max} SoundPLAN 3D noise propagation model is presented in Figure 5.3.

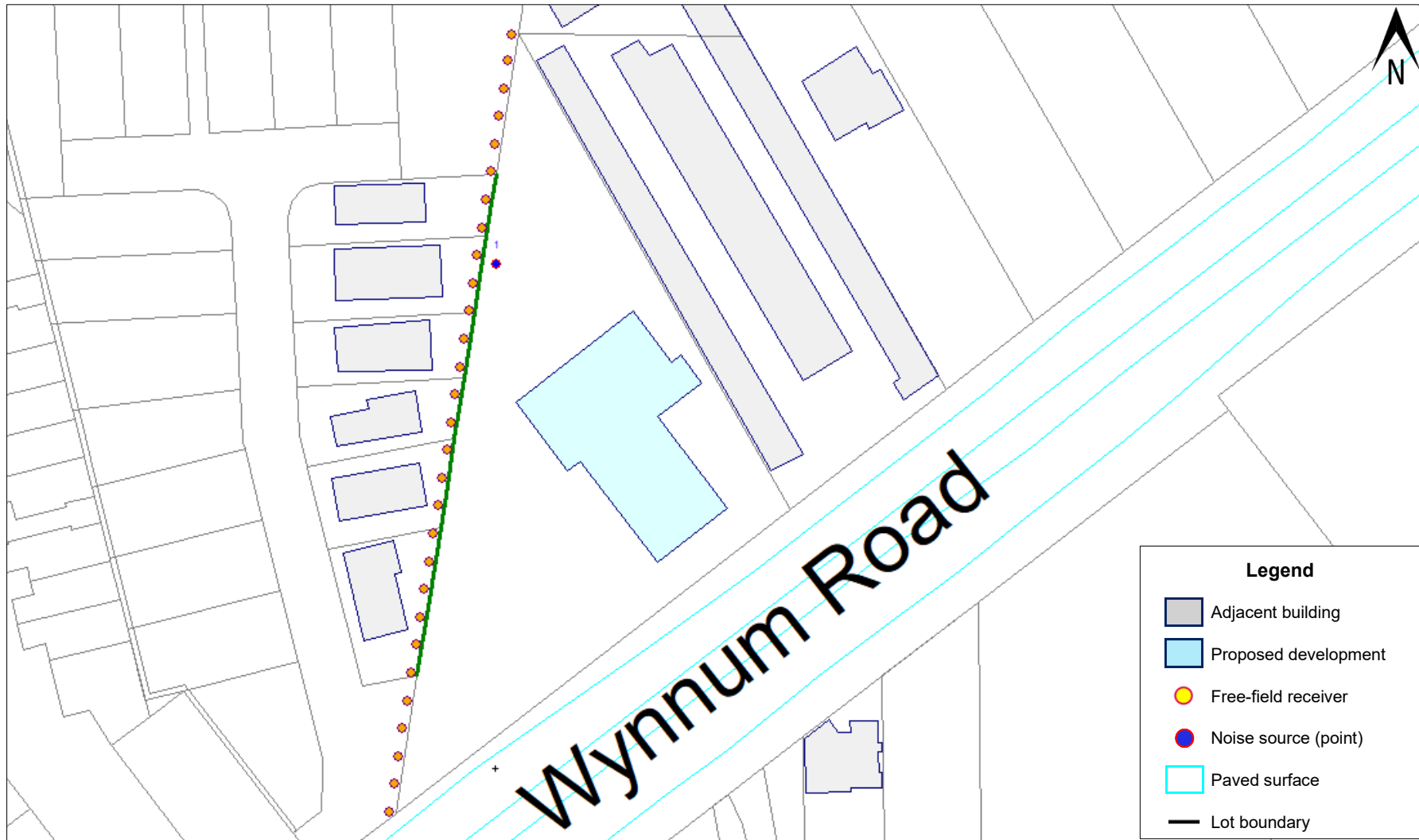


Figure 5.3 SoundPLAN operational noise model – L_{max}

5.4 Operational Noise Calculation Results

5.4.1 BCP2014 – Noise (planning) Criteria

The highest calculated noise levels at the boundaries of the nearby noise sensitive places, relative to the noise (planning) criteria from BCP2014, are presented in Table 5.5.

Table 5.5 Operational noise levels

Receiver name	Calculated noise levels			Complies with noise criteria?
	L _{Aeq,adj,11h} day dB(A)	L _{Aeq,adj,4hr} evening dB(A)	L _{Aeq,adj,9hr} night dB(A)	
Emerging community zone boundaries	53	48	43	
Unit 1, No. 1600 Wynnum Road	49	45	36	Yes
Unit 15, No. 1600 Wynnum Road	50	47	41	Yes
Unit 16, No. 1600 Wynnum Road	49	46	41	Yes
Unit 17, No. 1600 Wynnum Road	50	47	42	Yes
Unit 18, No. 1600 Wynnum Road	50	47	42	Yes
Unit 19, No. 1600 Wynnum Road	49	46	40	Yes
Unit 20, No. 1600 Wynnum Road	49	45	38	Yes
Unit 21, No. 1600 Wynnum Road	48	44	36	Yes

5.4.2 BCP2014 – L_{max} Noise Criteria

The maximum noise levels associated with distinct noise event (car door slam) at the proposed development during night-time are presented in Table 5.6.

Table 5.6 Calculated L_{max} noise levels

Receiver name	Calculated noise levels	Complies with noise criteria?
	The absolute highest single L _{Amax} event over a given night (10pm to 7am) period	
Emerging community zone boundaries – Night time criteria	62	
Unit 1, No. 1600 Wynnum Road	34	Yes
Unit 15, No. 1600 Wynnum Road	50	Yes
Unit 16, No. 1600 Wynnum Road	53	Yes
Unit 17, No. 1600 Wynnum Road	56	Yes
Unit 18, No. 1600 Wynnum Road	48	Yes
Unit 19, No. 1600 Wynnum Road	46	Yes
Unit 20, No. 1600 Wynnum Road	43	Yes
Unit 21, No. 1600 Wynnum Road	37	Yes

Detailed tabulated noise levels and noise contour maps are presented in Appendix E and Appendix F respectively.

- The acceptable form of construction for the noise barrier fence is as follows:
 - The noise barrier fence must be constructed of a material with minimum superficial mass of 12.5kg/m², such as concrete blockwork, brick, autoclaved aerated concrete, minimum 9mm thick compressed fibre cement sheeting, minimum 25mm thick overlapping timber palings or approved modular wall system by Modular Walls, Poly-Tek or equivalent.
 - There shall be no gaps on the surface and at the base of the noise barrier fence.
- All mechanical plant (air-conditioning condenser units and the refrigeration condenser unit) must be located within the dedicated mechanical plant area. Should there be a need to locate the mechanical plant to a location other than the dedicated mechanical plant area or should the breakout sound pressure level of the plant, measured at 1m from the acoustic louvered fencing, be greater than those presented in the Table 5.2, then the mechanical plant and equipment needs to be designed to comply with the noise criteria presented in Section 4 and an assessment by a qualified consultant should be conducted prior to installation. The assessment should include verification that the plant and equipment installed complies with the criteria as stated above.
- Lastly, the following general recommendations must be considered for the design and installation of all mechanical equipment:
 - Select equipment with low sound power level;
 - Provide acoustic lining to inside of ventilation ducts and/or provide duct silencers;
 - Where equipment has directional noise characteristics, point equipment away from the noise sensitive areas;
 - Construct solid acoustic screens or enclosures around equipment to screen it from noise sensitive areas;
 - Wherever possible, the mechanical plants should be operated on a timer to limit noise emissions during evening and night-time; and
 - The mechanical plants must be isolated from the building structure using appropriate vibration isolation mounts to mitigate structure borne noise.

Provided the noise mitigation measures recommended in this report are fully implemented in the detailed design and construction, there shall be no further acoustic constraints on the establishment of the proposed commercial development at 1604 Wynnum Road in Tingalpa.

7. References

- Australian Standard AS1055-2018 (*Acoustics – Description and Measurement of Environmental Noise*)
- Australian Standard AS1055.2-1997 (*Acoustics – Description and Measurement of Environmental Noise Part 2: Application to Specific Situations*)
- Australian Standard ASIEC61672.1-2019 (*Electroacoustics – Sound Level Meters – Specifications*)
- International Standard ISO9613 (*Acoustics – Attenuation of Sound during Propagation Outdoors*)
- Brisbane City Council, Brisbane City Plan 2014
- Queensland Government, Environmental Protection (Noise) Policy 2019
- Queensland Government, Environmental Protection Act 1994



Appendix A – Proposed Development Layout

JSTN.

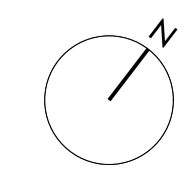
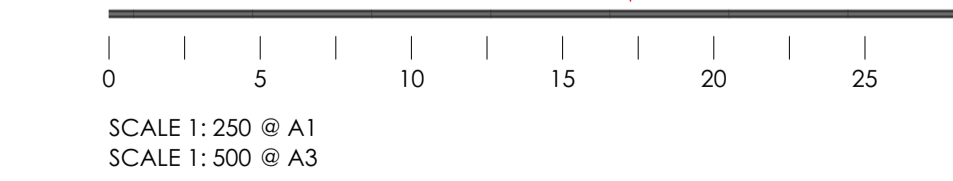
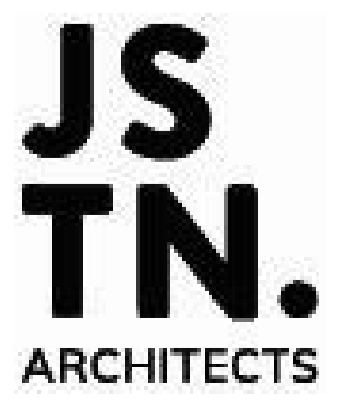
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← BRISBANE CITY 22km
 → MANLY 8km
 ↑ AIRPORT 15km

SITE PLAN
 SCALE 1:250 @ A1
 SCALE 1:500 @ A3



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		D. C. A.	

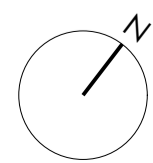
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 1604 WYNNUM RD, TINGALPA, QLD 4173
 CLIENT - MEGAFRESH
 DRAWING TITLE
SITE PLAN
 JOB No CAS07
 ISSUE 02
SK1002

FLOOR PLAN - EXTERNAL WORKS

SCALE 1:200 @ A1
SCALE 1:400 @ A3

0 2 4 6 8 10 12 14 16 18 20

SCALE 1:200 @ A1
SCALE 1:400 @ A3



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03 DESIGN PACK 2	30.10.25	JG	JG	JG
02 DESIGN PACK	28.10.25	JG	JG	JG
01 EXT WORKS	26.10.25	JG	JG	JG

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	29.11.25	JG	JG	JG
	17.11.25	BG	JG	JG
	30.10.25	JG	JG	JG
	28.10.25	JG	JG	JG
	26.10.25	JG	JG	JG

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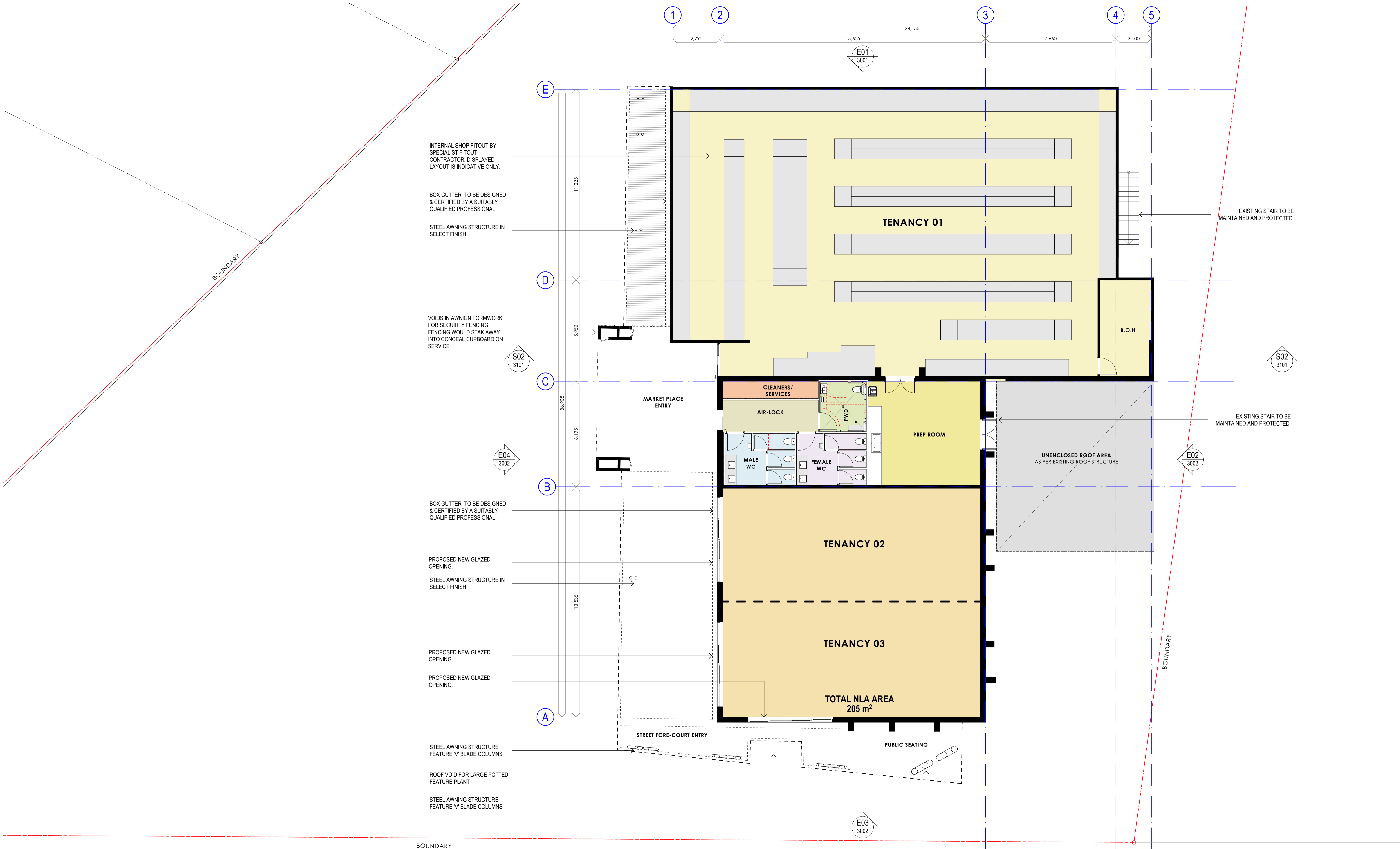
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JOB No
CAS07

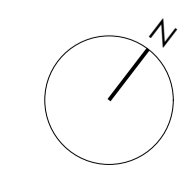
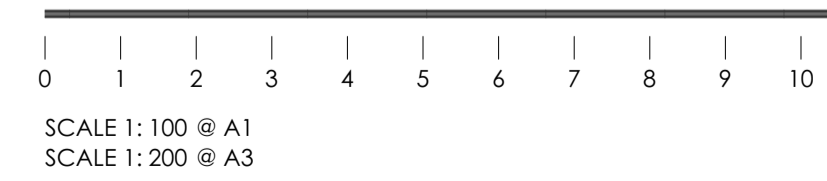
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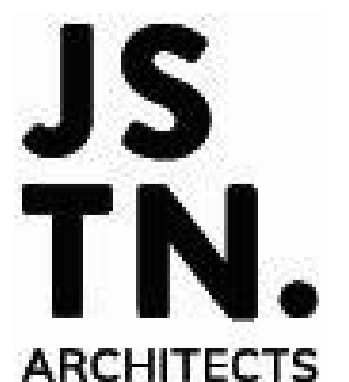
FLOOR PLAN - GROUND FLOOR
 SCALE 1:100 @ A1
 SCALE 1:200 @ A3



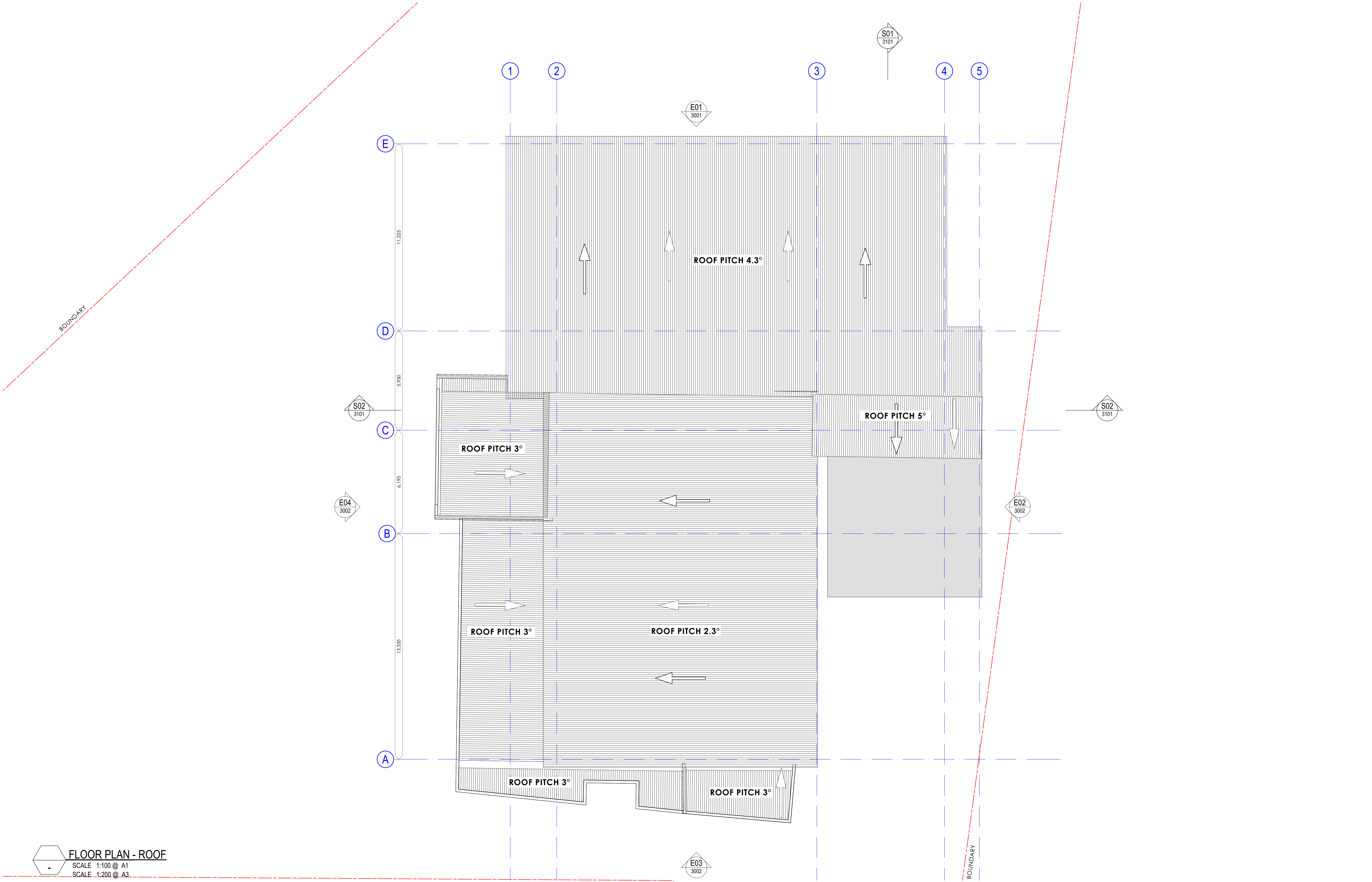
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02 WIP PLANS	25.09.25	JG	JG	JG	
01 WIP PLANS	18.09.25	JG	JG	JG	

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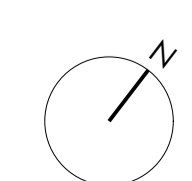
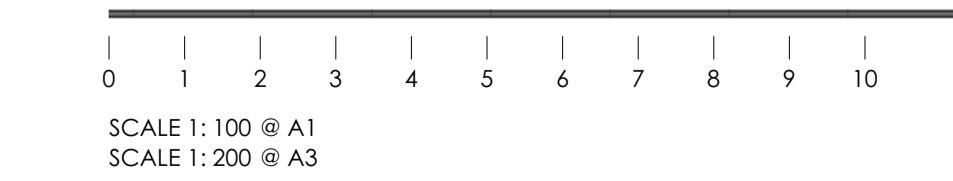


SK2007



FLOOR PLAN - ROOF

SCALE 1:100 @ A1
SCALE 1:200 @ A3



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03 DESIGN PACK 2	30.10.25	JG	JG	JG	
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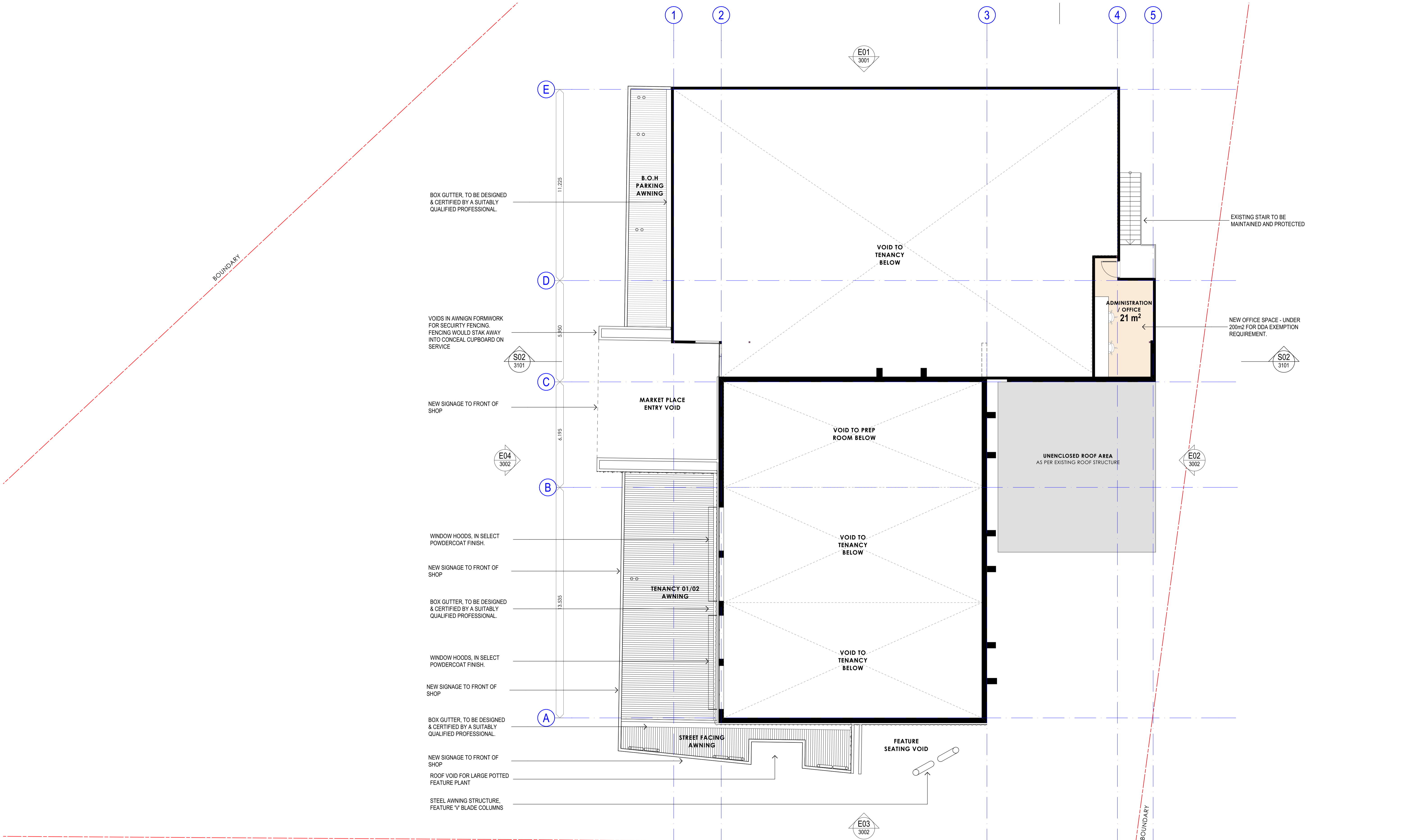
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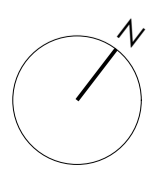
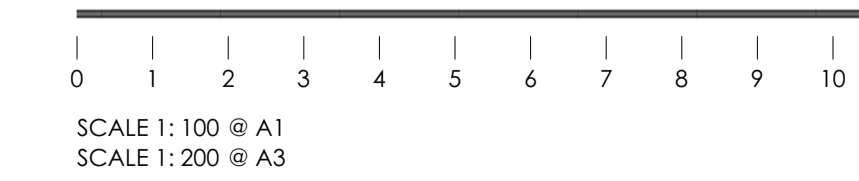
FLOOR PLAN - ROOF

JOB No CAS07
ISSUE 05

SK2009



FLOOR PLAN - FIRST FLOOR
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 SCALE 1:200 @ A3



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02 WIP PLANS	25.09.25	JG	JG	JG	
01 WIP PLANS	18.09.25	JG	JG	JG	

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SK2010

SITE COVER - DIAGRAM

AREA SUMMARY

BUILDING AREA = 781m²
 PROPOSED AWNING = 228m²
 PROPOSED AWNING = 93m²

TOTAL = 1,102m²

DEVELOPMENT SITE COVER

TOTAL COVERED AREA / SITE AREA

1,102m² / 4,221m² = 26.11%

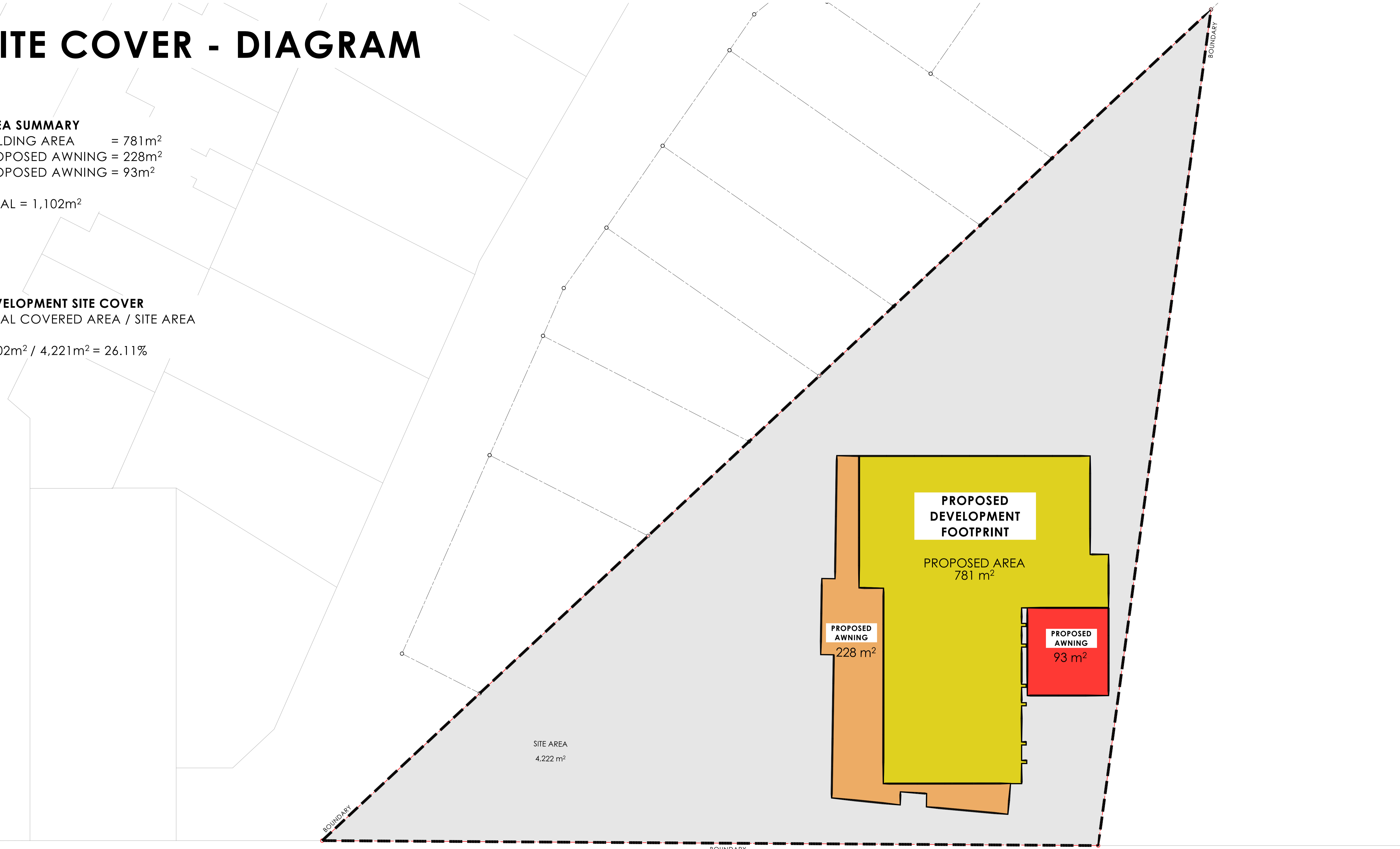
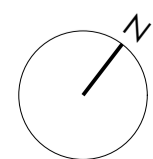


DIAGRAM - IMPERVIOUS AREA

0 2 4 6 8 10 12 14 16 18 20

SCALE 1: 200 @ A1
 SCALE 1: 400 @ A3



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ISSUE PURPOSE	DATE	D.	C.	A.
		STATUS		

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CLIENT - MEGAFRESH

DRAWING TITLE

DIAGRAM - SITE COVER

JOB No

CAS07

ISSUE

02

SK2803

SETBACK - DIAGRAM

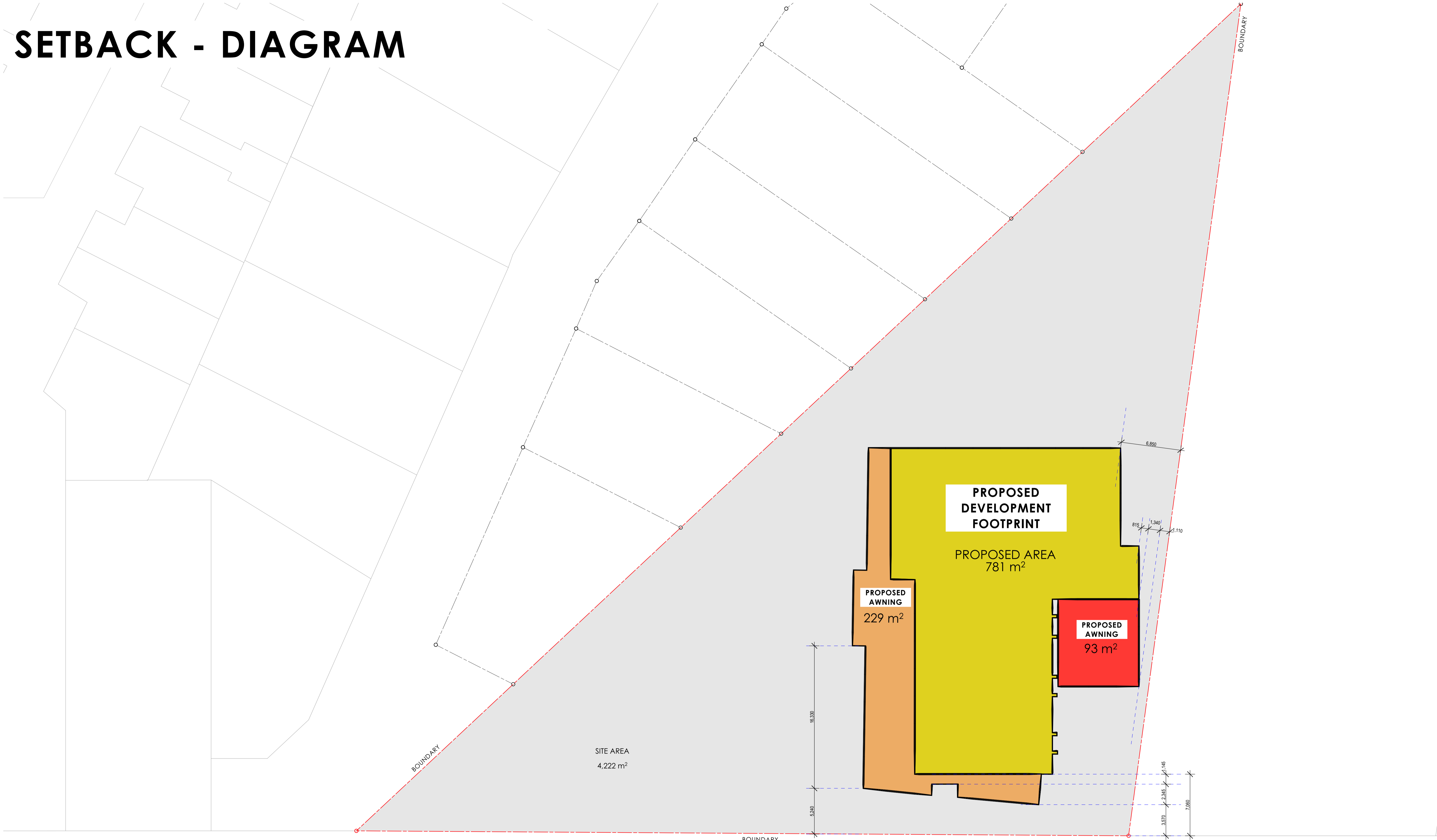
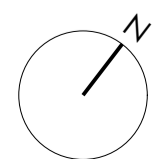
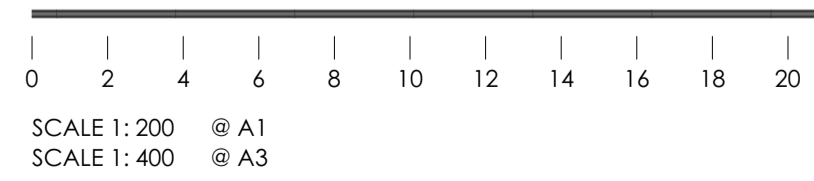


DIAGRAM - IMPERVIOUS AREA



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ISSUE PURPOSE	DATE	STATUS
02 DA SET	09.01.26	JG JG
01 FOR PLANNING REVIEW	29.11.25	JG JG JG
	D. C. A.	

TINGALPA COMMERCIAL
1604 WYNNUM RD, TINGALPA, QLD 4173
CLIENT - MEGAFRESH
DRAWING TITLE
DIAGRAM - SETBACK DIAGRAM

JOB No
CAS07
ISSUE
02

SK2804

Appendix B – Site Photos



Photo 1: Noise Logger location at 1604 Wynnum Road in Tingalpa (view due north)



Photo 2: Noise Logger location at 1604 Wynnum Road in Tingalpa (view due west)

Appendix C – Meteorological Data

Brisbane Airport, Queensland

November 2025 Daily Weather Observations



Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain mm	Evap mm	Sun hours	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Sa	19.9	27.6	0	4.6	4.9	NNE	50	15:32	24.5	82	6	NE	15	1016.8	24.1	83	7	S	13	1014.3
2	Su	20.4	28.2	17.8	4.6	11.0	NNE	52	21:05	25.8	76	7	N	17	1013.8	27.2	79	1	NE	30	1008.9
3	Mo	23.9	28.7	0.2	7.2	6.8	NNE	54	14:03	26.2	87	7	NNE	31	1010.7	26.7	83	7	NNE	39	1006.6
4	Tu	22.2	28.3	0	5.4	6.0	NNE	39	16:01	22.8	76	7	W	15	1011.8	25.4	75	6	NNE	24	1008.6
5	We	14.2	27.8	0.4	4.8	13.0	ENE	35	14:14	25.3	31	0	SSE	7	1014.3	25.9	37	1	ENE	20	1012.0
6	Th	15.9	26.4	0	7.4	12.7	ENE	33	12:50	24.7	64	3	SE	13	1017.8	25.2	59	1	ESE	17	1015.4
7	Fr	16.0	25.8	0	8.0	12.0	N	31	21:01	24.3	64	7	NNE	9	1017.6	24.7	59	2	NE	19	1013.5
8	Sa	17.3	27.4	0	8.0	10.8	NNE	50	14:29	24.3	69	1	N	24	1014.3	26.1	70	1	NNE	37	1008.1
9	Su	20.6	27.3	1.4	7.2	0.3	WSW	33	11:49	25.1	70	8	W	11	1009.6	24.5	81	8	WNW	13	1009.1
10	Mo	18.5	24.3	0.4	2.4	4.3	ESE	35	15:40	22.3	70	8	SSE	13	1014.2	21.8	78	7	ESE	19	1011.5
11	Tu	14.1	25.6	1.0	3.6	12.8	N	37	21:06	21.9	78	3	N	6	1015.0	24.6	63	1	NE	24	1010.6
12	We	14.7	24.8	0	8.4	12.1	ESE	46	11:28	23.9	51	5	SE	19	1017.3	23.3	54	1	ESE	19	1015.5
13	Th	18.8	25.6	0.4	9.8	12.0	N	56	21:13	23.4	61	3	N	17	1018.3	24.4	61	2	NNE	30	1013.6
14	Fr	19.2	27.2	0.8	9.8	2.1	WSW	69	18:20	20.6	90	8	NNW	9	1013.7	24.5	84	8	NNE	31	1007.9
15	Sa	18.8	28.4	23.4	4.6	8.4	N	48	18:31	25.5	78	3	ENE	11	1012.7	25.3	84	7	NNE	31	1008.4
16	Su	20.8	28.6	11.8	5.6	0.4	N	46	02:13	24.3	90	8	N	20	1009.6	24.1	91	8	N	20	1005.9
17	Mo	20.4	33.8	1.4	1.4	12.8	W	54	12:04	28.3	56	1	NNW	11	1004.5	33.5	24	1	WSW	28	999.8
18	Tu	17.7	26.4	0	13.0	11.7	ENE	37	15:19	25.1	69	5	ESE	17	1009.9	24.2	65	5	ENE	22	1008.6
19	We	17.6	26.8	0	7.4	11.5	NE	33	14:25	23.8	65	6	N	13	1013.8	25.4	65	1	ENE	22	1010.8
20	Th	18.6	27.9	0	7.0	12.1	NE	31	15:34	25.5	61	4	NNW	9	1014.6	26.5	61	3	ENE	20	1011.8
21	Fr	21.1	28.8	0	6.8	8.9	SE	35	15:13	26.7	74	7	NNE	7	1014.3	26.9	76	6	ENE	20	1013.3
22	Sa	21.4	28.0	0	7.6	5.9	ESE	30	10:25	25.3	75	8	ESE	13	1016.5	25.6	79	7	ENE	19	1012.4
23	Su	19.7	28.8	20.2	5.8	7.4	WSW	65	07:23	20.3	92	7	NE	20	1010.5	27.4	67	1	NNE	28	1007.2
24	Mo	20.3	30.4	0.2	4.4	10.3	SSE	96	15:19	28.8	74	3	N	13	1005.2	27.2	83	7	N	37	999.2
25	Tu	20.3		31.6	18.2					25.7	77	3	NNE	11	1007.3						
Statistics for the first 25 days of November 2025																					
Mean		18.9	27.6		6.9	8.8				24.6	71	5		14	1013.0	25.6	69	4		24	1009.7
Lowest		14.1	24.3		1.4	0.3				20.3	31	0	N	6	1004.5	21.8	24	1	#	13	999.2
Highest		23.9	33.8	31.6	18.2	13.0	SSE	96		28.8	92	8	NNE	31	1018.3	33.5	91	8	NNE	39	1015.5
Total				111.0	173.0	210.2															



Appendix D – Noise Measurement Results



Unattended Noise Measurements

1604 Wynnum Road, Tinglpa

Environmental Noise Levels Day, Evening and Night

Logger Location - North-western boundary of lot

ARL Environmental Noise Logger
 Logger Serial Number 15-203-537
 Measurement Title Field Reading.
 Measurement started at 12/11/2025 16:00
 Measurement stopped at 20/11/2025 9:00
 Frequency Weighting A
 Time Averaging Fast
 Statistical Interval 15 min
 Pre-measurement Ref. 94.0
 Post-measurement Ref. 94.1
 Engineering Units dB SPL

Date	Day	L _{Aeq,T} dB(A)			L _{A01,T} dB(A)			L _{A10,T} dB(A)			L _{A90,T} dB(A)			Assessment Background Levels (ABL) dB(A)		
		D	E	N	D	E	N	D	E	N	D	E	N	D	E	N
12/11/2025	Wednesday	—	60	51	—	71	62	—	62	54	—	47	40	—	43	35
13/11/2025	Thursday	62	56	50	70	64	61	63	59	53	51	48	41	48	42	36
14/11/2025	Friday	61	61	53	70	70	64	63	64	55	51	53	42	49	46	39
15/11/2025	Saturday	59	58	51	66	65	61	61	60	53	49	53	41	48	48	39
16/11/2025	Sunday	57	55	51	65	64	62	60	59	53	47	46	43	44	45	40
17/11/2025	Monday	60	59	54	69	69	65	62	61	56	52	49	46	50	47	40
18/11/2025	Tuesday	59	57	52	67	65	63	61	59	54	51	47	42	50	43	38
19/11/2025	Wednesday	58	56	51	66	64	62	61	59	54	50	46	42	48	44	37
Average		59	57	52	68	66	62	61	60	54	50	47	42	—	—	—

Rating Background Level (RBL)	48	43	38
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Note

— No noise data available

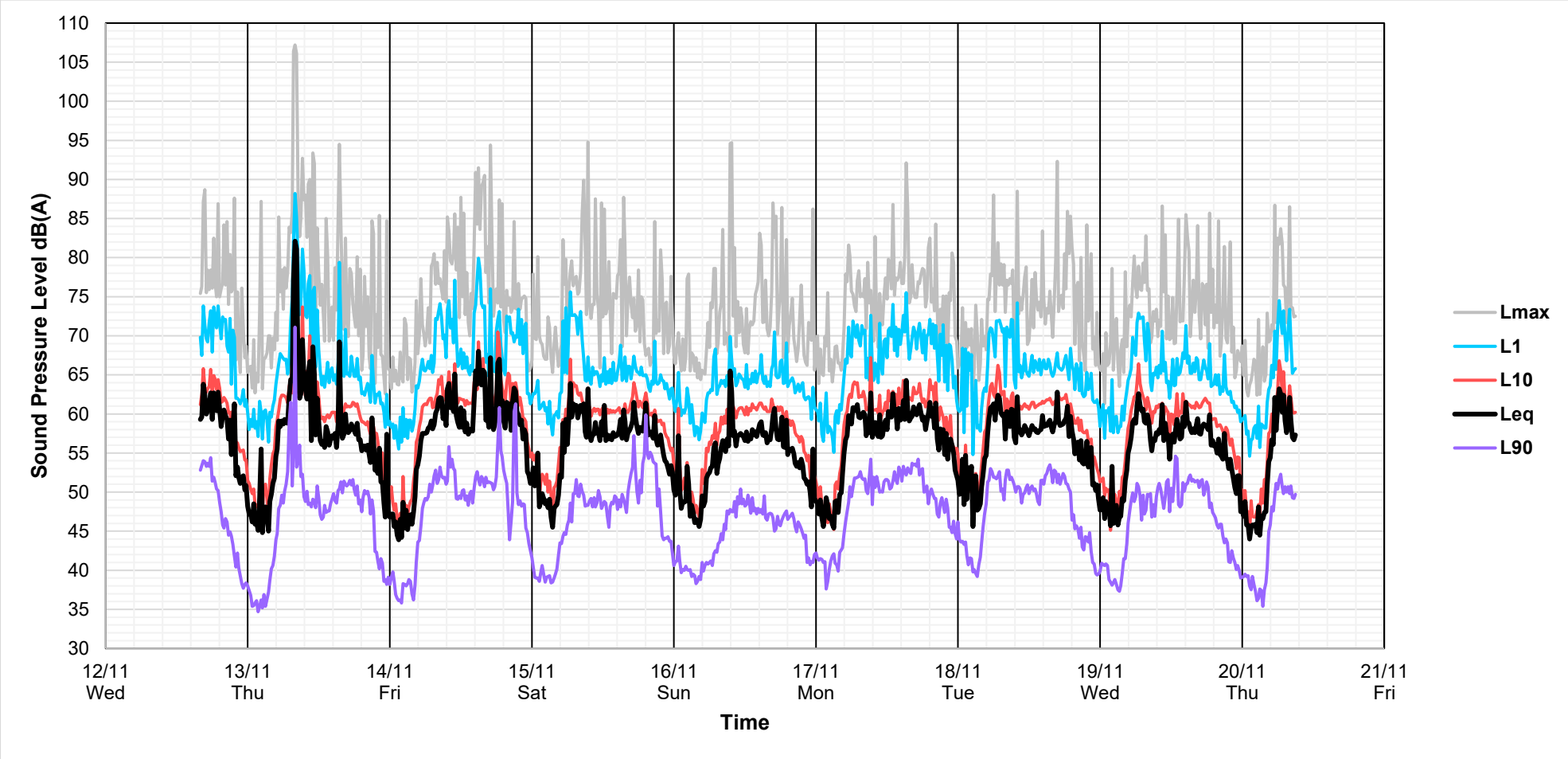
Day (D): 7:00am to 6:00pm

Evening (E): 6:00pm to 10:00pm

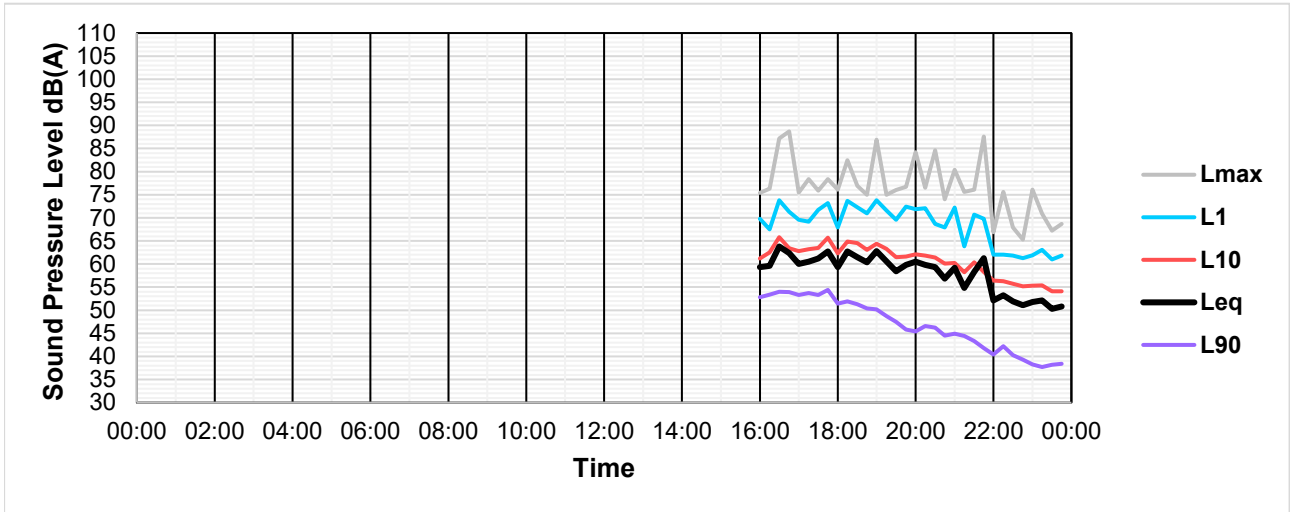
Night (N): 10:00pm to 7:00am

■ Rainfall recorded on this day

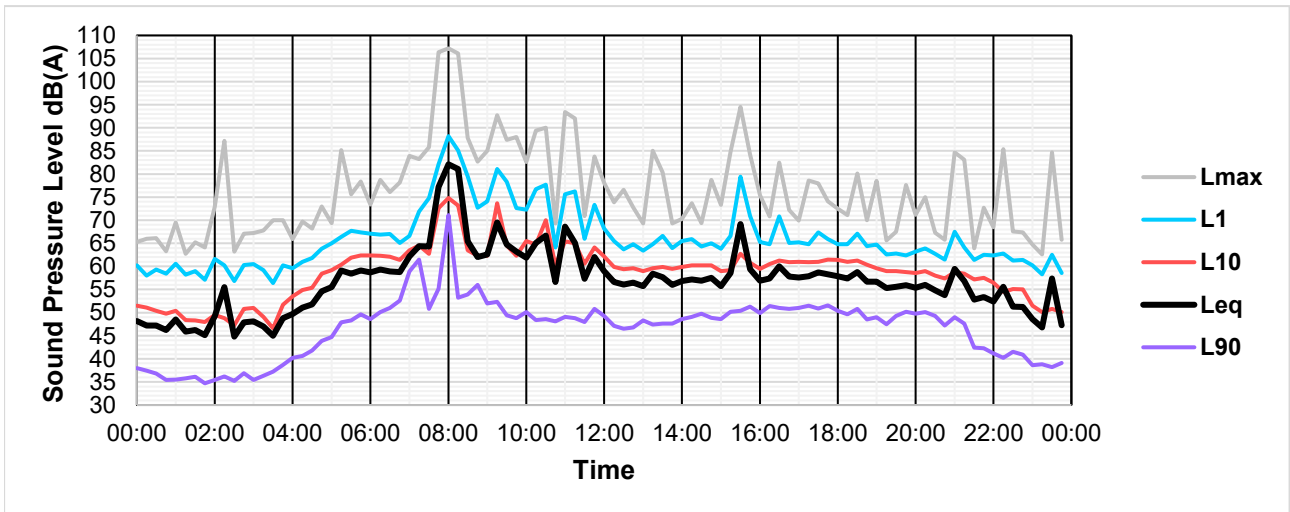
Unattended Noise Measurements 12 to 20 November 2025



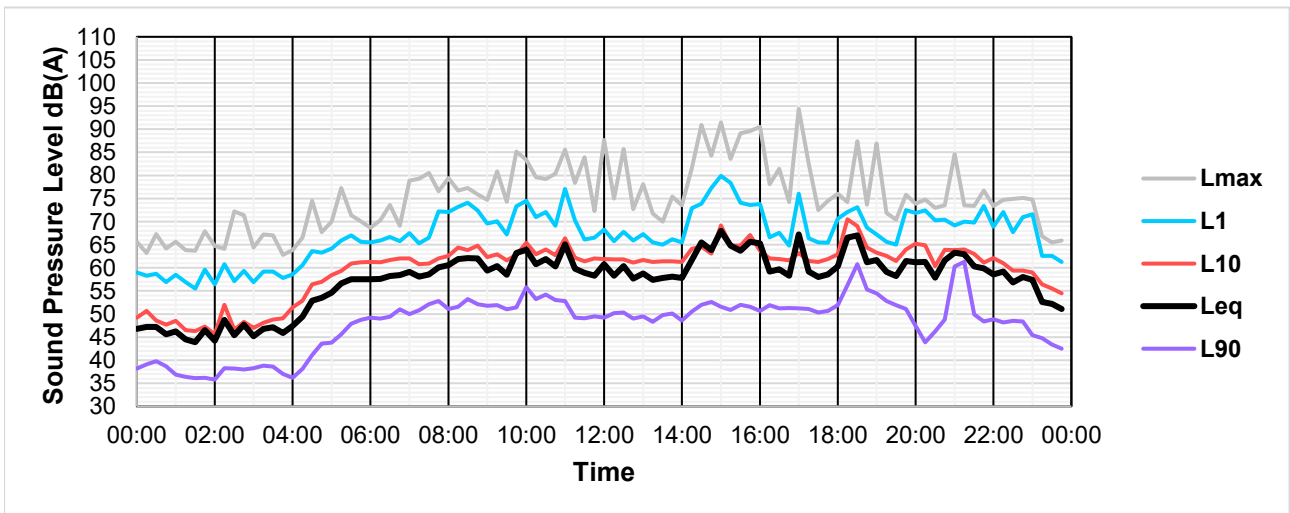
Unattended Noise Measurements Wednesday 12 November 2025



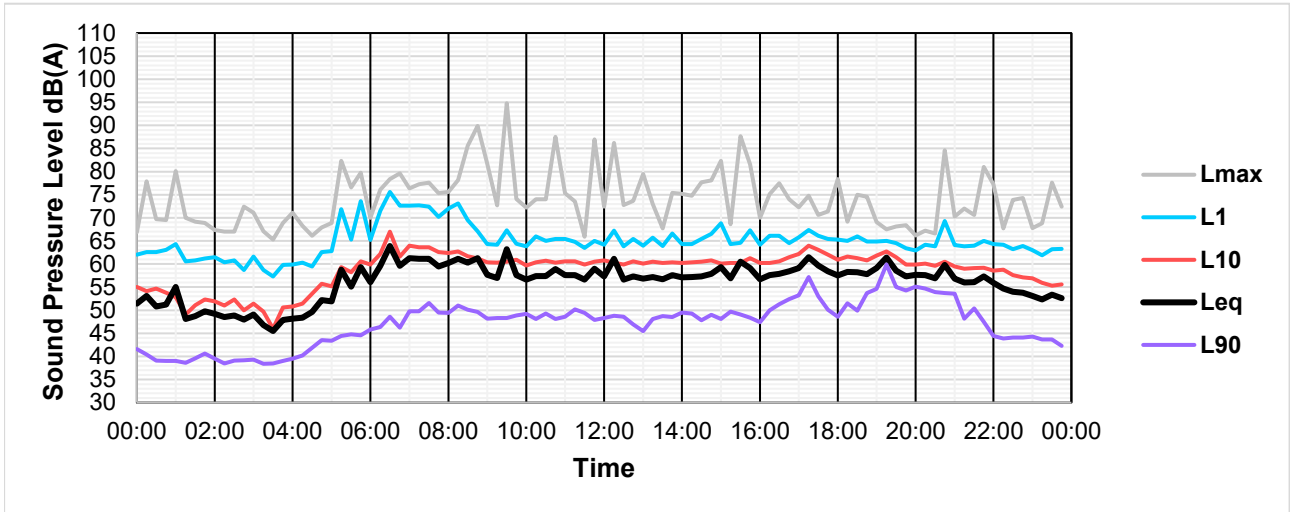
Unattended Noise Measurements Thursday 13 November 2025



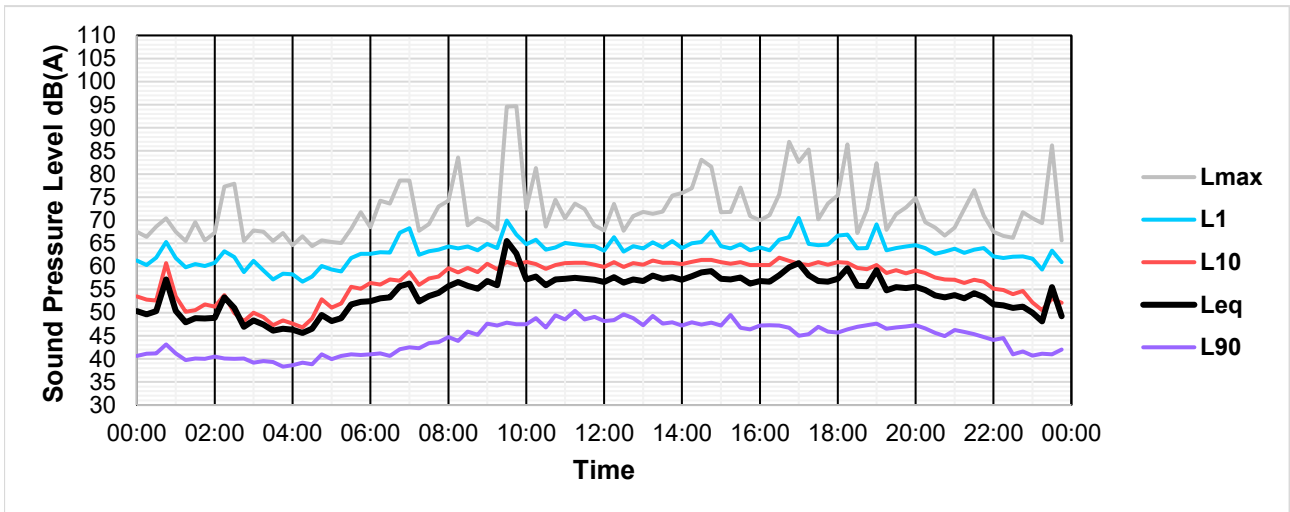
Unattended Noise Measurements Friday 14 November 2025



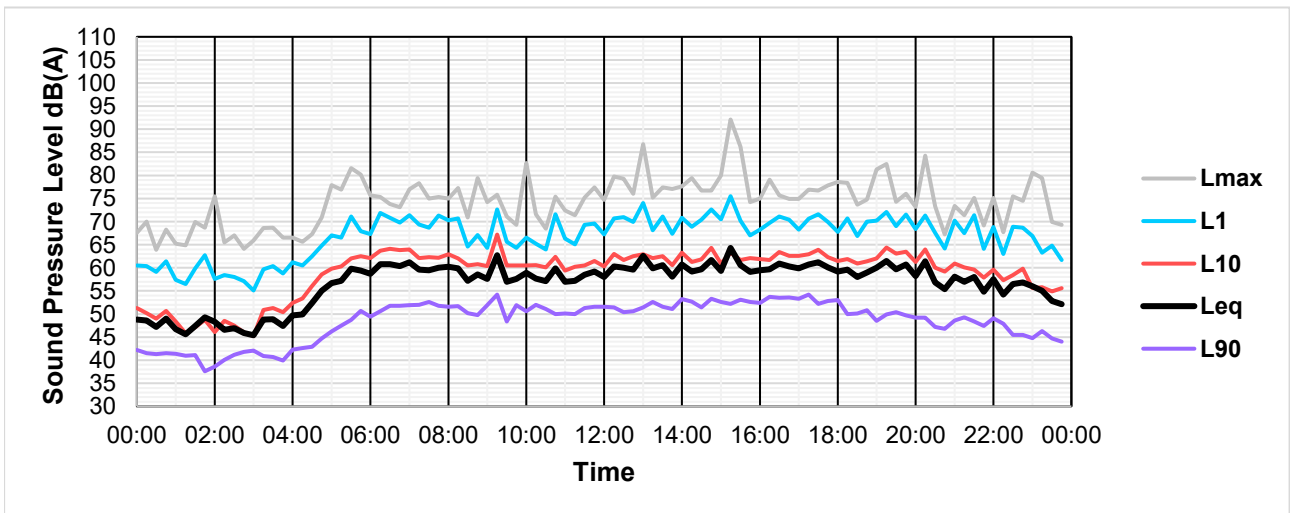
Unattended Noise Measurements Saturday 15 November 2025



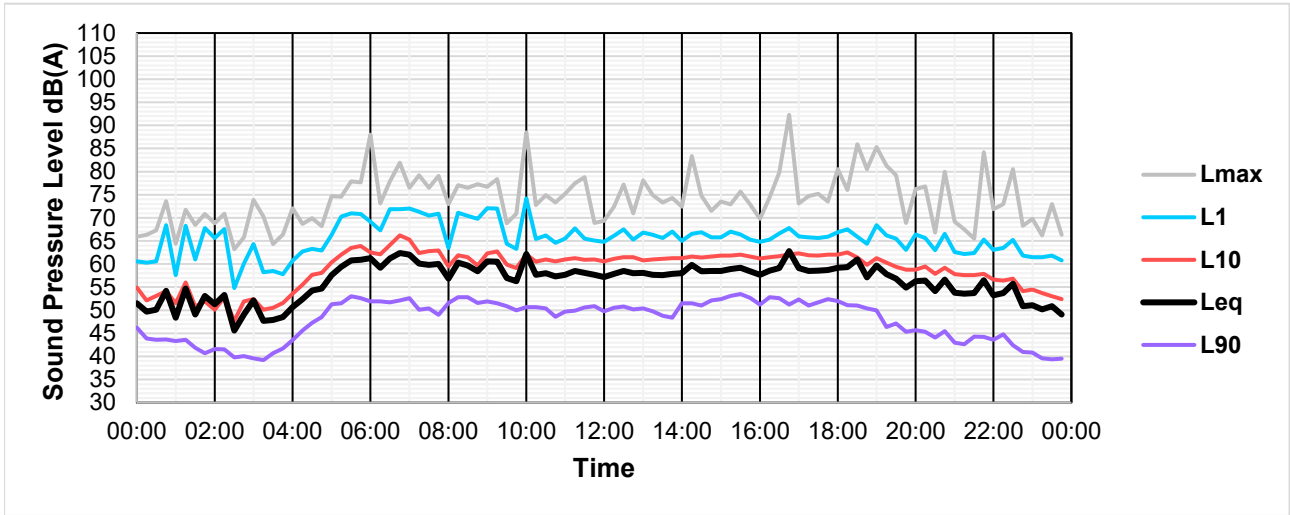
Unattended Noise Measurements Sunday 16 November 2025



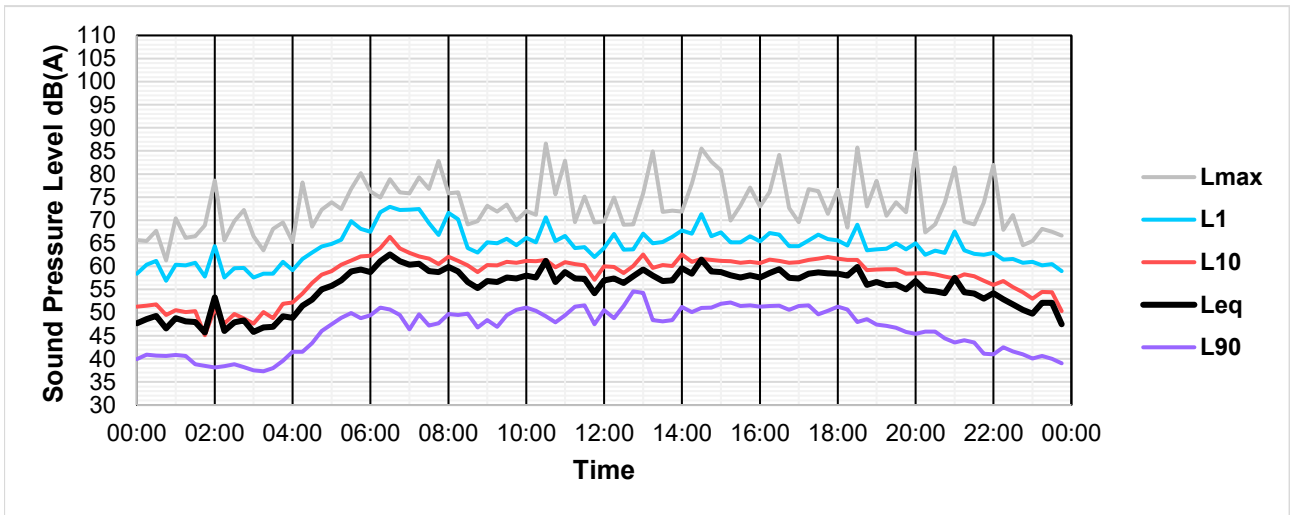
Unattended Noise Measurements Monday 17 November 2025



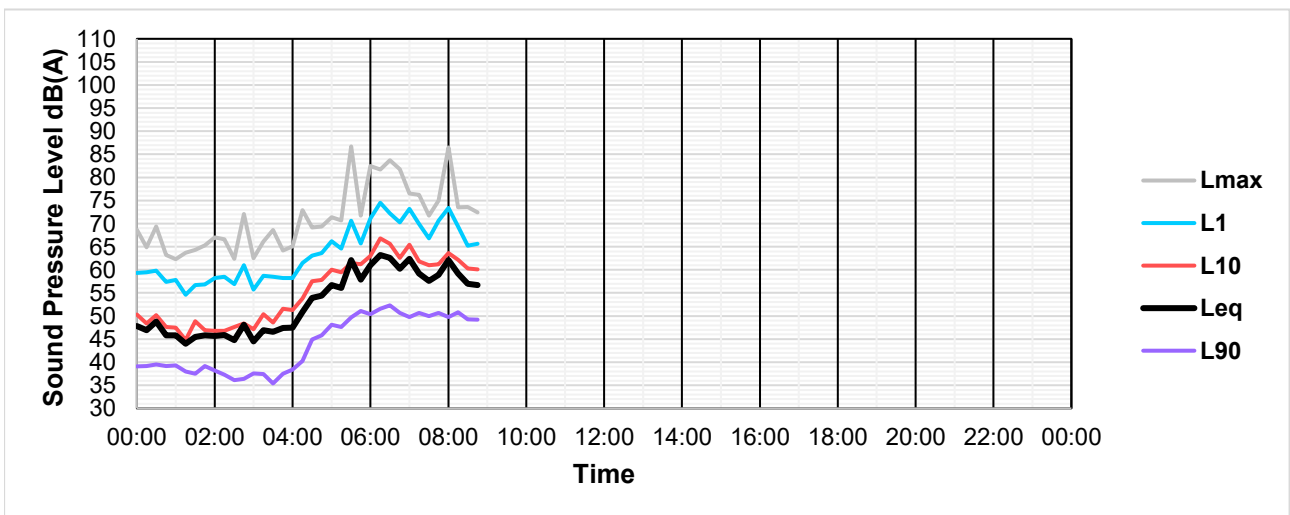
Unattended Noise Measurements Tuesday 18 November 2025



Unattended Noise Measurements Wednesday 19 November 2025



Unattended Noise Measurements Thursday 20 November 2025



Appendix E – Tabulated Operational Noise Levels

1604 Wynnum Road

Assessed receiver levels

Operational Noise Impact Assessment

Receiver	Leq,adj,11 dB(A)	Leq,adj,4h dB(A)	Leq,adj,9h dB(A)
Unit 21, 1600 Wynnum Road	48	44	36
Unit 21, 1600 Wynnum Road	48	44	35
Unit 21, 1600 Wynnum Road	48	44	36
Unit 21, 1600 Wynnum Road	48	43	35
Unit 21, 1600 Wynnum Road	47	42	34
Unit 21, 1600 Wynnum Road	45	41	33
Unit 20, 1600 Wynnum Road	49	45	38
Unit 20, 1600 Wynnum Road	48	44	37
Unit 20, 1600 Wynnum Road	48	44	36
Unit 19, 1600 Wynnum Road	49	46	40
Unit 19, 1600 Wynnum Road	49	46	40
Unit 18, 1600 Wynnum Road	50	47	41
Unit 18, 1600 Wynnum Road	50	47	42
Unit 17, 1600 Wynnum Road	50	47	42
Unit 17, 1600 Wynnum Road	50	47	42
Unit 17, 1600 Wynnum Road	49	46	40
Unit 16, 1600 Wynnum Road	49	46	41
Unit 16, 1600 Wynnum Road	48	46	40
Unit 15, 1600 Wynnum Road	50	47	41
Unit 15, 1600 Wynnum Road	49	46	41
Unit 15, 1600 Wynnum Road	49	45	39
Unit 15, 1600 Wynnum Road	48	44	38
Unit 15, 1600 Wynnum Road	47	43	37
Unit 15, 1600 Wynnum Road	45	42	36
Unit 1, 1600 Wynnum Road	49	45	36
Unit 1, 1600 Wynnum Road	47	43	35
Unit 1, 1600 Wynnum Road	46	42	33
Unit 1, 1600 Wynnum Road	45	41	32
Unit 1, 1600 Wynnum Road	44	40	31



ATP Consulting Engineers

1604 Wynnum Road
 ISO9613 Calculation Method
 Predicted Operational Noise Levels at Adjacent Uses
 From Activities at Proposed Development

Legend

Source		Source name
Source type		Type of source (point, line, area)
Time slice		Name of time slice
Li	dB(A)	Level inside
Rw	dB	Rated transmission loss
L'w	dB(A)	Sound power level per m, m ²
Lw	dB(A)	Sound power level per unit
I or A	m, m ²	Size of source (length or area)
KI	dB	Correction for source impulsiveness
KT	dB	Correction for source tonality
DO	dB	Correction for propagation in limited spacial angle
S	m	Distance source - receiver
Adiv	dB	Mean attenuation due to geometrical spreading
Agr	dB	Mean attenuation due to ground effect
Abar	dB	Mean attenuation due to screening
Aatm	dB	Mean attenuation due to air absorption
Amisc	dB	Mean attenuation due to foliage, industrial areas and building areas
ADI	dB	Mean directivity correction
dLrefl	dB(A)	Level increase due to reflections
Ls	dB(A)	Unassessed sound pressure level at the receiver $L_s=L_w+DO+ADI+Adiv+Agr+Abar+Aatm+Afol_site_house+Awind+dLrefl$
Cmet	dB	Meteorological correction
dLw	dB	Correction due to source operation time
ZR	dB	Correction for rest periods
Lr	dB(A)	Assessed level of time slice

1604 Wynnum Road
 ISO9613 Calculation Method
 Predicted Operational Noise Levels at Adjacent Uses
 From Activities at Proposed Development

Source	Source type	Time slice	Li dB(A)	Rw dB	L'w dB(A)	Lw dB(A)	I or A m,m ²	KI dB	KT dB	DO dB	S m	Adiv dB	Agr dB	Abar dB	Aatm dB	Amisc dB	ADI dB	dLrefl dB(A)	Ls dB(A)	Cmet dB	dLw dB	ZR dB	Lr dB(A)
Receiver Unit 21, 1600 Wynnum Road FI GF			Leq,adj,11 48 dB(A)	Leq,adj,4h 44 dB(A)	Leq,adj,9h 36 dB(A)																		
Carpark	PLot	Leq,adj,11			57.5	89.7	1688.4	0.0	0.0	0	18.75	-36.5	-0.7	-6.6	-0.1	0.00	0.0	1.4	47.3	0.0	0.0	0.0	47.3
Carpark	PLot	Leq,adj,4h			57.5	89.7	1688.4	0.0	0.0	0	18.75	-36.5	-0.7	-6.6	-0.1	0.00	0.0	1.4	47.3	0.0	-4.3	0.0	43.0
Carpark	PLot	Leq,adj,9h			57.5	89.7	1688.4	0.0	0.0	0	18.75	-36.5	-0.7	-6.6	-0.1	0.00	0.0	1.4	47.3	0.0	-12.6	0.0	34.7
Mech plant-Facade 01	Area	Leq,adj,11	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	55.39	-45.9	-4.6	-17.4	-0.1	0.00	0.0	2.5	6.0	0.0	0.0	0.0	11.0
Mech plant-Facade 01	Area	Leq,adj,4h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	55.39	-45.9	-4.6	-17.4	-0.1	0.00	0.0	2.5	6.0	0.0	-1.0	0.0	10.0
Mech plant-Facade 01	Area	Leq,adj,9h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	55.39	-45.9	-4.6	-17.4	-0.1	0.00	0.0	2.5	6.0	0.0	-5.4	0.0	5.6
Mech plant-Facade 02	Area	Leq,adj,11	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	57.56	-46.2	-4.6	-16.2	-0.1	0.00	0.0	3.9	4.5	0.0	0.0	0.0	9.5
Mech plant-Facade 02	Area	Leq,adj,4h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	57.56	-46.2	-4.6	-16.2	-0.1	0.00	0.0	3.9	4.5	0.0	-1.0	0.0	8.5
Mech plant-Facade 02	Area	Leq,adj,9h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	57.56	-46.2	-4.6	-16.2	-0.1	0.00	0.0	3.9	4.5	0.0	-5.4	0.0	4.1
Mech plant-Facade 03	Area	Leq,adj,11	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	56.73	-46.1	-4.6	-13.6	-0.1	0.00	0.0	3.6	12.7	0.0	0.0	0.0	17.7
Mech plant-Facade 03	Area	Leq,adj,4h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	56.73	-46.1	-4.6	-13.6	-0.1	0.00	0.0	3.6	12.7	0.0	-1.0	0.0	16.8
Mech plant-Facade 03	Area	Leq,adj,9h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	56.73	-46.1	-4.6	-13.6	-0.1	0.00	0.0	3.6	12.7	0.0	-5.4	0.0	12.3
Mech plant-Facade 04	Area	Leq,adj,11	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	55.74	-45.9	-4.7	-11.9	-0.1	0.00	0.0	1.1	-0.9	0.0	0.0	0.0	4.1
Mech plant-Facade 04	Area	Leq,adj,4h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	55.74	-45.9	-4.7	-11.9	-0.1	0.00	0.0	1.1	-0.9	0.0	-1.0	0.0	3.1
Mech plant-Facade 04	Area	Leq,adj,9h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	55.74	-45.9	-4.7	-11.9	-0.1	0.00	0.0	1.1	-0.9	0.0	-5.4	0.0	-1.3
Mech plant-Facade 05	Area	Leq,adj,11	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	54.46	-45.7	-4.7	-13.0	-0.1	0.00	0.0	4.6	14.9	0.0	0.0	0.0	19.9
Mech plant-Facade 05	Area	Leq,adj,4h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	54.46	-45.7	-4.7	-13.0	-0.1	0.00	0.0	4.6	14.9	0.0	-1.0	0.0	18.9
Mech plant-Facade 05	Area	Leq,adj,9h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	54.46	-45.7	-4.7	-13.0	-0.1	0.00	0.0	4.6	14.9	0.0	-5.4	0.0	14.5
Mech plant-Roof 01	Area	Leq,adj,11			70.0	82.2	16.5	0.0	5.0	0	55.83	-45.9	-2.6	-16.9	-0.1	0.00	0.0	5.5	22.0	0.0	0.0	0.0	27.0
Mech plant-Roof 01	Area	Leq,adj,4h			70.0	82.2	16.5	0.0	5.0	0	55.83	-45.9	-2.6	-16.9	-0.1	0.00	0.0	5.5	22.0	0.0	-1.0	0.0	26.0
Mech plant-Roof 01	Area	Leq,adj,9h			70.0	82.2	16.5	0.0	5.0	0	55.83	-45.9	-2.6	-16.9	-0.1	0.00	0.0	5.5	22.0	0.0	-5.4	0.0	21.6
Outdoor F&B (S)	Area	Leq,adj,11			67.8	83.5	37.0	0.0	0.0	0	50.55	-45.1	-3.3	-20.2	-0.2	0.00	0.0	5.0	19.7	0.0	-1.2	0.0	18.4
Outdoor F&B (S)	Area	Leq,adj,4h			67.8	83.5	37.0	0.0	0.0	0	50.55	-45.1	-3.3	-20.2	-0.2	0.00	0.0	5.0	19.7	0.0	-3.6	0.0	16.1
Outdoor F&B (S)	Area	Leq,adj,9h			67.8	83.5	37.0	0.0	0.0	0	50.55	-45.1	-3.3	-20.2	-0.2	0.00	0.0	5.0	19.7	0.0	-12.6	0.0	7.1
Outdoor F&B (W)	Area	Leq,adj,11			67.3	83.5	41.9	0.0	0.0	0	33.05	-41.4	-2.7	-4.6	-0.1	0.00	0.0	4.7	39.4	0.0	-1.2	0.0	38.2
Outdoor F&B (W)	Area	Leq,adj,4h			67.3	83.5	41.9	0.0	0.0	0	33.05	-41.4	-2.7	-4.6	-0.1	0.00	0.0	4.7	39.4	0.0	-3.6	0.0	35.8
Outdoor F&B (W)	Area	Leq,adj,9h			67.3	83.5	41.9	0.0	0.0	0	33.05	-41.4	-2.7	-4.6	-0.1	0.00	0.0	4.7	39.4	0.0	-12.6	0.0	26.9
RCV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	60.15	-46.6	-2.1	-17.3	-0.1	0.00	0.0	5.3	30.0	0.0	-23.4	0.0	11.6
RCV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	60.15	-46.6	-2.1	-17.3	-0.1	0.00	0.0	5.3	30.0	0.0			
RCV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	60.15	-46.6	-2.1	-17.3	-0.1	0.00	0.0	5.3	30.0	0.0			
Refrigeration plant	Point	Leq,adj,11			70.0	70.0		0.0	5.0	0	62.84	-47.0	-3.3	-9.7	-0.1	0.00	0.0	3.9	13.9	0.0	-13.4	0.0	5.5
Refrigeration plant	Point	Leq,adj,4h			70.0	70.0		0.0	5.0	0	62.84	-47.0	-3.3	-9.7	-0.1	0.00	0.0	3.9	13.9	0.0			



1604 Wynnum Road
ISO9613 Calculation Method
Predicted Operational Noise Levels at Adjacent Uses
From Activities at Proposed Development

Source	Source type	Time slice	Li	Rw	L'w	Lw	I or A	KI	KT	DO	S	Adiv	Agr	Abar	Aatm	Amisc	ADI	dLrefl	Ls	Cmet	dLw	ZR	Lr		
			dB(A)	dB	dB(A)	dB(A)	m, m ²	dB	dB	dB	m	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)	dB	dB	dB	dB(A)		
Refrigeration plant	Point	Leq,adj,9h			70.0	70.0		0.0	5.0	0	62.84	-47.0	-3.3	-9.7	-0.1	0.00	0.0	3.9	13.9	0.0					
Refuse collection	Point	Leq,adj,11			92.0	92.0		5.0	0.0	0	61.36	-46.7	-0.7	-22.8	-1.0	0.00	0.0	6.6	27.3	0.0	-34.2	0.0	-1.9		
Refuse collection	Point	Leq,adj,4h			92.0	92.0		5.0	0.0	0	61.36	-46.7	-0.7	-22.8	-1.0	0.00	0.0	6.6	27.3	0.0					
Refuse collection	Point	Leq,adj,9h			92.0	92.0		5.0	0.0	0	61.36	-46.7	-0.7	-22.8	-1.0	0.00	0.0	6.6	27.3	0.0					
Reversing beeper (RCV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	59.97	-46.6	-1.2	-22.0	-0.3	0.00	0.0	6.5	28.5	0.0	-36.0	0.0	-2.5		
Reversing beeper (RCV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	59.97	-46.6	-1.2	-22.0	-0.3	0.00	0.0	6.5	28.5	0.0					
Reversing beeper (RCV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	59.97	-46.6	-1.2	-22.0	-0.3	0.00	0.0	6.5	28.5	0.0					
Reversing beeper (SRV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	62.72	-46.9	-1.3	-20.1	-0.3	0.00	0.0	12.2	35.6	0.0	-33.0	0.0	7.7		
Reversing beeper (SRV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	62.72	-46.9	-1.3	-20.1	-0.3	0.00	0.0	12.2	35.6	0.0					
Reversing beeper (SRV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	62.72	-46.9	-1.3	-20.1	-0.3	0.00	0.0	12.2	35.6	0.0					
SRV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	62.94	-47.0	-2.1	-14.6	-0.1	0.00	0.0	7.6	34.6	0.0	-20.4	0.0	19.2		
SRV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	62.94	-47.0	-2.1	-14.6	-0.1	0.00	0.0	7.6	34.6	0.0					
SRV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	62.94	-47.0	-2.1	-14.6	-0.1	0.00	0.0	7.6	34.6	0.0					
Truck movements	Line	Leq,adj,11			58.9	81.9	197.2	0.0	0.0	0	20.87	-37.4	-1.1	-6.3	-0.1	0.00	0.0	2.2	39.3	0.0	-5.6	0.0	33.6		
Truck movements	Line	Leq,adj,4h			58.9	81.9	197.2	0.0	0.0	0	20.87	-37.4	-1.1	-6.3	-0.1	0.00	0.0	2.2	39.3	0.0					
Truck movements	Line	Leq,adj,9h			58.9	81.9	197.2	0.0	0.0	0	20.87	-37.4	-1.1	-6.3	-0.1	0.00	0.0	2.2	39.3	0.0					
Receiver Unit 20, 1600 Wynnum Road FI GF			Leq,adj,11 49 dB(A)	Leq,adj,4h 45 dB(A)	Leq,adj,9h 38 dB(A)																				
Carpark	PLot	Leq,adj,11			57.5	89.7	1688.4	0.0	0.0	0	19.72	-36.9	-0.8	-6.4	-0.1	0.00	0.0	1.7	47.3	0.0	0.0	0.0	47.3		
Carpark	PLot	Leq,adj,4h			57.5	89.7	1688.4	0.0	0.0	0	19.72	-36.9	-0.8	-6.4	-0.1	0.00	0.0	1.7	47.3	0.0	-4.3	0.0	43.0		
Carpark	PLot	Leq,adj,9h			57.5	89.7	1688.4	0.0	0.0	0	19.72	-36.9	-0.8	-6.4	-0.1	0.00	0.0	1.7	47.3	0.0	-12.6	0.0	34.8		
Mech plant-Facade 01	Area	Leq,adj,11	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	42.95	-43.7	-4.2	-15.4	-0.1	0.00	0.0	9.6	17.8	0.0	0.0	0.0	22.8		
Mech plant-Facade 01	Area	Leq,adj,4h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	42.95	-43.7	-4.2	-15.4	-0.1	0.00	0.0	9.6	17.8	0.0	-1.0	0.0	21.8		
Mech plant-Facade 01	Area	Leq,adj,9h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	42.95	-43.7	-4.2	-15.4	-0.1	0.00	0.0	9.6	17.8	0.0	-5.4	0.0	17.4		
Mech plant-Facade 02	Area	Leq,adj,11	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	45.05	-44.1	-4.2	-14.1	-0.1	0.00	0.0	5.8	11.0	0.0	0.0	0.0	16.0		
Mech plant-Facade 02	Area	Leq,adj,4h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	45.05	-44.1	-4.2	-14.1	-0.1	0.00	0.0	5.8	11.0	0.0	-1.0	0.0	15.1		
Mech plant-Facade 02	Area	Leq,adj,9h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	45.05	-44.1	-4.2	-14.1	-0.1	0.00	0.0	5.8	11.0	0.0	-5.4	0.0	10.6		
Mech plant-Facade 03	Area	Leq,adj,11	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	43.68	-43.8	-4.2	-9.8	-0.1	0.00	0.0	4.6	20.2	0.0	0.0	0.0	25.2		
Mech plant-Facade 03	Area	Leq,adj,4h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	43.68	-43.8	-4.2	-9.8	-0.1	0.00	0.0	4.6	20.2	0.0	-1.0	0.0	24.2		
Mech plant-Facade 03	Area	Leq,adj,9h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	43.68	-43.8	-4.2	-9.8	-0.1	0.00	0.0	4.6	20.2	0.0	-5.4	0.0	19.8		
Mech plant-Facade 04	Area	Leq,adj,11	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	42.27	-43.5	-4.3	-7.8	-0.1	0.00	0.0	2.4	7.3	0.0	0.0	0.0	12.3		
Mech plant-Facade 04	Area	Leq,adj,4h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	42.27	-43.5	-4.3	-7.8	-0.1	0.00	0.0	2.4	7.3	0.0	-1.0	0.0	11.4		
Mech plant-Facade 04	Area	Leq,adj,9h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	42.27	-43.5	-4.3	-7.8	-0.1	0.00	0.0	2.4	7.3	0.0	-5.4	0.0	6.9		
Mech plant-Facade 05	Area	Leq,adj,11	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	41.50	-43.4	-4.3	-5.4	-0.1	0.00	0.0	3.8	24.4	0.0	0.0	0.0	29.4		



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Source	Source type	Time slice	Li	Rw	L'w	Lw	I or A	KI	KT	DO	S	Adiv	Agr	Abar	Aatm	Amisc	ADI	dLrefl	Ln	Cmet	dLw	ZR	Lr
			dB(A)	dB	dB(A)	dB(A)	m, m ²	dB	dB	dB	m	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)	dB	dB	dB	dB(A)
Mech plant-Facade 05	Area	Leq,adj,4h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	41.50	-43.4	-4.3	-5.4	-0.1	0.00	0.0	3.8	24.4	0.0	-1.0	0.0	28.4
Mech plant-Facade 05	Area	Leq,adj,9h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	41.50	-43.4	-4.3	-5.4	-0.1	0.00	0.0	3.8	24.4	0.0	-5.4	0.0	24.0
Mech plant-Roof 01	Area	Leq,adj,11			70.0	82.2	16.5	0.0	5.0	0	42.84	-43.6	-2.4	-8.6	-0.2	0.00	0.0	6.2	33.5	0.0	0.0	0.0	38.5
Mech plant-Roof 01	Area	Leq,adj,4h			70.0	82.2	16.5	0.0	5.0	0	42.84	-43.6	-2.4	-8.6	-0.2	0.00	0.0	6.2	33.5	0.0	-1.0	0.0	37.5
Mech plant-Roof 01	Area	Leq,adj,9h			70.0	82.2	16.5	0.0	5.0	0	42.84	-43.6	-2.4	-8.6	-0.2	0.00	0.0	6.2	33.5	0.0	-5.4	0.0	33.1
Outdoor F&B (S)	Area	Leq,adj,11			67.8	83.5	37.0	0.0	0.0	0	49.08	-44.8	-3.3	-20.8	-0.2	0.00	0.0	5.5	19.9	0.0	-1.2	0.0	18.6
Outdoor F&B (S)	Area	Leq,adj,4h			67.8	83.5	37.0	0.0	0.0	0	49.08	-44.8	-3.3	-20.8	-0.2	0.00	0.0	5.5	19.9	0.0	-3.6	0.0	16.3
Outdoor F&B (S)	Area	Leq,adj,9h			67.8	83.5	37.0	0.0	0.0	0	49.08	-44.8	-3.3	-20.8	-0.2	0.00	0.0	5.5	19.9	0.0	-12.6	0.0	7.3
Outdoor F&B (W)	Area	Leq,adj,11			67.3	83.5	41.9	0.0	0.0	0	32.29	-41.2	-2.7	-4.6	-0.1	0.00	0.0	5.4	40.3	0.0	-1.2	0.0	39.0
Outdoor F&B (W)	Area	Leq,adj,4h			67.3	83.5	41.9	0.0	0.0	0	32.29	-41.2	-2.7	-4.6	-0.1	0.00	0.0	5.4	40.3	0.0	-3.6	0.0	36.7
Outdoor F&B (W)	Area	Leq,adj,9h			67.3	83.5	41.9	0.0	0.0	0	32.29	-41.2	-2.7	-4.6	-0.1	0.00	0.0	5.4	40.3	0.0	-12.6	0.0	27.7
RCV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	47.17	-44.5	-1.9	-7.5	-0.2	0.00	0.0	5.3	42.0	0.0	-23.4	0.0	23.6
RCV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	47.17	-44.5	-1.9	-7.5	-0.2	0.00	0.0	5.3	42.0	0.0			
RCV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	47.17	-44.5	-1.9	-7.5	-0.2	0.00	0.0	5.3	42.0	0.0			
Refrigeration plant	Point	Leq,adj,11			70.0	70.0		0.0	5.0	0	49.48	-44.9	-3.0	-4.7	-0.1	0.00	0.0	4.6	21.9	0.0	-13.4	0.0	13.4
Refrigeration plant	Point	Leq,adj,4h			70.0	70.0		0.0	5.0	0	49.48	-44.9	-3.0	-4.7	-0.1	0.00	0.0	4.6	21.9	0.0			
Refrigeration plant	Point	Leq,adj,9h			70.0	70.0		0.0	5.0	0	49.48	-44.9	-3.0	-4.7	-0.1	0.00	0.0	4.6	21.9	0.0			
Refuse collection	Point	Leq,adj,11			92.0	92.0		5.0	0.0	0	48.83	-44.8	-0.6	-20.9	-0.6	0.00	0.0	17.8	42.9	0.0	-34.2	0.0	13.7
Refuse collection	Point	Leq,adj,4h			92.0	92.0		5.0	0.0	0	48.83	-44.8	-0.6	-20.9	-0.6	0.00	0.0	17.8	42.9	0.0			
Refuse collection	Point	Leq,adj,9h			92.0	92.0		5.0	0.0	0	48.83	-44.8	-0.6	-20.9	-0.6	0.00	0.0	17.8	42.9	0.0			
Reversing beeper (RCV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	47.00	-44.4	-1.1	-9.5	-0.3	0.00	0.0	6.6	43.4	0.0	-36.0	0.0	12.4
Reversing beeper (RCV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	47.00	-44.4	-1.1	-9.5	-0.3	0.00	0.0	6.6	43.4	0.0			
Reversing beeper (RCV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	47.00	-44.4	-1.1	-9.5	-0.3	0.00	0.0	6.6	43.4	0.0			
Reversing beeper (SRV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	49.37	-44.9	-1.1	-8.9	-0.3	0.00	0.0	8.3	45.2	0.0	-33.0	0.0	17.3
Reversing beeper (SRV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	49.37	-44.9	-1.1	-8.9	-0.3	0.00	0.0	8.3	45.2	0.0			
Reversing beeper (SRV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	49.37	-44.9	-1.1	-8.9	-0.3	0.00	0.0	8.3	45.2	0.0			
SRV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	49.58	-44.9	-2.0	-7.2	-0.2	0.00	0.0	6.8	43.3	0.0	-20.4	0.0	27.9
SRV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	49.58	-44.9	-2.0	-7.2	-0.2	0.00	0.0	6.8	43.3	0.0			
SRV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	49.58	-44.9	-2.0	-7.2	-0.2	0.00	0.0	6.8	43.3	0.0			
Truck movements	Line	Leq,adj,11			58.9	81.9	197.2	0.0	0.0	0	17.33	-35.8	-0.9	-6.6	-0.1	0.00	0.0	2.3	40.9	0.0	-5.6	0.0	35.3
Truck movements	Line	Leq,adj,4h			58.9	81.9	197.2	0.0	0.0	0	17.33	-35.8	-0.9	-6.6	-0.1	0.00	0.0	2.3	40.9	0.0			
Truck movements	Line	Leq,adj,9h			58.9	81.9	197.2	0.0	0.0	0	17.33	-35.8	-0.9	-6.6	-0.1	0.00	0.0	2.3	40.9	0.0			

Receiver Unit 19, 1600 Wynnum Road FI GF Leq,adj,11 49 dB(A) Leq,adj,4h 46 dB(A) Leq,adj,9h 40 dB(A)



ATP Consulting Engineers

1604 Wynnum Road
ISO9613 Calculation Method
Predicted Operational Noise Levels at Adjacent Uses
From Activities at Proposed Development

Source	Source type	Time slice	Li	Rw	L'w	Lw	I or A	KI	KT	DO	S	Adiv	Agr	Abar	Aatm	Amisc	ADI	dLrefl	Ln	Cmet	dLw	ZR	Lr
			dB(A)	dB	dB(A)	dB(A)	m,m ²	dB	dB	dB	m	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)	dB	dB	dB	dB(A)
Carpark	PLot	Leq,adj,11			57.5	89.7	1688.4	0.0	0.0	0	19.57	-36.8	-0.7	-6.6	-0.1	0.00	0.0	1.2	46.8	0.0	0.0	0.0	46.8
Carpark	PLot	Leq,adj,4h			57.5	89.7	1688.4	0.0	0.0	0	19.57	-36.8	-0.7	-6.6	-0.1	0.00	0.0	1.2	46.8	0.0	-4.3	0.0	42.5
Carpark	PLot	Leq,adj,9h			57.5	89.7	1688.4	0.0	0.0	0	19.57	-36.8	-0.7	-6.6	-0.1	0.00	0.0	1.2	46.8	0.0	-12.6	0.0	34.2
Mech plant-Facade 01	Area	Leq,adj,11	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	35.75	-42.1	-3.9	-8.6	-0.1	0.00	0.0	7.1	24.0	0.0	0.0	0.0	29.0
Mech plant-Facade 01	Area	Leq,adj,4h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	35.75	-42.1	-3.9	-8.6	-0.1	0.00	0.0	7.1	24.0	0.0	-1.0	0.0	28.1
Mech plant-Facade 01	Area	Leq,adj,9h	70.0	10.0	62.6	68.5	3.9	0.0	5.0	3	35.75	-42.1	-3.9	-8.6	-0.1	0.00	0.0	7.1	24.0	0.0	-5.4	0.0	23.6
Mech plant-Facade 02	Area	Leq,adj,11	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	37.73	-42.5	-3.9	-9.4	0.0	0.00	0.0	5.5	17.2	0.0	0.0	0.0	22.2
Mech plant-Facade 02	Area	Leq,adj,4h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	37.73	-42.5	-3.9	-9.4	0.0	0.00	0.0	5.5	17.2	0.0	-1.0	0.0	21.2
Mech plant-Facade 02	Area	Leq,adj,9h	70.0	10.0	62.6	64.6	1.6	0.0	5.0	3	37.73	-42.5	-3.9	-9.4	0.0	0.00	0.0	5.5	17.2	0.0	-5.4	0.0	16.8
Mech plant-Facade 03	Area	Leq,adj,11	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	35.81	-42.1	-3.9	-9.2	0.0	0.00	0.0	5.3	23.5	0.0	0.0	0.0	28.5
Mech plant-Facade 03	Area	Leq,adj,4h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	35.81	-42.1	-3.9	-9.2	0.0	0.00	0.0	5.3	23.5	0.0	-1.0	0.0	27.5
Mech plant-Facade 03	Area	Leq,adj,9h	70.0	10.0	62.6	70.5	6.1	0.0	5.0	3	35.81	-42.1	-3.9	-9.2	0.0	0.00	0.0	5.3	23.5	0.0	-5.4	0.0	23.1
Mech plant-Facade 04	Area	Leq,adj,11	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	34.01	-41.6	-3.9	-8.8	0.0	0.00	0.0	5.8	12.1	0.0	0.0	0.0	17.1
Mech plant-Facade 04	Area	Leq,adj,4h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	34.01	-41.6	-3.9	-8.8	0.0	0.00	0.0	5.8	12.1	0.0	-1.0	0.0	16.1
Mech plant-Facade 04	Area	Leq,adj,9h	70.0	10.0	62.6	57.6	0.3	0.0	5.0	3	34.01	-41.6	-3.9	-8.8	0.0	0.00	0.0	5.8	12.1	0.0	-5.4	0.0	11.7
Mech plant-Facade 05	Area	Leq,adj,11	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	33.76	-41.6	-3.9	-3.5	-0.1	0.00	0.0	4.0	28.8	0.0	0.0	0.0	33.8
Mech plant-Facade 05	Area	Leq,adj,4h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	33.76	-41.6	-3.9	-3.5	-0.1	0.00	0.0	4.0	28.8	0.0	-1.0	0.0	32.8
Mech plant-Facade 05	Area	Leq,adj,9h	70.0	10.0	62.6	70.8	6.5	0.0	5.0	3	33.76	-41.6	-3.9	-3.5	-0.1	0.00	0.0	4.0	28.8	0.0	-5.4	0.0	28.4
Mech plant-Roof 01	Area	Leq,adj,11			70.0	82.2	16.5	0.0	5.0	0	35.25	-41.9	-2.2	-5.0	-0.1	0.00	0.0	5.4	38.3	0.0	0.0	0.0	43.3
Mech plant-Roof 01	Area	Leq,adj,4h			70.0	82.2	16.5	0.0	5.0	0	35.25	-41.9	-2.2	-5.0	-0.1	0.00	0.0	5.4	38.3	0.0	-1.0	0.0	42.3
Mech plant-Roof 01	Area	Leq,adj,9h			70.0	82.2	16.5	0.0	5.0	0	35.25	-41.9	-2.2	-5.0	-0.1	0.00	0.0	5.4	38.3	0.0	-5.4	0.0	37.9
Outdoor F&B (S)	Area	Leq,adj,11			67.8	83.5	37.0	0.0	0.0	0	50.65	-45.1	-3.3	-21.0	-0.2	0.00	0.0	4.0	17.9	0.0	-1.2	0.0	16.7
Outdoor F&B (S)	Area	Leq,adj,4h			67.8	83.5	37.0	0.0	0.0	0	50.65	-45.1	-3.3	-21.0	-0.2	0.00	0.0	4.0	17.9	0.0	-3.6	0.0	14.3
Outdoor F&B (S)	Area	Leq,adj,9h			67.8	83.5	37.0	0.0	0.0	0	50.65	-45.1	-3.3	-21.0	-0.2	0.00	0.0	4.0	17.9	0.0	-12.6	0.0	5.4
Outdoor F&B (W)	Area	Leq,adj,11			67.3	83.5	41.9	0.0	0.0	0	35.58	-42.0	-2.8	-4.6	-0.1	0.00	0.0	2.3	36.3	0.0	-1.2	0.0	35.1
Outdoor F&B (W)	Area	Leq,adj,4h			67.3	83.5	41.9	0.0	0.0	0	35.58	-42.0	-2.8	-4.6	-0.1	0.00	0.0	2.3	36.3	0.0	-3.6	0.0	32.7
Outdoor F&B (W)	Area	Leq,adj,9h			67.3	83.5	41.9	0.0	0.0	0	35.58	-42.0	-2.8	-4.6	-0.1	0.00	0.0	2.3	36.3	0.0	-12.6	0.0	23.8
RCV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	39.32	-42.9	-1.8	-7.8	-0.1	0.00	0.0	7.0	45.1	0.0	-23.4	0.0	26.7
RCV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	39.32	-42.9	-1.8	-7.8	-0.1	0.00	0.0	7.0	45.1	0.0			
RCV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	39.32	-42.9	-1.8	-7.8	-0.1	0.00	0.0	7.0	45.1	0.0			
Refrigeration plant	Point	Leq,adj,11			70.0	70.0		0.0	5.0	0	41.21	-43.3	-2.8	-4.0	-0.1	0.00	0.0	4.8	24.6	0.0	-13.4	0.0	16.2
Refrigeration plant	Point	Leq,adj,4h			70.0	70.0		0.0	5.0	0	41.21	-43.3	-2.8	-4.0	-0.1	0.00	0.0	4.8	24.6	0.0			
Refrigeration plant	Point	Leq,adj,9h			70.0	70.0		0.0	5.0	0	41.21	-43.3	-2.8	-4.0	-0.1	0.00	0.0	4.8	24.6	0.0			



1604 Wynnum Road
 ISO9613 Calculation Method
 Predicted Operational Noise Levels at Adjacent Uses
 From Activities at Proposed Development

Source	Source type	Time slice	Li dB(A)	Rw dB	L'w dB(A)	Lw dB(A)	I or A m,m ²	KI dB	KT dB	DO dB	S m	Adiv dB	Agr dB	Abar dB	Aatm dB	Amisc dB	ADI dB	dLrefl dB(A)	Ls dB(A)	Cmet dB	dLw dB	ZR dB	Lr dB(A)
Refuse collection	Point	Leq,adj,11			92.0	92.0		5.0	0.0	0	41.41	-43.3	-0.6	-8.1	-0.6	0.00	0.0	7.4	46.8	0.0	-34.2	0.0	17.6
Refuse collection	Point	Leq,adj,4h			92.0	92.0		5.0	0.0	0	41.41	-43.3	-0.6	-8.1	-0.6	0.00	0.0	7.4	46.8	0.0			
Refuse collection	Point	Leq,adj,9h			92.0	92.0		5.0	0.0	0	41.41	-43.3	-0.6	-8.1	-0.6	0.00	0.0	7.4	46.8	0.0			
Reversing beeper (RCV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	39.18	-42.9	-1.0	-10.2	-0.2	0.00	0.0	8.6	46.5	0.0	-36.0	0.0	15.5
Reversing beeper (RCV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	39.18	-42.9	-1.0	-10.2	-0.2	0.00	0.0	8.6	46.5	0.0			
Reversing beeper (RCV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	39.18	-42.9	-1.0	-10.2	-0.2	0.00	0.0	8.6	46.5	0.0			
Reversing beeper (SRV)	Point	Leq,adj,11			92.1	92.1		0.0	5.0	0	41.10	-43.3	-1.0	-6.7	-0.2	0.00	0.0	7.0	47.9	0.0	-33.0	0.0	19.9
Reversing beeper (SRV)	Point	Leq,adj,4h			92.1	92.1		0.0	5.0	0	41.10	-43.3	-1.0	-6.7	-0.2	0.00	0.0	7.0	47.9	0.0			
Reversing beeper (SRV)	Point	Leq,adj,9h			92.1	92.1		0.0	5.0	0	41.10	-43.3	-1.0	-6.7	-0.2	0.00	0.0	7.0	47.9	0.0			
SRV	Point	Leq,adj,11			90.8	90.8		0.0	5.0	0	41.30	-43.3	-1.8	-5.7	-0.2	0.00	0.0	6.4	46.2	0.0	-20.4	0.0	30.7
SRV	Point	Leq,adj,4h			90.8	90.8		0.0	5.0	0	41.30	-43.3	-1.8	-5.7	-0.2	0.00	0.0	6.4	46.2	0.0			
SRV	Point	Leq,adj,9h			90.8	90.8		0.0	5.0	0	41.30	-43.3	-1.8	-5.7	-0.2	0.00	0.0	6.4	46.2	0.0			
Truck movements	Line	Leq,adj,11			58.9	81.9	197.2	0.0	0.0	0	13.57	-33.6	-0.7	-7.4	-0.1	0.00	0.0	1.4	41.5	0.0	-5.6	0.0	35.9
Truck movements	Line	Leq,adj,4h			58.9	81.9	197.2	0.0	0.0	0	13.57	-33.6	-0.7	-7.4	-0.1	0.00	0.0	1.4	41.5	0.0			
Truck movements	Line	Leq,adj,9h			58.9	81.9	197.2	0.0	0.0	0	13.57	-33.6	-0.7	-7.4	-0.1	0.00	0.0	1.4	41.5	0.0			



1604 Wynnum Road

Assessed receiver levels

Operational Noise Impact Assessment

Receiver	Lmax dB(A)
Unit 21, 1600 Wynnum Road	37
Unit 21, 1600 Wynnum Road	37
Unit 21, 1600 Wynnum Road	36
Unit 21, 1600 Wynnum Road	36
Unit 21, 1600 Wynnum Road	35
Unit 21, 1600 Wynnum Road	34
Unit 20, 1600 Wynnum Road	43
Unit 20, 1600 Wynnum Road	42
Unit 20, 1600 Wynnum Road	41
Unit 19, 1600 Wynnum Road	46
Unit 19, 1600 Wynnum Road	43
Unit 18, 1600 Wynnum Road	48
Unit 18, 1600 Wynnum Road	48
Unit 17, 1600 Wynnum Road	55
Unit 17, 1600 Wynnum Road	55
Unit 17, 1600 Wynnum Road	51
Unit 16, 1600 Wynnum Road	53
Unit 16, 1600 Wynnum Road	50
Unit 15, 1600 Wynnum Road	50
Unit 15, 1600 Wynnum Road	50
Unit 15, 1600 Wynnum Road	49
Unit 15, 1600 Wynnum Road	49
Unit 15, 1600 Wynnum Road	47
Unit 15, 1600 Wynnum Road	44
Unit 1, 1600 Wynnum Road	34
Unit 1, 1600 Wynnum Road	34
Unit 1, 1600 Wynnum Road	34
Unit 1, 1600 Wynnum Road	34
Unit 1, 1600 Wynnum Road	32



ATP Consulting Engineers

Appendix F – Operational Noise Contour Maps



ATP250812

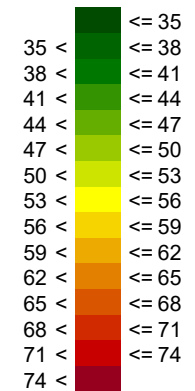
1604 Wynnun Road,
Tingalpa

Noise Levels Associated with
Proposed Development

Free-field (1.5m AGL)

Operational Noise Level

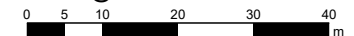
Leq,adj,11hr, Day dB(A)



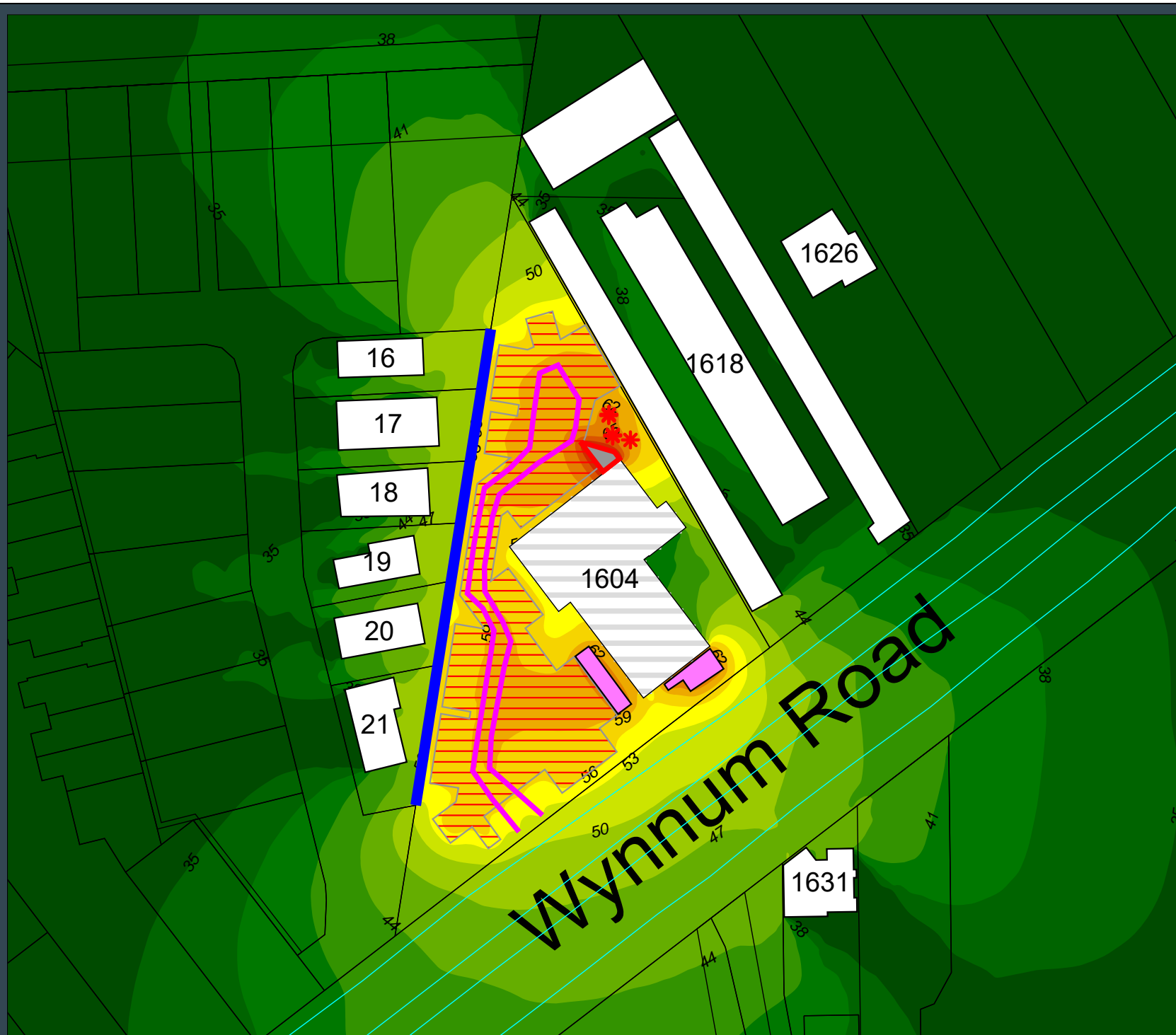
Legend

- Proposed development
- Noise source (point)
- Line Source
- Paved surface
- Lot boundary
- Parking lot
- Existing buildings
- Noise barrier fence
- Industrial building; Room
- Area source

SCALE @ A4 1:1000



Grid Spacing: 1m
Project Engineer: Mark Chang
Created: 17/04/2026
Processed with SoundPLAN 9.1





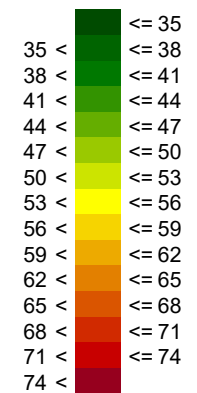
ATP250812

1604 Wynnum Road,
Tingalpa

Noise Levels Associated with
Proposed Development

Free-field (1.5m AGL)

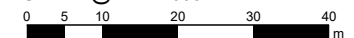
Operational Noise Level
Leq,adj,4hr, Evening dB(A)



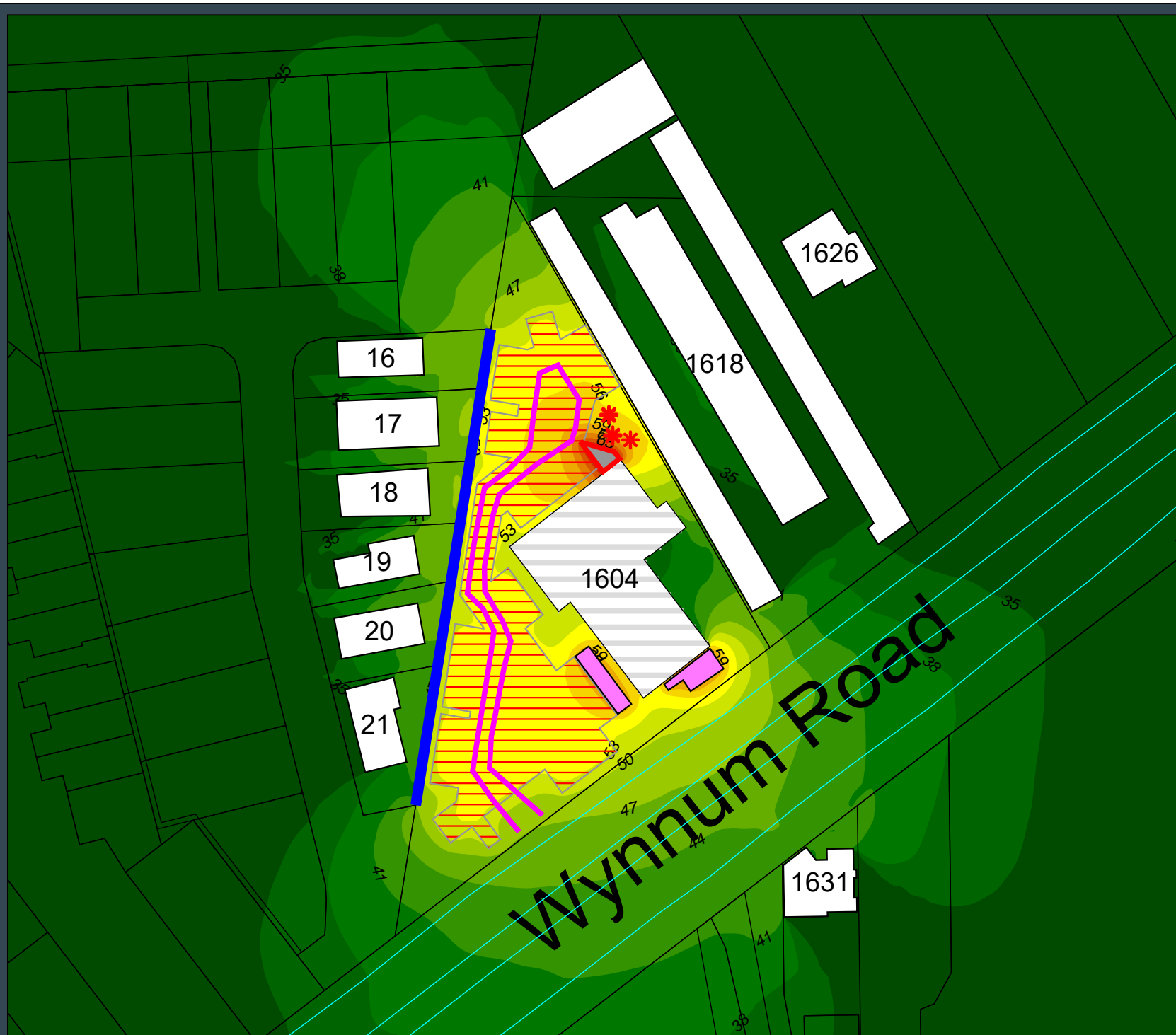
Legend

- Proposed development
- Noise source (point)
- Line Source
- Paved surface
- Lot boundary
- Parking lot
- Existing buildings
- Noise barrier fence
- Industrial building; Room
- Area source

SCALE @ A4 1:1000

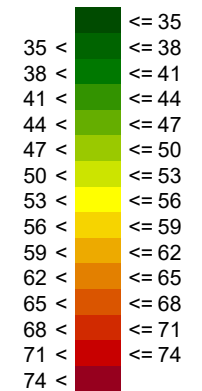


Grid Spacing: 1m
Project Engineer: Mark Chang
Created: 17/04/2026
Processed with SoundPLAN 9.1



**Noise Levels Associated with
Proposed Development**

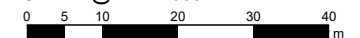
Free-field (1.5m AGL)
Operational Noise Level
Leq,adj,9hr, Night dB(A)



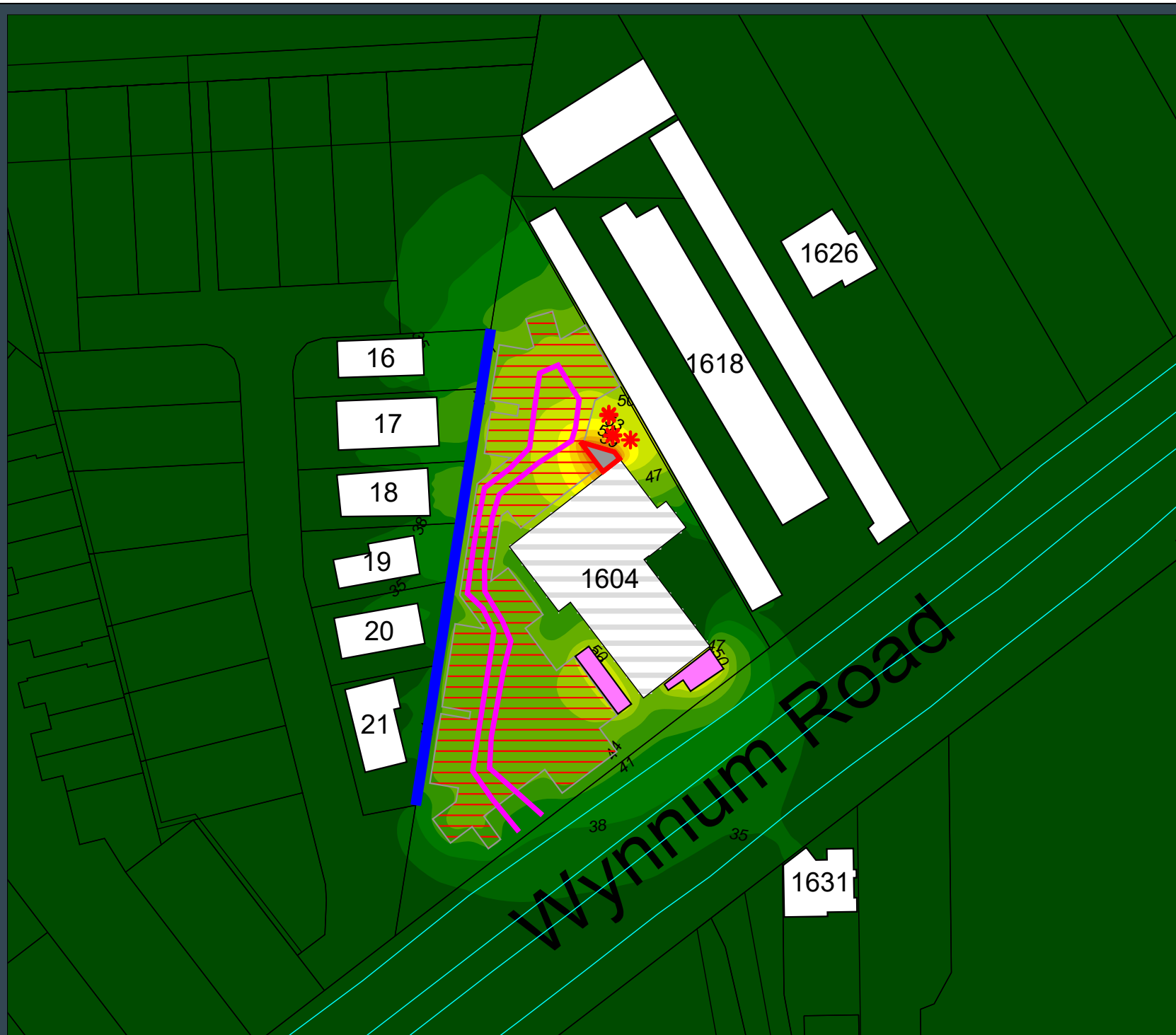
Legend

- Proposed development
- Noise source (point)
- Line Source
- Paved surface
- Lot boundary
- Parking lot
- Existing buildings
- Noise barrier fence
- Industrial building; Room
- Area source

SCALE @ A4 1:1000



Grid Spacing: 1m
Project Engineer: Mark Chang
Created: 17/04/2026
Processed with SoundPLAN 9.1



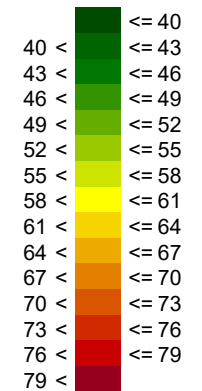


ATP250812

1604 Wynnnum Road,
Tingalpa

Noise Levels Associated with
Proposed Development

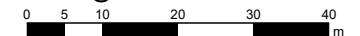
Free-field (1.5m AGL)
Operational Noise Level
L_{max, Night} dB(A)



Legend

- Proposed development
- Noise source (point)
- Paved surface
- Lot boundary
- Existing buildings
- Noise barrier fence

SCALE @ A4 1:1000



Grid Spacing: 1m
Project Engineer: Mark Chang
Created: 16/04/2026
Processed with SoundPLAN 9.1

