



ALPHA
ACOUSTICS

CONSULTING ACOUSTICAL ENGINEERS

PO Box 700 Margate Beach QLD 4019 AUSTRALIA

ABN 22 180 702 408

m: 0420 935 874

e: info@alphaacoustics.com.au

w: alphaacoustics.com.au

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**TOOWOOMBA
REGIONAL COUNCIL**

ENVIRONMENTAL NOISE ASSESSMENT

51 Tourist Road, East Toowoomba QLD 4350

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Report Issued	Attention	Phone	Email
Constructions Group	Ben Holley	0407 590 067	benh@cgaust.com

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Recommendations made in this report are intended to resolve acoustical problems only. We make no claim of expertise in other areas and draw your attention to the possibility that our recommendations may not meet the structural, fire, thermal, or other aspects of building construction

We encourage clients to check with us before using materials or equipment that are alternative to those specified in our Acoustical Report.

The integrity of acoustic structures is very dependent on installation techniques. For example, a small crack between the top of a wall and a ceiling can reduce the effective sound transmission loss of a wall from R_w 50 to R_w 40. Therefore, the use of contractors that are experienced in acoustic construction is encouraged. Furthermore, two insulation products may have the same thermal R rating but the sound absorption of one may be entirely deficient, therefore the use of materials and equipment that are supported by acoustic laboratory test data is encouraged.

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EXECUTIVE SUMMARY

This acoustic report has been prepared to support a Development Application for Constructions Group at 51 Tourist Road, East Toowoomba 4350. The development site falls within the Toowoomba Regional Council – Low to Medium Density Residential Zone and the site is surrounded by residences.

This environmental noise assessment uses unattended noise measurements taken on site and environmental noise emission and immission modelling to determine acoustic treatments for the development.

The following conclusions apply to this assessment:

- Onsite short duration activity noise emissions are predicted to comply with noise sensitive receivers at levels within the daytime and evening and night time periods.
- Noise from surrounding commercial operations are predicted to comply with reverse amenity noise criteria impacting the site.

Recommendations

- Acoustic noise controls as outlined in this report should be constructed as described in **Section 6** of this report.

1 INTRODUCTION

This acoustic report has been prepared to support a Development Application for Constructions Group at 51 Tourist Road, East Toowoomba 4350. The development site falls within the Toowoomba Regional Council – Low to Medium Density Residential Zone and the site is surrounded by residences and a shopping centre and petrol station to the East.

This environmental noise assessment uses unattended noise measurements taken on site and environmental noise emission modelling to determine acoustic treatments for the development.

The development includes twenty eight (28) units on six levels including a ground level pool, spa, and gymnasium. Carparking is undertaken in the basement, and each unit will have split system air conditioning with the compressors located on the plank deck on the eastern façade of each floor.

The development has the potential to impact nearby residences from mechanical plant noise, people noise using the pool and spa area and rubbish disposal. Additionally the near by petrol station and shopping centre have the potential to impact the development and this is assessed by reverse amenity.

Potential noise emissions going out from the development and noise imissions coming into the development have been forecast in a noise modelling program called SoundPLAN to determine future noise emission impacts. Noise control recommendations are recommended where necessary. Baseline noise measurements have also been performed at the site to determine the background and ambient noise levels in the area.

2 SITE DESCRIPTION

This acoustic report has been prepared to support a Development Application for Constructions Group at 51 Tourist Road, East Toowoomba 4350. The development site falls within the Toowoomba Regional Council – Low to Medium Density Residential Zone and the site is surrounded by residences and a shopping centre and petrol station to the East. The nearest residences include residential dwellings:

- R1 – 58 Tourist Road, East Toowoomba
- R2 – 60 Tourist Road, East Toowoomba
- R3 – 62 Tourist Road, East Toowoomba
- R4 – 64 Tourist Road, East Toowoomba
- R5 – 4 James Street, East Toowoomba
- R6 – 6 James Street, East Toowoomba
- R7 – 8 James Street, East Toowoomba
- R8 – 10 James Street, East Toowoomba
- R9 – 12 James Street, East Toowoomba
- R10 – 1A Burke Street, East Toowoomba
- R11 – 1 Burke Street, East Toowoomba

The general location layout is shown in **Figure 2.1**. The development site falls within The Medium Density Residential Zone, as shown in **Figure 2.2**.

[illegible]

Toowoomba Regional Planning Scheme v28 Rich traditions. Bold ambitions.

51 Tourist Road, East Toow X

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1B

BURKE STREET

TOURIST ROAD

51

Search result

51 Tourist Road, East Toowoomba,
Toowoomba, Queensland, 4350, AUS

[Zoom to](#)

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58

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Layer List

- Land Use Zones
 - Precincts
 - Greenfield Areas
 - Local Plan Areas
 - Zones
 - Low Density Residential
 - Low-Medium Density Residential
 - Principal Centre
 - Major Centre
 - District Centre
 - Local Centre
 - Specialised Centre
 - Sport and Recreation
 - Open Space
 - Low Impact Industry
 - Medium Impact Industry
 - High Impact Industry
 - Emerging Community
 - Community Facilities

3 EXISTING ACOUSTIC ENVIRONMENT

An on-site survey was conducted for a period of 7 days, between Sunday 31st May 2026 to Saturday 6th June 2026. The measurement location (ML1) was located in the yard of the site at 51 Tourist Road, East Toowoomba. This location is a representative ambient noise location for the surrounding residences as shown in **Figure 2.1** above.

The microphone was placed at a height of 1.5 m at ML1. The measured levels are considered free field. The background noise was predominantly made up of traffic noise and shopping centre noise and flora and fauna.

All instrumentation used in this assessment holds a current calibration certificate from a certified NATA calibration laboratory. The following instruments were used to measure the ambient noise levels-

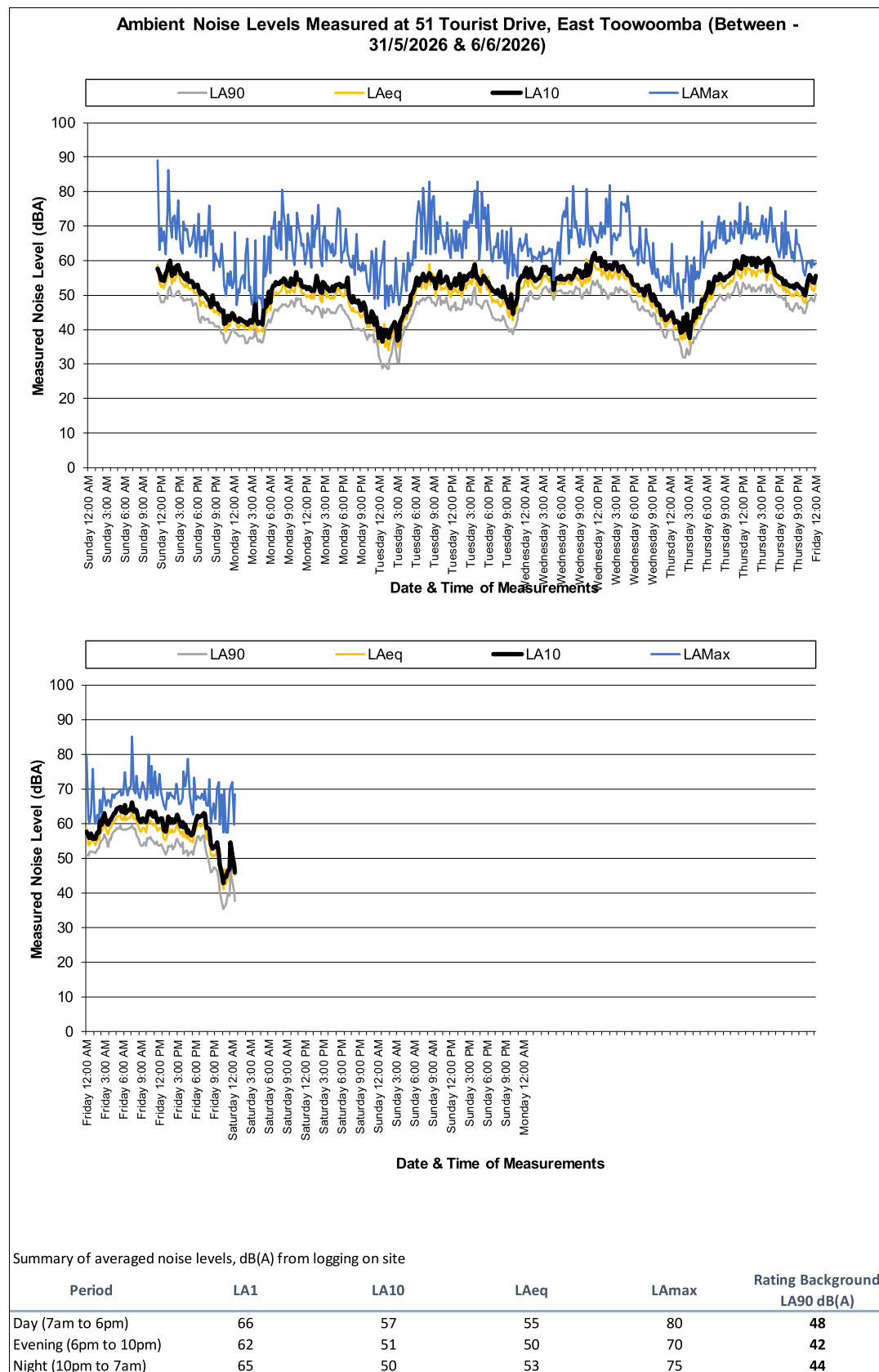
Table 3.1 Noise Instrumentation

Description	Model No.	Serial No.
ARL Noise Logger	Rion NL22	01273553
Condenser Microphone 0.5" diameter	UC52	147752
Acoustical Calibrator	Larson Davis CAL 200	2617
Microphone Windscreen	Acoustically transparent foam	

Ambient sound pressure levels were measured generally in accordance with Australian Standard AS1055.1:1997 - 'Acoustics-Description and measurement of environmental noise - Part 1: General procedures'. Ambient noise levels were recorded at continuous 15 minute intervals. (**Figure 3.1**). The noise equipment was calibrated before and after noise measurements and no significant drift from the reference signal was found. Terms and definitions used in the report are found in **Appendix A**.

Weather during the monitoring period were obtained from the Bureau of Meteorology website and weather conditions were fine with temperature ranging between 8⁰C to 16⁰C and relative humidity 53% to 86%.

Figure 3.1 Exterior Noise Levels at ML1



4 NOISE CRITERIA

4.1 Toowoomba Regional Council - Environmental Protection (Noise) Policy

The Acoustic Quality Objectives and the Background Creep requirements of the Environmental Protection (Noise) Policy 2019 (EPP Noise) have been used as the assessment criteria for the development. Operational activities for the proposed use have been assessed against the Acoustic Quality Objectives as shown in **Table 4.3.1**.

Table 4.3.1 Acoustic Quality Objectives of the Environmental Protection Policy 2008

Sensitive Receptor	Time of Day	Acoustic Quality Objective (Measured at the Receptor) dB(A)			Environmental Value
		LA _{eq,adj,1hr}	LA _{10,adj,1hr}	LA _{01,adj,1hr}	
Dwellings (for outdoors)	Daytime and evening (7am to 10pm)	50	55	65	Health and wellbeing
Dwellings (for indoors)	Daytime and evening (7am to 10pm)	35	40	45	Health and wellbeing
Dwellings (for indoors)	Night-time (10pm to 7am)	30	35	40	Health and wellbeing in relation to the ability to sleep

Introduced plant have the potential to increase background noise levels in the area. These have been assessed against the Background Creep requirements of EPP Noise.

To the extent that it is reasonable to do so, noise from an activity must not be:

- For continuous noise (e.g. fan noise) – Measured by LA_{90,T} more than nil dB(A) greater than the existing acoustic environment measured by LA_{90,T}.
- For noise that varies over time (i.e. vehicle movements,) – Measured by LA_{eq,adj,T} more than 5 dB(A) greater than the existing acoustic environment measured by LA_{90,T}.

Noise emission limits for the control of background creep, based on measured background levels are shown in **Table 4.3.2** below.

Table 4.3.2 Background Creep Requirements of the Environmental Protection Policy 2019

Time of Day	Measured Background Level LA ₉₀ dB(A)	Permitted Noise Emission dB(A)	
		Continuously Operating Plant LA _{90,T}	Time Varying Noise LA _{eq,adj,T}
Daytime (7am to 6pm)	48	48	53
Evening (6pm to 10pm)	42	42	47
Night (10pm to 7am)	44	44	49

4.3.1 Environmental Protection Act - Air Conditioning

Under Section 440U of the Environmental Protection Act 1994 the noise from air conditioning or refrigeration plant, must not exceed the following noise levels when measured over a period of 15 minutes at an affected building:

- Between 10pm and 7am: 3 dB(A) above the background level
- From 7am to 10pm: 5 dB(A) above the background level

4.3.2 Project Specific Noise Criteria

Considering the criteria discussion above, the project specific noise criteria is summarised in **Table 4.3.3** below.

Table 4.3.3 – Summary of all relevant Noise Assessment Criteria (outdoors)

Criteria	Noise Descriptor	Day	Evening	Night
MBRC Planning Scheme Policy - Noise				
Intrusive Noise Criteria	Leq dB(A)	53	47	49
Acoustic Amenity Criteria	Leq dB(A)	48	42	44
Night Time Noise Criteria	Lmax dB(A)	n/a	n/a	50 ¹
Environmental Protection Act				
Mechanical Plant Noise Criteria	L90 dB(A)	53	47	47
Environmental Protection Policy 2019 Acoustic Quality Objectives & Background Noise Creep				
Dwelling Outdoors	Leq dB(A) - Time Varying	50	40 ²	35 ²
Dwelling Outdoors	Leq dB(A) - Continuous	48	40 ²	35 ²
Dwelling Outdoors	L10 dB(A)	55	45 ²	40 ²
Dwelling Outdoors	L1 dB(A)	65	50 ²	45 ²

Note 1 The L_{Amax} is the average of 15 L_{Amax} noise emissions

Note 2 the night time EPP Noise criteria is based on indoor levels + 5dB(A) to account for an open window

4.2 Council Reverse Amenity Noise Criteria

Low-medium Density Residential Zone Code PO18 requires that development has a high level of residential amenity. A DA must address reverse amenity in terms of noise from nearby noise sources (service station, shopping centre), noise impacts from the development to surrounding sensitive receptors. To this end noise emissions from nearby commercial uses are modelled and assessed against the noise criteria outlined in the Environmental Protection Policy 2008.

4.3 Project Specific Noise Criteria

4.3.3 To Residences surrounding the site:

Considering the criteria discussion above, the project specific noise criteria that ensures compliance with the noise criteria at all times is:

- **L_{Aeq} 40 dBA during the daytime and evening period** and
- **L_{Aeq} 35 dBA** and
- **L_{AMax} 50 dBA at night at a building facade.**

4.3.4 To the site residences from nearby commercial operations :

Considering the criteria discussion above, the project specific noise criteria that ensures compliance with the noise criteria at all times is:

- **L_{Aeq} 40 dBA during the daytime and evening period** and
- **L_{Aeq} 35 dBA at night**

5 NOISE ASSESSMENT

5.1 Environmental Noise Modelling

Modelled noise levels of noise emissions from the site and into the site are shown below in **Table 5.1**. The sound sources have been modelled in SoundPLAN. The noise emissions used for the various noise sources (taken from previous similar noise measurement noise data from Alpha Acoustics Pty Ltd and SoundPlan Sound Library) as sound power levels.

Table 5.1 Summary of Common Noise Sources (Sound Power levels, dBA)

		63	125	250	500	1000	2000	4000	8000	
Noise Source	Descriptor	63	125	250	500	1000	2000	4000	8000	dBA
1 Person Talking loudly	Leq SWL	60	70	75	80	73	70	62	55	79
	Lmax SWL	70	80	85	90	83	80	72	65	89
1 person talking normally	Leq SWL	50	60	67	68	60	57	51	45	67
	Lmax SWL	60	70	77	78	70	67	61	55	77
carparking, start, car door closes drive off	Leq SWL	94	96	91	90	88	87	83	79	94
	Lmax SWL	95	97	92	91	89	88	84	80	95
mechanical plant	Leq SWL	60	63	68	62	60	56	53	47	65
	Lmax SWL	65	68	73	67	65	61	58	52	70
carpark Exhaust	Leq SWL	65	68	73	67	65	61	58	52	70
	Lmax SWL	70	73	78	72	70	66	63	57	75
large 4 x 4 Drives / door closes	Leq SWL	82	82	71	67	67	68	59	53	74
	Lmax SWL	95	92	87	90	86	85	78	68	92
Deisel pump operating	Leq SWL	94	96	86	84	86	84	75	67	90
	Lmax SWL	75	70	63	63	68	77	86	92	92
Vehicle driving around site	Leq SWL	88	82	73	73	73	72	64	58	78
	Lmax SWL	82	92	81	80	87	88	88	84	94
comercial airconditioning 50Kw	Leq SWL	87	82	79	74	72	69	67	65	78
	Lmax SWL	90	85	82	77	75	72	70	68	81

Knowing the source sound power level (see above Table 5.2.4), the sound pressure level can be calculated at a remote location using suitable formulae to account for distance losses, ground absorption, sound barriers, atmospheric effects, etc.

Noise modelling has been conducted using SoundPLAN v8.2 and the prediction methodology *ISO 9613-2: 1996* incorporating manufacturer published sound emission data. We would expect the order of uncertainty to be in the range of +/- 2 dB(A). The noise model presents all plant operating simultaneously, accordingly the predictions should be considered a worst-case scenario, assuming constant noise levels.

5.2 Environmental Noise Emissions

The site noise emissions include:

- Airconditioning unit for each residential unit located as indicated on plans
- Roof top air conditioner for the lift
- People noise around the pool and spa area
- Vehicle noise
- Rubbish pick up noise

The calculated noise levels at the subject site are modelled and shown in Table 5.2.1 below for the daytime and evening period.

Table 5.2.5 Modelled Daytime and Evening noise levels at sensitive receivers

Receiver	LAeq Day Evening criteria	LAeq Day Evening Noise Emissions	Pass/Fail
R1 – 58 Tourist Road, East Toowoomba	40	36.3	Pass
R2 – 60 Tourist Road, East Toowoomba	40	33.4	Pass
R3 – 62 Tourist Road, East Toowoomba	40	26.6	Pass
R4 – 64 Tourist Road, East Toowoomba	40	29.1	Pass
R5 – 4 James Street, East Toowoomba	40	24.6	Pass
R6 – 6 James Street, East Toowoomba	40	35	Pass
R7 – 8 James Street, East Toowoomba	40	35	Pass
R8 – 10 James Street, East Toowoomba	40	35	Pass
R9 – 12 James Street, East Toowoomba	40	34.9	Pass
R10 – 1A Burke Street, East Toowoomba	40	31.2	Pass
R11 – 1 Burke Street, East Toowoomba	40	32.5	Pass

Assuming the pool area is closed at night time, and assuming a 1.2m high solid barrier around the pool and upper deck area, the calculated noise levels at the subject site are modelled and shown in Table 5.2.6 below for the daytime and evening period.

Table 5.2.6 Modelled Night time noise levels at sensitive receivers

Receiver	LAeq Night criteria	LAeq Night Noise Emissions	LAMax Night criteria	LAMax Night Noise Emissions	Pass/Fail
R1 – 58 Tourist Road, East Toowoomba	35	16.2	50	24.8	Pass
R2 – 60 Tourist Road, East Toowoomba	35	14.8	50	24	Pass
R3 – 62 Tourist Road, East Toowoomba	35	13.4	50	15	Pass
R4 – 64 Tourist Road, East Toowoomba	35	10.5	50	12.2	Pass
R5 – 4 James Street, East Toowoomba	35	24.5	50	29.7	Pass
R6 – 6 James Street, East Toowoomba	35	35	50	39.6	Pass
R7 – 8 James Street, East Toowoomba	35	35	50	38.9	Pass
R8 – 10 James Street, East Toowoomba	35	35	50	39.3	Pass
R9 – 12 James Street, East Toowoomba	35	34.9	50	39.5	Pass
R10 – 1A Burke Street, East Toowoomba	35	31.2	50	36.6	Pass
R11 – 1 Burke Street, East Toowoomba	35	32.4	50	41.2	Pass

5.3 Noise Intrusion – Reverse Amenity - Commercial Noise intrusion

The site noise emissions include:

- Airconditioning unit for each residential unit located as indicated on plans
- Roof top air conditioner for the lift
- People noise around the pool and spa area
- Vehicle noise
- Rubbish pick up noise

The calculated noise levels at the subject site are modelled and shown in Table 5.3.1 below for the daytime and evening period.

To ensure residential amenity for the proposed development, a reverse amenity assessment was conducted to evaluate noise impacts from the adjacent commercial operations to the east (shopping centre and service station). The site was modelled in SoundPLAN to determine the incident noise levels upon the proposed residential facades. The modelled commercial noise sources included mechanical plant (air conditioning), petrol bowsers, vehicle movements (20 km/hr), and patron noise.

Australian Standard AS 3671-1989 has been adopted in this assessment to establish the minimum construction requirements for the building envelope. The required facade attenuation is determined by subtracting the recommended internal design level 35 dB(A) LAeq from the predicted external incident noise level.

Table 5.3.1 outlines the predicted incident noise levels, the required attenuation, and the resulting construction category for the most exposed facades.

Table 5.3.1: Predicted Commercial Noise Intrusion and Construction Categories

Receptor Level	Receptor Façade	Receptor Room	L _{Aeq} Noise Level, dB(A)	Internal Criteria	Difference	Category
gf	east	Residents Lounge	37.8	35	2.8	Cat 1
gf	north	northern type A1	30.2	35	-4.8	Cat 1
gf	north	residents lounge	34	35	-1	Cat 1
gf	north	southern type A1	28.3	35	-6.7	Cat 1
gf	north	type C	25	35	-10	Cat 1
gf	north	type C	47.1	35	12.1	Cat 2
gf	south	northern Type A1	44.2	35	9.2	Cat 1
gf	south	southern type A1	46.6	35	11.6	Cat 2
gf	south	type C	45.1	35	10.1	Cat 2
level 1	east	type B	55.8	35	20.8	Cat 2
level 1	east	type C	44.6	35	9.6	Cat 1
level 1	north	northern type A1	36.9	35	1.9	Cat 1
level 1	north	southern type A1	29.4	35	-5.6	Cat 1
level 1	north	type A2	27.8	35	-7.2	Cat 1
level 1	north	type B	49.5	35	14.5	Cat 2
level 1	north	type C	23.7	35	-11.3	Cat 1
level 1	south	type B	43.7	35	8.7	Cat 1
level 1	south	type C	32	35	-3	Cat 1
level 2	east	type B	55.8	35	20.8	Cat 2
level 2	east	type C	43.6	35	8.6	Cat 1
level 2	north	centre type A2	30.3	35	-4.7	Cat 1
level 2	north	northern type A2	38.3	35	3.3	Cat 1
level 2	north	southern type A2	26.8	35	-8.2	Cat 1
level 2	north	type B	50.1	35	15.1	Cat 2
level 2	north	type C	24.8	35	-10.2	Cat 1
level 2	south	type B	46.7	35	11.7	Cat 2
level 2	south	type C	35.1	35	0.1	Cat 1
level 3	east	type B	54.8	35	19.8	Cat 2
level 3	east	type C	43.6	35	8.6	Cat 1
level 3	north	centre type A2	30.3	35	-4.7	Cat 1
level 3	north	northern type A2	38.3	35	3.3	Cat 1
level 3	north	southern type A2	26.7	35	-8.3	Cat 1
level 3	north	type B	49.8	35	14.8	Cat 2
level 3	north	type C	24.7	35	-10.3	Cat 1
level 3	south	type B	46.5	35	11.5	Cat 2
level 3	south	type C	33.6	35	-1.4	Cat 1
level 4	east	type B	53.5	35	18.5	Cat 2
level 4	east	type C	43.4	35	8.4	Cat 1
level 4	north	centre type A2	30.3	35	-4.7	Cat 1

level 4	north	northern type A2	38.3	35	3.3	Cat 1
level 4	north	southern type A2	26.8	35	-8.2	Cat 1
level 4	north	type B	49.5	35	14.5	Cat 2
level 4	north	type C	24.8	35	-10.2	Cat 1
level 4	south	type B	46.2	35	11.2	Cat 2
level 4	south	type C	33.6	35	-1.4	Cat 1
level 5	east	type B	51.7	35	16.7	Cat 2
level 5	east	type C	43	35	8	Cat 1
level 5	north	centre type A2	30.5	35	-4.5	Cat 1
level 5	north	northern type A2	38.3	35	3.3	Cat 1
level 5	north	southern type A2	27	35	-8	Cat 1
level 5	north	type B	49.1	35	14.1	Cat 2
level 5	north	type C	25	35	-10	Cat 1
level 5	south	type B	46	35	11	Cat 2
level 5	south	type C	33.8	35	-1.2	Cat 1

As detailed in Table 5.3.1, some facades require Category 2 (AS 3671) construction to adequately mitigate noise from the adjacent commercial operations. In accordance with AS 3671, these facades must be constructed without lightweight elements (such as fibrous cement), **and all windows and doors (standard construction) must remain closed**. Consequently, these specific units require alternative methods of mechanical ventilation to comply with the National Construction Code.

6 NOISE CONTROL RECOMMENDATIONS

Based on the following assumed standard building construction, the noise levels will comply with the noise criteria at all residences for noise emissions emanating from the proposed development provided the following noise controls are considered:

- **Toilet Exhaust Fans** maximum sound power level of **60 dBA**, and 3m length of Quad Zero Acoustic duct lining should be installed between the fan and exhaust outlet.
- **Air Conditioners** maximum sound power level of **65 dBA**. We have also provided an indication of potential noise impact levels of likely onsite mechanical plant; although the levels are merely a guide as no plant selections have yet been completed. For this reason, further more detailed assessment/s should be conducted upon determination of plant. Such assessments should be undertaken prior to Building Approval; and be conditioned within the Development Approval. To minimise the potential for annoyance, air-conditioning condenser units should be located as far as possible from habitable rooms (i.e. bedrooms and living areas) of nearest offsite dwellings To minimise the potential for annoyance, air-conditioning condenser units should be located as far as possible from habitable rooms (i.e. bedrooms and living areas) of nearest offsite dwellings.
- **Pool and Spa area** to have a minimum 1.2m high solid barrier around the entire space.
- It is noted that **waste collection activities** are typically of short duration and of an infrequent nature (i.e. once per week); therefore, such activities are unlikely to cause annoyance. To minimise the potential for annoyance we have recommended that waste collection activities be limited to the daytime period between 7am to 6pm and
- Use of the onsite communal recreation areas should be limited to 7am to 10pm. Signage should be erected and managed by the Caretaker.
- Driveways, basement ramps and carpark areas be finished with surface coatings which prevent tyre squeal (an uncoated surface is acceptable).
- Drainage grating over trafficable areas be well secured to prevent rattling.

7 CONCLUSION

This acoustic report has been prepared to support a Development Application for Constructions Group at 51 Tourist Road, East Toowoomba 4350. The development site falls within the Toowoomba Regional Council – Low to Medium Density Residential Zone and the site is surrounded by residences.

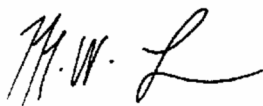
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The following conclusions apply to this assessment:

- Onsite short duration activity noise emissions are predicted to comply with noise sensitive receivers at levels within the daytime and evening and night time periods.
- Noise from surrounding commercial operations are predicted to comply with reverse amenity noise criteria impacting the site.

Recommendations

- Acoustic noise controls as outlined in this report should be constructed as described in **Section 6** of this report.



MATTHEW FISHBURN BE(Mech) Hons, MAAS, MIEAust, CPEng, RPEQ [14356]

Principal Consulting Acoustical Engineer

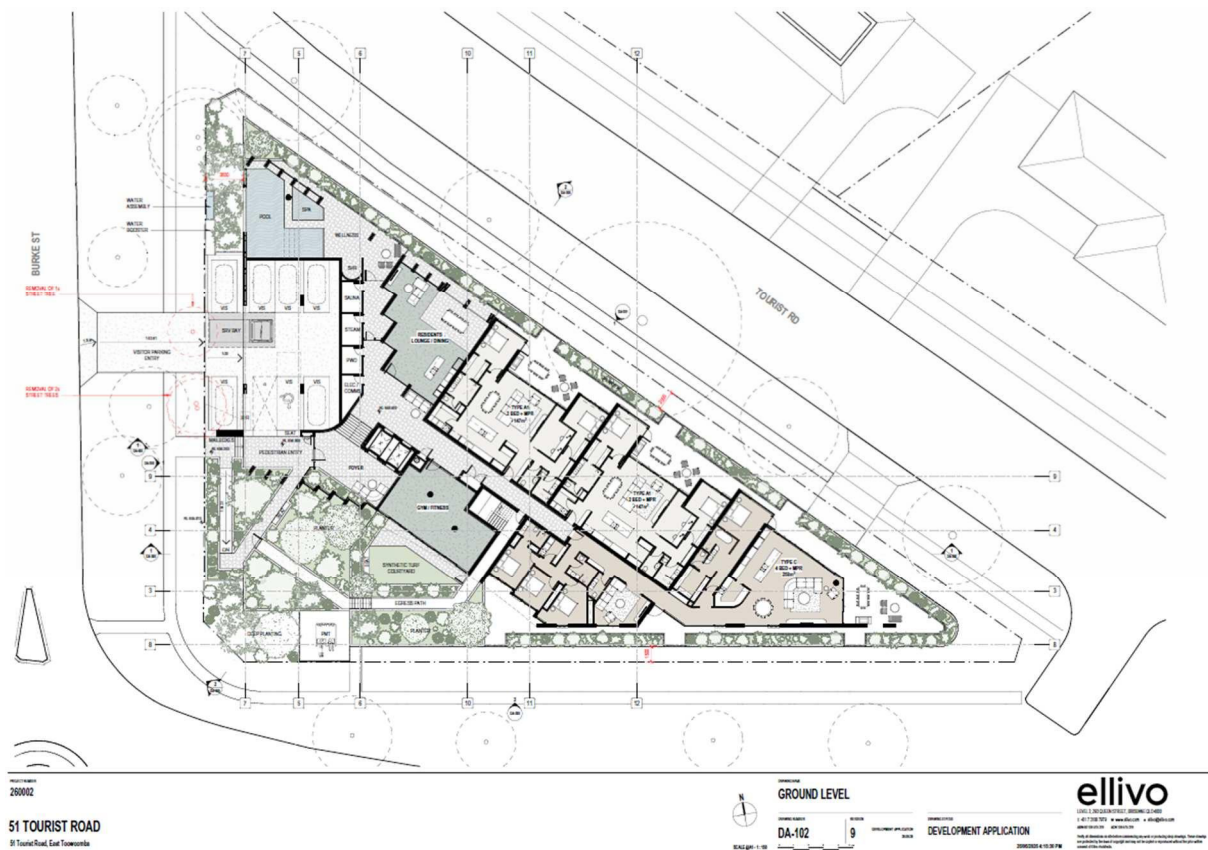
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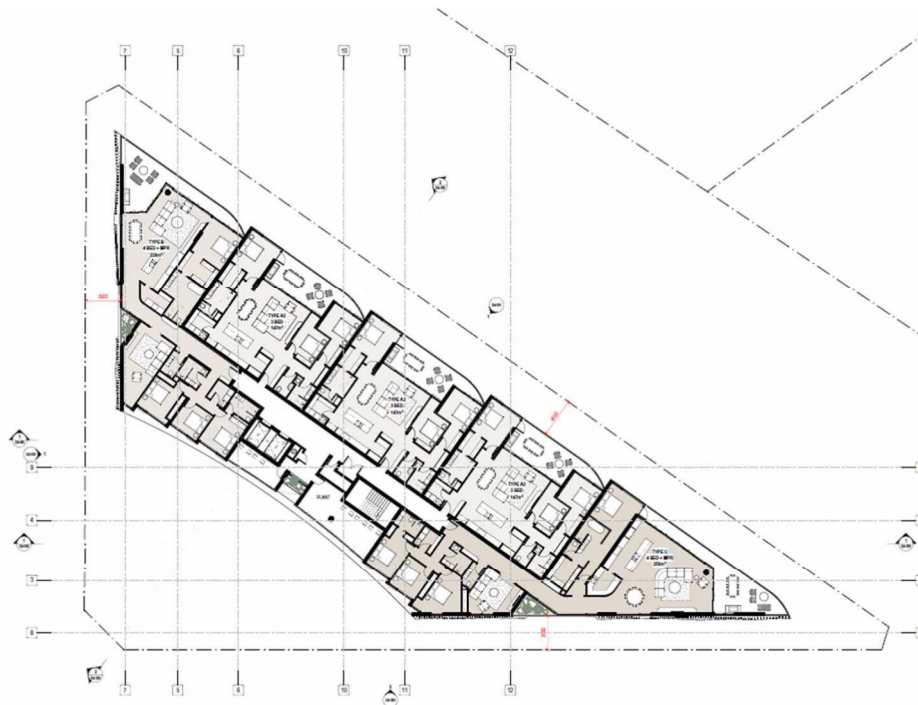
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M: 0420 935 874

E: info@alphaacoustics.com.au







PROJECT NAME
260002

51 TOURIST ROAD
51 Tourist Road, East Toowoomba



LEVEL 02-05

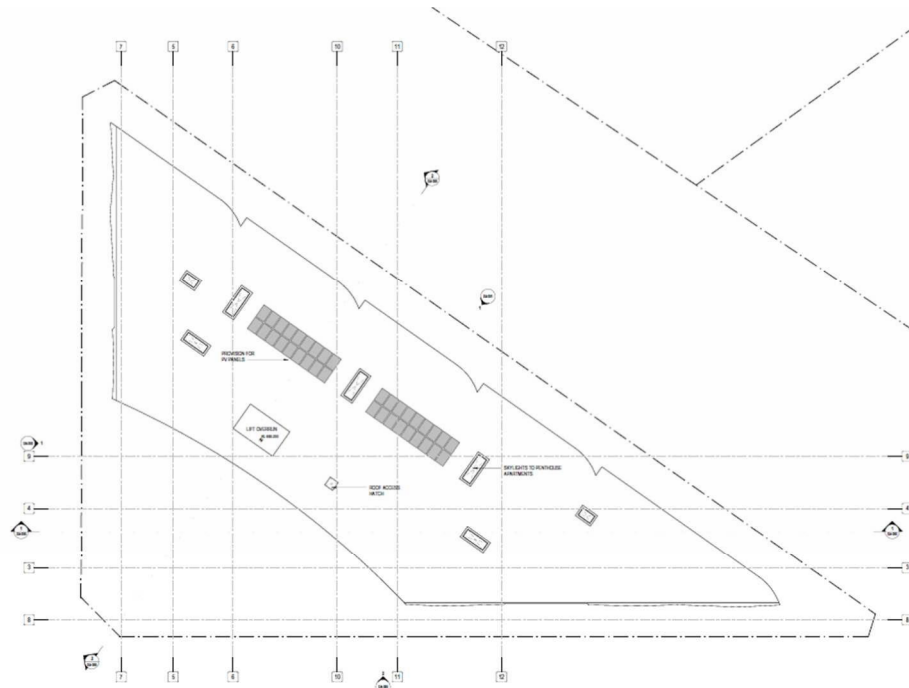
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DEVELOPMENT APPLICATION

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PROJECT NAME
260002

51 TOURIST ROAD
51 Tourist Road, East Toowoomba



LEVEL 06 - ROOF

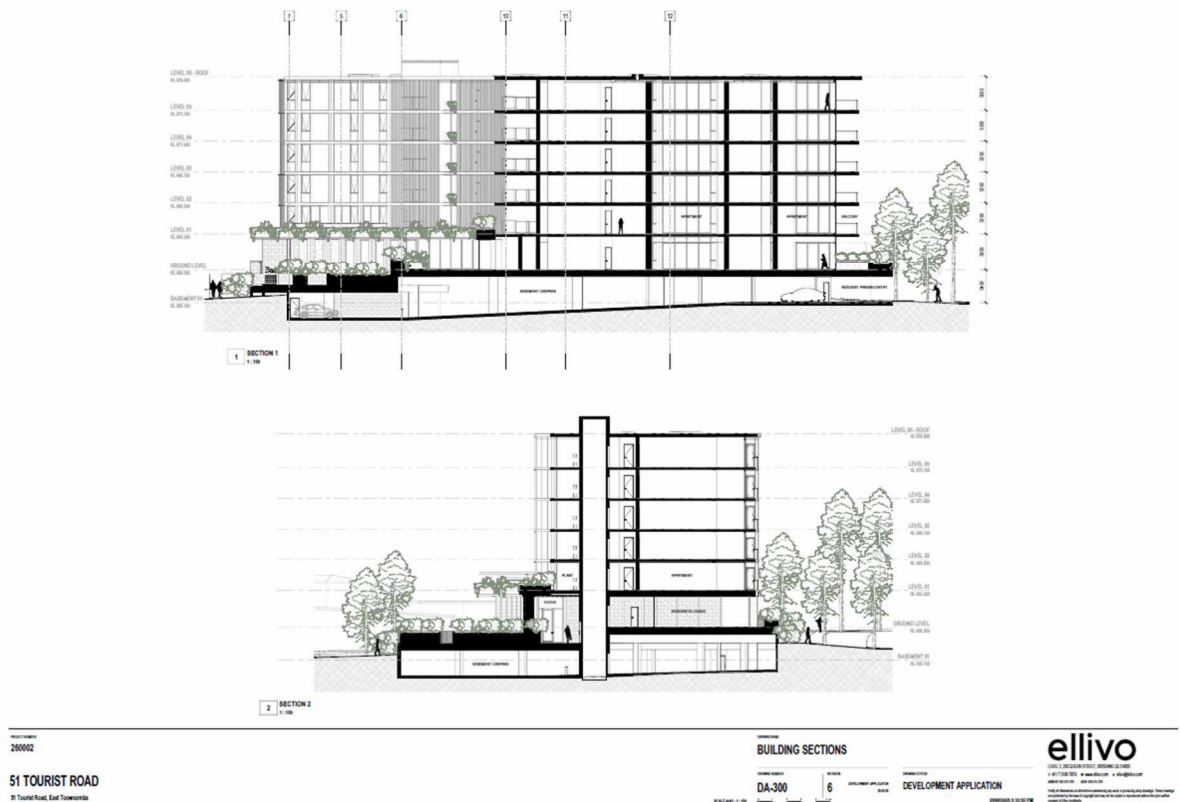
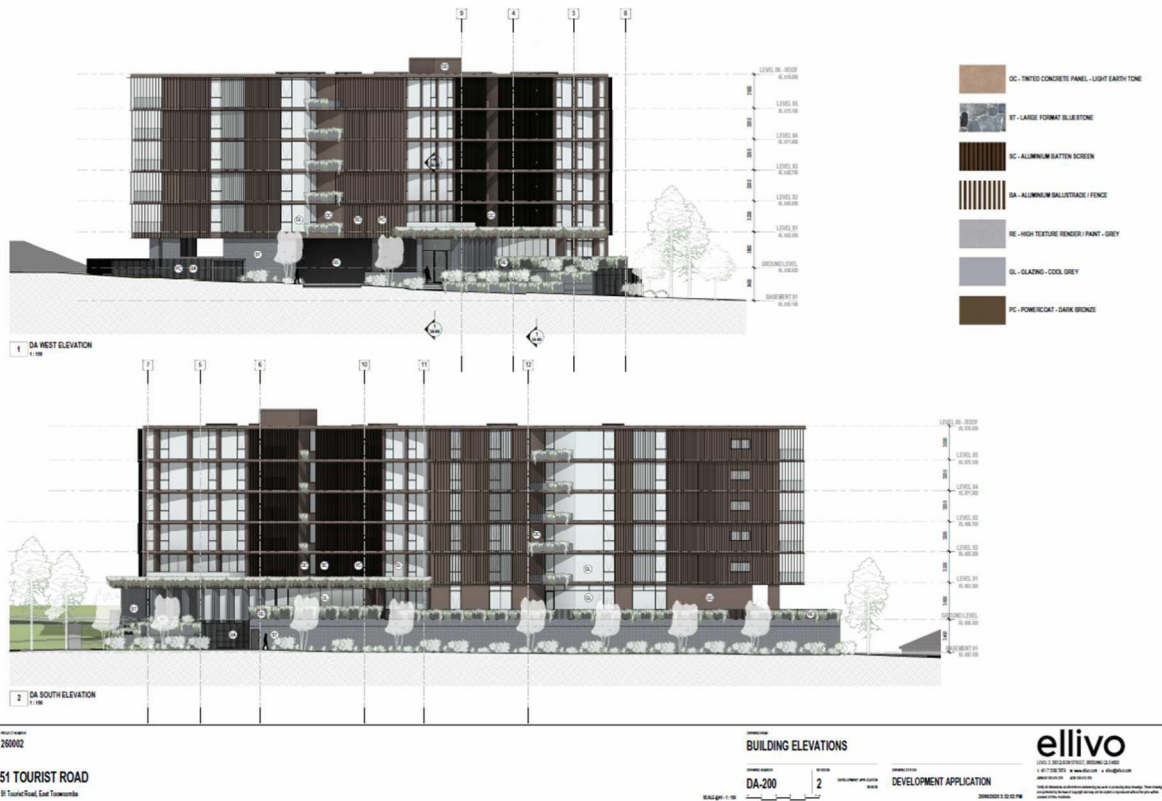
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APPENDIX B – GLOSSARY OF ACOUSTIC TERMS

The following is a brief description of the technical terms used to describe traffic noise to assist in understanding the technical issues presented in this document.

Event maximum sound pressure level ($L_{A\%,adj,T}$), L_{01}

The L_{01} level is calculated as the noise level equalled and exceeded for 1% of the measurement time, for example 9 seconds in any 15 minute interval. L_{01} is an appropriate level to characterise single events, such as from impulsive or distinctive pass-by noise. In this Report, the measured L_{01} levels for day/evening/night are not averaged but are arranged from low to high in the relevant day/evening/night interval and the value that is found at the 90th percentile (L_{10} of L_{01} sample) in the interval is recorded as its “ L_{01} ” level. The level can be adjusted for tonality or impulsiveness.

Average maximum sound pressure level ($L_{A\%,adj,T}$), L_{10}

The “ L_{10} ” level is an indicator of “steady-state” noise or intrusive noise conditions from traffic, music and other relatively non-impulsive noise sources. The L_{10} level is calculated as the noise level equalled and exceeded for 10% the measurement time, for example 90 seconds in any 15 minute interval. The measured L_{10} time-intervals for day/evening/night are arithmetically averaged to present the “average maximum” levels of the environment for day/evening/night. The level can be adjusted for tonality or impulsiveness.

Background sound pressure level ($L_{A90,T}$), L_{90}

Commonly called the “ L_{90} ” or “background” level and is an indicator of the quietest times of day, evening or night. The L_{90} level is calculated as the noise level equalled and exceeded for 90% the measurement time. The measured L_{90} time-intervals are arithmetically averaged to present the “average background” levels of the environment for day/evening/night. The level is recorded in the absence of any noise under investigation. The level is not adjusted for tonality or impulsiveness.

Equivalent Continuous or time average sound pressure level ($L_{Aeq,T}$), L_{eq}

Commonly called the “ L_{eq} ” level it is the logarithmic average noise level from all sources far and near. The maximum 1-hour levels within the day/evening/night time intervals are referenced for building design. The level can be adjusted for tonality.

Facade-adjusted level

A sound level that is measured at a distance of 1.0 metre from a wall or facade. The level is nominally 2.5 dB higher than the free-field level.

Free-field level

A sound level that is measured at a distance of more than 3.5 metres from a wall or facade.

Weighted Sound Reduction Index, R_w

A single number value used to compare the sound reduction index of building elements. Similar to the Sound Transmission Class (STC) rating that is still in common use. R_w and STC are not identical though may be considered, for most applications, as being interchangeable. A high R_w indicates high sound reduction.