

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2022/1325

Date: 17/05/2023



APPENDIX D

UPDATED ACOUSTIC REPORT

19 December 2022

Reference: 2021494 L01B Bonner Street, Southport RTN RAIL ENV - Further Information Response 221219.docx

State Development, Infrastructure, Local Government and Planning
PO Box 15009
City East
QLD 4002

RE: 16 Nexus Way, Southport
Acoustic Response to Information Request DEV2022/1325

This letter is in response to State Development, Infrastructure, Local Government and Planning further information request (ref: DEV2022/1325), dated 11 October 2022 in relation to the application for the proposed mixed-use development at 16 Nexus Way, Southport. The acoustic issues raised by the state department, and the response from Acoustic Works are detailed as follows:

33. Revised Acoustic Report

Provide a revised acoustic report to address the potential noise impacts from road noise on the sensitive use (medical suites) areas of the proposed development. The report should:

Requested Issue:

a. Show background sound level monitoring

Response:

Noise monitoring for the site can be found in Section 5 of our revised acoustic report (ref. 2021494 R01E).

Requested Issue:

b. Detail the expected impact of road noise against Table 8.2.14-3 of the 'Regional infrastructure overlay code';

Response:

The expected noise impacts from Smith Street can be found in Section 7 of the revised acoustic report (ref. 2021494 R01E).

Requested Issue:

c. Provide all monitoring data and locations, methodology and calculations; and

Response:

All monitoring data and locations, methodology and calculations can be found in Sections 5.1, 4, 6 and 7 of the revised acoustic report (ref. 2021494 R01E), respectively.

Requested Issue:

d. Detail the required control measures to achieve compliance with the applicable legislation and standards (including AS1055.1-3 - Acoustics – Description and Measurement of Environmental Noise and the Environmental Protection Act 1994 and subordinate regulations and policies).

Response:

Control measures can be found in Section 9 of the revised acoustic report (ref. 2021494 R01E).

We trust this information meets your current requirements. If you should have any further queries, please do not hesitate to contact us.

Yours faithfully,



Kayleigh Duce

Acoustic Consultant

acousticworks)))

PLANS AND DOCUMENTS
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DEVELOPMENT APPROVAL

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Date: 17/05/2023



acousticworks)))

Proposed Mixed use Development
16 Bonner Street
Southport

ACOUSTIC REPORT



Client:

Gold Coast 888 Pty Ltd
c/- MG Group

Reference:

2021494 R01G Bonner Street, Southport RTN ENV.docx

Date Issued:

19 December 2022

Document Information

Contact Details

Acoustic Works
Unit 2/8 Castlemaine Street
Coorparoo QLD 4151
(07) 3393 2222
ABN: 56 157 965 056

PO Box 1271
Coorparoo DC
QLD 4151

Greg Pearce
Email: gpearce@acousticworks.com.au

Mark Enersen
Email: menersen@acousticworks.com.au

Report Register

Date	Revision	Author	Reviewer
16/11/21	R01B	Kayleigh Duce	Mark Enersen
28/07/22	R01C	Kayleigh Duce	Mark Enersen
01/08/22	R01D	Kayleigh Duce	Mark Enersen
09/12/22	R01F	Kayleigh Duce	Mark Enersen
19/12/22	R01G	Kayleigh Duce	Mark Enersen

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1. Introduction

The following report is in response to a request by Gold Coast 888 Pty Ltd for an acoustic assessment for a proposed mixed-use development located at 16 Bonner Street, Southport. To facilitate the assessment, unattended noise monitoring and attended measurements were conducted for the following:

- Road traffic levels
- Light rail (G Link)
- Ambient noise levels

Unattended noise monitoring was conducted, and assessment of environmental noise impacts produced. Based upon the predicted noise levels, recommendations are provided.

This report is based on site assessments, calculations and analysis by Acoustic Works.

This report was revised in December 2022 to address Item 33 of the EDQ further information request (ref: DEC2022/1325 dated 11 October 2022).

2. Site Description

2.1 Site Location

The site is described by the following:

16 Bonner Street, Southport
Lot 9 on SP275512

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)



Comprehensive site surveys were conducted on the 8 October 2021 and identified the following;

- a) The site is currently vacant.
- b) A 2-storey commercial building bounds to site to the north.
- c) A carpark bounds the site to the east, separating it from commercial and residential buildings.
- d) Bonner Street bounds the site to the west separating the site from a carpark.
- e) Knowledge Street bounds the site to the south separating the site from a vacant site.
- f) Smith Street Motorway is located approximately 160m south of the site.
- g) Gold Coast Light Rail is located approximately 100 metres west of the site.

2.2 Proposal

The proposal is to construct a 11 storey mixed-use development building as follows:

- Commercial tenants on the ground floor.
- Medical suits located on Level 5-10.
- Restaurant, bar and function centre on level 4
- 165 car parking spaces provided on level 1-3.
- Site access is via access road off Bonner Street.

Refer to the development application for development plans.

2.3 Acoustic Environment

The surrounding area is primarily affected by road traffic noise from Smith Street and Parklands Drive with noise impact from the G-Link Light Rail.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor
- Norsonics Nor140 sound level meter
- BSWA Technology Co. Ltd Sound Calibrator

The Rion NL42 Environmental Noise Monitor and Norsonic sound level meter hold current NATA Laboratory Certification and was field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Noise Monitoring Locations

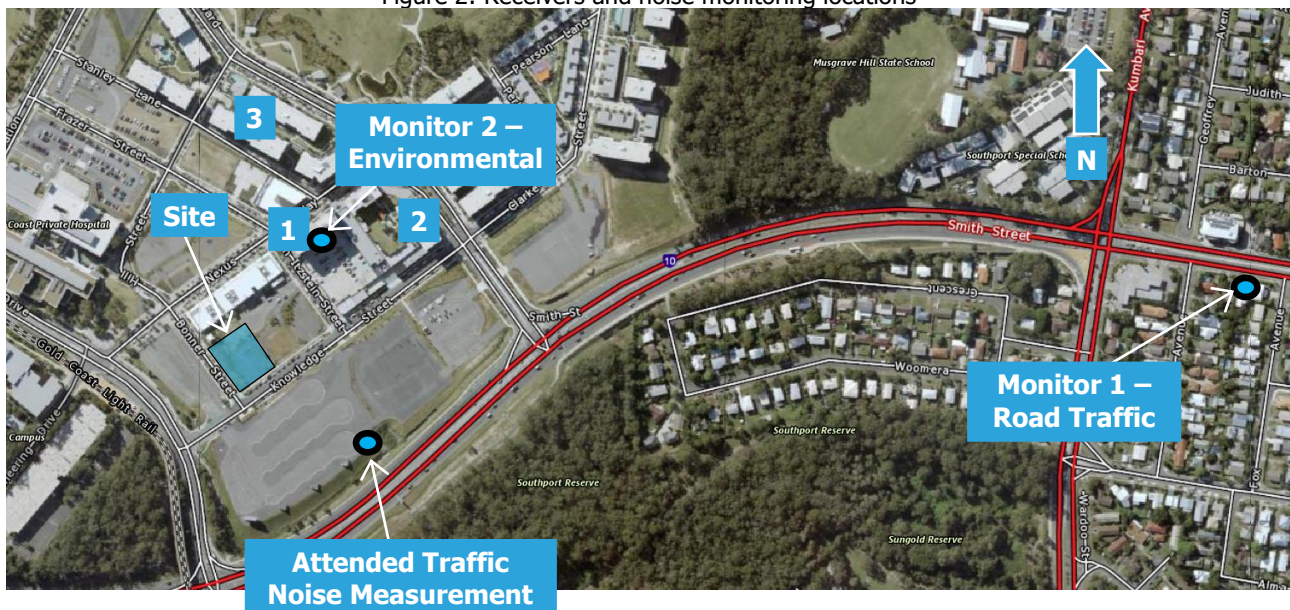
4.1 Receiver Locations

The nearest residential receiver locations were identified as follows;

1. A 7 storey residential units located to the north east of the site at 18 Queen Street.
2. A 5 storey residential units located to the west of the site at 65 Bauer Street.
3. A 3 Storey residential units located to the south of the site at 63 Bauer Street.

These locations were chosen as being representative of the nearest residential receivers to the proposed development. Refer to Figure 2 for these locations.

Figure 2: Receivers and noise monitoring locations



4.2 Monitor 1 – Road Traffic Monitoring

The Rion NL42 environmental noise monitor was placed at 144 Smith Street approximately 5m from the nearest lane, to measure road traffic noise levels. The monitor was placed away from site as there was found to be no suitable locations onsite which provided secure fixing of the noise monitor. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 8 October and 18 October 2021.

The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 1 hour statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise* with road traffic conducted in accordance with Australian Standard AS2702:1984 *'Acoustics – Methods for the measurement of road traffic noise'*.

For the unattended noise monitoring location refer to Figure 2.

4.3 Monitor 2 – Ambient Noise Monitoring

The Rion NL42 environmental noise monitor was placed at Smith 6 Nexus Way to measure ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between the 8 October and 18 October 2021.

The environmental noise monitor was set to record noise levels in “A” Weighting, Fast response using 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise* with road traffic conducted in accordance with Australian Standard AS2702:1984 *Acoustics – Methods for the measurement of road traffic noise*.

For the unattended noise monitoring location refer to Figure 2.

4.4 Attended Traffic Measurement

Attended measurements of road traffic noise have been conducted by Acoustic Works on 18 October 2021. These measurements were taken close to the site, in the vacant lot adjacent to Knowledge Street. These measurements were taken due to the distance between the logger and the site. These measurements are also utilised in the noise level verification shown in Section 5.3.1. Measurements were conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise*. Refer to Figure 2 for measurement location.

5. Measured Noise Levels

The following tables present the measured existing ambient noise levels from the unattended noise survey. Any periods of inclement weather or extraneous noise are excluded from the omitted from the measured data prior to determining the results.

5.1 Road traffic noise levels

The measured road traffic noise levels at the monitoring location are as follows;

Table 1: Measured noise levels

Day	Date	L10 (18h)	Leq(1h)	Leq(1h)	L90 (8h)	L90 (18h)
			Day	Night		
Friday	8/10/2021	71.5	70.5	67.7	68.3	53.6
Saturday	9/10/2021	-	-	-	-	-
Sunday	10/10/2021	-	-	-	-	-
Monday	11/10/2021	71.4	69.2	68.4	66.4	54.2
Tuesday	12/10/2021	72.0*	70.3*	69.8*	67.0*	54.6*
Wednesday	13/10/2021	71.9*	72.9*	71.1*	67.1*	55.1*
Thursday	14/10/2021	72.1*	71.1*	72.2*	67.2*	55.2*
Friday	15/10/2021	71.7	72.1	69.4	67.3	55.4
Saturday	16/10/2021	-	-	-	-	-
Sunday	17/10/2021	-	-	-	-	-
Monday	18/10/2021	-	-	-	-	-
Overall		71.5	70.7	68.5	67.3	54.4

*Due to large weather events the noise levels have been removed for the assessment.

5.2 Ambient noise levels

The measured background noise levels at the monitoring location are as follows;

Table 2: Measured L90 noise levels

Day	Date	L90 dB(A)		
		Day	Evening	Night
Friday	8/10/2021	-	47	43
Saturday	9/10/2021	49	45	42
Sunday	10/10/2021	48	43	40
Monday	11/10/2021	48	-	40
Tuesday	12/10/2021	-	-	-
Wednesday	13/10/2021	-	-	-
Thursday	14/10/2021	-	-	-
Friday	15/10/2021	-	-	-
Saturday	16/10/2021	46	45	40
Sunday	17/10/2021	46	43	41
Monday	18/10/2021	46	-	42
Overall		47	44	41

Graphical presentation of the measured noise levels are presented in the Appendices.

5.3 Attended Measurements

5.3.1 Traffic Verification Measurement

Due to the distance between the site and the road traffic noise monitor location, attended measurements were utilised to verify the data. These additional measurements were taken close to the site, adjacent to Knowledge Street. Results of the attended measurements of road traffic noise are presented in the table below.

Date	Time	Description	Distance from road	LAeq (dBA)	LA10 (dBA)	Duration
18/10/21	9:00am	Logger Data	15m	66.7	70	1 hour
18/10/21	9:03am	Attended Measurement	5m	66.2	69.3	1 hour

Results from the attended traffic measurement verify that the logger data is considered representative of the site, and no correction is necessary.

6. Noise Criteria

6.1 Road Traffic Noise Criteria

As the development is located near a state controlled road, the State Development Assessment Provisions (SDAP) criteria detailed in Section 6.1 applies.

6.1.1 State Development Assessment Provisions (SDAP)

The criteria applied are in accordance with the SDAP Version 3.0 dated 4 February 2022 by the Department of State Development, Manufacturing, Infrastructure and Planning. The SDAP *State Code 1: Development in a state-controlled road environment* sets out matters of interest for assessment of developments near state controlled roads or multi-modal corridors. The applicable criteria for the development in the year 2032 (ten year planning horizon) requires road traffic noise to be assessed in accordance with Table 1.2.2 of the policy statement as follows;

Table 3: SDAP Road Traffic Noise Criteria

Material change of use (other uses)	
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor	
P046 Development involving: 1. indoor education areas and indoor play areas; or 2. sleeping rooms in a childcare centre; or 3. patient care areas in a hospital achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor	
P048 Development including: 1. indoor education areas and indoor play areas in a childcare centre or educational establishment; or 2. sleeping rooms in a childcare centre; or 3. patient care areas in a hospital located above ground level, is designed and constructed to achieve the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.

Table 4: Table 3 of SDAP Maximum Internal Acoustic Levels

Applicable use	Acoustic levels
3.4: : Patient care areas in a hospital	≤35 dB(A) Leq (1 hour) (maximum hour over 24 hours)

6.2 Environmental noise

The noise criteria as applied by Gold Coast City Council are as follows;

6.2.1 Acoustic Quality Objectives

Table 5 below presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the EPP (Noise) 2008.

Table 5: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm - 7am)	30	35	40

6.2.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T} \leq \text{Ambient } L_{A90,T} + 5\text{dB(A)}$$

Steady-state noise:

$$L_{A90,T} \leq \text{Ambient } L_{A90,T}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 4.

Table 6: Background creep noise limits

Time Period	Noise Level Limits SPL dB(A)	
	$L_{Aeq,T}$	$L_{A90,T}$
Day 7am – 6pm	52	47
Evening 6pm – 10pm	49	44
Night 10pm – 7am	46	41

7. Road Traffic Assessment

Road traffic noise associated with the Smith Street Motorway for a ten year planning horizon was assessed at the development to determine compliance with SDAP criteria.

7.1 Traffic Volumes

Traffic data for Smith Street Motorway was obtained from the Transport and Main Roads Traffic Census 2019 and is presented in Table 7 below. The data was used for predictions of future traffic volumes as this was considered to be representative of typical traffic volumes for the area.

Table 7: Traffic Volumes

Location	2019 AADT	2021 Predicted AADT	2032 Predicted AADT	Percentage of Heavy Vehicles	Predicted Annual Growth Rate
Smith Street Motorway	45,076	45,076	45,076	4.52%	0%

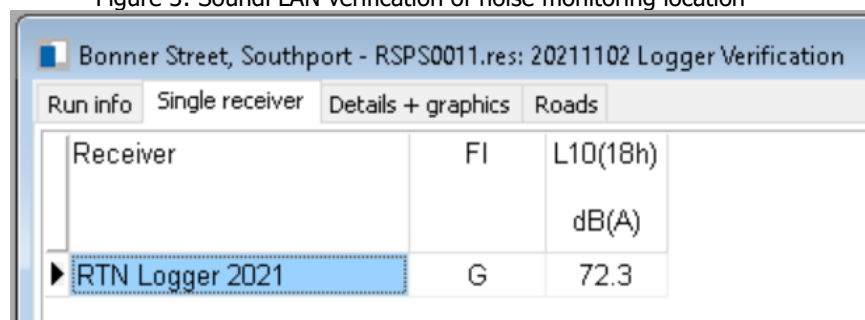
7.2 Road Traffic Noise Verification

To ensure the CoRTN noise model is accurate, a verification model of the predicted $L_{A10(18hr)}$ was created and compared to the measured noise level. The CoRTN method allows a 2dB(A) variation from the predicted and measured level, if the variation exceeds 2dB(A) a correction to the predicted level is required.

Table 8: Comparison of measured and predicted noise levels

Location	Measured $L_{A10(18hr)}$ dB(A)	Predicted $L_{A10(18hr)}$ dB(A)	Correction
Noise Monitor	71.5	72.3	0

Figure 3: SoundPLAN verification of noise monitoring location



7.3 Predicted Road Traffic Noise Levels - 2032

Road traffic noise modelling for the proposed development was based on the following information:

- Site layout and floor plans by TVS Architects: dated December 2022
- Smith Street speed limit of 60km/h.
- Calculations include façade correction.
- Receiver heights based on 1.5m above finished floor level.

The 3D SoundPLAN CoRTN noise model predicted LA_{10,18hr} levels and corrections were applied to convert the levels into LA_{eq,1hr} to compare with the GCCC assessment criteria and AS2107:2000.

Table 9 presents the predicted road traffic noise impacts to the development, with Figure 4 and Figure 5 showing the road traffic noise contours.

Table 9: Predicted road traffic noise impacts

Location			Predicted Road Traffic Noise Impacts 2032
Level	Finished Floor Level (m)	Unit	LA ₁₀ (18hr) dBA
Ground	17.4	Tenancy 1	56
		Tenancy 2	58
		Tenancy 3	59
		Tenancy 4	59
		Tenancy 5	58
5	36.9	North Façade	59
		South Facade	63
		East Façade	60
		West Facade	58
6	40.6	1	58
		2	58
		3	58
		4	58
		5	60
		6	60
		7	60
		8	60
7	44.3	North Façade	60
		South Facade	64
		East Façade	61
		West Facade	59
8	48.0	North Façade	60
		South Facade	64
		East Façade	59
		West Facade	61
9	51.7	North Façade	60
		South Facade	64
		East Façade	61
		West Facade	59
10	55.4	North Façade	60
		South Facade	64
		East Façade	61
		West Facade	59

Figure 4: Traffic noise contours 2032 – Level 2

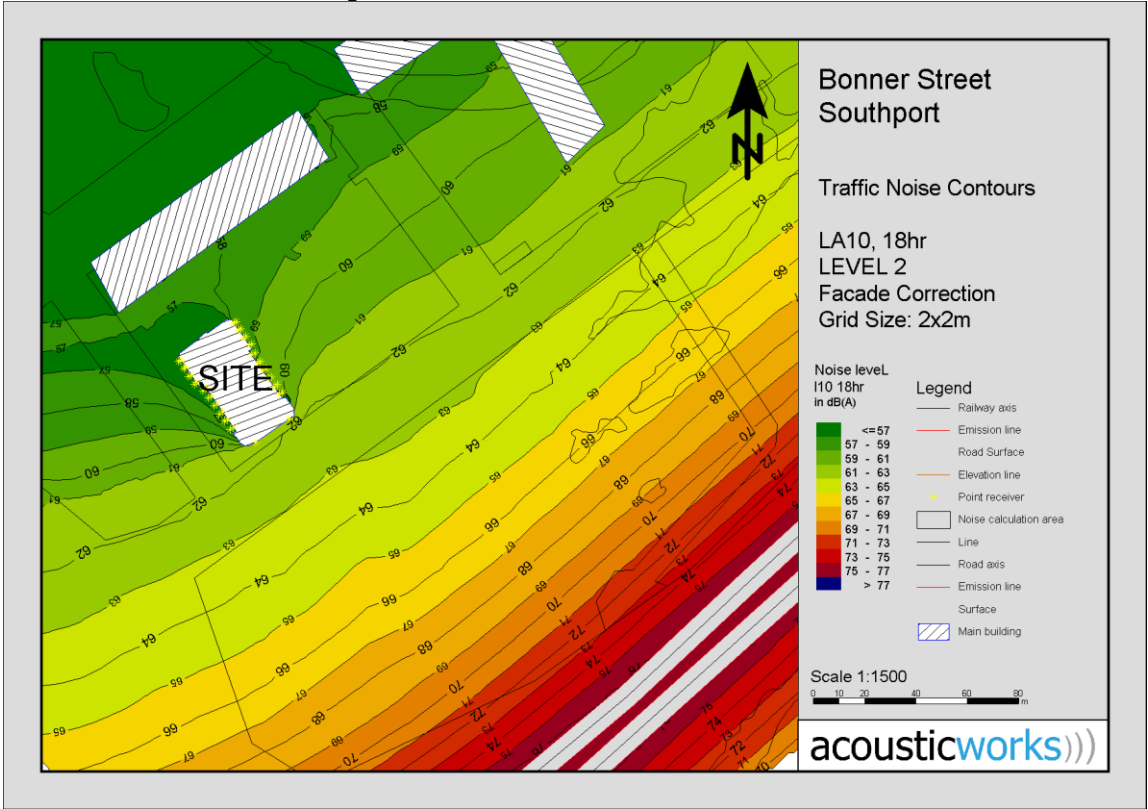
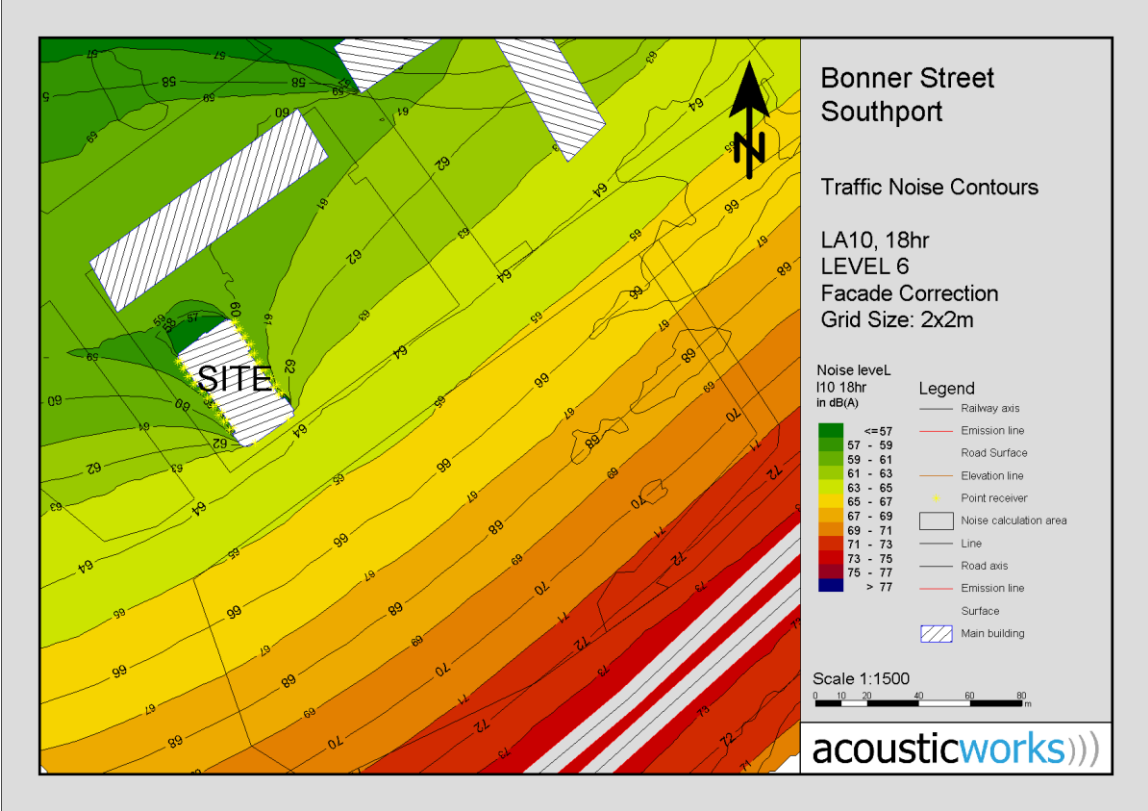


Figure 5: Traffic noise contours 2032 – Level 6



Based on modelled road traffic noise impacts, additional facade treatments are required. Refer to Section 9 for further recommendations.

8. Environmental Assessment

8.1 Patron Noise

Noise associated with patrons is based on a technical paper '*Prediction of Noise from Small to Medium Sized Crowds*' (Hayne et al, 2011). The paper was based upon attended noise measurements conducted at a sample of premises to account for range of patron numbers. Based on the measured levels, the resulting analysis determined that the sound power levels of a small-medium crowd could be predicted by the following equation:

$$L_{WAeq} = 15 \log (\text{number of patrons}) + 64 \text{ dBA (approx. maximum 100 patrons)}$$

$$L_{WA10} = 15 \log (\text{number of patrons}) + 67 \text{ dBA (approx. maximum 100 patrons)}$$

$$L_{WA01} = 11 \log (\text{number of patrons}) + 77 \text{ dBA (approx. maximum 100 patrons)}$$

Using the above formula, the predicted overall sound power level generated by patrons is presented in Table 10. A total of 50 patrons were assessed, with numbers in each area estimated from the amount of available seating.

Table 10: Predicted sound power levels of patrons

Area	Expected maximum number of guests (typical worst case)	Predicted Sound Power Level LAeq dB(A)	Predicted Sound Power Level LA10 dB(A)	Predicted Sound Power Level LA01 dB(A)
Bar	50	90	93	96

The predicted equivalent source sound pressure level (at 1m) is taken to be 8 dB lower than the sound power levels presented in Table 10.

8.2 Onsite Activities

Noise associated with the development has been assessed based on measurements of typical activities. The calculations assume that the activities are located at the closest point within the development site to each receiver location in each case. Any relevant shielding, building transmission loss or recommended acoustic screens are taken into account for these activities.

8.2.1 Acoustic Quality Objectives

The average maximum noise source levels and predicted levels at the receiver locations, without acoustic treatments, are shown in Table 11 as follows. Note: LA10 and LA1 results are not shown in cases where the total duration of the events is less than the minimum time required e.g. LA10(1hr) requires noise events to occur for at least 360 seconds of an hour long period. LAeq results are not shown where the calculated total is less than 0dBA.

Table 11: Acoustic quality objective noise levels, 1 hour

Receiver	Receivers 1. Smith 6 Units Queen Street 2. Smith 8 Units Bauer Street 3. Smith 4 Units Bauer Street 4.	Description	Source Leq@1m dB(A) Corrected Leq@1m dB(A)*	Receivers												Amenity Laeq Compliance			LA10 Compliance			LA1 Compliance																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
				No. of events per 1hr Day	No. of events per 1hr Eve	No. of events per 1hr Night	Duration per event	Distance (m)	No Barrier (height (t	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @6dB/dd	Laeq adj,1hr ext. dB(A) Day	Laeq adj,1hr ext. dB(A) Day	Laeq adj,1hr ext. dB(A) Eve	Laeq adj,1hr int. dB(A) Eve	Laeq adj,1hr ext. dB(A) Night	Laeq adj,1hr int. dB(A) Night	LA10 adj,1hr ext. dB(A) Day	LA10 adj,1hr int. dB(A) Eve	LA10 adj,1hr ext. dB(A) Eve	LA10 adj,1hr ext. dB(A) Night	LA1 adj,1hr ext. dB(A) Day	LA1 adj,1hr int. dB(A) Day	LA1 adj,1hr ext. dB(A) Eve	LA1 adj,1hr int. dB(A) Night	LA1 adj,1hr int. dB(A) Night	Day/eve	Day/eve indo	Night indo	Day/eve	Day/eve indo	Night indo	Day/eve	Day/eve indo	Night indo																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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*Correction due to tonality and impulsiveness as per AS1055:1997.

Some minor exceedances of the acoustic quality objective criteria are predicted at receivers 1 and 2. However, as these criteria are already exceeded by the background noise levels, the impacts do not necessarily affect the acoustic amenity. Therefore, assessment to the background creep criteria only is recommended.

8.2.2 Background Creep

The noise source levels and predicted impacts at the receiver locations are shown as follows;

Table 12: Background Creep Noise Levels, 15min

Receiver	Receivers	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15min Day	No. of events per 15min Eve	No. of events per 15min Night	Duration per event	Distance (m)	No Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @-6dB/dd	LAeq adj, T ext. dB(A) Day	LAeq adj, T int. dB(A) Day	LAeq adj, T ext. dB(A) Eve	LAeq adj, T int. dB(A) Eve	LAeq adj, T ext. dB(A) Night	LAeq adj, T int. dB(A) Night	LAeq 15 min Compliance		
	Description																				Day	Eve	Night
	Criteria																				52	49	46
	Patron Noise (Level 4)	82		82	1	1	1	900	132					-43	39	29	39	29	39	29	Yes	Yes	Yes
	Background Music (Level 4)	85		85	1	1	1	900	132					-43	42	32	42	32	42	32	Yes	Yes	Yes
	Voice conversation (Retail Tenancies)	70		70	1	1	1	900	114			-11		-42	17	7	17	7	17	7	Yes	Yes	Yes
	Background Music (Retail Tenancies)	85		85	1	1	1	900	114			-11		-42	32	22	32	22	32	22	Yes	Yes	Yes
	Deliveries	92		92	1			60	118			-3		-42	35	25					Yes	n/a	n/a
	Total														45	35	44	34	44	34	Yes	Yes	Yes
	Criteria																				52	49	46
	Patron Noise (Level 4)	82		82	1	1	1	900	220					-47	35	25	35	25	35	25	Yes	Yes	Yes
	Background Music (Level 4)	85		85	1	1	1	900	220					-47	38	28	38	28	38	28	Yes	Yes	Yes
	Voice conversation (Retail Tenancies)	70		70	1	1	1	900	210					-46	24	14	24	14	24	14	Yes	Yes	Yes
	Background Music (Retail Tenancies)	85		85	1	1	1	900	210					-46	39	29	39	29	39	29	Yes	Yes	Yes
	Deliveries	92		92	1			60	215			-3		-47	31	21					Yes	n/a	n/a
	Total														43	33	42	32	42	32	Yes	Yes	Yes
	Criteria																				52	49	46
	Patron Noise (Level 4)	82		82	1	1	1	900	215					-47	35	25	35	25	35	25	Yes	Yes	Yes
	Background Music (Level 4)	85		85	1	1	1	900	215					-47	38	28	38	28	38	28	Yes	Yes	Yes
	Voice conversation (Retail Tenancies)	70		70	1	1	1	900	198					-46	24	14	24	14	24	14	Yes	Yes	Yes
	Background Music (Retail Tenancies)	85		85	1	1	1	900	198					-46	39	29	39	29	39	29	Yes	Yes	Yes
	Deliveries	92		92	1			60	196					-46	34	24					Yes	n/a	n/a
	Total														43	33	43	33	43	33	Yes	Yes	Yes

*Correction due to tonality and impulsiveness as per AS1055:1997.

Noise levels are predicted to comply with the 15 minute background creep criteria without the need for further acoustic treatment.

Carpark activity is calculated to a time period of 15 seconds in Table 13.

Table 13: Background Creep Noise Levels, 15sec

Receiver	Receivers																						
	1. Smith 6 Units Queen Street 2. Smith 8 Units Bauer Street 3. Smith 4 Units Bauer Street 4.																						
	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15sec Day	No. of events per 15sec Eve	No. of events per 15sec Night	Duration per event	Distance (m)	No Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @ 6dB/dd	L _{Aeq} adj, T ext. dB(A) Day	L _{Aeq} adj, T int. dB(A) Day	L _{Aeq} adj, T ext. dB(A) Eve	L _{Aeq} adj, T int. dB(A) Eve	L _{Aeq} adj, T ext. dB(A) Night	L _{Aeq} adj, T int. dB(A) Night	L _{Aeq} 15 sec Compliance		
																					Day	Eve	Night
	Criteria																				52	49	46
	Car passby	69		69	1	1	1	15	117					-42	27	17	27	17	27	17	Yes	Yes	Yes
1	Car door closure	75	2	77	1	1	1	2	115					-41	27	17	27	17	27	17	Yes	Yes	Yes
	Car start	74	2	76	1	1	1	2	115					-42	25	15	25	15	25	15	Yes	Yes	Yes
	Car on ramp	74		74	1	1	1	10	120					-42	30	20	30	20	30	20	Yes	Yes	Yes
	Total														34	24	34	24	34	24	Yes	Yes	Yes
	Criteria																				52	49	46
	Car passby	69		69	1	1	1	15	212					-47	22	12	22	12	22	12	Yes	Yes	Yes
2	Car door closure	75	2	77	1	1	1	2	210					-46	22	12	22	12	22	12	Yes	Yes	Yes
	Car start	74	2	76	1	1	1	2	210					-46	21	11	21	11	21	11	Yes	Yes	Yes
	Car on ramp	74		74	1	1	1	10	214			-6		-47	20	10	20	10	20	10	Yes	Yes	Yes
	Total														27	17	27	17	27	17	Yes	Yes	Yes
	Criteria																				52	49	46
	Car passby	69		69	1	1	1	15	200					-47	22	12	22	12	22	12	Yes	Yes	Yes
3	Car door closure	75	2	77	1	1	1	2	196					-46	22	12	22	12	22	12	Yes	Yes	Yes
	Car start	74	2	76	1	1	1	2	196					-46	21	11	21	11	21	11	Yes	Yes	Yes
	Car on ramp	74		74	1	1	1	10	201			-6		-46	20	10	20	10	20	10	Yes	Yes	Yes
	Total														27	17	28	18	28	18	Yes	Yes	Yes

*Correction due to tonality and impulsiveness as per AS1055:2018.

Compliance is predicted carpark activity without the need for further acoustic treatments.

9. Recommendations

9.1 Road Traffic Noise

Building treatments for road traffic noise were calculated using Australian Standard *AS3671:1989 'Road Traffic Noise Intrusion – Building Siting and Construction'*.

9.2 Façade acoustic ratings

The minimum façade acoustic ratings are presented in Table 14, with the installed glazing system to comply with the following:

- The minimum glass thickness specified shall not be reduced regardless of the R_w performance of the glass unless the glazier can provide a specific (non-generic) NATA Test report proving the proposed glazing system complies (the test report must be based on the same configuration proposed for the development). Note an estimation or calculated performance will not count.
- If compliance cannot be achieved with the minimum R_w ratings, the glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a seal that has been tested with a glazing system or door to achieve an R_w in accordance with AS/NZS ISO 717.1, mohair seals are not acceptable.
- The glazier shall provide NATA test reports on request to verify compliance with the minimum R_w ratings. Generic reports are not acceptable.

Table 14: Minimum R_w requirements

Level	Unit	Rw Ratings			Glazing	Acoustic seals
		Wall	Roof	Glazing		
Ground	Tenancy 1	35	-	22	4mm float	No
	Tenancy 2	35	-	27	4mm float	Yes
	Tenancy 3	35	-	22	4mm float	No
	Tenancy 4	35	-	24	4mm float	Yes
	Tenancy 5	35	-	24	4mm float	Yes
5	North Façade	35	-	22	4mm float	No
	South Façade	35	-	22	4mm float	No
	East Façade	35	-	24	4mm float	Yes
	West Façade	35	-	22	4mm float	No
6	1	35	-	29	5mm tough	Yes
	2	35	-	27	4mm float	Yes
	3	35	-	27	4mm float	Yes
	4	35	-	27	4mm float	Yes
	5	35	-	30	6mm float	Yes
	6	35	-	27	4mm float	Yes
	7	35	-	27	4mm float	Yes
	8	35	-	29	5mm tough	Yes
7	North Façade	35	-	22	4mm float	No
	South Façade	35	-	24	4mm float	Yes
	East Façade	35	-	24	4mm float	Yes
	West Façade	35	-	24	4mm float	Yes
8	North Façade	35	-	22	4mm float	No
	South Façade	35	-	24	4mm float	Yes
	East Façade	35	-	22	4mm float	No
	West Façade	35	-	27	4mm float	Yes
9	North Façade	35	-	22	4mm float	No
	South Façade	35	-	24	4mm float	Yes
	East Façade	35	-	24	4mm float	Yes

Level	Unit	Rw Ratings			Glazing	Acoustic seals
		Wall	Roof	Glazing		
10	West Façade	35	-	24	4mm float	Yes
	North Façade	35	-	22	4mm float	No
	South Façade	35	-	24	4mm float	Yes
	East Façade	35	-	24	4mm float	Yes
	West Façade	35	-	24	4mm float	Yes

Any locations not identified in the Table 14 would require at least 4mm float for windows (minimum Rw 22) and 4mm toughened for sliding doors (minimum Rw 23).

Note that other criteria, such as safety or wind loading etc, may require thicker and/or laminated or toughened glass, therefore advice should be sought from relevant qualified consultants to ensure all minimum design criteria are satisfied.

9.2.1 Alternative Ventilation

We recommend that all locations nominated in Table 20 have the provision for an alternative ventilation system (in accordance with National Construction Code 2016 requirements) similar to air-conditioning or mechanical ventilation to allow doors and windows to be closed.

9.2.2 Wall construction

The minimum required acoustic rating of external walls is Rw35. Typical external wall constructions are provided in the table below.

Table 15: Typical external wall construction

Description	Cavity insulation	R _w rating
Conventional masonry construction with 10mm plasterboard internal	-	45
Minimum 6mm fibre cement external sheet, 90mm timber stud or 92mm metal stub, standard plasterboard at least 13mm thick internally	-	36

9.3 Onsite activities

Compliance is predicted with council criteria on the following conditions:

- Music within the retail tenancies is limited to 85 dBA when measured 1m from the speakers.
- Music within the level 10 bar is limited to 85 dBA when measured 1m from the speakers.

9.4 Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria stated in Section 6.2.2. We recommend an assessment by qualified acoustic consultant be conducted prior to installation to determine any requirements for acoustic treatments to mechanical plant.

9.5 Waste collection

We recommend that waste collection be conducted in accordance with existing collections in the area to reduce the potential for disturbance.

10. Conclusion

An environmental noise assessment was conducted for the proposed residential development located at 16 Bonner St Southport which considered the following:

- Road traffic noise from Smith Street.
- Light rail noise from the GLink.
- Onsite activities to sensitive receivers in the vicinity of the site.

Acoustic recommendations have been provided. If you should have any queries please do not hesitate to contact us.

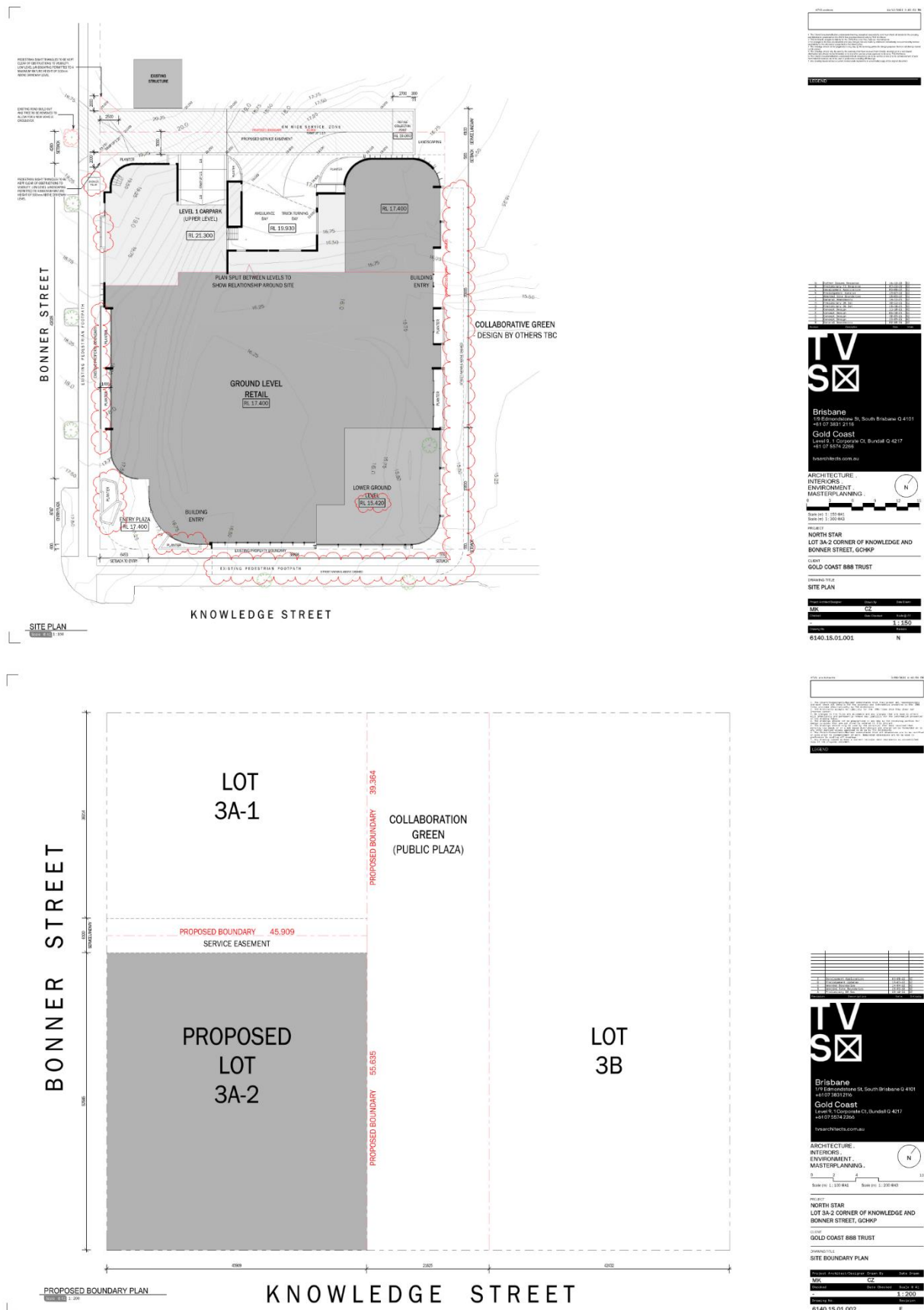
Report Compiled by:



Kayleigh Duce
Acoustic Consultant
acousticworks)))

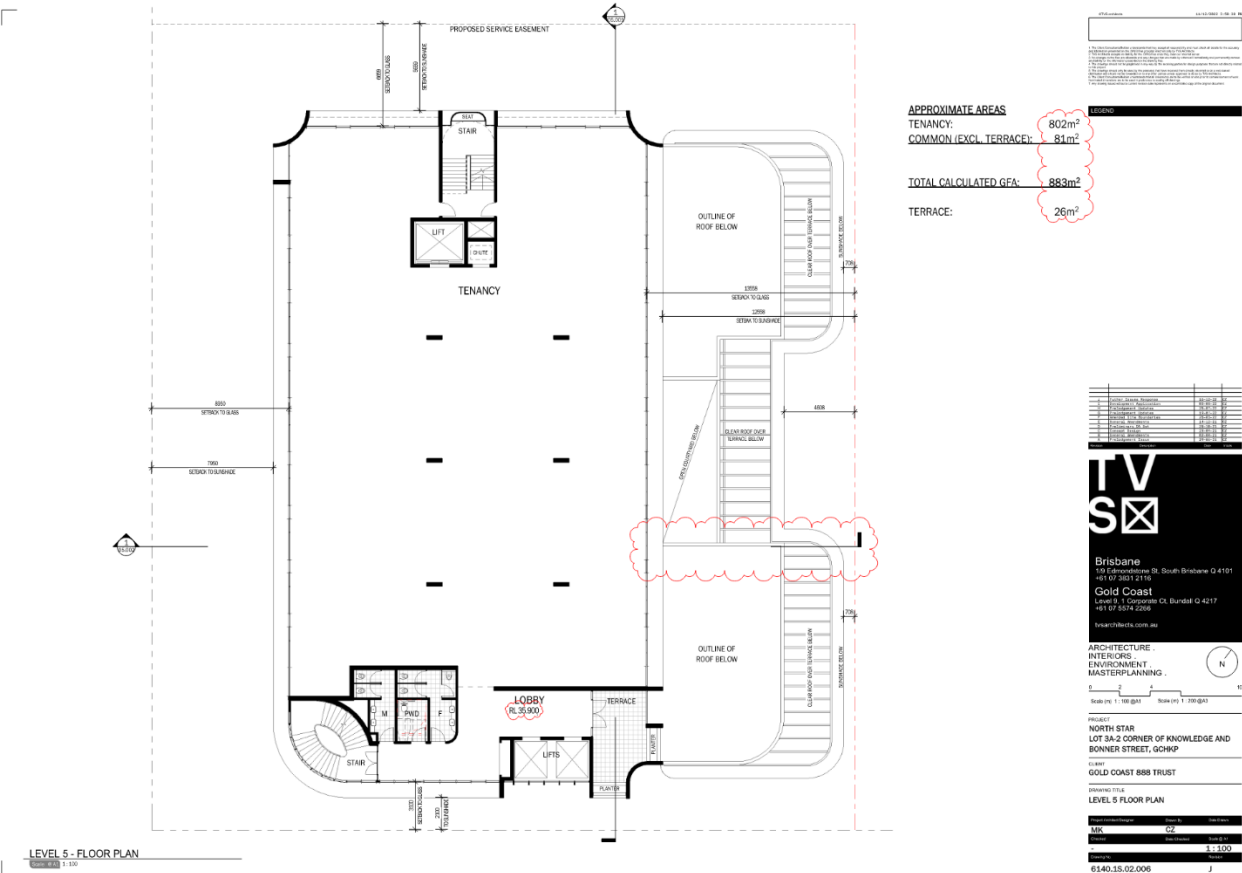
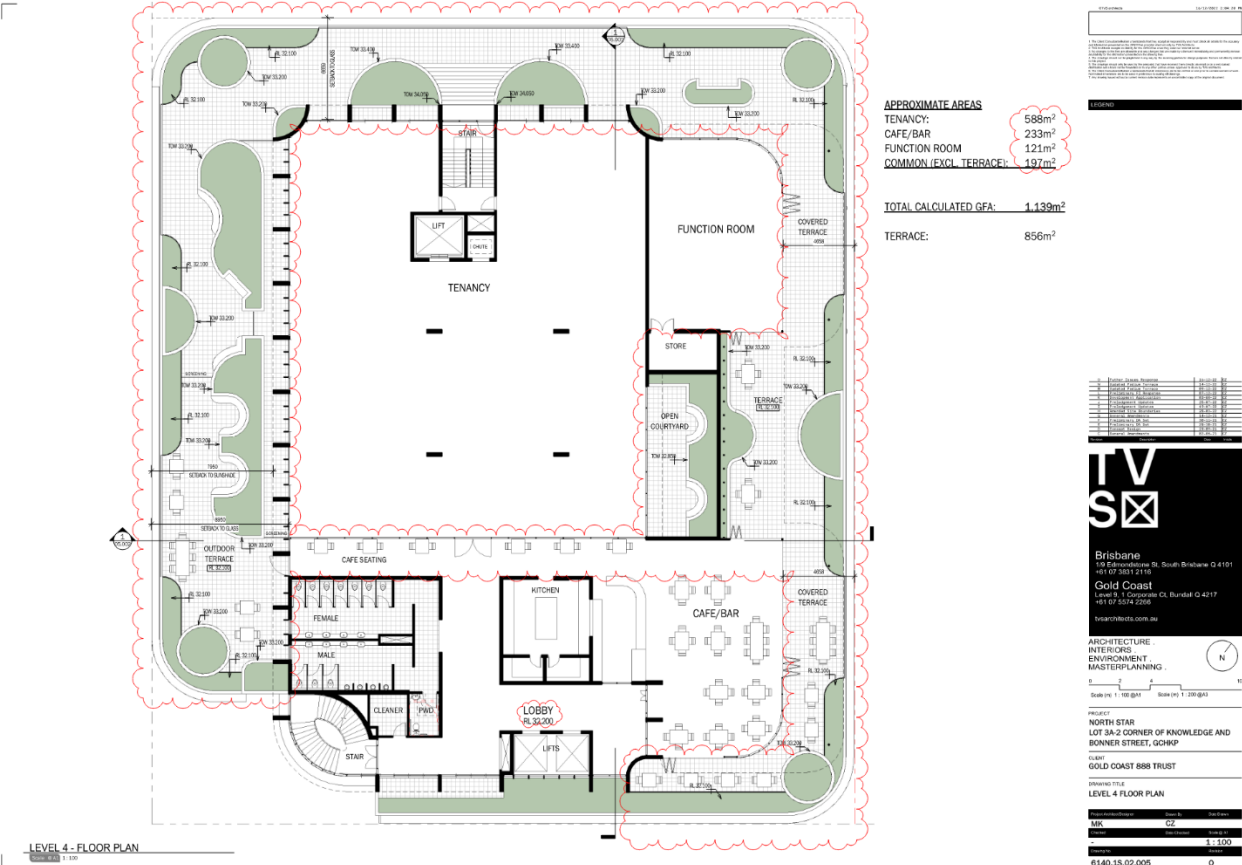
11. Appendices

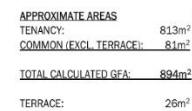
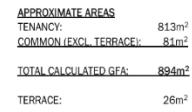
11.1 Development Plans

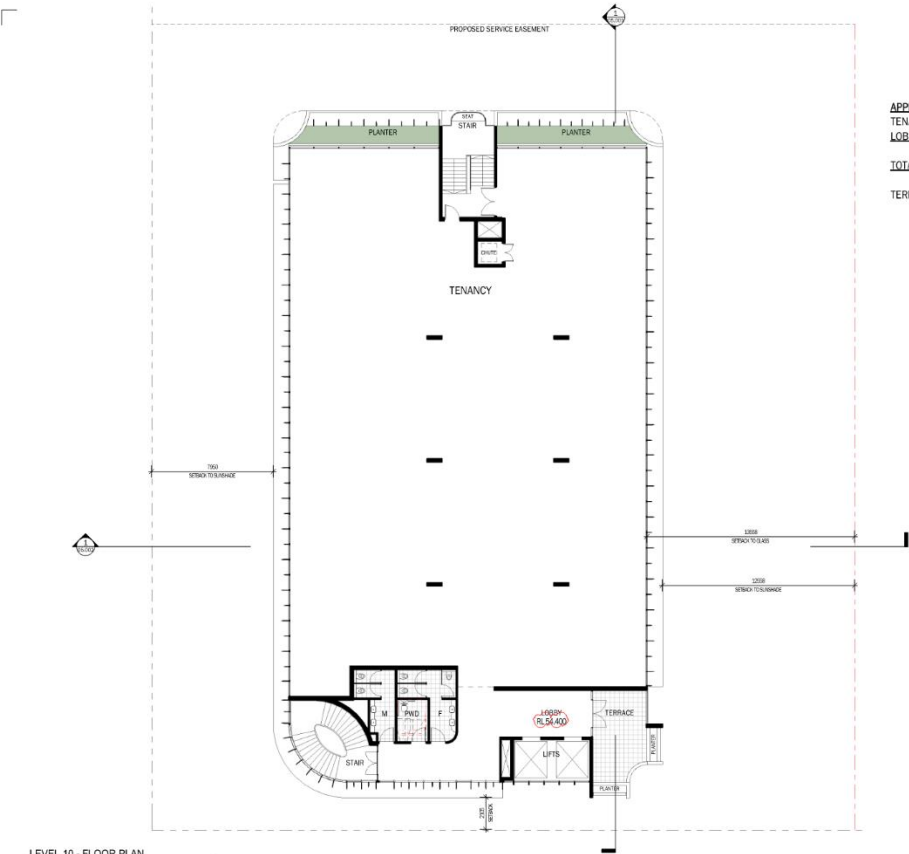












APPROXIMATE AREAS

TENANCY:	784m ²
LOBBY / AMENITIES:	81m ²
TOTAL CALCULATED GFA:	865m²
TERRACE:	26m ²

PROVISIONS

1. All work shall be in accordance with the Australian Standards and the relevant Building Code of Australia.
2. All work shall be in accordance with the relevant Council of Local Government Engineers (CLGE) specifications.
3. All work shall be in accordance with the relevant Council of Local Government Engineers (CLGE) specifications.
4. All work shall be in accordance with the relevant Council of Local Government Engineers (CLGE) specifications.
5. All work shall be in accordance with the relevant Council of Local Government Engineers (CLGE) specifications.

LEGEND

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TVS

Brisbane
181 Sandown Road, South Brisbane Q 4101
+61 07 3631 2116

Gold Coast
Level 3, 1 Corporate Ct, Bundall Q 4217
+61 07 5574 2366

research@tvs.com.au

ARCHITECTURE,
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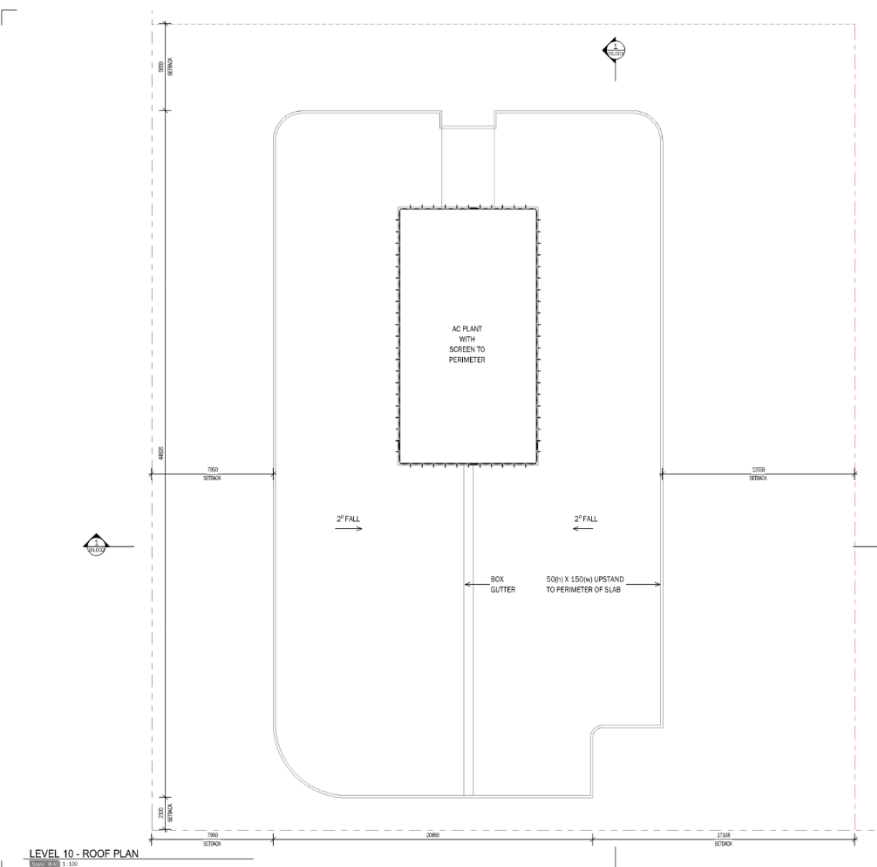
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PROJECT:
NORTH STAR
LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GOHP

CLIENT:
GOLD COAST 888 TRUST

DRAWING TITLE:
LEVEL 10 FLOOR PLAN

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PROVISIONS

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TVS

Brisbane
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Gold Coast
Level 3, 1 Corporate Ct, Bundall Q 4217
+61 07 5574 2366

research@tvs.com.au

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ENVIRONMENT,
MASTERPLANNING.

Scale (m): 1:100 (A1) Scale (m): 1:200 (A2)

PROJECT:
NORTH STAR
LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GOHP

CLIENT:
GOLD COAST 888 TRUST

DRAWING TITLE:
ROOF PLAN

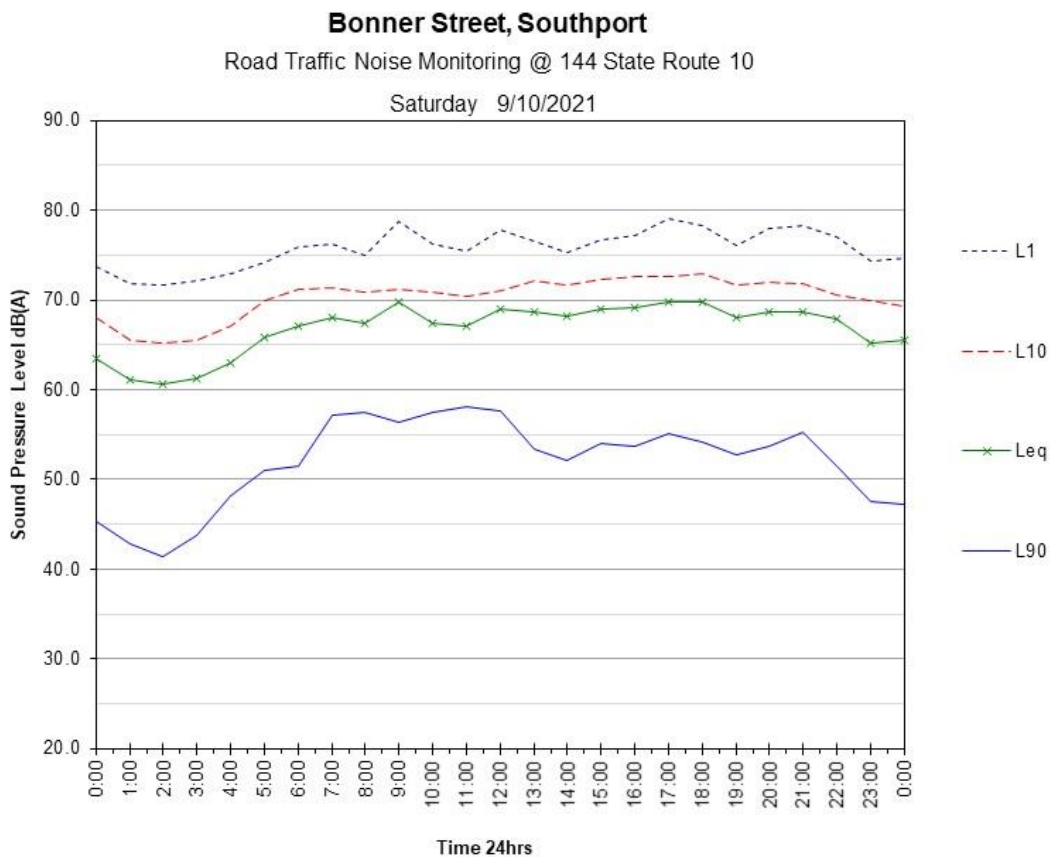
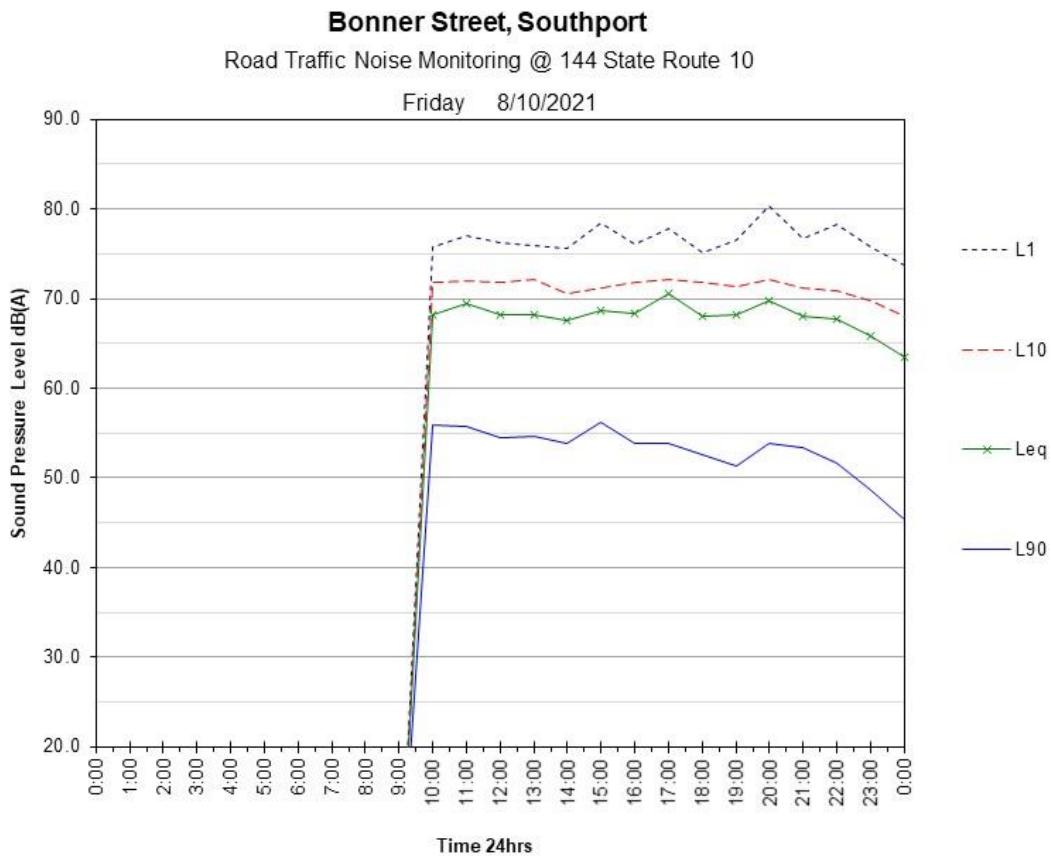
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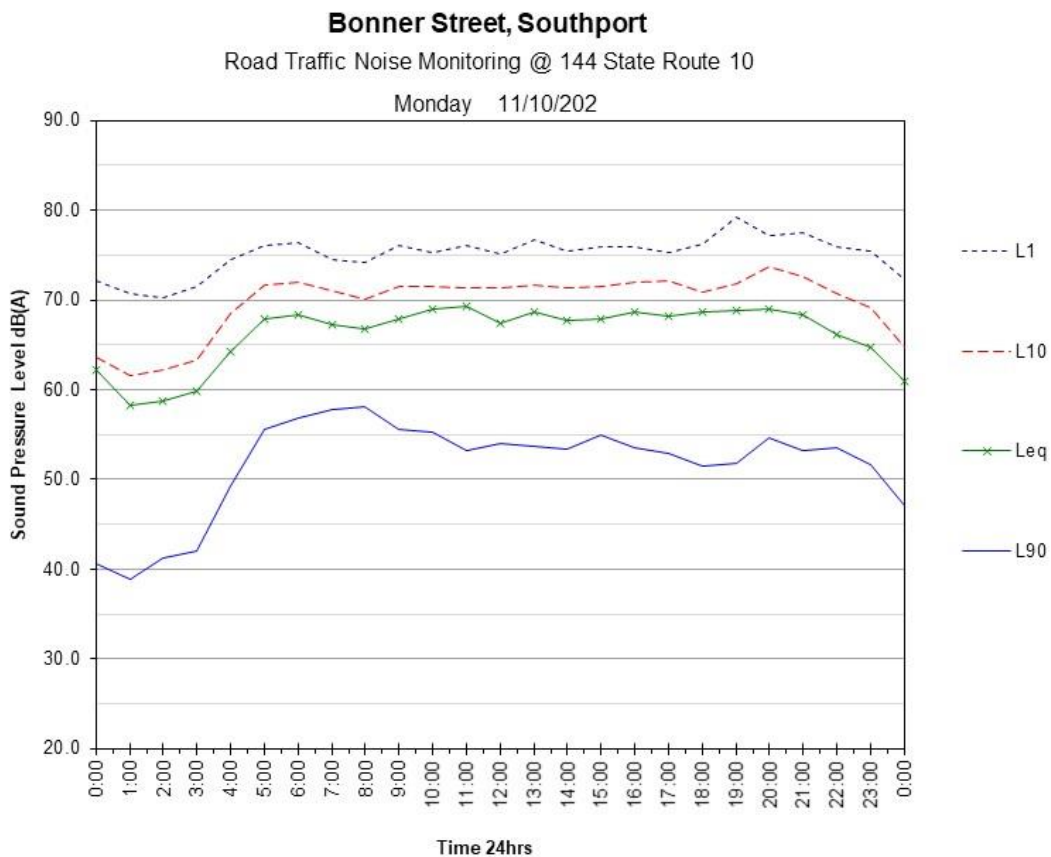
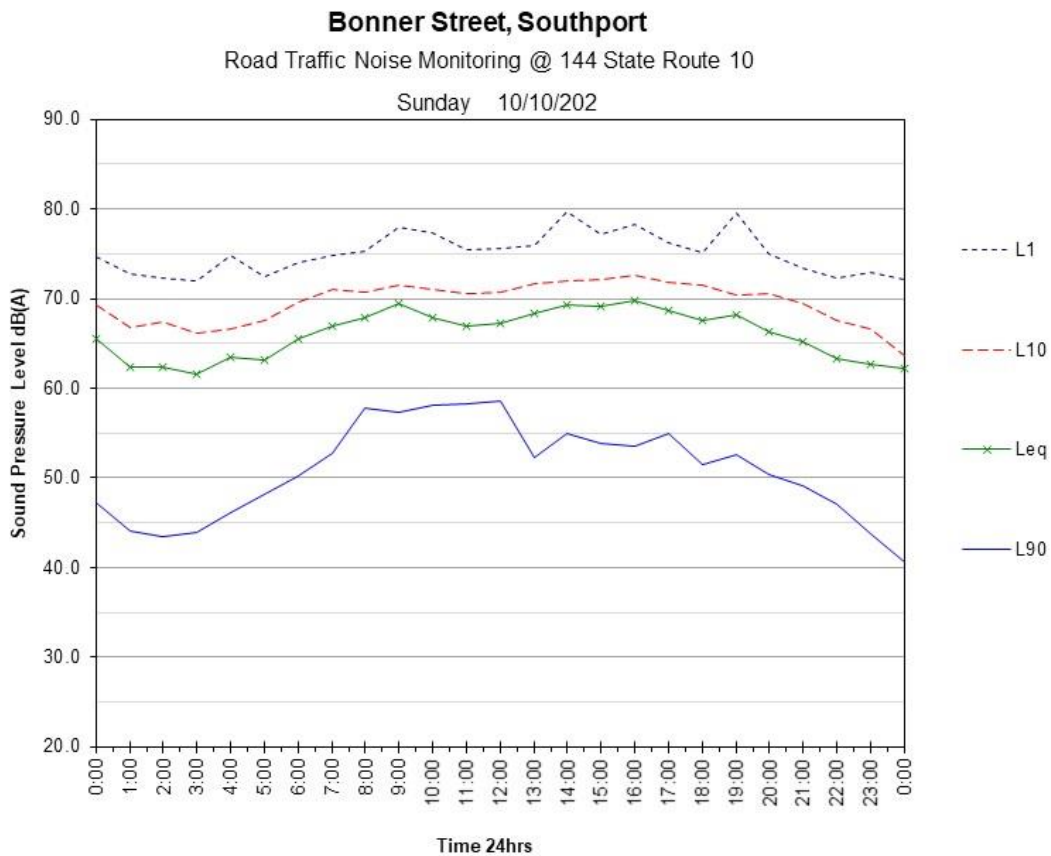


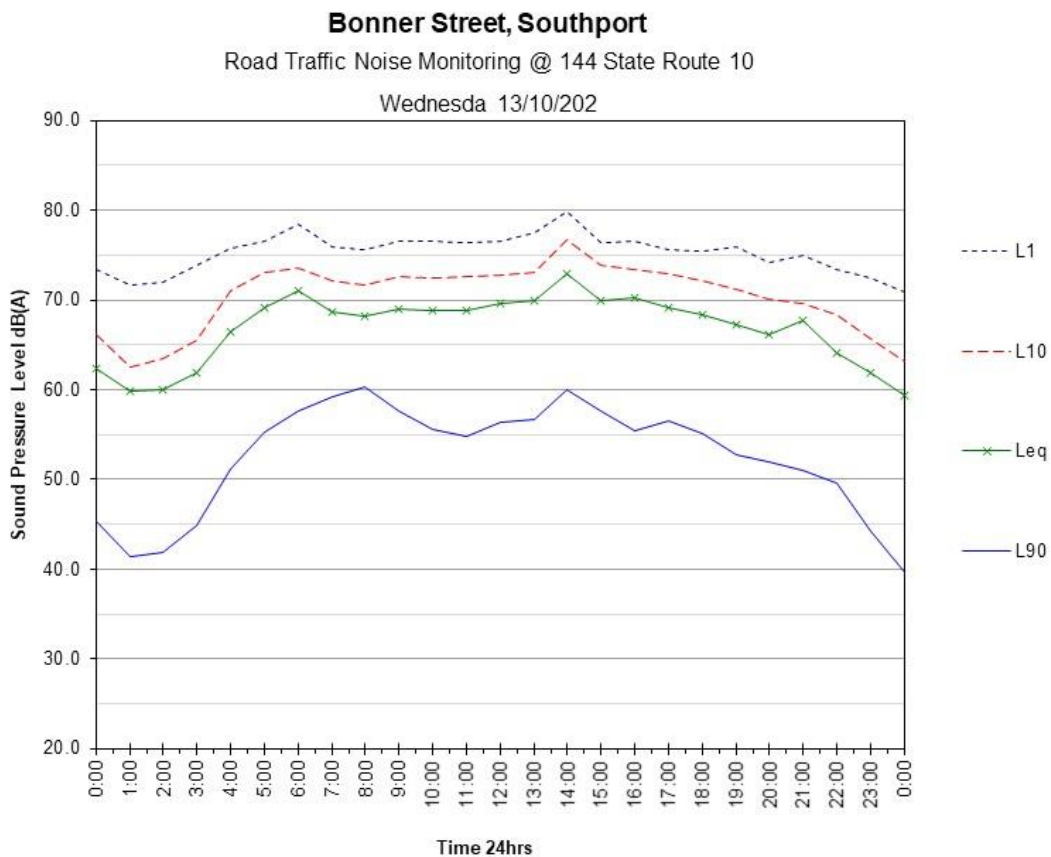
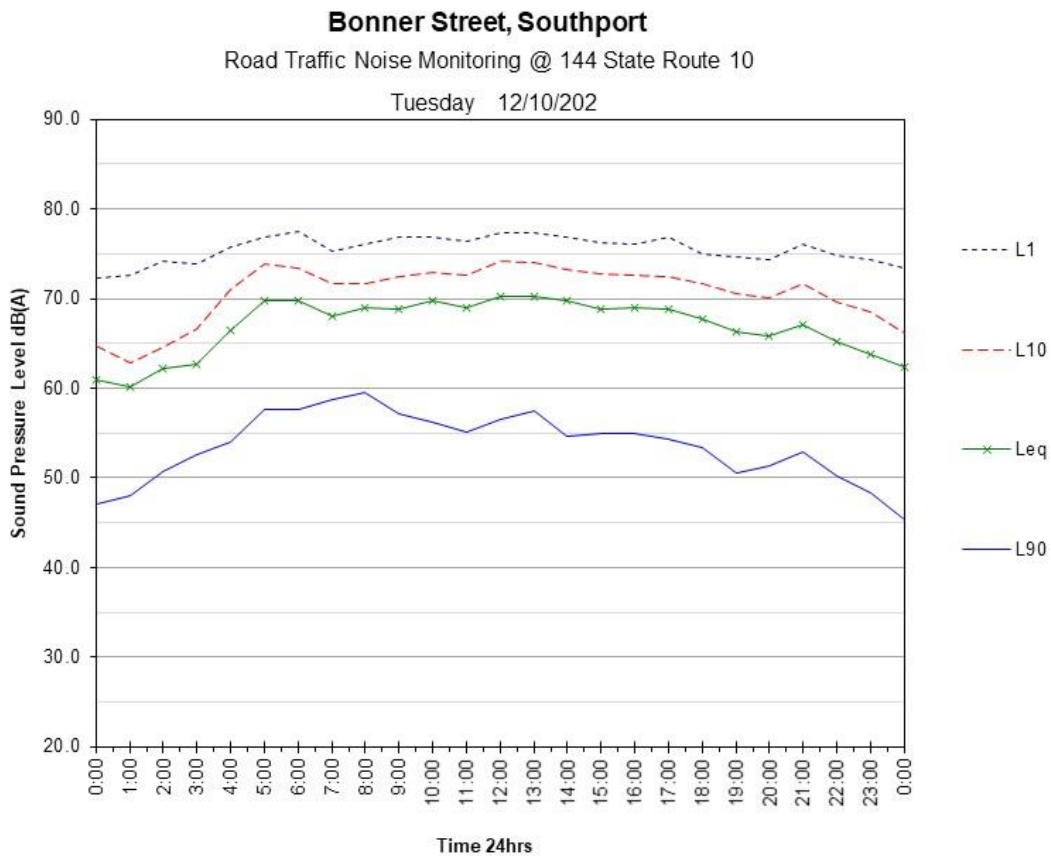


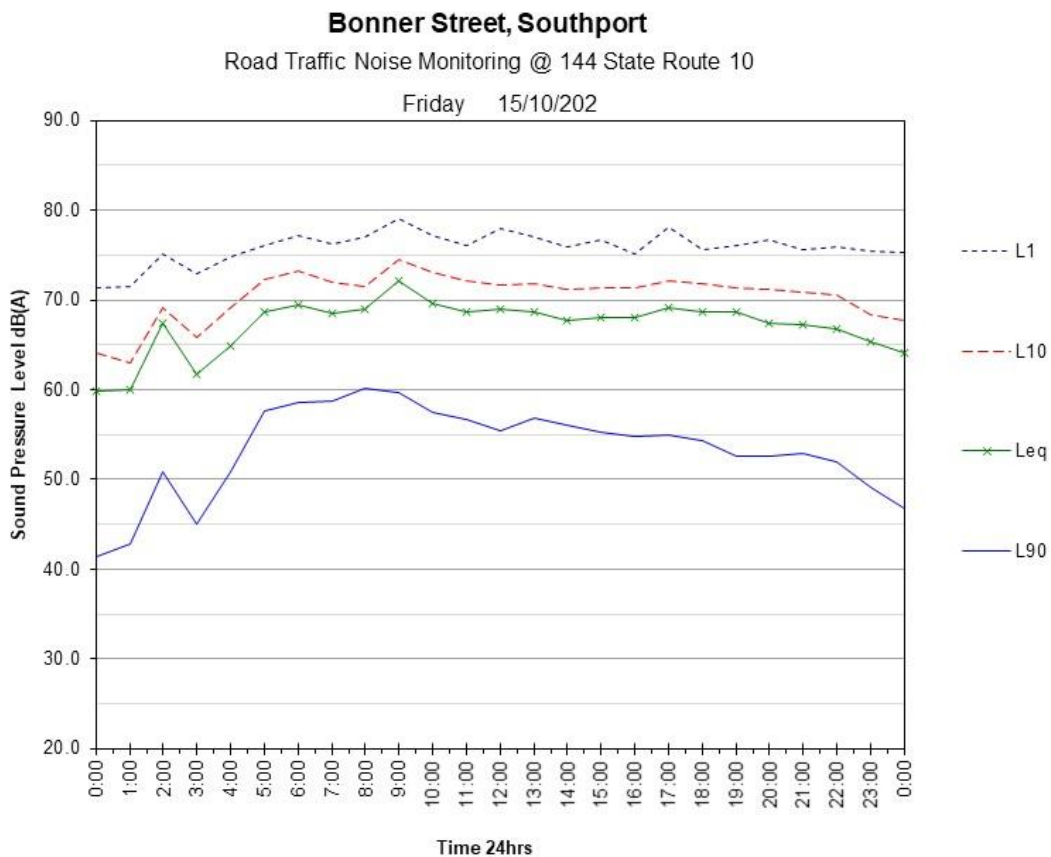
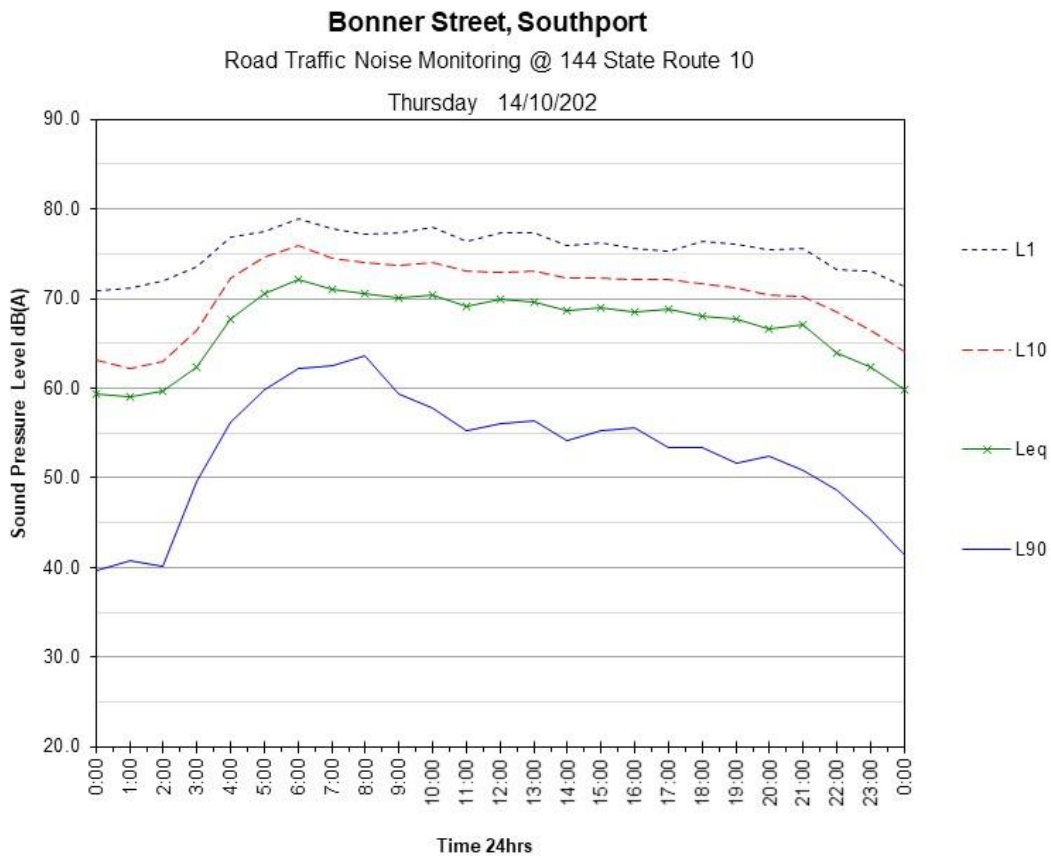
11.2 Noise Monitoring Charts

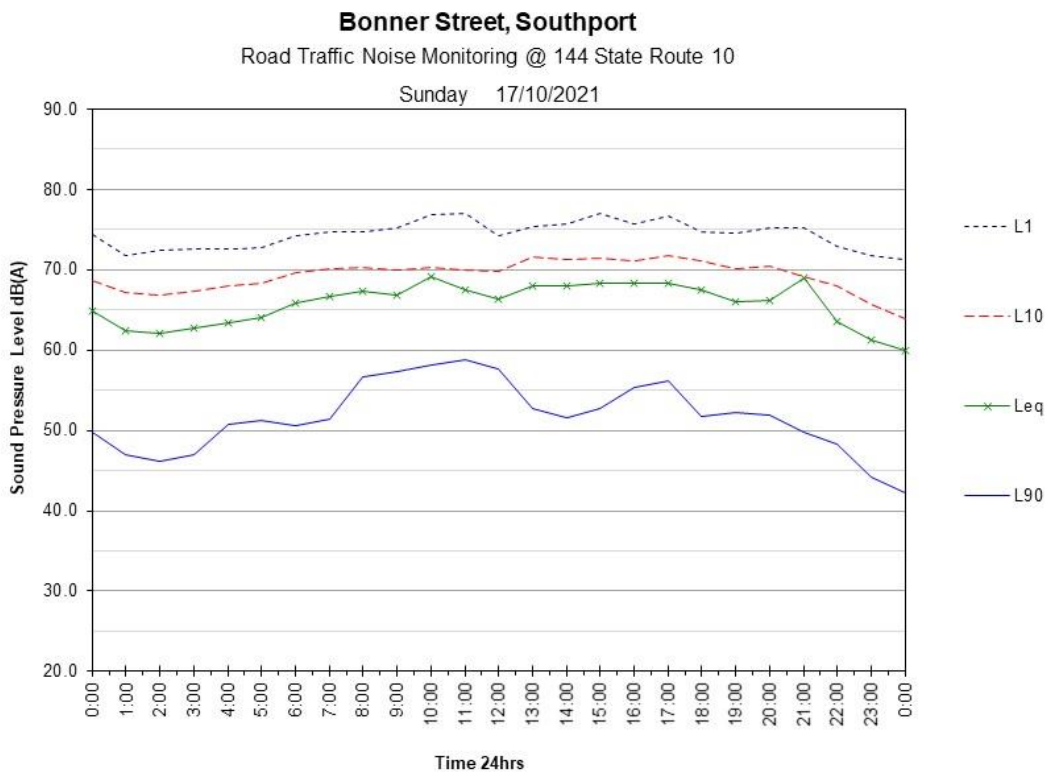
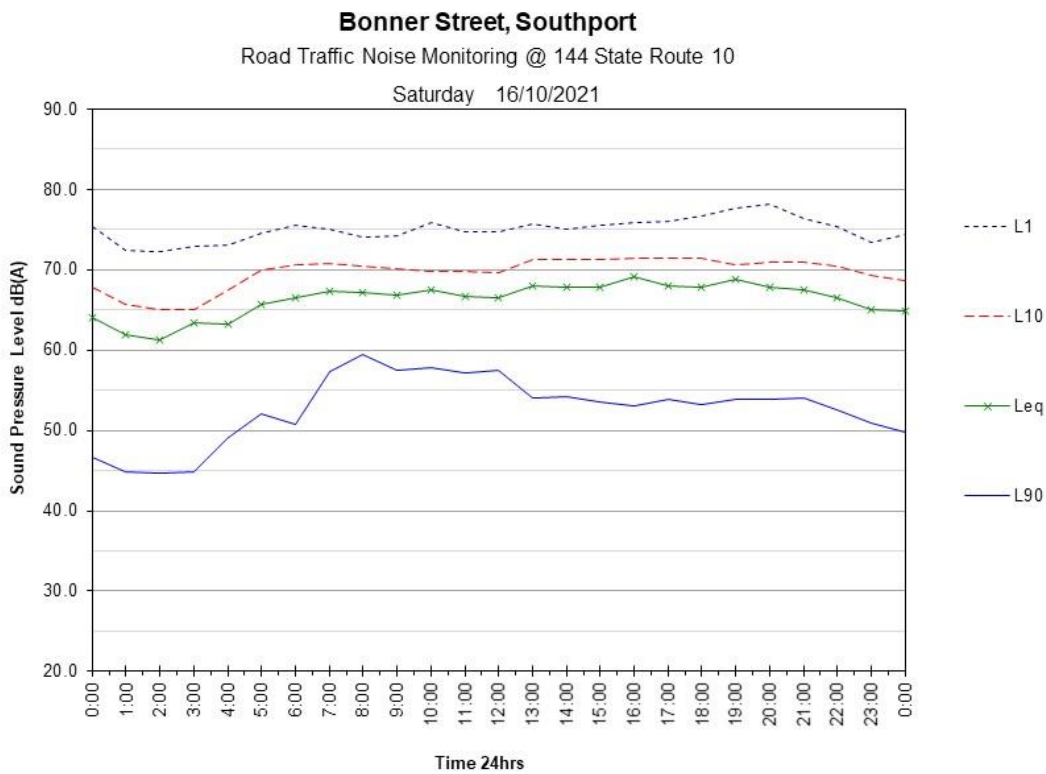
11.2.1 Road Traffic

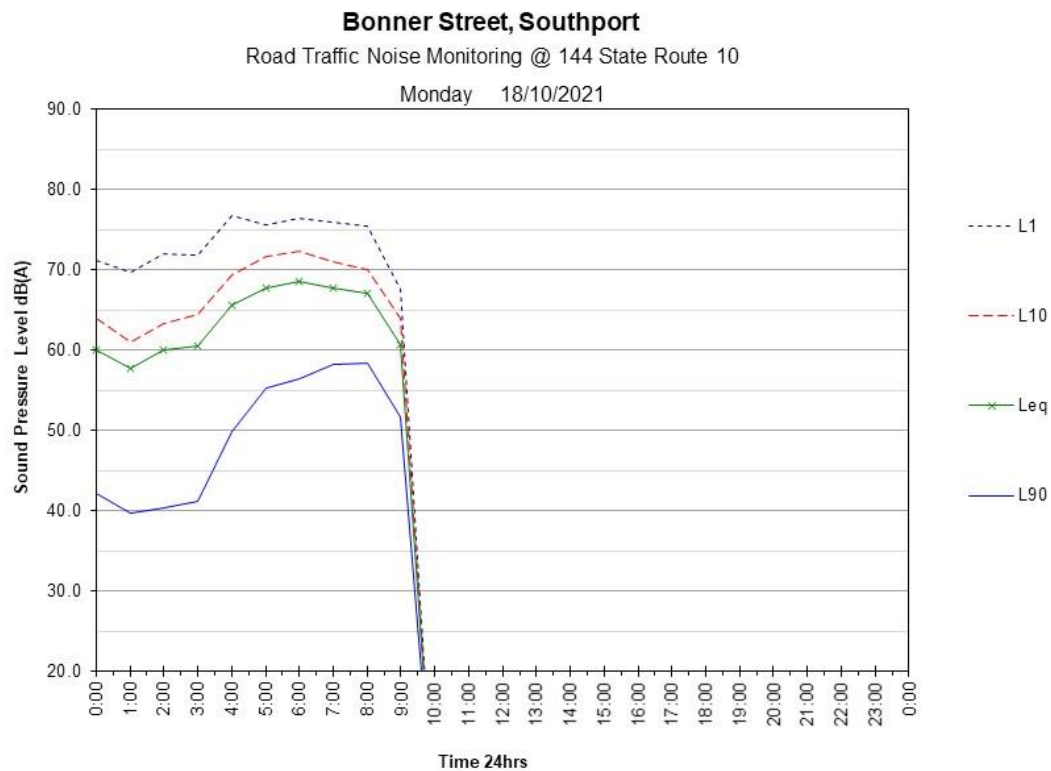












11.2.2 Ambient Noise Monitoring

