acousticworks

Proposed Funeral Home
37 Ocean Street
Woollahra

ACOUSTIC REPORT




Client:
JCP Construction
ATTN: James Pearce

Reference:
1021100 R01D 37 Ocean Street Woollahra ENV.docx

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Document Information

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Report Register

Date	Revision	Author	Reviewer	Manager
16/08/2021	R01A	Benjamin Cox	Matthew Bechara	GP
16/08/2021	R01B	Benjamin Cox	Matthew Bechara	GP
16/08/2021	R01C	Benjamin Cox	Matthew Bechara	GP
24/11/2021	R01D	Benjamin Cox	Matthew Bechara	GP

Disclaimer

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1. Introduction

This report is in response to a request by JCP Construction for an environmental noise assessment of a proposed funeral home to be located at 37 Ocean Street, Woollahra. To facilitate the assessment unattended noise monitoring was conducted to determine the criteria and assess impacts to sensitive receivers in proximity to the development. Based on the outcomes of the assessment, recommendations for acoustic treatments are specified.

2. Site description

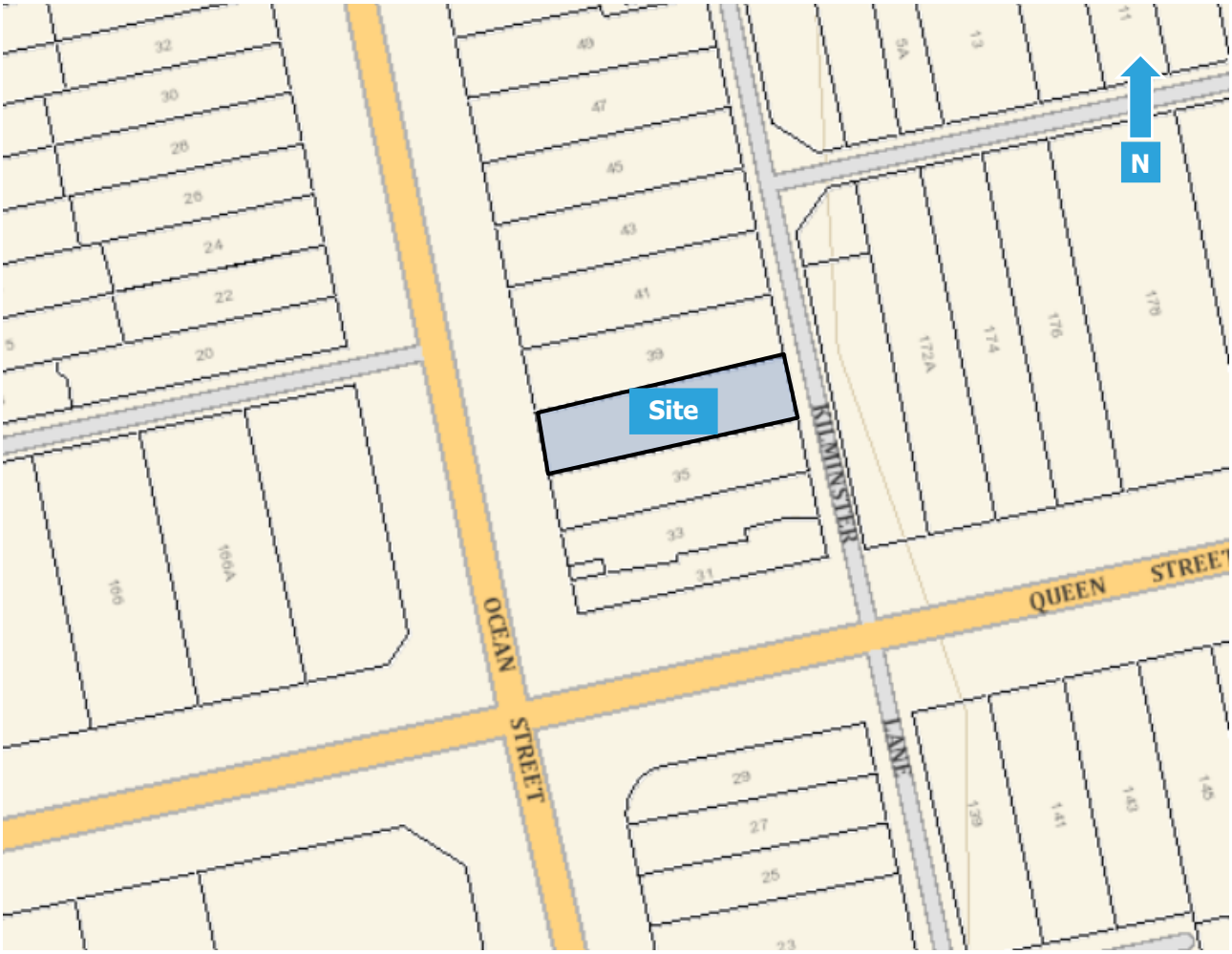
2.1 Site location

The site is described by the following:

37 Ocean Street, Woollahra
Lot 37 on DP181112

Refer to Figure 1 for site location.

Figure 1: Site location (not to scale)



A comprehensive site survey was conducted on 6th August 2021 and identified the following:

a) The site is currently occupied by a two storey mixed use building which will be utilised for the proposed development.
b) The site is located in a R2 Low Density Residential zone as defined in the Woollahra Local Environmental Plan (LEP) 2014.
c) The surrounding area consists of residential and commercial land uses.

2.2 Proposal

The proposal is to redevelop the existing building into a funeral home comprised of the following:

- Reception, waiting room, and viewing room areas.
- Off street car parking spaces via Kilminster Lane.
- Proposed operating hours of 8am to 10pm, 7 days a week, with trading hours of 9am to 4pm, Monday to Friday.

Refer to appendices for complete development plans.

2.3 Acoustic environment

The surrounding area is primarily affected by road traffic noise from the surrounding road network.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor (SN# 00171587)
- Pulsar Model 105 Ltd Sound Calibrator (SN # 57417)

The Rion NL42 environmental noise monitor holds 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 monitoring

4.1 Receiver locations

The nearest representative sensitive receiver locations were identified as follows;

1. A two storey residential dwelling is located adjacent the southern site boundary at 35 Ocean Street.
2. A two storey commercial building with shop top housing is located to the west at 168 Queen Street.
3. A two storey commercial building with the potential for residential land use is located adjacent the northern site boundary at 39 Ocean Street.

Refer to Figure 2 for these locations.

Figure 2: Receivers and noise monitoring locations

4.2 Unattended noise monitoring procedure

A Rion NL42 environmental noise monitor was placed onsite at 37 Ocean Street, Woollahra to measure ambient noise levels. This location was chosen as it was considered to be representative of the nearest residential receivers. The monitor was located in a free field position with the microphone approximately 1.4 metres above first floor surface level. The monitor was set to record noise levels between the 6th and 13th August 2021.

The noise monitor was set to record noise levels in "A" weighting, Fast response using 15 minute statistical intervals. Background noise monitoring was conducted generally in accordance with Australian Standard AS1055:2018 '*Acoustics – Description & Measurement of Environmental Noise'.*

For the unattended noise monitoring location refer to Figure 2.

5. Existing ambient noise levels

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

5.1 Meteorological conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (http://www.bom.gov.au/climate/data), shown in Table 1 below.

Table 1: Meteorological conditions – Sydney

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Speed (km/h)	Direction	Speed (km/h)	Direction
Friday	06/08/21	0	17	WNW	7	NW
Saturday	07/08/21	0	19	WNW	7	W
Sunday	08/08/21	0.8	15	W	9	E
Monday	09/08/21	4.6	13	WNW	20	NE
Tuesday	10/08/21	0	11	WNW	15	N
Wednesday	11/08/21	0.2	20	NNW	26	NNW
Thursday	12/08/21	0	17	S	17	WNW

5.2 Background noise level

The measured rating background noise levels (RBL), in accordance with the NSW Noise Policy for Industry, are as follows;

Table 2: Measured RBL noise levels

Day	Date	Background L90 dBA		
		Day	Evening	Night
Friday	06/08/21	x	41.7	37.3
Saturday	07/08/21	53.4	42.5	34.9
Sunday	08/08/21	52.0	37.2	30.3
Monday	09/08/21	55.6	40.3	35.2
Tuesday	10/08/21	55.8	41.4	36.6
Wednesday	11/08/21	55.4	*47.0	37.8
Thursday	12/08/21	55.4	40.3	35.7
RBL		55	41	36

*Note wind recorded on 11th August was found to have affected the measured noise levels, with the data for the affected time periods omitted. Rainfall recorded on 8th, 9th and 11th August was not found to have affected the measured noise levels, therefore the data for these time periods was utilised.

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

6. Noise Criteria

To determine the appropriate noise criteria to be applied, a review of Woollahra Municipal Council planning policies and the NSW Noise Policy for Industry was conducted.

6.1 Woollahra Municipal Council

A letter received from council, dated 2nd August 2021 (ref: DA 203/2021/1) specifies the following in relation to noise requirements:

> *"An Acoustic Report prepared by a suitable qualified acoustic engineer must be submitted. The Acoustic Report shall have consideration to both the noise levels and sound character in the assessment of annoyance and impact on amenity at nearby sensitive receivers. All calculated noise emission levels are to be conservatively based on the maximum source noise levels and maximum capacity operations (worst-case scenario) of the proposed funeral home."*

As no specific criteria are nominated, further reference is made to the NSW Noise Policy for Industry (2017).

6.2 Noise Policy for Industry

Assessment of noise in accordance with NSW Noise Policy for Industry (2017) has two main components: intrusiveness and amenity criteria. These are compared to each other (after conversion of amenity noise level to LAeq,15min equivalent level) to determine the overall project noise trigger level.

6.2.1 Intrusiveness noise level

The intrusiveness noise level is based on the $L_{Aeq\ (15\ min)}$ associated with commercial activity being less than or equal to the measured L_{A90} Rating Background Level + 5dB as per section 2.3 of the policy. A modifying factor should also be added where appropriate to allow for tonality, impulsiveness, and intermittency or low frequency effects.

6.2.2 Amenity noise level

The amenity noise level is determined in accordance with Section 2.4 of the policy based on the land use and relevant noise criteria specified in Tables 2.2 and 2.3. The Noise Policy for Industry sets out acceptable noise levels for various locations. Determination of which residential receiver category applies is described in Table 2.3 of the policy.

Table 3: Receiver category (Table 2.3 of the Noise Policy for Industry)

Receiver category	**Typical planning zoning – standard instrument**	**Typical existing background noise levels**	**Description**
Rural residential	RU1 – primary production RU2 – rural landscape RU4 – primary production small lots R5 – large lot residential E4 – environmental living	Daytime RBL <40 dB(A) Evening RBL <35 dB(A) Night RBL <30 dB(A)	**Rural** – an area with an acoustical environment that is dominated by natural sounds, having little or no road traffic noise and generally characterised by low background noise levels. Settlement patterns would be typically sparse. Note: Where background noise levels are higher than those presented in column 3 due to existing industry or intensive agricultural activities, the selection of a higher noise amenity area should be considered.
Suburban residential	RU5 – village RU6 – transition R2 – low density residential R3 – medium density residential E2 – environmental conservation E3 – environmental management	Daytime RBL<45 dB(A) Evening RBL<40 dB(A) Night RBL <35dB(A)	**Suburban** – an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.
Urban residential	R1 – general residential R4 – high density residential B1 – neighbourhood centre (boarding houses and shop-top housing) B2 – local centre (boarding houses) B4 – mixed use	Daytime RBL> 45 dB(A) Evening RBL> 40 dB(A) Night RBL >35 dB(A)	**Urban** – an area with an acoustical environment that: • is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources • has through-traffic with characteristically heavy and continuous traffic flows during peak periods • is near commercial districts or industrial districts • has any combination of the above.

To determine the appropriate receiver category, the following observations were made:

- Receivers 1 - 3 are zoned R2 – Low Density Residential and R3 – Medium Density Residential which corresponds with the typical planning zoning of the suburban category.
- The measured RBL values presented in Section 5.3 correspond with the typical existing background noise levels of the urban category.
- The acoustical environment of the surrounding area is dominated by 'urban hum' and has through-traffic with characteristically heavy and continuous traffic flows during peak periods, which corresponds with the description of the urban category.

Therefore, receivers 1 - 3 would be assessed against the urban criteria.

6.2.3 Modifying factors

The Noise Policy for Industry includes correction factors such as tonal noise, low-frequency noise, intermittent noise and duration. Where two or more modifying factors are present, the maximum adjustment to a noise source level is 10dBA (excluding duration correction).

6.3 Project noise trigger level

To determine the project trigger noise level, the amenity noise level must first be standardised to and equivalent LAeq 15min in order to compare to the intrusiveness noise level. This is done in accordance with section 2.2 of the policy as follows;

$$L_{Aeq,15min} = L_{Aeq,\ period} + 3dB$$

Therefore, based on the measured data presented in Section 5, the project specific noise limits are determined.

6.3.1 Intrusiveness noise criteria

The intrusiveness noise levels are as follows;

Table 4: Intrusiveness noise levels

Time period	Receivers 1 - 3
	Criteria $L_{eq\ (15min)}$ dBA
Day (7am-6pm Mon-Sat; 8am-6pm Sun)	60
Evening (6pm-10pm)	46
Night (10pm-7am Sun-Fri, 10pm-8am Sat)	41

6.3.2 Amenity criteria

Based on Section 2.4 of the policy, the amenity noise levels are as follows;

Table 5: Amenity noise levels

Time period	Receivers 1 - 3
	Criteria $L_{eq\ (15min)}$ dBA
Day (7am-6pm Mon-Sat; 8am-6pm Sun)	58
Evening (6pm-10pm)	48
Night (10pm-7am Sun-Fri, 10pm-8am Sat)	43

6.3.3 Project specific noise criteria

The project noise trigger level is the more stringent value of the intrusiveness and amenity noise levels. Therefore the project noise criteria are as follows:

Table 6: Project criteria

Time period	Receivers 1 - 3
	Criteria $L_{eq\ (15min)}$ dBA
Day (7am-6pm Mon-Sat; 8am-6pm Sun)	58
Evening (6pm-10pm)	46
Night (10pm-7am Sun-Fri, 10pm-8am Sat)	41

7. Environmental Assessment

7.1 Onsite activities

Noise associated with the development was assessed based on previous measurements of similar activities. The calculations assume nominated activities are located at a representative distance within the development site to each receiver location. Any relevant shielding or building transmission loss is taken into account for these activities.

7.2 Project noise impacts

The noise source levels and resulting predicted levels of airborne noise at the receiver locations are shown in Table 7 below;

Table 7: Predicted noise impacts

Receiver	Receivers 1. 35 Ocean Street (S) 2. 168 Queen Street (W) 3. 39 Ocean Street (N) Description	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) Source	Distance (m) Receiver	Barrier (height (m No	Barrier screening dB	Building TL or shield dB	Building screening dB	Dist atten. @-6dB/dd	Source L10-Leq dB	Source L1-Leq dB	LAeq adj,T ext. dB(A) Day	LAeq adj,T ext. dB(A) Eve	LAeq 15 min Compliance Day	Eve	Night
	Criteria																			58	46	41
1	Voice conversation	72		72	1	1		900	1	6			-10	-5	-16	0	0	41	41	Yes	Yes	n/a
	Background music	70		70	1	1		900	1	6			-10	-5	-16	0	0	39	39	Yes	Yes	n/a
	Car door closure	70	2	72	1	1		2	1	7					-17	0	0	29	29	Yes	Yes	n/a
	Car passby	69		69	1	1		15	1	7					-17	0	0	34	34	Yes	Yes	n/a
	Car start	74	2	76	1	1		2	1	7					-17	0	0	33	33	Yes	Yes	n/a
	Delivery van	78		78	1	1		10	1	7					-17	0	0	42	42	Yes	Yes	n/a
	Roller door	68		68	1	1		34	1	15					-24	0	0	30	30	Yes	Yes	n/a
	Lift	50		50	1	1		3	1	7					-17	0	0	8	8	Yes	Yes	n/a
	Total																	46	46	**Yes**	**No**	**Yes**
	Criteria																			58	46	41
2	Voice conversation	72		72	1	1		900	1	27			-10		-29	0	0	33	33	Yes	Yes	n/a
	Background music	70		70	1	1		900	1	27			-10		-29	0	0	31	31	Yes	Yes	n/a
	Car door closure	70	2	72	1	1		2	1	47				-20	-33	0	0			Yes	Yes	n/a
	Car passby	69		69	1	1		15	1	47				-20	-33	0	0			Yes	Yes	n/a
	Car start	74	2	76	1	1		2	1	47				-20	-33	0	0			Yes	Yes	n/a
	Delivery van	78		78	1	1		10	1	47				-20	-33	0	0	5	5	Yes	Yes	n/a
	Roller door	68		68	1	1		34	1	53				-20	-34	0	0			Yes	Yes	n/a
	Lift	50		50	1	1		3	1	47				-20	-33	0	0			Yes	Yes	n/a
	Total																	36	36	**Yes**	**Yes**	**Yes**
	Criteria																			58	46	41
3	Voice conversation	72		72	1	1		900	1	9			-10		-19	0	0	43	43	Yes	Yes	n/a
	Background music	70		70	1	1		900	1	9			-10		-19	0	0	41	41	Yes	Yes	n/a
	Car door closure	70	2	72	1	1		2	1	15					-24	0	0	22	22	Yes	Yes	n/a
	Car passby	69		69	1	1		15	1	15					-24	0	0	28	28	Yes	Yes	n/a
	Car start	74	2	76	1	1		2	1	15					-24	0	0	26	26	Yes	Yes	n/a
	Delivery van	78		78	1	1		10	1	15					-24	0	0	35	35	Yes	Yes	n/a
	Roller door	68		68	1	1		34	1	17					-25	0	0	29	29	Yes	Yes	n/a
	Lift	50		50	1	1		3	1	15					-24	0	0	2	2	Yes	Yes	n/a
	Total																	46	46	**Yes**	**Yes**	**Yes**

Compliance is predicted at the receiver locations for the proposed hours of operation on the condition the recommendations in Section 8 are implemented.

8. Recommendations

8.1 Onsite activities

Compliance is predicted for all onsite activities at the receiver locations for the proposed hours of operation on the condition the following recommendations are implemented:

- Background music is not to exceed 70dBA when measured at 1m from the speaker and is to be limited to the day and evening time periods (7am to 10pm). Alternatively, staff can confirm the music is inaudible by standing at the boundary of the nearest receiver, listening and adjusting until the background music is inaudible.
- Delivery vans are not to idle and should be turned off during loading and unloading activities in the evening period.

8.2 Waste collection

We recommend that waste collection be conducted in accordance with the surrounding residential properties.

8.3 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 with an assessment undertaken by a qualified acoustic consultant to be conducted prior to installation.

9. Conclusion

An environmental noise assessment was conducted for the proposed funeral home to be located at 37 Ocean Street, Woollahra. Compliance is predicted at the receiver locations on the condition the recommendations detailed in Section 8 are implemented.

Should you have any queries please do not hesitate to contact us.

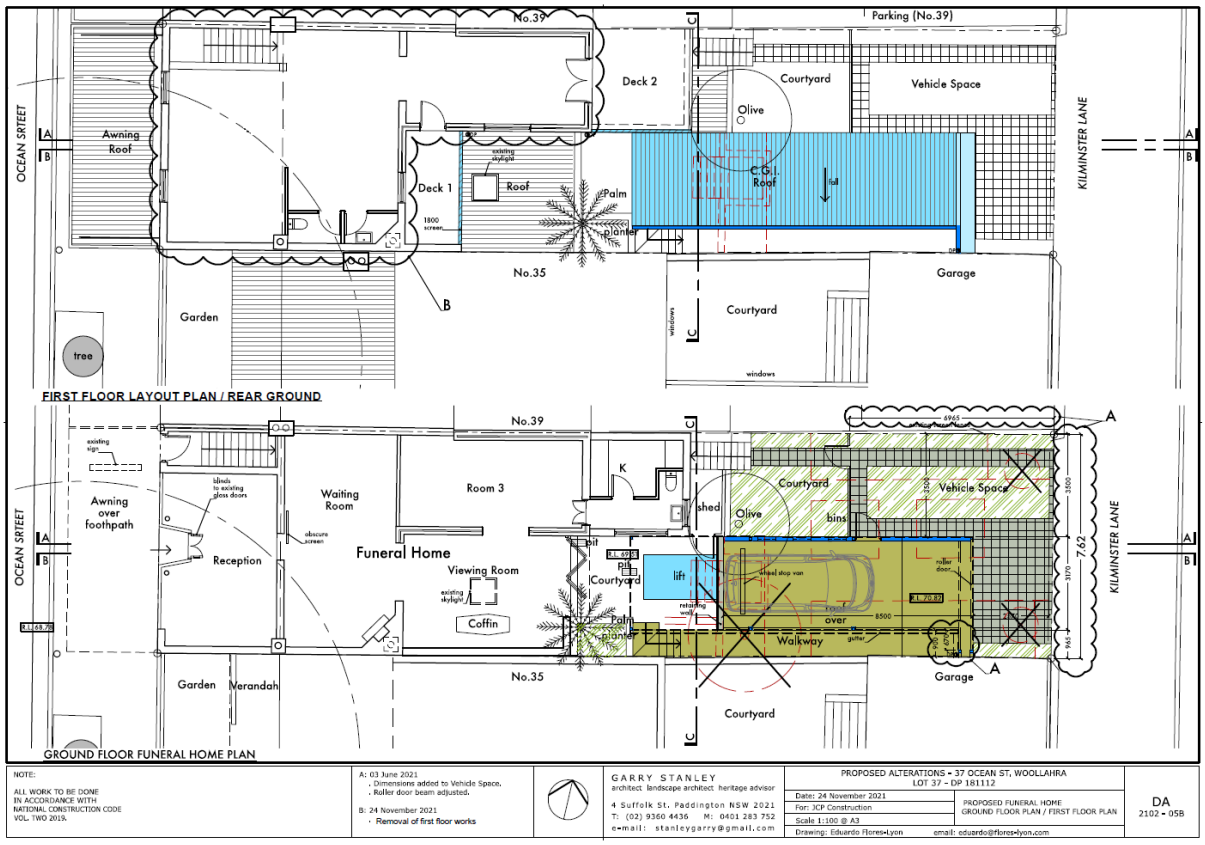
Report Prepared By

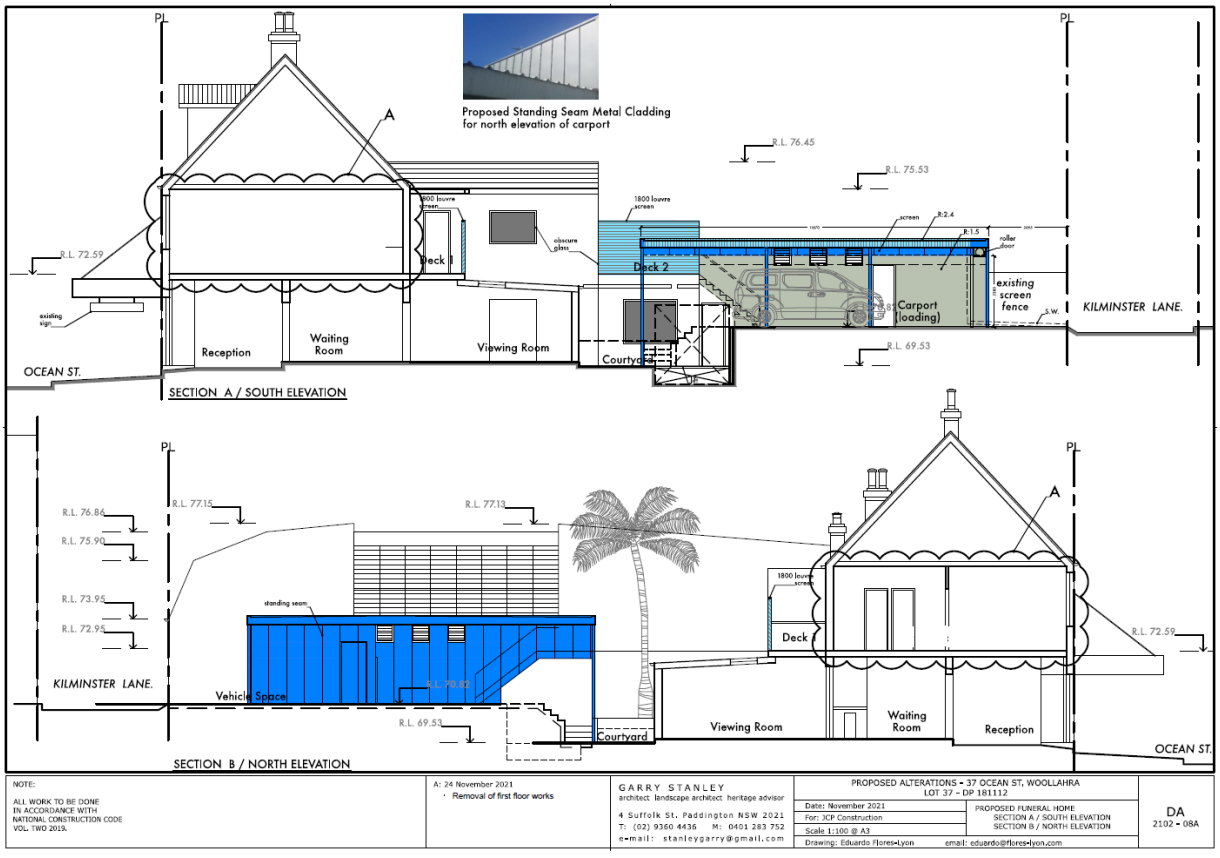
Benjamin Cox
Acoustic Consultant

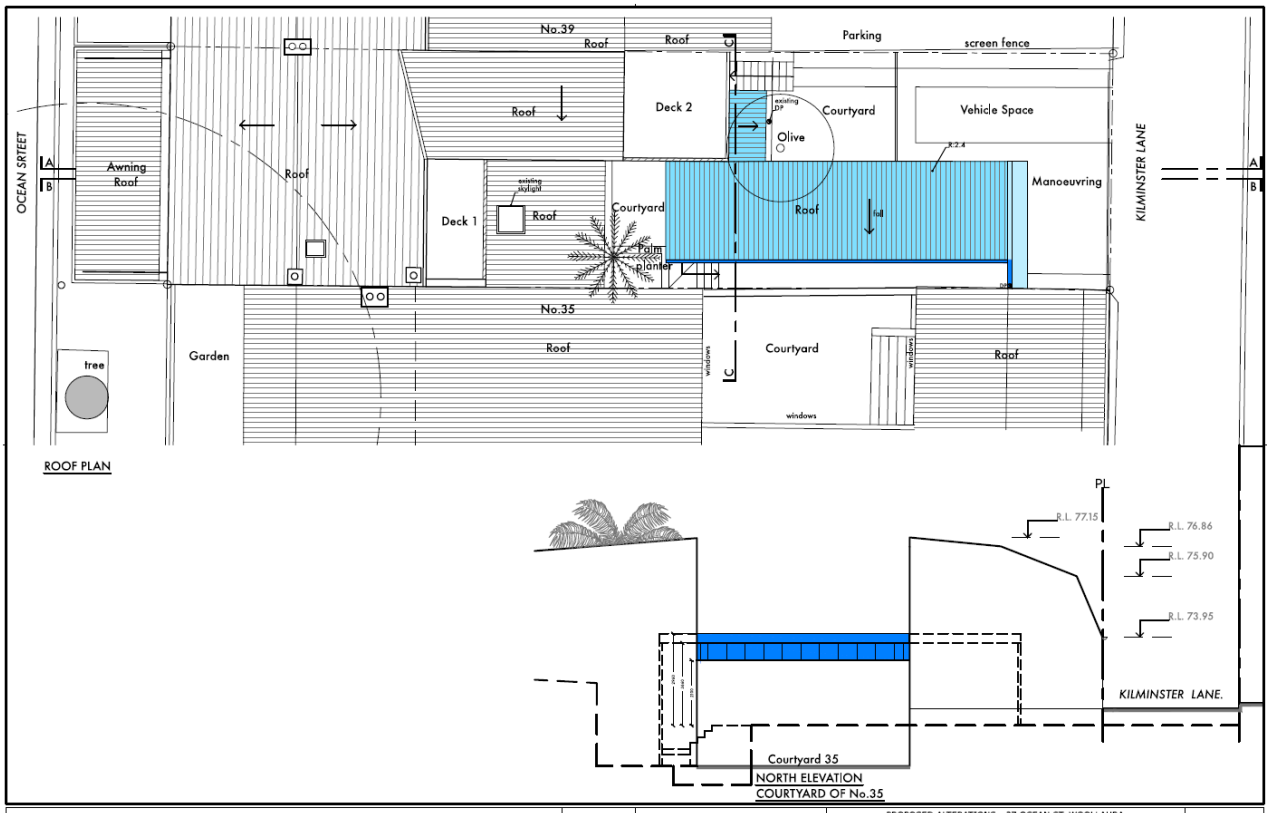
acousticworks)))

10. Appendices

10.1 Development Plans







NOTE:
ALL WORK TO BE DONE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE VOL. TWO 2019.

GARRY STANLEY
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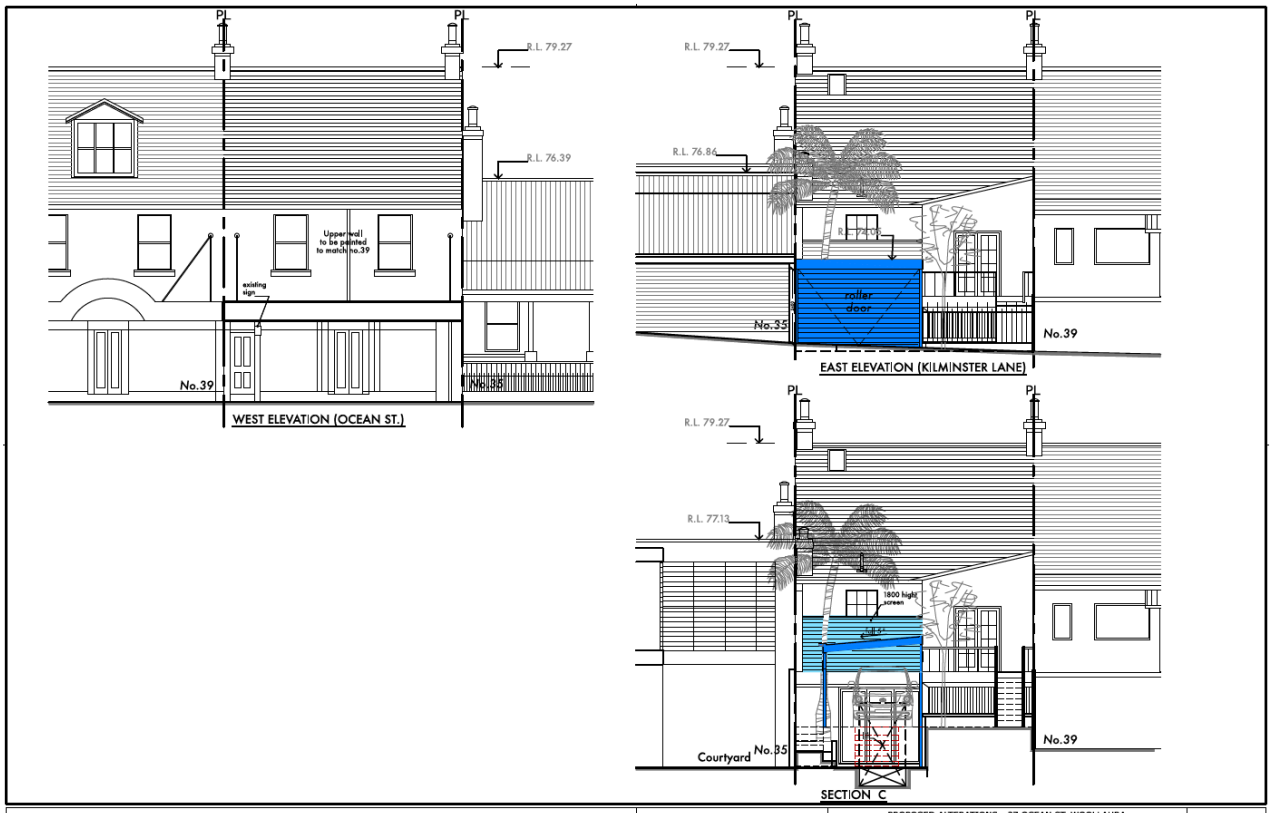
e-mail: stanleygarry@gmail.com

PROPOSED ALTERATIONS - 37 OCEAN ST, WOOLLAHRA
LOT 37 - DP 181112
Date: May 2021
For: JCP Construction
Scale 1:100 @ A3
Drawing: Eduardo Flores-Lyon email: eduardo@flores-lyon.com
PROPOSED FUNERAL HOME
ROOF PLAN
NORTH ELEVATION (FROM No.35)

DA
2102 - 06



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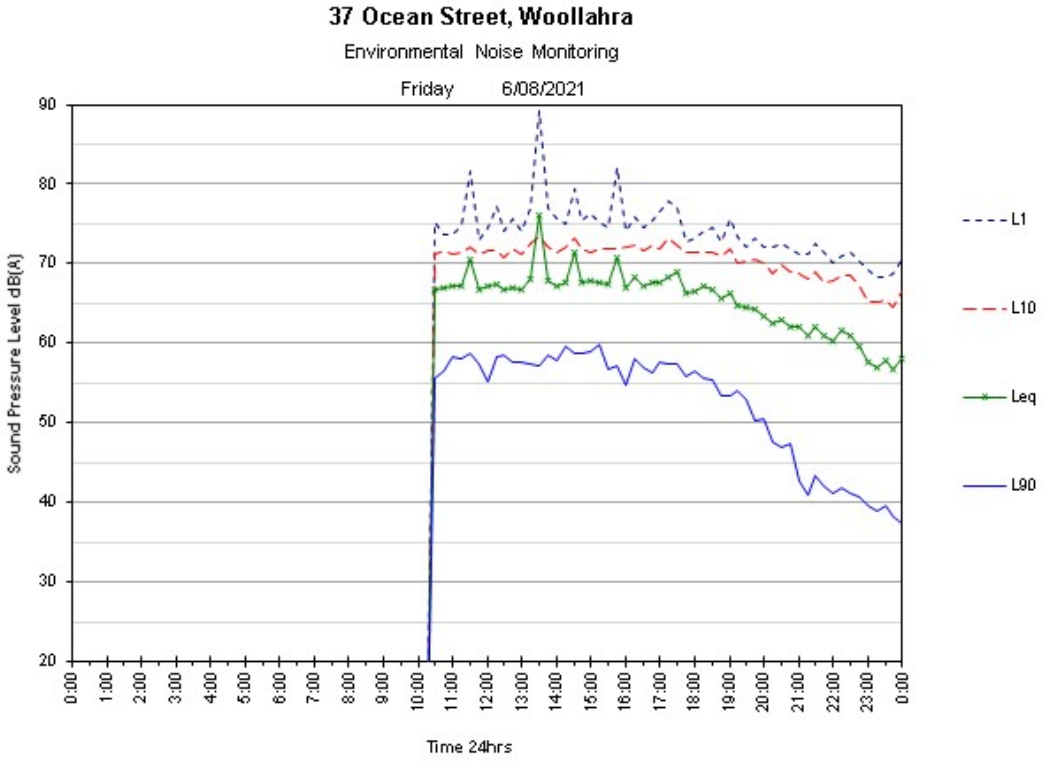
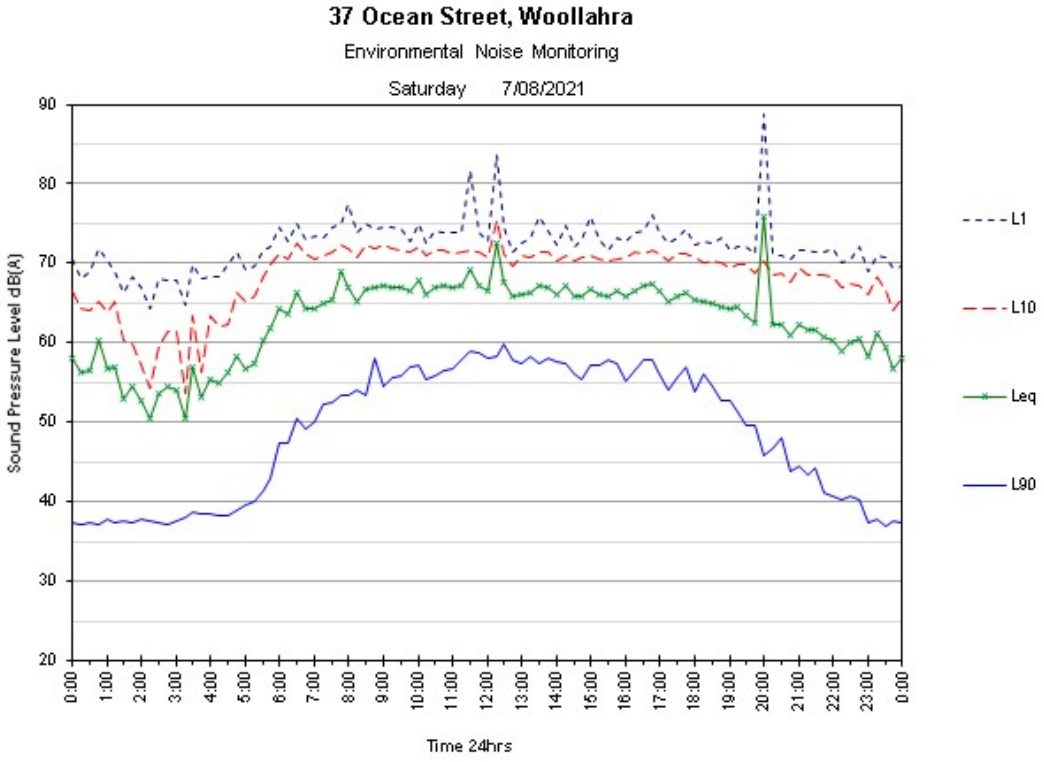
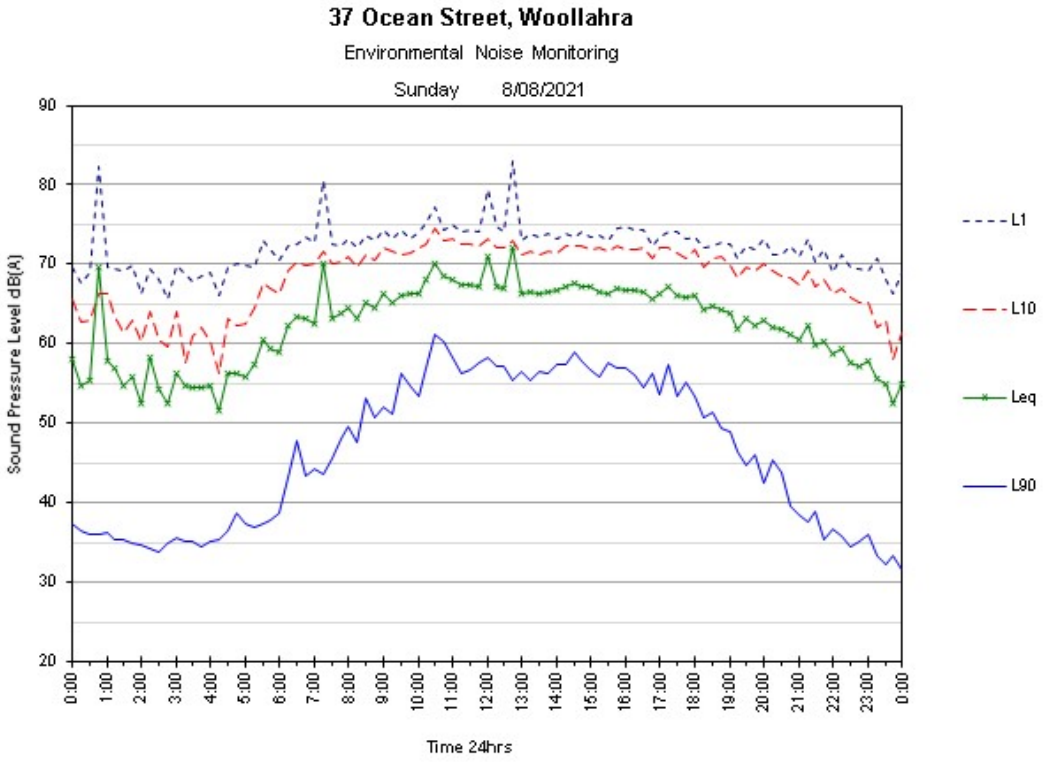
LOT 37 - DP 181112
Date: May 2021
For: JCP Construction
Scale 1:100 @ A3
Drawing: Eduardo Flores-Lyon email: eduardo@flores-lyon.com
PROPOSED FUNERAL HOME
WEST ELEVATION

DA
2102 - 07

10.2 Noise monitoring charts



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Environmental Noise Monitoring
Sunday 8/08/2021
Sound Pressure Level dB(A)
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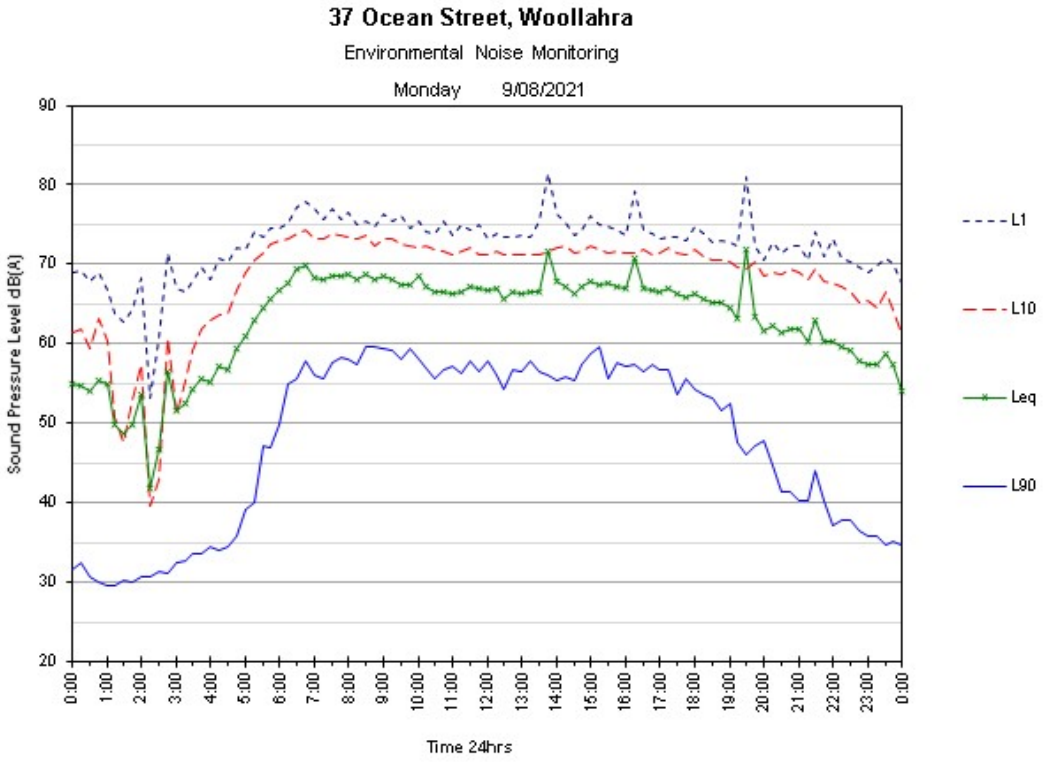
37 Ocean Street, Woollahra
Environmental Noise Monitoring
Monday 9/08/2021
Sound Pressure Level dB(A)
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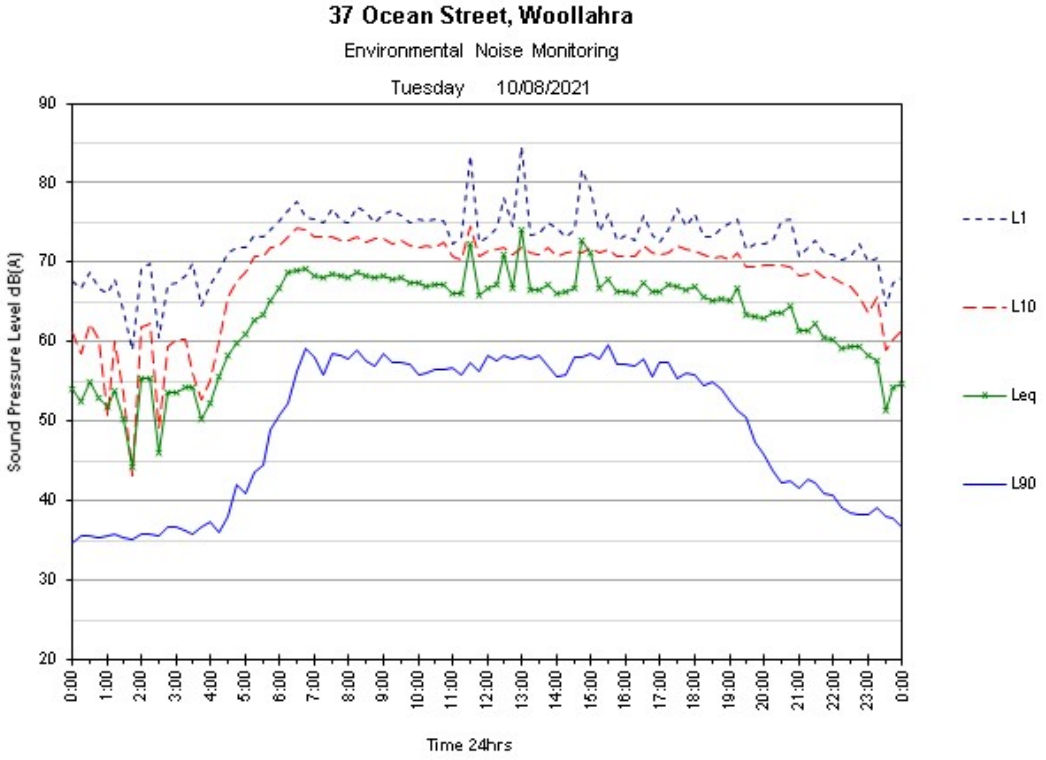
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Environmental Noise Monitoring
Tuesday 10/08/2021
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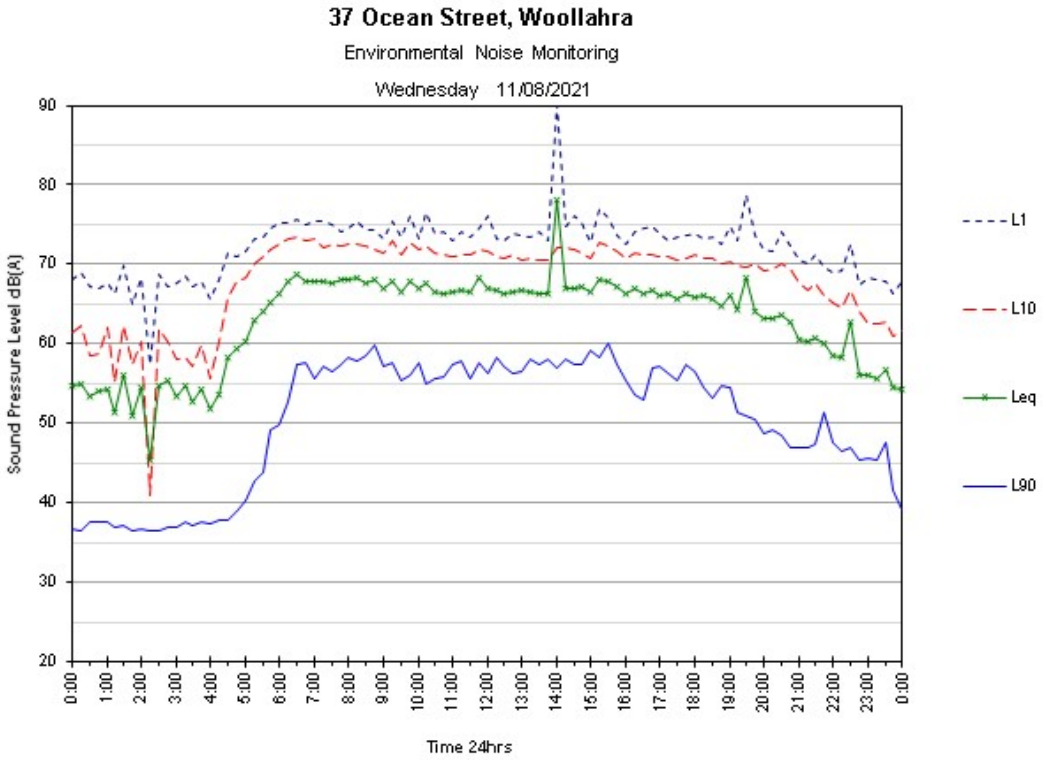
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Environmental Noise Monitoring
Wednesday 11/08/2021
Sound Pressure Level dB(A)
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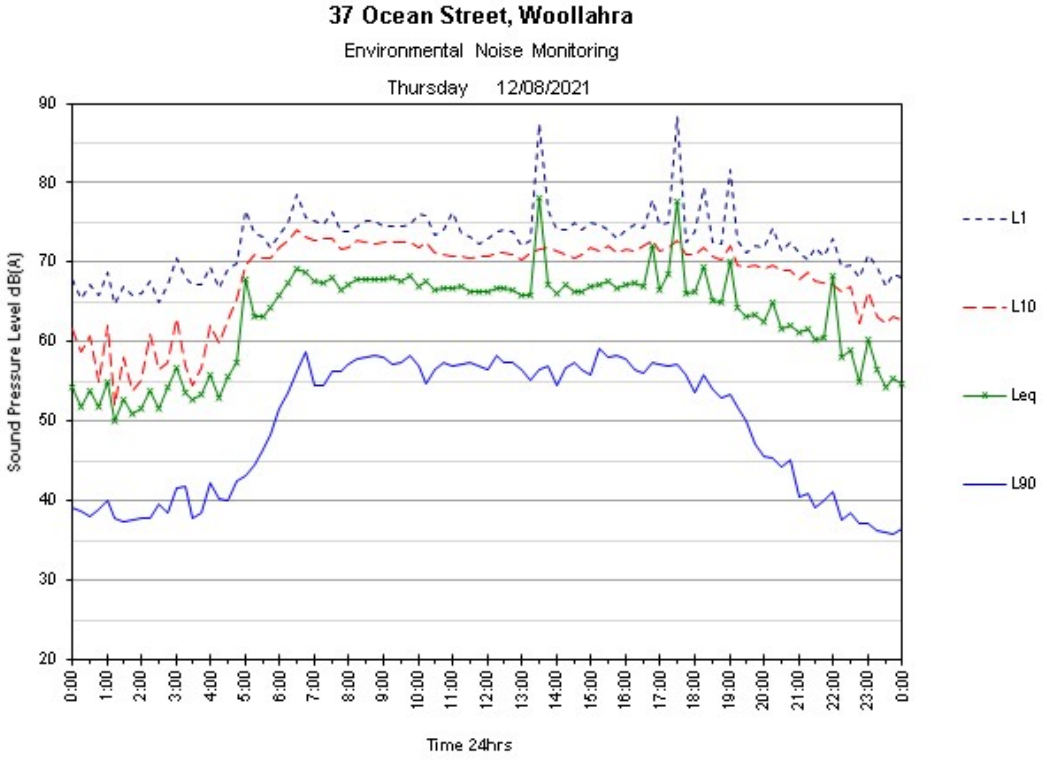
37 Ocean Street, Woollahra
Environmental Noise Monitoring
Thursday 12/08/2021
Sound Pressure Level dB(A)
90
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1:00
2:00
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Time 24hrs
L1
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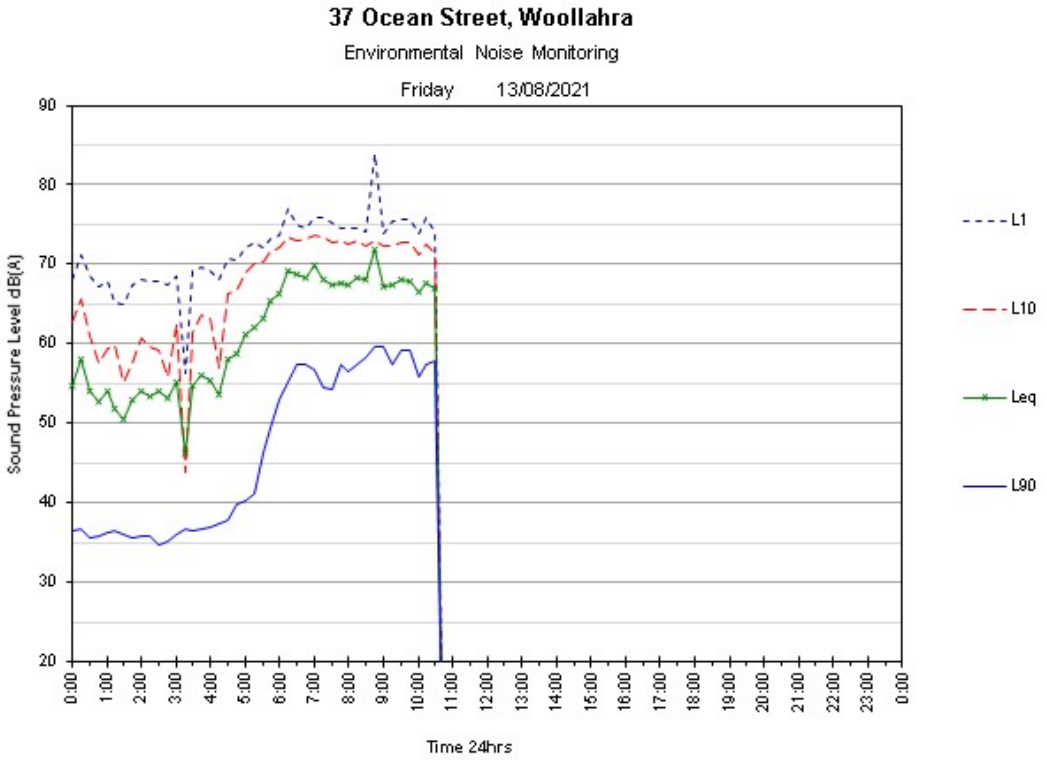
Leq
L90


37 Ocean Street, Woollahra
Environmental Noise Monitoring
Friday 13/08/2021
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time 24hrs
L1
L10
Leq
L90