

**Environmental Noise Level Impact Assessment for Proposed
Refurbishments to Kiosk and Cafe, 1012 Sir Samuel Griffith Drive, Mt
Coot-tha Drive**

conducted for

Mantle Group

Report No: R24014.docx/D3860/Rev.1/16.08.24

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Report prepared for:

Mantle Group
GPO Box 2866
BRISBANE QLD 4001

Authorised by:

Mr Arj Rupesinghe
CEO
Mantle Group

Mobile: 0412 553 858

Phone: -

Dates of assessment:

Thursday 08 to Thursday 15 February 2024

Consultants:

David Moore & Associates Pty Ltd
(PO Box 38)
7 Eleanor Drive
SILVAN VIC 3795

Telephone: 07 3170 3222

Mobile: 0417 717 506



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David Moore, B App Sc, MAAS

Our reference:

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INTRODUCTION

This noise impact assessment relates to the proposed refurbishment of the existing kiosk and café located at 1012 Sir Samuel Griffith Drive, Mt Coot-tha. This report has been prepared to assess the acoustic impacts of the proposal and respond to Brisbane City Council's Further Issues letter dated 23 January 2024.

In accordance with advice from the Brisbane City Council, namely:

NOISE

2) *The proposed Function Facility, Bar and Hotel, have the potential to impact on the noise amenity of residents situated to the south and south-west of the site until 3:00am daily. Due to the nature of the proposed use (above), a performance outcome is required as the acceptable outcome does not allow these types of uses to be assessed without a noise report.*

a) *The applicant is to submit a Noise Impact Assessment Report prepared in accordance with the Noise Impact Assessment Planning Scheme Policy demonstrating that PO1 of the Centre or Mixed Use Code can be achieved. At least emissions from amplified sound/music should be included in the report, with any outdoor areas where patrons congregate being included as well.*

Note: Speaker emission source levels and the number of people being accommodated must be detailed to justify noise source levels.

The primary potential noise impacts from the proposal is with respect to people and amplified music, and to a lesser extent plant and equipment and carpark activity.

As identified by Council the closest residential areas are to the south at the northern end of Blackstone Street and to the south-west at the northern end of Chapel Hill Road, with separation distances of approximately 590 and 720 metres respectively.

To assess current ambient noise levels a 7-day assessment was conducted from monitoring location A (refer Figure 1A), at the northern end of Blackstone Street, adjacent to the eastern side boundary of 72 Blackstone Street, with the microphone elevated 1.5 metres. At this monitoring location the dominant noise source was natural sounds associated with the adjacent bushland (bird calls, insects, etc) and some distant traffic noise.

In accordance with PO1 of the Centre or Mixed Use Code:

PO1

Development:

- 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.*

This report details the results of the ambient noise level assessment, current ambient noise levels and rating background levels, noise limits, state of compliance with noise limits and any required noise control measures. Specifically, this report has assessed noise emissions from amplified sound/music associated with the proposed development in addition to outdoor areas where patrons are likely to congregate.

Refer Figures 1A and 1B for locality plan and monitoring location, Figure 2 for the staging plan, Figure 3 for the Kiosk ground floor fitout plan, Figure 4 for Kiosk Level 1 fitout plan and Figure 5 for the proposed café ground floor plan.

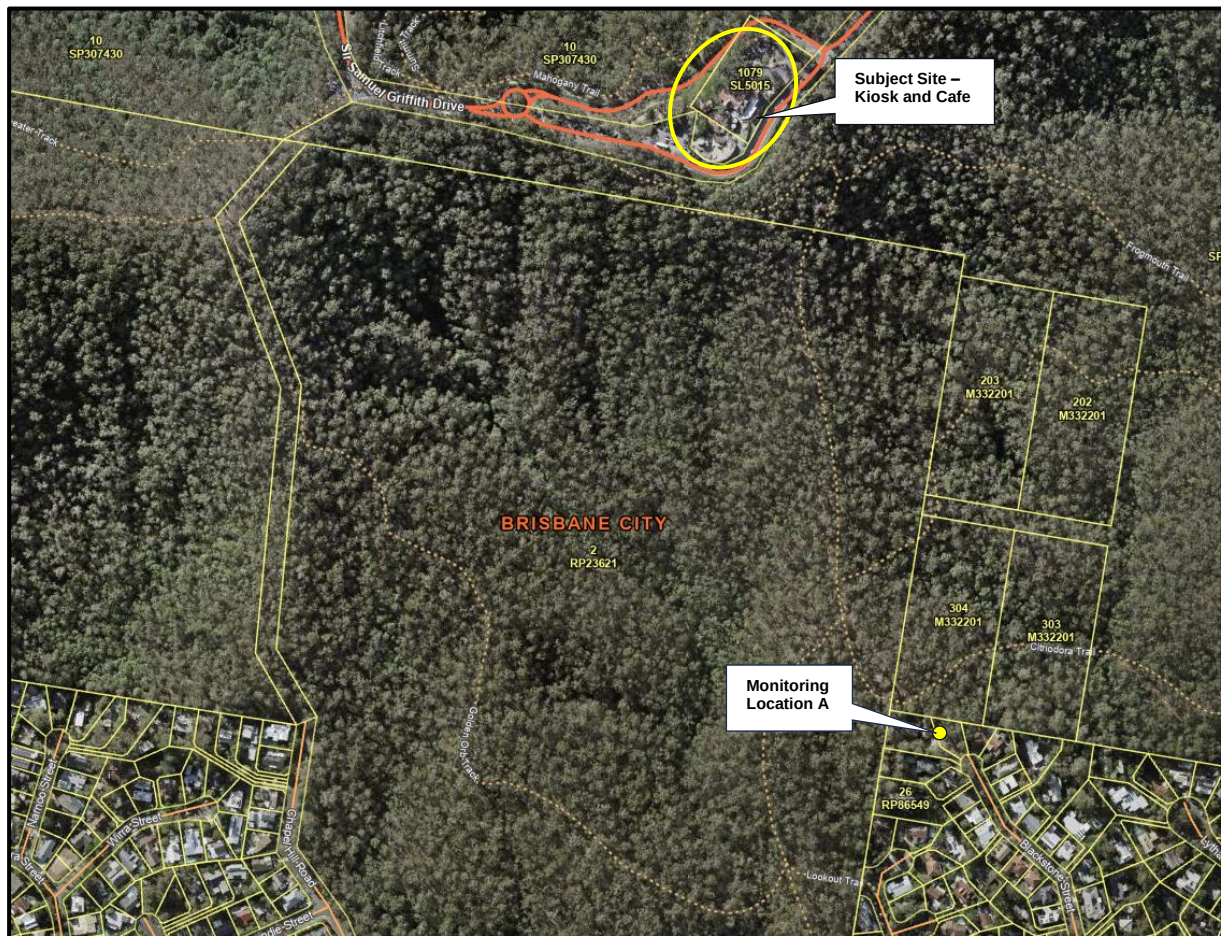


Figure 1A
Locality Plan (Top of the Page is North) and Monitoring Location A



Figure 1B
Subject Site Detail Locality Plan

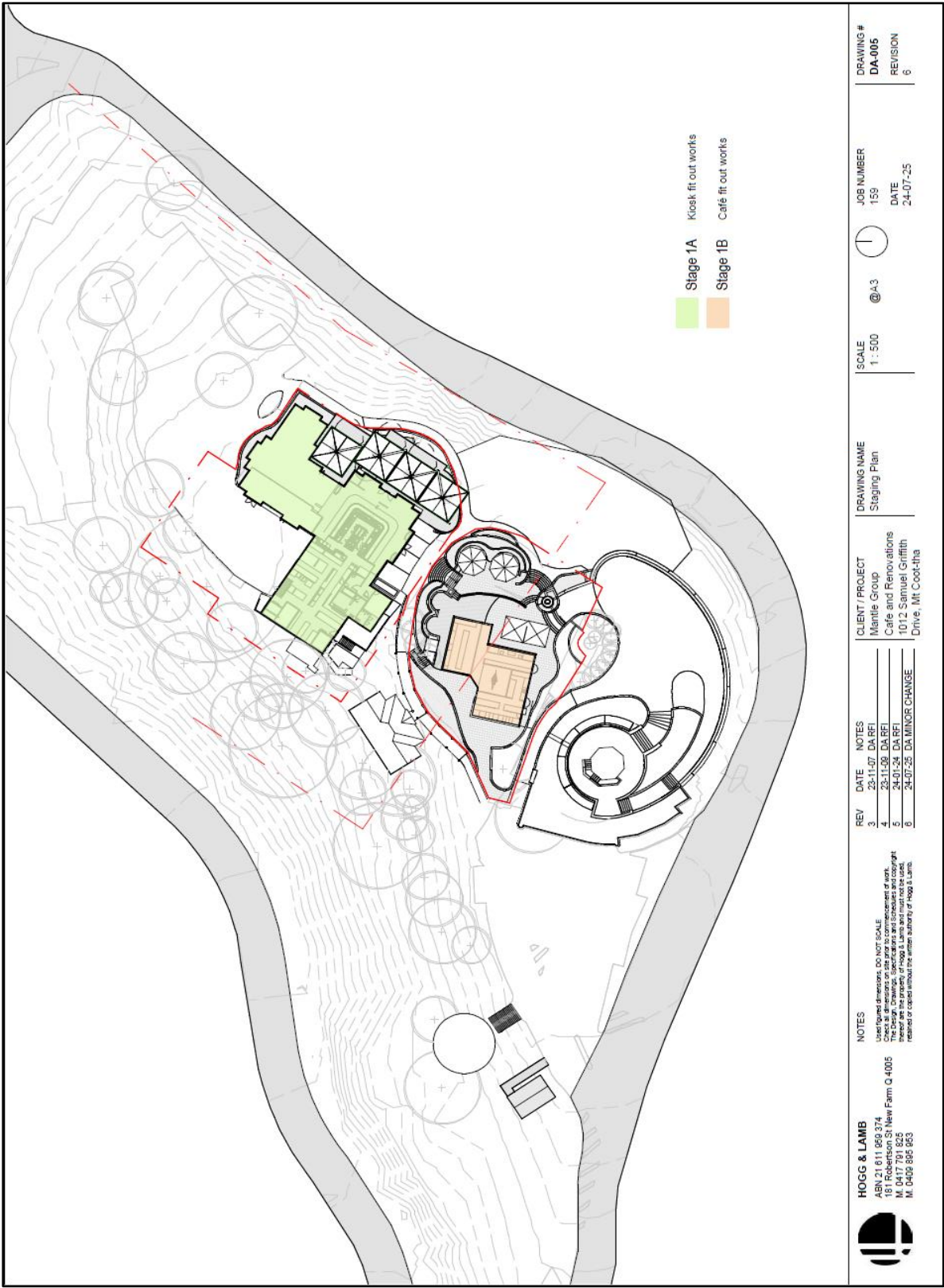


Figure 2
Staging Plan

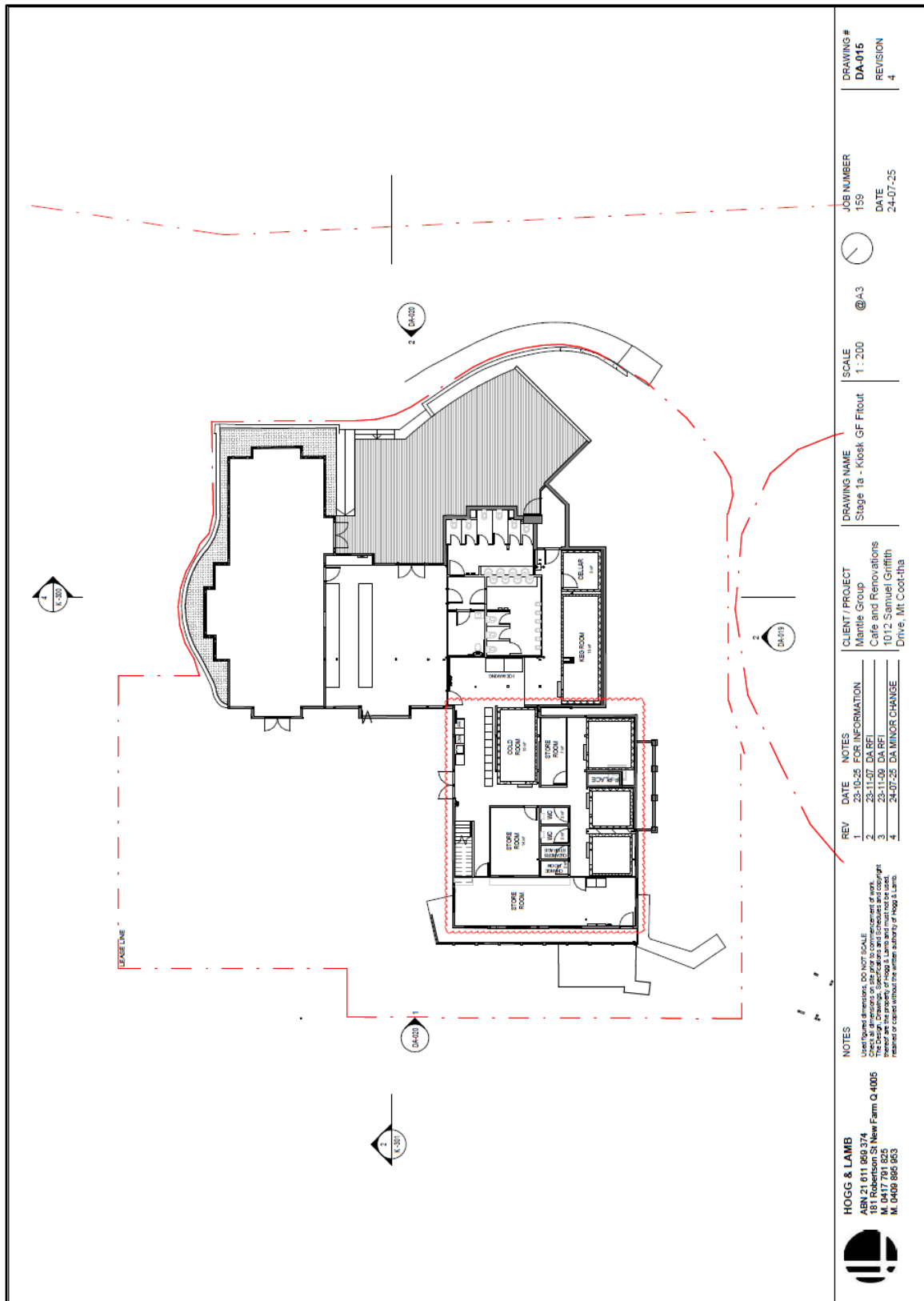


Figure 3
Stage 1A – Kiosk Ground Floor Fitout

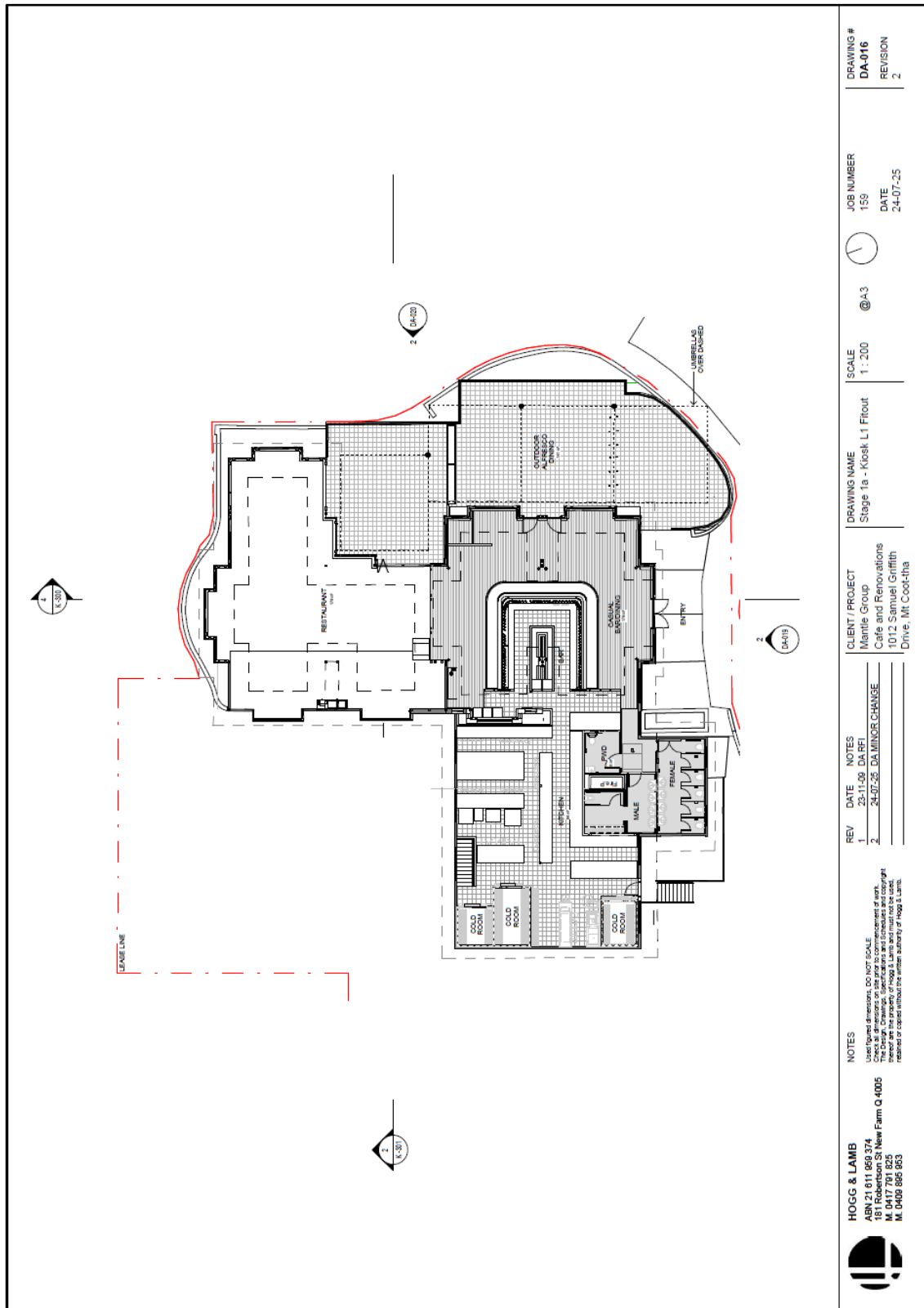


Figure 4
Stage 1A – Kiosk Level One Fitout

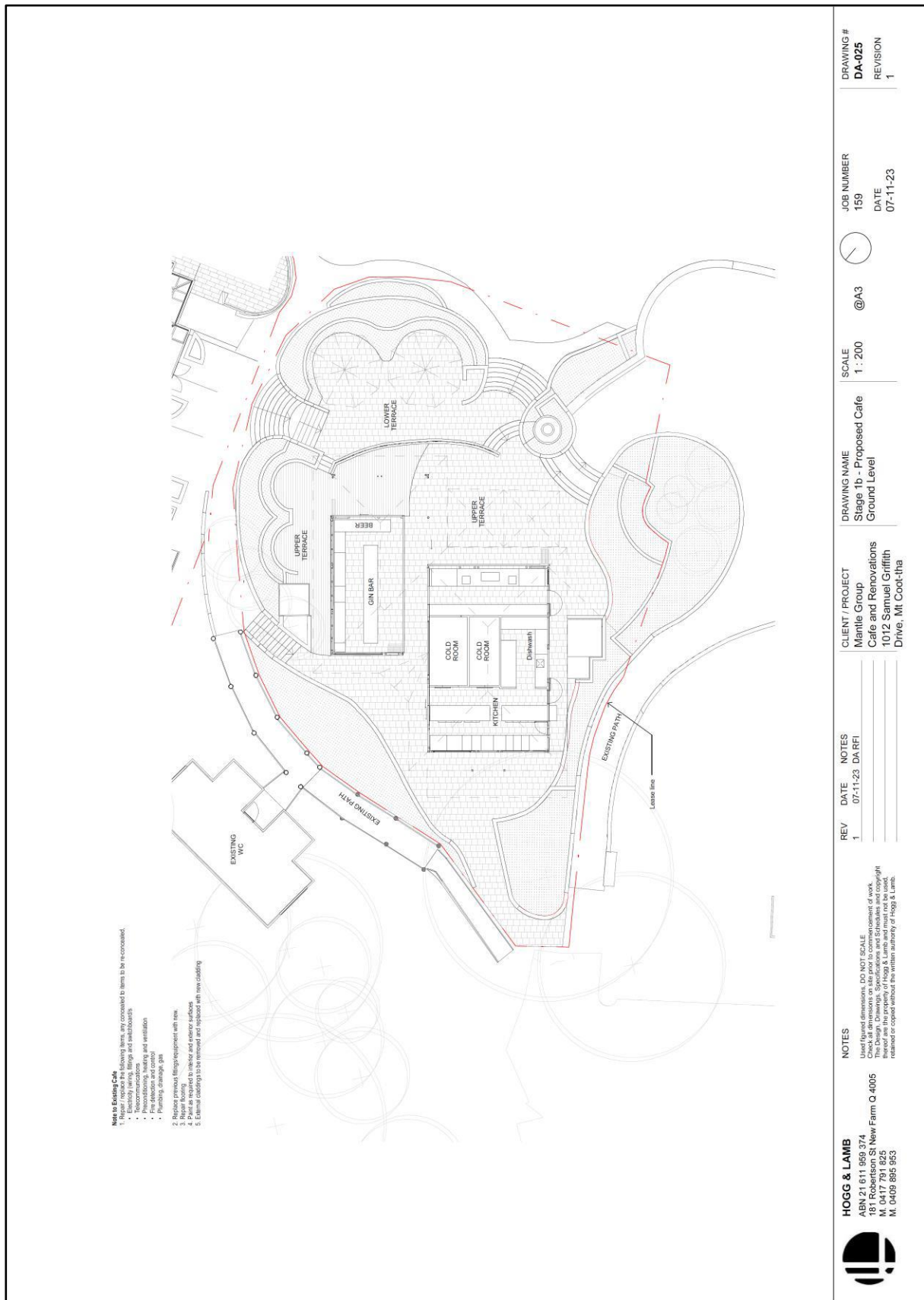


Figure 5
Stage 1B – Proposed Café Ground Level Fitout

CRITERIA

Measurements and Calculations

All noise level measurements were conducted generally in accordance with the following:

- general requirements of the Queensland environmental protection legislation;
- Environmental Protection (Noise) Policy 2019;
- *Noise Measurement Manual*, Queensland Department of Environment and Heritage Protection, Version 4.01, 10 March 2020;
- Australian Standard AS 1055 - 2018, *Acoustics – Description and measurement of environmental noise*; and
- Brisbane City Council *City Plan 2014*.

Noise Limits

In accordance with the requirements of the City Plan 2014 the following should be noted:

Centre or Mixed Use Code

In accordance with the Centre or Mixed Use Code for the closest residential boundary the noise limits are:

- **Intrusive Noise Criteria:** $L_{Aeq,adj,T}$ is not greater than the rating background level by more than 3 dB(A), where T = 11 hours for the daytime, 4 hours for the evening and 9 hours for the night-time;
- **Acoustic Amenity Criteria:**
 - Daytime: 50 dB(A) $L_{Aeq,adj,11H}$;
 - Evening: 45 dB(A) $L_{Aeq,adj,4H}$;
 - Night-time: 40 dB(A) $L_{Aeq,adj,9H}$;
- **Low Frequency Noise Criteria:**
 - Daytime: 65 dB(C) $L_{Ceq,adj,11H}$;
 - Evening: 65 dB(C) $L_{Ceq,adj,4H}$;
 - Night-time: 60 dB(C) $L_{Ceq,adj,9H}$.
- **Night-time Noise Criteria (where the existing $L_{Aeq,9Hnight}$ is 45 to 60 dB(A)):**
 - average of the 15-highest single L_{Amax} events is not greater than 50 dB(A);
 - absolute maximum noise event is not greater than 55 dB(A).

AMBIENT NOISE LEVELS

Table 1 details the range and average ambient noise levels at Monitoring Location A, located at the northern end of Blackstone Street adjacent to the eastern side boundary of 72 Blackstone Street, with the microphone elevated 1.5 metres. The results of this ambient noise assessment are predominantly natural sounds from the adjacent bushland, with some limited traffic noise. Refer Figure 1 for further detail of monitoring location A.

For details of measurement equipment, equipment settings, monitoring location and atmospheric conditions for the 7-day period, refer Appendix A, whilst Appendix B details all of the results of the ambient noise level measurements.

With respect to noise the following should be noted:

- daytime: 0700 to 1800 hours;
- evening: 1800 to 2200 hours;
- night-time: 2200 to 0700 hours;
- 'A' weighted: adjustment made by the sound level meter to the measured noise to correspond to the response of the human ear. This adjustment is standardised by international noise standards;
- $L_{Aeq,T}$: the equivalent continuous (or approximately the 'average') 'A' weighted sound pressure level for the measurement period 'T';
- $L_{A1,T}$: the 'A' weighted sound pressure level exceeded for 1% of the measurement period 'T';
- $L_{A10,T}$: the 'A' weighted sound pressure level exceeded for 10% of the measurement period 'T', which is an approximation of the 'average of the maximum noise levels';
- $L_{A90,T}$: the 'A' weighted sound pressure level exceeded for 90% of the measurement period 'T', which is an approximation of the 'average of the minimum noise levels', which is also known as the 'background' noise level;
- RBL: the Rating Background Level is the 10th percentile of the $L_{A90,T}$ background sound levels for the periods daytime, evening and night-time, and is a single figure for each of these time periods.

Table 1 Results of Ambient Noise Assessment, Monitoring Location A															
Day	Date	Time	$L_{Aeq,T}$			$L_{A1,T}$			$L_{A10,T}$			$L_{A90,T}$			RBL
			Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Average
Thursday	08.02.24	Evening	41.7	56.9	50.9	44.9	70.1	61.0	43.2	57.3	51.9	39.8	54.6	47.0	40.3
		Night	35.6	50.5	45.0	41.6	61.0	55.1	38.1	53.7	46.5	32.7	45.4	39.8	33.9
Friday	09.02.24	Day	45.7	54.3	50.6	53.8	67.5	58.9	47.5	55.2	52.6	41.3	50.5	46.2	42.8
		Evening	42.1	57.3	51.9	44.4	65.8	59.0	43.0	58.8	53.2	40.6	55.4	49.2	41.2
		Night	34.4	52.4	45.1	39.9	64.3	55.5	36.2	55.7	46.5	32.2	49.0	39.4	32.8
Saturday	10.02.24	Day	45.4	53.5	50.2	51.3	63.7	58.0	47.6	55.7	52.4	41.3	50.3	45.9	42.2
		Evening	46.6	61.2	55.2	48.3	76.5	66.2	47.5	59.2	55.3	42.1	56.2	51.7	42.5
		Night	37.3	60.6	48.7	42.6	76.7	63.0	39.5	59.2	49.0	34.1	45.2	39.6	35.4
Sunday	11.02.24	Day	48.9	56.8	53.7	55.1	63.4	60.0	48.8	59.3	56.0	39.5	53.1	49.8	44.1
		Evening	40.8	59.3	52.7	44.9	71.3	62.3	43.0	62.7	55.5	38.8	52.3	47.4	40.4
		Night	34.0	53.8	46.1	40.5	67.1	57.5	35.4	56.0	48.1	32.0	44.8	39.6	33.0
Monday	12.02.24	Day	46.7	55.8	53.0	54.8	65.3	59.4	48.4	57.9	55.0	41.7	53.5	49.3	44.5
		Evening	42.3	56.7	50.2	44.6	62.7	60.5	43.3	59.0	51.9	41.3	54.2	46.2	41.3
		Night	35.7	52.6	46.0	41.5	64.7	56.9	36.9	55.9	48.1	33.4	45.1	40.0	34.1
Tuesday	13.02.24	Day	47.6	56.7	52.1	51.9	69.1	59.9	50.2	56.2	53.8	42.7	50.8	48.0	45.1
		Evening	40.6	56.8	50.3	43.0	66.1	58.8	41.6	57.4	51.6	39.3	54.1	47.3	39.5
		Night	34.1	53.4	45.1	40.5	61.9	55.1	35.8	56.4	47.7	30.9	42.7	37.9	32.0

Table 1 Results of Ambient Noise Assessment, Monitoring Location A															
Day	Date	Time	L _{Aeq,T}			L _{A1,T}			L _{A10,T}			L _{A90,T}			RBL
			Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Average
Wednesday	14.02.24	Day	47.9	53.1	50.8	51.8	61.7	57.3	50.0	57.6	53.1	40.5	49.6	46.0	41.8
		Evening	41.8	61.8	53.5	45.5	73.2	63.5	42.8	68.0	57.7	40.6	54.4	47.1	40.6
		Night	34.8	55.5	44.7	42.0	63.2	52.7	37.7	59.7	47.7	31.0	45.3	38.3	31.6
Thursday	15.02.24	Day	45.0	57.9	52.3	53.3	62.8	58.6	47.1	56.2	53.8	40.6	51.8	48.8	43.1

Average dB(A) Noise Level

L _{Aeq,T}	Daytime	51.0	L _{A90,T}	Daytime	46.7
	Evening	51.6		Evening	47.4
	Night-time	45.0		Night-time	39.2
L _{A1,T}	Daytime	58.2	RBL	Daytime	42.5
	Evening	60.9		Evening	40.6
	Night-time	54.6		Night-time	32.9
L _{A10,T}	Daytime	53.0			
	Evening	52.2			
	Night-time	47.1			

It should be noted that for the ambient noise assessment there were adverse weather conditions and, therefore, some of the daily averages have been excluded from the overall average due to weather – refer Appendix C for details:

- Thursday 8th February: 1.2 mm rain;
- Friday 9th February: 3.4 mm rain;
- Saturday 10th February: 2.2 mm rain;
- Sunday 11th February: 5.0 mm rain;
- Monday 12th February: 1.8 mm rain;
- Tuesday 13th February: 0.8mm rain;
- Wednesday 14th February: 0 mm rain;
- Thursday 15th February: 0.4 mm rain.

Based on the above RBL levels and the fact that the closest residential to the south and south-west are all zoned low density residential the noise limits are:

- intrusive noise criteria:
 - daytime: $42.5 + 3 = 46 \text{ dB(A) } L_{Aeq,adj,11H};$
 - evening: $40.6 + 3 = 44 \text{ dB(A) } L_{Aeq,adj,4H};$
 - night-time: $32.9 + 3 = 36 \text{ dB(A) } L_{Aeq,adj,9H};$
- acoustic amenity criteria:
 - daytime: $50 \text{ dB(A) } L_{Aeq,adj,11H};$
 - evening: $45 \text{ dB(A) } L_{Aeq,adj,4H};$
 - night-time: $40 \text{ dB(A) } L_{Aeq,adj,9H};$

- night-time noise criteria:
 - $L_{Amax} = 50 \text{ dB(A)}$;
 - Single event maximum = 55 dB(A);
- low frequency noise criteria:
 - daytime: 65 dB(C) $L_{Ceq,adj,11H}$;
 - evening: 65 dB(C) $L_{Ceq,adj,4H}$;
 - night-time: 60 dB(C) $L_{Ceq,adj,9H}$.

As the acoustic amenity criteria noise limits are greater than the intrusive noise criteria noise limits the intrusive noise criteria has been adopted, together with the low frequency noise criteria for amplified music. Night-time noise criteria are based on the fact that the $L_{Aeq,9Hnight} = 45 \text{ dB(A)}$.

SOURCE NOISE LEVELS

For the proposed refurbishment of the kiosk and café, the different areas and the anticipated number of patrons are:

- kiosk:
 - ground floor:
 - Function Room 1, 100 patrons;
 - Bar 40 patrons;
 - external patio 75 patrons;
 - Level 1:
 - Restaurant 100 patrons;
 - Outdoor alfresco dining 100 patrons;
 - Casual Bar/Dining 75 patrons;
- café:
 - Ground floor:
 - Bar 30 patrons;
 - Lower Terrace 75 patrons;
 - Upper Terrace 100 patrons.

Aspects of the kiosk and café are proposed to commence trading at 0600 hours for breakfast and all of the above areas have the potential to trade until 0300 hours.

With respect to patron noise, reference has been made to the paper presented by Hayne, M.J. and others at Acoustics 2011 titled 'Prediction of Noise from Small to Medium Sized Crowds'. In accordance with this paper (and reference to the applied noise limits for the applicable parameters) the following formula apply:

- $L_{WAmx} = 11 \times \log_{10}N + 81$;
- $L_{WAeq} = 15 \times \log_{10}N + 64$;

where N = number of people.

It should be noted that in accordance with this paper:

The measured sound pressure levels were converted into sound power levels using the equation

$$L_W = 20 \log d \div C$$

where the constant C = 8 for a hemispherical source or C = 5 for a quarter sphere source and d was the distance from the centre of the crowd to the measurement position.

In accordance with the above reference the separation distance must be measured from the centre of the crowd to the residential, and in accordance with the Centre or Mixed Use Code the relevant residential location is the residential/zone boundary, which in this case the closest is the residential boundary.

From the Brisbane City Council mapping the measured separation distances from the centre of the following areas to the closest residential boundary are:

- kiosk:
 - ground floor:
 - Function Room 1, 625 metres;
 - Bar 621 metres;
 - external patio 608 metres;
 - Level 1:
 - Restaurant 624 metres;
 - Outdoor alfresco dining 608 metres;
 - Casual Bar/Dining 613 metres;
- café:
 - Ground floor:
 - Bar 602 metres;
 - Lower Terrace 590 metres;
 - Upper Terrace 597 metres.

Patron noise levels have been calculated based on the above, and are:

- kiosk:
 - ground floor:
 - Function Room 1, 94 dB(A) L_{WAeq} and 103 dB(A) L_{WAmix} ;
 - Bar 88 dB(A) L_{WAeq} and 99 dB(A) L_{WAmix} ;
 - external patio 92 dB(A) L_{WAeq} and 102 dB(A) L_{WAmix} ;
 - Level 1:
 - Restaurant 94 dB(A) L_{WAeq} and 103 dB(A) L_{WAmix} ;
 - Outdoor alfresco dining 94 dB(A) L_{WAeq} and 103 dB(A) L_{WAmix} ;
 - Casual Bar/Dining 92 dB(A) L_{WAeq} and 102 dB(A) L_{WAmix} ;
- café:
 - Ground floor:
 - Bar 86 dB(A) L_{WAeq} and 97 dB(A) L_{WAmix} ;
 - Lower Terrace 92 dB(A) L_{WAeq} and 102 dB(A) L_{WAmix} ;
 - Upper Terrace 94 dB(A) L_{WAeq} and 103 dB(A) L_{WAmix} .

For the night-time period the absolute L_{WA} maximum patron noise level is $L_{WAmix,T} + 5$ dB.

For patron noise for the period 0600 to 0700 hours it has been assumed that there would be 50 patrons outside the café and 50 patrons outside the kiosk, with the following source noise levels:

- 0600 to 0700 hours:
 - café outside, 90 dB(A) $L_{WAeq,T}$ and 100 dB(A) $L_{WAmix,T}$;
 - kiosk outside, 90 dB(A) $L_{WAeq,T}$ and 100 dB(A) $L_{WAmix,T}$.

Given the frequency spectrum of the human voice patron noise expressed as dB(C) would be similar to the above dB(A) values and therefore the above dB(A) values have also been used as the dB(C) values for human voice.

At the time of preparing this report no detail was available with respect to plant and equipment – neither it's location nor source noise level. However, in comparison to the noise of patrons and amplified music the combined noise of the plant and equipment would be at least 10 dB(A) less and, therefore, would not have an additive effect to the noise impact.

For carpark and vehicle activity the following noise sources are relevant:

- Carpark:
 - car driving on site: 48 dB(A) $L_{Aeq,adj,T}$ @ 8 m, duration 20 seconds per event;
 - car door closing: 62 dB(A) $L_{Aeq,adj,T}$ @ 8 m, duration 1 second per event;
 - car engine starting: 61 dB(A) $L_{Aeq,adj,T}$ @ 8 m, duration 2 seconds per event;
 - people laughing, talking: 59 dB(A) $L_{Aeq,adj,T}$ @ 8 m, busiest is 5 minutes out of 15 minute period average, 10 minutes per hour;
- delivery truck: 55 dB(A) $L_{Aeq,adj,T}$ @ 8 m for driving and unloading, duration 6 minutes per event;
- waste collection: 91 dB(A) L_{WAeq} , 8 minutes per event.

Assuming frequent carpark activity during the daytime and evening and reduced activity during the night-time period the adopted source noise levels for the carpark are:

- daytime and evening:
 - cars driving: 48 dB(A) $L_{Aeq,adj,T}$ @ 8 m;
 - car doors closing: 62 dB(A) $L_{Aeq,adj,T}$ @ 8 m;
 - car engines starting: 61 dB(A) $L_{Aeq,adj,T}$ @ 8 m;
 - people in carpark: 59 dB(A) $L_{Aeq,adj,T}$ @ 8 m;
- night-time (up to 0300 hours):
 - cars driving: 45 dB(A) $L_{Aeq,adj,T}$ and 50 dB(A) $L_{Amax,T}$ and 55 dB(A) maximum @ 8 m;
 - car doors closing: 59 dB(A) $L_{Aeq,adj,T}$ and 67 dB(A) $L_{Amax,T}$ and 72 dB(A) maximum @ 8 m;
 - car engines starting: 58 dB(A) $L_{Aeq,adj,T}$ and 64 dB(A) $L_{Amax,T}$ and 69 dB(A) maximum @ 8 m;
 - people in carpark: 56 dB(A) $L_{Aeq,adj,T}$ and 63 dB(A) $L_{Amax,T}$ and 68 dB(A) maximum @ 8 m;

Current deliveries occur 3 to 4 times per day for week days only (no deliveries on weekends). For delivery vehicles it has been assumed that there would be four daily deliveries during the early morning, daytime (eg. milk, bread, meat, fruit and vegetable, general produce, alcohol), with the following associated noise levels:

- early morning: 52 dB(A) $L_{Aeq,adj,T}$ and 60 dB(A) $L_{Amax,T}$ and 65 dB(A) maximum @ 8 m;
- daytime: 52 dB(A) $L_{Aeq,adj,T}$.

Waste collection currently occurs two days per week for general waste (currently Friday and Monday) and one day per week for cardboard (currently Monday). Adopting worst case that general waste and cardboard waste collection occurs on the same day (Monday), waste collection would have the following associated noise levels:

- early morning: 70 dB(A) $L_{Aeq,adj,T}$, 78 dB(A) $L_{Amax,T}$ and 83 dB(A) maximum @ 8 m.

The only other potential noise source is amplified music, which has been assumed to occur in all areas, both inside and outside. For all internal areas it has been assumed that external doors will be open with an associated 5 dB reduction from inside to outside these internal areas.

The assumed amplified music noise level from each area is:

- daytime:
 - internal areas 95 dB(A) $L_{Aeq,adj,T}$ and 105 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 90 dB(A) and 100 dB(C) @ 3m from an individual speaker;
 - external areas 90 dB(A) $L_{Aeq,adj,T}$ and 100 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 85 dB(A) and 95 dB(C) @ 3m from an individual speaker;
- evening:
 - internal areas 93 dB(A) $L_{Aeq,adj,T}$ and 103 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 88 dB(A) and 98 dB(C) @ 3m from an individual speaker;
 - external areas 88 dB(A) $L_{Aeq,adj,T}$ and 98 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 83 dB(A) and 93 dB(C) @ 3m from an individual speaker;
- night-time (up to 0300 hours and early morning):
 - two different internal areas:
 - 88 dB(A) $L_{Aeq,adj,T}$ and 98 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 83 dB(A) and 93 dB(C) @ 3m from an individual speaker;
 - 95 dB(A) $L_{Amax,T}$ @ 3m;
 - 100 dB(A) maximum @ 3m;
 - other three internal areas:
 - 75 dB(A) $L_{Aeq,adj,T}$ and 85 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 70 dB(A) and 80 dB(C) @ 3m from an individual speaker;
 - 82 dB(A) $L_{Amax,T}$ @ 3m;
 - 86 dB(A) maximum @ 3m;
 - external areas:
 - 75 dB(A) $L_{Aeq,adj,T}$ and 85 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 70 dB(A) and 80 dB(C) @ 3m from an individual speaker;
 - 82 dB(A) $L_{Amax,T}$ @ 3m;
 - 86 dB(A) maximum @ 3m.

NOISE LEVEL IMPACT

The source noise levels detailed above have been calculated to the closest residential boundary (north-west corner of 72 Blackstone Street) for the daytime, evening and night-time (up to 0300 hours) periods, as well as the early morning period, as follows:

- early morning:
 - kiosk patrons outside:
 - 90 dB(A) $L_{WAeq,T} - 64$ (distance) – 8 (ground attenuation, vegetation) = 18 dB(A) $L_{Aeq,adj,T}$;
 - 90 dB(C) $L_{WCeq,T} - 64$ (distance) – 8 (ground attenuation, vegetation) = 18 dB(C) $L_{Ceq,adj,T}$;
 - 100 dB(A) $L_{WAmix,T} - 64 - 8 = 28$ dB(A) $L_{Amax,T}$;
 - 105 dB(A) $L_{WAmix,T} - 64 - 8 = 33$ dB(A) maximum;
 - amplified music, kiosk outside:
 - 75 dB(A) $L_{Aeq,adj,T}$ @ 3m – 46 (distance) – 8 (ground attenuation, vegetation) = 21 dB(A) $L_{Aeq,adj,T}$;
 - 85 dB(C) $L_{Ceq,adj,T}$ @ 3m – 46 (distance) – 8 (ground attenuation, vegetation) = 31 dB(C) $L_{Ceq,adj,T}$;
 - 82 dB(A) $L_{Amax,T} - 46 - 8 = 28$ dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum – 46 – 8 = 33 dB(A) maximum;

- café patrons outside:
 - 90 dB(A) $L_{WAeq,T} - 63$ (distance) – 8 (ground attenuation, vegetation) = 19 dB(A) $L_{Aeq,adj,T}$;
 - 90 dB(C) $L_{WCeq,T} - 63$ (distance) – 8 (ground attenuation, vegetation) = 19 dB(C) $L_{Ceq,adj,T}$;
 - 100 dB(A) $L_{WAmax,T} - 63 - 8 = 29$ dB(A) $L_{Amax,T}$;
 - 105 dB(A) $L_{WAmatrix,T} - 63 - 8 = 34$ dB(A) maximum;
- amplified music, café outside:
 - 75 dB(A) $L_{Aeq,adj,T}$ @ 3m – 46 (distance) – 8 (ground attenuation, vegetation) = 21 dB(A) $L_{Aeq,adj,T}$;
 - 85 dB(C) $L_{Ceq,adj,T}$ @ 3m – 46 (distance) – 8 (ground attenuation, vegetation) = 31 dB(C) $L_{Ceq,adj,T}$;
 - 82 dB(A) $L_{Amax,T} - 46 - 8 = 28$ dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum – 46 – 8 = 33 dB(A) maximum;
- delivery truck:
 - 52 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 6 dB(A) $L_{Aeq,adj,T}$;
 - 60 dB(A) $L_{Amax,T} - 38 - 8 = 14$ dB(A) $L_{Amax,T}$;
 - 65 dB(A) maximum – 38 – 8 = 19 dB(A) maximum;
 - waste collection:
 - 70 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 24 dB(A) $L_{Aeq,adj,T}$;
 - 78 dB(A) $L_{Amax,T} - 38 - 8 = 32$ dB(A) $L_{Amax,T}$;
 - 83 dB(A) maximum – 38 – 8 = 37 dB(A) maximum
 - cars driving:
 - 45 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 0 dB(A) $L_{Aeq,adj,T}$
 - 50 dB(A) $L_{Amax,T}$ @ 8m – 38 – 8 = 4 dB(A) $L_{Amax,T}$;
 - 55 dB(A) maximum @ 8m – 38 – 8 = 9 dB(A) maximum;
 - car doors closing:
 - 59 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 13 dB(A) $L_{Aeq,adj,T}$;
 - 67 dB(A) $L_{Amax,T}$ @ 8m – 38 – 8 = 21 dB(A) $L_{Amax,T}$;
 - 72 dB(A) maximum @ 8m – 38 – 8 = 26 dB(A) maximum;
 - car engines starting:
 - 58 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 12 dB(A) $L_{Aeq,adj,T}$;
 - 64 dB(A) $L_{Amax,T}$ @ 8m – 38 – 8 = 18 dB(A) $L_{Amax,T}$;
 - 69 dB(A) maximum @ 8m – 38 – 8 = 23 dB(A) maximum;
 - people in carpark:
 - 56 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 10 dB(A) $L_{Aeq,adj,T}$;
 - 63 dB(A) $L_{Amax,T}$ @ 8m – 38 – 8 = 17 dB(A) $L_{Amax,T}$;
 - 68 dB(A) maximum @ 8m – 38 – 8 = 22 dB(A) maximum;
 - combined:
 - $18 + 21 + 19 + 21 + 6 + 24 + 0 + 13 + 12 + 10 = 28.4 = 28$ dB(A) $L_{Aeq,adj,T}$;
 - $28 + 28 + 29 + 28 + 14 + 32 + 4 + 21 + 18 + 17 = 37$ dB(A) $L_{Amax,T}$;
 - $33 + 33 + 34 + 33 + 19 + 37 + 9 + 26 + 23 + 22 = 42$ dB(A) maximum;
 - $18 + 19 + 31 + 31 = 34$ dB(C) $L_{Ceq,adj,T}$;
- daytime:
 - kiosk patrons:
 - Function Room 1, 94 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 17 dB(A) $L_{Aeq,adj,9H}$ and 17 dB(C) $L_{Ceq,adj,9H}$;
 - Bar, 88 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 11 dB(A) $L_{Aeq,adj,9H}$ and 11 dB(C) $L_{Ceq,adj,9H}$;
 - External patio, 92 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 20 dB(A) $L_{Aeq,adj,9H}$ and 20 dB(C) $L_{Ceq,adj,9H}$;
 - Restaurant, 94 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 17 dB(A) $L_{Aeq,adj,9H}$ and 17 dB(C) $L_{Ceq,adj,9H}$;
 - Casual Bar/Dining, 92 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 15 dB(A) $L_{Aeq,adj,9H}$ and 15 dB(C) $L_{Ceq,adj,9H}$;

- Alfresco dining, 94 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 22 dB(A) $L_{Aeq,adj,9H}$ and 22 dB(C) $L_{Ceq,adj,9H}$;
- Café patrons:
 - Bar, 86 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 9 dB(A) $L_{Aeq,adj,9H}$ and 9 dB(C) $L_{Ceq,adj,9H}$;
 - Lower Terrace, 92 dB(A) $L_{WAeq} - 63$ (distance) – 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$ and 21 dB(C) $L_{Ceq,adj,9H}$;
 - Upper Terrace, 94 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 22 dB(A) $L_{Aeq,adj,9H}$ and 22 dB(C) $L_{Ceq,adj,9H}$;
- Kiosk amplified music:
 - Function Room 1:
 - 95 dB(A) $L_{Aeq,adj,9H}$ @ 3m – 5 (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = 36 dB(A) $L_{Aeq,adj,9H}$;
 - 105 dB(C) $L_{Ceq,adj,9H}$ @ 3m – 5 – 46 – 8 = 46 dB(C) $L_{Ceq,adj,9H}$;
 - Bar:
 - 95 dB(A) $L_{Aeq,adj,9H} - 5 - 46 - 8 = 36$ dB(A) $L_{Aeq,adj,9H}$;
 - 105 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - External patio:
 - 90 dB(A) $L_{Aeq,adj,9H} - 46$ (distance) – 8 (ground absorption, vegetation) = 36 dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - Restaurant:
 - 95 dB(A) $L_{Aeq,adj,9H} - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = 36 dB(A) $L_{Aeq,adj,9H}$;
 - 105 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - Casual Bar/Dining:
 - 95 dB(A) $L_{Aeq,adj,9H} - 5 - 46 - 8 = 36$ dB(A) $L_{Aeq,adj,9H}$;
 - 105 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - Alfresco dining:
 - 90 dB(A) $L_{Aeq,adj,9H} - 46 - 8 = 36$ dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
- Café amplified music:
 - Bar:
 - 95 dB(A) $L_{Aeq,adj,9H} - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = 36 dB(A) $L_{Aeq,adj,9H}$;
 - 105 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - Lower Terrace:
 - 90 dB(A) $L_{WAeq} - 46$ (distance) – 8 (ground absorption, vegetation) = 36 dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
 - Upper Terrace:
 - 90 dB(A) $L_{WAeq} - 46 - 8 = 36$ dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 46$ dB(C) $L_{Ceq,adj,9H}$;
- delivery truck:
 - 52 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 6 dB(A) $L_{Aeq,adj,T}$;
- cars driving:
 - 48 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 2 dB(A) $L_{Aeq,adj,T}$;
- car doors closing:
 - 62 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 16 dB(A) $L_{Aeq,adj,T}$;
- car engines starting:
 - 61 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 15 dB(A) $L_{Aeq,adj,T}$;
- people in carpark:
 - 59 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 13 dB(A) $L_{Aeq,adj,T}$;

- combined:
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 36 + 36 + 36 + 36 + 36 + 36 + 36 + 36 + 6 + 2 + 16 + 15 + 13 = 46 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 46 + 46 + 46 + 46 + 46 + 46 + 46 + 46 + 46 = 56 \text{ dB(C)} L_{Ceq,adj,9H}$;
- evening:
 - kiosk patrons:
 - Function Room 1, $94 \text{ dB(A)} L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = $17 \text{ dB(A)} L_{Aeq,adj,9H}$ and $17 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Bar, $88 \text{ dB(A)} L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = $11 \text{ dB(A)} L_{Aeq,adj,9H}$ and $11 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - External patio, $92 \text{ dB(A)} L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = $20 \text{ dB(A)} L_{Aeq,adj,9H}$ and $20 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Restaurant, $94 \text{ dB(A)} L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = $17 \text{ dB(A)} L_{Aeq,adj,9H}$ and $17 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Casual Bar/Dining, $92 \text{ dB(A)} L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = $15 \text{ dB(A)} L_{Aeq,adj,9H}$ and $15 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Alfresco dining, $94 \text{ dB(A)} L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = $22 \text{ dB(A)} L_{Aeq,adj,9H}$ and $22 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Café patrons:
 - Bar, $86 \text{ dB(A)} L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = $9 \text{ dB(A)} L_{Aeq,adj,9H}$ and $9 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Lower Terrace, $92 \text{ dB(A)} L_{WAeq} - 63$ (distance) – 8 (ground absorption, vegetation) = $21 \text{ dB(A)} L_{Aeq,adj,9H}$ and $21 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Upper Terrace, $94 \text{ dB(A)} L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = $22 \text{ dB(A)} L_{Aeq,adj,9H}$ and $22 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Kiosk amplified music:
 - Function Room 1:
 - $95 \text{ dB(A)} L_{Aeq,adj,9H} @ 3m - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = $36 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $105 \text{ dB(C)} L_{Ceq,adj,9H} @ 3m - 5 - 46 - 8 = 46 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Bar:
 - $95 \text{ dB(A)} L_{Aeq,adj,9H} - 5 - 46 - 8 = 36 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $105 \text{ dB(C)} L_{Ceq,adj,9H} - 5 - 46 - 8 = 46 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - External patio:
 - $85 \text{ dB(A)} L_{Aeq,adj,9H} - 46$ (distance) – 8 (ground absorption, vegetation) = $31 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $95 \text{ dB(C)} L_{Ceq,adj,9H} - 46 - 8 = 41 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Restaurant:
 - $95 \text{ dB(A)} L_{Aeq,adj,9H} - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = $36 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $105 \text{ dB(C)} L_{Ceq,adj,9H} - 5 - 46 - 8 = 46 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Casual Bar/Dining:
 - $95 \text{ dB(A)} L_{Aeq,adj,9H} - 5 - 46 - 8 = 36 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $105 \text{ dB(C)} L_{Ceq,adj,9H} - 5 - 46 - 8 = 46 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Alfresco dining:
 - $85 \text{ dB(A)} L_{Aeq,adj,9H} - 46 - 8 = 31 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $95 \text{ dB(C)} L_{Ceq,adj,9H} - 46 - 8 = 41 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Café amplified music:
 - Bar:
 - $95 \text{ dB(A)} L_{Aeq,adj,9H} - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = $36 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $105 \text{ dB(C)} L_{Ceq,adj,9H} - 5 - 46 - 8 = 46 \text{ dB(C)} L_{Ceq,adj,9H}$;
 - Lower Terrace:
 - $85 \text{ dB(A)} L_{WAeq} - 46$ (distance) – 8 (ground absorption, vegetation) = $31 \text{ dB(A)} L_{Aeq,adj,9H}$;
 - $95 \text{ dB(C)} L_{Ceq,adj,9H} - 46 - 8 = 41 \text{ dB(C)} L_{Ceq,adj,9H}$;

- Upper Terrace:
 - 85 dB(A) $L_{WAeq} - 46 - 8 = 31$ dB(A) $L_{Aeq,adj,9H}$;
 - 95 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 41$ dB(C) $L_{Ceq,adj,9H}$;
 - cars driving:
 - 48 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 (distance) – 8 (ground attenuation, vegetation) = 2 dB(A) $L_{Aeq,adj,T}$;
 - car doors closing:
 - 62 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 16 dB(A) $L_{Aeq,adj,T}$;
 - car engines starting:
 - 61 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 15 dB(A) $L_{Aeq,adj,T}$;
 - people in carpark:
 - 59 dB(A) $L_{Aeq,adj,T}$ @ 8m – 38 – 8 = 13 dB(A) $L_{Aeq,adj,T}$;
 - combined:
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 36 + 36 + 31 + 36 + 36 + 31 + 36 + 31 + 2 + 16 + 15 + 13 = 44$ dB(A) $L_{Aeq,adj,9H}$;
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 46 + 46 + 41 + 46 + 46 + 41 + 46 + 41 + 41 = 54$ dB(C) $L_{Ceq,adj,9H}$;
 - Night-time (up to 0300 hours):
 - kiosk patrons:
 - Function Room 1:
 - 94 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 17 dB(A) $L_{Aeq,adj,9H}$ and 17 dB(C) $L_{Ceq,adj,9H}$;
 - 103 dB(A) $L_{Amax} - 5 - 64 - 8 = 26$ dB(A) $L_{Amax,T}$;
 - 108 dB(A) maximum – 5 – 64 – 8 = 31 dB(A) maximum;
 - Bar:
 - 88 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 11 dB(A) $L_{Aeq,adj,9H}$ and 11 dB(C) $L_{Ceq,adj,9H}$;
 - 99 dB(A) $L_{Amax} - 5 - 64 - 8 = 22$ dB(A) $L_{Amax,T}$;
 - 104 dB(A) maximum – 5 – 64 – 8 = 27 dB(A) maximum;
 - External patio:
 - 92 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 20 dB(A) $L_{Aeq,adj,9H}$ and 20 dB(C) $L_{Ceq,adj,9H}$;
 - 102 dB(A) $L_{Amax} - 5 - 64 - 8 = 25$ dB(A) $L_{Amax,T}$;
 - 107 dB(A) maximum – 5 – 64 – 8 = 30 dB(A) maximum;
 - Restaurant:
 - 94 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 17 dB(A) $L_{Aeq,adj,9H}$ and 17 dB(C) $L_{Ceq,adj,9H}$;
 - 103 dB(A) $L_{Amax} - 5 - 64 - 8 = 26$ dB(A) $L_{Amax,T}$;
 - 108 dB(A) maximum – 5 – 64 – 8 = 31 dB(A) maximum;
 - Casual Bar/Dining:
 - 92 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 15 dB(A) $L_{Aeq,adj,9H}$ and 15 dB(C) $L_{Ceq,adj,9H}$;
 - 102 dB(A) $L_{Amax} - 5 - 64 - 8 = 25$ dB(A) $L_{Amax,T}$;
 - 107 dB(A) maximum – 5 – 64 – 8 = 30 dB(A) maximum;
 - Alfresco dining:
 - 94 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 22 dB(A) $L_{Aeq,adj,9H}$ and 22 dB(C) $L_{Ceq,adj,9H}$;
 - 103 dB(A) $L_{Amax} - 5 - 64 - 8 = 26$ dB(A) $L_{Amax,T}$;
 - 108 dB(A) maximum – 5 – 64 – 8 = 31 dB(A) maximum;

- Café patrons:
 - Bar:
 - 86 dB(A) $L_{WAeq} - 5$ (inside to outside) – 64 (distance) – 8 (ground absorption, vegetation) = 9 dB(A) $L_{Aeq,adj,9H}$ and 9 dB(C) $L_{Ceq,adj,9H}$;
 - 97 dB(A) $L_{Amax} - 5 - 64 - 8 = 20$ dB(A) $L_{Amax,T}$;
 - 102 dB(A) maximum – 5 – 64 – 8 = 25 dB(A) maximum;
 - Lower Terrace:
 - 92 dB(A) $L_{WAeq} - 63$ (distance) – 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$ and 21 dB(C) $L_{Ceq,adj,9H}$;
 - 102 dB(A) $L_{Amax} - 5 - 64 - 8 = 25$ dB(A) $L_{Amax,T}$;
 - 107 dB(A) maximum – 5 – 64 – 8 = 30 dB(A) maximum;
 - Upper Terrace:
 - 94 dB(A) $L_{WAeq} - 64$ (distance) – 8 (ground absorption, vegetation) = 22 dB(A) $L_{Aeq,adj,9H}$ and 22 dB(C) $L_{Ceq,adj,9H}$;
 - 103 dB(A) $L_{Amax} - 5 - 64 - 8 = 26$ dB(A) $L_{Amax,T}$;
 - 108 dB(A) maximum – 5 – 64 – 8 = 31 dB(A) maximum;
- Kiosk amplified music:
 - Function Room 1:
 - 90 dB(A) $L_{Aeq,adj,9H}$ @ 3m – 5 (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = 31 dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H}$ @ 3m – 5 – 46 – 8 = 41 dB(C) $L_{Ceq,adj,9H}$;
 - 98 dB(A) $L_{Amax,T}$ @ 3m – 5 – 46 – 8 = 39 dB(A) $L_{Amax,T}$;
 - 103 dB(A) maximum @ 3m – 5 – 46 – 8 = 44 dB(A) maximum;
 - Bar:
 - 75 dB(A) $L_{Aeq,adj,9H} - 5 - 46 - 8 = 16$ dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 26$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T}$ @ 3m – 5 – 46 – 8 = 23 dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m – 5 – 46 – 8 = 27 dB(A) maximum;
 - External patio:
 - 75 dB(A) $L_{Aeq,adj,9H} - 46$ (distance) – 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 31$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T}$ @ 3m – 46 – 8 = 28 dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m – 46 – 8 = 32 dB(A) maximum;
 - Restaurant:
 - 90 dB(A) $L_{Aeq,adj,9H} - 5$ (inside to outside) – 46 (distance) – 8 (ground absorption, vegetation) = 31 dB(A) $L_{Aeq,adj,9H}$;
 - 100 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 41$ dB(C) $L_{Ceq,adj,9H}$;
 - 98 dB(A) $L_{Amax,T}$ @ 3m – 5 – 46 – 8 = 39 dB(A) $L_{Amax,T}$;
 - 103 dB(A) maximum @ 3m – 5 – 46 – 8 = 44 dB(A) maximum;
 - Casual Bar/Dining:
 - 75 dB(A) $L_{Aeq,adj,9H} - 5 - 46 - 8 = 16$ dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 26$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T}$ @ 3m – 5 – 46 – 8 = 23 dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m – 5 – 46 – 8 = 27 dB(A) maximum;
 - Alfresco dining:
 - 75 dB(A) $L_{Aeq,adj,9H} - 46$ (distance) – 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 31$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T}$ @ 3m – 46 – 8 = 28 dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m – 46 – 8 = 32 dB(A) maximum;

- Café amplified music:
 - Bar:
 - 75 dB(A) $L_{Aeq,adj,9H} - 5 - 46 - 8 = 16$ dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 5 - 46 - 8 = 26$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T} @ 3m - 5 - 46 - 8 = 23$ dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m - 5 - 46 - 8 = 27 dB(A) maximum;
 - Lower Terrace:
 - 75 dB(A) $L_{Aeq,adj,9H} - 46$ (distance) - 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 31$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T} @ 3m - 46 - 8 = 28$ dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m - 46 - 8 = 32 dB(A) maximum;
 - Upper Terrace:
 - 75 dB(A) $L_{Aeq,adj,9H} - 46$ (distance) - 8 (ground absorption, vegetation) = 21 dB(A) $L_{Aeq,adj,9H}$;
 - 85 dB(C) $L_{Ceq,adj,9H} - 46 - 8 = 31$ dB(C) $L_{Ceq,adj,9H}$;
 - 82 dB(A) $L_{Amax,T} @ 3m - 46 - 8 = 28$ dB(A) $L_{Amax,T}$;
 - 86 dB(A) maximum @ 3m - 46 - 8 = 32 dB(A) maximum;
- cars driving:
 - 45 dB(A) $L_{Aeq,adj,T} @ 8m - 38$ (distance) - 8 (ground attenuation, vegetation) = 0 dB(A) $L_{Aeq,adj,T}$;
 - 50 dB(A) $L_{Amax,T} @ 3m - 38 - 8 = 4$ dB(A) $L_{Amax,T}$;
 - 55 dB(A) maximum @ 3m - 38 - 8 = 9 dB(A) maximum;
- car doors closing:
 - 59 dB(A) $L_{Aeq,adj,T} @ 8m - 38 - 8 = 13$ dB(A) $L_{Aeq,adj,T}$;
 - 67 dB(A) $L_{Amax,T} @ 3m - 38 - 8 = 21$ dB(A) $L_{Amax,T}$;
 - 72 dB(A) maximum @ 3m - 38 - 8 = 26 dB(A) maximum;
- car engines starting:
 - 58 dB(A) $L_{Aeq,adj,T} @ 8m - 38 - 8 = 12$ dB(A) $L_{Aeq,adj,T}$;
 - 64 dB(A) $L_{Amax,T} @ 3m - 38 - 8 = 18$ dB(A) $L_{Amax,T}$;
 - 69 dB(A) maximum @ 3m - 38 - 8 = 23 dB(A) maximum;
- people in carpark:
 - 56 dB(A) $L_{Aeq,adj,T} @ 8m - 38 - 8 = 10$ dB(A) $L_{Aeq,adj,T}$;
 - 63 dB(A) $L_{Amax,T} @ 3m - 38 - 8 = 17$ dB(A) $L_{Amax,T}$;
 - 68 dB(A) maximum @ 3m - 38 - 8 = 22 dB(A) maximum;
- combined:
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 31 + 16 + 21 + 31 + 16 + 21 + 16 + 21 + 21 + 0 + 13 + 12 + 10 = 36$ dB(A) $L_{Aeq,adj,9H}$;
 - $17 + 11 + 20 + 17 + 15 + 22 + 9 + 21 + 22 + 41 + 26 + 31 + 41 + 26 + 31 + 26 + 31 + 31 = 45$ dB(C) $L_{Ceq,adj,9H}$;
 - $26 + 22 + 25 + 26 + 25 + 26 + 20 + 25 + 26 + 39 + 39 + 28 + 39 + 23 + 28 + 23 + 28 + 28 + 4 + 21 + 18 + 17 = 45$ dB(A) $L_{Amax,T}$;
 - $31 + 27 + 30 + 31 + 30 + 31 + 25 + 30 + 31 + 44 + 44 + 32 + 44 + 27 + 32 + 27 + 32 + 32 + 9 + 26 + 23 + 22 = 50$ dB(A) maximum.

For the combined noise sources for the early morning, daytime, evening and night-time (up to 0300 hours) the noise limits are complied with.

NOISE CONTROL

To comply with the noise limits prescribed under PO1 of the City Plan 2014 at the closest residential boundary, which is to the south (72 Blackstone Street) the combined noise impact of patrons, amplified music, carpark activity, delivery trucks and waste collection has been considered for the early morning, daytime, evening and night-time (up to 0300 hours).

With the following noise control measures in place all of the noise limits for the different time periods are complied with:

1. waste collection early morning or daytime only;
2. delivery vehicles early morning or daytime only;
3. patron numbers (from daytime to 0300 hours):
 - a. kiosk:
 - i. ground floor:
 1. Function Room 1, 100 patrons;
 2. Bar 40 patrons;
 3. external patio 75 patrons;
 - ii. Level 1:
 1. Restaurant 100 patrons;
 2. Outdoor alfresco dining 100 patrons;
 3. Casual Bar/Dining 75 patrons;
 - b. café:
 - i. Ground floor:
 1. Bar 30 patrons;
 2. Lower Terrace 75 patrons;
 - ii. Upper Terrace 100 patrons;
4. For the early morning the assumed patron numbers were 50 outside the kiosk and 50 outside the café;
5. for internal areas assumed that external doors were open at all times;
6. amplified music noise levels:
 - a. daytime:
 - i. internal areas 95 dB(A) $L_{Aeq,adj,T}$ and 105 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 90 dB(A) and 100 dB(C) @ 3m from an individual speaker;
 - ii. external areas 90 dB(A) $L_{Aeq,adj,T}$ and 100 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 85 dB(A) and 95 dB(C) @ 3m from an individual speaker;
 - b. evening:
 - i. internal areas 93 dB(A) $L_{Aeq,adj,T}$ and 103 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 88 dB(A) and 98 dB(C) @ 3m from an individual speaker;
 - ii. external areas 88 dB(A) $L_{Aeq,adj,T}$ and 98 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 83 dB(A) and 93 dB(C) @ 3m from an individual speaker;
 - c. night-time (up to 0300 hours and early morning):
 - i. two different internal areas:
 1. 88 dB(A) $L_{Aeq,adj,T}$ and 98 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 83 dB(A) and 93 dB(C) @ 3m from an individual speaker;
 2. 95 dB(A) $L_{Amax,T}$ @ 3m;
 3. 100 dB(A) maximum @ 3m;
 - ii. other three internal areas:
 1. 75 dB(A) $L_{Aeq,adj,T}$ and 85 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 70 dB(A) and 80 dB(C) @ 3m from an individual speaker;
 2. 82 dB(A) $L_{Amax,T}$ @ 3m;
 3. 86 dB(A) maximum @ 3m;
 - iii. external areas:
 1. 75 dB(A) $L_{Aeq,adj,T}$ and 85 dB(C) $L_{Ceq,adj,T}$ @ 3m, which would approximate 70 dB(A) and 80 dB(C) @ 3m from an individual speaker;

2. 82 dB(A) $L_{Amax,T}$ @ 3m;
3. 86 dB(A) maximum @ 3m.

The above amplified music noise levels are an example only, for all internal and external areas to have amplified music from early morning to night-time (0300 hours), with only the worst case scenario considered – external doors open at all times for the five different internal areas. It is possible that if some areas did not have any amplified music (eg because they were closed) then the volume of amplified music in other areas could increase.

CONCLUSIONS

This noise impact assessment report has been prepared to assess the noise impacts of the proposed refurbishment of the existing kiosk and café located at 1012 Sir Samuel Griffith Drive, Mt Coot-tha, to be transformed into a Function Facility, Bar and Hotel. It is proposed that both internal and external areas will be utilised, with potential to noise impact the closest residences, located approximately 600 metres to the south and south-west with intervening bushland.

To determine the applicable noise limits in accordance with the Centre or Mixed Use Code a 7-day ambient noise assessment was conducted from monitoring location A, at the northern end of Blackstone Street, adjacent to the eastern side boundary of 72 Blackstone Street, with the microphone elevated 1.5 metres. Despite some adverse weather conditions (rainfall) the lowest rating background sound levels were determined by excluding that data which was affected by the weather.

The potential amplified music and patron noise source locations are:

- kiosk:
 - ground floor, Function Room 1, Bar and external patio;
 - Level 1 restaurant, outdoor alfresco and casual Bar/Dining area;
- café:
 - Ground floor Bar, Lower Terrace and Upper Terrace.

Other potential noise sources are carpark activity, delivery trucks and waste collection. At the time of preparing this report no detail was available with respect to plant and equipment – neither it's location nor source noise level. However, in comparison to the noise of patrons and amplified music the combined noise of the plant and equipment would be at least 10 dB(A) less and, therefore, would not have an additive effect to the noise impact. Therefore an assessment of plant and equipment is not considered necessary.

For the nominated number of patrons and amplified music noise levels for the different areas, source noise levels for the early morning, daytime, evening and night-time (up to 0300 hours) were calculated individually to the closest residential boundary to the south and then combined to compare to the noise limits for each specific time period.

With the noise control measures detailed in this report in place, no additional noise control measures are required, with noise limit compliance from early morning to night-time (up to 0300 hours).

RECOMMENDATION

It is recommended that, from an environmental noise perspective, the proposed development (refurbishment of the existing kiosk and café) at 1012 Sir Samuel Griffiths Drive, Mt Coot-tha be approved, provided that the noise control measures detailed in this report are incorporated into the development.

APPENDIX A: NOISE LEVEL MEASUREMENT EQUIPMENT

Measurement Equipment

The following equipment was used to conduct the ambient noise level study at Monitoring Location A:

- Bruel and Kjaer Type 2250-L Handheld Analyzer, Serial No. 3004552, with Type BZ 7222, BZ 7223 and BZ 7224 Software and Pre-polarised free field ½" microphone, Type 4189, Serial No. 2880058;
- Bruel and Kjaer Type 3592 outdoor microphone kit, including Type UA1404 outdoor microphone;
- Bruel and Kjaer Type AO 0442 ten metre microphone extension cable; and
- Bruel and Kjaer Type 4231 Sound Level Calibrator, Serial No. 3011409.

All the above equipment is Type 1 in accordance with the requirements of Australian Standard AS 1259-1990, *Acoustics – Sound Level Meters*.

Measurement Equipment Settings

The above equipment was used with the following settings:

- Detector: RMS
- Time Weighting: FAST
- Frequency Weighting: linear in 1/3rd octave bands from 12.5 to 20000 Hz
- Sound Incidence: FRONTAL
- Sensitivity: 35.708 mV/Pa.

Calibration

The sound level meter was calibrated to the required value of 93.8 dB at 1000 Hz immediately before and after the noise level measurements were conducted. At no time was an adjustment of more than ±0.5 dB required. This complies with the requirements of the Australian Standard.

Monitoring Location

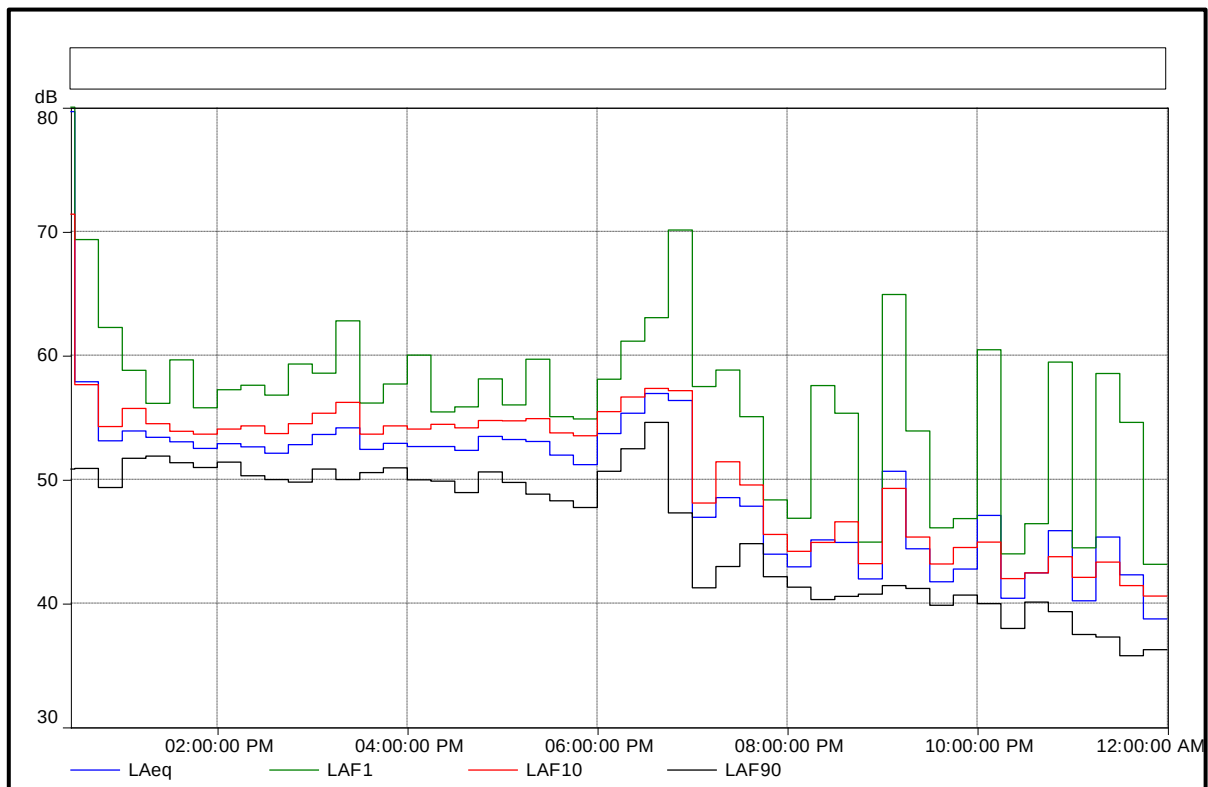
Monitoring Location A was at the northern end of Blackstone Street, adjacent to the eastern side boundary of 72 Blackstone Street, with the microphone elevated 1.5 metres. Refer Figure 1 for further detail.

Atmospheric Conditions

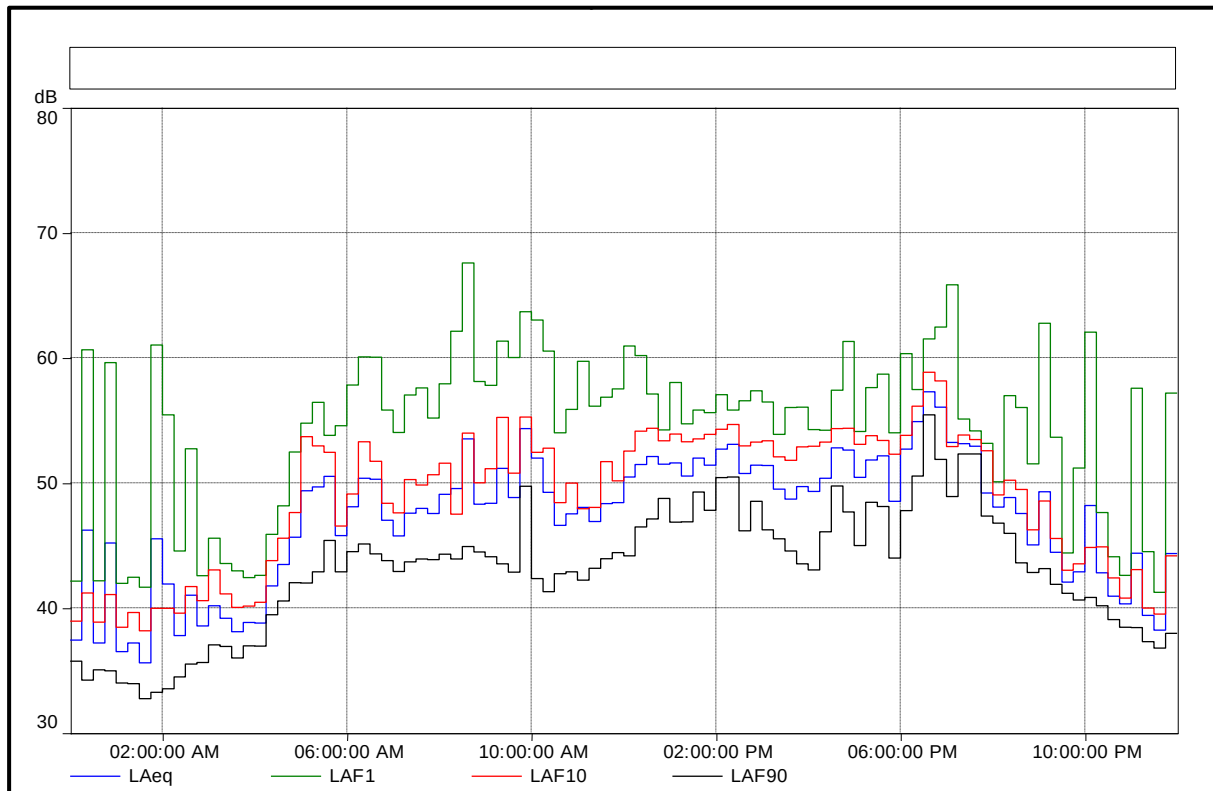
Throughout the ambient noise assessment atmospheric conditions generally complied with the requirements of the Australian Standard, with the exception of rainfall. Refer Appendix C for details.

APPENDIX B: DETAILED RESULTS OF NOISE LEVEL MEASUREMENTS

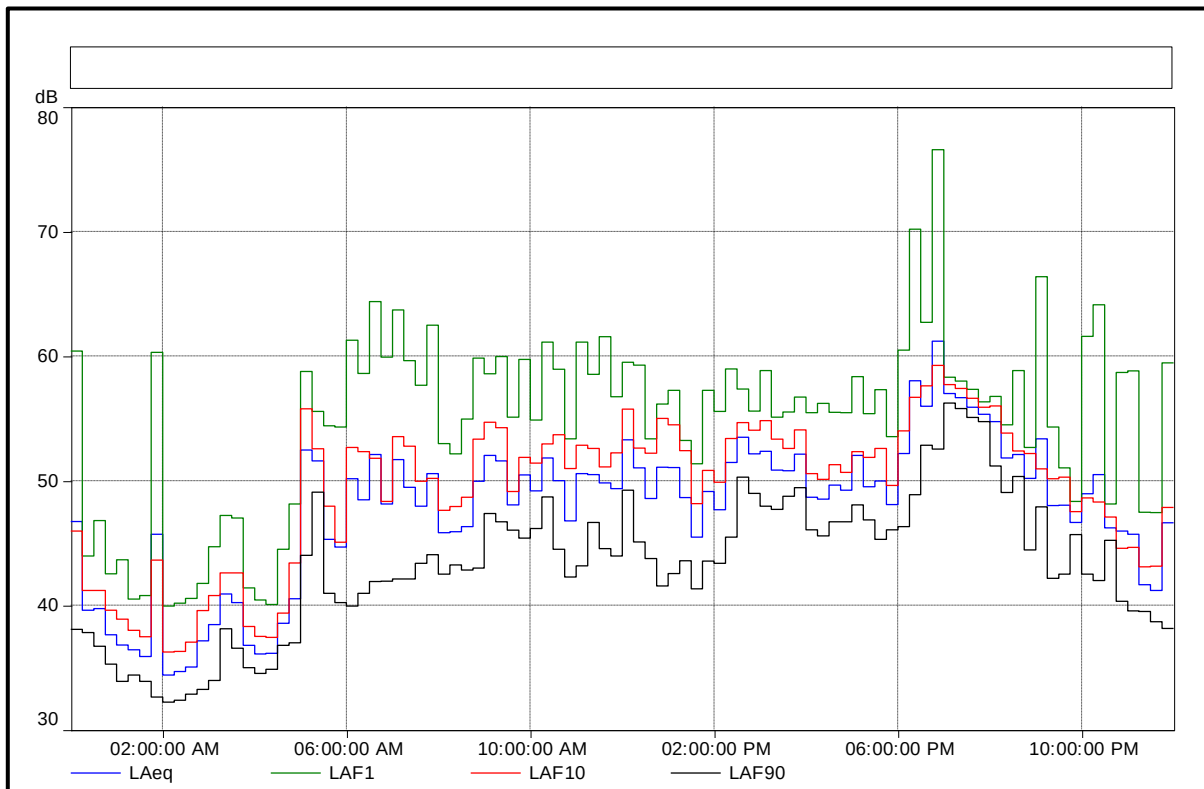
Instrument:	2250-L	
Application:	BZ7133 Version 4.7.6	
Start Time:	02/08/2024 12:27:13	
End Time:	02/15/2024 11:23:11	
Elapsed Time:	6.22:55:58	
Bandwidth:	1/3-octave	
Max Input Level:	143.87	
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z
Instrument Serial Number:	3004552	
Microphone Serial Number:	2880058	
Input:		
Windscreen Correction:	None	
Sound Field Correction:	Free-field	
Calibration Time:	02/08/2024 12:23:03	
Calibration Type:	External reference	
Sensitivity:	35.7082299888134 mV/Pa	



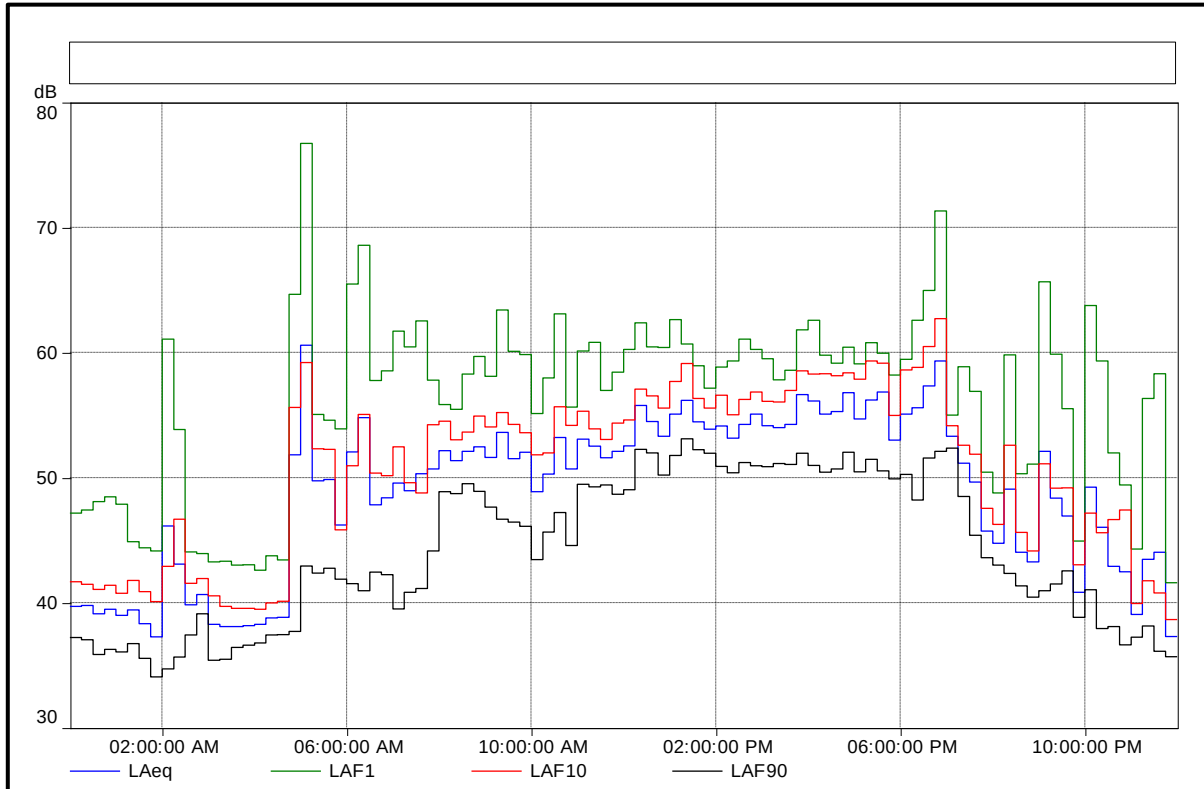
Day 1, Thursday 8 February 2024 from 1227 hours



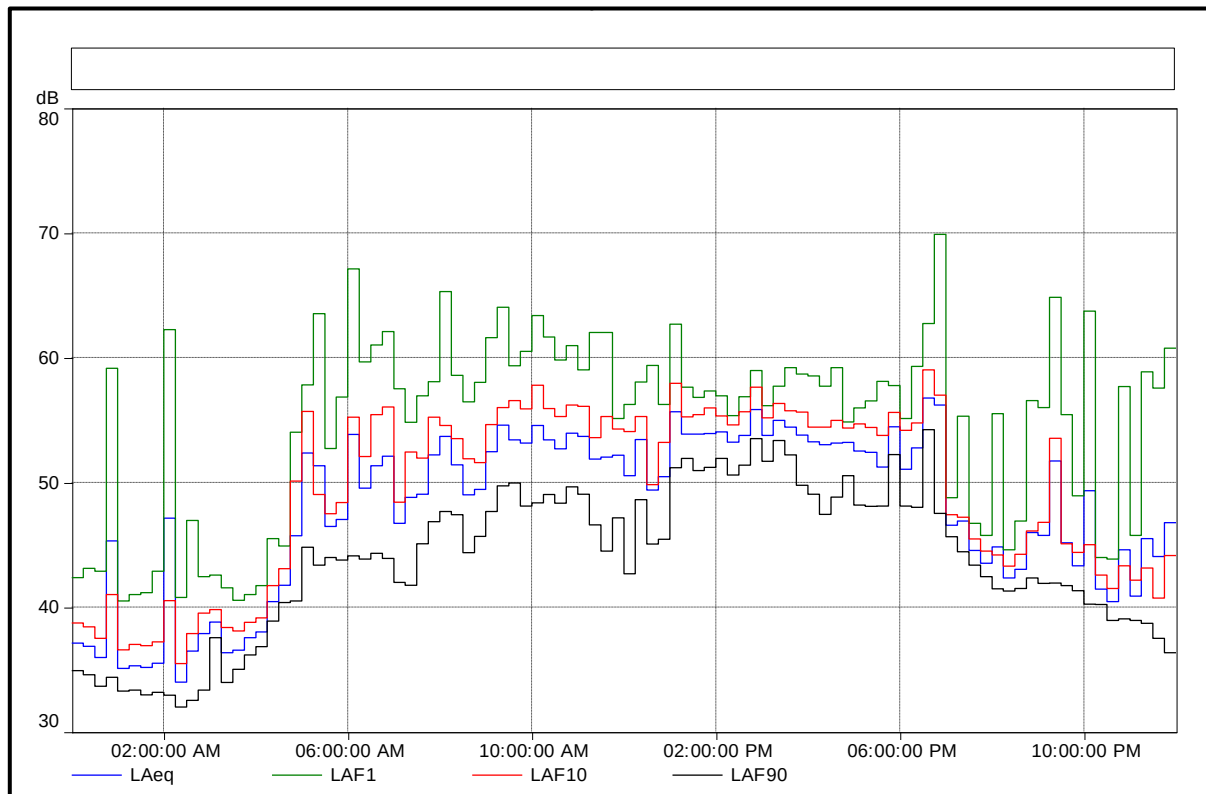
Day 2, Friday 9 February 2024



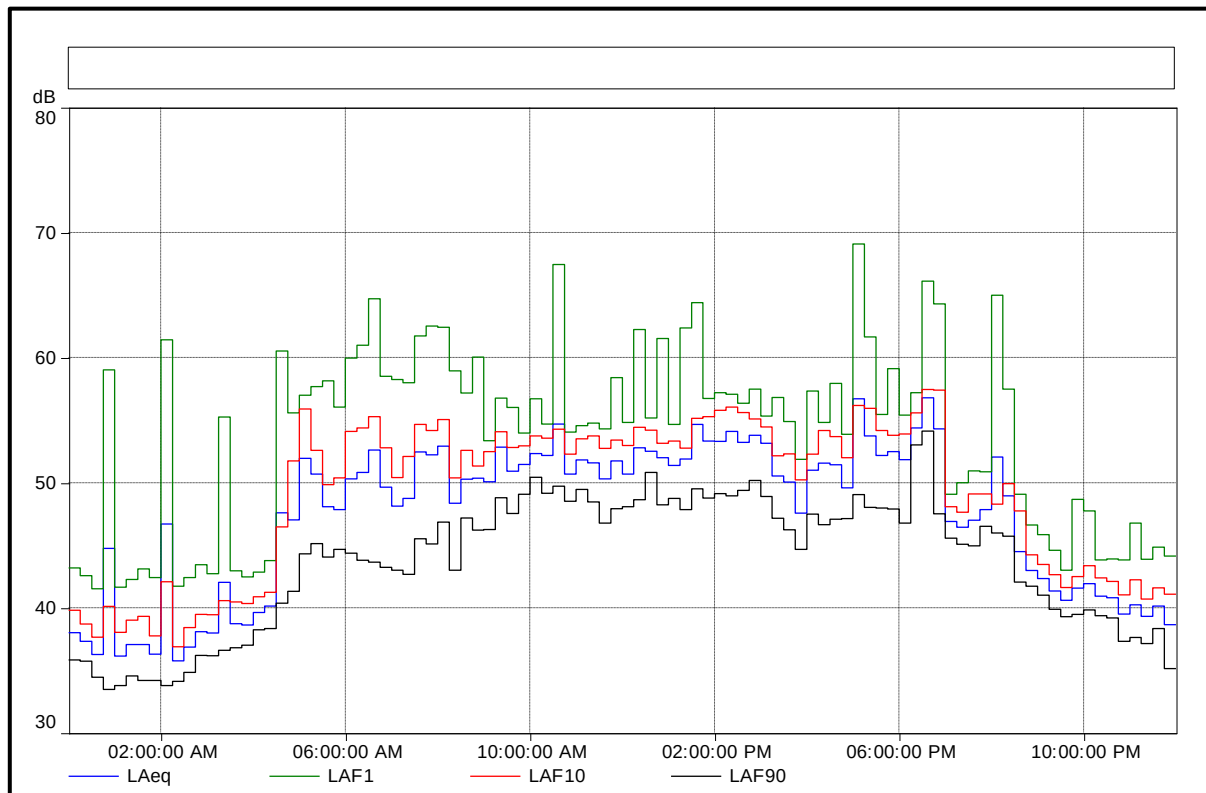
Day 3, Saturday 10 February 2024



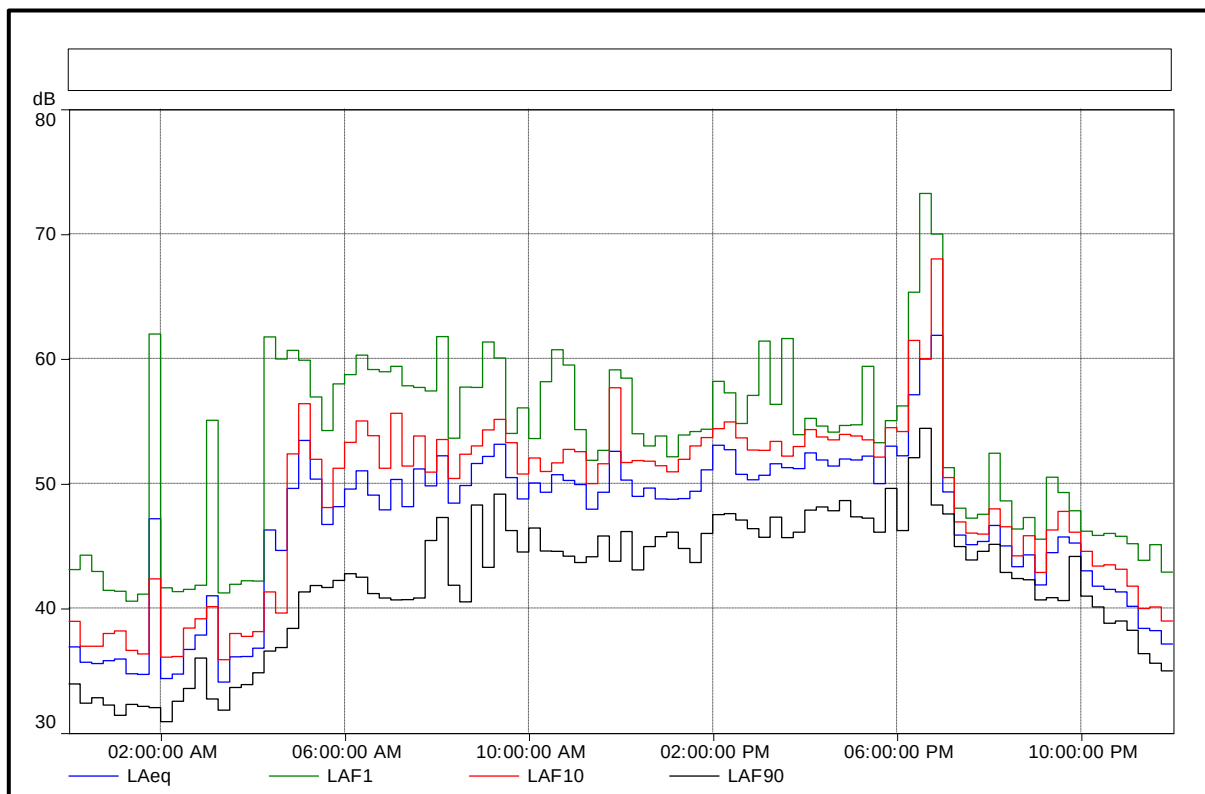
Day 4, Sunday 11 February 2024



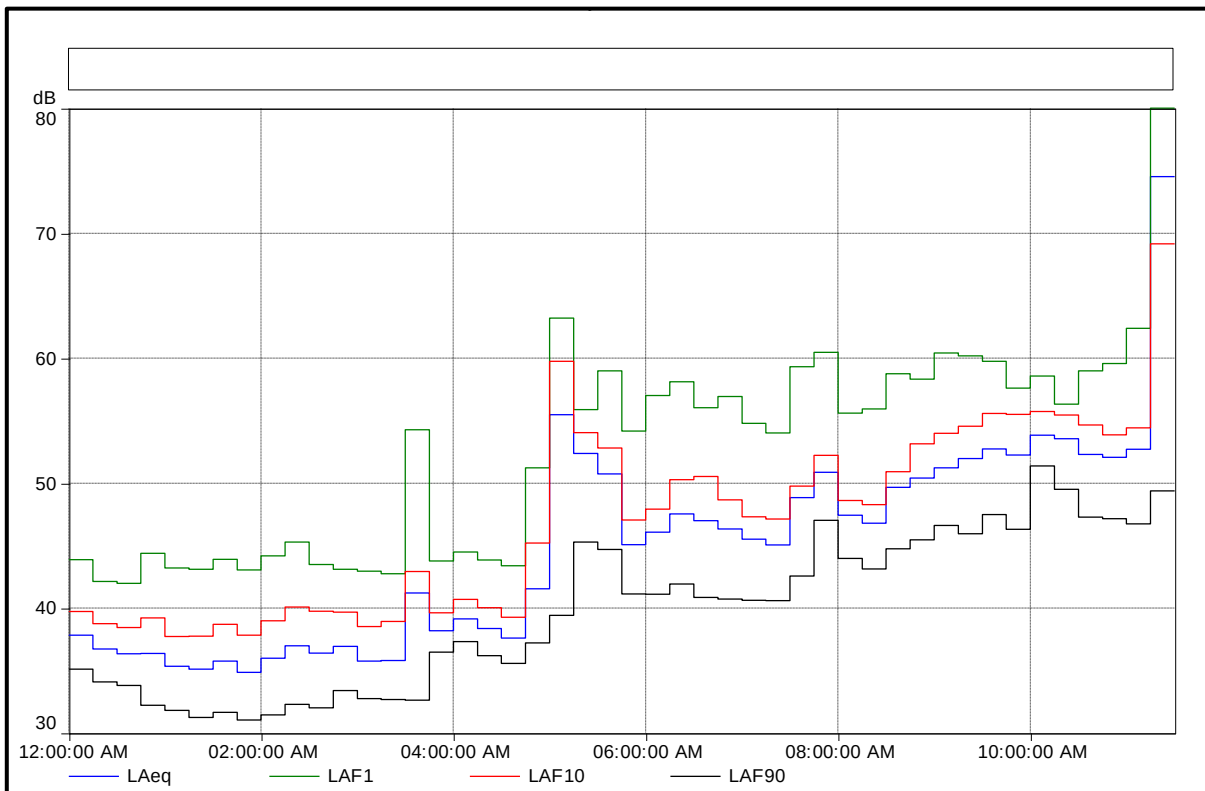
Day 5, Monday 12 February 2024



Day 6, Tuesday 13 February 2024



Day 7, Wednesday 14 February 2024



Day 8, Thursday 15 February 2024 until 1130 hours

APPENDIX C: ATMOSPHERIC CONDITIONS FOR BRISBANE FOR FEBRUARY 2024

Brisbane, Queensland February 2024 Daily Weather Observations															 Australian Government Bureau of Meteorology									
Date		Day	Temps		Rain	Evap	Sun	Max wind gust			9am				3pm									
			Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP		
			°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa		
1		Th	22.6	31.6	0.2	9.8	11.4	SE	30	10:37	27.6	64	1	SE	13	1010.4	30.2	58	6	ESE	13	1008.3		
2		Fr	21.6	32.9	0	8.4	12.6	NE	22	16:23	27.4	66	1	W	6	1008.7	31.9	53	1	NE	9	1004.5		
3		Sa	23.9	31.8	0	7.6	11.1	ENE	26	16:42	28.5	70	6	ESE	9	1012.1	31.0	65	1	ENE	13	1010.4		
4		Su	23.8	31.1	0	8.2	6.9	NE	22	14:41	28.6	69	7	W	2	1013.4	29.1	71	7	NE	9	1011.5		
5		Mo	23.1	31.6	0	6.4	12.0	ENE	24	13:14	29.4	52	1	NE	6	1012.9	30.4	60	1	ENE	13	1009.0		
6		Tu	24.8	33.1	0	8.8	9.4	NE	24	15:15	29.3	65	7	NE	4	1011.7	31.9	59	6	NNE	9	1008.2		
7		We	24.8	30.3	0	7.8	2.5	E	35	12:35	29.0	68	7	SE	11	1013.7	28.7	69	7	E	17	1012.9		
8		Th	21.9	30.5	1.2	6.6	10.0	SE	31	12:06	27.9	67	6	S	7	1016.7	29.6	57	5	SE	11	1015.0		
9		Fr	21.3	27.9	3.4	8.0	1.0	S	20	10:08	23.8	82	8	SW	9	1018.1	26.3	72	8	SE	9	1015.6		
10		Sa	22.5	27.3	2.2	3.8	0.4	SE	24	11:07	25.7	75	8	S	6	1017.1	25.1	84	8	E	7	1015.4		
11		Su	21.6	30.6	5.0	2.6	9.2	SE	33	12:22	27.2	75	6	SSW	6	1017.6	29.1	54	7	SE	15	1015.5		
12		Mo	21.3	29.8	1.8	7.4	10.5	E	37	14:45	27.5	65	5	E	11	1019.0	27.6	66	6	E	13	1016.9		
13		Tu	21.3	28.8	0.8	9.8	4.2	E	26	09:42	26.4	67	7	ESE	6	1018.4	27.6	55	7	E	9	1015.5		
14		We	21.9	31.9	0	6.0	7.2	ENE	26	14:31	27.1	66	7	WNW	2	1015.7	30.5	57	3	ENE	11	1011.9		
15		Th	24.2	29.1	0.4	7.4	0.8	E	28	16:42	27.6	68	7	SE	7	1016.5	28.1	65	7	ESE	7	1015.7		
16		Fr	22.3	27.4	183.6	7.4	0.0	ENE	26	00:49	22.6	97	8	ESE	4	1019.3	23.1	88	8	SE	4	1018.6		
17		Sa	20.1	30.1	20.8	4.0	11.3	SE	30	15:34	27.2	73	3	SW	6	1020.4	28.5	63	3	ESE	11	1017.7		
18		Su	21.3	30.7	0.2	7.2	12.2	E	31	12:37	27.1	67	5	S	9	1019.0	28.7	58	2	E	13	1015.8		
19		Mo	21.5	29.1	0.4	7.2	6.6	SE	20	17:21	27.9	65	3	ESE	6	1016.2	25.7	75	7	ENE	7	1014.5		
20		Tu	20.0		4.0	6.0					25.5	69	1	SW	6	1014.9	29.1	64	4	ENE	13	1012.1		
Statistics for the first 20 days of February 2024																								
Mean			22.3	30.3		7.0	7.3				27.2	69	5		6	1015.6	28.6	64	5		10	1013.2		
Lowest			20.0	27.3		2.6	0.0				22.6	52	1	#	2	1008.7	23.1	53	1	SE	4	1004.5		
Highest			24.8	33.1	183.6	9.8	12.6	E	37		29.4	97	8	SE	13	1020.4	31.9	88	8	E	17	1018.6		
Total					224.0	140.4	139.3																	