Vine and Bean Pty Ltd

380 Pittwater Rd, Nth Manly

Cafe and Wine Bar Acoustic Assessment

February 2020

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1. Introduction

1.1 Introduction

GHD has prepared an acoustic assessment for a proposed café and wine bar located at 380 Pittwater Road, North Manly.

The objective of this assessment is to assess noise emission from the use and operation of the proposed café and wine bar, and where required, provide mitigation measures to achieve the relevant requirements of Warringah Council for development approval. In addition to these requirements the Liquor and Gaming New South Wales (LGNSW) have also been considered as the application will also require a separate liquor license. A summary of the proposal is as follows:

- Operational hours:
  - Sunday to Wednesday
    - 6:00 am to 10:00 pm
    - Premises to be used as a café between 6:00 am to 12:00 pm
    - Premises to be used as a wine bar between 12:00 pm to 10:00 pm
    - Outdoor area fronting Pittwater Road used between 6:00 am to 10:00 pm
  - Thursday to Saturday
    - 6:00 am to 11:00 pm
    - Premises to be used as a café between 6:00 am to 12:00 pm
    - Premises to be used as a wine bar between 12:00 pm to 11:00 pm
    - Outdoor area fronting Pittwater Road used between 6:00 am to 10:00 pm
- Application for a liquor licence

1.2 Scope of works

This report has been prepared to support the Development Application (DA) for the proposed café and wine bar The DA will be lodged with Warringah Council.

The scope of this assessment includes:

- Undertake background noise monitoring to establish noise criteria
- Assessment of the operational noise emission of mechanical plant, patrons, music and other noise generating activities in accordance with the requirements of the Warringah Council and LGNSW
- Provide mitigation measures, where required, to reduce noise emission to acceptable levels.

This report has been prepared with consideration of the following document:

- Warringah Council Development Control Plan (DCP) 2011
- *Noise Policy for Industry* (EPA, 2017) (NPI)
- *Noise Guide for Local Government* (EPA, 2013) (NGLG)
- *AS2107:2016 Acoustics – Recommended design sound levels and reverberation times from building interiors*
- *Liquor and Gaming New South Wales* standard conditions (LGNSW)

1.3 Scope and limitations

This report: has been prepared by GHD for Vine and Bean Pty Ltd and may only be used and relied on by Vine and Bean Pty Ltd for the purpose agreed between GHD and the Vine and Bean Pty Ltd as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Vine and Bean Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Vine and Bean Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the noise levels) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Existing environment

The proposed café and wine bar is to be located at 380 Pittwater Road, North Manly, situated within a “IN2: Light Industrial” planning zone.

The noise environment in the vicinity of the site changes significantly depending on the proximity to Pittwater Road. As such, the nearest sensitive receivers have been separated into two (2) Noise Catchment Areas (NCA’s). These have been divided as follows:

- NCA1 – residential receivers to the north of Pittwater Road
- NCA2 – residential receivers to the south of Pittwater Road and R11 on Oliver Street

The nearest receivers, along with the relevant NCA are detailed in Table 2-1 below. The site location, nearest sensitive receivers, noise monitoring locations and NCAs are presented below in Figure 2-1.

Figure 2-1 Site location and nearest receivers

Table 2-1 Residential sensitive receivers

Receiver ID	Receiver type	Noise catchment area	Address
R01	Residential	NCA2	391 to 407 Pittwater Road, North Manly
R02	Residential	NCA1	6 to 18 Rowe Street, Freshwater
R03	Residential	NCA1	7 and 9 Rowe Street, Freshwater
R04	Place of Worship	NCA1	Kingdom Hall of Jehovah's Witnesses, 49 Palomar Pde, Freshwater
R05	Residential	NCA1	47 Palomar Parade, Freshwater
R06	Commercial	NCA1	Bike Addiction, 380 Pittwater Road, North Manly
R07	Commercial	NCA1	380 Pittwater Road, North Manly
R08	Industrial	NCA1	3-5 Rowe Street, Freshwater
R09	Commercial	NCA1	Beaumont Tiles, 378 Pittwater Road, North Manly
R10	Residential	NCA2	2-4 Lakeside Crescent, North Manly
R11	Residential	NCA2	40 Dailey Street, Queenscliff

3. Monitoring and methodology

3.1 Noise monitoring methodology

The methodology for the noise monitoring program includes the following:

- Noise monitoring was conducted in two noise catchment areas in order to monitor varying noise environments.
- Identification of sensitive receivers including residences and other sensitive land uses in the vicinity of the proposal
- Noise logging was conducted from Monday 25 November to Wednesday 4 December, 2019.
- A calibration check was performed on the noise monitoring equipment using a sound level calibrator with a sound pressure level of 94 dB(A) at 1 kHz. At completion of the measurements, the meter's calibration was re-checked to ensure the sensitivity of the noise monitoring equipment had not varied. The noise loggers were found to be within the acceptable tolerance of ± 0.5 dB(A).

Noise monitoring was undertaken using two environmental noise loggers; a Rion NL-52 and a SVAN 977. The noise logger was programmed to accumulate L_{A90}, L_{A10}, and L_{Aeq} noise descriptors continuously over the entire monitoring period.

The data collected by the loggers was downloaded and analysed, and any invalid data removed. Invalid data generally refers to periods of time where average wind speeds were greater than 7 m/s (adjusted for ground level), or when rainfall occurred. Meteorological data was sourced from the Sydney Observatory Hill Aws (SN 066062).

All noise monitoring activities were undertaken and processed in accordance with the Noise Policy for Industry (NPfI, 2017) long term monitoring method. All noise logger settings and descriptors used were based on this method.

3.2 Summary of noise monitoring results

Details of the noise monitoring equipment and location are provided Table 3-1, and a summary of the noise monitoring results is presented in Table 3-2.

Table 3-1 Background noise monitoring details

Location	Equipment details	Equipment settings	Logger photo
M1 – 14 Rowe Street (NCA1)	Rion NL-52 SN: 00131631	A-weighted Fast time response 15 minute intervals Pre/post calibration variance: -0.1 dB	

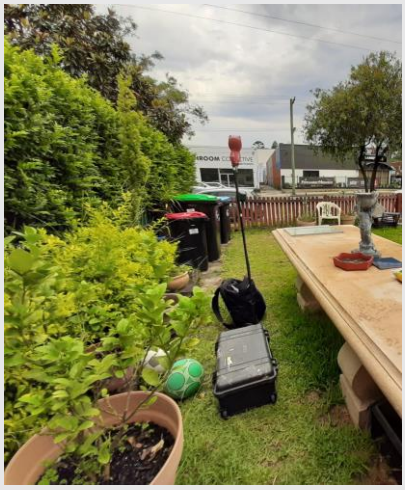
Location	Equipment details	Equipment settings	Logger photo
M2 – 399 Pittwater Road (NCA2)	SVAN 977 SN: 36874	A-weighted Fast time response 15 minute intervals Pre/post calibration variance: -0.4	

Table 3-2 Summary of noise monitoring results

Location	Background noise descriptors $L_{A90,15m}$, dB(A)				Ambient noise descriptors $L_{Aeq,15m}$, dB(A)			
	MSP[1]	Day	Evening	NSP[2]	MSP[1]	Day	Evening	NSP[2]
M1 (NCA1)	34	37	34	31	43	48	48	38
M2 (NCA2)	48	54	49	44	62	65	63	61

Note 1 - MSP: Morning shoulder period – this has been used as the café and wine bar is only operational between 6:00 am and 7:00 am during the night hours

Note 2 – NSP: Night-time shoulder period – this has been used as the café and wine bar is only operational between 10:00 pm and 11:00 pm during the night hours

3.3 Octave band background noise levels

The criteria presented in Section 5.1 requires the assessment of noise emission in octave bands. Octave band background noise levels are presented in Table 3-3 for the evening and night shoulder periods.

Table 3-3 Octave band background noise levels

Location	Time of day	L_{A90} in octave bands [Hz], dB(A)								
		31.5	63	125	250	500	1000	2000	4000	8000
M1 (NCA1)	Evening	12	20	22	28	32	35	36	23	16
M2 (NCA2)		19	33	37	40	45	50	47	34	22

M1 (NCA1)	NSP	5	14	17	23	26	27	22	19	16
M2 (NCA2)		20	32	37	40	44	50	45	33	20

4. Noise criteria

4.1 Warringah Council Development Control Plan 2011

A review of the Warringah Council Development Control Plan (DCP) has been undertaken, and the following numerical criteria pertaining to noise emission from a development is stipulated below:

> ***D3 Noise***
>
> ***Applies to Land***
>
> *This control applies to land to which Warringah Local Environmental Plan 2011 applies.*
>
> ***Objectives***
>
> • *To encourage innovative design solutions to improve the urban environment.*
>
> • *To ensure that noise emission does not unreasonably diminish the amenity of the area or result in noise intrusion which would be unreasonable for occupants, users or visitors.*
>
> ***Requirements***
>
> *1. Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5 dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses.*

Based on the provided information from the Warringah Council numerical noise criteria for mechanical plant noise has been provided, however no criteria for the assessment of noise from other sources from the café and wine bar has been provided. Note that the *NSW Industrial Noise Policy* has been superseded by the EPA's *Noise Policy for Industry.*

Based on the above requirements, the relevant council criteria is presented in Table 4-1. In addition to mechanical plant and equipment, the overall operation of the site will be assessed to this criteria, as well as the Liquor and Gaming New South Wales (LGNSW) criteria provided below.

Table 4-1 Warringah Council noise emission criteria, dB(A)

Receiver type	Location	Time of day	RBL $L_{A90(15m)}$, dB(A)	Noise criteria $L_{Aeq(15m)}$, dB(A)
Residential	NCA1	MSP (6:00 am to 7:00 am)	34	39
		Day (7:00 am to 6:00 pm)	37	42
		Evening (6:00 pm to 10:00 pm)	34	39
		NSP (10:00 pm to 11:00 pm)	31	36
	NCA2	MSP (6:00 am to 7:00 am)	48	53
		Day (7:00 am to 6:00 pm)	54	59
		Evening (6:00 pm to 10:00 pm)	49	54
		NSP (10:00 pm to 11:00 pm)	44	49

4.2 Noise Policy for Industry (EPA, 2017)

As noise criteria for other sensitive land uses is not stipulated in the Warringah DCP, guidance for such can be found in the NSW EPA Noise Policy for Industry (NPI). The guideline includes project amenity noise levels that are designed to limit the total noise level from industry near a receiver. Project amenity noise levels are defined as:

Projected amenity noise level for industrial developments = recommended amenity noise level minus 5 dB(A)

The amenity criteria for non-residential receivers surrounding the proposed licensed venue is presented in Table 4-2.

Table 4-2 NPfI amenity criteria

Type of receiver	Time of day	Recommended amenity noise level $L_{Aeq(period)}$, dB(A)	Project amenity noise criteria $L_{Aeq(15m)}$[1], dB(A)
Commercial	When in use	65	63
Industrial	When in use	70	68
Place of Worship	When in use	50[2]	48

Note 1: A +3 dB correction has been added to convert the noise descriptor from a $L_{Aeq(period)}$ to a $L_{Aeq(15m)}$

Note 2: Recommended amenity noise levels for Places of Worship are presented as internal levels in the NPfI. A + 10 dB correction has been added as a conservative estimate for noise reduction through an open window

4.3 International Standard ISO 226 : 2003

The ISO 226 :2003 – Normal Equal-Loudness-Level contours presents *Tf* values for the threshold of human hearing in third octave bands. The *Tf* corresponding to each octave band centre frequency is presented in Table 4-3 below.

Table 4-3 Threshold of human hearing (ISO 226:2003 Table 1)

Weighting	dB in octave bands [Hz]								
	31.5	63	125	250	500	1000	2000	4000	8000
Z - weighted	59.5	37.5	22.1	11.4	4.4	2.4	-1.3	-5.4	12.6
A - weighted	20.1	11.3	6	2.8	1.2	2.4	-0.1	-4.4	11.5

Where octave band background noise levels are below the threshold of human hearing, the A-weighted threshold of human hearing will be used.

4.4 Liquor and Gaming New South Wales

The proposed land use change includes the addition of a liquor license for the proposed licensed venue. Noise emission from the proposal will also be assessed against the standard conditions imposed on licensed venues by Liquor and Gaming New South Wales (LGNSW).

The standard conditions imposed on licensed venues by LGNSW are presented below.

> *The L_{A10} noise emitted from the licensed premises shall not exceed the background noise level in any octave band frequency (31.5 Hz to 8 kHz inclusive) by more than 5 dB(A) between 7.00am and midnight at the boundary at any affected residence.*
>
> *The L_{A10} noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5 Hz to 8 kHz inclusive) between midnight and 7.00am at the boundary of any affected residence.*
>
> *Notwithstanding compliance of the above, noise from the licensed premises shall not be audible in any habitable room in any residential premises between the hours of midnight and 7.00am.*

The LGNSW octave band noise criteria for residential receivers is presented in Table 4-4.

Table 4-4 LGNSW octave band noise criteria for residential receivers

Location	Metric	Noise level in octave bands [Hz], dB(A)								
		31.5	63	125	250	500	1000	2000	4000	8000
EVENING (BG + 5 dB in octave bands)										
NCA1	L_{90}[1]	20 (12)	20	22	28	32	35	36	23	16
	Criteria	25	25	27	33	37	40	41	28	21
NCA2	L_{90}[1]	20 (19)[2]	33	37	40	45	50	47	34	22
	Criteria	25	38	42	45	50	55	52	39	27
NIGHT SHOULDER PERIOD (BG + 5 dB in octave bands)										
NCA1	L_{90}[1]	20 (5)	14	17	23	26	27	22	19	16
	Criteria	25	19	22	28	31	32	27	24	21
NCA2	L_{90}[1]	20	32	37	40	44	50	45	33	20
	Criteria	25	37	42	45	49	55	50	38	25

Note 1: The value has been shifted to the minimum threshold of human hearing presented in Table 4-3. The number in brackets is the measured value

4.5 Sleep disturbance

The *Noise Policy for Industry* (EPA, 2017) recommends a maximum noise level assessment to assess the potential for sleep disturbance impacts which include awakenings and disturbance to sleep stages. An initial screening test for the maximum noise levels events should be assessed to the following levels.

- $L_{Aeq(15\ min)}$ 40 dBA or the prevailing RBL plus 5 dB, whichever is greater, and/or
- L_{AFmax} 52 dBA or the prevailing RBL plus 15 dB, whichever is greater.

If the screening test indicates there is a potential for sleep disturbance then a detailed maximum noise level assessment should be undertaken. The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

Table 4-5 below summarises the background noise level at the nearby residential receivers and the sleep disturbance criterion. The criteria is based on the night-time shoulder period, which is more conservative than the morning shoulder period.

Table 4-5 Sleep disturbance criteria (NGLG)

Location	Background noise level $L_{A90(period)}$, dB(A)	Sleep disturbance criterion $L_{AF,max}$, dB(A)
North of Pittwater road – NCA1	31	52
South of Pittwater road – NCA2	44	59

4.6 Internal transmission

Noise from the use and operation of the café and wine bar has the potential to transmit through the partition walls separating adjacent tenancies. (R06/R07) The Warringah Council DCP provides no guidance or criteria for internal levels in adjoining commercial tenancies. Therefore, the internal noise at adjoining commercial receivers from the use and operation of the facility will be assessed to the recommended internal noise levels presented in Australian Standard *AS2107:2016 Acoustics – Recommended design sound levels and reverberation times from building interiors*, presented in Table 4-6.

Table 4-6 Recommended design sound levels (Table 1 of AS2107:2016)

Type of occupancy	Recommended design sound level L_{Aeq}, dB(A)
8 SHOP BUILDINGS	
Small retail stores (general)	< 50

5. Noise assessment

5.1 External noise assessment

5.1.1 Modelling assumptions and parameters

The assessment of noise emission from the venue has been assessed against the relevant noise emission criteria. Four operational scenarios have been considered to assess potential noise impacts at various stages of operation. These are considered representative of café and wine bar operations, with other activities either the same or less in noise emission:

Scenario 1 (S1) – Café morning service

- Noise associated with the venue during morning café service
- Internal café space at maximum capacity of 60 patrons
- External seating area fronting Pittwater Road at maximum capacity of 12 patrons
- Ambient music played inside café and wine bar space

This scenario has been assessed against the Warringah Council requirements

Scenario 2 (S2) – Wine bar afternoon and evening service

- Noise associated with the venue during afternoon and evening wine bar service
- Internal wine bar space at maximum capacity of 60 patrons
- External seating area fronting Pittwater Road at maximum capacity of 12 patrons
- Live music played inside and wine bar space

This scenario has been assessed against the Warringah Council and LGNSW requirements. This has been conservatively assessed against the evening criteria. Compliance with the evening criteria will result in compliance during the day-time period.

Scenario 3 (S3) – Wine bar night time shoulder period service

- Noise associated with the venue during afternoon and evening wine bar service
- Internal wine bar space at maximum capacity of 60 patrons
- Live music played inside and wine bar space

This scenario has been assessed against the Warringah Council and LGNSW requirements

Scenario 4 (S4) – Deliveries

- Noise associated with the movement of trucks for deliveries of product and stock
- Worst case scenario of one truck delivery (and therefore two truck movements) along Girard St, Palomar Pde and Rowe St

This scenario has been assessed against the Warringah Council requirements

The modelling assumptions and parameters for each scenario are presented below in Table 5-1.

Table 5-1 Modelling assumptions and parameters

Modelling assumption		Parameter
Scenarios 1 to 3 – Cafe morning service and Wine bar afternoon, evening and night-time shoulder period service		
Internal bar and patron area	Patrons distributed evenly throughout internal café and wine bar space – capacity 60 people	Assumed 50% talking at any one time 70% of patrons talking with normal voices – 68 dB(A) each 20% of patrons talking with raised voices – 75 dB(A) each 10% of patrons talking with loud voices – 83 dB(A) each
	Live / amplified music	Sound power level (SWL) 80 dB(A) **during morning café service – Scenario 1** Sound power level (SWL) 85 dB(A) **during afternoon and evening wine bar service – Scenario 2**
	Assumed majority of surfaces to be of low absorption	NRC 0.1
	Overall internal reverberant sound pressure level (SPL) – calculated based on the above assumptions	75 dB(A) **during morning café service – Scenario 1** 80 dB(A) **during afternoon and evening wine bar service – Scenario 2**

Modelling assumption		Parameter
Outdoor area fronting Pittwater Road (6:00 am to 10:00 pm only)	12 patrons sitting at designated tables	Assumed 50% talking at any one time 70% of patrons talking with normal voices – 68 dB(A) each 20% of patrons talking with raised voices – 75 dB(A) each 10% of patrons talking with loud voices – 83 dB(A) each
Café and Wine bar entrance corridor opening	Conservatively modelled with no noise attenuation from corridor	Area specific SWL 69 dB(A) **during morning café service – Scenario 1**
	Modelled as vertical area source	Area specific SWL 74 dB(A) **during afternoon and evening wine bar service – Scenario 2**
Wine bar windows fronting Pittwater road	Standard glazing	Rw 25
	Modelled as vertical area source	Area specific SWL 48 dB(A) **during morning café service – Scenario 1** Area specific SWL 53 dB(A) **during afternoon and evening wine bar service – Scenario 2**
Wine bar door fronting Pittwater road	Assumed door is closed, wooden construction	Rw 27
	Modelled as vertical area source	Area specific SWL 47 dB(A) **during morning café service – Scenario 1** Area specific SWL 52 dB(A) **during afternoon and evening wine bar service – Scenario 2**
Skylight through carpark	Standard glazing	Rw 25
	Modelled as area source	Area specific SWL 48 dB(A) **during morning café service – Scenario 1** Area specific SWL 53 dB(A) **during afternoon and evening wine bar service – Scenario 2**

Modelling assumption		Parameter
Scenario 4 – Deliveries		
Truck Delivery	Truck sound power level	91 dB(A)
	Modelled as moving point source	Speed 30 km/h

Noise predictions of the proposed café and wine bar to external receivers were undertaken using the computer noise modelling software CadnaA 2019 and ISO 9613:1996 – *Acoustics – Attenuation of sound during propagation outdoors*. The following noise modelling parameters were used:

- Surrounding land was modelled assuming majority of hard surface, equating to a ground absorption coefficient of 0
- atmospheric absorption was based on an average temperature of 10°C and an average humidity of 70%
- atmospheric propagation conditions were modelled with noise enhancing wind conditions for noise propagation (downwind conditions) or an equivalently well-developed moderate ground based temperature inversions
- modelled scenarios take into account the shielding effect from surrounding buildings and structures on and adjacent to the site.

5.1.2 Noise assessment – Warringah Council criteria

Predicted noise levels at nearby receivers against the acoustic requirements of the NPfI are presented in Table 5-2. The noise emission from the site has been assessed against the morning shoulder period, which is the most stringent criteria. Compliance with this criteria will result in compliance at all other times of the day.

Table 5-2 Predicted $L_{Aeq(15\ min)}$ at surrounding sensitive receivers

Receiver	Receiver type	Night-time criteria [dBA]	Predicted noise level [dBA]				Compliance (yes/no)
			S1	S2	S3	S4	
R01	Residential – NCA2	**MSP – 53** **Day – 59** **Evening – 54** **NSP – 49**	43	43	30	22	Yes
R02	Residential – NCA1	**MSP – 39** **Day – 42** **Evening – 39** **NSP – 36**	22	22	22	32	Yes

Receiver	Receiver type	Night-time criteria [dBA]	Predicted noise level [dBA]				Compliance (yes/no)
			S1	S2	S3	S4	
R03	Residential – NCA1	**MSP – 39** **Day – 42** **Evening – 39** **NSP – 36**	25	25	25	30	Yes
R04	Place of Worship	**When in use – 48**	24	24	24	28	Yes
R05	Residential – NCA1	**MSP – 39** **Day – 42** **Evening – 39** **NSP – 36**	8	13	13	24	Yes
R06	Commercial	**When in use – 63**	37	37	37	30	Yes
R07	Commercial	**When in use – 63**	58	58	58	35	Yes
R08	Industrial	**When in use – 68**	34	34	34	33	Yes
R09	Commercial	**When in use – 63**	35	35	26	19	Yes
R10	Residential – NCA2	**MSP – 53** **Day – 59** **Evening – 54** **NSP – 49**	36	36	24	17	Yes
R11	Residential – NCA2	**MSP – 53** **Day – 59** **Evening – 54** **NSP – 49**	23	23	23	17	Yes

5.1.3 Octave band noise assessment (LGNSW)

The results of the octave band noise assessment to nearby residential receivers is presented below in Table 5-3 and Table 5-4. Only scenarios 2 and 3, pertaining to wine bar service noise from patrons and music, has been assessed, as the LGNSW octave band criteria only requires the assessment of noise from patrons and music.

Table 5-3 Scenario 2 (6:00 pm to 10:00 pm) – Octave band noise assessment results (LGNSW)

Receiver	Predicted noise level L_{A10}[1] in octave bands [Hz], [dBA]								
	31.5	63	125	250	500	1000	2000	4000	8000
Criteria – NCA1	**25**	**25**	**27**	**33**	**37**	**40**	**41**	**28**	**21**
R02	0	0	7	18	21	21	13	1	0
R03	0	0	9	20	23	24	18	7	0
R05	0	0	3	11	11	9	1	1	0
Criteria – NCA2	**25**	**38**	**42**	**45**	**50**	**55**	**52**	**39**	**27**
R01	0	13	21	34	42	42	35	27	19
R10	0	7	15	27	35	34	27	19	8
R11	0	0	11	20	21	21	13	0	0
Notes: L_{A10} value are based on the L_{Aeq} values + 3 dB									

Table 5-4 Scenario 3 (10:00 pm to 11:00 pm) - Octave band noise assessment results (LGNSW)

Receiver	Predicted noise level L_{A10}[1] in octave bands [Hz], [dBA]								
	31.5	63	125	250	500	1000	2000	4000	8000
Criteria – NCA1	**25**	**19**	**22**	**28**	**31**	**32**	**27**	**24**	**21**
R02	0	0	7	18	21	21	13	1	0
R03	0	0	9	20	23	24	18	7	0
R05	0	0	3	11	11	9	1	1	0
Criteria – NCA2	**25**	**37**	**42**	**45**	**49**	**55**	**50**	**38**	**25**
R01	0	13	20	29	27	24	21	14	17
R10	0	6	14	23	22	19	15	6	6
R11	0	0	11	20	21	21	13	0	0
Notes: L_{A10} value are based on the L_{Aeq} values + 3 dB									

5.2 Sleep disturbance

5.2.1 Modelling assumptions and parameters

The assessment of sleep disturbance from the use and operation of the proposed café is based on the following assumptions, and is assessed against the relevant criteria presented above in Section 4:

- Maximum noise level from café and wine bar operations, being the slamming of a car door located in front of entrance with a sound power level of 95 dB(A), or a patron shouting outside with a sound power level of 90 dB(A). It is expected that maximum noise events from within the facility would be less than this.

The results of the sleep disturbance noise assessment are presented below in Table 5-5.

Table 5-5 Predicted L_{Amax} noise levels at nearby residential receivers – sleep disturbance

Receiver	NCA	Criteria	Predicted L_{Amax} external noise level at receiver (dBA)	Compliance
R01	NCA2	59	37	Yes
R02	NCA1	52	46	Yes
R03	NCA1	52	46	Yes
R05	NCA1	52	24	Yes
R10	NCA2	59	48	Yes
R11	NCA2	59	44	Yes

5.3 Internal transmission

The proposed café and wine bar shares internal partitions to commercial spaces. All partitions were identified to of minimum construction 70 mm brick, and its sound reduction performance was calculated using Insul 9.0. The resulting sound reduction performance and predicted receiver internal noise levels are presented below in Table 5-6.

Table 5-6 Predicted L_{Aeq} to surrounding internal commercial receivers (AS2107:2016)

Café and wine bar internal reverberant SPL, dB(A)	Partition construction	Sound reduction	Received SPL, dB(A)	Criteria
80	Minimum 70 mm brick	Rw 40	40	50[1]
Note 1: Criteria taken from design sound level for retail commercial spaces (AS 2107:2016), see Table 4-6				

5.4 Discussion

The results of the noise assessment is as follows:

External noise assessment (NPfI)

- External noise emission from the use and operation of the proposed café and wine bar is predicted to be compliant at all residential, commercial and industrial receivers

Octave band noise assessment (LGNSW)

- External noise emission in all octave bands from the use and operation of the proposed café and wine bar is predicted to be compliant at all residential receivers

Sleep disturbance (NGLG)

- The use and operation of the proposed café and wine bar complies with the sleep disturbance criteria during the morning shoulder period (6:00 am to 7:00 am)

Internal noise assessment (AS2107:2016)

- Internal noise emission to adjacent commercial receivers is compliant with the internal noise targets of AS2107:2016

6. Recommendations

Predictions show that compliance will be achieved with the relevant acoustic criteria presented in Section 4. We do however provide the following recommendations to ensure compliance with the relevant acoustic criteria is maintained and acoustic amenity of nearby receivers is adequately protected.

- The erection of clear signage at the entry/exit of the café and wine bar advising patrons that they must not generate excessive noise and leave the café and wine bar in a quiet and sensible manor manner to minimise any potential impacts on the surrounding amenity.
- If any additional mechanical plant be installed in the restaurant a suitable acoustic engineer should be engaged to assess any potential noise impacts on nearby receivers.
- The emptying of glass bottles into bins, generating excessive noise, should be conducted during day time hours only (7 am to 6 pm Monday to Saturday and 8 am to 6 pm on Sundays and Public Holidays).

7. Conclusion

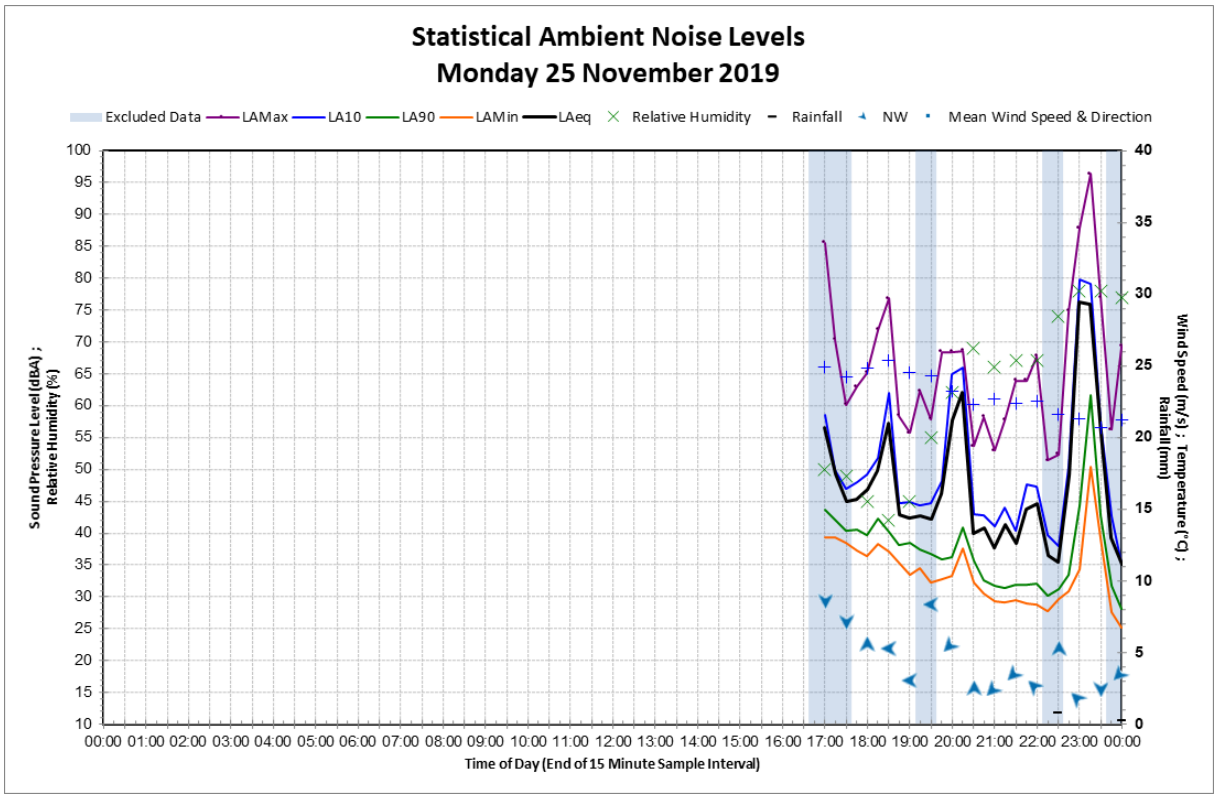
GHD has prepared an acoustic assessment for a proposed café wine bar located at 380 Pittwater Road, North Manly.

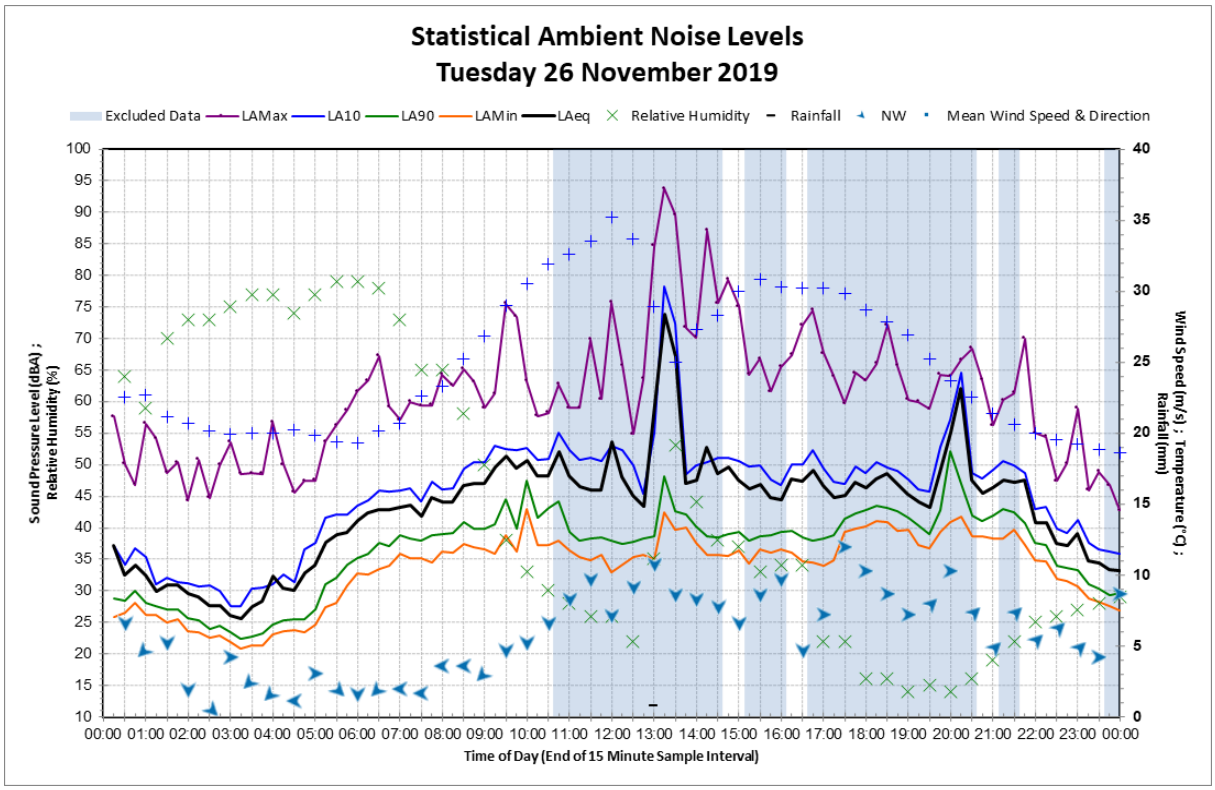
Based on the noise modelling assumptions and assessment of the operation of the proposed café wine bar located at 380 Pittwater Road, North Manly, noise emission from the use and operation of the site is predicted to comply with the relevant noise emission criteria presented in Section 4 of the report. The development is not likely to adversely affect the amenity of the surrounding industrial, commercial and residential area.

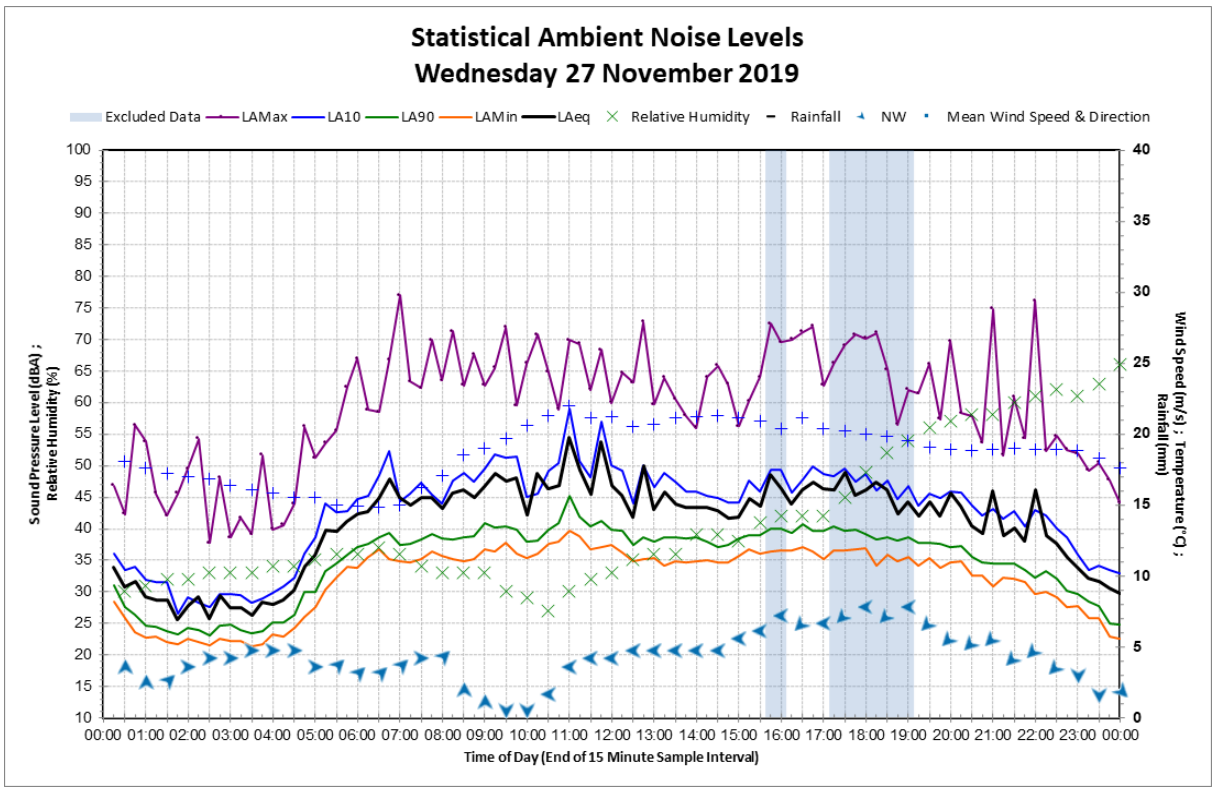
Appendices

Appendix A – Daily noise monitoring charts

M1 – 14 Rowe Street



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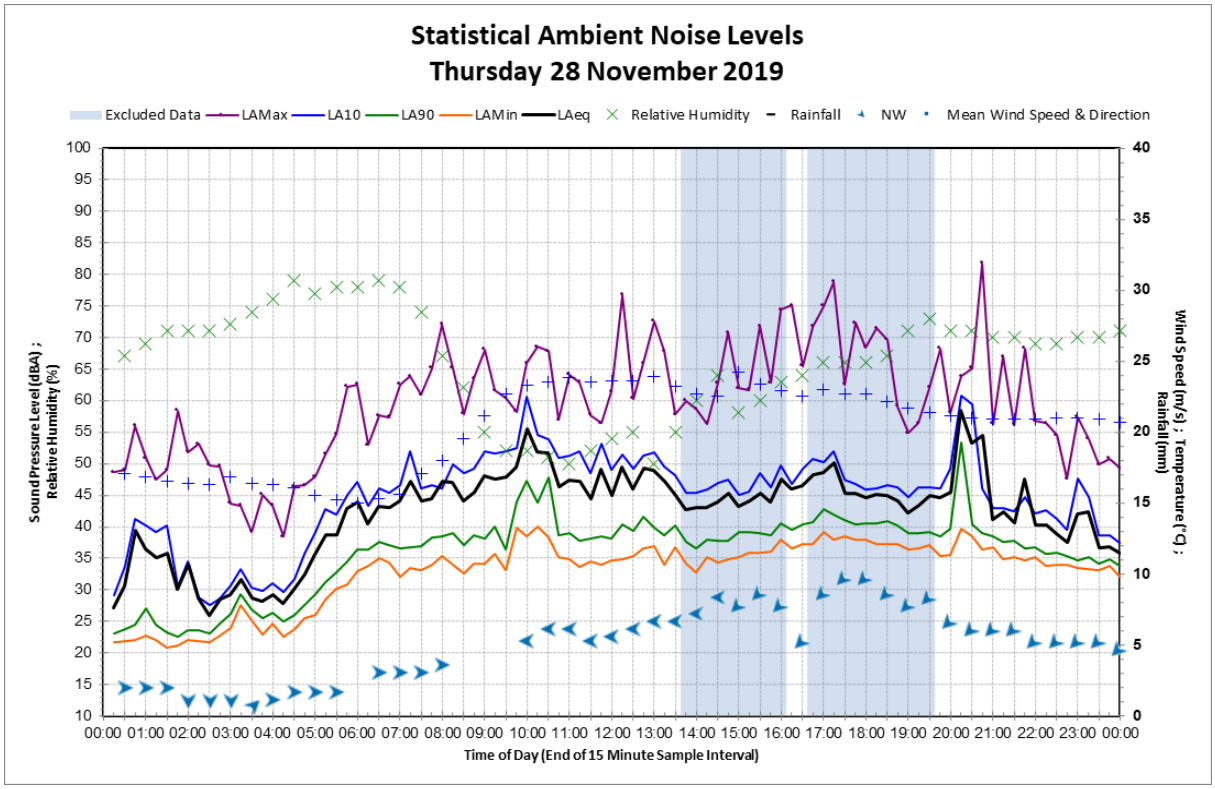
Wednesday 27 November 2019
Excluded Data
LAMax
LA10
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
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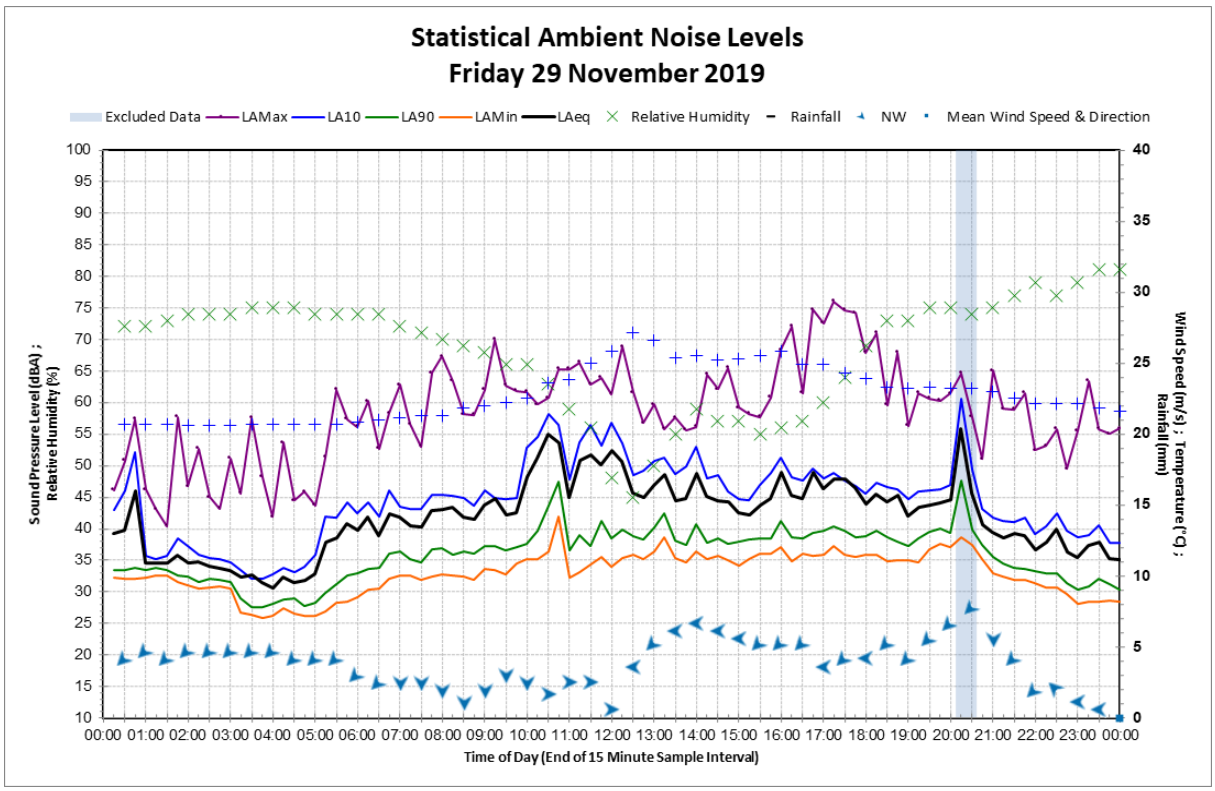
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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Rainfall
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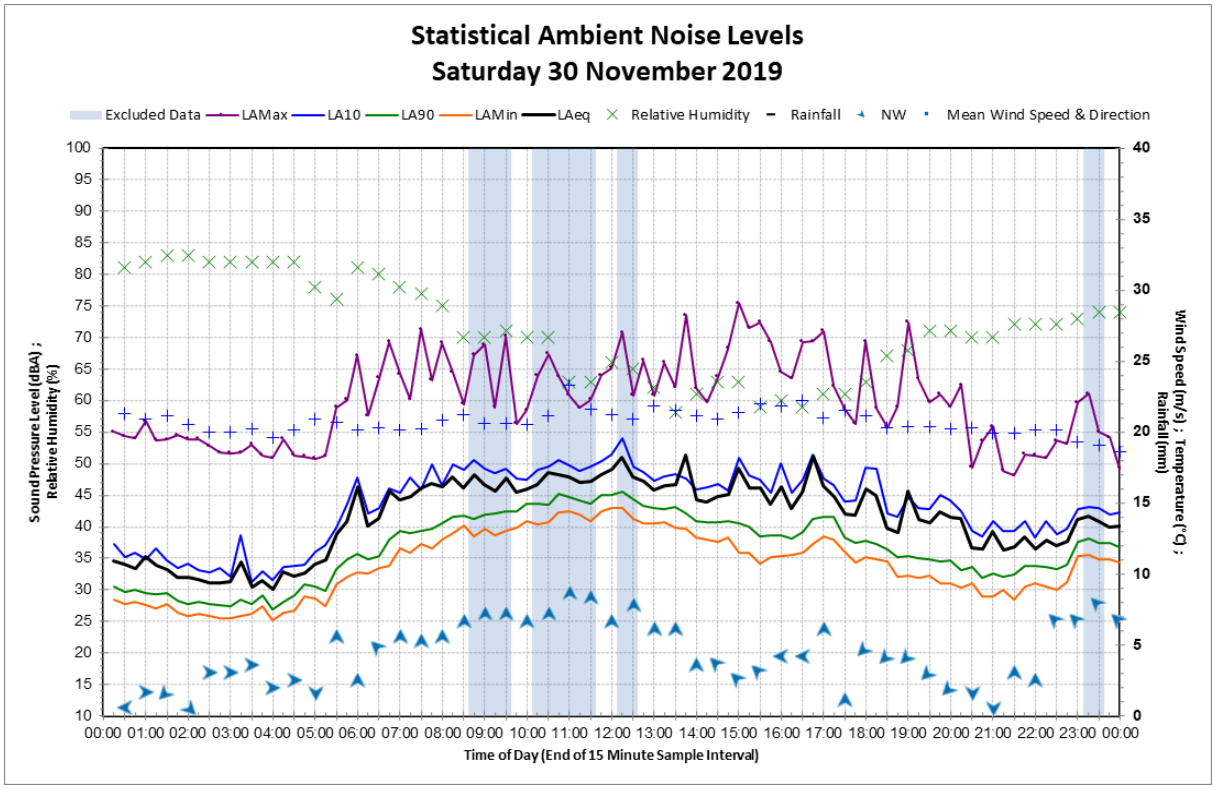
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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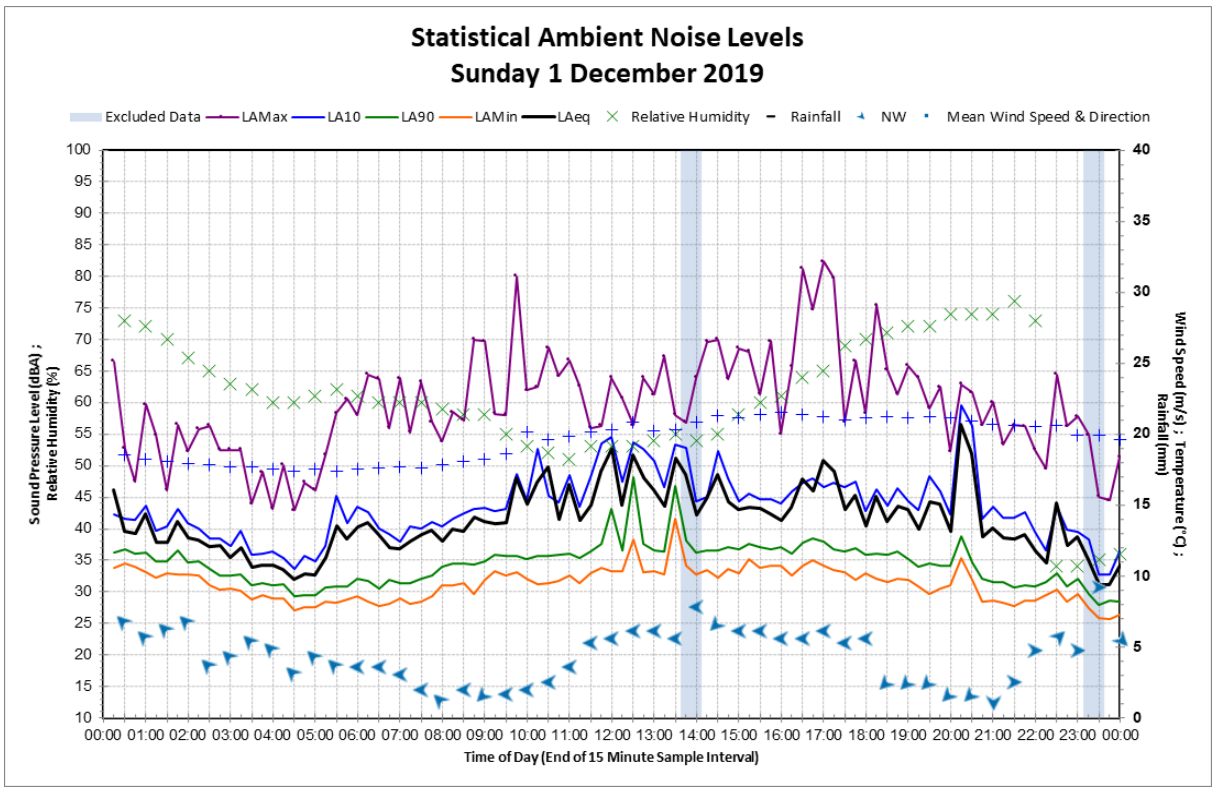
LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
Mean Wind Speed & Direction
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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LA90
LAMin
LAeq
Relative Humidity
Rainfall
NW
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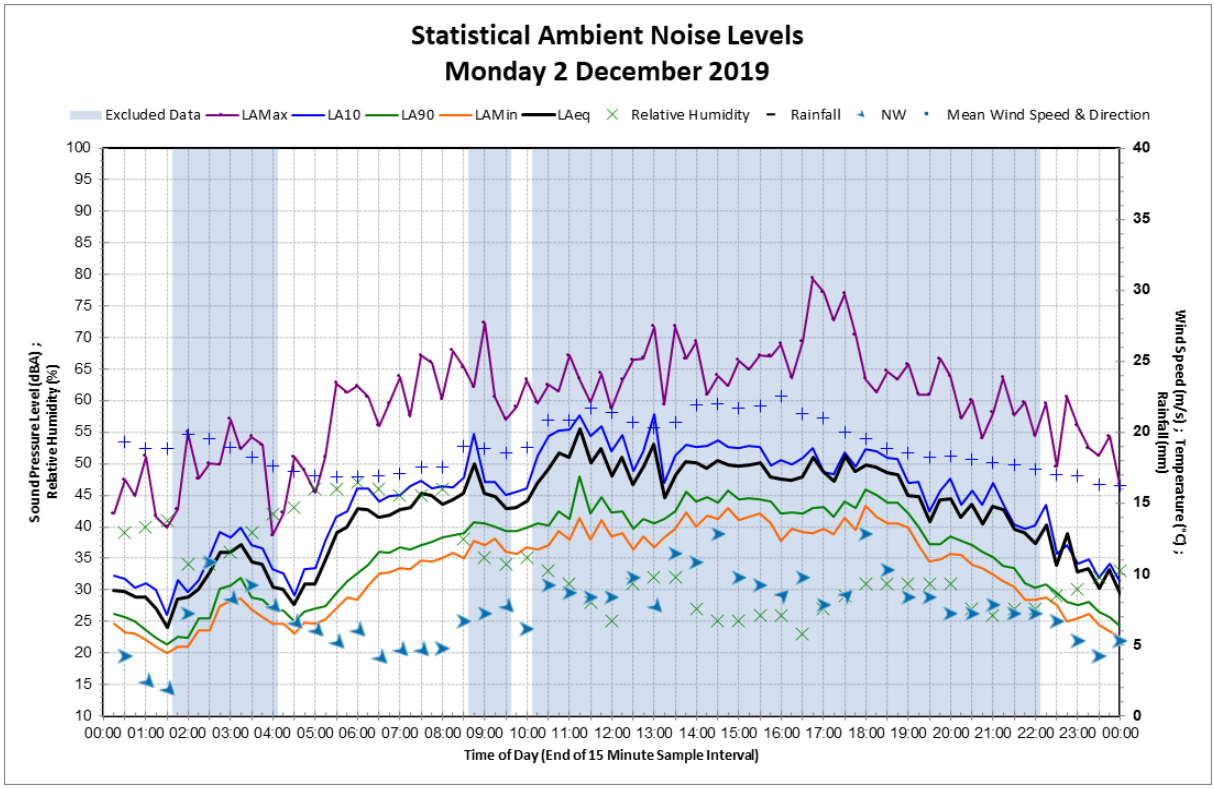
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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LA90
LAMin
LAeq
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Rainfall
NW
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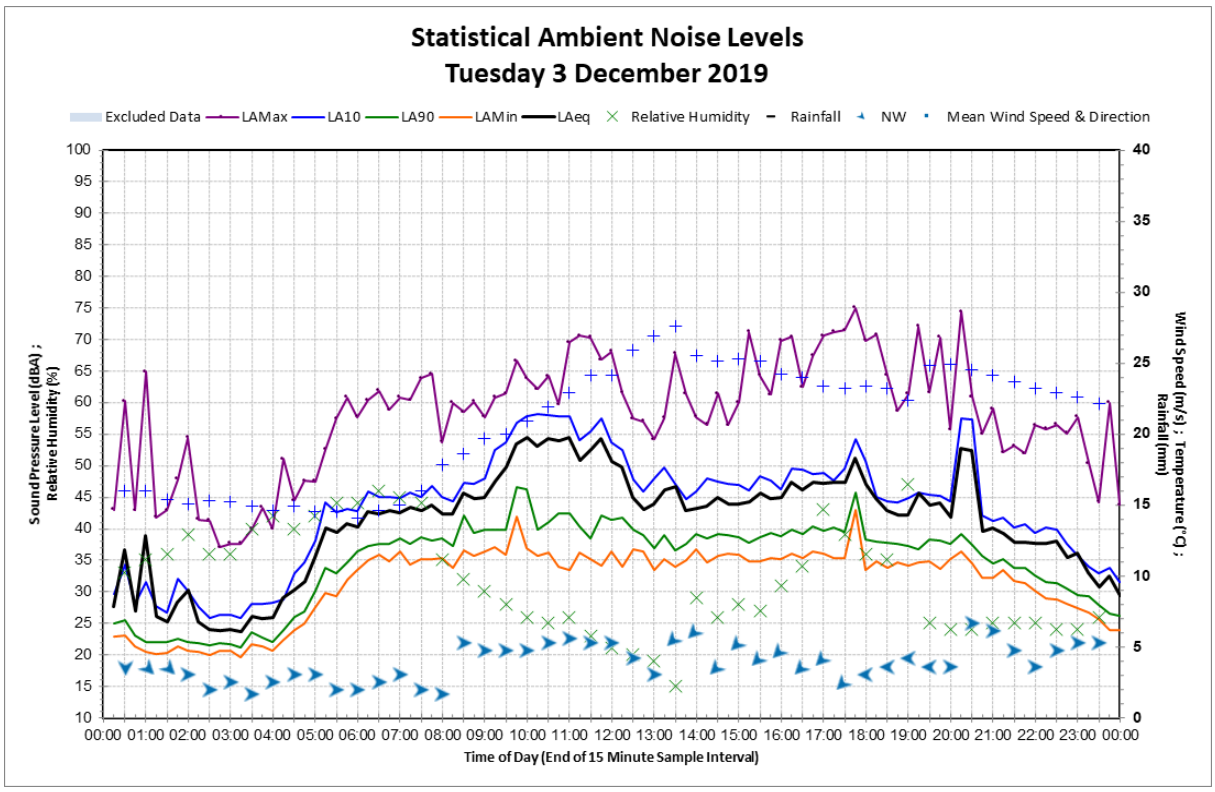
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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LAMin
LAeq
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Rainfall
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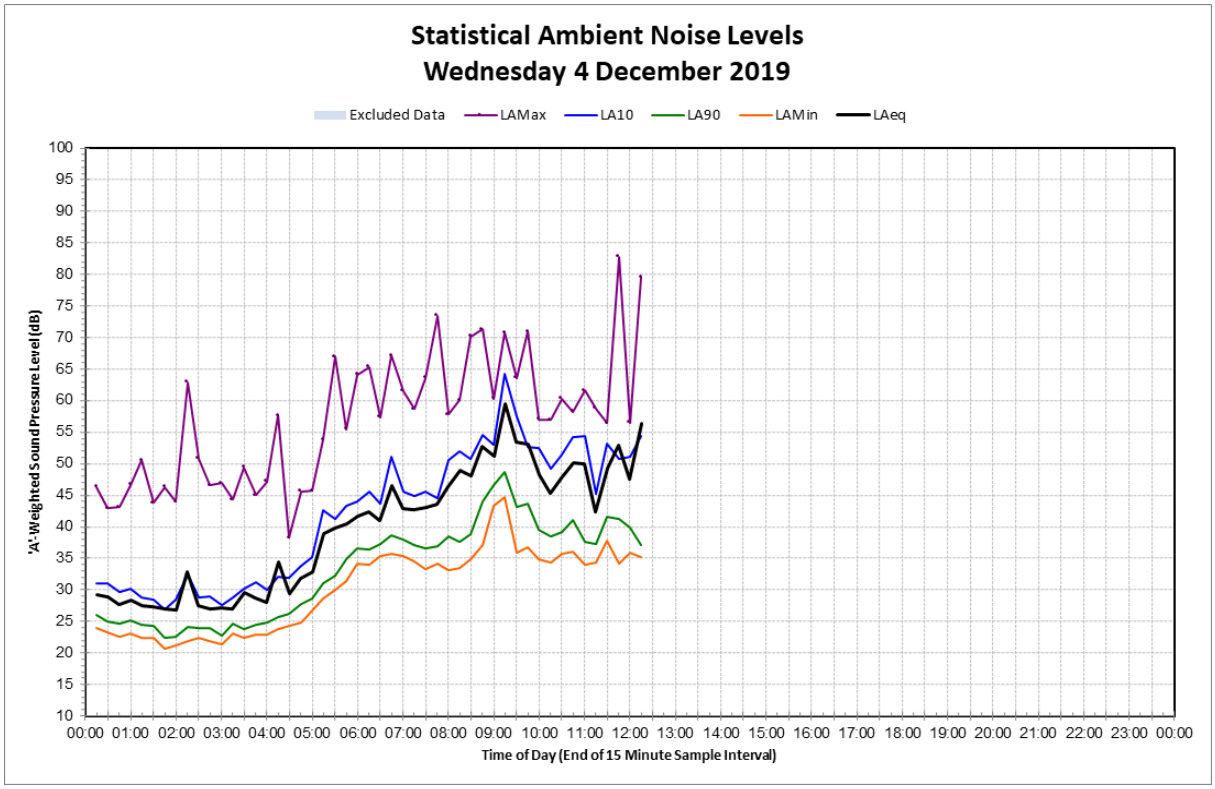
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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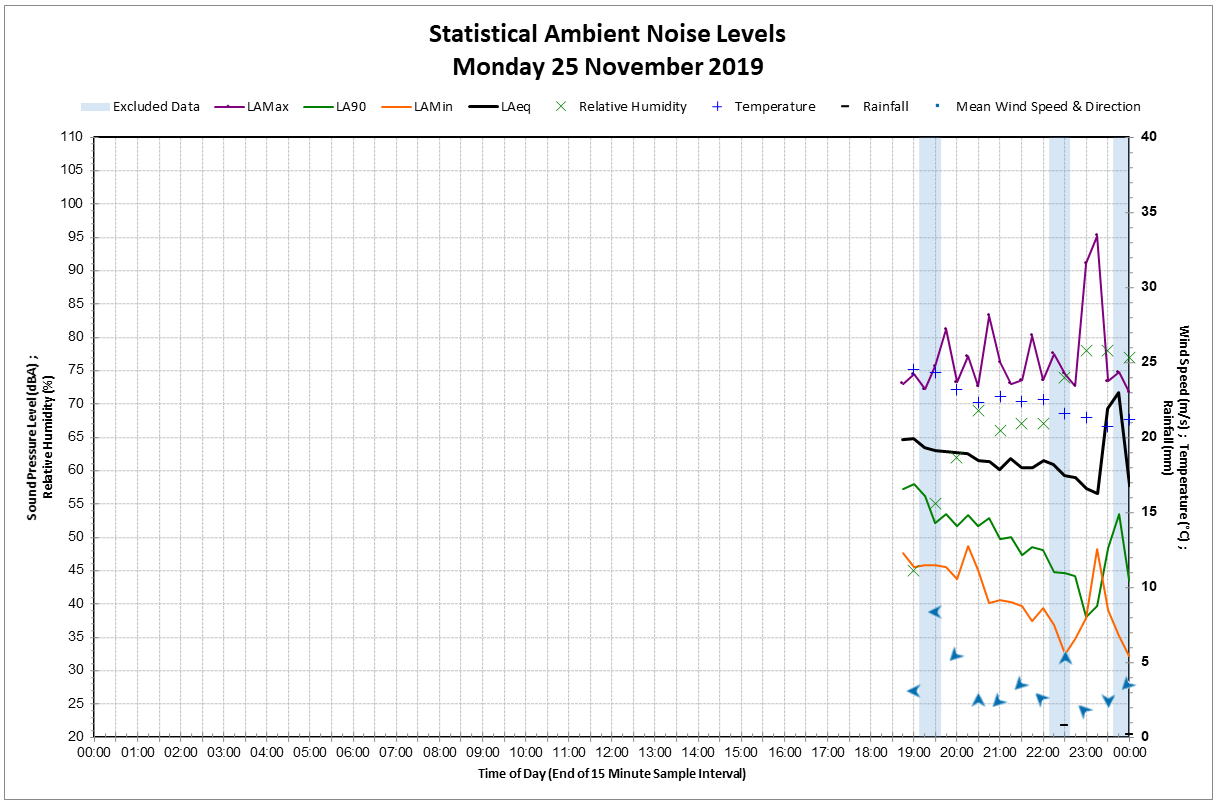
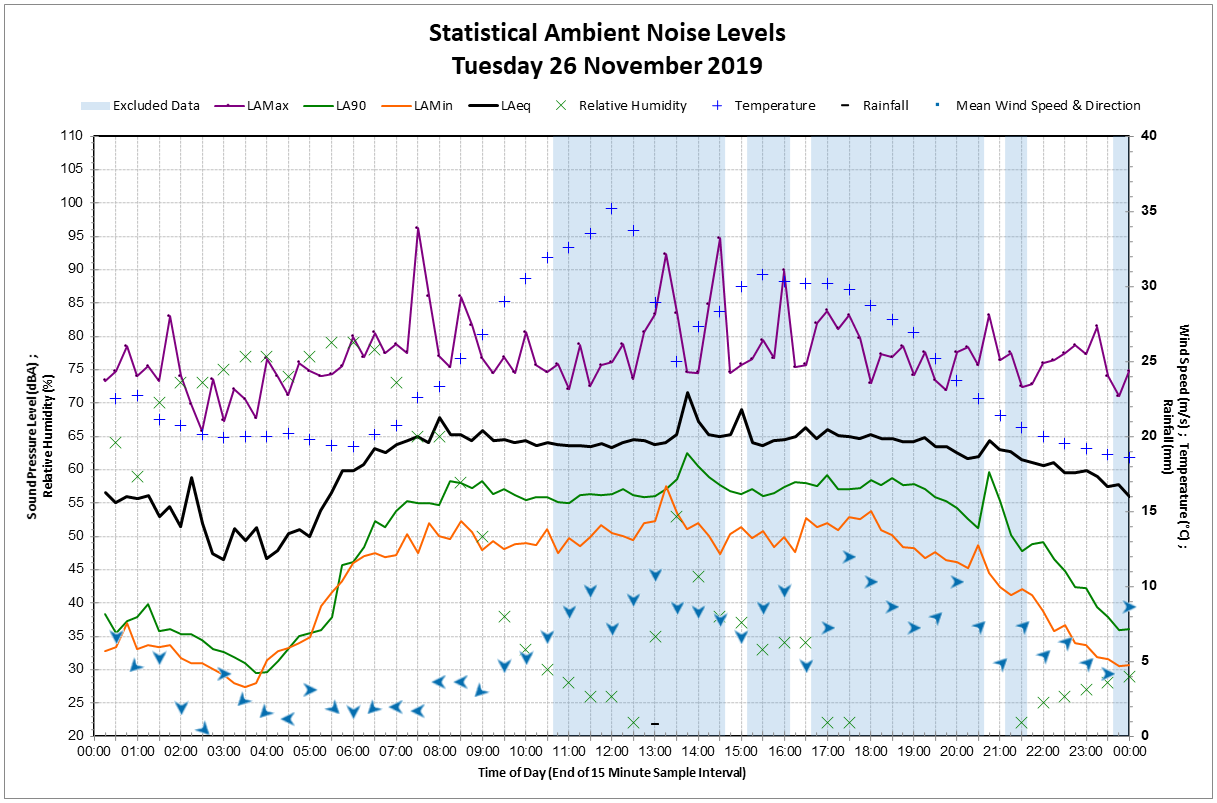
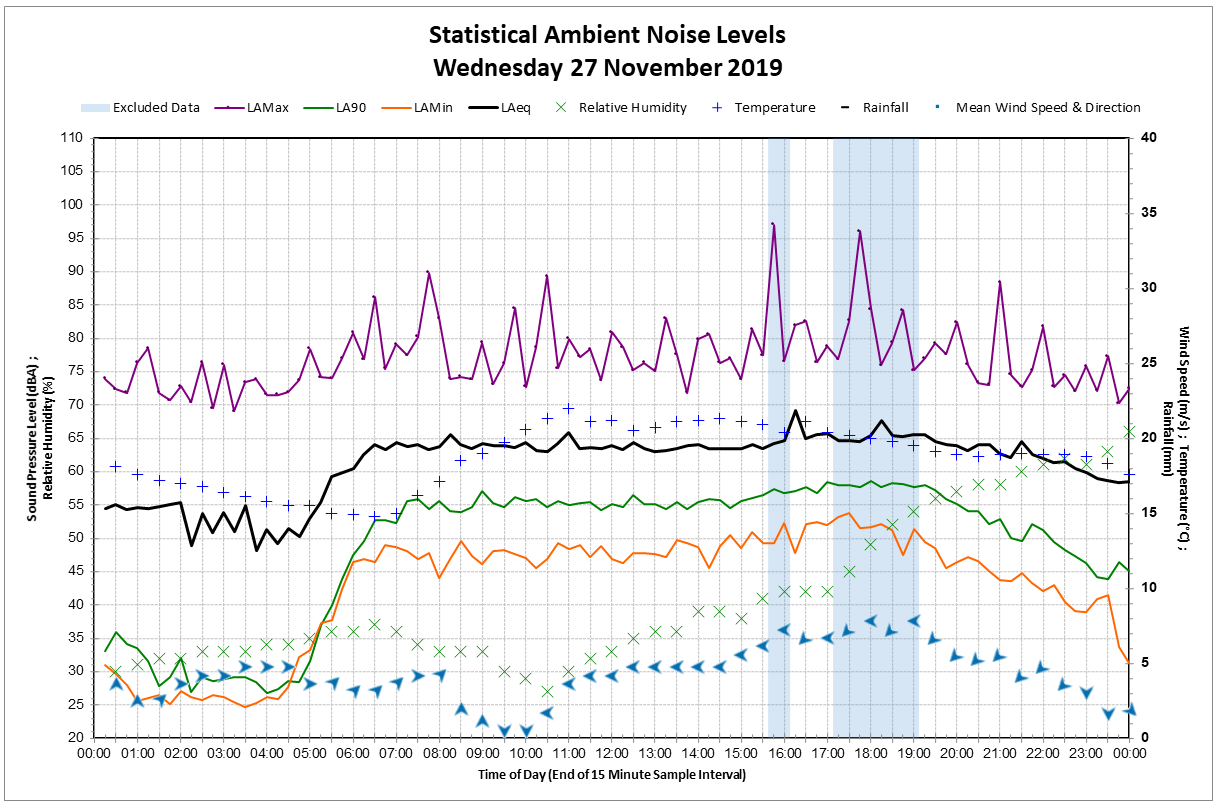
LAMin
LAeq
'A'-Weighted Sound Pressure Level (dB)
Time of Day (End of 15 Minute Sample Interval)

M2 – 399 Pittwater Road



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LAeq
Relative Humidity
Temperature
Rainfall
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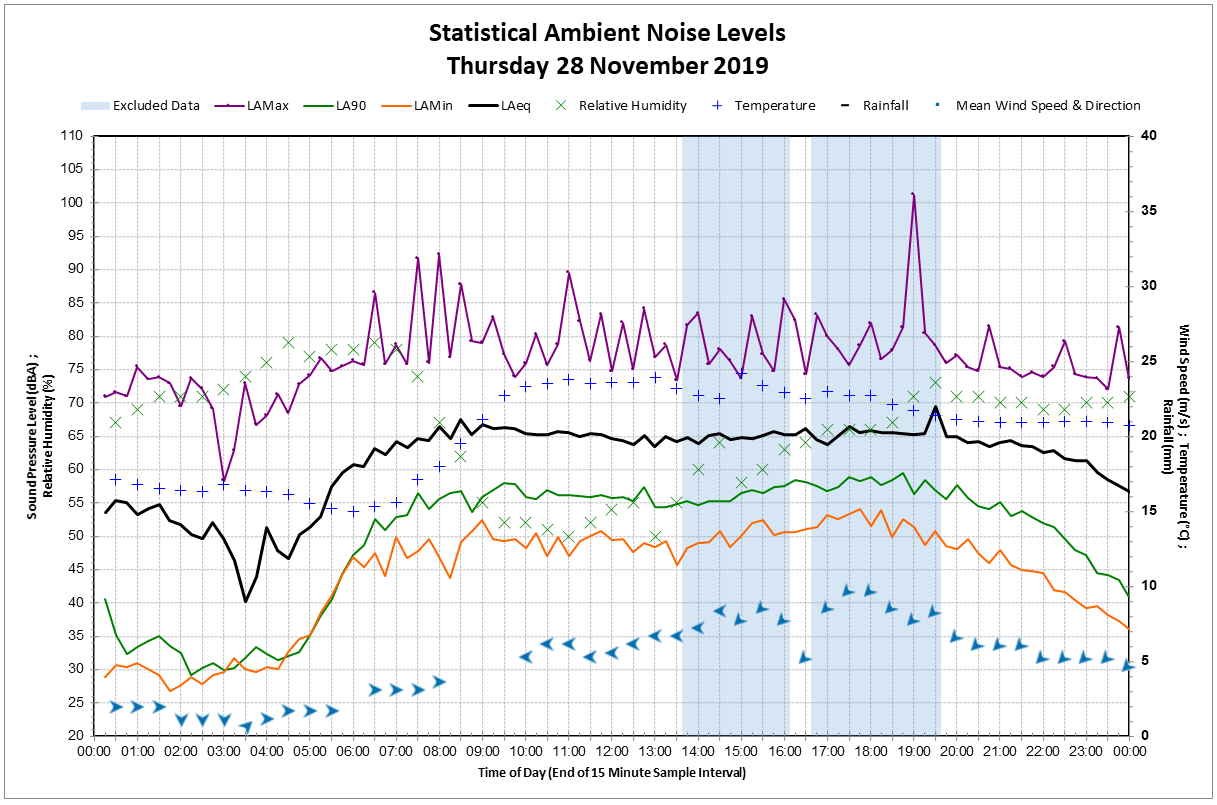
Sound Pressure Level (dBA) ; Relative Humidity (%)
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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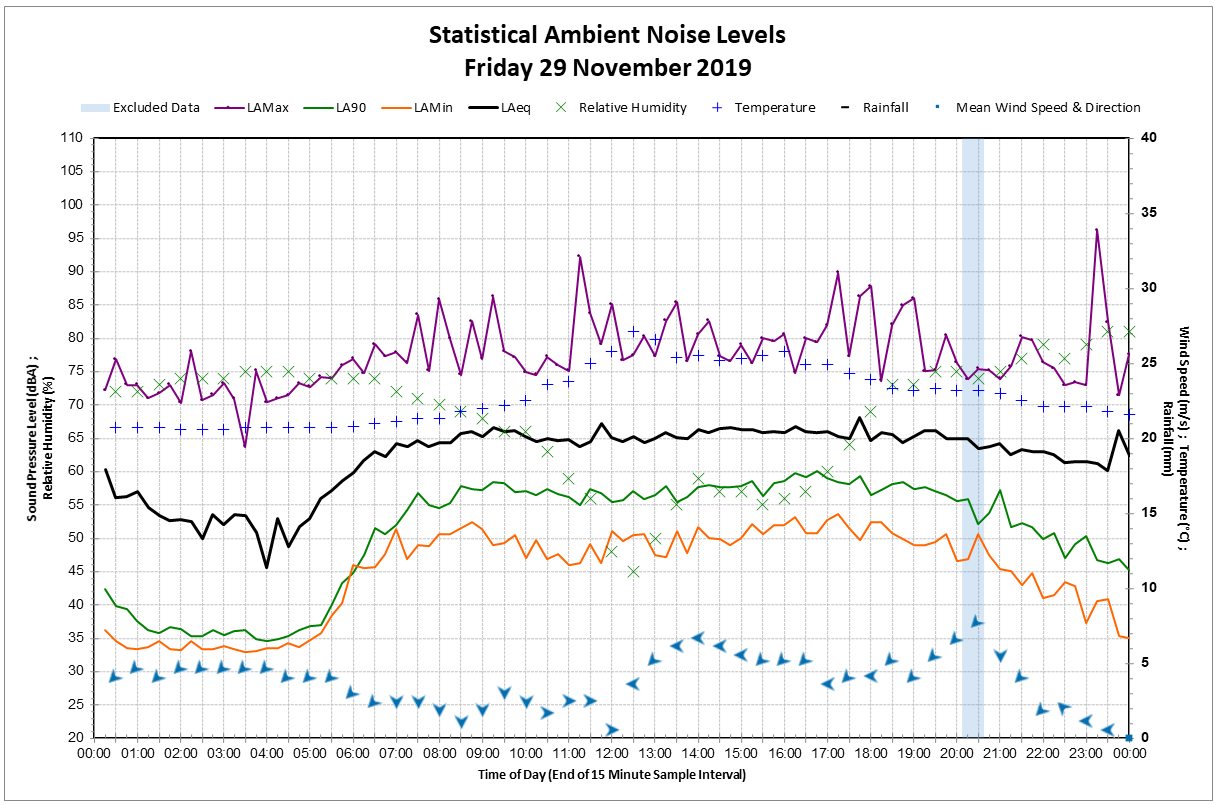
Time of Day (End of 15 Minute Sample Interval)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Relative Humidity
Temperature
Rainfall
Mean Wind Speed & Direction
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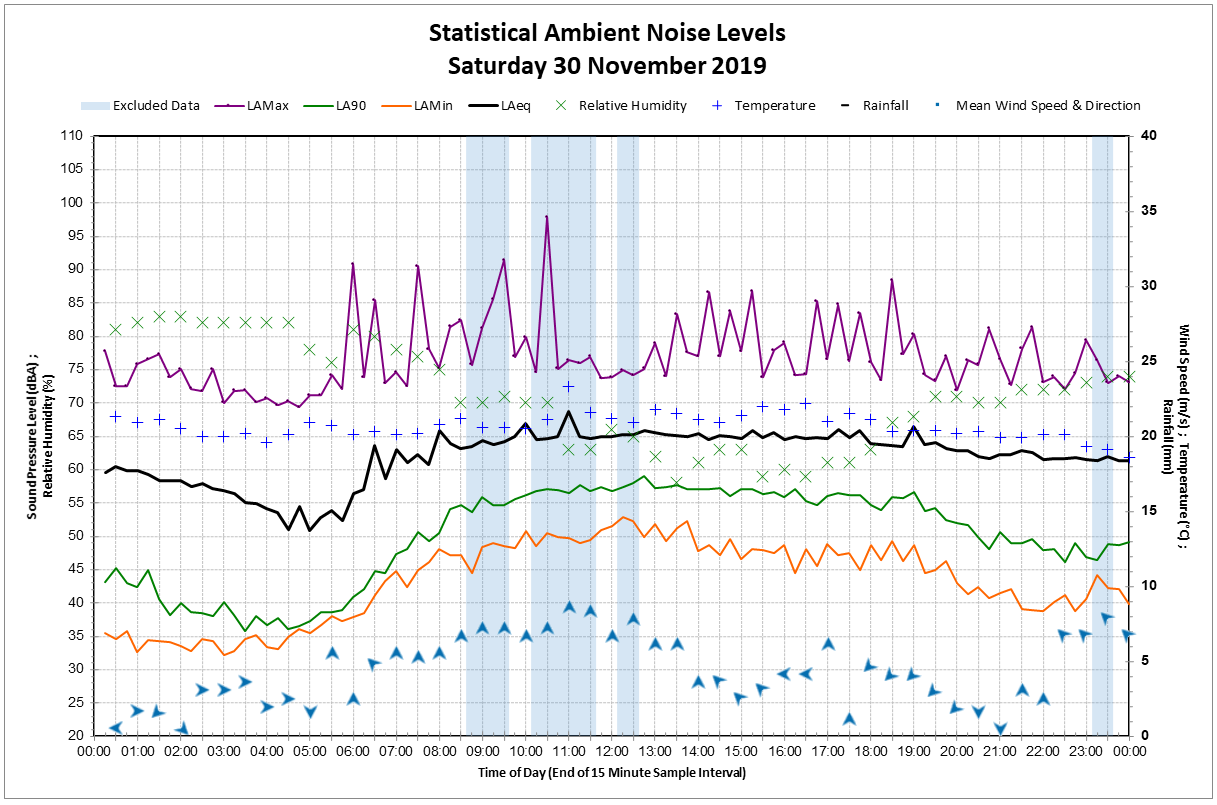
Wind Speed (m/s) ; Temperature (°C) ; Rainfall (mm)
Time of Day (End of 15 Minute Sample Interval)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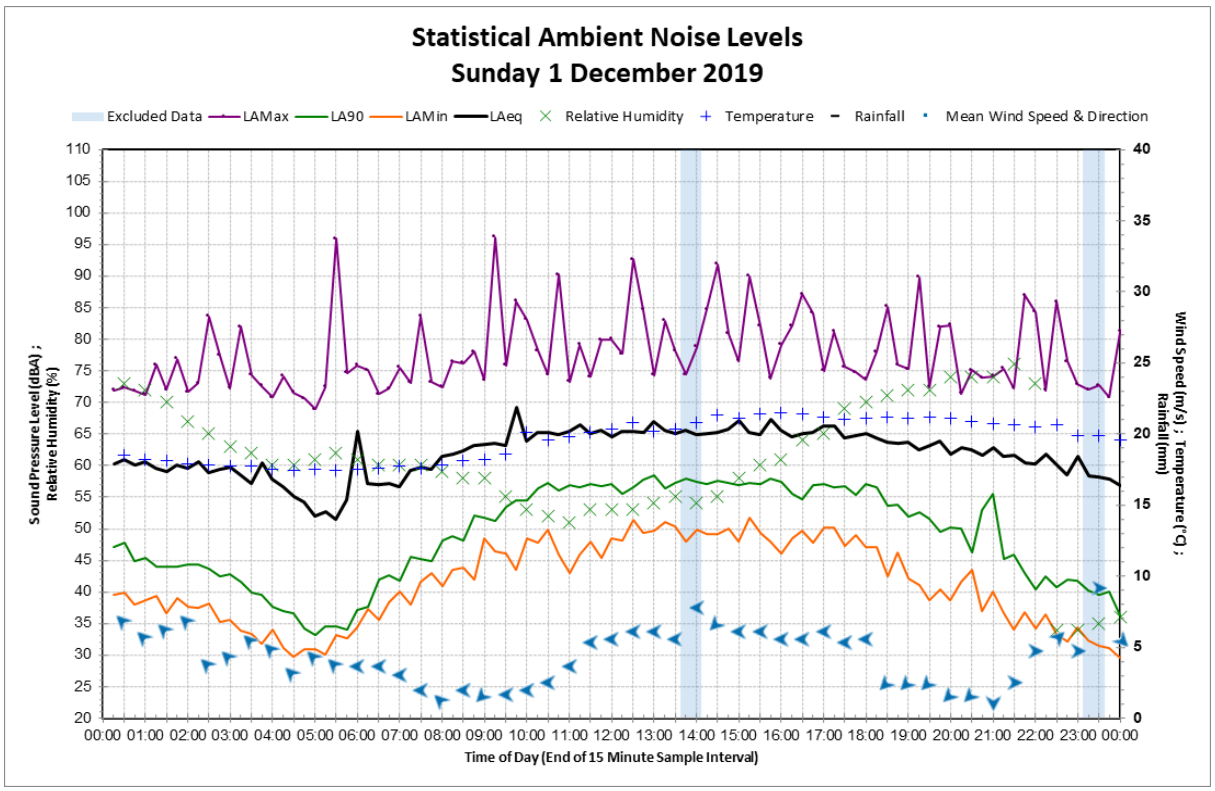
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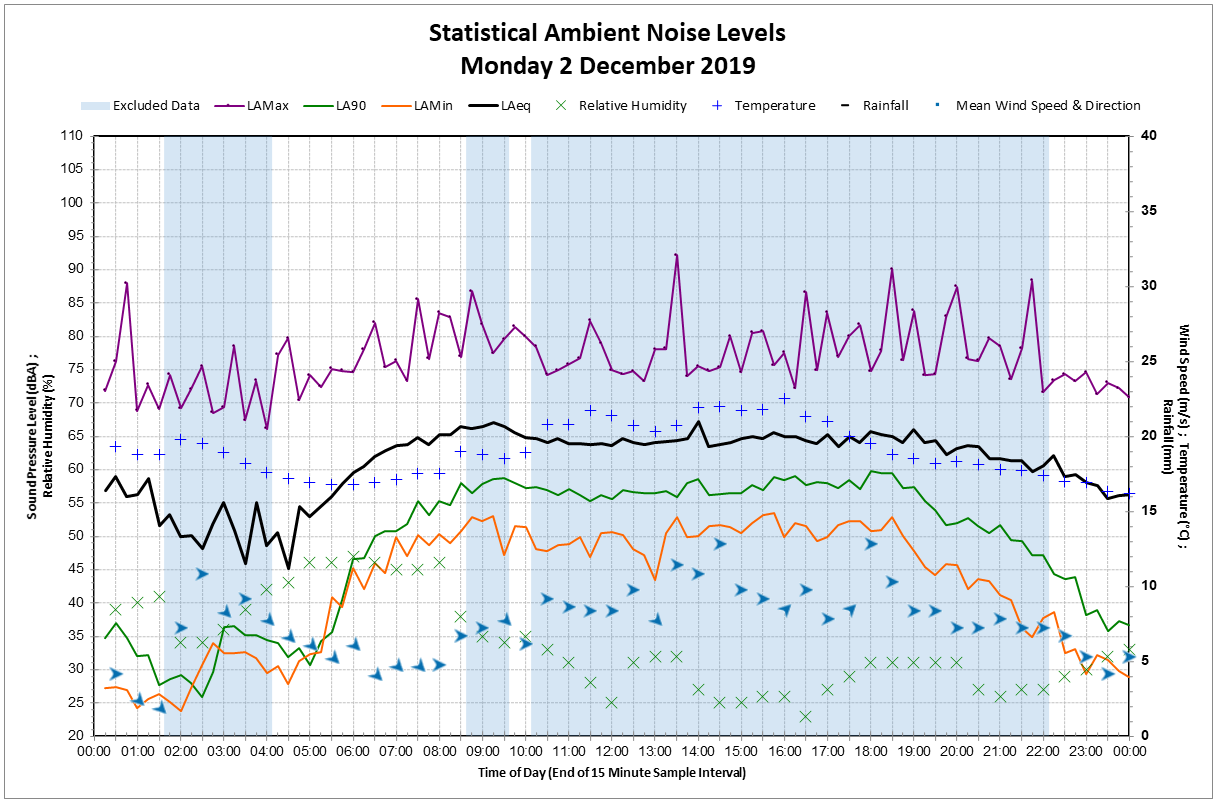
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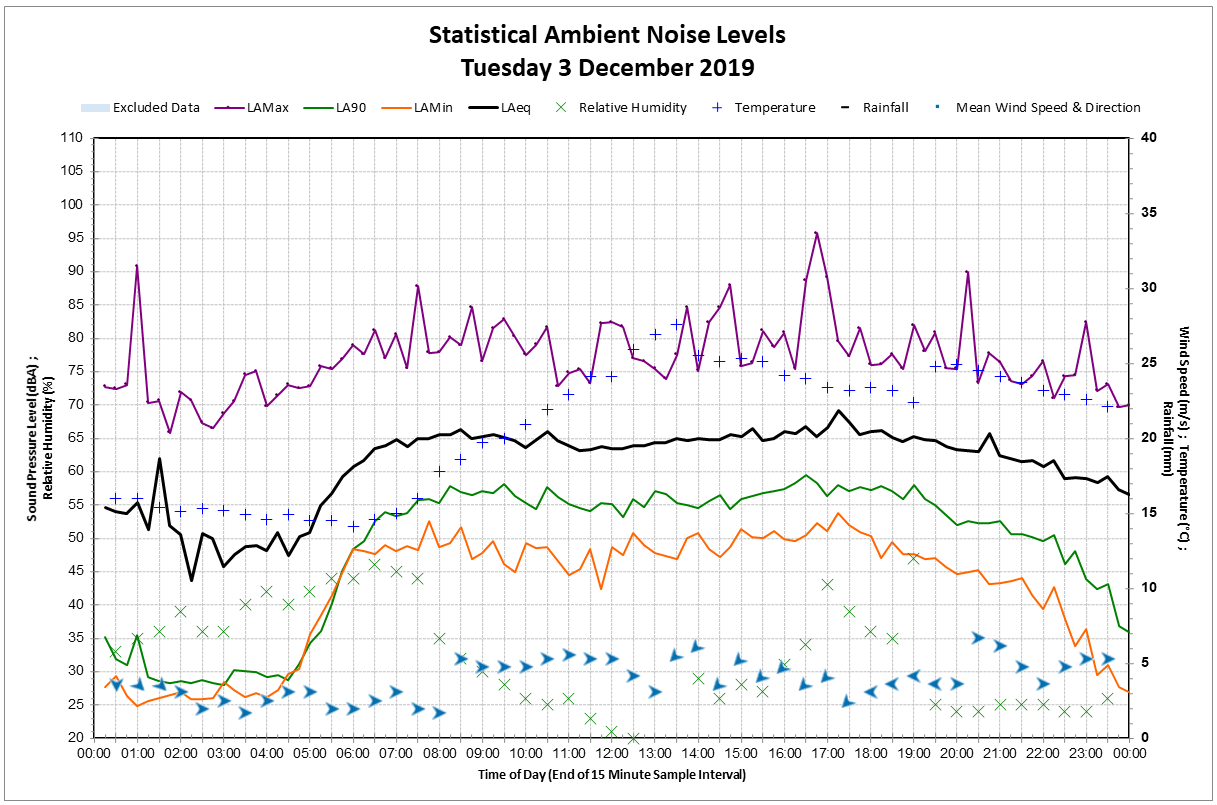
Time of Day (End of 15 Minute Sample Interval)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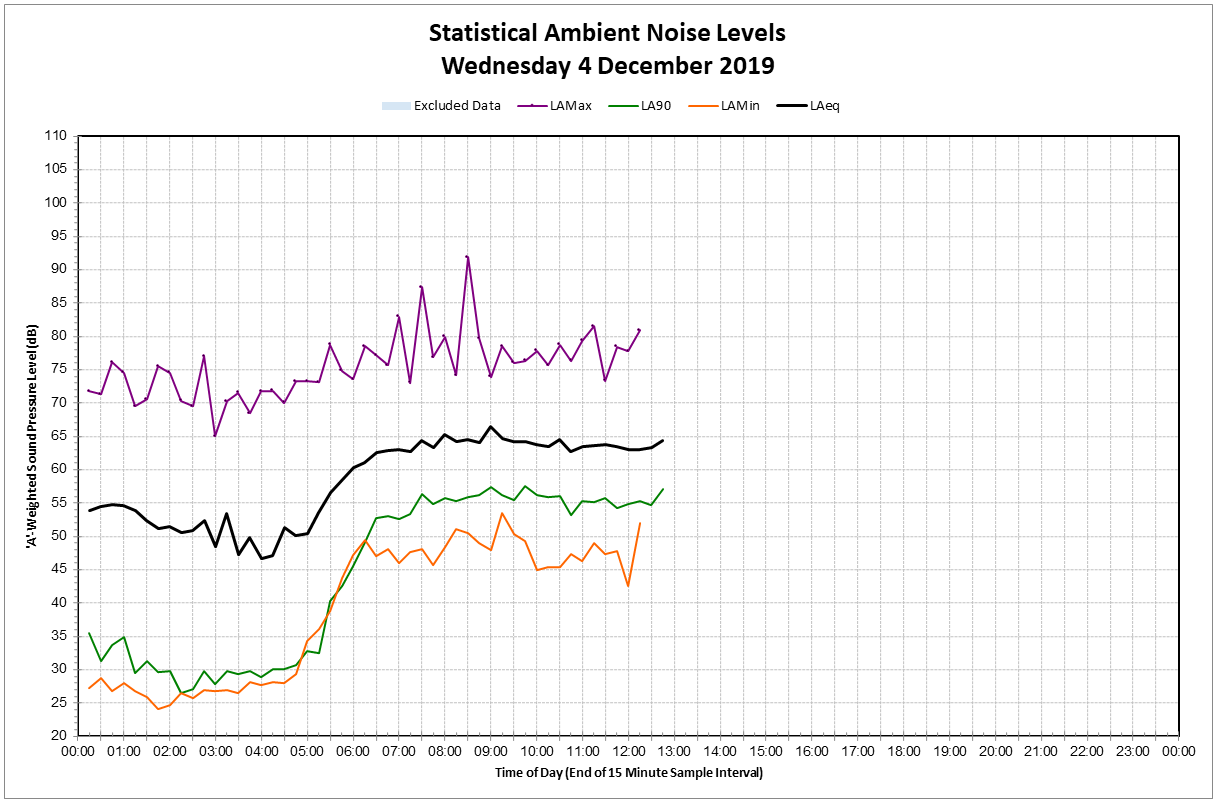
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LA90
LAMin
LAeq
'A'-Weighted Sound Pressure Level (dB)
Time of Day (End of 15 Minute Sample Interval)

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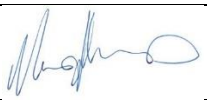
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	R.Browell/ A Bagby	C Gordon		E Milton		6/12/2019
1	C Gordon	M Velasco		E Smith		5/02/2020

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