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ACOUSTICAL REPORT

PEER REVIEW OF THE RENZO TONIN & ASSOCIATES REPORT

DATED 13/3/2025 (DA489/2024)

33 CROSS STREET, DOUBLE BAY

(INTERCONTINENTAL HOTEL DOUBLE BAY)

Date: Thursday, 3 April 2025

File Reference: 3950R20250403jt25WilliamStDoubleBay_IntercontinentalHotel

DOCUMENT CONTROL

Project title	Acoustical Report Peer Review of the Renzo Tonin Associates Report Dated 13/3/2025 (DA489/2024) 33 Cross Street, Double Bay (Intercontinental Hotel Double Bay)		
Project number	3950		
Document reference	3950R20250403jt25WilliamStDoubleBay_IntercontinentalHotel		
Document path	G:\Shared drives\KA Acoustics 2025\REPORT\Clubs and Restaurants\3950 (jt) 25 William St, Double Bay\3950R20250403jt25WilliamStDoubleBay_IntercontinentalHotel.docx		
Date	Author	Review	Notes
03/04/2025	JT	NK	Report available for issue
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ACOUSTICAL REPORT
PEER REVIEW OF THE RENZO TONIN ASSOCIATES REPORT DATED 13/3/2025
(DA489/2024)
33 CROSS STREET, DOUBLE BAY (INTERCONTINENTAL HOTEL DOUBLE BAY)

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1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was engaged to conduct a peer review of the Renzo Tonin Associates Report Dated 13/3/2025 (DA489/2024) for 33 Cross Street, Double Bay (Intercontinental Hotel Double Bay) on behalf of the surrounding residential premises, in particular, 25 William Street, Double Bay.

A peer review has been conducted of the noise measurements and modelling/calculations presented in the acoustical report prepared by Renzo Tonin & Associates (Reference: TP046-01D01 Acoustic Assessment for DA (r3), Date: 13.02.2025).

Koikas Acoustics has referred to previous noise logging surveys that have been conducted by Koikas Acoustics at 25 William Street between 23rd and 29th January 2020, and 31-33 William Street between 24th and 30th November 2022.

This report will hereafter refer to Koikas Acoustics as 'KA' and Renzo Tonin & Associates as 'RT&A'. To summarise, the peer review conducted by Koikas Acoustics found that:

- The ambient noise levels measured by RT&A were considerably higher than those measured by KA at 25 William Street and 31-33 William Street, and are not representative of the residential premises along William Street.
- The adopted noise criteria in the acoustical report prepared by RT&A are incorrect as they have relied upon elevated ambient noise levels and have considered the residents along William Street to be located in an 'Urban' area rather than a 'suburban' area as defined by the EPA's Noise Policy for Industry.
- The acoustical report prepared by RT&A does not provide sufficient details on the calculations and noise modelling that have been conducted to calculate the noise levels to surrounding residential premises.
- Given the measured ambient noise levels by RT&A are not representative of the residents along William Street, the adopted noise criteria have not been calculated correctly and there are insufficient details regarding the calculation and/or noise modelling, the recommendations and noise mitigation measures are unlikely to result in acceptable noise levels.



2.0 KOIKAS ACOUSTICS NOISE LOGGING SURVEYS

An unattended noise logging survey was conducted by KA between Thursday 23rd and Wednesday 29th January 2020 near the western boundary of 25 William Street, Double Bay NSW (Location A) at approximately 1.5 metres above the natural ground level in 'free-field' conditions, ie. ≥ 3.5 metres from any reflective façade.

Another unattended noise logging survey was conducted by KA between Thursday 24th and Wednesday 30th November 2022 near the western boundary of 31-33 William Street, Double Bay NSW (Location B) at approximately 1.5 metres above the natural ground level in 'free-field' conditions, ie. ≥ 3.5 metres from any reflective façade.



Figure 1. Noise logging locations and the Intercontinental Hotel – Image from Six Maps

A Type 1 Nti XL2 sound level meter was used for these noise surveys. The instrument was set up to measure sound pressure levels as 'A' frequency weighting and 'Fast' time response. Noise levels

were stored within the logger memory at 15-minute intervals on the quarter-hour.

A NATA-calibrated and certified Larson Davis CAL200 precision acoustic calibrator was used to field calibrate the sound level meter before and after the noise survey. No system drift was observed for this sound level meter.

BOM weather records for the nearest available weather station indicate that inclement weather conditions may have impacted the noise survey. Noise data from affected periods throughout the survey were removed following standard requirements of the NSW Environmental Protection Authority (EPA).

It was observed that in the absence of the mechanical plant from the adjoining premises as observed on the Sunday of the 2020 noise survey conducted by KA, the ambient background noise level measured during the daytime period at 25 William Street, was $L_{A90, \text{Daytime}}$ 39 dB and was considered representative of the typical ambient noise level in the absences of the mechanical plant.

The owner of 25 William Street and the Hotel have come to an agreement to install a 2-meter high noise barrier along the rear wall to ensure the noise from the condenser units are below the ambient background noise level of $L_{A90, \text{Daytime}}$ 39 dB. Similarly, the noise from the Intercontinental Hotel during the daytime and evening periods should be below $L_{A90, \text{Daytime}}$ 39 dB when measured at the most affected area of 25 William Street.



A summary of the noise survey data is presented below.

Table 1. Summary of noise logger results conducted by Koikas Acoustics [dB]				
Location	Period, T ¹	Ambient noise level L _{Aeq}	Rating background level L _{A90}	Traffic noise level ² L _{Aeq, Period}
25 William Street, Double Bay NSW (Location A)	Day	55	48 (39) ³	55
	Evening	55	41 (39) ³	
	Night	47	33	47
31-33 William Street, Double Bay NSW (Location B)	Day	53	38	52
	Evening	51	37	44
	Night	44	31	
Notes	1. The NSW EPA Noise Policy for Industry (NPfi) refers to: Daytime: 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays. Evening: 6 pm – 10 pm Monday to Sunday Night: 10 pm - 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays. 2. The EPA/RMS/NSW DoP refers to: Daytime: 7 am – 10 pm seven days per week. Night: 10 pm - 7 am seven days per week 3. It was observed that in the absence of the mechanical plant from the adjoining premises, the ambient background noise level measured during the daytime period at 25 William Street, was L_{A90, Daytime} 39 dB.			

Daily logger graphs are attached in **Appendix A**.



3.0 PEER REVIEW OF ACOUSTICAL REPORT PREPARED BY RENZO TONIN & ASSOCIATES

Koikas Acoustics has reviewed the acoustical report prepared by RT&A (Reference: TP046-01D01 Acoustic Assessment for DA (r3), Date: 13.02.2025) and identified the following points of contention or areas where additional information is required.

3.1 EXISTING AMBIENT NOISE LEVELS

RT&A has conducted two noise-logging surveys between 1st and 10th July 2024 at the following locations:

- Location L1 was located on the southern end of The Intercontinental Hotel and was representative of the residences along Cross Street.
- Location L2 was located on the northern end of The Intercontinental Hotel and was representative of the residences to the north of the site.

KA has made reference to previous noise logging surveys that have been conducted at 25 William Street between 23rd and 29th January 2020, and 31-33 William Street between 24th and 30th November 2022. The relevant noise logger locations from KA and RT&A are shown in Figure 1.

The ambient background noise levels measured by RT&A at Location L2 and KA are summarised in Table 2 for the residences along William Street.

Table 2. Summary of noise logger results [dB]			
Period, T ¹	25 William Street (KA - Location A)	31-33 William Street (KA - Location B)	Northern end of The Intercontinental Hotel (RT&A - Location L2)
Day	39 Note 2	38	45
Evening	39 Note 2	37	42
Night	33	31	40
Notes	1. The NSW EPA Noise Policy for Industry (NPfI) refers to: Daytime: 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays. Evening: 6 pm – 10 pm Monday to Sunday Night: 10 pm - 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays. 2. It was observed that in the absence of the mechanical plant from the adjoining premises, the ambient background noise level measured during the daytime period at 25 William Street, was L_{A90, Daytime} 39 dB.		



3.1.1 Incorrect noise logging survey location

No details have been provided regarding the height of the microphones in the acoustical report prepared by RT&A, however, it appears that the noise logger installed by RT&A at Location L2 was installed outside the balcony of the existing hotel room approximately 10 meters above the residential premises at 25 William Street (Location A) and 31-33 William Street (Location B), as seen in Figure 2.

The noise logger installed by RT&A at Location L2 was at an elevated level that was exposed to significantly more ambient noise from the surrounding area and is not indicative of the ambient noise profile along the ground at 25 William Street (Location A) and 31-33 William Street (Location B).

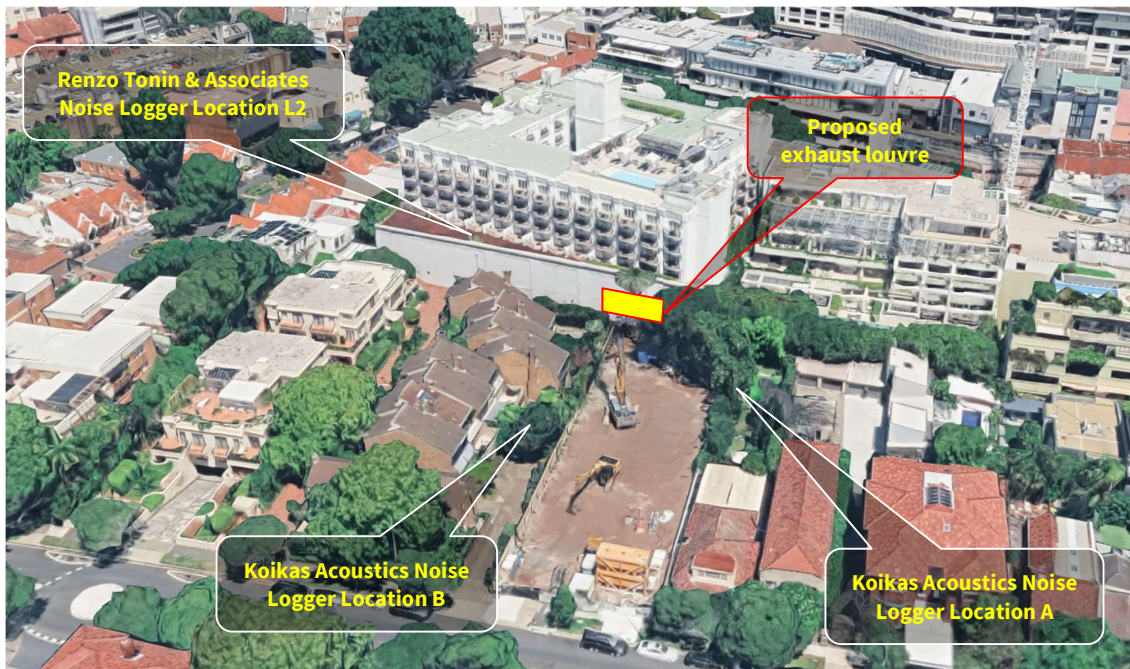


Figure 2. Noise logging locations, proposed exhaust louvre and the Intercontinental Hotel – Image from Google Maps

3.1.2 Excessive rainfall

There was no mention in the acoustical report prepared by RT&A of the rainfall observation during their noise logging survey. A review of the daily rainfall at the nearest BOM weather station (Sydney Botanical Garden) indicated significant rainfall of 2.8-13.2 mm for eight of the ten days of monitoring (see **Appendix B**).

There is no indication in the acoustical report prepared by RT&A that the excessive rainfall during their noise logging survey has been considered and given the excessive rainfall over a majority of the noise logging survey, re-monitoring is required in accordance with the EPA's Noise Policy for Industry.

3.1.3 Difference in measured noise levels

KA has measured ambient background noise levels to be lower than those measured by RT&A at Location L2 by:

- 7 dB during the daytime period (0700 to 1800 hours);
- 5 dB during the evening period (1800 to 2200 hours), and
- 9 dB during the night-time period (2200 to 0700 hours).

The noise logger installed by RT&A at Location L2 was exposed to significantly more ambient noise from the surrounding area which is not indicative of the ambient noise profile along the ground at 25 William Street (Location A) and 31-33 William Street (Location B). Furthermore, excessive rainfall occurred for over 80% of the noise logging survey and would require re-monitoring in accordance with the EPA's Noise Policy for Industry.

3.2 NOISE CRITERIA

3.2.1 Background noise-dependent criteria are incorrect

KA generally agrees with the adoption of the EPA's Noise Policy for Industry for plant and equipment, and the standard licence conditions for the Office of Liquor and Gaming NSW (L&GNSW) for patron and music noise.

However, given the adopted noise criteria are based upon the measured ambient noise levels, the actual noise criteria are expected to be significantly lower, particularly in octave band centre frequencies for the reasons discussed in Section 3.1 of this report.

3.2.2 Incorrect classification in accordance with the EPA's Noise Policy For Industry

RT&A have considered the nearby residential receivers to be located in an **urban residential area** and therefore adopted the urban residential amenity noise levels outlined in the EPA's Noise Policy for Industry.



It is KA professional opinion that the residential premises along William Street are located in a **suburban residential area** for the following reasons:

- R2 low-density residential zoning (this is typical planning zoning for a **suburban residential area** as outlined in the EPA's Noise Policy for Industry)
- Daytime RBL are 38-39 dB(A) (this is typical existing background noise level for a **suburban residential area** as outlined in the EPA's Noise Policy for Industry)
- Evening RBL are 37-39 dB(A) (this is typical existing background noise level for a **suburban residential area** as outlined in the EPA's Noise Policy for Industry)
- Night-time RBL are 31-33 dB(A) (this is typical existing background noise level for a **suburban residential area** as outlined in the EPA's Noise Policy for Industry)
- The EPA's Noise Policy for Industry has the following descriptions:
 - **'suburban'** as 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'** 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
 - The definition of **'suburban'** aligns much more with the ambient profile of the residential premises along William Street.

The **'suburban'** amenity noise levels are 5 dB lower for each period of the day than the **'urban'** amenity noise levels, and therefore a 5 dB more stringent amenity noise level should be adopted.



3.3 CALCULATIONS AND NOISE MODELLING METHODOLOGY

3.3.1 *No details on the calculations and/or noise modelling software*

The acoustical report prepared by RT&A presents predicted noise emissions from patrons and music in the café/restaurant area, however, has not provided any details on how the noise was predicted, if/what noise modelling software was utilised and the respective noise parameters adopted for the calculations.

Furthermore, no predicted noise levels have been considered for the cinema, foyer and mechanical plant.

3.3.2 *Insufficient details of the source noise levels*

There is insufficient detail on the source noise levels in the acoustical report prepared by RT&A . RT&A do not describe if the source noise levels are based on previous noise measurements, published data, and/or have been calculated. Details on the parameters should be included such as how many patrons, vocal effort, area, surface finishes, etc, and what (if any) corrections have been made.

The recommended music noise limits do not seem realistic nor practical for the respective use and there are no details on how they have been derived in the acoustical report.

3.3.3 *Insufficient assessment of mechanical plant and equipment*

Furthermore, no predictions have been made regarding the mechanical plant and equipment noise emissions. Whilst KA agrees the details are typically not known at the DA stage, it is KA's professional opinion that an indicative assessment should be conducted with indicative equipment to determine where the development can achieve the adopted noise criteria through practical and feasible noise mitigation measures.

The development is proposing louvres (approximate location indicated in Figure 2) on the northern façade with a direct line of sight to multiple residential premises along William Street. There is a practical limitation on the effectiveness of any acoustic louvre as it will impede airflow and there is limited spacing between the chiller plant room to the louvres for acoustic treatment, as seen in Figure 3.



Section View of Basement Air-Cooled Chiller

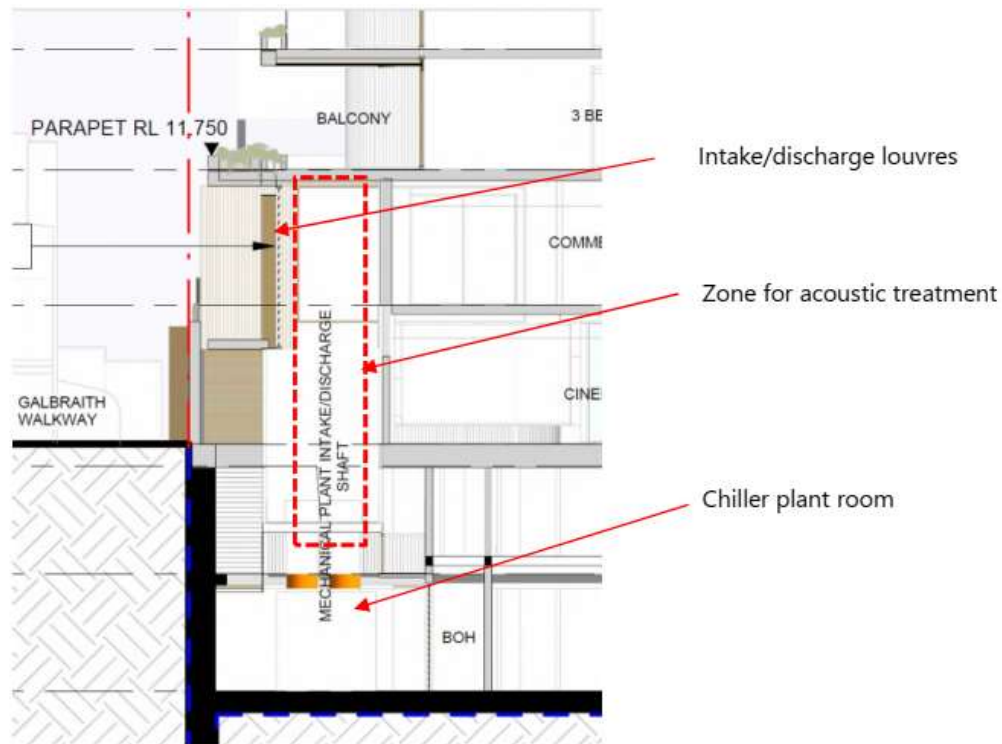


Figure 3. Section view of the mechanical shaft – Image from Renzo Tonin & Associates Acoustical Report

3.3.4 No assessment of the cinema

Breakout noise from the cinema has not been considered in the acoustical report prepared by RT&A.

4.0 CONCLUSION

Koikas Acoustics Pty Ltd was engaged to conduct a peer review of the redevelopment proposal for 33 Cross Street, Double Bay (Intercontinental Hotel Double Bay) on behalf of the surrounding residential premises, particularly 25 William Street, Double Bay.

The review focused on the noise measurements and modelling/calculations presented in the acoustical report prepared by Renzo Tonin & Associates. Koikas Acoustics also referenced previous noise logging surveys conducted at 25 William Street and 31-33 William Street.

To summarise, the peer review conducted by Koikas Acoustics found that:

- RT&A measured ambient noise levels were considerably higher than those measured by KA at 25 William Street and 31-33 William Street. RT&A incorrectly located the loggers and failed to take account of the impact of heavy rainfall.
- Renzo failed to provide adequate details on calculations and software for predicted noise emission or any meaningful assessment of the cinema and mechanical plant noise levels.
- Their recommended music noise limits appear unrealistic for the premises.
- Based on the deficiencies of the RT&A report, it cannot be relied upon as an assessment of the acoustic impacts of the proposed development and the recommended noise mitigations are unlikely to result in acceptable noise level.



APPENDIX A

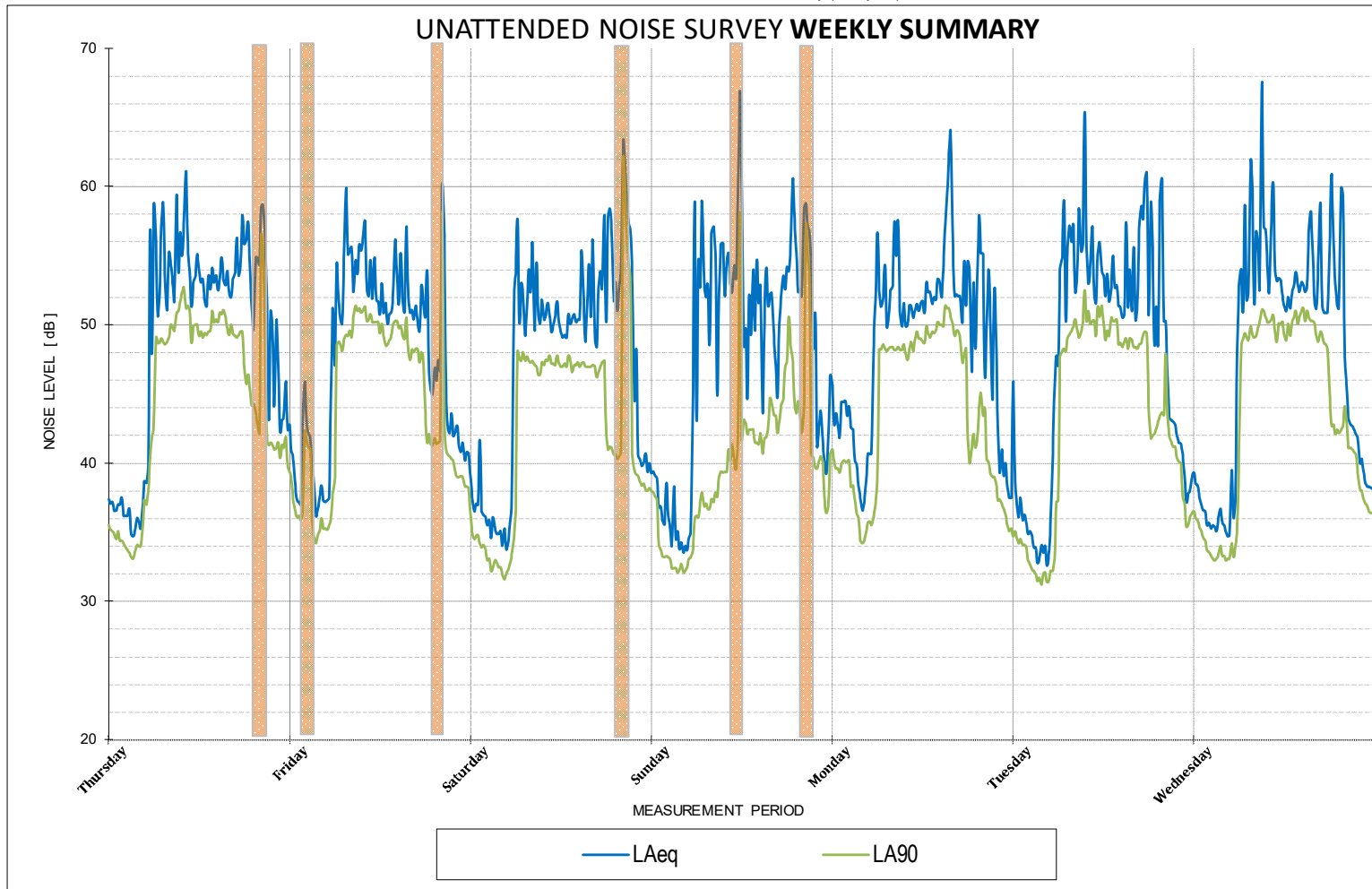
A P P E N D I X A

APPENDIX A

WEEKLY SUMMARY

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

PERIOD: 23rd to the 29th January 2020



Sundays and Public Holidays the hours change to 0800

Noise measurements were affected by extraneous noise events.

Mechanical plant noise.

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	LA90 Evening	LA90 Night-time
Day 1, Thursday	49	41	34
Day 2, Friday	48	40	35
Day 3, Saturday	47	40	32
Day 4, Sunday	39	41	32
Day 5, Monday	48	39	35
Day 6, Tuesday	48	41	32
Day 7, Wednesday	49	41	33
RBL	48	41	33

	LAeq Daytime	LAeq Evening	LAeq Night-time
Day 1, Thursday	55	55	48
Day 2, Friday	54	51	46
Day 3, Saturday	52	57	46
Day 4, Sunday	56	56	49
Day 5, Monday	55	53	47
Day 6, Tuesday	56	54	47
Day 7, Wednesday	56	55	46
Average	55	55	47

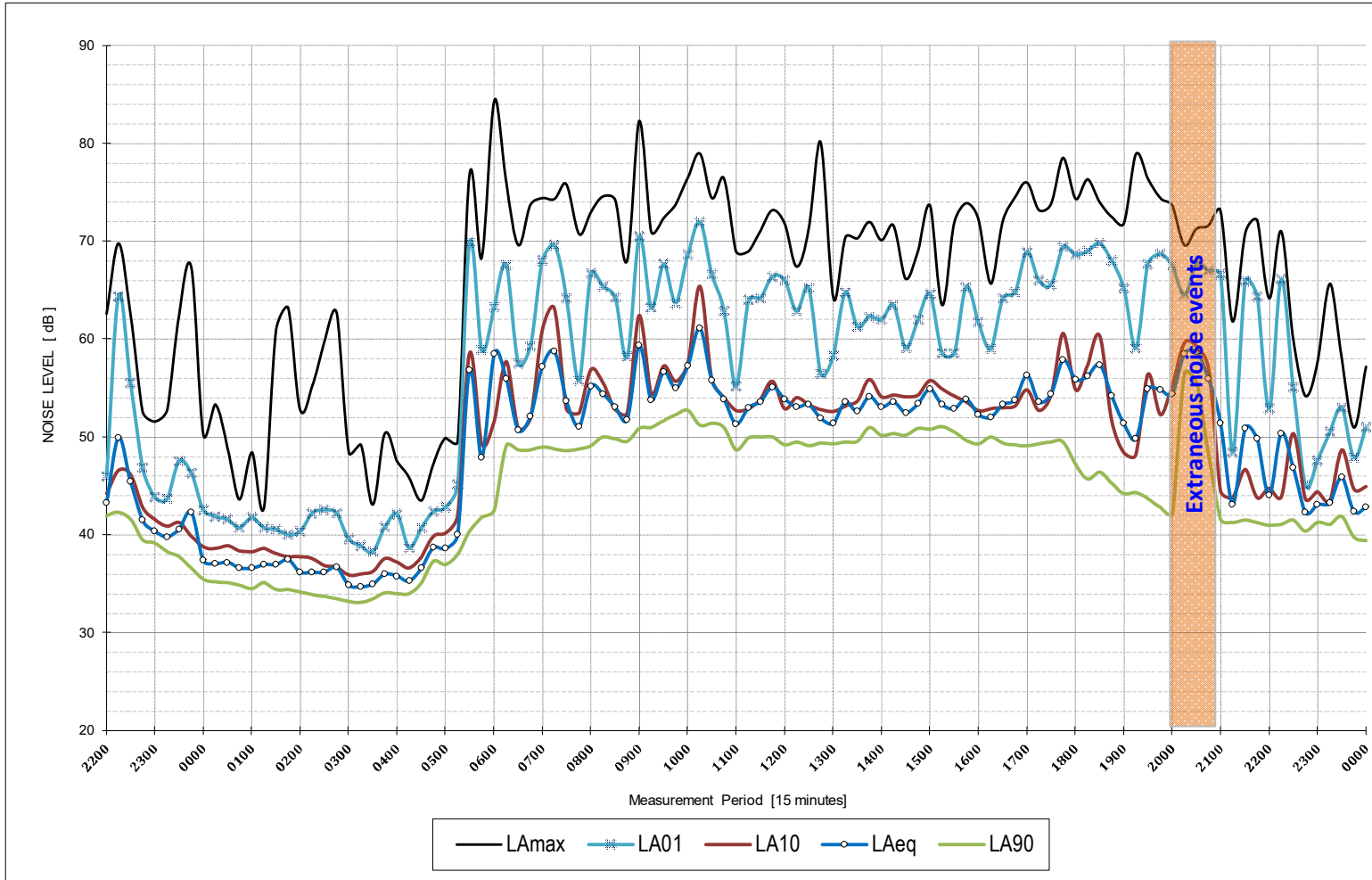
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	55	dB
LAeq 9 hrs	2200-0700	47	dB
Max LAeq 1 hr	0700-2200	57	dB
Max LAeq 1 hr	2200-0700	49	dB

DAY 1

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Thursday, 23 January 2020



Noise measurements were affected by extraneous noise events.

Mechanical plant noise.

AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	49	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	34	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	55	dB
LAeq Night-time	2200-0700	48	dB

TRAFFIC & MISC. NOISE METRICS

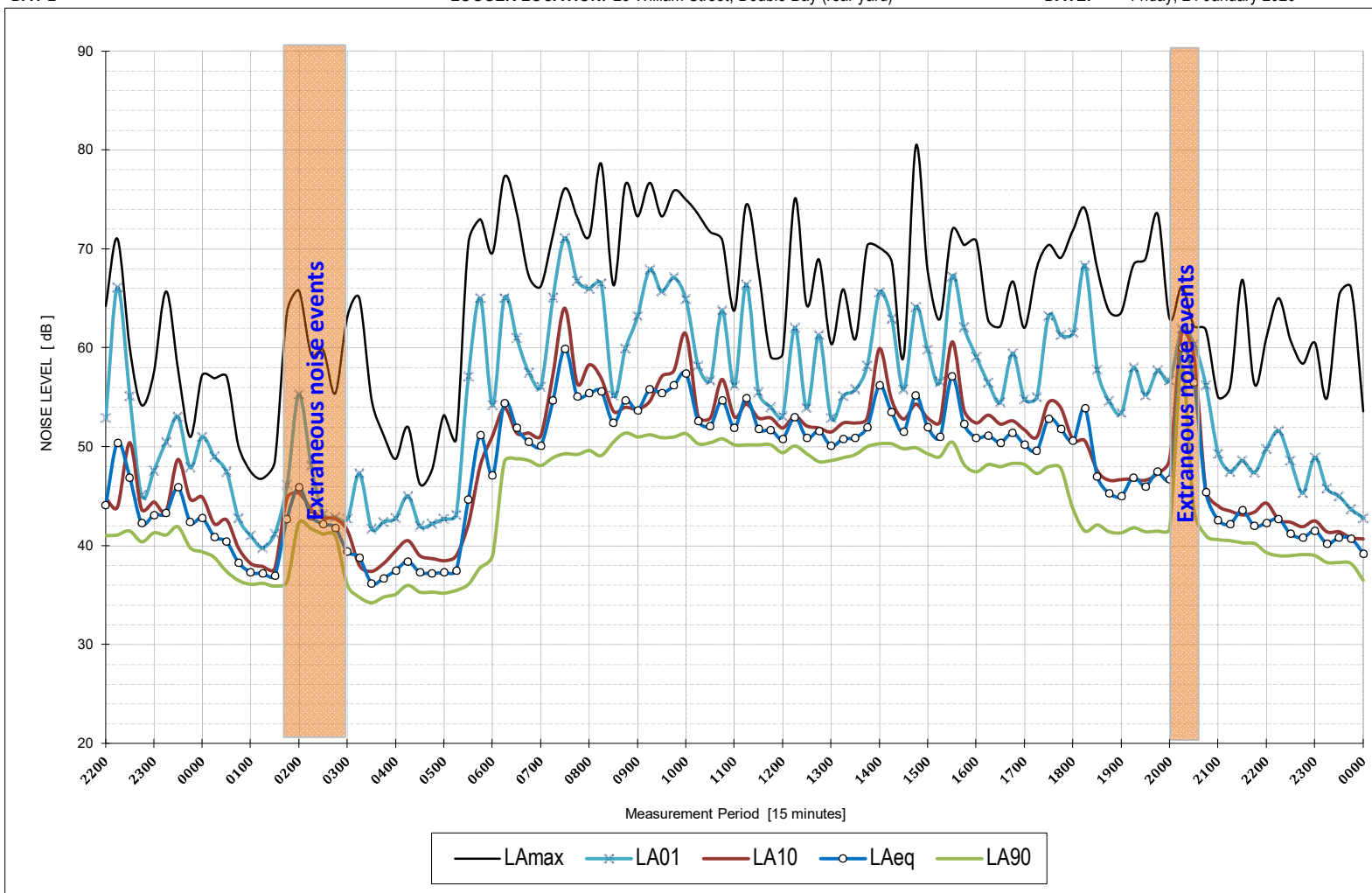
LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	54	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Max} - L_{Aeq} \geq 15$]	18
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DAY 2

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Friday, 24 January 2020

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	48	dB
LA90 Evening	1800-2200	40	dB
LA90 Night-time	2200-0800	35	dB
L _{Aeq} Daytime	0700-1800	54	dB
L _{Aeq} Evening	1800-2200	51	dB
L _{Aeq} Night-time	2200-0700	46	dB

TRAFFIC & MISC. NOISE METRICS

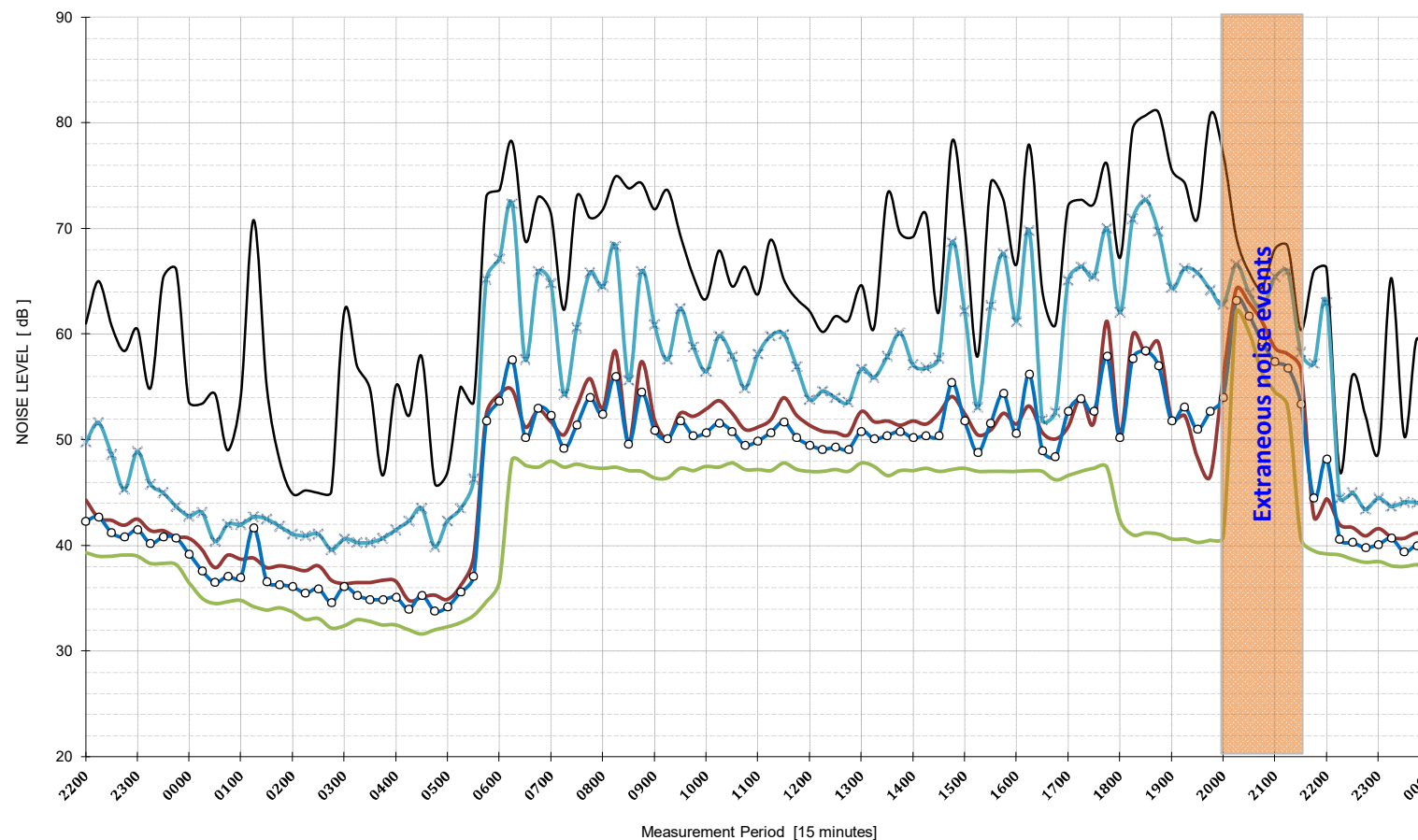
L _{Aeq} 15 hours	0700-2200	53	dB
L _{Aeq} 9 hours	2200-0700	46	dB
Max L _{Aeq} 1 hour	0700-2200	56	dB
Max L _{Aeq} 1 hour	2200-0700	47	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Amax} - L_{Aeq} \geq 15$]	19
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DAY 3

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Saturday, 25 January 2020



Noise measurements were affected by extraneous noise events.

Mechanical plant noise.

AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	47	dB
LA90 Evening	1800-2200	40	dB
LA90 Night-time	2200-0700	32	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	57	dB
LAeq Night-time	2200-0700	46	dB

TRAFFIC & MISC. NOISE METRICS

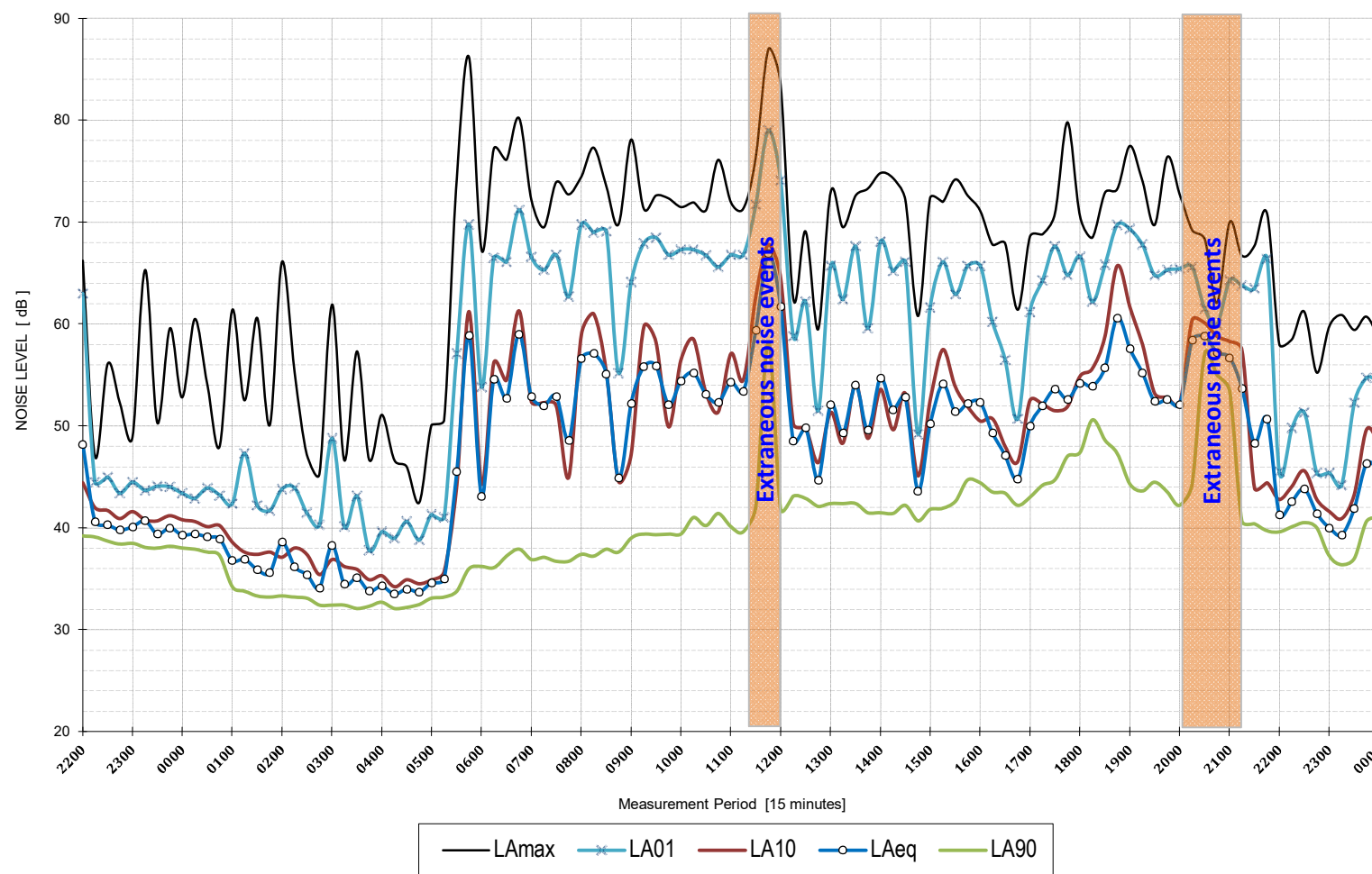
LAeq 15 hours	0700-2200	54	dB
LAeq 9 hours	2200-0700	46	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Amax} - L_{Aeq} \geq 15$]	25
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DAY 4

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Sunday, 26 January 2020



Noise measurements were affected by extraneous noise events.

Ambient noise levels for assessment period.

AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	39	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0800	32	dB
LAeq Daytime	0800-1800	56	dB
LAeq Evening	1800-2200	56	dB
LAeq Night-time	2200-0800	49	dB

TRAFFIC & MISC. NOISE METRICS

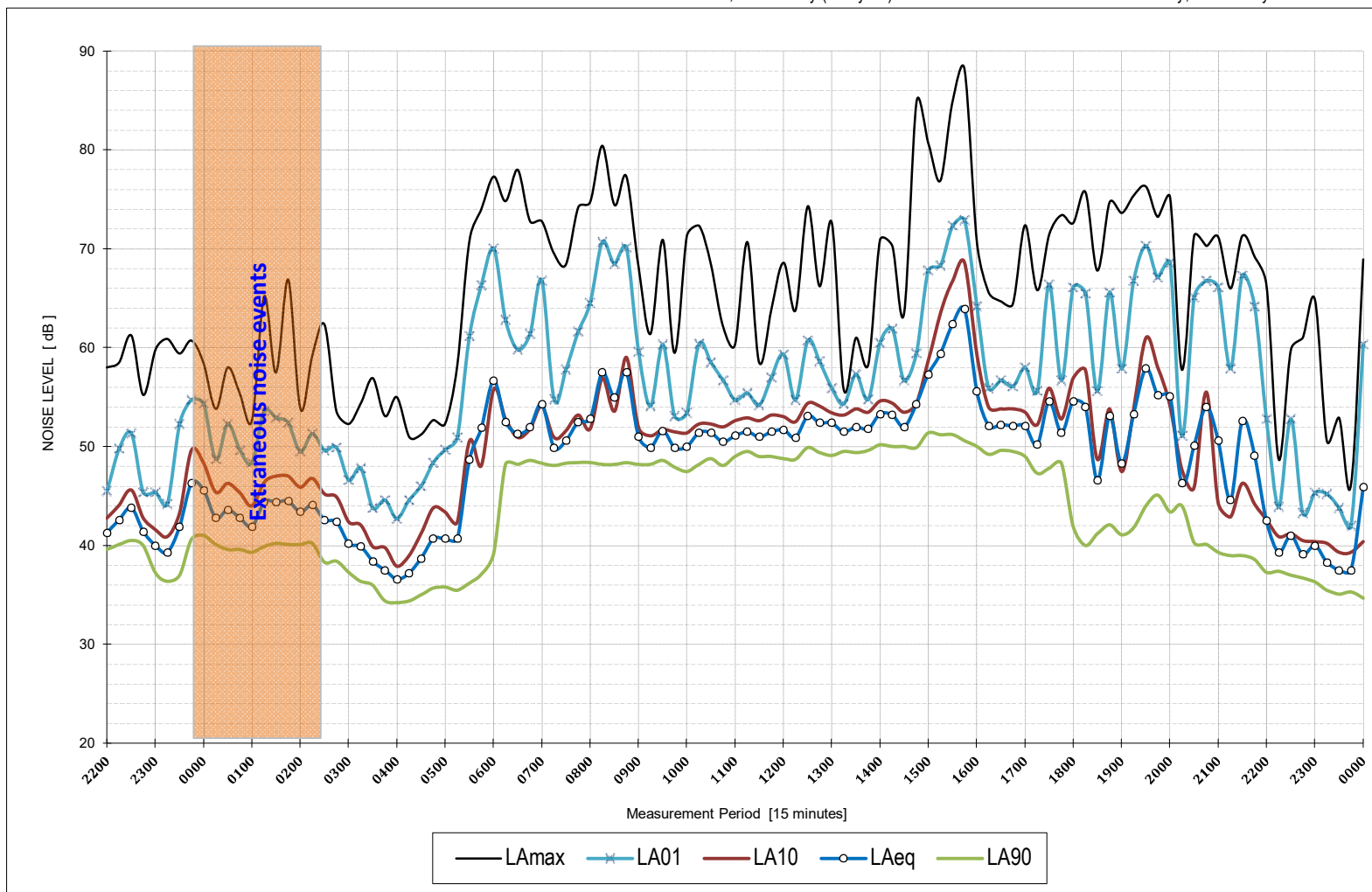
LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	53	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Max} - L_{Aeq} \geq 15$]	21
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DAY 5

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Monday, 27 January 2020



Noise measurements were affected by extraneous noise events.

Mechanical plant noise.

AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	48	dB
LA90 Evening	1800-2200	39	dB
LA90 Night-time	2200-0800	35	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	47	dB

TRAFFIC & MISC. NOISE METRICS

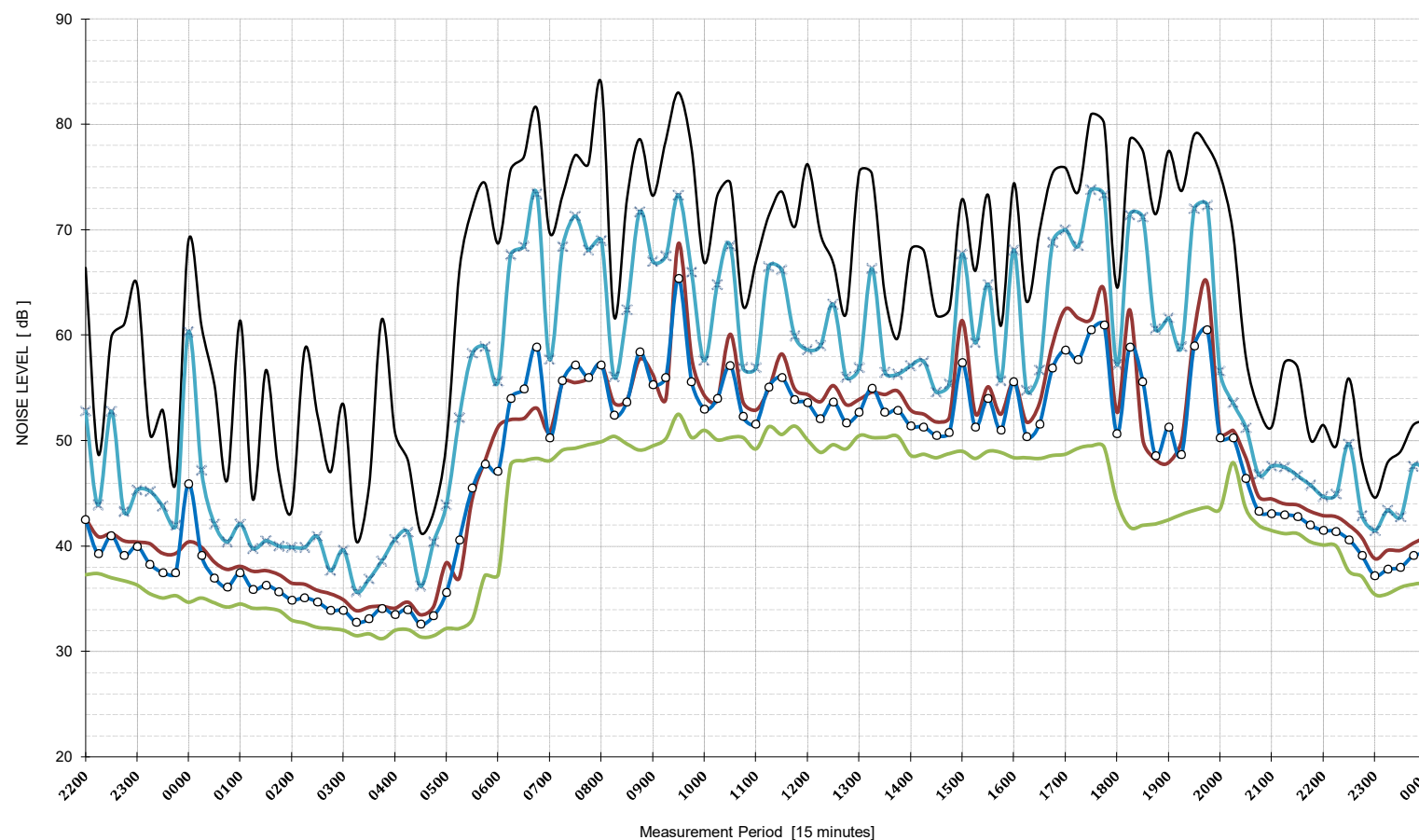
LAeq 15 hours	0700-2200	54	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	56	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LMax - LAeq ≥ 15]	20
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DAY 6

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Tuesday, 28 January 2020

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	48	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	32	dB
LAeq Daytime	0700-1800	56	dB
LAeq Evening	1800-2200	54	dB
LAeq Night-time	2200-0700	47	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	59	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined
in the Environmental Noise
Management Manual [$L_{Max} - L_{Aeq} \geq 15$]

22

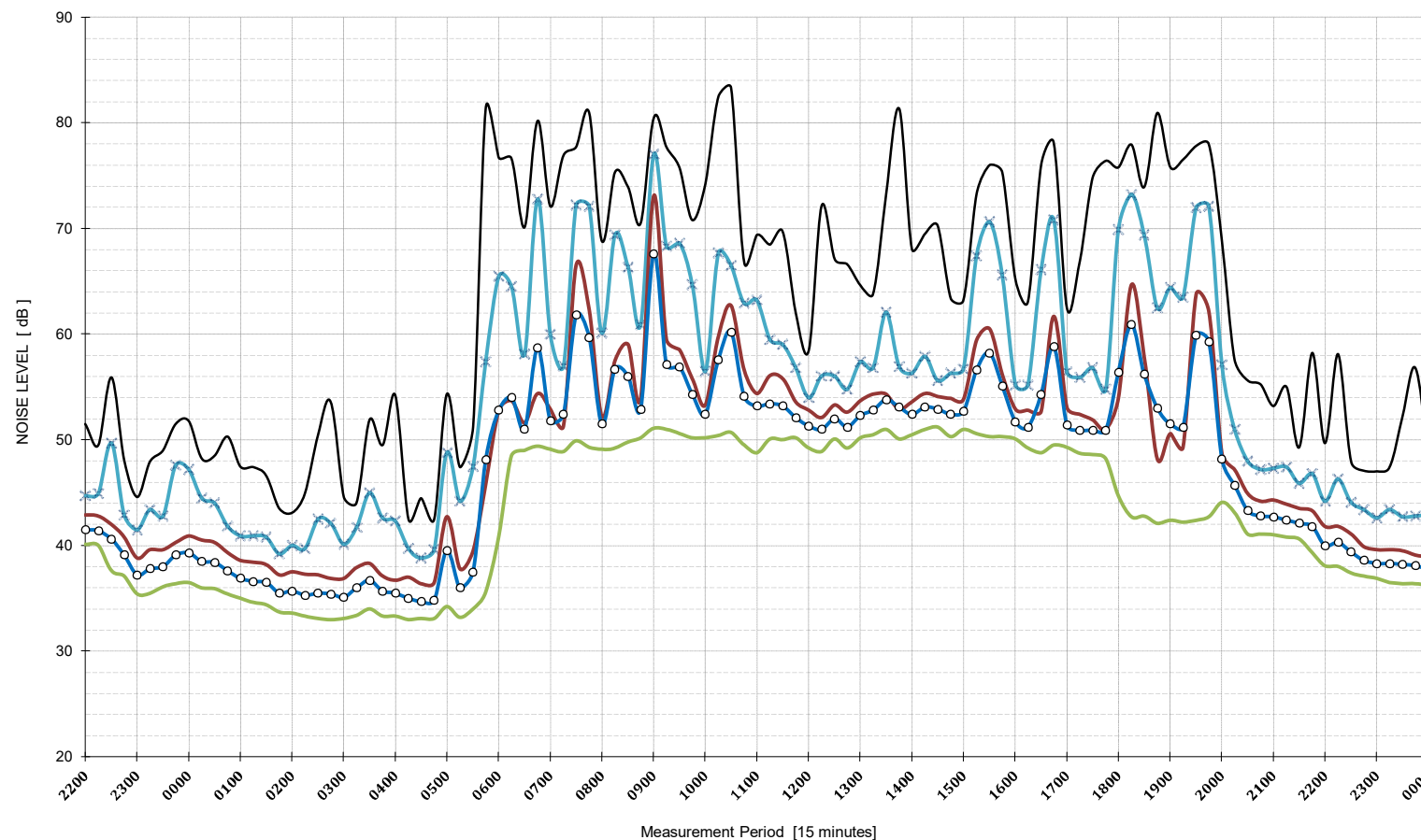
Noise measurements were affected by extraneous noise events.

Mechanical plant noise.

DAY 7

LOGGER LOCATION: 25 William Street, Double Bay (rear yard)

DATE: Wednesday, 29 January 2020

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	49	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	33	dB
LAeq Daytime	0700-1800	56	dB
LAeq Evening	1800-2200	55	dB
LAeq Night-time	2200-0700	46	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	46	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	47	dB

Maximum noise events as defined
in the Environmental Noise
Management Manual [$L_{Max} - L_{Aeq} \geq 15$]

10

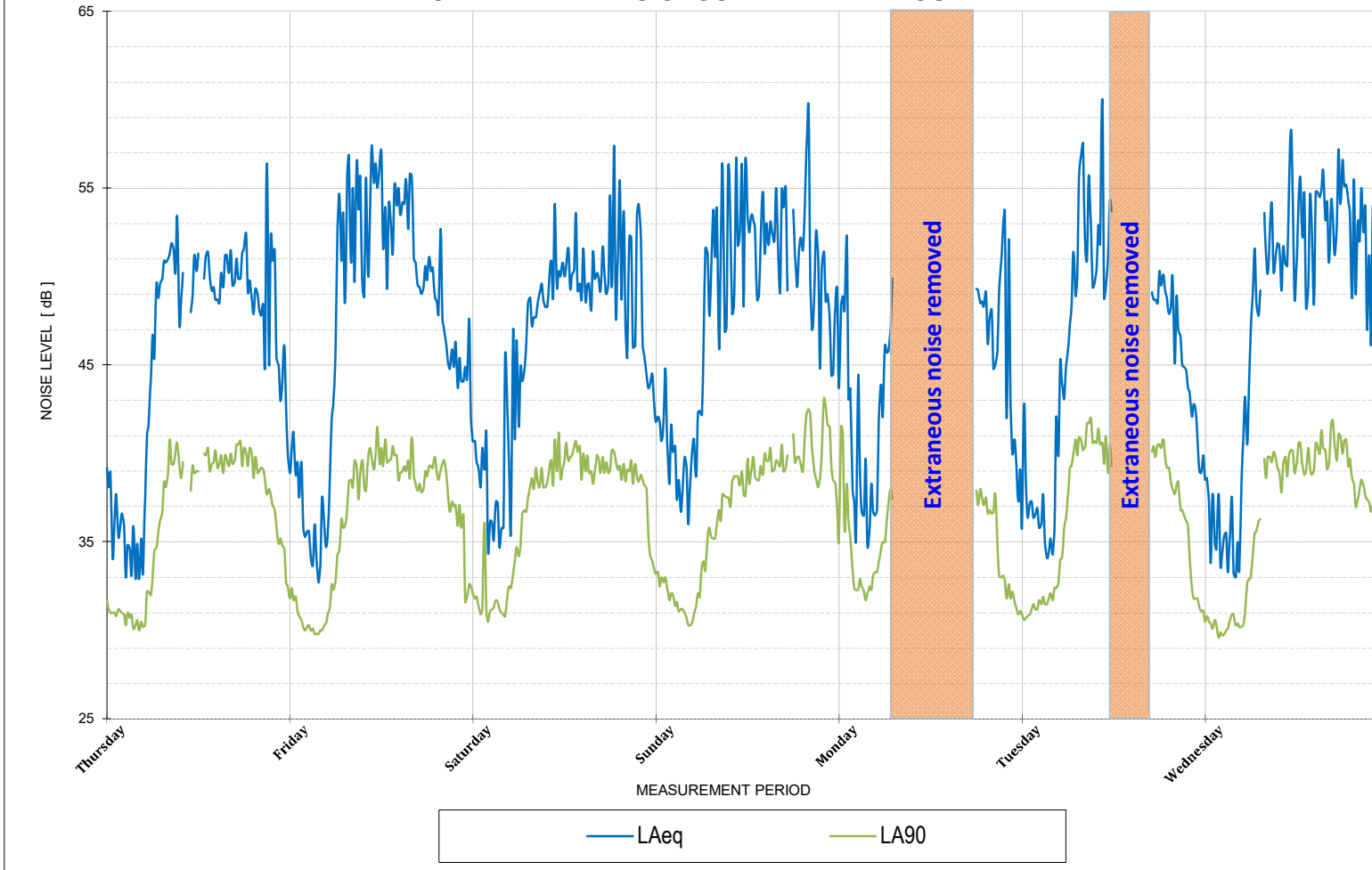
Mechanical plant noise.

WEEKLY SUMMARY

LOGGER LOCATION: 31-33 William Street Double Bay

PERIOD: 24th to the 30th November 2022

NTI UNATTENDED NOISE SURVEY WEEKLY SUMMARY



Sundays and Public Holidays the hours change to 0800

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	LA90 Evening	LA90 Night-time
Day 1	38	38	30
Day 2	38	37	30
Day 3	38	38	31
Day 4	36	39	31
Day 5	37	33	32
Day 6	39	36	31
Day 7	39	37	30
RBL	38	37	31

	LAeq Daytime	LAeq Evening	LAeq Night-time
Day 1	50	50	42
Day 2	54	49	45
Day 3	50	52	42
Day 4	53	53	46
Day 5	50	49	45
Day 6	53	48	43
Day 7	53	53	42
Average	52	51	44

SUMMARY OF TRAFFIC LEVELS

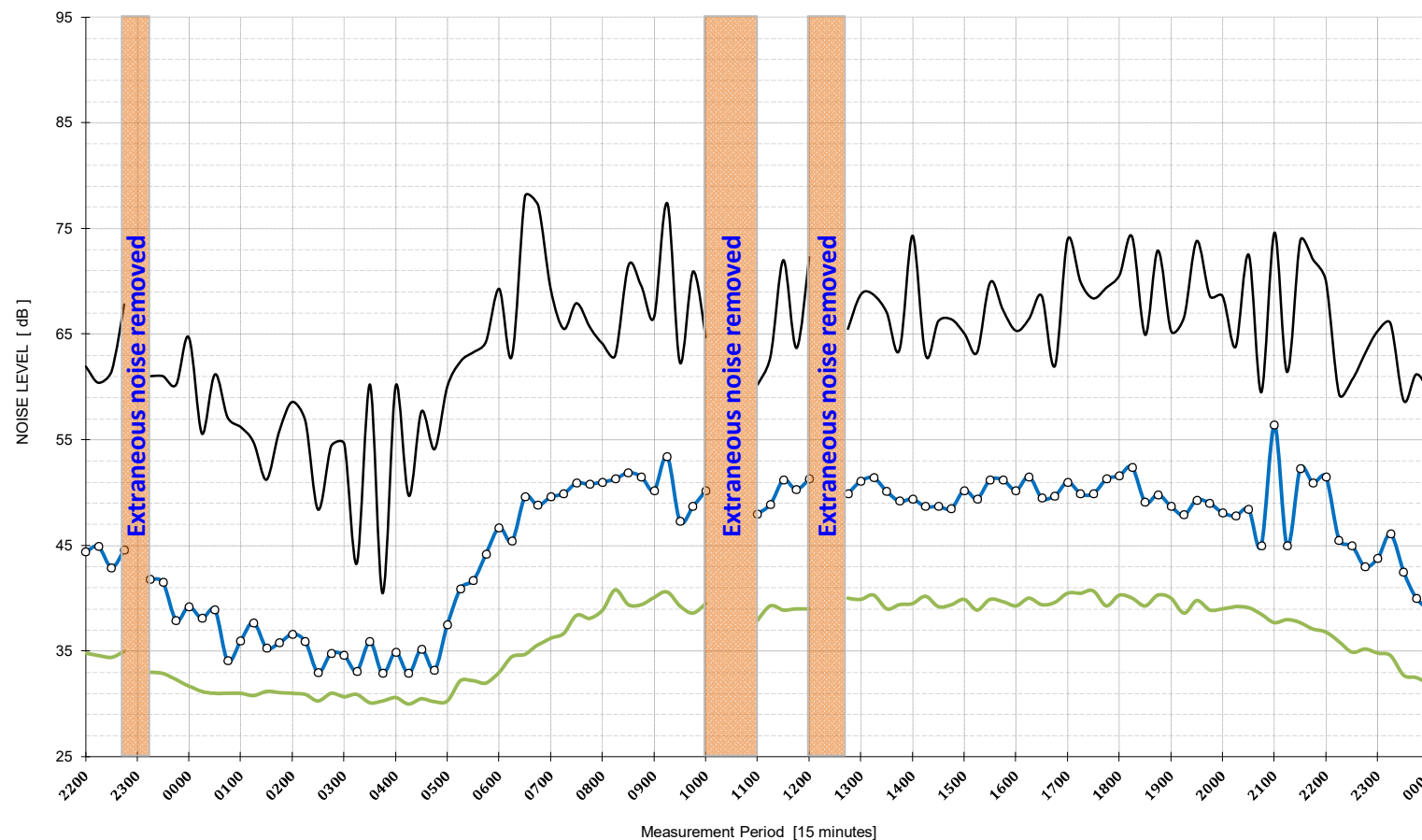
LAeq 15 hrs	0700-2200	52	dB
LAeq 9 hrs	2200-0700	44	dB
Max LAeq 1 hr	0700-2200	54	dB
Max LAeq 1 hr	2200-0700	45	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [L _{Amax} - L _{Aeq} ≥ 15]	32
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DAY 1

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Thursday, 24 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	38	dB
LA90 Evening	1800-2200	38	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	42	dB

TRAFFIC & MISC. NOISE METRICS

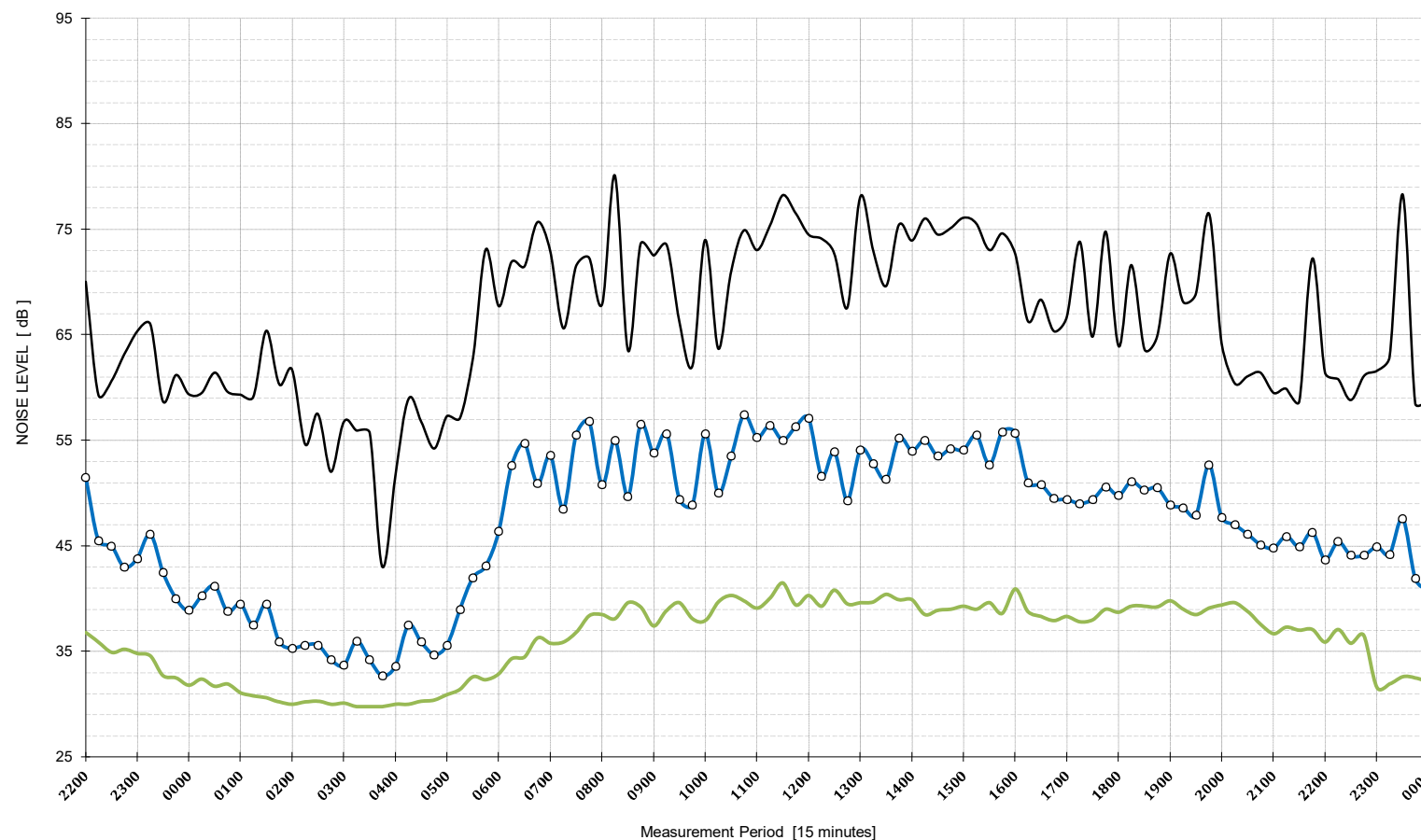
LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	42	dB
Max LAeq 1 hour	0700-2200	51	dB
Max LAeq 1 hour	2200-0700	44	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$LA_{max} - LA_{eq} \geq 15$]	33
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DAY 2

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Friday, 25 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	38	dB
LA90 Evening	1800-2200	37	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	54	dB
LAeq Evening	1800-2200	49	dB
LAeq Night-time	2200-0700	45	dB

TRAFFIC & MISC. NOISE METRICS

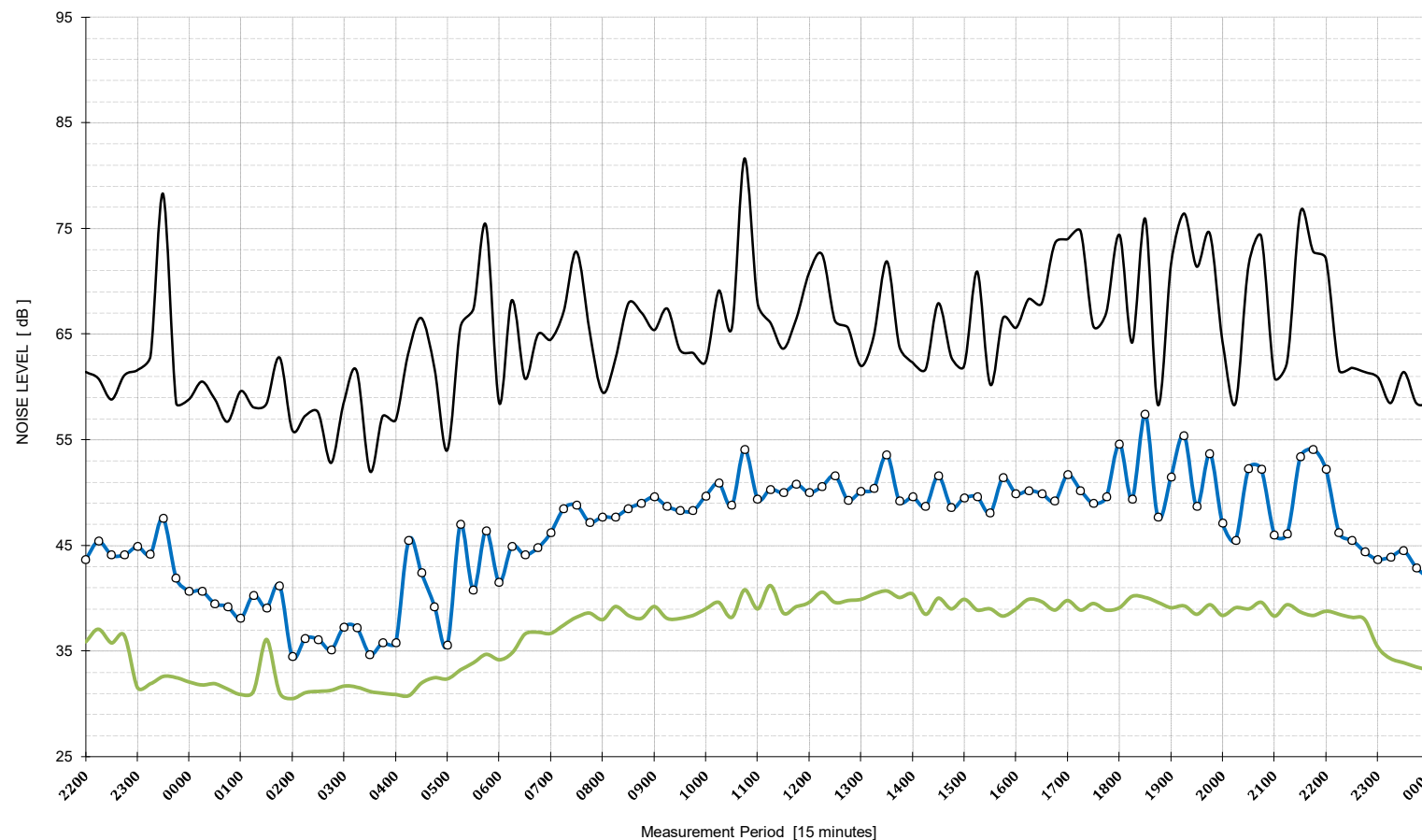
LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	47	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	34
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DAY 3

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Saturday, 26 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	38	dB
LA90 Evening	1800-2200	38	dB
LA90 Night-time	2200-0700	31	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	42	dB

TRAFFIC & MISC. NOISE METRICS

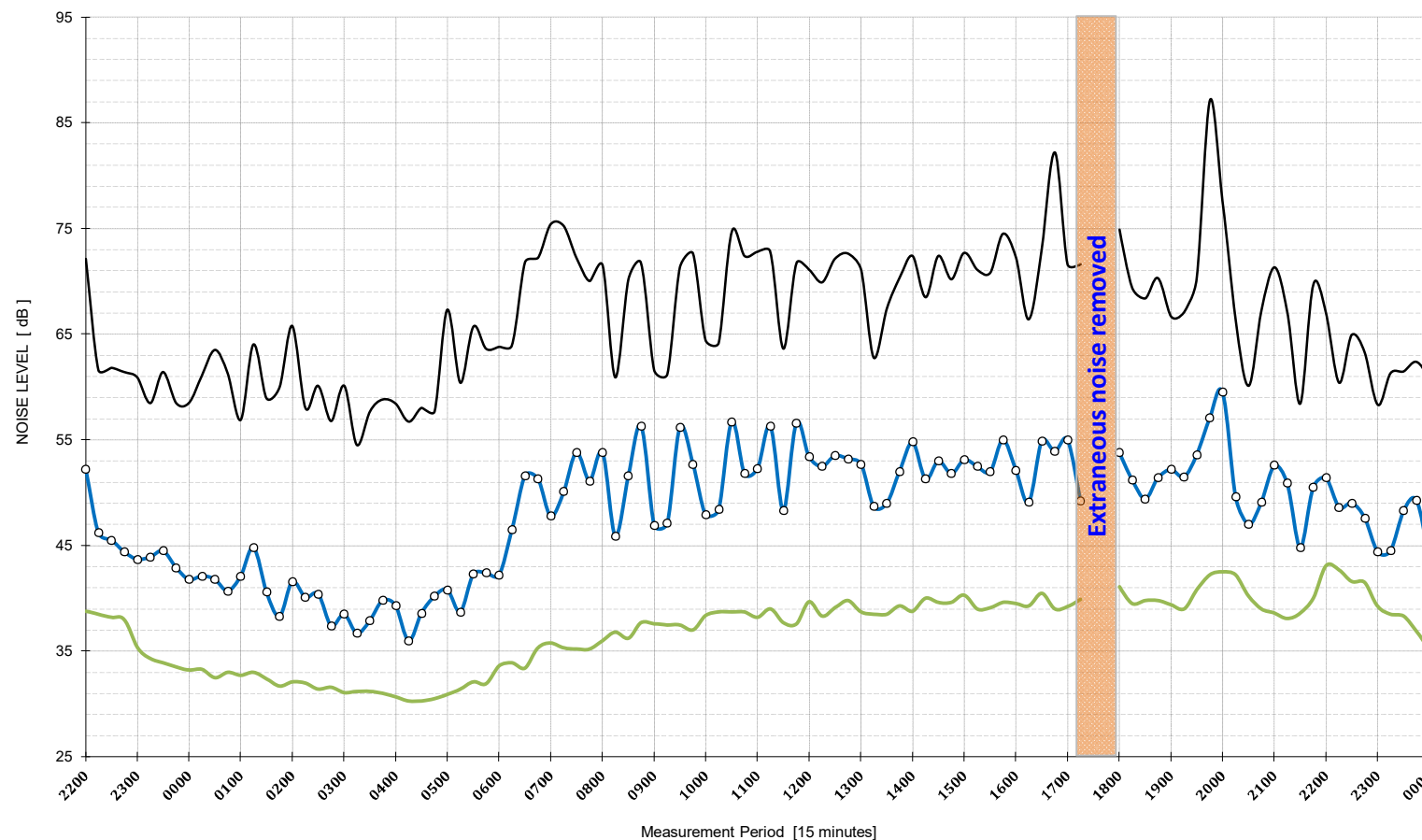
LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	42	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	45	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	35
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DAY 4

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Sunday, 27 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	36	dB
LA90 Evening	1800-2200	39	dB
LA90 Night-time	2200-0700	31	dB
LAeq Daytime	0800-1800	53	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0800	46	dB

TRAFFIC & MISC. NOISE METRICS

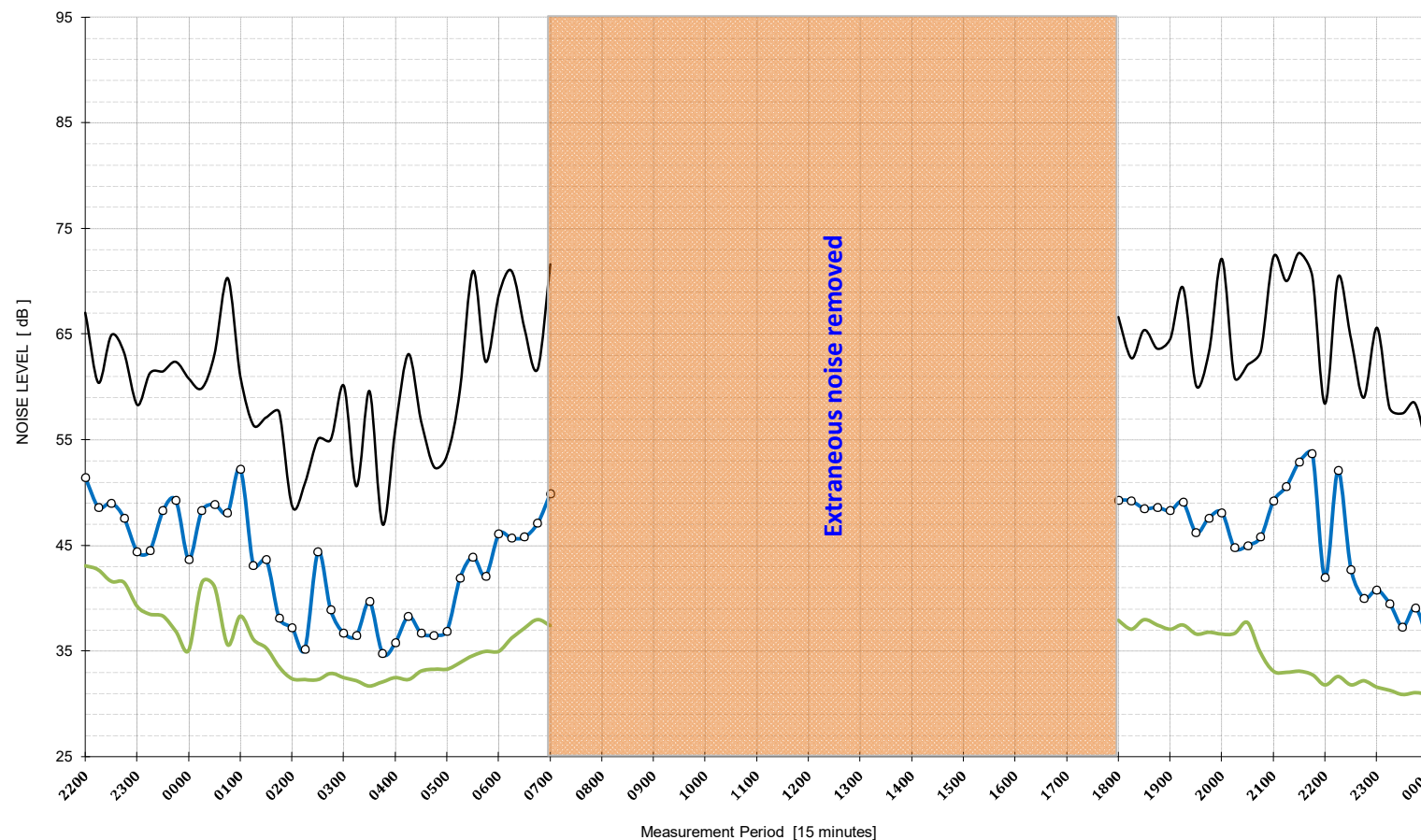
LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	44	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	45	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LMax - LAeq ≥ 15]	34
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DAY 5

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Monday, 28 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	37	dB
LA90 Evening	1800-2200	33	dB
LA90 Night-time	2200-0700	32	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	49	dB
LAeq Night-time	2200-0700	45	dB

TRAFFIC & MISC. NOISE METRICS

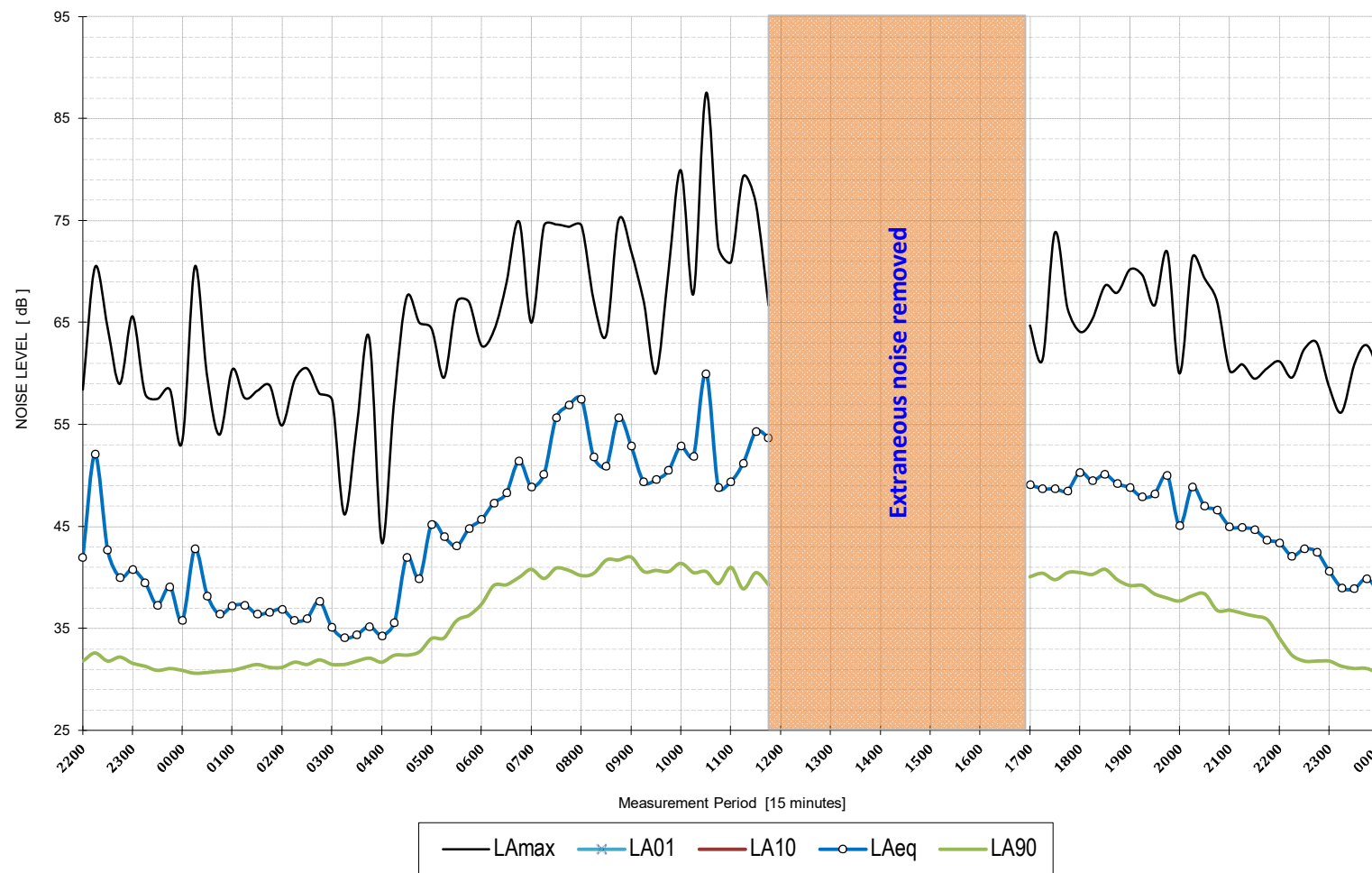
LAeq 15 hours	0700-2200	49	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	50	dB
Max LAeq 1 hour	2200-0700	48	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	22
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DAY 6

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Tuesday, 29 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	39	dB
LA90 Evening	1800-2200	36	dB
LA90 Night-time	2200-0800	31	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	48	dB
LAeq Night-time	2200-0700	43	dB

TRAFFIC & MISC. NOISE METRICS

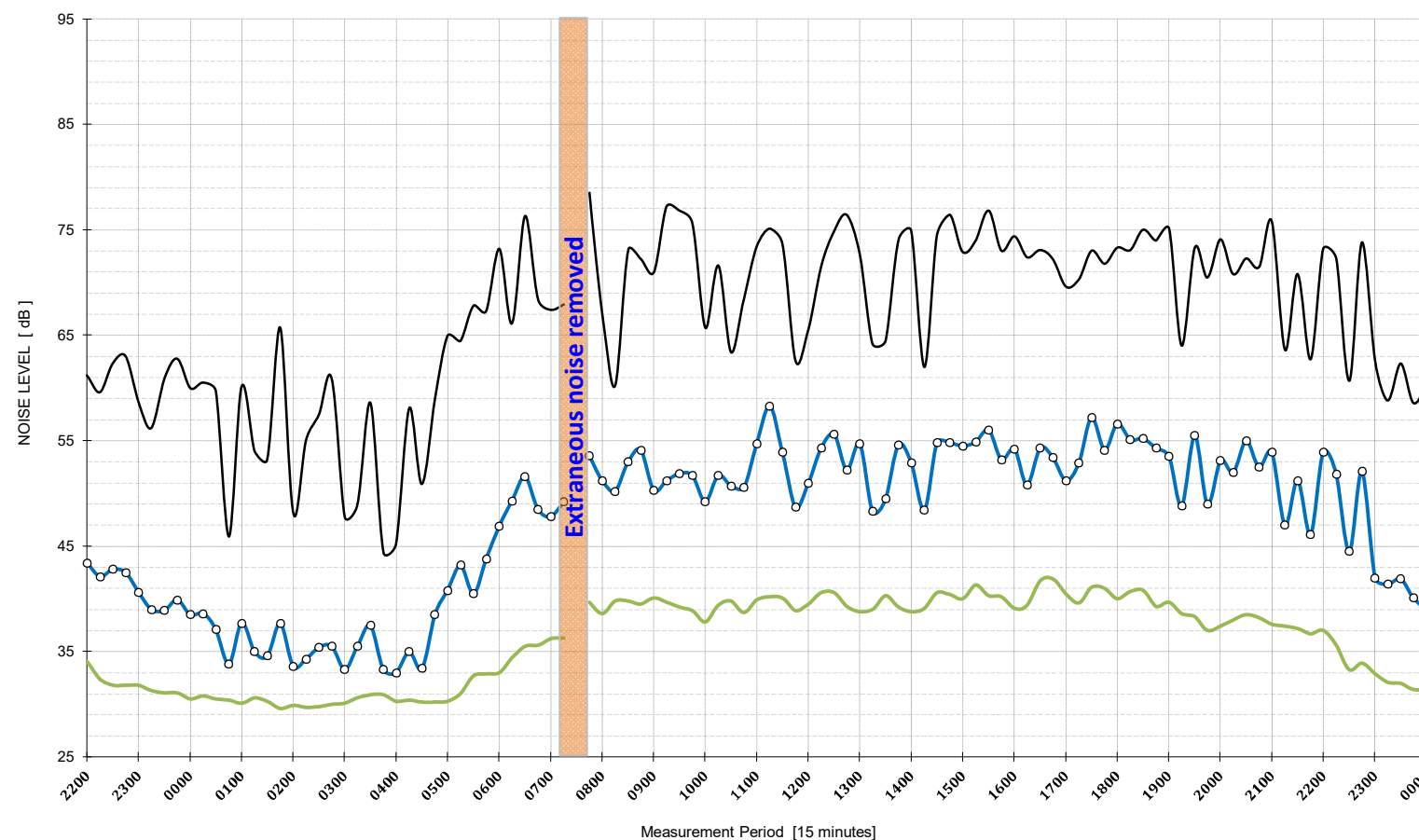
LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	43	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	34
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DAY 7

LOGGER LOCATION: 31-33 William Street Double Bay

DATE: Wednesday, 30 November 2022

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	39	dB
LA90 Evening	1800-2200	37	dB
LA90 Night-time	2200-0700	30	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	42	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	42	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	44	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LMax - LAeq ≥ 15]	30
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APPENDIX B

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APPENDIX B

Daily Rainfall (millimetres)

SYDNEY BOTANIC GARDENS

Station Number: 066006 · State: NSW · Opened: 1885 · Status: Open · Latitude: 33.87°S · Longitude: 151.22°E · Elevation: 15 m

2024	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	3.2	0.4	0.2	0	25.4	0.6	2.8	0.4	0	0.2	9.0	1.2
2nd	0	0	0	0	23.6	159.5	11.2	8.0	0	0	1.0	34.8
3rd	0	0	1.2	2.8	6.9	0	5.2	1.2	0	1.0	1.2	0
4th	0	0	0	0	21.0	0.2	13.2	0	0	0	0	0.4
5th	1.8	0	0	125.0	26.0	0	10.4	0	0	1.4	0.4	0
6th	0	22.2	0	162.0	30.4	7.0	4.6	0	0	0	0	0
7th	0	0	0	0	5.4	61.2	0.6	0	0	0	0	10.0
8th	0	0.4	0	0	6.8	21.2	4.8	0	0	0	3.0	13.0
9th	3.0	0	0	0	9.6	0	3.6	0	0	0.4	0	6.0
10th	0	8.0	0	13.0	3.2	0	0.6	0	0	0.6	0	0
11th	0	1.2	0	0	18.4	0	0	0.1	0	0	0.4	0
12th	0.4	0	0	0	33.8	0	0	11.2	0	0	0	0
13th	0.2	0	0	0	13.0	0	0	4.8	1.8	2.1	10.0	0
14th	6.2	0.4	0	0	0.2	0	0	0.8	0	0	2.4	0
15th	55.0	2.6	4.4	0	0	74.2	0	13.4	0	32.9	1.0	0
16th	2.2	61.4	0.6	0	0		0	1.8	0	0.4	1.2	
17th	0.8	0.1	21.0	0	0	0	0.2	9.2	0	0	0.2	
18th	44.2	0	2.2	2.0	0	0.6	0	0	0	0	21.8	
19th	0	0.2	3.0	5.2	6.4	0	0.2	0	0	5.8	0.2	
20th	0	57.3	0	5.2	0	0	0	0.2	0	0.6	1.8	
21st	0	16.4	1.8	11.6	1.6	0	0	0	0	0	0	
22nd	0	0	0.2	0	0	31.5	0	0	0	0	0	
23rd	0.6	0	0	0	0	36.6	0	0	0	0	0	
24th	0	3.1	0	0	0	0.6	0	0.6	0	0	0	
25th	0	0.4	0	0	0	0.2	0	0.4	0	2.0	0	
26th	0	0	0	0	0	0	3.2	0	4.6	0	0	
27th	1.0	0	0	0	0	0	0.4	0	42.6	0	0	
28th	0	1.4	0.6	0	0	0	7.8	0	2.8	0	0	
29th	0.6	0	0.8	0	0	0	0	0	0.8	0	2.8	
30th	1.2		0	0.6	0	7.2	1.0	0	3.2	0	57.2	
31st	1.8		0		0		1.0	0		0		
Highest daily	55.0	61.4	21.0	162.0	33.8	159.5	13.2	13.4	42.6	32.9	57.2	34.8
Monthly Total	122.2	175.5	36.0	327.4	231.7		70.8	52.1	55.8	47.4	113.6	65.4

↓ This day is part of an accumulated total
Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown

Daily Rainfall (millimetres)

SYDNEY BOTANIC GARDENS

Station Number: 066006 · State: NSW · Opened: 1885 · Status: Open · Latitude: 33.87°S · Longitude: 151.22°E · Elevation: 15 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	104.0	118.1	136.9	123.0	120.3	133.8	96.2	84.9	67.8	76.4	86.0	82.5
Median	80.8	81.7	102.4	87.6	88.8	93.8	75.2	57.4	52.8	52.1	73.0	66.2
Highest daily	185.9	264.0	277.4	162.0	230.0	159.5	181.1	340.0	108.8	141.7	248.2	130.0
Date of highest daily	13th 1911	9th 1992	28th 1942	6th 2024	1st 1988	2nd 2024	7th 1931	6th 1986	15th 1990	22nd 1960	9th 1984	13th 1910

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml>.