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Subject: DA 2020/0442 -

Attachments: Koikas Acoustics - 4235R20200721mfc233WhaleBeachRdWhaleBeach.pdf;

Lashta Hadari has advised me to submit this submission to the Council for inclusion to their consideration of the above DA.

Robyn Jarvis
233 Whale Beach Road,
Whale Beach 2107

koikas acoustics PTY LTD

CONSULTANTS IN NOISE & VIBRATION

Commercial 1 (Unit 27)

+612 9587 9702

DELIVERING SOUND ADVICE

637-645 Forest Road

office@koikasacoustics.com

Bexley NSW 2207

www.koikasacoustics.com

ABN: 12 058 524 771

ACOUSTICAL REPORT

POTENTIAL NOISE IMPACT FROM THE PROPOSED

COMMERCIAL GARBAGE COLLECTION

ADJACENT TO THE EXISTING DWELLING AT

233 WHALE BEACH ROAD, WHALE BEACH NSW

Date: Tuesday, 21 July 2020

File Reference: 4235R20200721mfc233WhaleBeachRdWhaleBeach.docx

DOCUMENT CONTROL

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Client	Robyn Jarvis Email: robyswims@bigpond.com			

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ACOUSTICAL REPORT
NOISE IMPACT FROM THE PROPOSED COMMERCIAL GARBAGE COLLECTION
ADJACENT TO THE EXISTING DWELLING AT
233 WHALE BEACH ROAD, WHALE BEACH NSW

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1.0 INSTRUCTIONS

Koikas Acoustics Pty Ltd was requested by the owner of 233 Whale Beach Road, Whale Beach to undertake a noise impact assessment of the proposed commercial garbage collection adjacent to an existing dwelling and to determine if the subject noise is “offensive” as defined by the POEO Act 1997.

This report aims to quantify the noise level from the future garbage collection servicing the proposed commercial/residential complex at 231 Whale Beach Road, Whale Beach NSW (subject assessment site). Where necessary, appropriate noise mitigation measures are provided for compliance purpose.



2.0 BACKGROUND INFORMATION

2.1 ASSESSMENT SITE LOCATION & SURROUNDINGS

Koikas Acoustics has been advised that the subject garbage collection (231 Whale Beach Road) is proposed at the approximated location marked in Figure 1 and 2 below.



Figure 1. Aerial photo of the assessment site, the proposed garbage collection point and surrounding area
(Image source – Google Earth)



Figure 2. Proposed garbage collection point and noise-sensitive receiver locations (Image source – Google Earth)

The noise-sensitive locations at the existing residential dwelling (233 Whale Beach Road) are marked as R1, R2 and R3 (Refer to Figure 2 above). These locations are outside the bedroom windows. The closest receiver location to the proposed garbage collection point (G) is R1, therefore, by demonstrating the compliance at this location (R1), it is deemed to comply at other less-sensitive locations further away.

Koikas Acoustics has been advised that based on the topography of the assessment site and surrounding, the distance between the proposed garbage collection point (G) and the nearest receiver location R1 (at an elevated level outside the bedroom window of 233 Whale Beach Road) is approximately 20 meters.

2.2 AMBIENT NOISE PROFILE OF THE SITE

Prevailing ambient noise conditions on-site and in the local area is dominated by the crashing of waves along Whale Beach to the east.

3.0 AMBIENT NOISE SURVEY

Existing external ambient noise levels were measured by installing a sound level meter data logger on the car park level of 233 Whale Beach Road, Whale Beach.

The installed location meant that the microphone was approximately 1.5 metres above the car park level. This meter was placed to measure existing background noise levels pertaining to the area. The unattended noise monitoring location is marked in Figure 1 & 2 of this report.

A Type 1 precision Svantek 949 noise logger was used for the survey. The instrument was set-up to measure A-frequency and ‘Fast’ time-weighted noise levels. Noise level data was stored within the logger memory at 15-minute intervals for one week between Monday 6th and Tuesday 14th July 2020. Calibration readings were taken before and after each survey with a NATA calibrated and certified Larson Davis CAL200 precision acoustic calibrator. No system drift was observed for this meter.

BOM (Bureau of Meteorology) weather records for the nearest available weather station indicate that inclement weather conditions have an adverse impact on the noise survey predominately on the 14th of July 2020. The weather affected noise measurements were removed from the noise logger calculations.

Table 1. Summary of noise logger results [dB]				
Location	Period, T ¹	Ambient noise level L _{Aeq}	Rating Background Level L _{A90}	Ambient noise level L _{Aeq} Period
233 Whale Beach Rd	Day	57	50	56
	Evening	53	49	
	Night	51	47	51
Notes	1: EPA (Environment Protection Authority) defines the following periods: Day – 7 am to 6 pm Mon to Sat and 8 am to 6 pm Sun and public holidays, Evening – 6 pm to 10 pm Mon to Sun, Night – 10 pm to 7 am Mon to Sat and 10 pm to 8 am Sun and public holidays.			

Details of the unattended noise survey results are attached in **Appendix A**.



4.0 DISCUSSION ACOUSTICAL REQUIREMENTS

4.1 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the NSW Environmental Protection Authority (EPA) Noise Policy (EPA) for Industry (NPfl). The NPfl replaces the former Industrial Noise Policy, also prepared by the EPA.

The NPfl is designed to assess environmental noise impacts associated with scheduled activities prescribed within the Protection of the Environment Operations (POEO) Act 1997, Schedule 1. It is also commonly used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial operations.

The guideline applies limits on the short-term intrusive nature of a noise or noise-generating development (project intrusive noise level), as well as applying an upper limit on cumulative industrial noise emissions from all surrounding development/industry (project amenity noise level).

The most stringent of the project intrusive noise level and project amenity noise level is applied as the **project noise trigger level**. The project noise trigger level is the point, above which noise emission from a source or development site would trigger a management response.

To be able to define the more stringent of the intrusive and amenity noise levels, the underlying noise metrics must be the same. As the intrusive noise level is defined in terms of an $L_{Aeq, 15 \text{ minutes}}$ and the amenity noise level is defined in terms of an $L_{Aeq, \text{Period}}$, a correction +3dB correction is applied to the project amenity noise level to equate the $L_{Aeq, \text{Period}}$ to $L_{Aeq, 15 \text{ minutes}}$. Generally, “offensive noise” is unlikely to occur when compliance with the EPA’s NPfl is achieved.



4.2 OFFENSIVE NOISE (POEO ACT 1997 DEFINITION)

The Protection of the Environment Operations Act 1997, defines 'offensive noise' as noise:

- a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
 1. *is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
 2. *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.*

4.3 OFFENSIVE NOISE CHECKLIST - EPA NOISE GUIDE FOR LOCAL GOVERNMENT (NGLG) 2013

The Environment Protection Authority (EPA) NGLG provides a checklist that is proposed to assist with establishing if a particular noise is offensive. The checklist is summarised as follows (with the inclusion of comments from Koikas Acoustics in blue based on calculation presented in Section 5.3 of this report):

- Is the noise loud in an absolute sense? Is it loud relative to other noise in the area?
The noise level emanating from the proposed garbage collection is expected to exceed the nominated noise criterion by up to 13 dB before 10 pm and up to 17 dB after 10 pm, and therefore, is considering "loud" in our opinion. Refer to Table 5, 6 and 7 of this report for more details.
- Does the noise include characteristics that make it particularly irritating?
Yes, during the reverse of the truck or clattering noise from the glass bottles during the tipping of the recyclable waste.
- Does the noise occur at times when people expect to enjoy peace and quiet?
Yes, if the garbage collection occurs after 10 pm. Therefore, it is recommended to restrict garbage collection/storage activities after 10 pm.
- Is the noise atypical for the area?
Yes, the noise from garbage collection, especially the clattering of bottles would be atypical for the area.
- Does the noise occur often?



No, the garbage collection is expected to take place twice a week (one for general waste and one for recyclable waste).

- Are several people affected by the noise?

Yes, other surrounding residents are also likely to be affected.

Based on the above comments, the noise from the proposed garbage collection is expected to be “offensive” and further noise mitigation measures are required (provided in Section 5.4 of this report).

4.4 SLEEP DISTURBANCE/AROUSAL

The NPfI also provides guidance on assessing potential sleep disturbance for residents affected by maximum noise levels from a particular development or assessment site. Although the current literature is yet to define a quantifiable noise level above which sleep disturbance is experienced, guidelines are provided by the EPA for assessing the potential for sleep disturbance as follows:

- $L_{Aeq\ 15\ minutes}$ 40 dB or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{Amax} 52 dB or the prevailing RBL plus 15 dB, whichever is the greater.

The DECCW Road Noise Policy (RNP) also provides some guidance for assessing noise that may result in sleep disturbance. This document suggests that a low probability for sleep disturbance can be achieved where L_{Amax} noise levels within a bedroom are kept below 50~55 dB, and $L_{A1, 1-minute}$ noise levels do not exceed the background level by more than 15 dB.

A sleep disturbance assessment would be warranted if the garbage collection activities were to occur during the night time (between 2200 and 0700 hours).



5.0 NOISE IMPACT ASSESSMENT OF GARBAGE COLLECTION

5.1 PROJECT NOISE TARGETS

Based on the discussion in Section 4.0 and ambient noise survey results (Section 3.0), the derivation of noise criteria is summarised in Table 2 & 3 below.

Table 2. Derivation of plant noise criteria – $L_{Aeq,15minutes}$ [dB]								
Period, T (Note 1)	Intrusive		Amenity					Project noise trigger level
	RBL	RBL + 5	Area classification	Recommended amenity noise level	High traffic area	Project amenity noise level	+3dB correction	
Day	50	55	Urban	60	No	55	58	55
Evening	49	54	Urban	50	No	45	48	48
Night	47	52	Urban	45	No	40	43	43
Notes	<p>1. EPA defines the following periods, Day – 7 am to 6 pm Mon to Sat and 8 am to 6 pm Sun and public holidays, Evening – 6 pm to 10 pm Mon to Sun, Night – 10 pm to 7 am Mon to Sat and 10 pm to 8 am Sun and public holidays.</p> <p>2. Project noise amenity level = recommended noise amenity level – 5dB, except where specific circumstances are met, such as high traffic.</p>							

A summary of the existing sleep disturbance guidelines are as follows:

Table 3. Sleep disturbance assessment guidelines					
Location	Period, T ¹	Noise Policy for Industry		Road Noise Policy	
		$L_{Aeq, 15 mins}$ [dB]	L_{Amax} [dB]	L_{Amax} [dB]	$L_{A1, 1 min}$ [dB]
233 Whale Beach Rd	Night	47 + 5 = 52	47 + 15 = 62	50 ~ 55 indoors	47 + 15 = 62
Notes	<p>1. Day: 7 am to 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays Evening: 6 pm to 10 pm Night: 10 pm to 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays</p>				
Definitions	<p>$L_{eq, T}$: The continuous steady-state sound level that represents the same amount of acoustic energy as a varying sound level over the nominated period, T. $L_{90, T}$: The 10th percentile minimum noise level over a defined monitoring period, T. Taken as the average minimum level on an analogue sound level meter.</p>				

The noise criteria for sleep disturbance are applicable during the night-time period between 10 pm and 7 am Monday to Saturday, and between 10 pm and 8 am on Sunday and public holidays.

5.2 SOUND SOURCE LEVELS

Attended noise surveys were previously conducted to quantify the noise levels from another similar commercial garbage. The noise source includes truck reversing with beeping alarm, tipping of garbage bins (general waste and recyclable bin with glass bottles) and leaving the site.

Noise measurements were conducted at an elevated location (stationary) at approximately 6 m from the garbage bins. Refer to Figure 3 below for illustration.

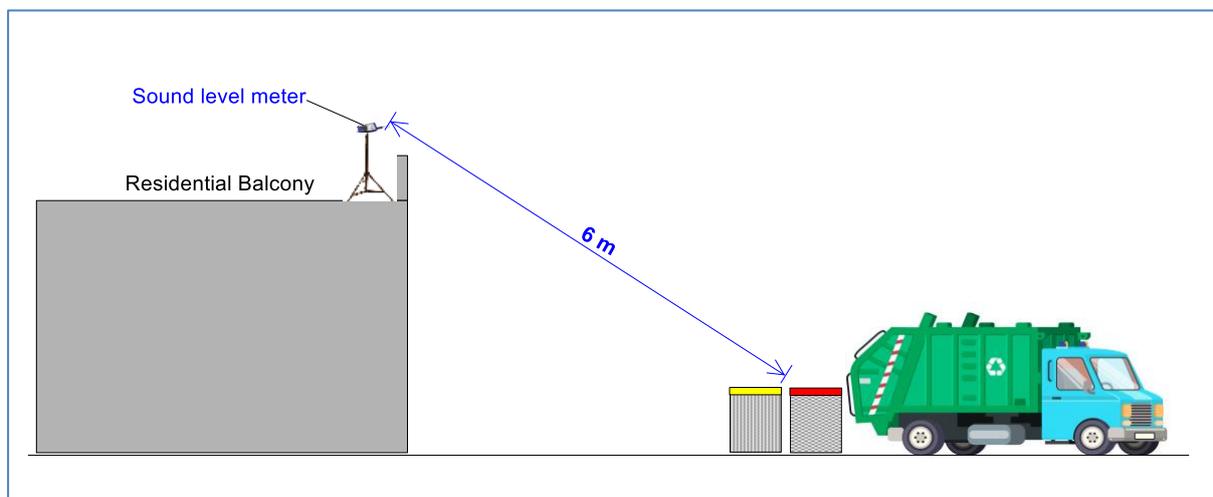


Figure 3. Illustration of noise measurements of commercial garbage collection (indicative only, not to scale)

It is noted that the truck was reversing slowly in the direction of the sound level meter towards the collection point approximately 6 m from the sound level meter.

The attended noise surveys were conducted:

- between 19:49 and 19:52 hours on Friday evening 10th July 2020 for general waste collection, and
- between 07:39 and 07:41 hours on Sunday morning 12th July 2020 for recyclable waste (bottles) collection.

Weather conditions over the monitoring period did not influence the noise survey results.

An NTi XL2 Type 1 precision spectrum analyser was used to measure these sound sources. The equipment used to take noise level measurements is traceable to NATA certification. The attended noise survey results are presented in Table 4 below.

Table 4. 1/1 Octave Band noise levels of typical garbage collection – [dB]											
Description	Noise metrics	1/1 octave band centre frequency [Hz]									
		31.5	63	125	250	500	1k	2k	4k	8k	Total
General waste collection	L _{Aeq}	36	46	52	58	61	70	65	61	52	72
	L _{A1}	46	59	66	76	79	80	77	80	72	86
	L _{Amax}	45	54	62	73	69	78	75	70	64	81
Recyclable waste collection	L _{Aeq}	36	47	53	59	64	71	69	76	63	78
	L _{A1}	46	60	67	76	79	80	78	85	74	88
	L _{Amax}	45	55	62	73	71	79	76	84	72	86

5.3 CALCULATIONS AND ANALYSIS

The potential noise impact from the proposed garbage collection point to the existing residential dwelling at 233 Whale Beach Road, Whale Beach has been calculated for two different scenarios, that is before 10 pm and after 10 pm (during which the sleep disturbance criteria apply).

A comparison summary of calculated noise levels and noise criteria is presented in Section 5.3.1 and Section 5.3.2 for before and after 10 pm scenario respectively.

5.3.1 Noise Impact Assessment Before 10 pm

The evening noise criterion level of L_{Aeq,15 minutes} 48 dB applies just before 10 pm. Two noise calculation scenarios have been considered, i.e. general garbage collection and recyclable garbage collection with glass bottles.

Table 5. Garbage collection noise levels and noise criteria <u>before 10 pm</u> (assessed at R1) – L _{Aeq} [dB]		
Description		L _{Aeq,period}
General Garbage Collection	General garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}	72
	Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}	62
	Noise level corrected for L _{Aeq,15minutes} at R1	55
	Noise criterion (evening)	48
	Exceeding level	7
	Compliance [Y/N]	N
Recyclable Garbage Collection	Recyclable garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}	78
	Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}	68
	Noise level corrected for L _{Aeq,15minutes} at R1	61
	Noise criterion (evening)	48
	Exceeding level	13
	Compliance [Y/N]	N

A maximum exceeding level of **13 dB** is expected at receiver location **R1** before 10 pm.

5.3.2 Noise Impact Assessment After 10 pm

Similarly, noise calculation scenarios for general garbage collection and recyclable garbage collection with glass bottles were considered for the assessment period after 10 pm. Additional noise analysis has been included for sleep disturbance assessment (Table 7).

Table 6. Garbage collection noise levels and noise criteria after 10 pm (assessed at R1) – L_{Aeq} [dB]

Description		L _{Aeq,period} dB
General Garbage Collection	General garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}	72
	Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}	62
	Noise level corrected for L _{Aeq,15minutes} at R1	55
	Noise criterion (night-time)	43
	Exceeding level	12
	Compliance [Y/N]	N
	Recyclable Garbage Collection	Recyclable garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}
Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}		68
Noise level corrected for L _{Aeq,15minutes} at R1		61
Noise criterion (night-time)		43
Exceeding level		17
Compliance [Y/N]		N

A maximum exceeding level of **17 dB** is expected at receiver location **R1** after 10 pm.

Table 7. Garbage collection noise levels and noise criteria after 10 pm for sleep disturbance assessment (assessed at R1) – L_{Aeq} [dB]

Description		Noise level L _{Aeq,period} dB	Noise level L _{A1} dB	Noise level L _{Amax} dB
General Garbage Collection	General garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}	72	86	81
	Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}	62	76	71
	Noise level corrected for L _{Aeq,15minutes} at R1	55	69	64
	Noise criterion (night-time)	52	62 Sleep disturbance criterion	62 Sleep disturbance criterion
	Exceeding level	3	7	2
	Compliance [Y/N]	N	N	N
	Recyclable Garbage Collection	Recyclable garbage collection noise levels @ 6 m – L _{Aeq,3 minutes}	78	88
Calculated general garbage collection noise @ 20 m (R1) – L _{Aeq,3 minutes}	68	78	76	
Noise level corrected for L _{Aeq,15minutes} at R1	61	71	69	
Noise criterion (night-time)	52	62 Sleep disturbance criterion	62 Sleep disturbance criterion	
Exceeding level	9	9	7	
Compliance [Y/N]	N	N	N	

Based on the exceeding level of 2~9 dB as shown in Table 7, sleep disturbance is likely to occur.

5.4 RECOMMENDATIONS

For achieving the compliance at all periods, the following are recommended:

- Allowing the garbage collection between 0800 and 2200 hours only.
- Glass bottles are to be bagged and wrapped with new papers to prevent cluttering noise to occur.
- Truck reversing beeping alarms to be replaced with a smart alarm system.
- A solid building enclosure should be erected over the garbage collection area to provide a minimum noise reduction of at least 20 dB. This would entail standard building materials.

Walls could be constructed of:

- timber stud frame
- 15 mm compressed fibre cement sheeting (external)
- corrugated roof over 9 mm compressed fibre cement sheet over roof joists

- solid roller door (minimal air gaps along periphery)
- solid timber door of access into garbage collection
- quiet extraction fan located on roof-top.

Alternatively, relocating the garbage collection point at some further distance from the nearest residents. Note, doubling the distance is equivalent to 6 dB noise reduction. On this basis, if no enclosure is provided, the garbage collection should be located at least four times the distance away from the garbage collection point.



6.0 CONCLUSION

Koikas Acoustics was requested to prepare an acoustical report to quantify the noise impact of the proposed garbage collection point to be located at approximately 20 m to the existing residential dwelling at 233 Whale Beach Road, Whale Beach NSW.

Our assessment concludes the following concerning the assessed noise from the proposed garbage collection:

- The noise level of the typical garbage collection is expected to exceed the nominated noise criterion level by up to 13 dB before 10 pm and up to 17 dB after 10 pm, and would be considered as being offensive noise by a person with normal hearing.
- Sleep disturbance is likely to occur if the garbage collection is to occur after 10 pm.

When the recommendations of this acoustical report being implemented (Section 5.4), it is the professional opinion of Koikas Acoustics that the nominated noise criteria will be achieved for the typical garbage collection servicing the new development at 231 Whale Beach Road, Whale Beach NSW.



APPENDIX A

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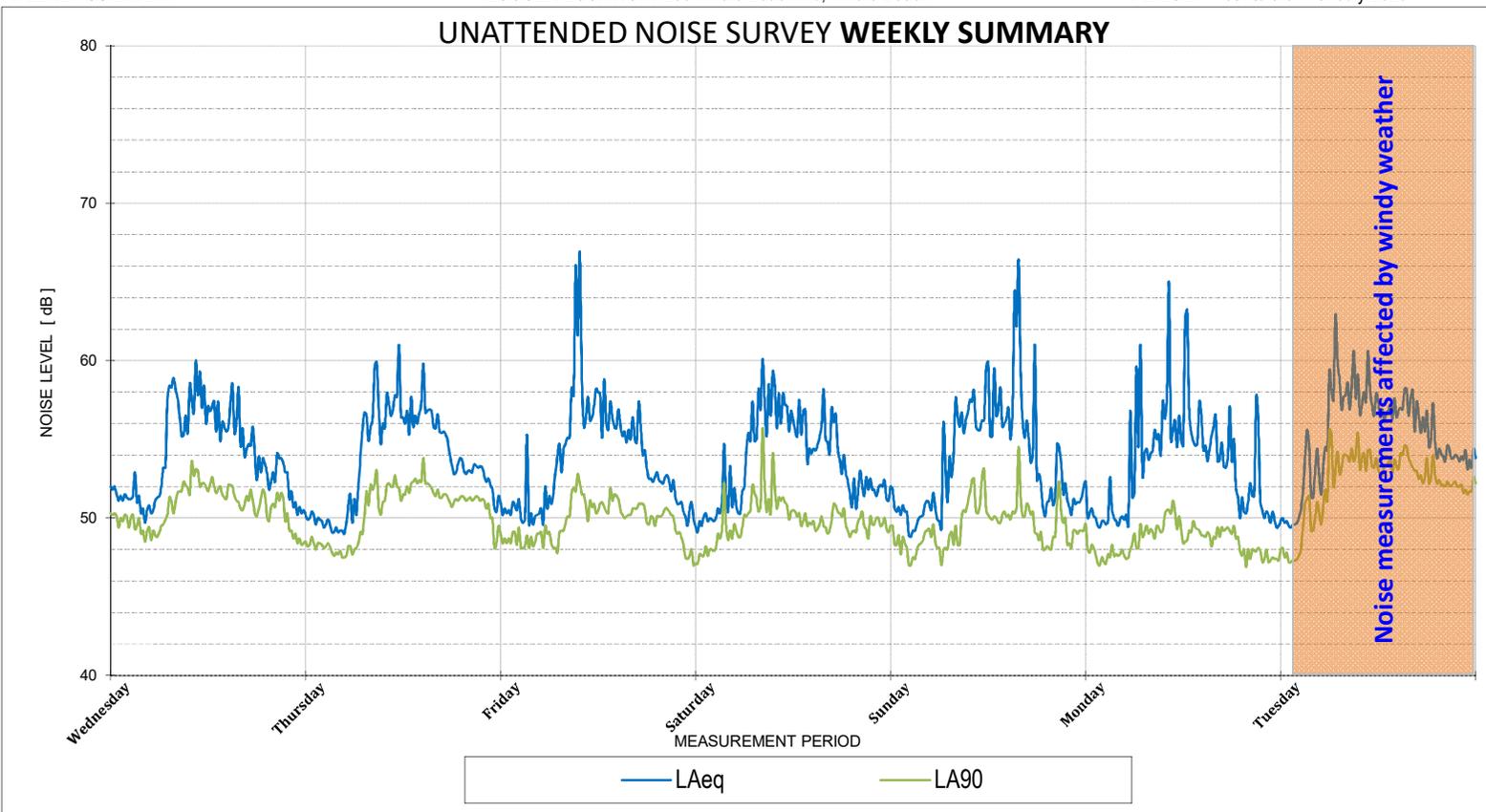
APPENDIX A

WEEKLY SUMMARY

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

PERIOD: 8th to the 14th July 2020

UNATTENDED NOISE SURVEY WEEKLY SUMMARY



Sundays and Public Holidays the hours change to 0800

Noise measurements affected by inclement weather conditons and have been excluded.

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	LA90 Evening	LA90 Night-time
Day 1	51	50	48
Day 2	51	51	48
Day 3	50	49	48
Day 4	49	49	47
Day 5	50	48	47
Day 6	49	47	47
Day 7	53	52	47
RBL	50	49	47

	LAeq Daytime	LAeq Evening	LAeq Night-time
Day 1	57	53	51
Day 2	57	53	50
Day 3	58	52	51
Day 4	56	52	51
Day 5	58	52	51
Day 6	57	53	53
Day 7	58	55	54
Average	57	53	51

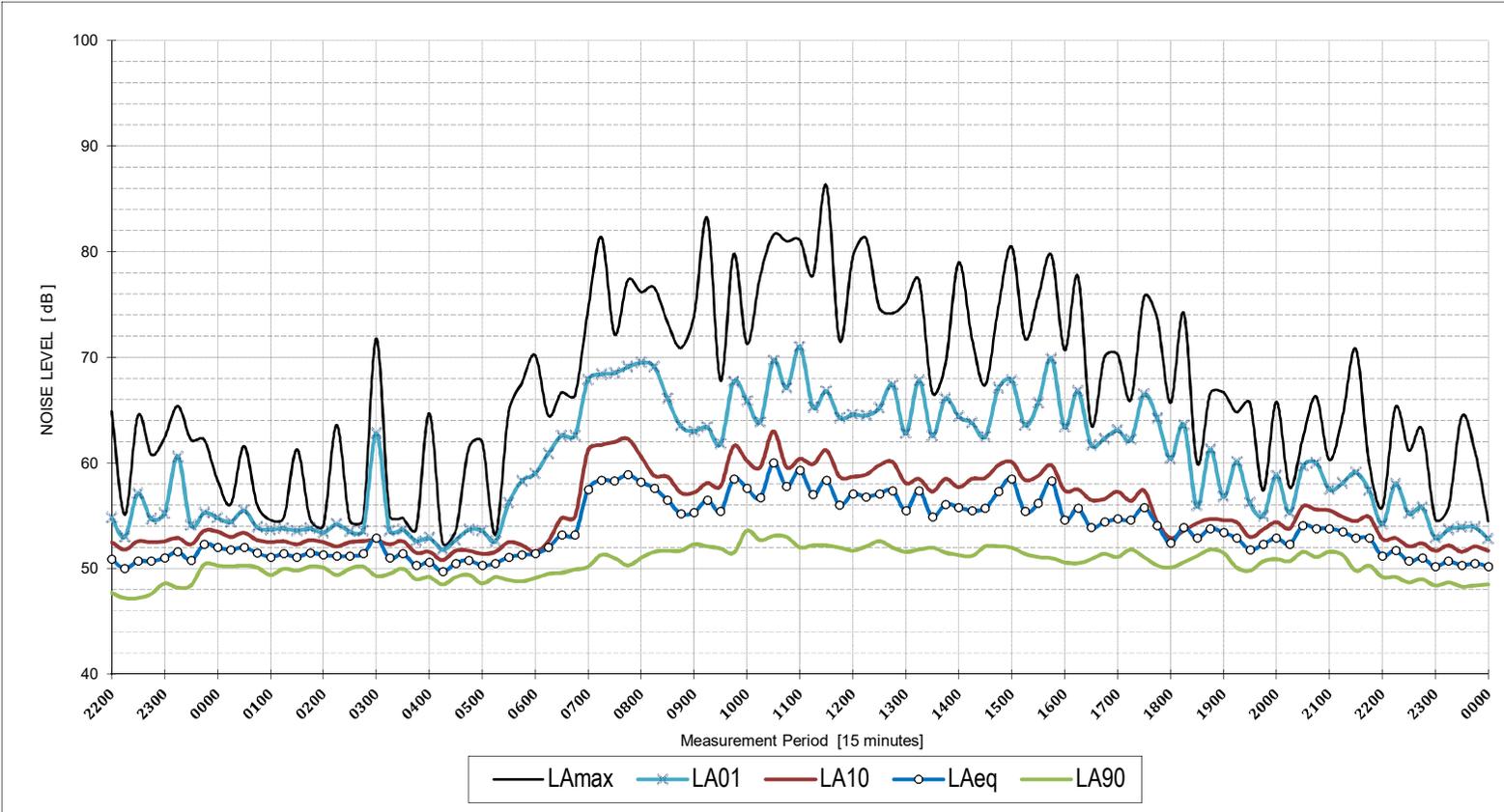
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	56	dB
LAeq 9 hrs	2200-0700	51	dB
Max LAeq 1 hr	0700-2200	59	dB
Max LAeq 1 hr	2200-0700	52	dB

DAY 1

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Wednesday, 8 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	51	dB
LA90 Evening	1800-2200	50	dB
LA90 Night-time	2200-0700	48	dB
LAeq Daytime	0700-1800	57	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	51	dB

TRAFFIC & MISC. NOISE METRICS

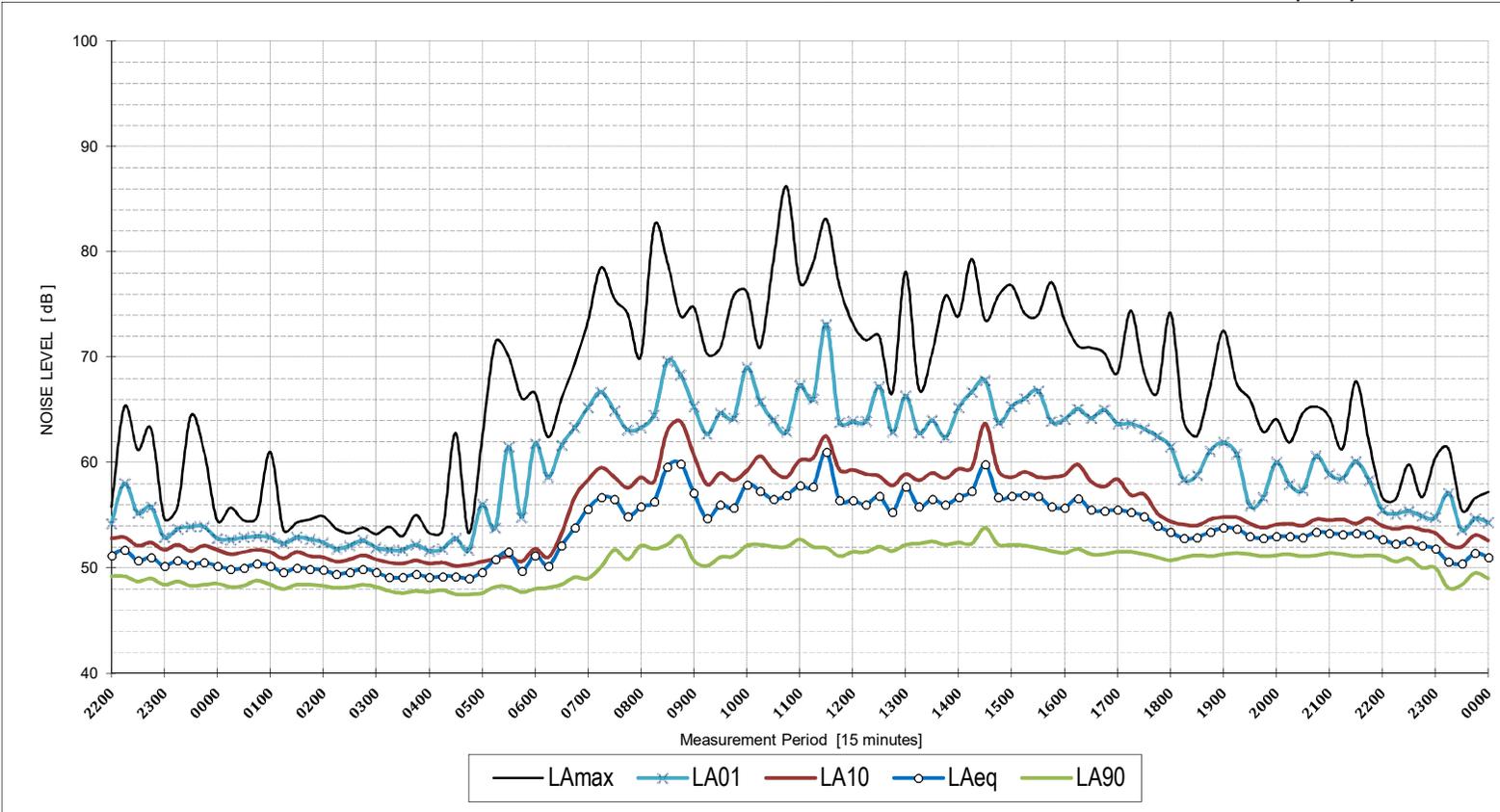
LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$LA_{max} - LA_{eq} \geq 15$]	3
---	---

DAY 2

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Thursday, 9 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	51	dB
LA90 Evening	1800-2200	51	dB
LA90 Night-time	2200-0700	48	dB
LAeq Daytime	0700-1800	57	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	50	dB

TRAFFIC & MISC. NOISE METRICS

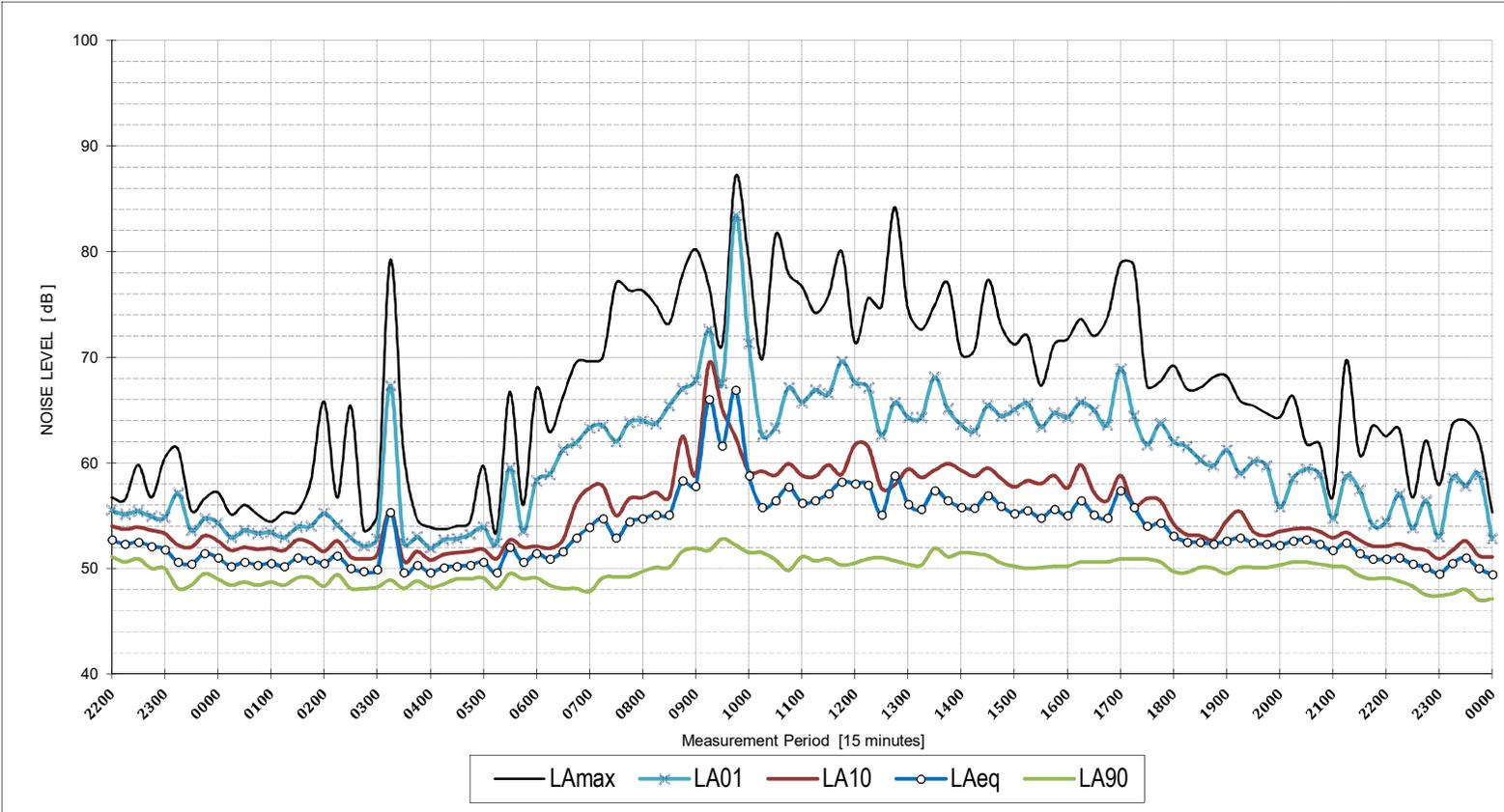
LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	50	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$LA_{max} - LA_{eq} \geq 15$]	5
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DAY 3

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Friday, 10 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	50	dB
LA90 Evening	1800-2200	49	dB
LA90 Night-time	2200-0700	48	dB
LAeq Daytime	0700-1800	58	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	51	dB

TRAFFIC & MISC. NOISE METRICS

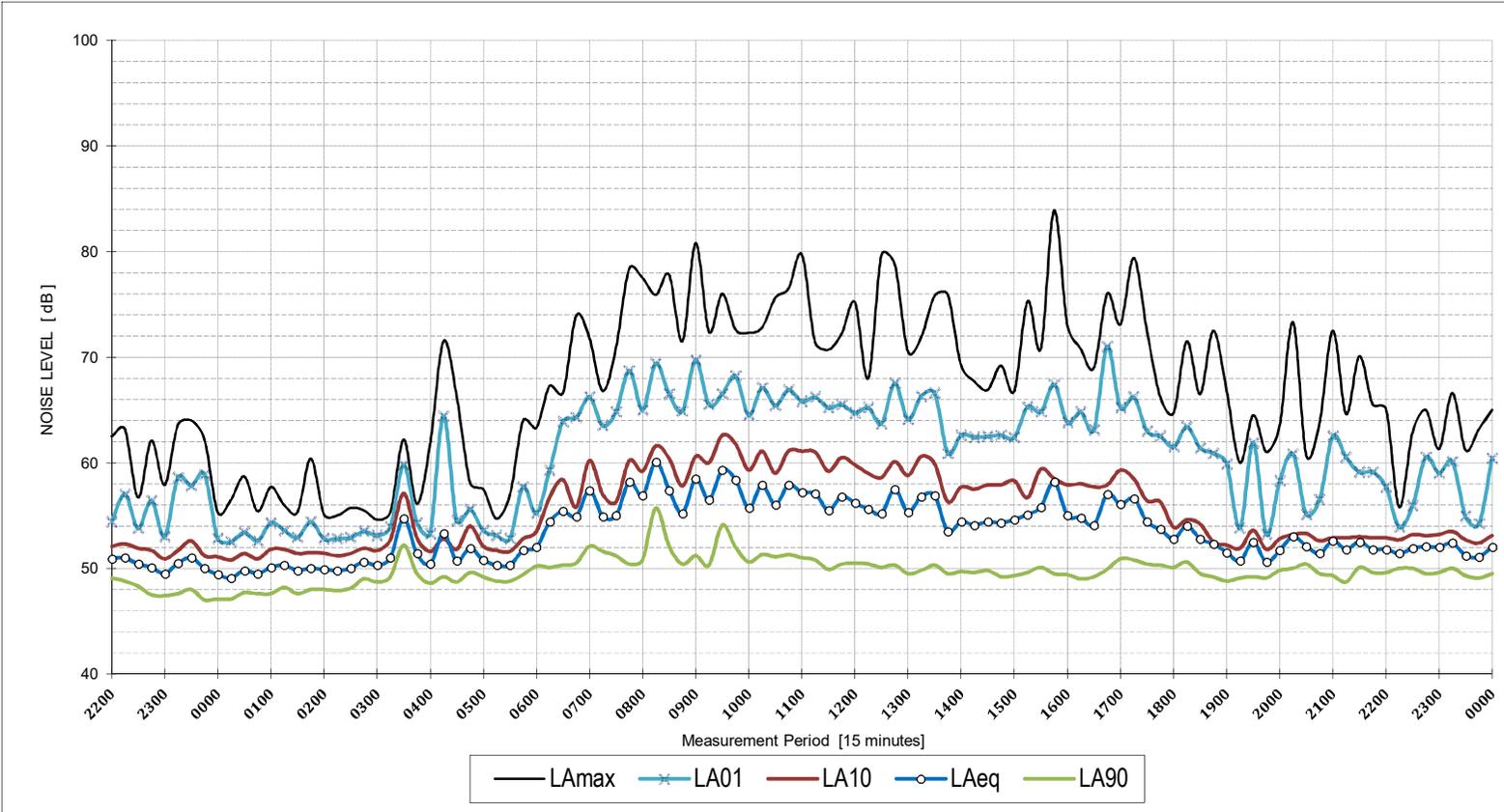
LAeq 15 hours	0700-2200	57	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	59	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	5
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DAY 4

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Saturday, 11 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	49	dB
LA90 Evening	1800-2200	49	dB
LA90 Night-time	2200-0700	47	dB
LAeq Daytime	0700-1800	56	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	51	dB

TRAFFIC & MISC. NOISE METRICS

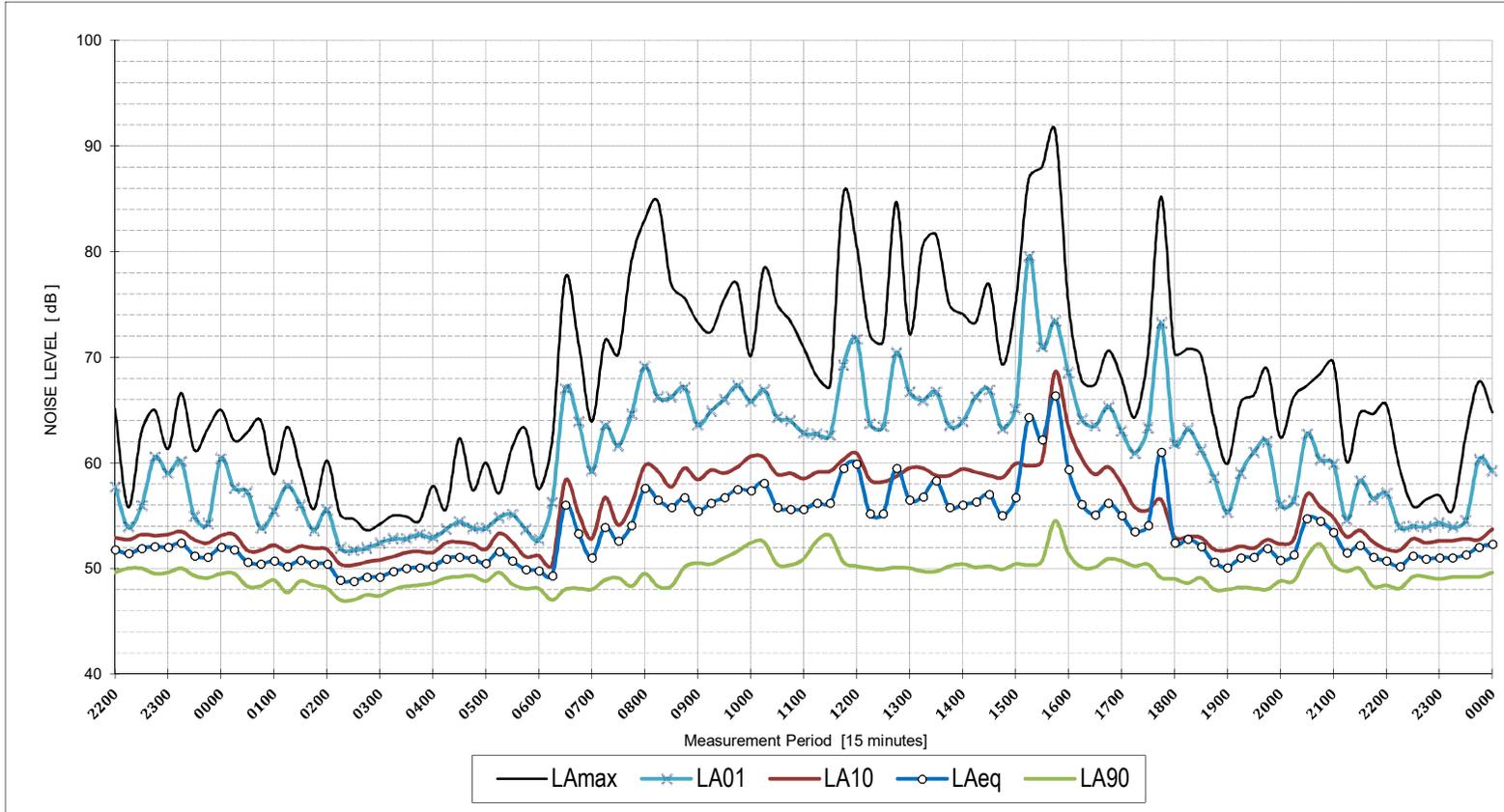
LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	52	dB

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

DAY 5

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Sunday, 12 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	50	dB
LA90 Evening	1800-2200	48	dB
LA90 Night-time	2200-0800	47	dB
LAeq Daytime	0800-1800	58	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0800	51	dB

TRAFFIC & MISC. NOISE METRICS

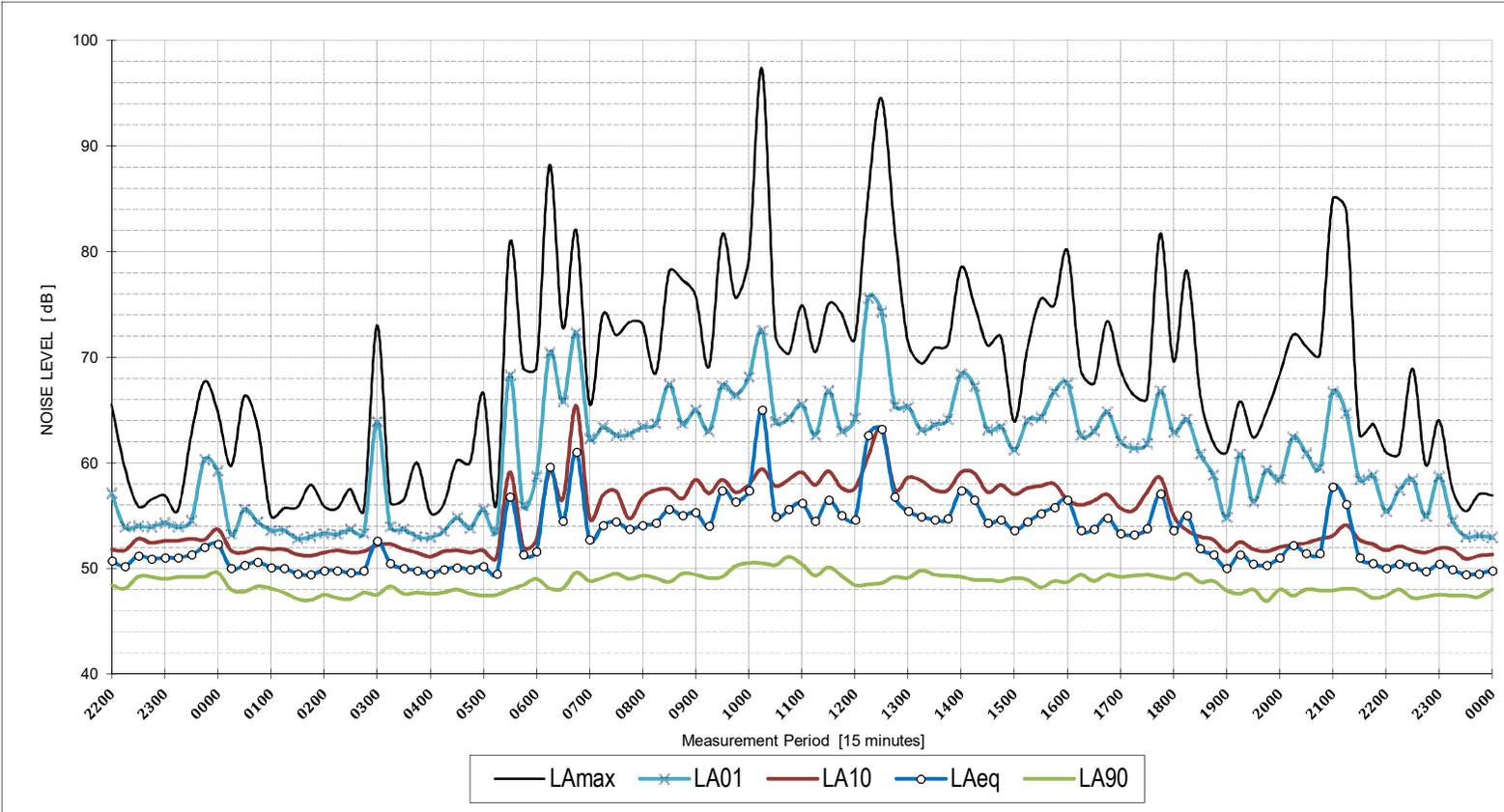
LAeq 15 hours	0700-2200	57	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	59	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	2
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DAY 6

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Monday, 13 July 2020



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	49	dB
LA90 Evening	1800-2200	47	dB
LA90 Night-time	2200-0700	47	dB
LAeq Daytime	0700-1800	57	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	53	dB

TRAFFIC & MISC. NOISE METRICS

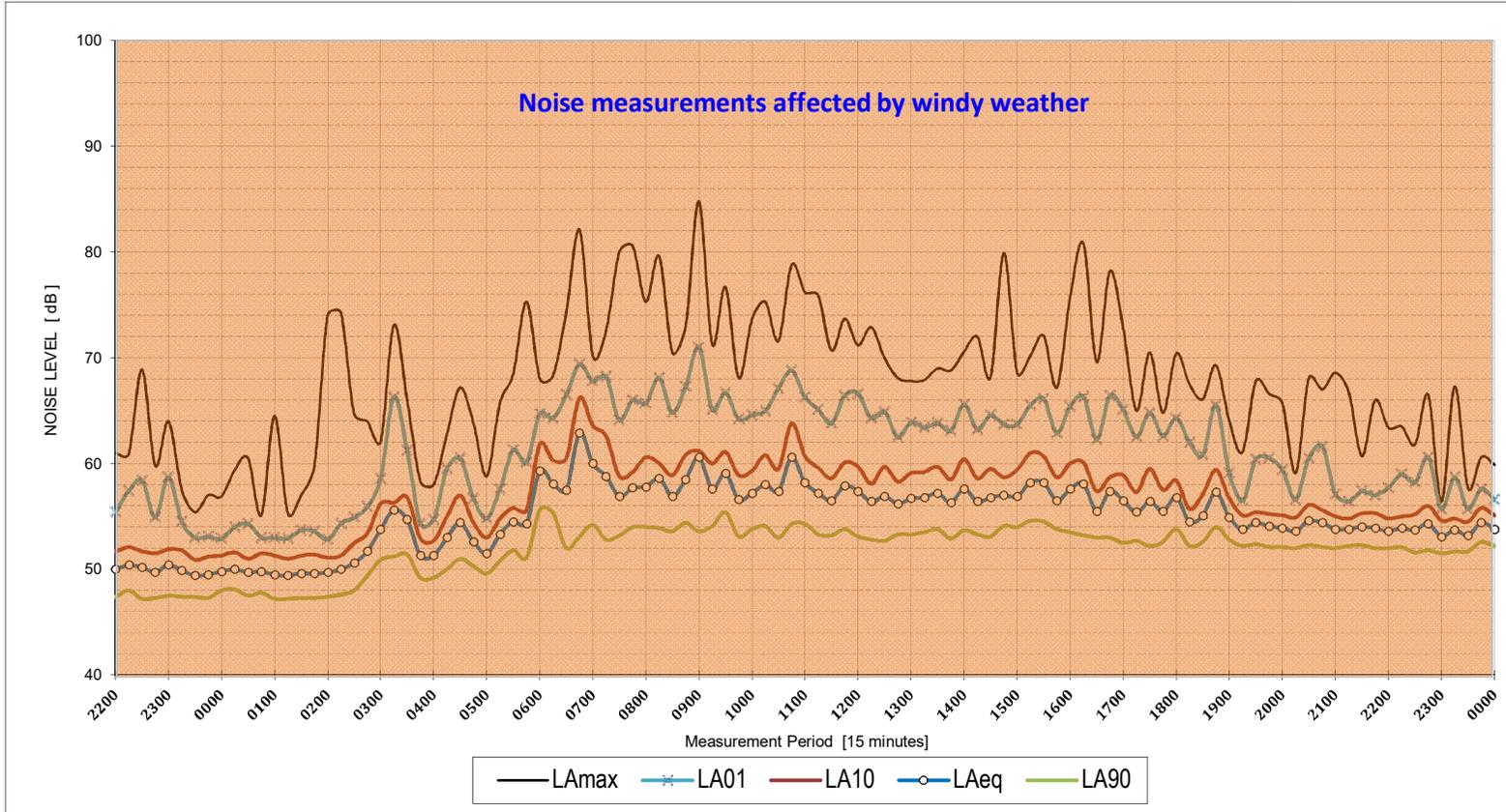
LAeq 15 hours	0700-2200	56	dB
LAeq 9 hours	2200-0700	53	dB
Max LAeq 1 hour	0700-2200	60	dB
Max LAeq 1 hour	2200-0700	53	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	10
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DAY 7

LOGGER LOCATION: 233 Whale Beach Rd, Whale Beach

DATE: Tuesday, 14 July 2020



Noise measurements affected by inclement weather conditions and have been excluded.

AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	53	dB
LA90 Evening	1800-2200	52	dB
LA90 Night-time	2200-0700	47	dB
LAeq Daytime	0700-1800	58	dB
LAeq Evening	1800-2200	55	dB
LAeq Night-time	2200-0700	54	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	57	dB
LAeq 9 hours	2200-0700	54	dB
Max LAeq 1 hour	0700-2200	59	dB
Max LAeq 1 hour	2200-0700	56	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	8
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