4th QUARTER 2020 NOISE MONITORING

Concrush Pty Ltd
21 Racecourse Rd, Teralba

Prepared for CONCRUSH

Prepared by RCA Australia

RCA ref 13155-605/0

February 2021

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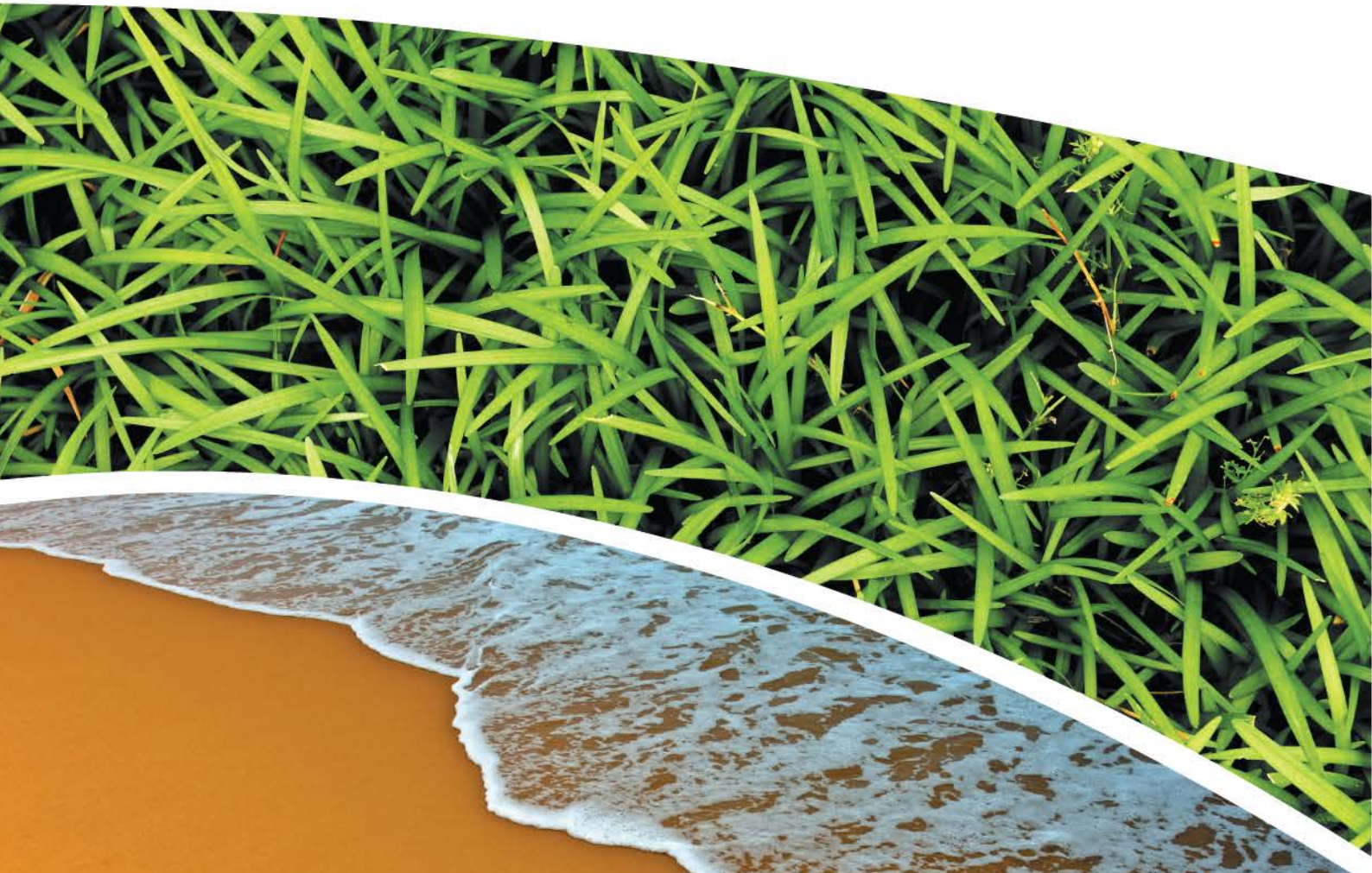
DRAFT



RCA AUSTRALIA
ABN 53 063 515 711

92 Hill Street, CARRINGTON NSW 2294

Telephone: +61 2 4902 9200
Facsimile: +61 2 4902 9299
Email: administrator@rca.com.au
Internet: www.rca.com.au

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DOCUMENT STATUS						
Rev No	Comment	Author	Reviewer	Approved for Issue (Project Manager)		
				Name	Signature	Date
/0	Draft	Dario Barbosa	A. Rees	A. Rees		05.02.21

DOCUMENT DISTRIBUTION				
Rev No	Copies	Format	Issued to	
/0	1	Electronic report	RCA – job archive	05.02.21
/0	1	Electronic email	Kevin Thompson - Kevin@concrush.com.au	05.02.21

bsi. ISO 9001 Quality Management

bsi. AS/NZS 4801 Occupational Health and Safety Management

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WEEKLY NOISE MEASUREMENTS – ON-SITE MONITOR SV 307

RCA ref 13155-605/0

5 February 2021

Concrush Pty Ltd
21 Racecourse Rd
Teralba NSW 2284

Attention: Mr Kevin Thompson

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4TH QUARTER 2020 NOISE MONITORING
CONCRUSH SITE, 21 RACECOURSE RD, TERALBA

1 INTRODUCTION

RCA Australia (RCA) was engaged by Concrush Pty Ltd (Concrush) to carry out a quarterly noise monitoring survey for the Concrush site facility located at 21 Racecourse Road, Teralba, NSW. The purpose of the noise survey was to monitor the noise levels at the closest sensitive receivers and assess site noise against relevant noise criteria.

The survey has been conducted in accordance with the requirements of AS 1055-2018 - Acoustics - Description and Measurement of Environmental Noise [1] and the Noise Policy for Industry [2] (NPfI), (EPA 2017).

Consent Condition B47 makes reference to observing noise limits stated in EPL13351. EPL13351 however does not contain any noise limits, and so environmental noise management levels has been based on the Operational Noise Management Plan [3] (ONMP) for the Project prepared by RCA.

2 SITE & SURROUNDS

2.1 LOCATION AND SENSITIVE RECEIVERS

Attended noise monitoring will be undertaken on a quarterly basis at the monitoring locations shown in **Appendix B.** Indicative monitoring location coordinates are provided in **Table 1** but these may change depending on safety and access considerations and to minimise disturbance to residential receivers.

Table 1 *Quarterly noise monitoring locations*

NCA	Latitude	Longitude
NCA 1	32°56'30.25"S	151°37'16.73"E
NCA 2	32°56'50.58"S	151°37'15.87"E
NCA 3	32°56'34.97"S	151°37'23.75"E

3 CRITERIA

The site's environmental noise management levels at the nominated monitoring locations are shown in **Table 2.**

Table 2 *Quarterly noise monitoring locations and noise management levels*

NCA	Day noise management level $L_{Aeq,15\ min}$ dBA	Eve noise management level $L_{Aeq,15\ min}$ dBA
NCA 1	51	43
NCA 2	56	47
NCA 3	53	53

3.1 ANNOYING CHARACTERISTICS

Under the NPfI corrections to measured site levels may apply if annoying characteristics apply to the noise. Possible characteristics are identified in **Table 3**.

Table 3 *Annoying characteristics as defined in NPfI*

Factor	Description	Correction
Tonal noise	Level of one-third octave band L_{Zeq} exceeds the level of the adjacent bands on both sides by: • 5 dB or more if the centre frequency of the band containing the tone is in the range 500-10,000 Hz • 8 dB or more if the centre frequency of the band containing the tone is in the range 160-400 Hz • 15 dB or more if the centre frequency of the band containing the tone is in the range 25-125 Hz.	5 dB
Low frequency noise	Difference between L_{Ceq} and L_{Aeq} is 15 dB or more and low frequency one-third octave band L_{Zeq} levels exceed the thresholds in Table C2 of the NPfI.	2-5 dB
Intermittent noise	Observed level of the source varies by more than 5 dB during the night.	5 dB
Duration	One noise event in a 24 hr period, which lasts less than 2.5 hours.	0-20 dB increase in criteria

3.2 WEATHER CONDITIONS

The NPfI states that environmental noise measurements should not be conducted under the following conditions:

> *Average wind speeds (over 15-minute periods or shorter) at microphone height are greater than 5 metres per second, or when rainfall occurs.*

4 SURVEY METHODOLOGY

4.1 MODIFICATIONS OF PROCEDURES

The quarterly noise monitoring methodology defined in the NMP requires two fifteen minute attended noise measurements to be taken at each monitoring location during both the day and evening. The site is not currently operational during the evening, and therefore no evening measurements were undertaken.

4.2 MONITORING LOCATIONS

Measurements were undertaken generally according to **Table 1** as shown in **Appendix B**. The NCA 2 location was moved approximately 100 m south but still within the residential estate. The modified location was adopted because there was no access to the proposed location due to houses being under construction.

4.3 EQUIPMENT

The equipment used for attended monitoring sound levels is shown below in **Table 4** and the on-site sound level monitor is shown in **Table 5**. The sound level meters are class 1 measurement instruments.

Table 4 *Equipment Used for Attended Sound Pressure Level Measurements*

Type	Make/Model	Serial Number	Last Calibrated
Sound Level Meter	SVAN 971	55582	Jun 2020
Calibrator	Rion NC73	1019 6883	Jan 2020

Table 5 *On-site sound level monitor*

Type	Make/Model	Serial Number
Sound Level Meter	SV 307	94124

4.4 WEATHER

Conditions were clear and suitable for monitoring in accordance with AS1055 and the NPfI.

Weather conditions at the time of the survey are shown in **Table 6**. Weather data has been sourced from the Concrush onsite weather station.

Table 6 *Survey weather conditions*

Survey Date	Time	Temp (°C)	Wind Speed (m/s)	Wind Direction	Cloud cover (observed)	Valid weather conditions?
10/12/20	11:50	26.6	3.4	S	1/8	Yes
10/12/20	12:15	26	3	S	1/8	Yes
10/12/20	12:40	25.8	3.8	S	1/8	Yes
10/12/20	13:10	24.4	4.3	S	1/8	Yes
10/12/20	13:35	23.9	5.6*	S	1/8	No
10/12/20	14:00	23.7	6.5*	S	1/8	No

5 SURVEY RESULTS

Table 7 provides the results of the attended noise survey.

Marked time traces of the attended noise surveys are shown in **Appendix A** at the end of this report. **Appendix C** shows weekly noise measurements taken from the on-site monitor SV 307. This will be presented for each quarterly survey so that over time a correlation between onsite and offsite noise measurements could be made, provided the site is audible at the attended monitoring locations.

Table 8 provides a compiled view of both the attended measurement results taken off site and the concurrent onsite real time noise monitor measured levels.

Table 7 *Noise survey observations*

Survey Location	Survey Start Time	Overall				Site L_{Amax} 15 min	Site L_{Aeq} 15min Limit	Site $L_{Aeq\ 15min}$ Contribution	Penalty for annoying characteristics[1]	Site $L_{Aeq\ 15min}$ Contribution including penalty	Complies with condition Y/N?	Noise Sources and Level Range dB(A)
		L_{Aeq} 15min	L_{Amax} 15 min	L_{A10} 15min	L_{A90} 15min							
NCA1	11:50	66	78	69	59	IA	51	NIL	NIL	NIL	Y	Site was inaudible. Other: Background noise coming from Cicadas and construction works @ bridge. Car Passbys ~ 73 dBA Passenger Train ~ 69 dBA Freight Train ~ 71 – 74 dBA
NCA2	12:17	64	85	59	53	IA	56	NIL	NIL	NIL	Y	Site was inaudible. Other: Background noise coming from Cicadas. Car Passby entering bridge work site ~ 84 dBA Passenger Train ~ 70 dBA
NCA3	12:41	61	86	64	56	IA	53	NIL	NIL	NIL	Y	Site was inaudible. Other: Road traffic coming from TC Frith Rd was the dominant background noise source.

Survey Location	Survey Start Time	Overall				Site L_{Amax} 15 min	Site L_{Aeq} 15min Limit	Site $L_{Aeq\ 15min}$ Contribution	Penalty for annoying characteristics[1]	Site $L_{Aeq\ 15min}$ Contribution including penalty	Complies with condition Y/N?	Noise Sources and Level Range dB(A)
		L_{Aeq} 15min	L_{Amax} 15 min	L_{A10} 15min	L_{A90} 15min							
NCA1	13:08	63	87	68	54	NM	51	NIL	NIL	NIL	Y	Excavator was occasionally audible but not measurable due to masking from ambient acoustic environment. Other: Background noise coming from Cicadas. Car Passbys ~ 70 dBA Passenger Train ~ 64 dBA Cicadas Close by ~ 68 dB
NCA2	13:35	58	76	58	53	NM	56	NIL	NIL	NIL	Y	Excavators were occasionally audible and observed to be working but not measurable due to masking from ambient acoustic environment Other: Background noise coming from Cicadas + road noise. Passenger Train ~ 69 dBA Truck Passby ~ 75 dBA

Survey Location	Survey Start Time	Overall				Site L_{Amax} 15 min	Site L_{Aeq} 15min Limit	Site $L_{Aeq\ 15min}$ Contribution	Penalty for annoying characteristics[1]	Site $L_{Aeq\ 15min}$ Contribution including penalty	Complies with condition Y/N?	Noise Sources and Level Range dB(A)
		L_{Aeq} 15min	L_{Amax} 15 min	L_{A10} 15min	L_{A90} 15min							
NCA3	13:59	62	72	65	58	IA	53	NIL	NIL	NIL	Y	Site was inaudible. Other: Road traffic coming from TC Frith Rd and Cicadas were the dominant background noise source

IA indicates “inaudible”, NM indicates “not measurable”.

Table 8 *Attended measurement and on-site real time monitor results*

Survey Location	Survey Start Time	Overall					Site L_{Amax} 15 min	Site $L_{Aeq\ 15min}$ Contribution	On-Site real time monitor results				
		L_{Aeq} 15min	L_{A01} 15min	L_{A10} 15min	L_{A90} 15min	L_{Amax} 15min			L_{Aeq} 15min	L_{A01} 15min	L_{A10} 15min	L_{A90} 15min	L_{Amax} 15min
NCA1	11:50	66	73	69	59	78	IA	NIL	66	70	68	61	78
NCA2	12:17	64	77	59	53	85	IA	NIL	63	69	66	59	79
NCA3	12:41	61	66	64	56	86	IA	NIL	63	71	69	56	75
NCA1	13:08	63	72	68	54	87	NM	NM	65	74	68	57	79

Survey Location	Survey Start Time	Overall					Site L_{Amax} 15 min	Site $L_{Aeq\ 15min}$ Contribution	On-Site real time monitor results				
		L_{Aeq} 15min	L_{A01} 15min	L_{A10} 15min	L_{A90} 15min	L_{Amax} 15min			L_{Aeq} 15min	L_{A01} 15min	L_{A10} 15min	L_{A90} 15min	L_{Amax} 15min
NCA2	13:35	58	69	58	53	76	NM	NM	60	68	62	55	80
NCA3	13:59	62	67	65	58	72	IA	NIL	61	68	63	56	78

5.1 ASSESSMENT OF ANNOYING CHARACTERISTICS

Site was not measurable. This means that activities from site were audible at times but were masked by the ambient acoustic environment. This indicates that site noise was not the primary contributor to measured noise levels. Noise correction analysis in these circumstances cannot be undertaken.

5.1.1 LOW FREQUENCY NOISE

Site was not measurable. This means that activities from site were audible at times but were masked by the ambient acoustic environment. This indicates that site noise was not the primary contributor to measured noise levels. Noise correction analysis in these circumstances cannot be undertaken.

5.1.2 INTERMITTENT NOISE

The penalty for intermittency is only applicable to the night time assessment period. This noise survey was undertaken during day time, and so this potential penalty does not apply to results in this report.

5.1.3 DURATION

Site is operational for more than 2.5 hours each day, and so no ‘duration’ modifications apply.

5.2 SUMMARY OF OBSERVATIONS

The site was intermittently audible during the second measurements at NCA 1 and NCA 2 but could not be quantified because other noise sources were dominating the ambient acoustic environment.

6 CONCLUSION

While it was not possible to determine site contributions for some measurements due to masking from the ambient acoustic environment, it can be said that the site was found not to be causing noise impacts.

Yours faithfully

RCA AUSTRALIA

Dario Barbosa
Acoustic Consultant

REFERENCES

[1] Standards Australia, AS1055 (2018): Acoustics – Description and measurement of environmental noise.

[2] The Noise Policy for Industry (NSW EPA, 2017)

[3] Operational Noise Management Plan for Concrush Pty Ltd Teralba Facility

GLOSSARY

dB (A) ..... Unit of sound pressure level, modified by the A-weighting network to represent the sensitivity of the human ear.

SPL (Lp) ..... The incremental variation of sound pressure from the reference pressure level expressed in decibels.

L_{eq}..... Equivalent continuous noise level averaged over time on an equivalent energy basis.

L_1..... Average Peak Noise Level in a measurement period.

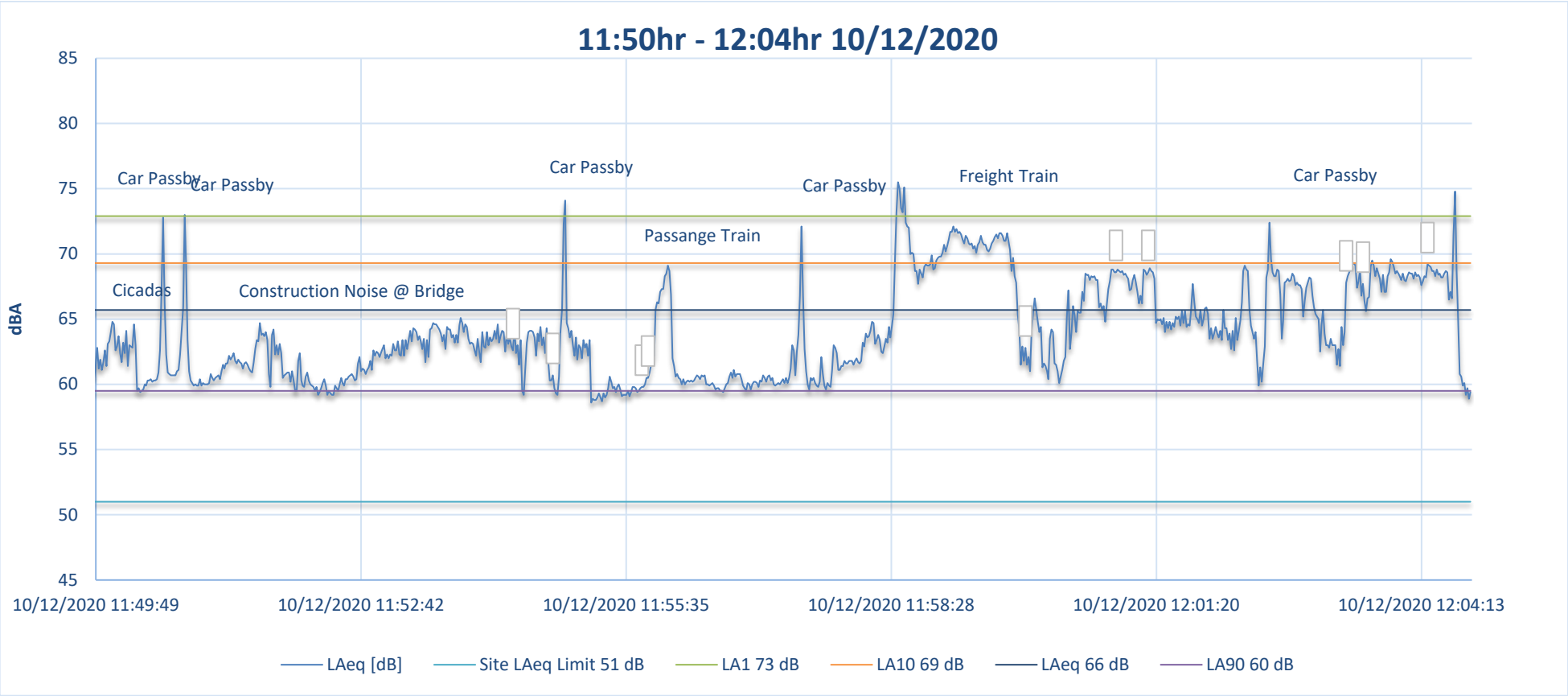
L_{10}..... Average Maximum Noise Level in a measurement period.

L_{90}..... Average Minimum Noise Level in a measurement period.

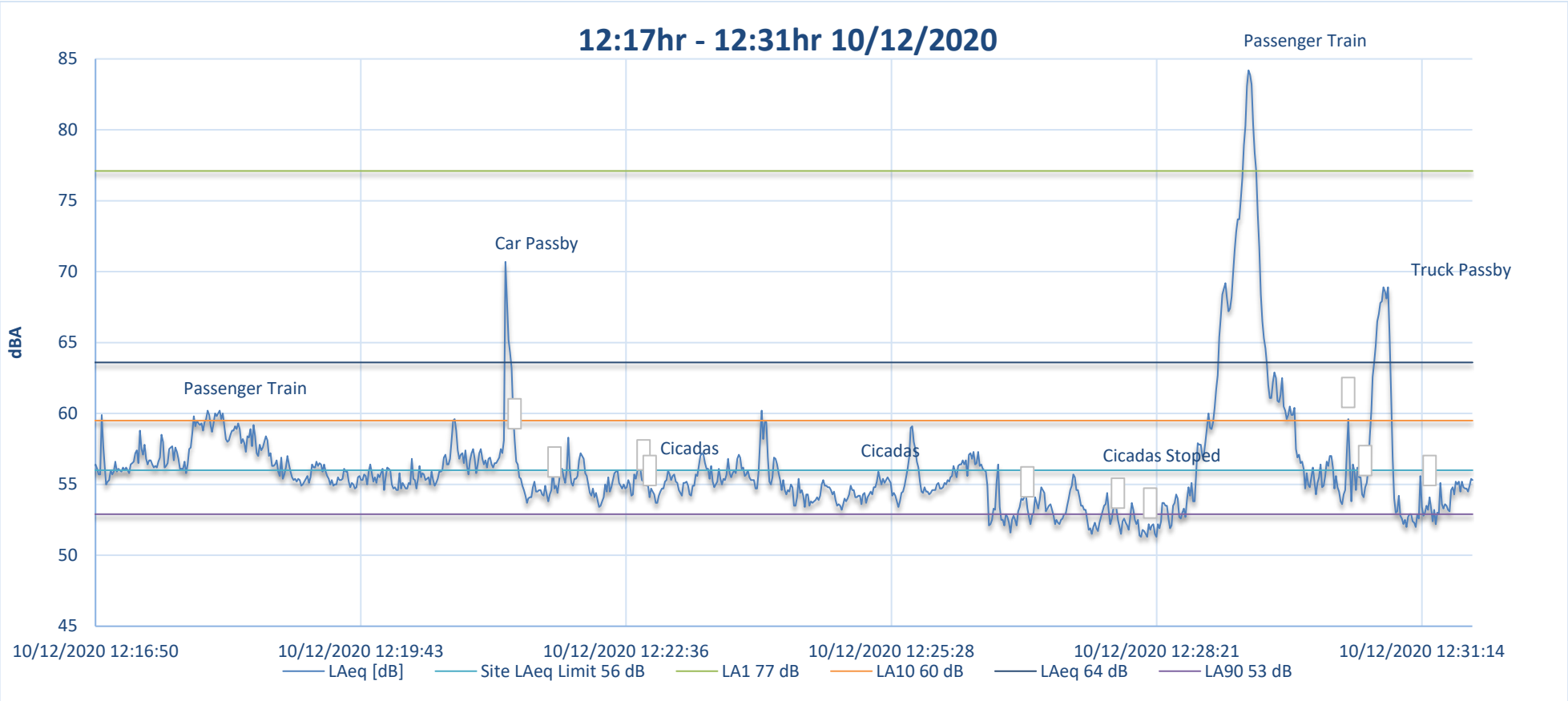
1/3 Octave ..... Division of frequencies into bands of width one-third of an octave. Sound data can be calculated for each division.

Appendix A

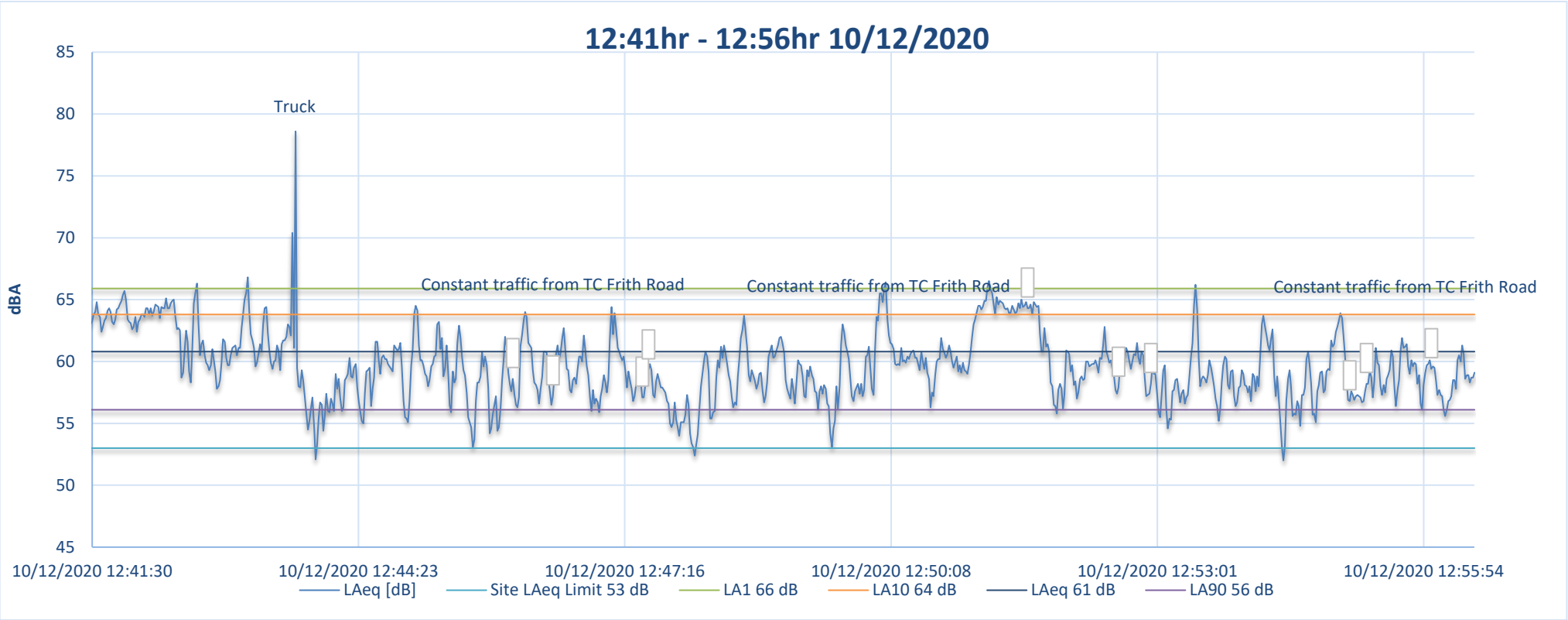
Survey Time Traces



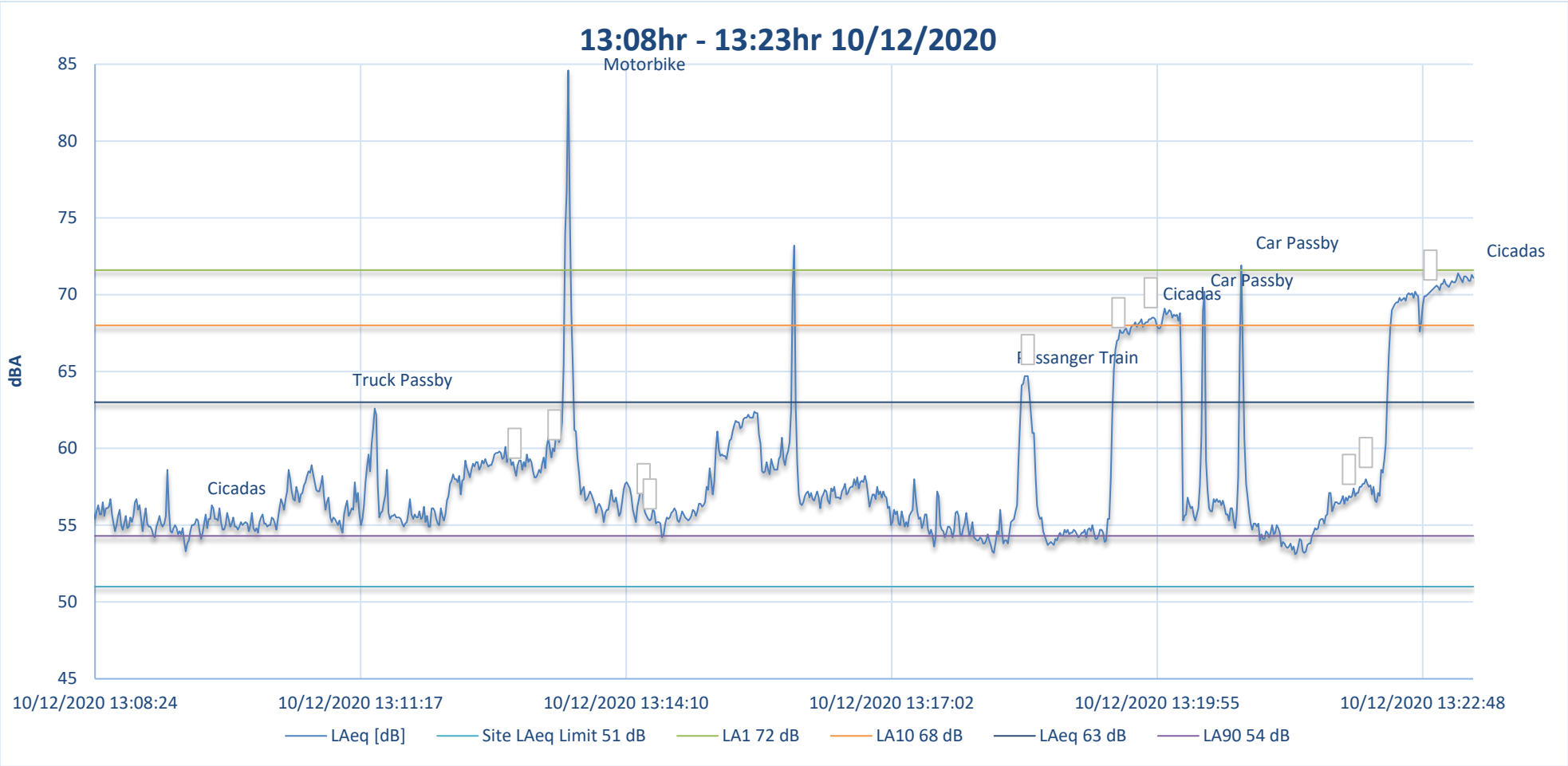
Sound Level Chart, NCA1 Day 1 measurement



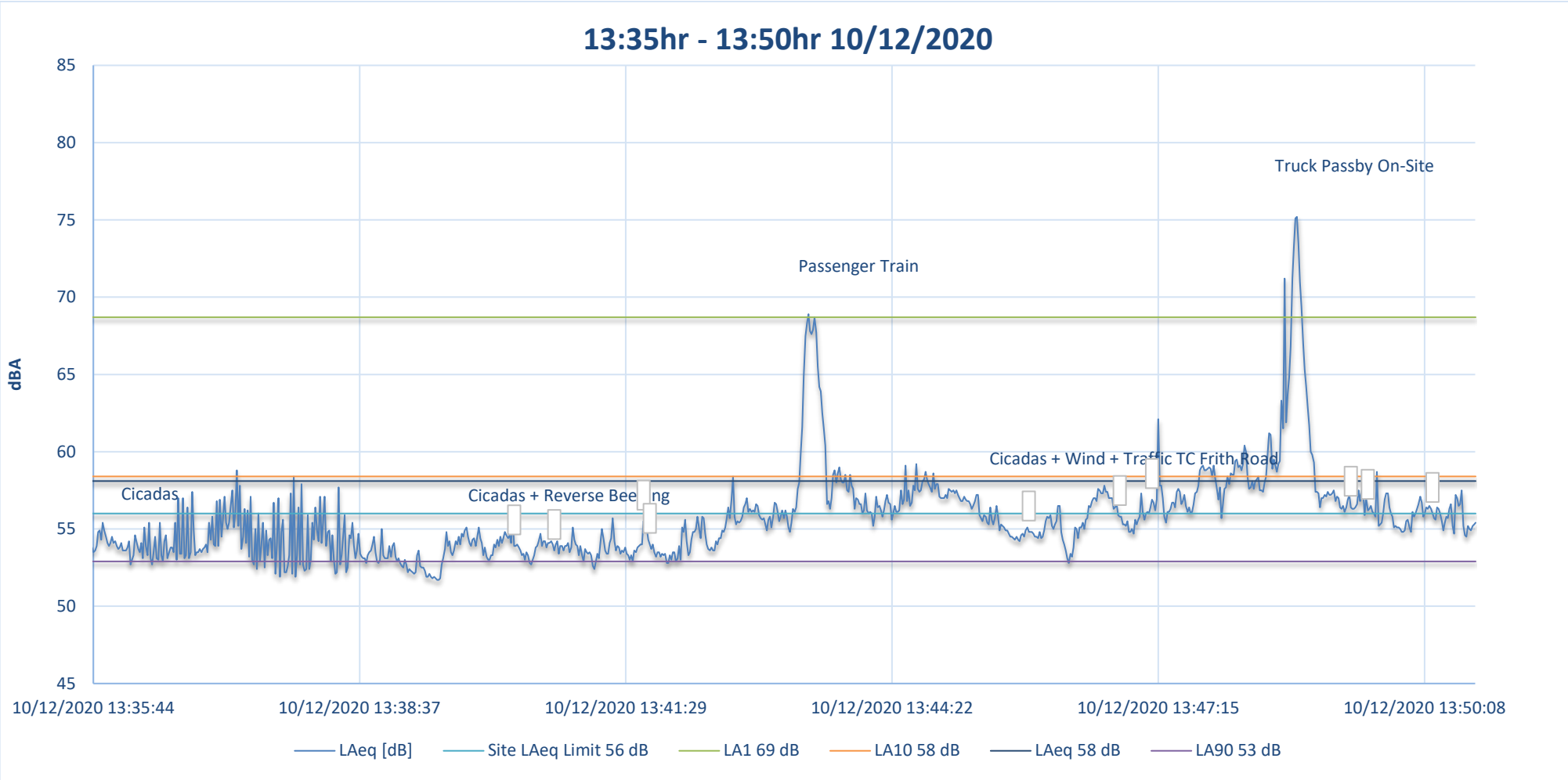
Sound Level Chart, NCA2 Day 1 measurement



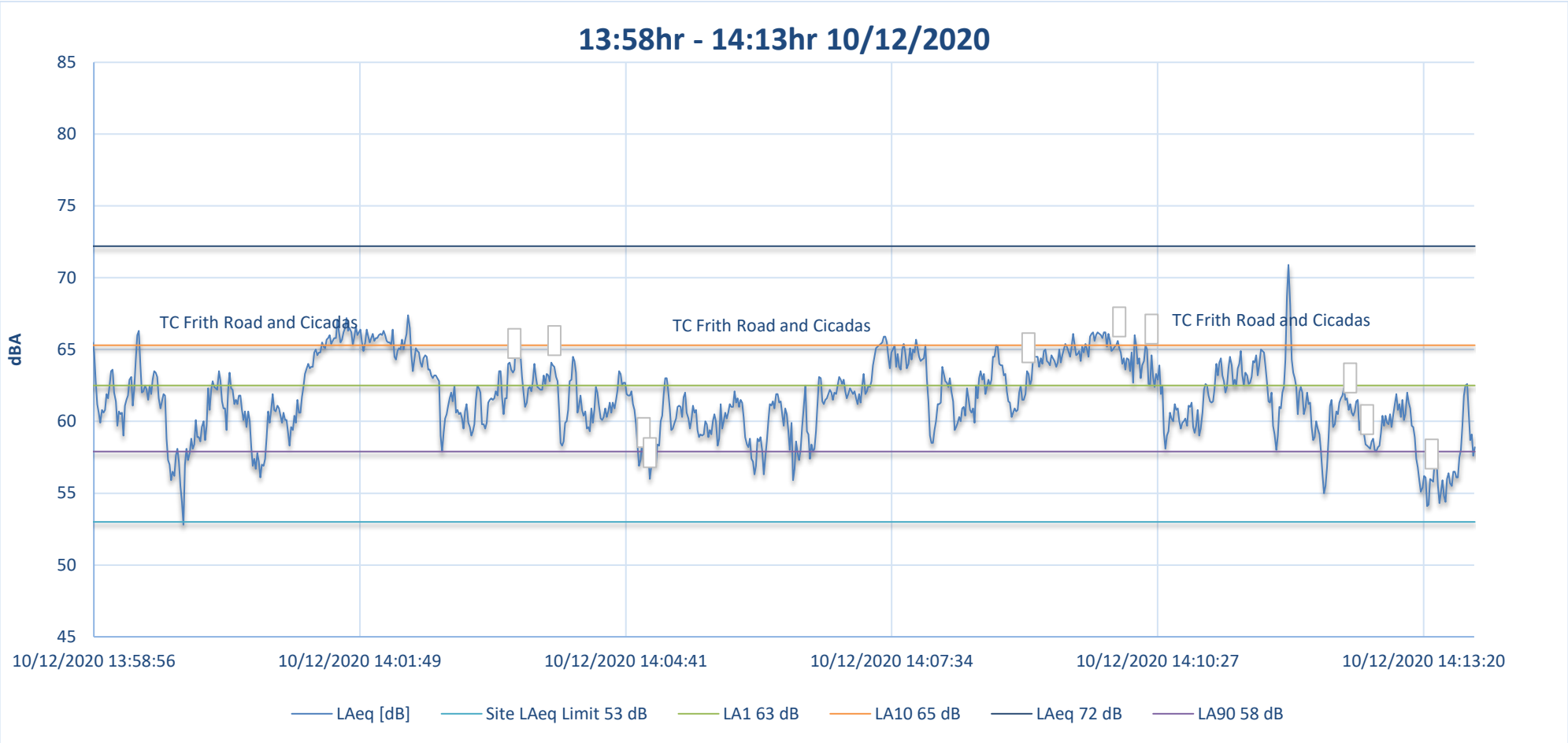
Sound Level Chart, NCA3 Day 1 measurement



Sound Level Chart, NCA1 Day 2 measurement



Sound Level Chart, NCA2 Day 2 measurement

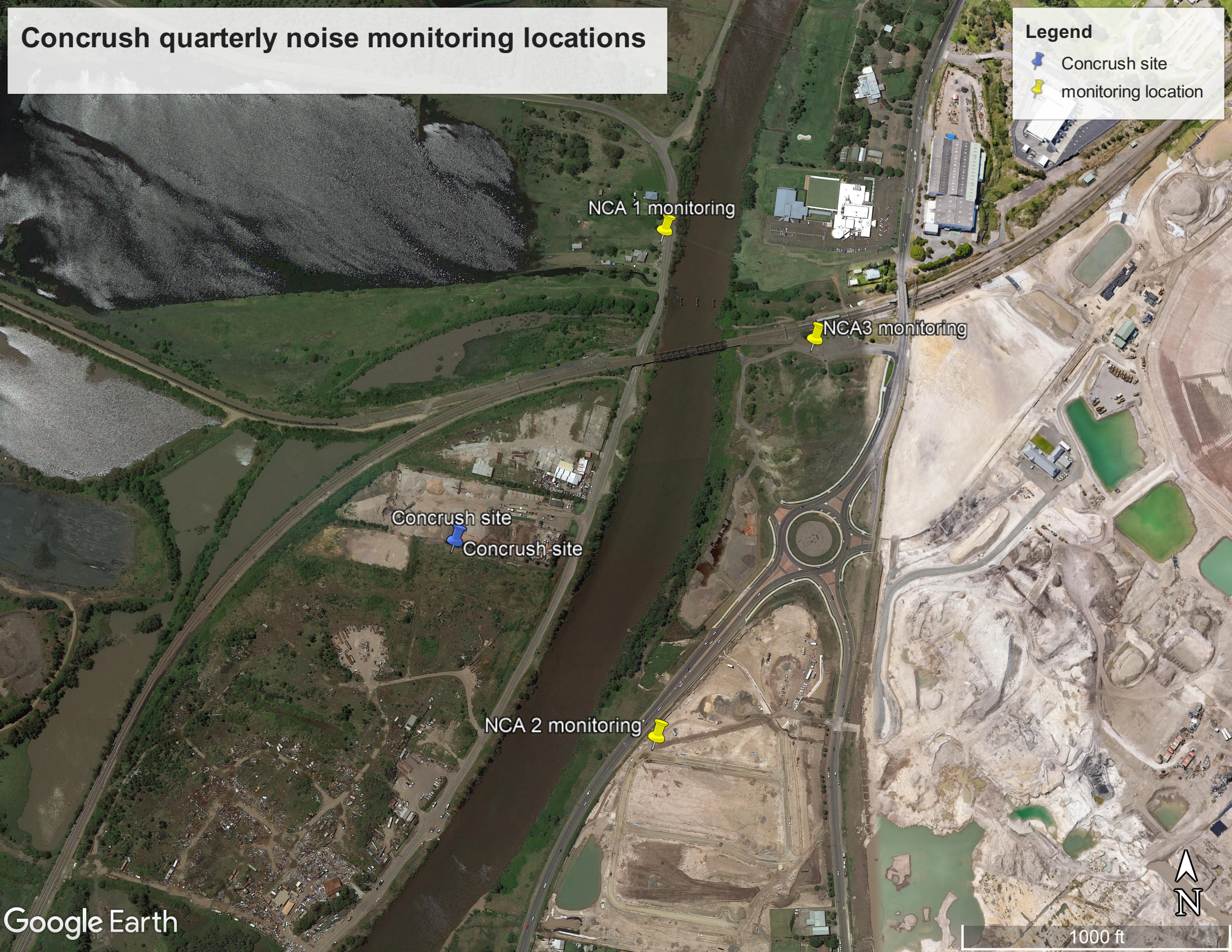


Sound Level Chart, NCA3 Day 2 measurement

Appendix B

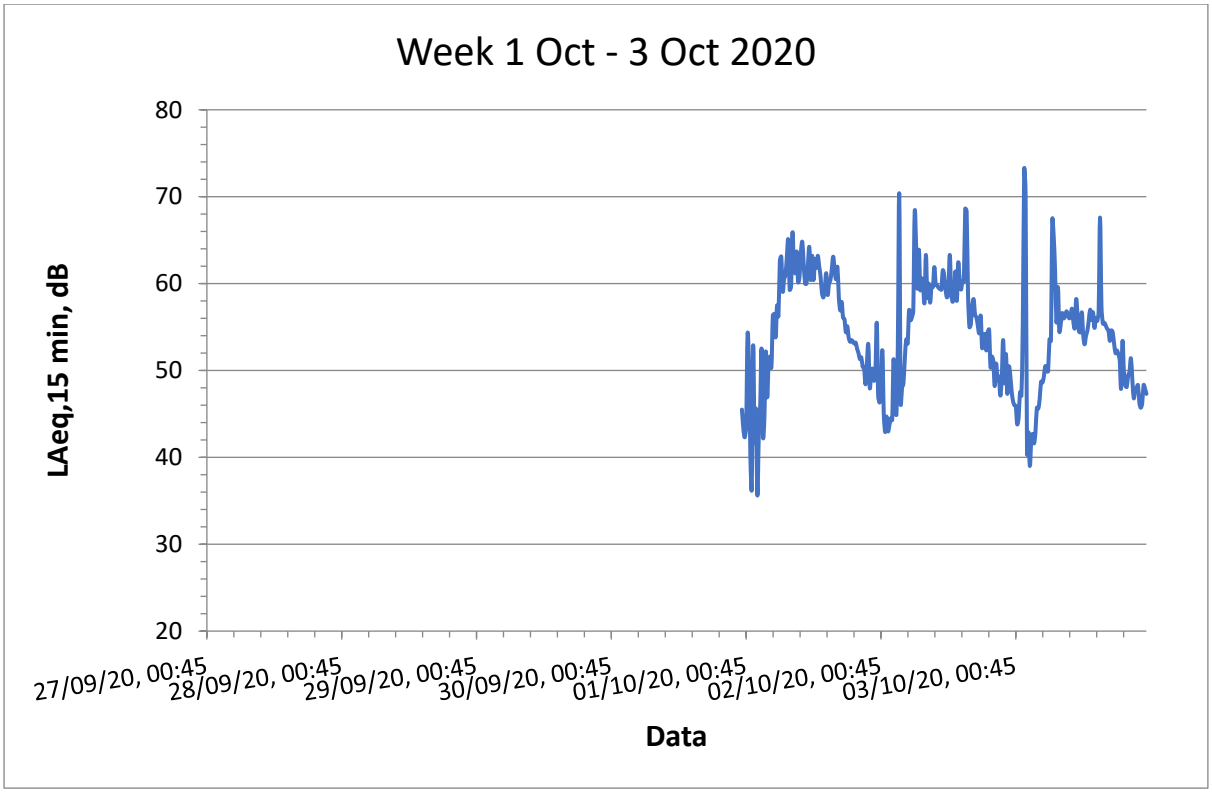
Monitoring Locations

Concrush quarterly noise monitoring locations



Appendix C

Weekly noise measurements – On-site monitor SV 307


Week 1 Oct - 3 Oct 2020
LAeq,15 min, dB
80
70
60
50
40
30
20
27/09/20, 00:45
28/09/20, 00:45
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02/10/20, 00:45
03/10/20, 00:45
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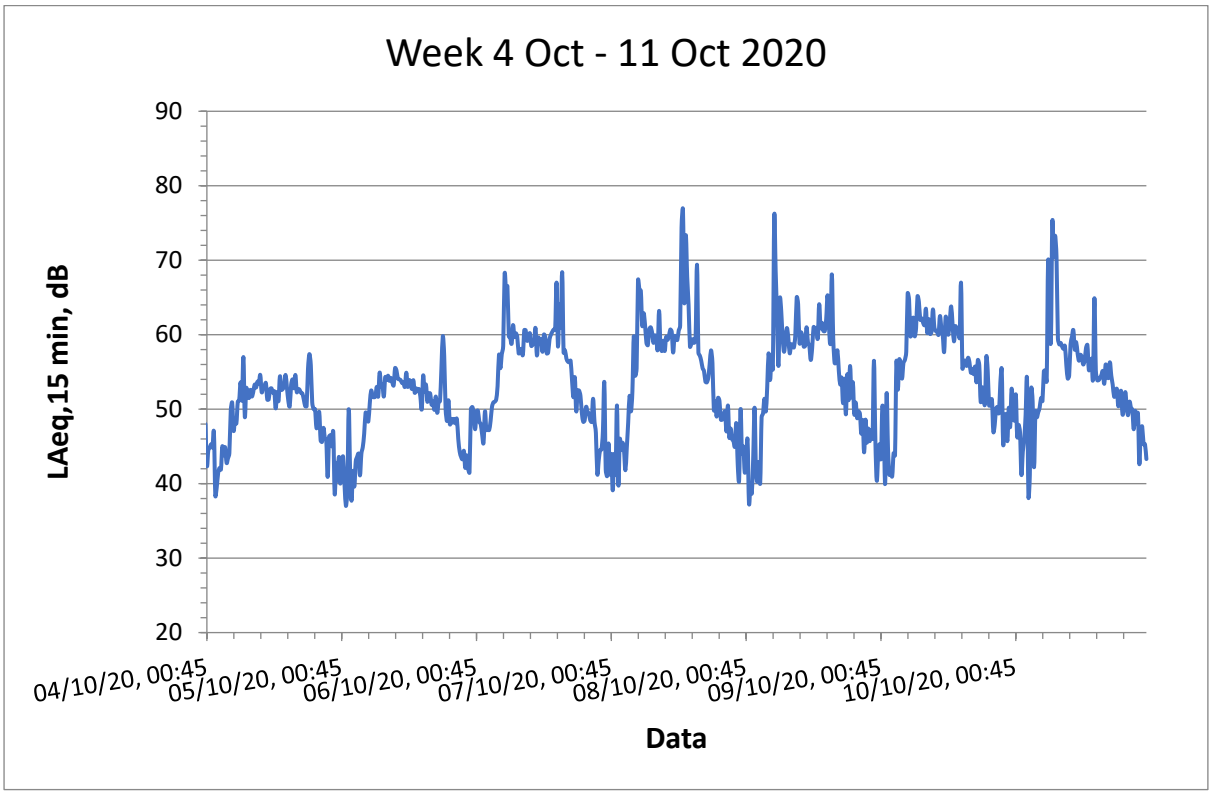
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LAeq,15 min, dB
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50
40
30
20
04/10/20, 00:45
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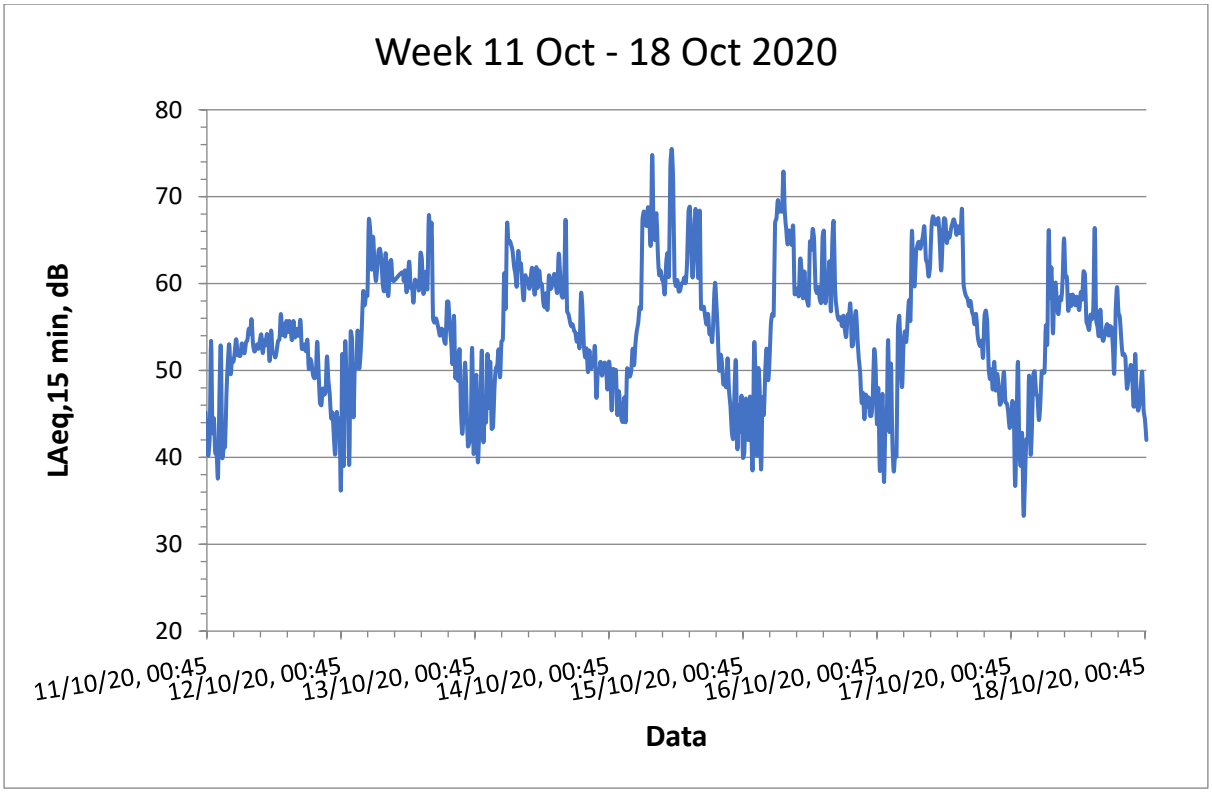
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70
60
50
40
30
20
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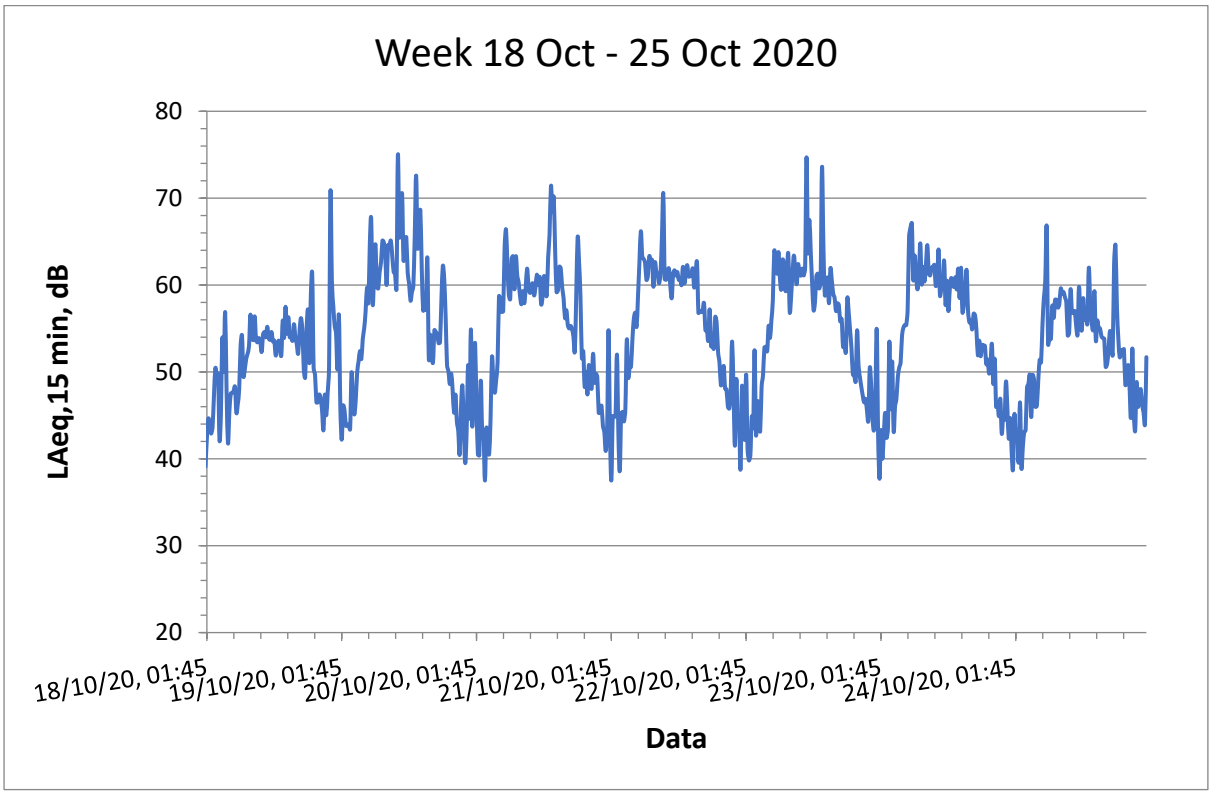
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40
30
20
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24/10/20, 01:45
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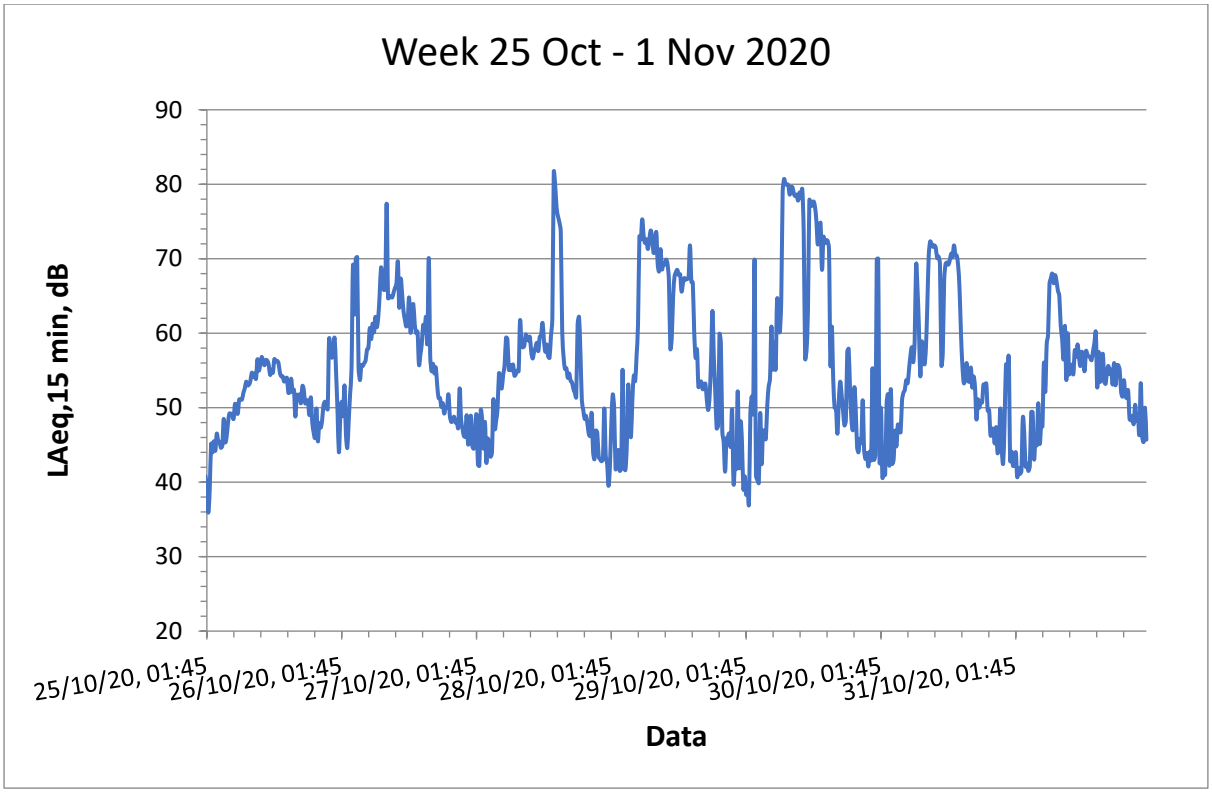
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70
60
50
40
30
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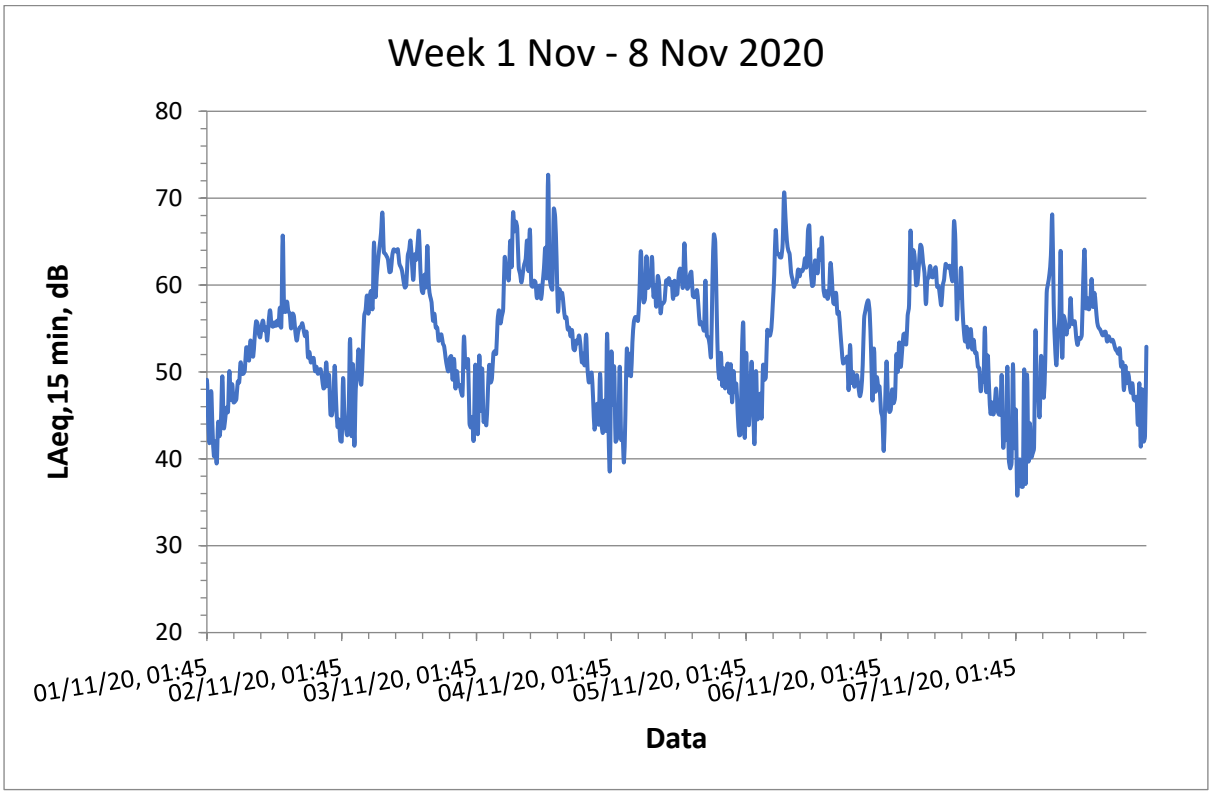
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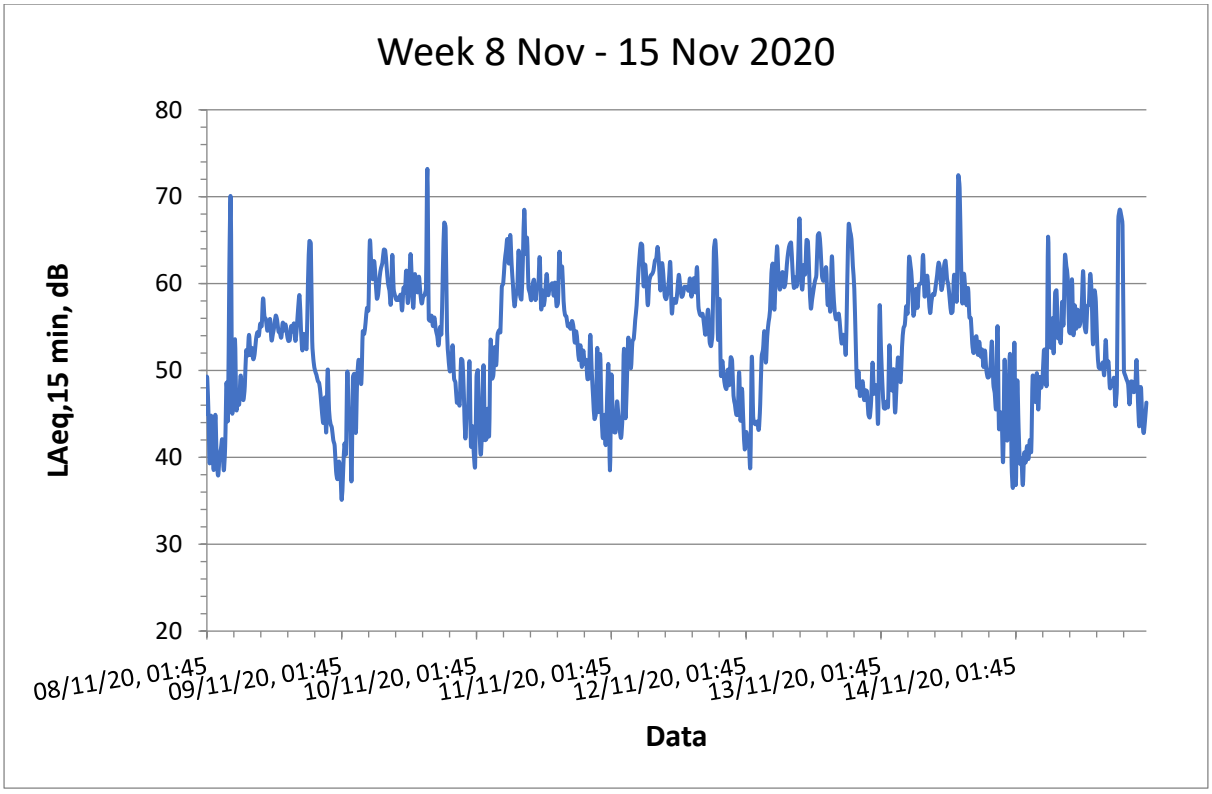
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30
20
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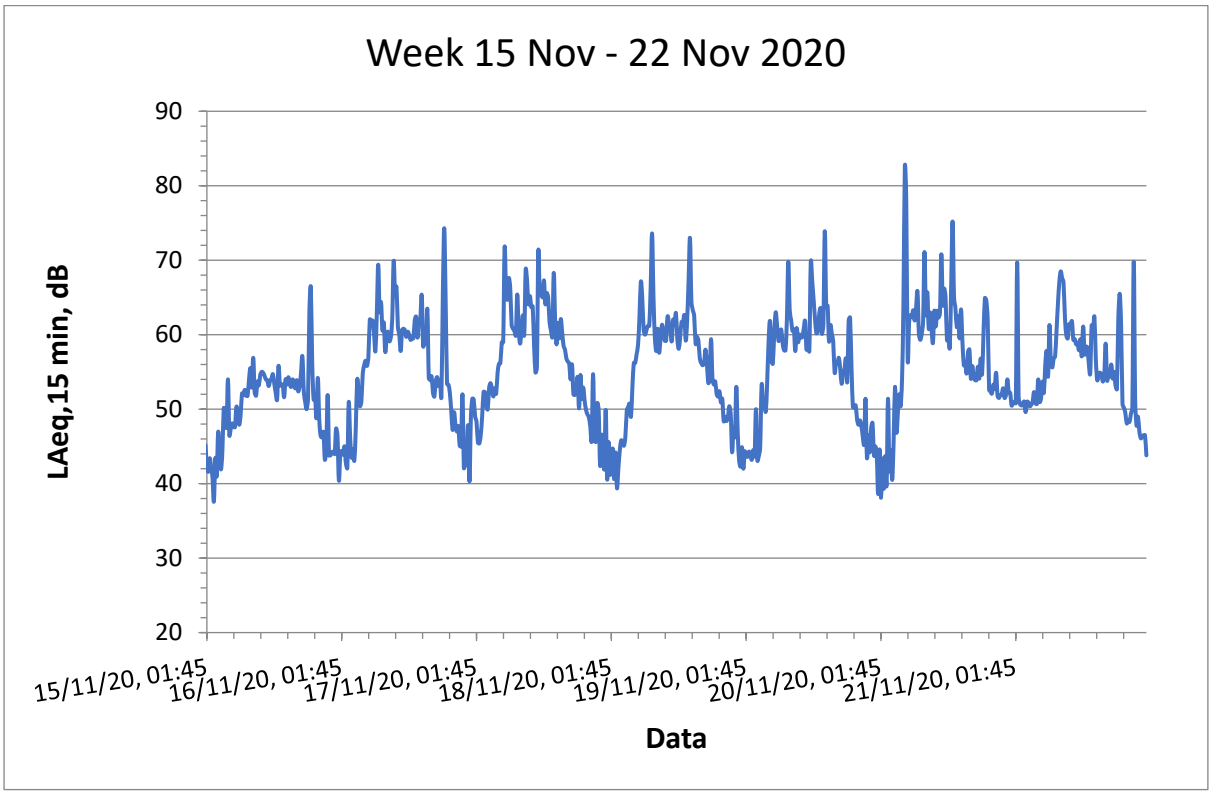
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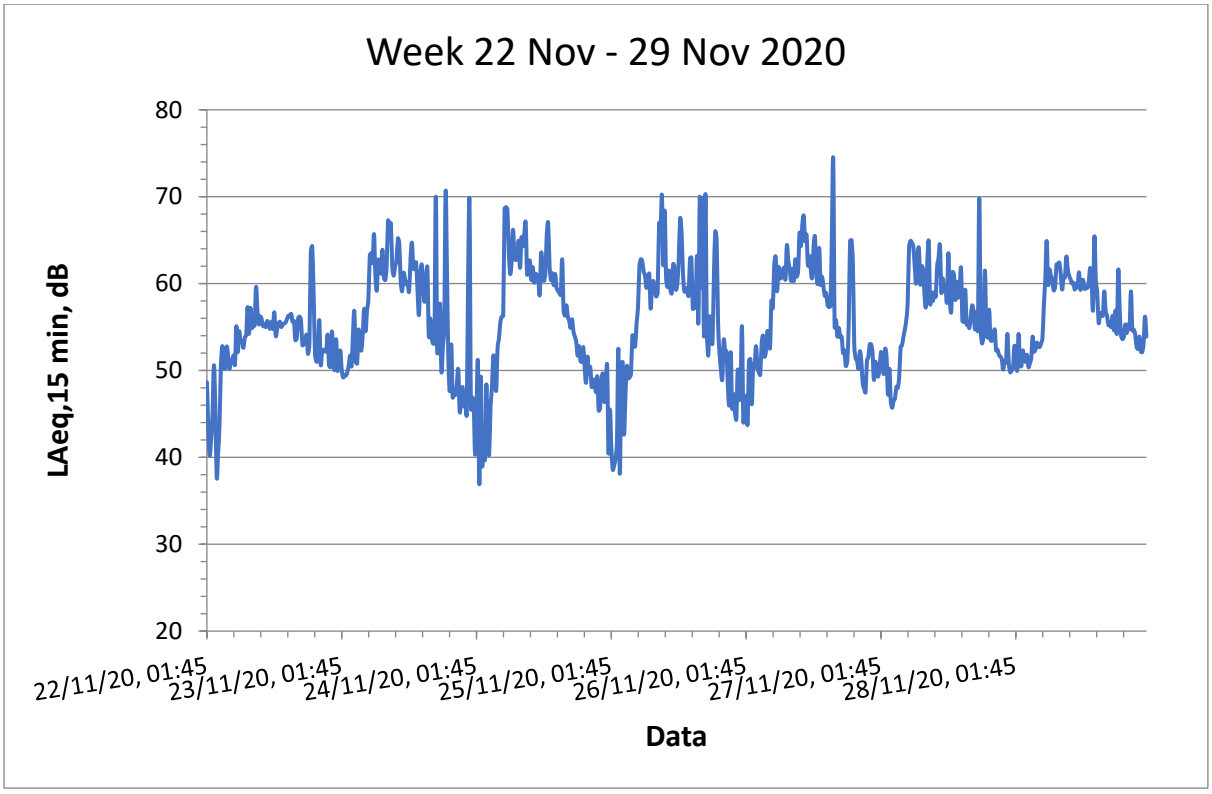
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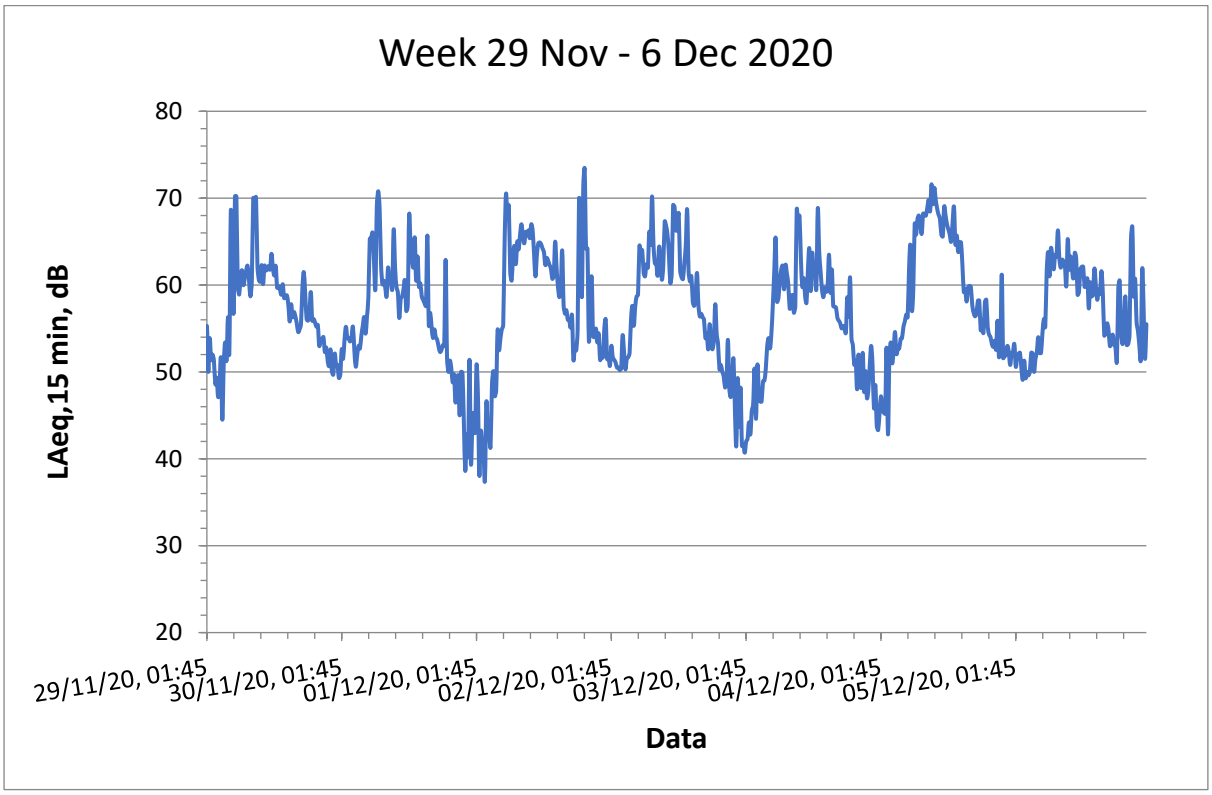
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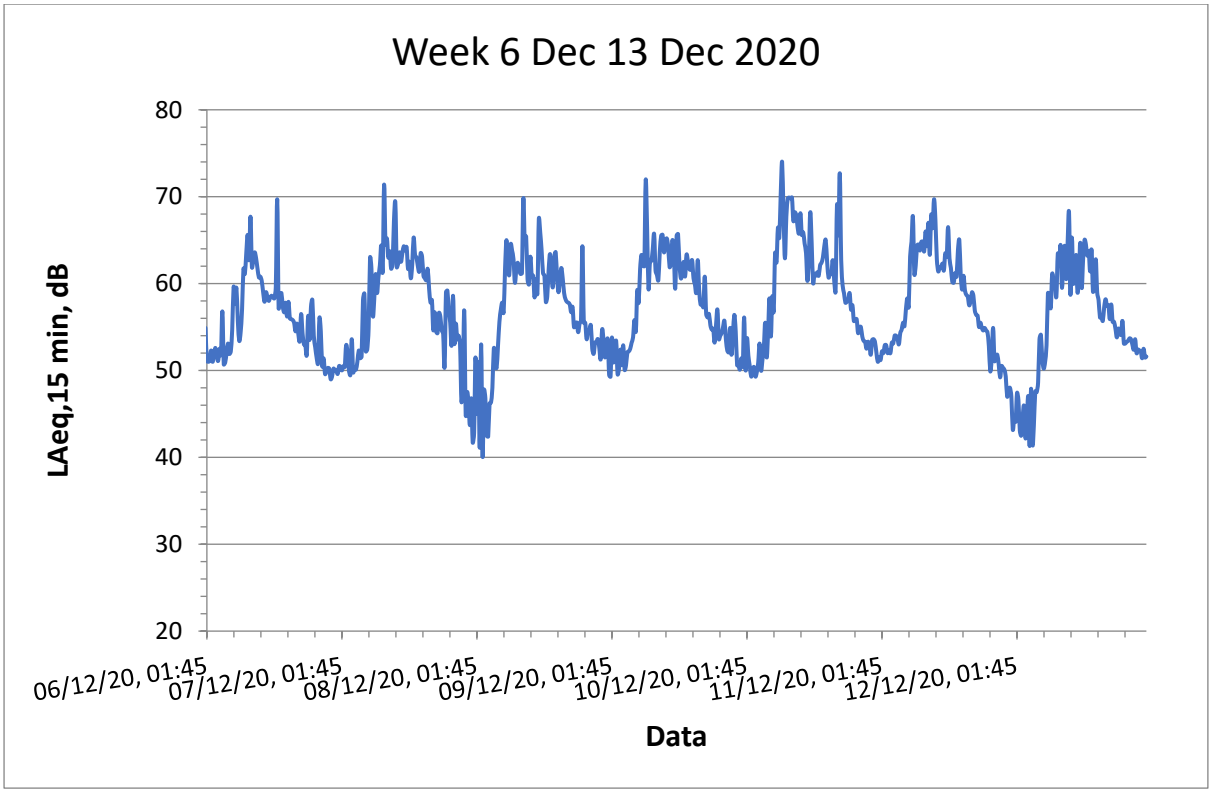
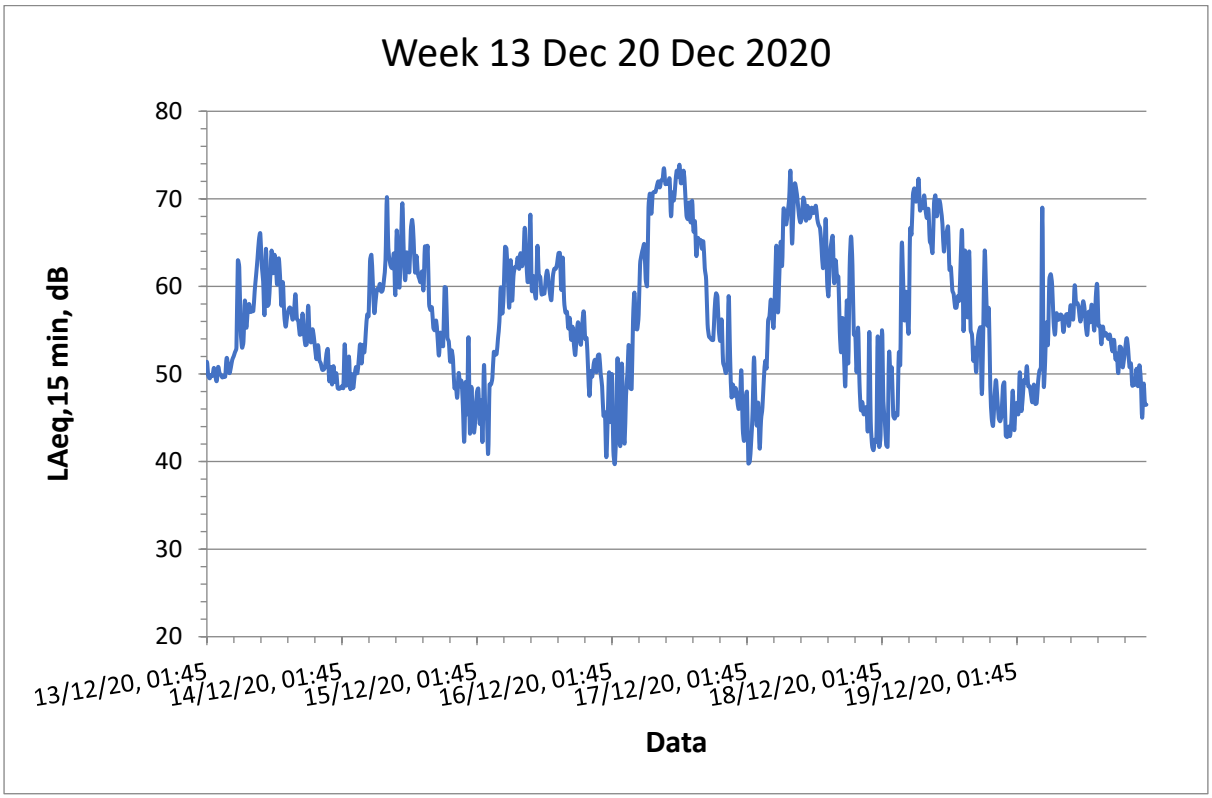
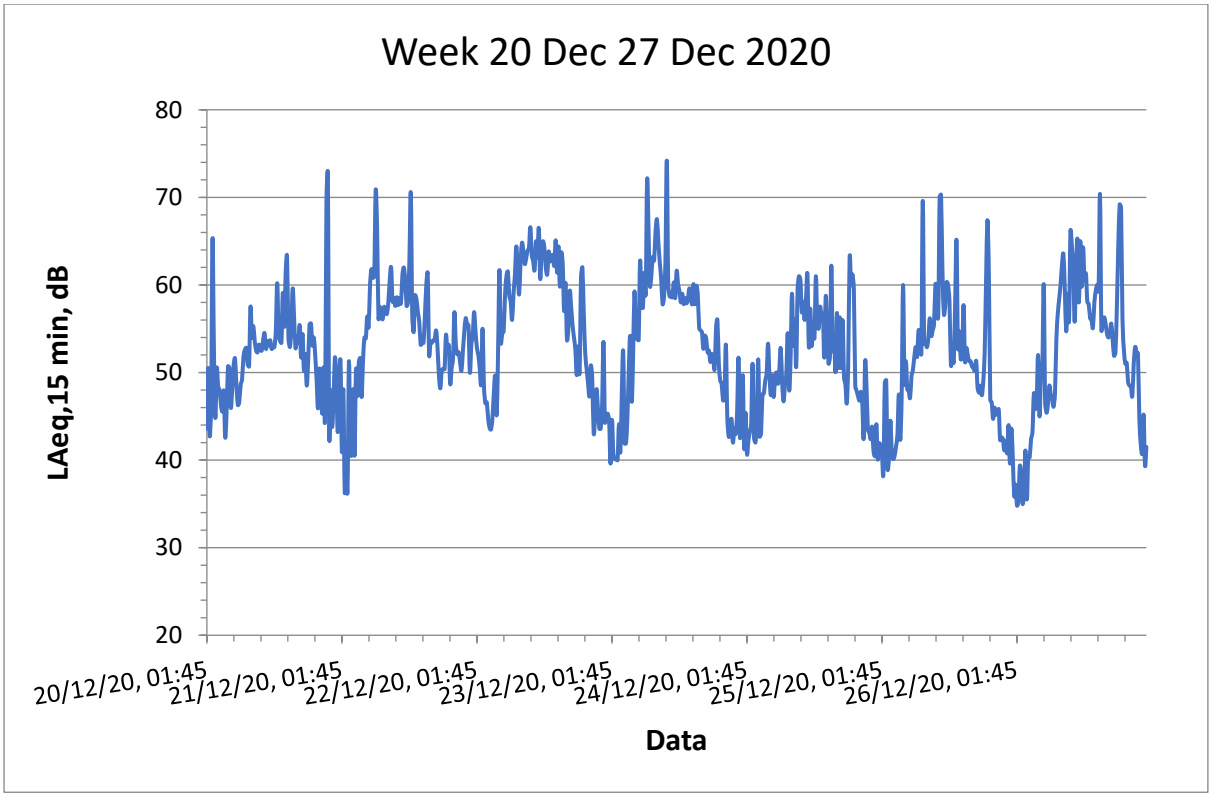
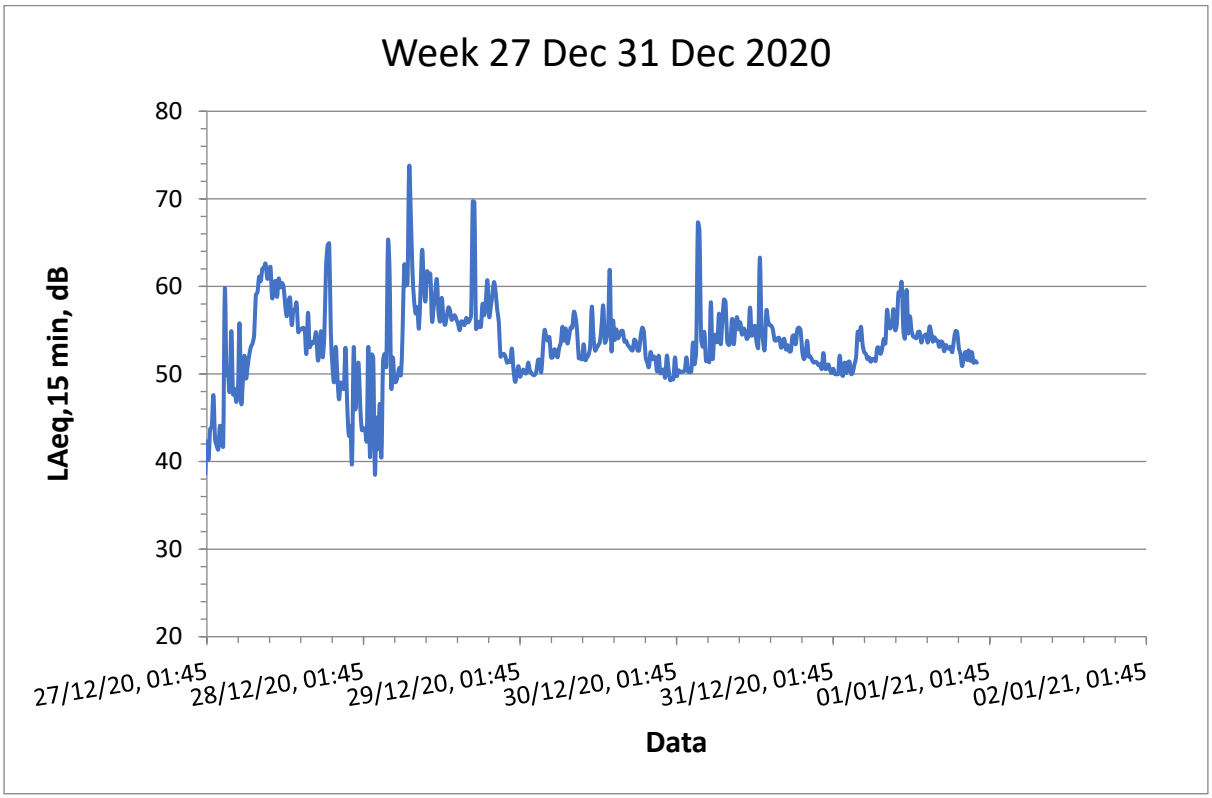
05/12/20, 01:45
Data


Week 6 Dec 13 Dec 2020
LAeq,15 min, dB
80
70
60
50
40
30
20
06/12/20, 01:45
07/12/20, 01:45
08/12/20, 01:45
09/12/20, 01:45
10/12/20, 01:45
11/12/20, 01:45
12/12/20, 01:45
Data


Week 13 Dec 20 Dec 2020
LAeq,15 min, dB
80
70
60
50
40
30
20
13/12/20, 01:45
14/12/20, 01:45
15/12/20, 01:45
16/12/20, 01:45
17/12/20, 01:45
18/12/20, 01:45
19/12/20, 01:45
Data


Week 20 Dec 27 Dec 2020
LAeq,15 min, dB
80
70
60
50
40
30
20
20/12/20, 01:45
21/12/20, 01:45
22/12/20, 01:45
23/12/20, 01:45
24/12/20, 01:45
25/12/20, 01:45
26/12/20, 01:45
Data


Week 27 Dec 31 Dec 2020
LAeq,15 min, dB
80
70
60
50
40
30
20
27/12/20, 01:45
28/12/20, 01:45
29/12/20, 01:45
30/12/20, 01:45
31/12/20, 01:45
01/01/21, 01:45
02/01/21, 01:45
Data