3rd QUARTER 2021 NOISE MONITORING

Concrush Pty Ltd
21 Racecourse Rd, Teralba

Prepared for CONCRUSH

Prepared by RCA Australia

RCA ref 13155-609/0

August 2021

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GEOTECHNICAL • ENVIRONMENTAL

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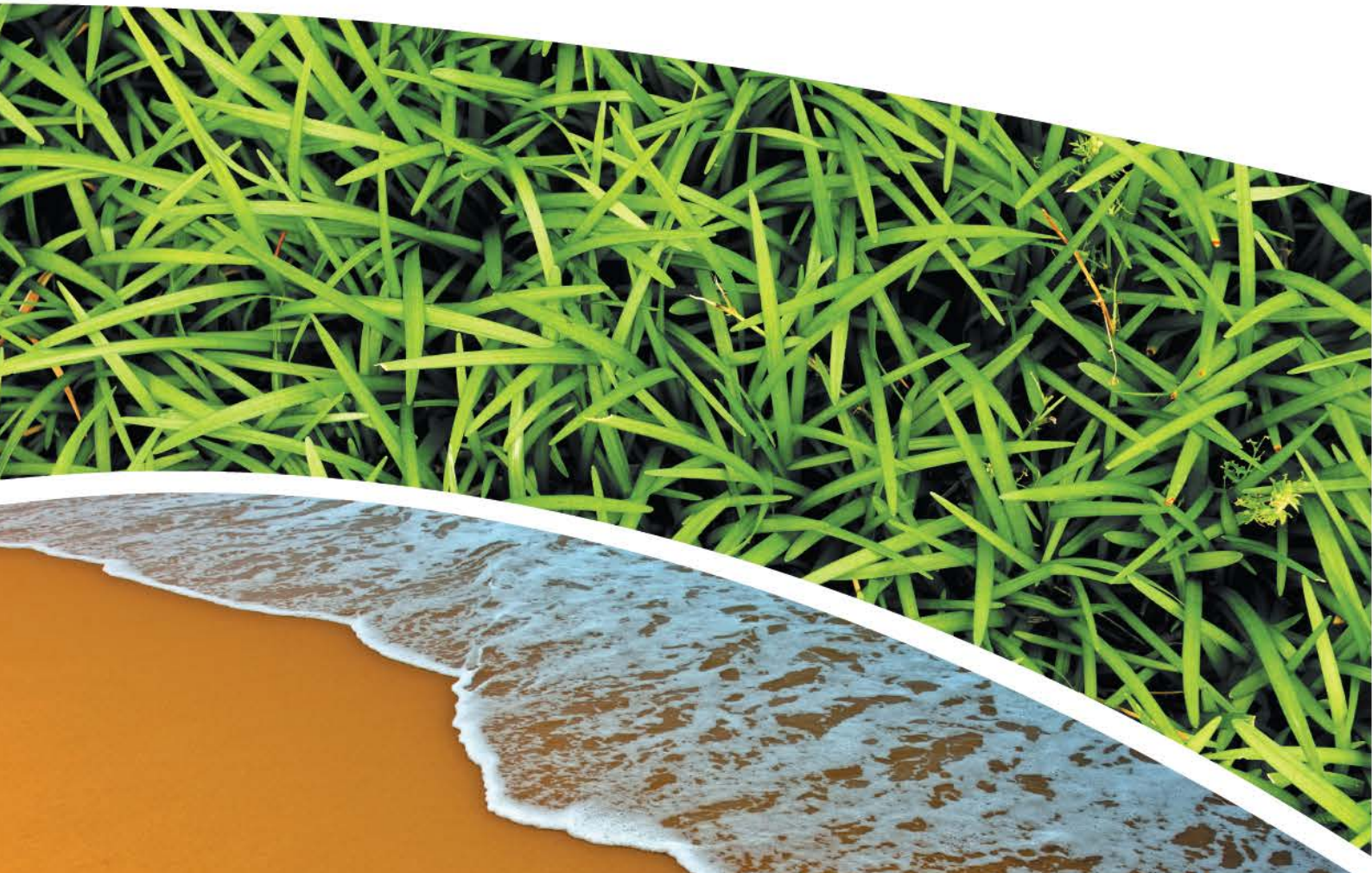

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4 August 2021

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Attention: Mr Kevin Thompson

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3RD QUARTER 2021 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 979	92044	Jan 2021
Calibrator	B&K/ 4230	1558684	June 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?
13/07/2021	14:35	19.5	2.4	WNW	1/8	Yes
13/07/2021	15:00	19.7	1.6	WNW	2/8	Yes
13/07/2021	15:25	18.7	1.2	NW	3/8	Yes
13/07/2021	15:58	17.8	0.4	N	5/8	Yes
13/07/2021	16:20	16.6	0.1	N	7/8	Yes
13/07/2021	16:40	16	0.3	NNE	7/8	Yes

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 Date 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_{Amax} 15min	L_{Aeq} 15 min	L_{A10} 15min	L_{A90} 15min							
NCA1	13/07/2021 14:35	71	58	63	46	NIL	51	NIL	NIL	NIL	Y	Site was inaudible. Other: Insects/ Birds 47 - 57 dBA Car Passby ~ 70 dBA Train Passby ~ 71 dBA Bridge work noise 52 – 57 dBA Wind on trees ~ 51 dBA
NCA2	13/07/2021 15:01	73	64	66	60	NIL	56	NIL	NIL	NIL	Y	Site was inaudible. Other: Traffic 67 - 73 dBA Wind on trees ~ 60 dBA
NCA3	13/07/2021 15:25	88	67	63	58	NIL	53	NIL	NIL	NIL	Y	Site was inaudible. Other: Car passby ~ 66 dBA Freight Train 76 - 88 dBA Passenger Train 61 - 71 dBA Birds ~ 64 dBA

Survey Location	Survey Date 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_{Amax} 15min	L_{Aeq} 15 min	L_{A10} 15min	L_{A90} 15min							
NCA1	13/07/2021 15:58	81	55	52	42	NIL	51	NIL	NIL	NIL	Y	Site was inaudible. Other: Insects and birds 50 - 59 dBA Car Passbys 51 - 81 dBA Distant traffic ~ 43 dBA Bridge work noise 51 – 58 dBA
NCA2	13/07/2021 16:22	80	64	67	60	NIL	56	NIL	NIL	NIL	Y	Site was inaudible. Other: Traffic 62 - 80 dBA Birds 66 - 70 dBA
NCA3	13/07/2021 16:40	84	65	67	48	NIL	53	NIL	NIL	NIL	Y	Site was inaudible. Other: Highway traffic ~ 50 dBA Car Passby ~ 59 dBA Freight Train ~ 84 dBA Passenger Train 68 - 75 dBA Birds 53 - 56 dBA

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

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

Survey Location	Survey Start Date Time	Overall					Site L_{Amax} 15 min	Site $L_{Aeq\ 15min}$ Contribution	On-Site real time monitor results				
		L_{Amax} 15min	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
NCA1	13/07/2021 14:35	71	58	67	63	46	NM	NIL	72	59	68	62	54
NCA2	13/07/2021 15:01	73	64	68	66	60	NM	NIL	83	61	70	63	54
NCA3	13/07/2021 15:25	88	67	78	63	58	NM	NIL	79	58	64	60	54
NCA1	13/07/2021 15:58	81	55	63	52	42	NM	NIL	69	57	66	61	52
NCA2	13/07/2021 16:22	80	64	69	67	60	NM	NIL	80	58	70	58	48
NCA3	13/07/2021 16:40	84	65	77	67	48	NM	NIL	73	60	69	65	48

5.1 ASSESSMENT OF ANNOYING CHARACTERISTICS

5.1.1 LOW FREQUENCY NOISE

Site was not audible. Corrections for noises with low frequency characteristics does not apply.

5.1.2 TONALITY

Site was not audible. Not tonality assessment is required.

5.1.3 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.

5.1.4 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 not audible during the measurements. Other noise sources dominated the ambient acoustic environment.

6 CONCLUSION

Noise levels from the Concrush site complied with noise criteria adopted in the ONMP.

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.

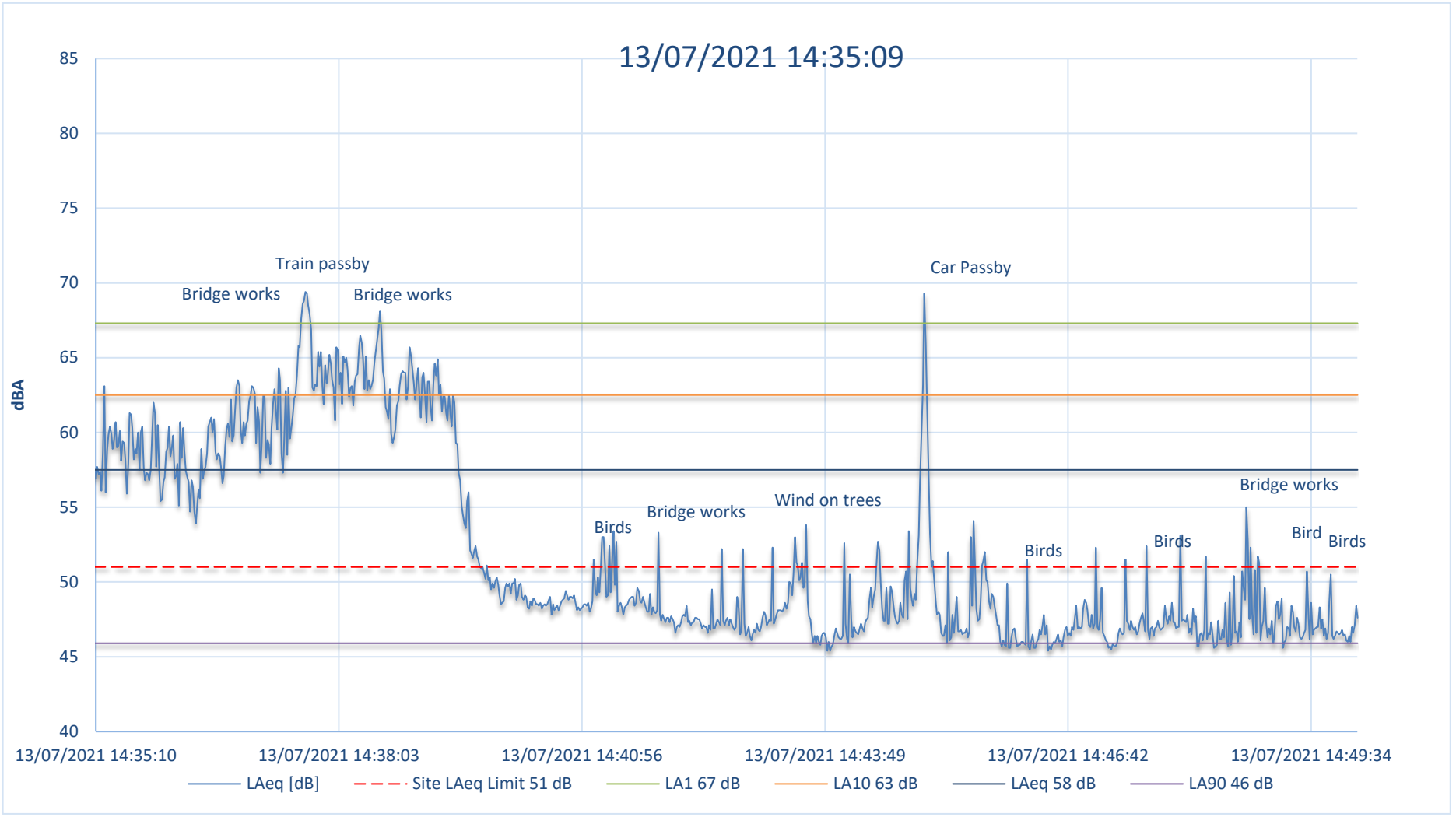
L_{10} ..... Average Maximum Noise Level in a measurement period.

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

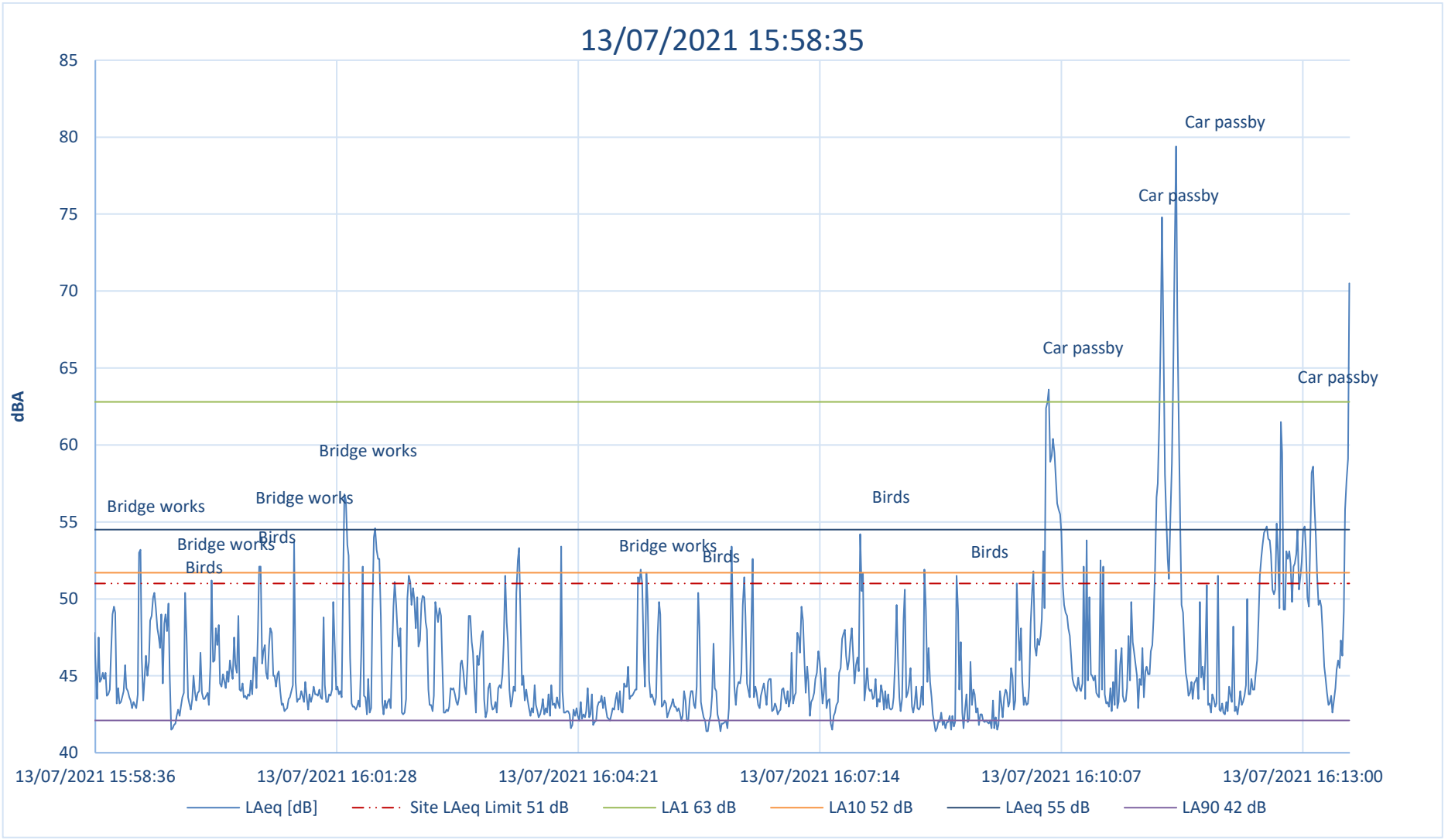
1/3 Octave ..... Division of frequencies into bands of width one-third of an octave. Sound data can be calculated for each division.

Appendix A

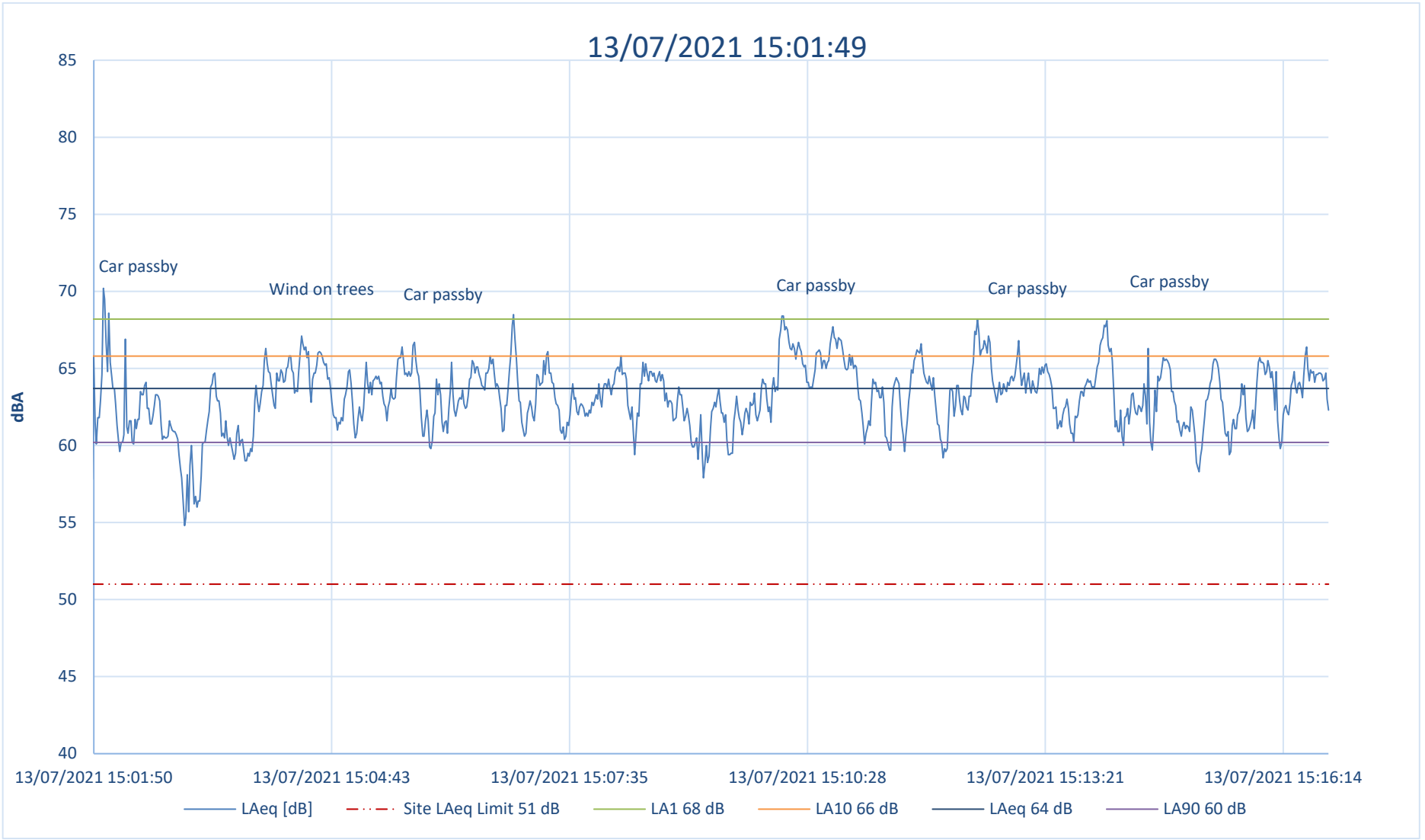
Survey Time Traces



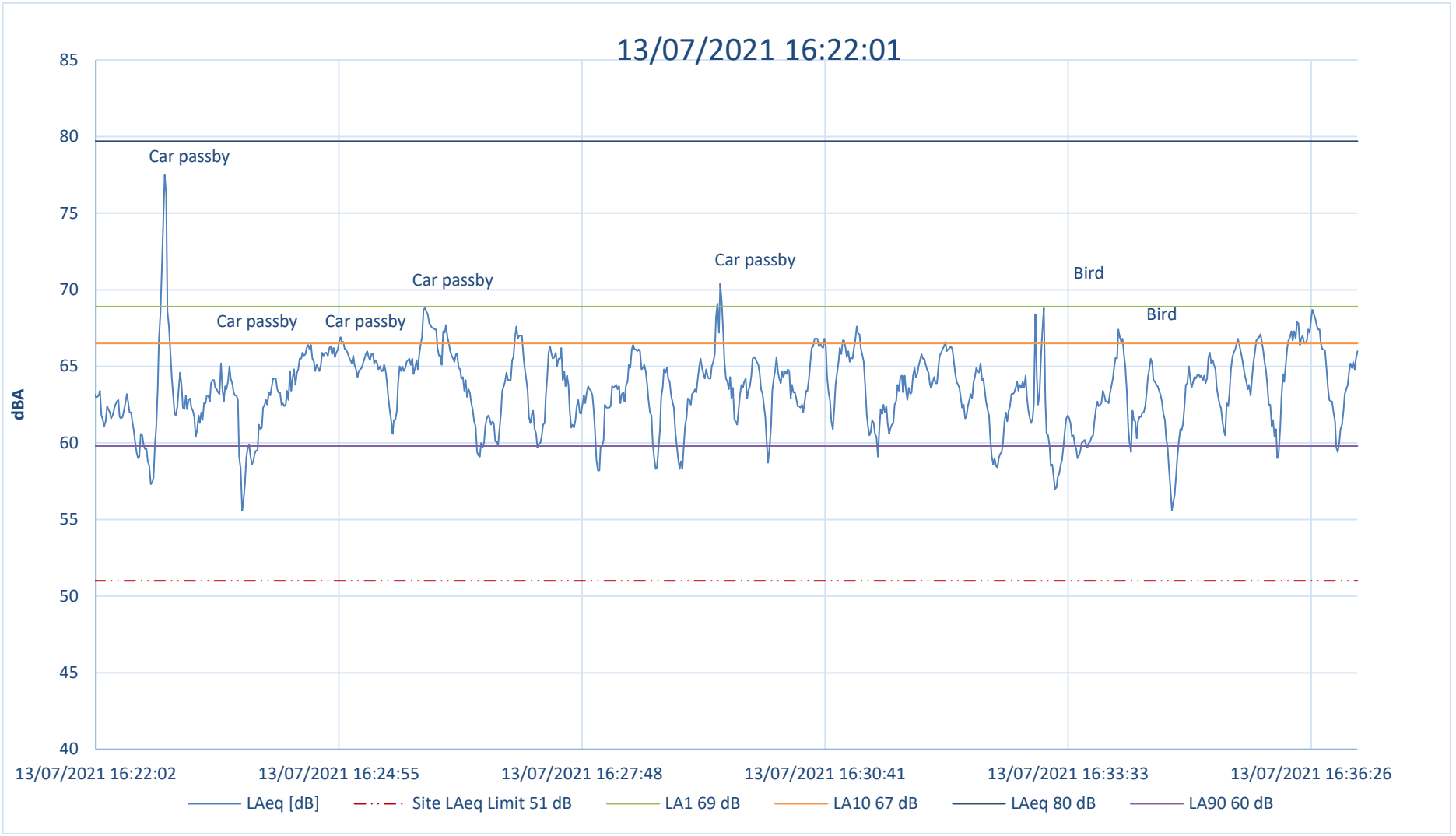
Sound Level Chart, NCA1 Day, 1st measurement



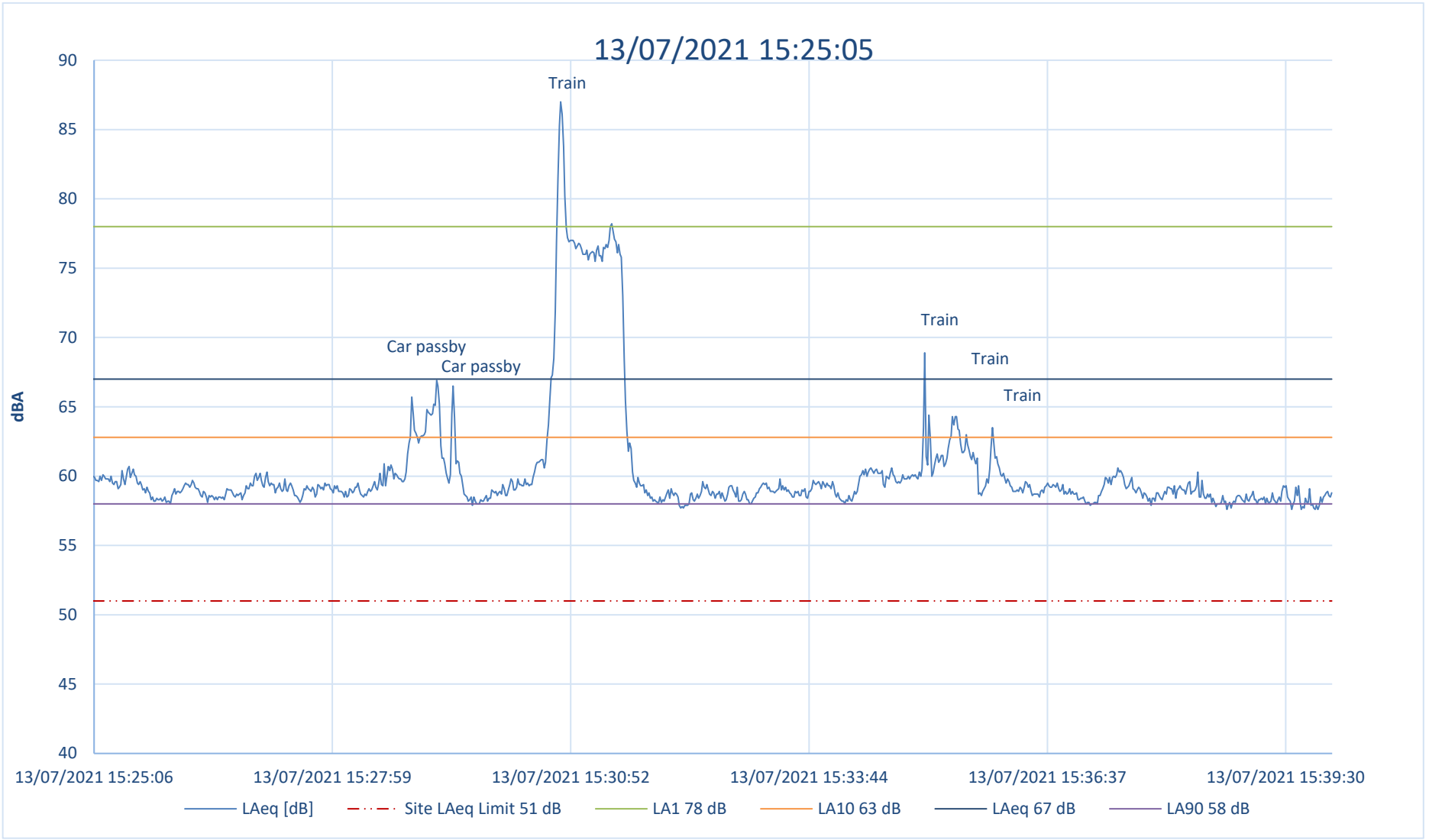
Sound Level Chart, NCA1 Day, 2nd measurement



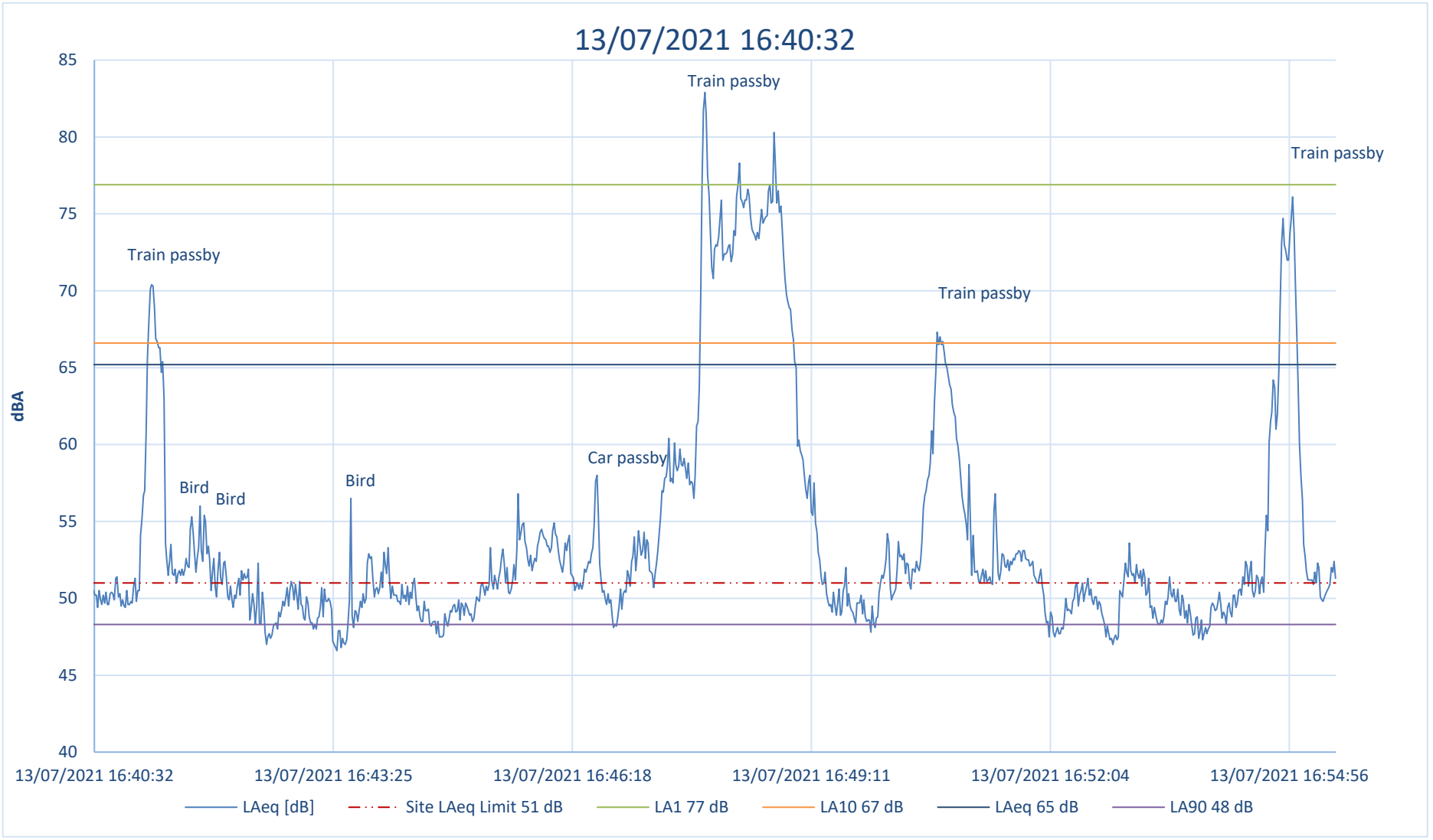
Sound Level Chart, NCA2 Day, 1st measurement



Sound Level Chart, NCA2 Day, 2nd measurement



Sound Level Chart, NCA3 Day, 1st measurement



Sound Level Chart, NCA3 Day, 2nd measurement

Appendix B

Monitoring Locations

Appendix C

Weekly noise measurements – On-site monitor SV307