



2024 QUARTER 2 NOISE MONITORING

**Concrush Pty Ltd
21 Racecourse Rd, Teralba**

Prepared for CONCRUSH

Prepared by RCA Australia

RCA ref 13155-623/1

June 2024



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DOCUMENT STATUS						
Rev No	Comment	Author	Reviewer	Approved for Issue (Project Manager)		
				Name	Signature	Date
/0	Draft	Zaryab Ali	Alex Rees	A. Rees	-	07/06/2024
/1	Final	Zaryab Ali	Alex Rees	A. Rees	<i>A. Rees</i>	11/06/2024

DOCUMENT DISTRIBUTION				
Rev No	Copies	Format	Issued to	Date
/0	1	Electronic report	RCA – job archive	07/06/2024
/0	1	Electronic email	Ross Lo Monaco - Ross@concrush.com.au	07/06/2024
/1	1	Electronic report	RCA – job archive	11/06/2024
/1	1	Electronic email	Ross Lo Monaco - Ross@concrush.com.au	11/06/2024



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RCA ref 13155-623/1

11 June 2024

Concrush Pty Ltd
21 Racecourse Rd
Teralba NSW 2284

Attention: Mr Kevin Thompson

Geotechnical Engineering

Engineering Geology

Environmental Engineering

Hydrogeology

Construction Materials Testing

Environmental Monitoring

Sound & Vibration

Occupational Hygiene

**2ND QUARTER 2024 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 three monitoring locations indicatively shown below. Monitoring locations may change depending on safety and access considerations and to minimise disturbance to residential receivers.

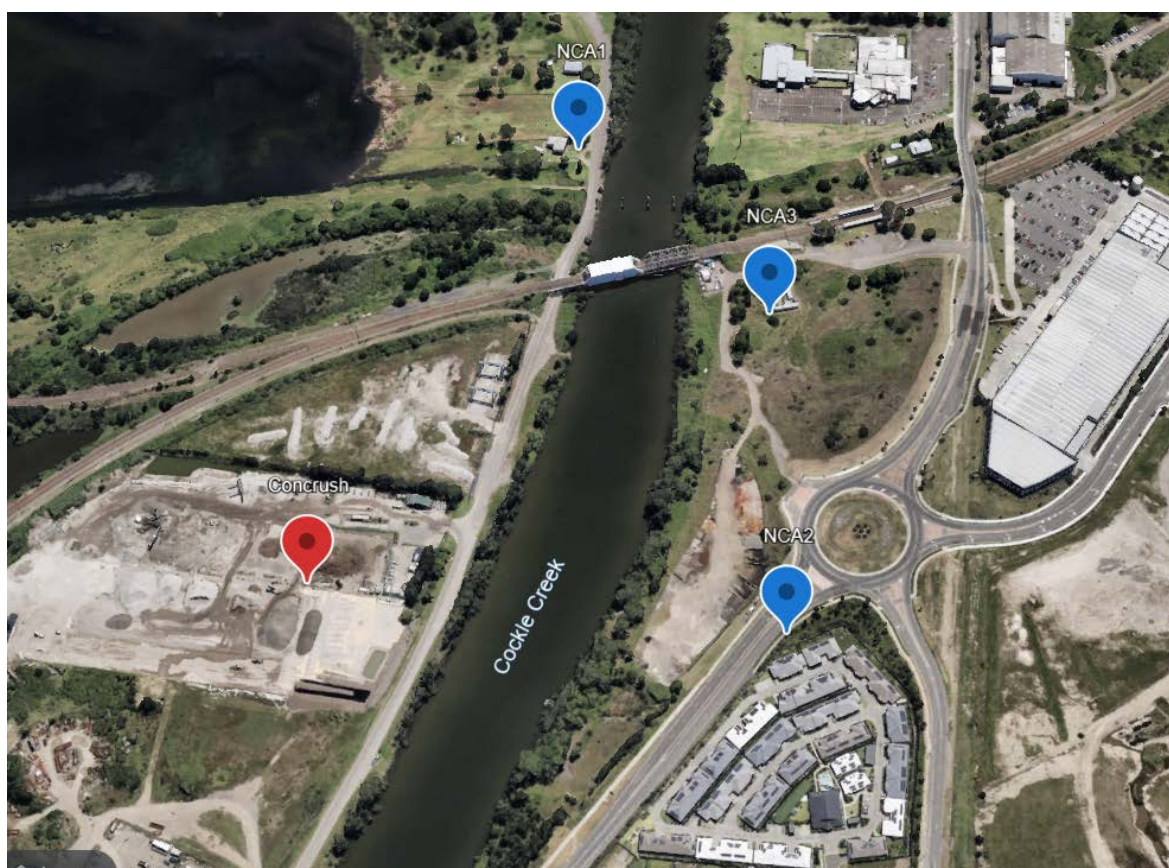


Figure 1 Site (red) and noise monitoring locations (blue)

3 CRITERIA

The site's environmental noise management levels at the nominated monitoring locations are shown in **Table 1**.

Table 1 Quarterly noise monitoring locations and noise management levels

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

3.1 ANNOYING CHARACTERISTICS

Under the *NPfl* corrections to measured site levels may apply if annoying characteristics apply to the noise. Possible characteristics are identified in **Table 2**.

Table 2 *Modifying factors as defined in NPfl*

Factor	Description	Correction
Tonal noise	Level of one-third octave band L_{Zeq} exceeds the level of the adjacent bands on both sides by: <ul style="list-style-type: none"> • 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 NPfl.	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 *NPfl* 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 *ONMP* requires two fifteen minute attended noise measurements to be taken at each monitoring location during both the day and evening. However, evening works is only

4.2 EQUIPMENT

The equipment used for attended monitoring is shown below in **Table 3** and the on-site sound level monitor is shown in **Table 4**. The sound level meters are class 1 measurement instruments.

Table 3 *Equipment used for attended noise monitoring*

Type	Make/Model	Serial Number	Last Calibrated
Sound Level Meter	SVAN 977	98083	September 2022
Sound Level Meter	SVAN 977	99452	March 2024
Calibrator	SV 33B	86489	March 2024

Table 4 *On-site sound level monitor*

Type	Make/Model	Serial Number	Last Calibrated
Sound Level Meter	SV 307	94124	Nov 2023

4.3 WEATHER

Conditions were clear and suitable for monitoring in accordance with AS1055 and the NPfl. Weather conditions observed by the RCA operator at the time of the survey are shown in **Table 5**.

Table 5 *Survey weather conditions ground observation*

Survey Date	Time	Wind Speed (m/s)	Wind Direction	Cloud cover (observed)
16/04/2024	20:30 – 22:00	0 – 1	-	4/8
17/04/2024	09:30 – 12:15	0 - 2	-	3/8 – 6/8
17/04/2024	20:30 – 22:00	0 - 1	-	8/8

5 SURVEY RESULTS

Table 6 through to **Table 8** provide the results of the daytime and evening attended noise surveys. RCA undertook two evening surveys during quarter 2 to make up for no evening surveys being captured during quarter 1.

Marked time traces of the attended noise surveys are shown in **Appendix A** at the end of this report. Site was only briefly audible during intermittent evening activities, and so some graphs do not show full fifteen minutes in order to better zoom into the time of the event so that we can visually determine a correlation between onsite and offsite noise levels.

Table 9 presents a comparison of noise levels measured by RCA offsite and the corresponding onsite noise levels measured by Concrush's onsite monitor.

Table 6 Noise survey observations Evening 16/04/2024, dBA

Survey Location	Survey Date Start Time	Overall				Site L _{Amax} 15min	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
		L _{Amax} 15min	L _{Aeq} 15 min	L _{A10} 15min	L _{A90} 15min							
NCA1	16/04/2024 20:30	80	60	58	40	Nil	43	Nil	Nil	Nil	Y	<p>Only site noise was due to loader operating between 9:00 pm – 9:06 pm.</p> <p>General background noise included insects, frogs, bats, possums, and distant road noise</p> <p>Passing trains both freight and passenger 62 - 73 dBA.</p> <p>Passing car ~70 dBA. Site only audible from soft reverse beeping ~42-46 dBA</p> <p>Overhead Plane Noise 46 - 61 dBA.</p>
NCA1	16/04/2024 20:45	79	57	51	40	Nil	43	Nil	Nil	Nil	Y	
NCA1	16/04/2024 21:00	81	60	60	41	43	43	<40 dBA	Nil	<40 dBA	Y	
NCA1	16/04/2024 21:15	85	61	59	39	Nil	43	Nil	Nil	Nil	Y	
NCA1	16/04/2024 21:30	77	58	56	40	Nil	43	Nil	Nil	Nil	Y	
NCA1	16/04/2024 21:45	81	60	61	39	Nil	43	Nil	Nil	Nil	Y	
NCA3	16/04/2024 21:00	81	68	72	57	Nil	53	Nil	Nil	Nil	Y	
NCA3	16/04/2024 21:15	87	66	71	52	Nil	53	Nil	Nil	Nil	Y	
NCA3	16/04/2024 21:30	87	66	70	44	Nil	53	Nil	Nil	Nil	Y	
NCA3	16/04/2024 21:45	81	64	68	43	Nil	53	Nil	Nil	Nil	Y	

Table 7 Noise survey observations Daytime 17/04/2024, 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
		L _{Amax} 15min	L _{Aeq} 15 min	L _{A10} 15min	L _{A90} 15min							
NCA1	17/04/2024 09:30	85	65	69	45	~45	51	<40	Nil	<40	Y	Site heard occasionally, although not dominant. Occasional reverse beeps and track noises. Bird noise was constant. Road noise ~60-85 dBA Resident working in yard 60 – 65 dBA.
NCA1	17/04/2024 11:15	81	64	69	46	~47	51	<40	Nil	<40	Y	Site barely audible, not dominant. Loader in operation on site audible, not dominant ~47 dBA Road noise ~59-81 dBA
NCA2	17/04/2024 10:30	81	71	74	65	Nil	56	Nil	Nil	Nil	Y	Site was inaudible (masked by road noise). Other: Road Noise 58-81 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
		L _{Amax} 15min	L _{Aeq} 15 min	L _{A10} 15min	L _{A90} 15min							
NCA2	17/04/2024 12:15	89	72	74	64	Nil	56	Nil	Nil	Nil	Y	Site was inaudible (masked by road noise). Other: Road Noise 58-89 dBA
NCA3	17/04/2024 10:00	76	56	53	47	NM	53	<47	Nil	<47	Y	Site heard intermittently, less than background. Birds ~44-52 dBA Road noise ~48-76 dBA
NCA3	17/04/2024 11:45	82	64	67	48	NM	53	<48	Nil	<48	Y	Site barely audible, not dominant. Council truck ~56-82 dBA Birds ~44-52 dBA Road noise ~49-75 dBA

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

Table 8 Noise survey observations Evening 17/04/2024, 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
		L _{Amax} 15min	L _{Aeq} 15 min	L _{A10} 15min	L _{A90} 15min							
NCA1	17/04/2024 20:30	80	59	59	40	Nil	43	Nil	Nil	Y	No site noise. Road Noise ~53-80 dBA Insects ~40-45 dBA	
NCA1	17/04/2024 20:45	80	62	66	41	Nil	43	Nil	Nil	Y	No site noise. Resident arrived home. Dogs barking Road Noise ~53-80 dBA Insects ~40-45 dBA	
NCA1	17/04/2024 21:00	76	58	55	40	45	43	<30	Nil	Y	Site truck arrival 40 – 45 dBA less than 20 seconds. Residents talking, distant cheering, and reverse beeping at the same time. Road Noise ~53-76 dBA Insects ~40-45 dBA	
NCA1	17/04/2024 21:15	77	58	53	40	44	43	<30	Nil	Y	Site truck arrival ~44 dBA for less than 10 seconds. Road Noise ~53-77 dBA Insects ~40-45 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
		L _{Amax} 15min	L _{Aeq} 15 min	L _{A10} 15min	L _{A90} 15min							
NCA1	17/04/2024 21:30	78	59	62	40	43	43	<30	Nil	<30	Y	Site truck brake compression briefly ~43 dBA Road Noise ~53-78 dBA Insects ~40-45 dBA
NCA1	17/04/2024 21:45	76	58	60	38	46	43	<30	Nil	<30	Y	Site truck ~46 dBA Plane overhead. Road Noise ~53-76 dBA Insects ~40-45 dBA
NCA2	17/04/2024 20:19	82	66	71	54	Nil	53	Nil	Nil	Nil	Y	Road Noise ~54-82 dBA
NCA2	17/04/2024 20:34	82	67	72	55	Nil	53	Nil	Nil	Nil	Y	Road Noise ~54-82 dBA
NCA2	17/04/2024 20:49	86	68	72	53	Nil	53	Nil	Nil	Nil	Y	Road Noise ~54-82 dBA
NCA3	17/04/2024 21:24	82	63	51	43	47	47	<30	Nil	<30	Y	Site tipping noise briefly ~47 dBA
NCA3	17/04/2024 21:39	79	64	56	43	51	47	<30	Nil	<30	Y	Site truck brake compression briefly ~51 dBA

Table 9 *Attended measurement and on-site real time monitor results, dBA*

Survey Location	Survey Start Date & Time	Overall off-site measurements				Site L _{Amax} , 15 min	Site L _{Aeq} , 15min Contribution	On-Site real time monitor results			
		L _{Amax} 15min	L _{Aeq} 15min	L _{A10} 15min	L _{A90} 15min			L _{Amax} 15min	L _{Aeq} 15min	L _{A10} 15min	L _{A90} 15min
NCA1	16/04/2024 20:30	80	60	58	40	Nil	Nil	64	49	53	41
NCA1	16/04/2024 20:45	79	57	51	40	Nil	Nil	61	47	50	41
NCA1	16/04/2024 21:00	81	60	60	41	43	<40	82	59	56	43
NCA1	16/04/2024 21:15	85	61	59	39	Nil	Nil	68	50	54	41
NCA1	16/04/2024 21:30	77	58	56	40	Nil	Nil	65	49	52	41
NCA1	16/04/2024 21:45	81	60	61	39	Nil	Nil	74	53	55	42
NCA3	16/04/2024 21:00	81	68	72	57	Nil	Nil	82	59	56	43
NCA3	16/04/2024 21:15	87	66	71	52	Nil	Nil	68	50	54	41
NCA3	16/04/2024 21:30	87	66	70	44	Nil	Nil	65	49	52	41
NCA3	16/04/2024 21:45	81	64	68	43	Nil	Nil	74	53	55	42
NCA1	17/04/2024 09:30	85	65	69	45	~45	<40	76	56	59	50

Survey Location	Survey Start Date & Time	Overall off-site measurements				Site L _{Amax} , 15 min	Site L _{Aeq} , 15min Contribution	On-Site real time monitor results			
		L _{Amax} 15min	L _{Aeq} 15min	L _{A10} 15min	L _{A90} 15min			L _{Amax} 15min	L _{Aeq} 15min	L _{A10} 15min	L _{A90} 15min
NCA1	17/04/2024 11:15	81	64	69	46	~47	<40	80	65	68	56
NCA2	17/04/2024 10:30	81	71	74	65	Nil	Nil	69	57	61	50
NCA2	17/04/2024 12:15	89	72	74	64	Nil	Nil	76	60	63	51
NCA3	17/04/2024 10:00	76	56	53	47	NM	<47	74	56	59	48
NCA3	17/04/2024 11:45	82	64	67	48	NM	<48	75	59	63	52
NCA1	17/04/2024 20:30	80	59	59	40	Nil	Nil	68	51	54	44
NCA1	17/04/2024 20:45	80	62	66	41	Nil	Nil	66	52	56	46
NCA1	17/04/2024 21:00	76	58	55	40	45	<30	70	52	56	44
NCA1	17/04/2024 21:15	77	58	53	40	44	<30	67	52	55	42
NCA1	17/04/2024 21:30	78	59	62	40	43	<30	76	55	58	42
NCA1	17/04/2024 21:45	76	58	60	38	46	<30	67	53	57	43

5.1 ASSESSMENT OF ANNOYING CHARACTERISTICS

5.1.1 LOW FREQUENCY NOISE

Site was occasionally audible but not the dominant noise source. A low frequency assessment could not be undertaken.

5.1.2 TONALITY

Site was occasionally audible but not the dominant noise source. A tonality assessment could not be undertaken.

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 and evening 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 audible but other noise sources dominated the ambient acoustic environment during all measurements. All measurements complied with noise targets set in the Operational Noise Management Plan.

6 CONCLUSION

Noise levels from the Concrush site complied with noise targets adopted in the ONMP at all monitoring locations.

Yours faithfully

RCA AUSTRALIA



Zaryab Ali
Graduate Acoustic Engineer

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

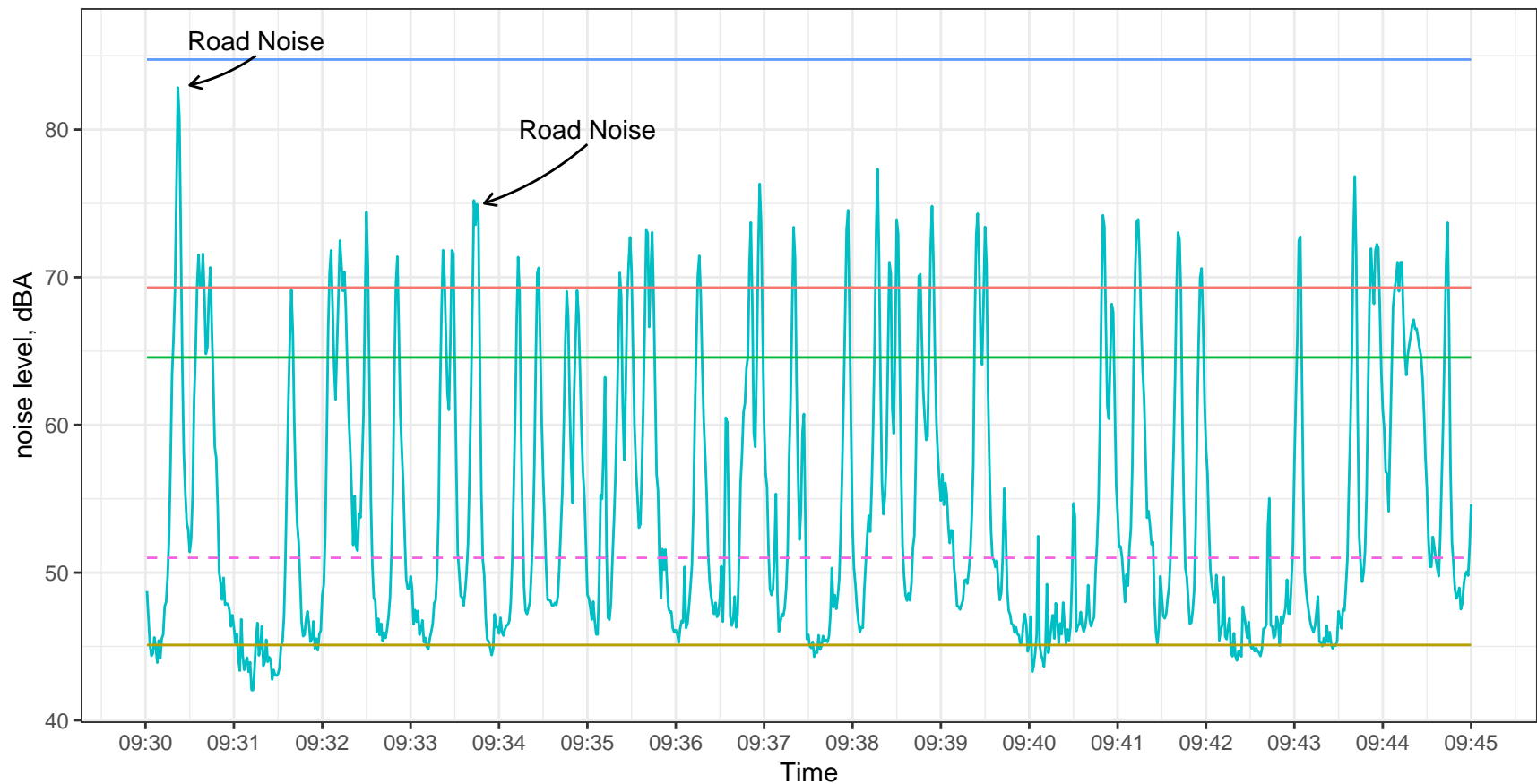
GLOSSARY

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

Daytime survey Time Traces

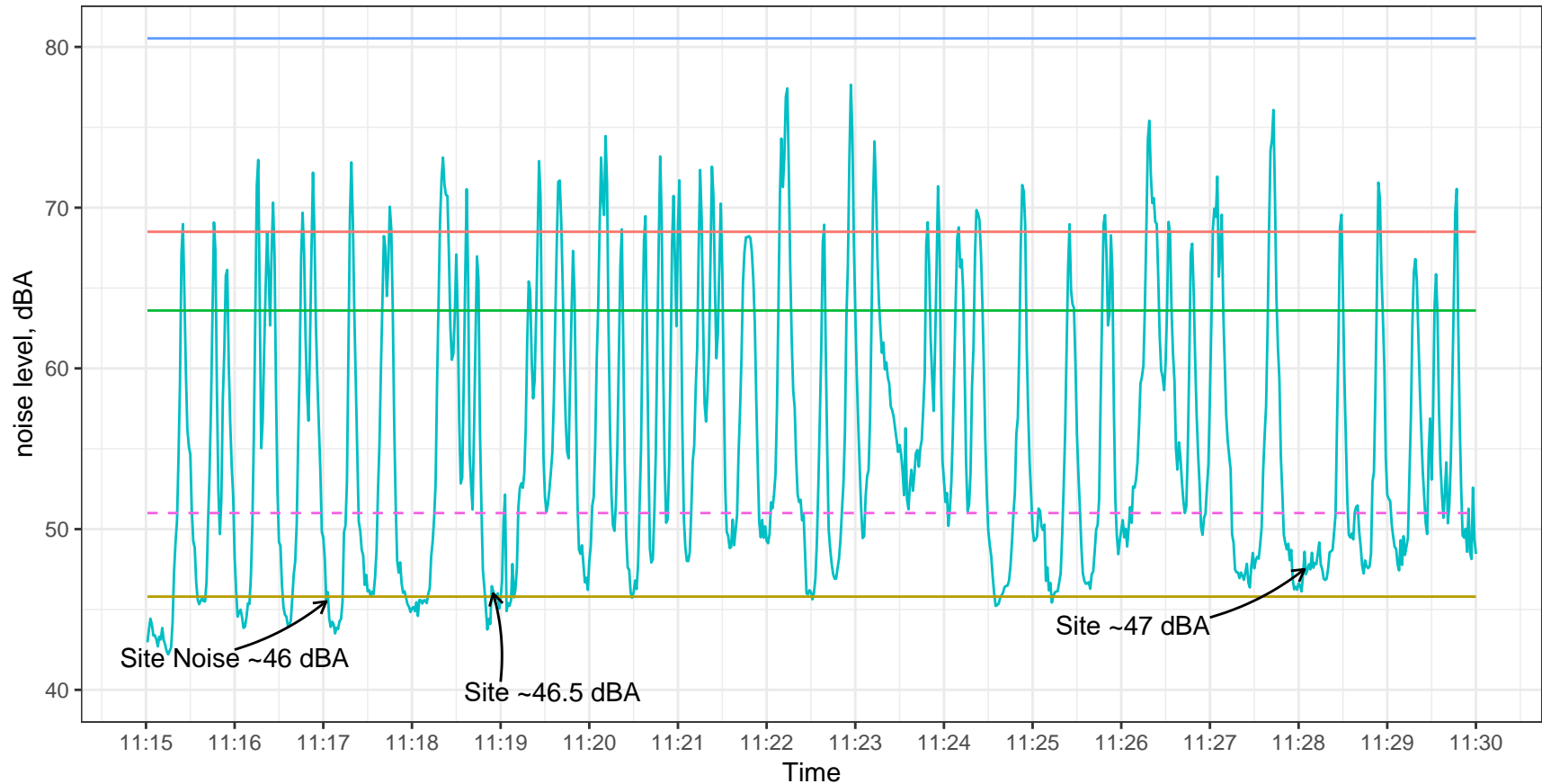
Concrush 17-April-2024 NCA1 9:30am to 9:45am



LA10_15m LAeq,15m LAmax,15m

LA90_15m LAeq,1s Site Limit(--)

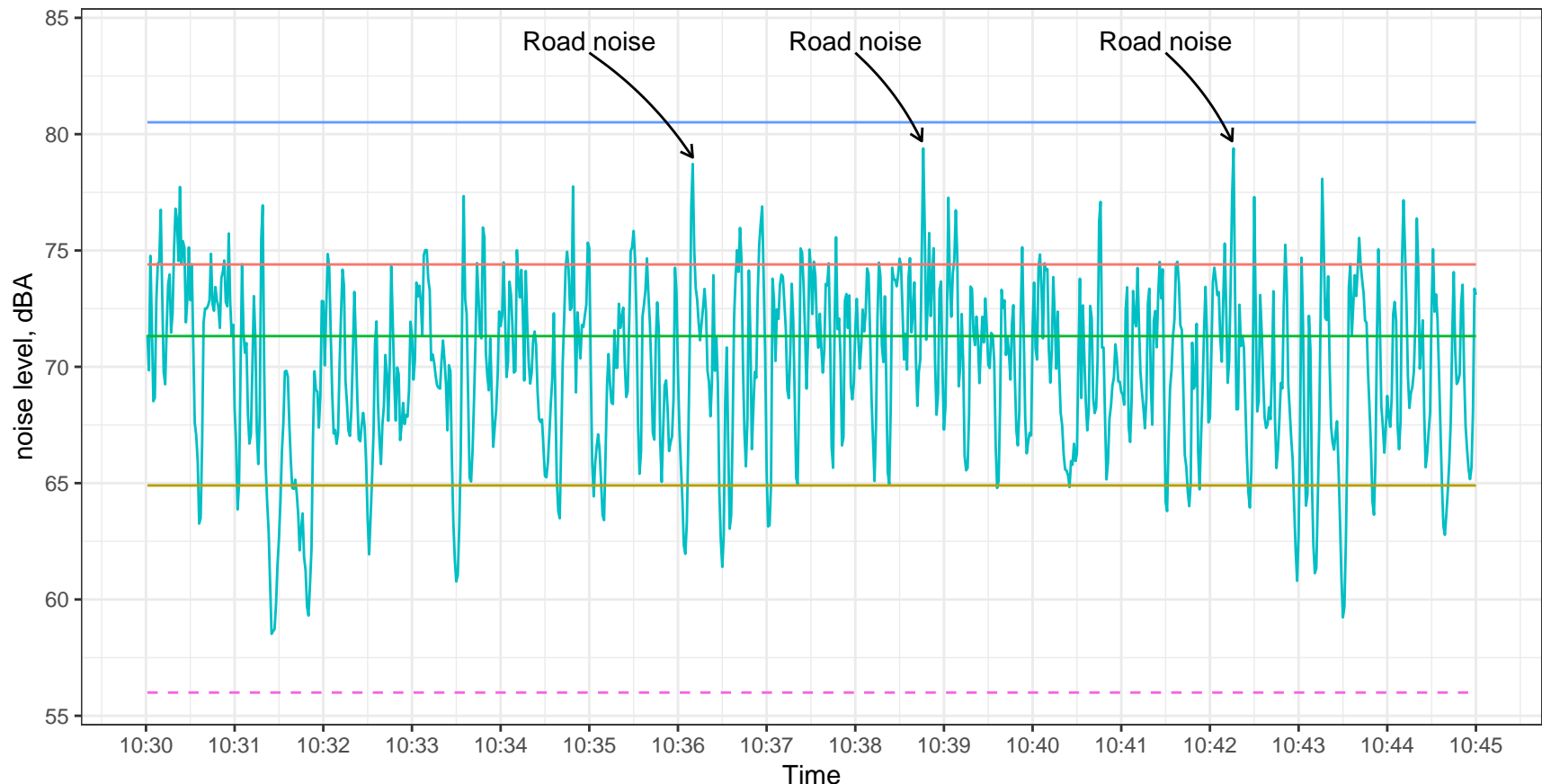
Concrush 17-April-2024 NCA1 11:15am to 11:30am



LA10_15m LAeq,15m LAmax,15m

LA90_15m LAeq,1s Site Limit(--)

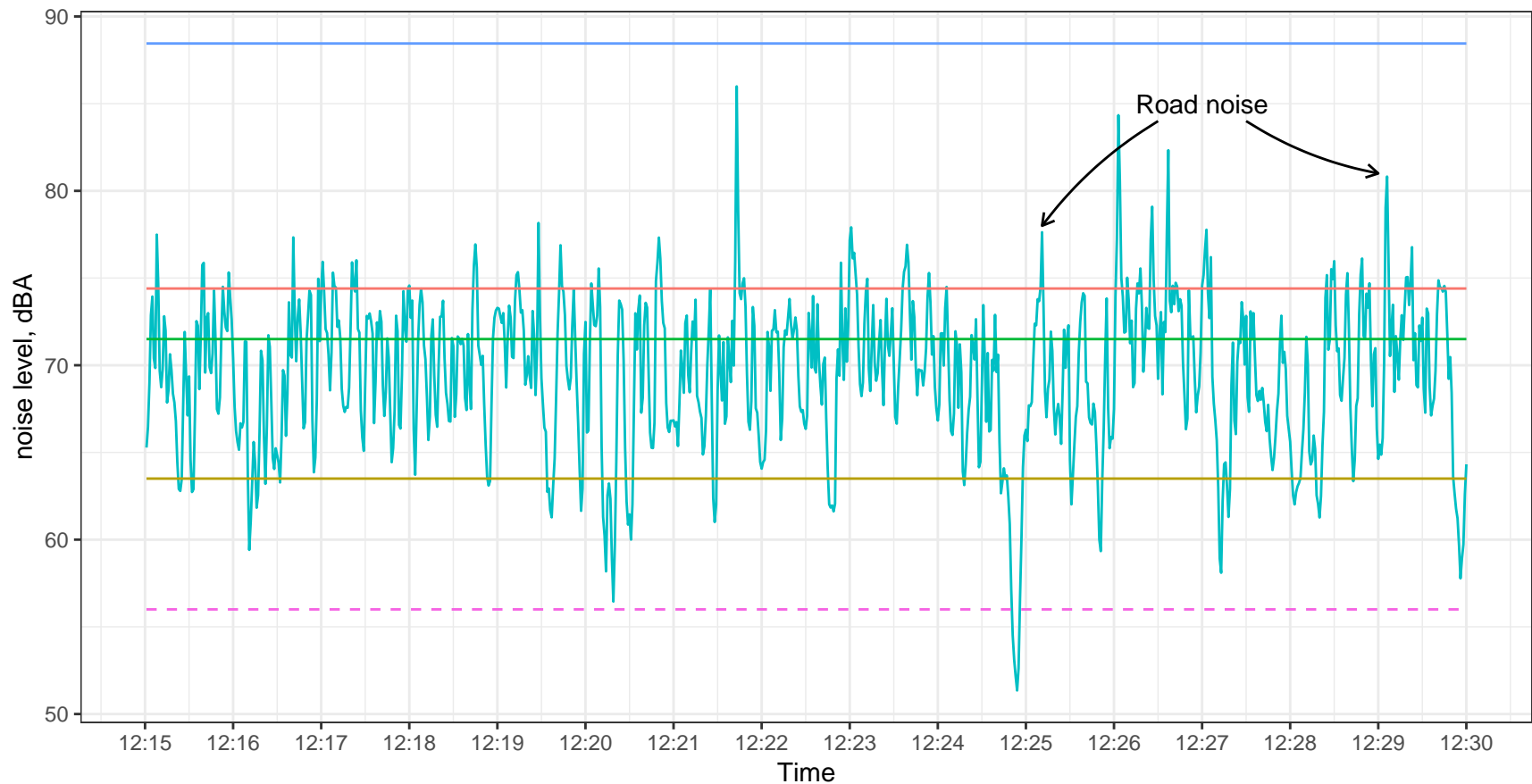
Concrush 17-April-2024 NCA2 10:30am to 10:45am



LA10_15m LAeq_15m LAmax_15m

LA90_15m LAeq_1s Site Limit(---)

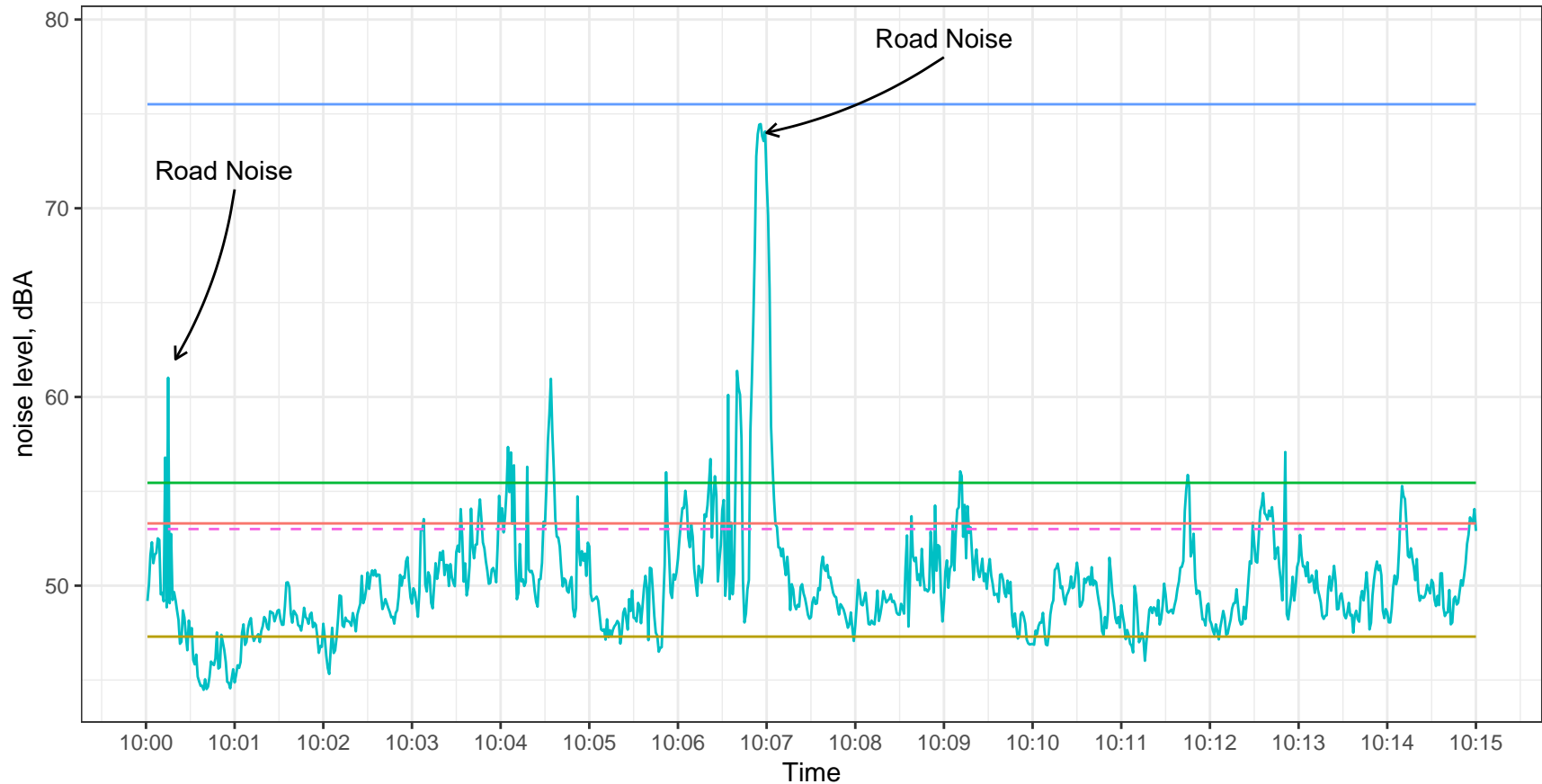
Concrush 17-April-2024 Day NCA2 12:15am to 12:30am



— LA10_15m — LAeq_15m — LAmax_15m

— LA90_15m — LAeq_1s - - - Site Limit(- - -)

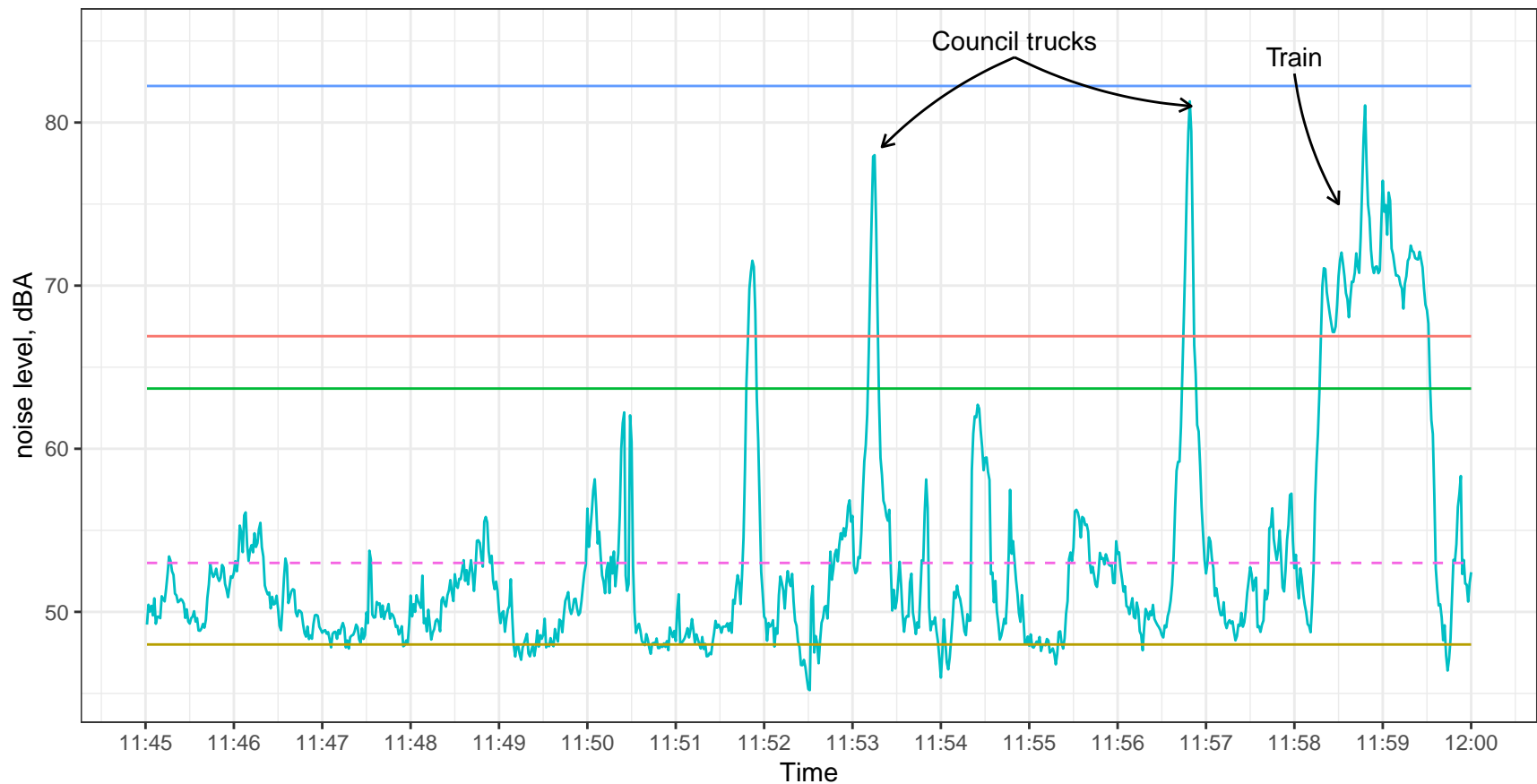
Concrush 17-April-2024 NCA3 10:00am to 10:15am



LA10_15m LAeq,15m LAmass,15m

LA90_15m LAeq,1s Site Limit(---)

Concrush 17-April-2024 Day NCA3 11:45am to 12:00am.



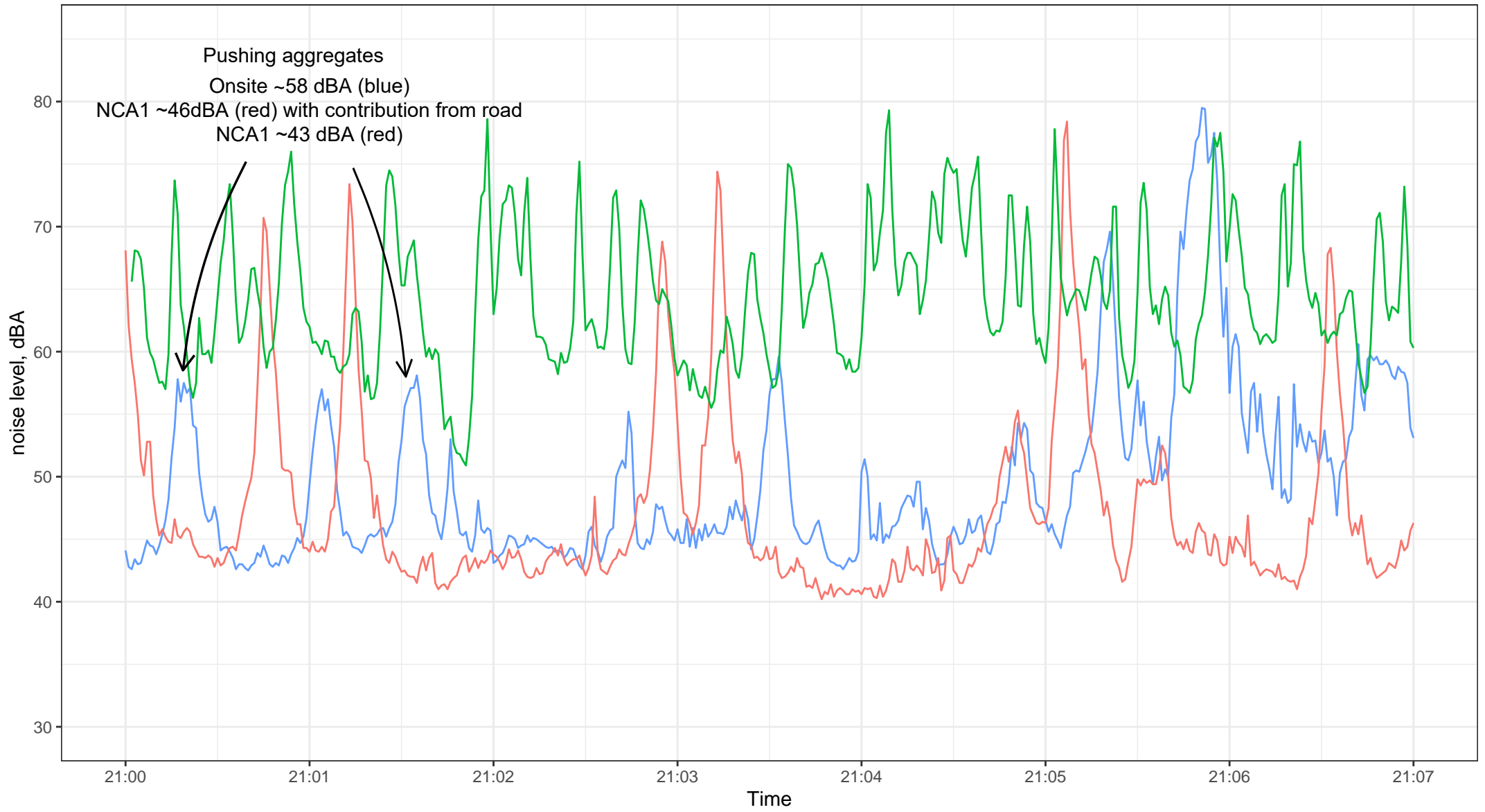
LA10_15m LAeq,15m LAmax,15m

LA90_15m LAeq,1s Site Limit(---)

Appendix B

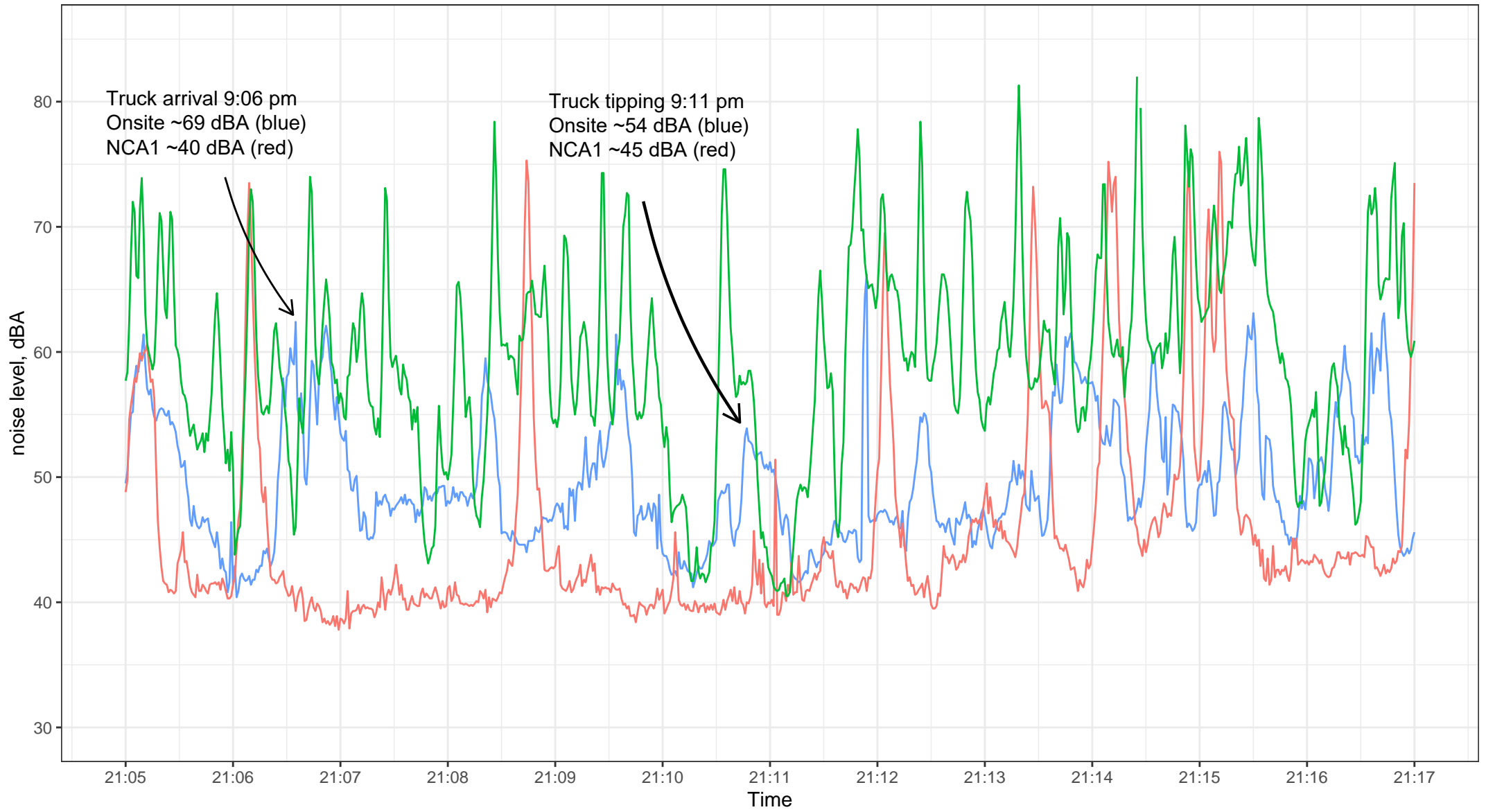
Evening survey plots to visually determine correlation between onsite and offsite noise levels

16-April-2024 pushing aggregates 9:00 pm - 9:06 pm



— NCA1 LAeq,1sec — NCA2 LAeq,1sec — Onsite LAeq,1s

17-April-2024 1st truck

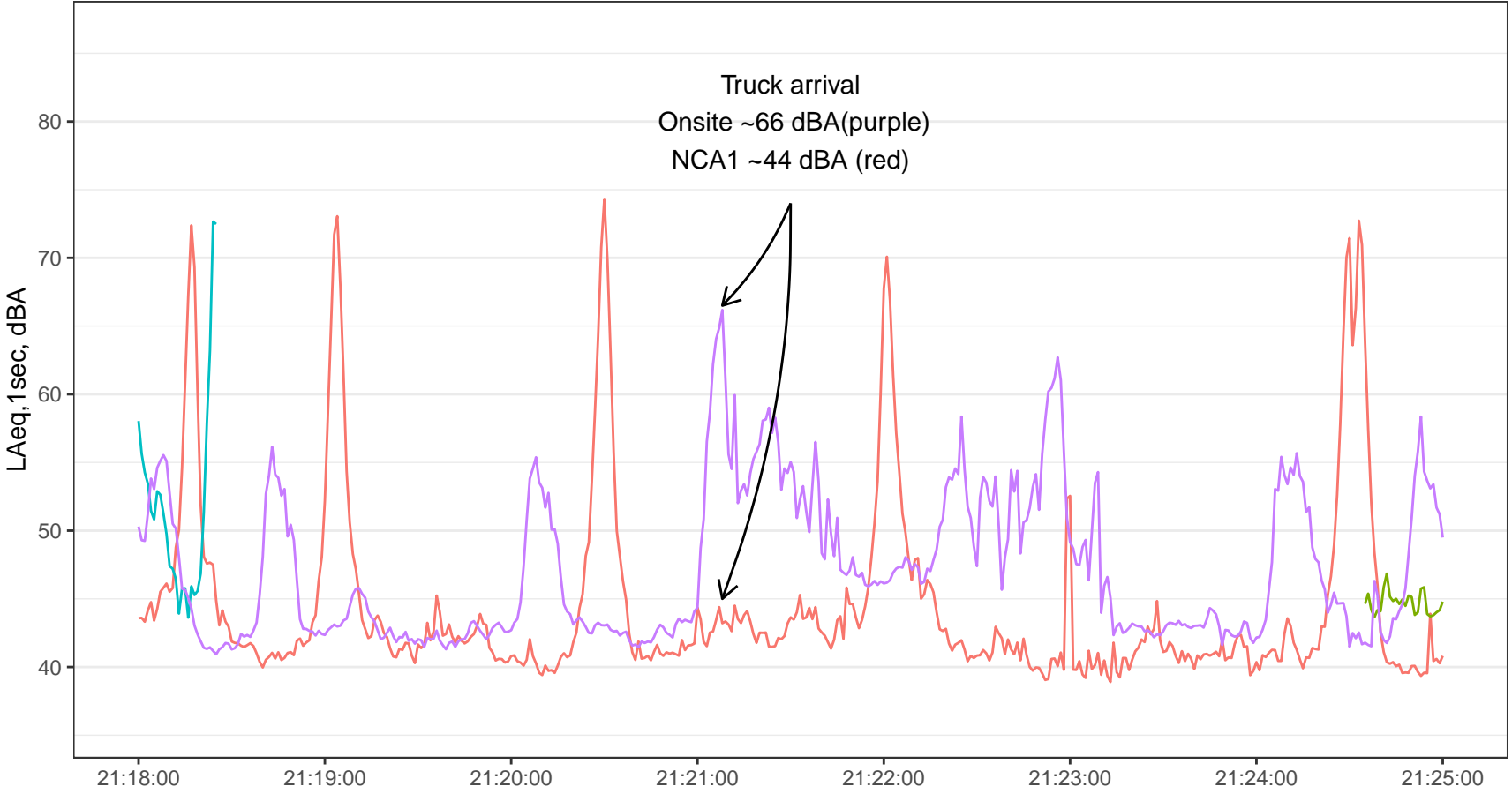


Truck arrival 9:06 pm
Onsite ~69 dBA (blue)
NCA1 ~40 dBA (red)

Truck tipping 9:11 pm
Onsite ~54 dBA (blue)
NCA1 ~45 dBA (red)

— NCA1 LAeq,1sec — NCA2 LAeq,1sec — Onsite LAeq,1s

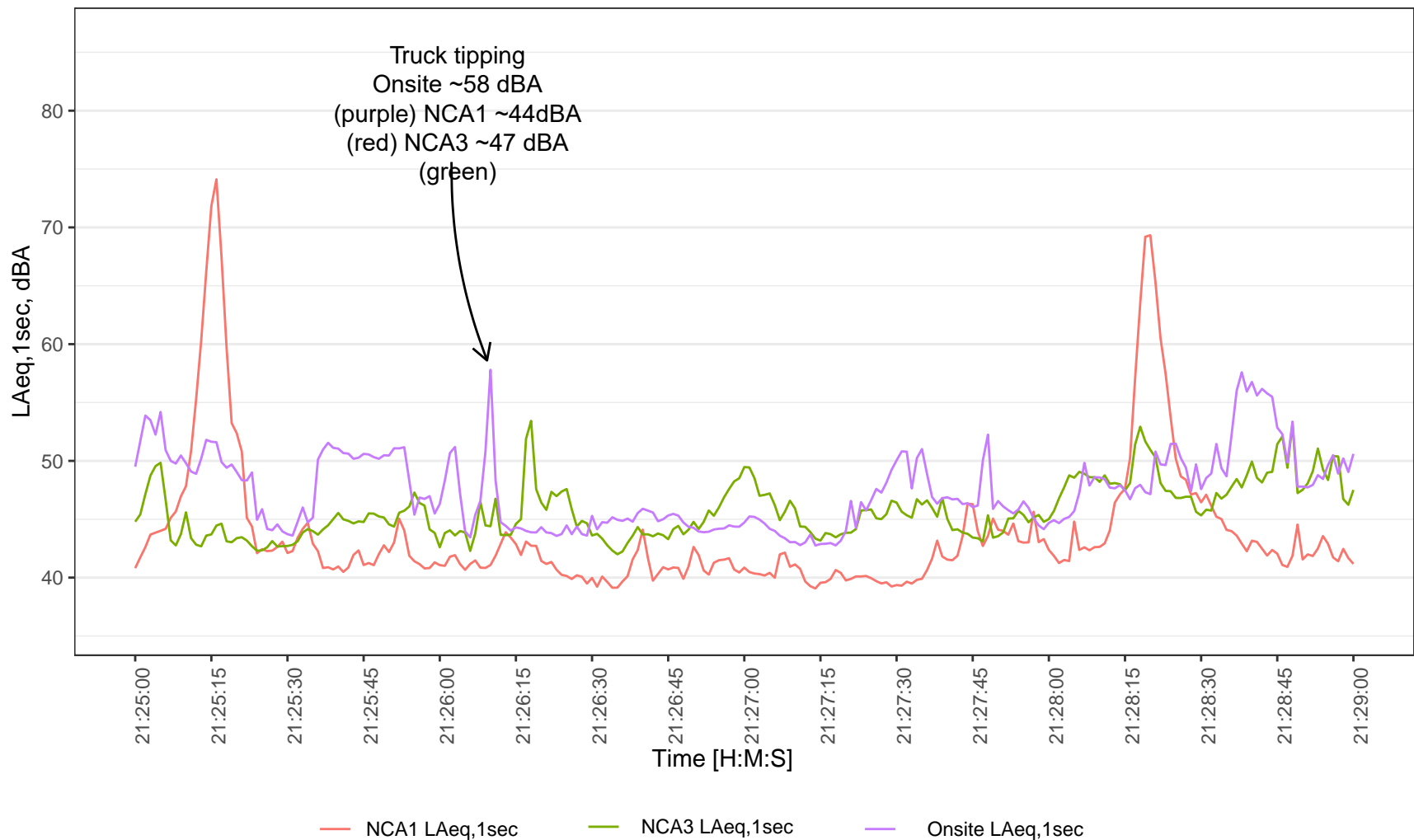
Concrush 17-April-2024 9:21pm Truck Arrival



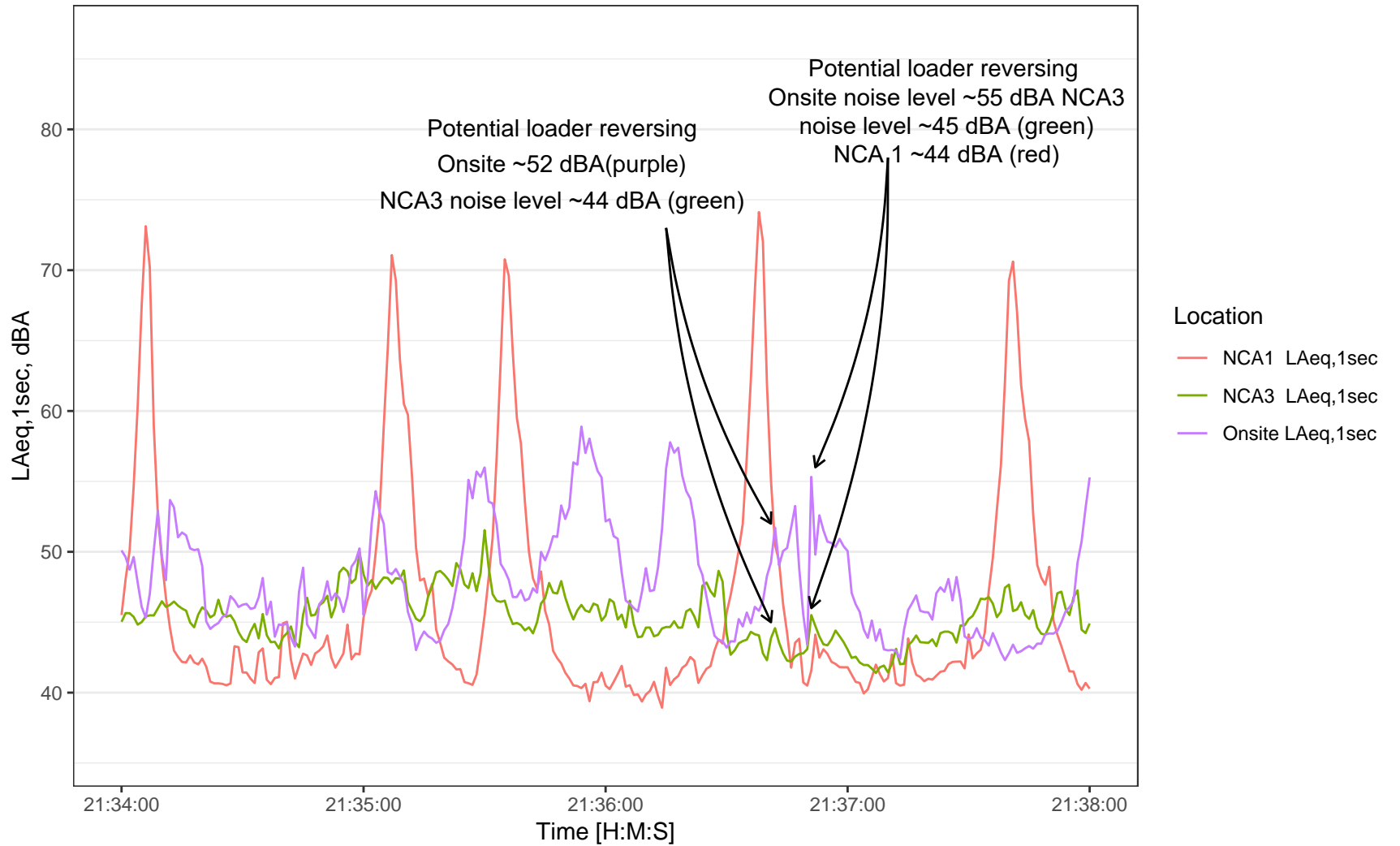
Truck arrival
Onsite ~66 dBA (purple)
NCA1 ~44 dBA (red)

— NCA1 LAeq,1sec — NCA2 LAeq,1sec — NCA3 LAeq,1sec — Onsite LAeq,1sec

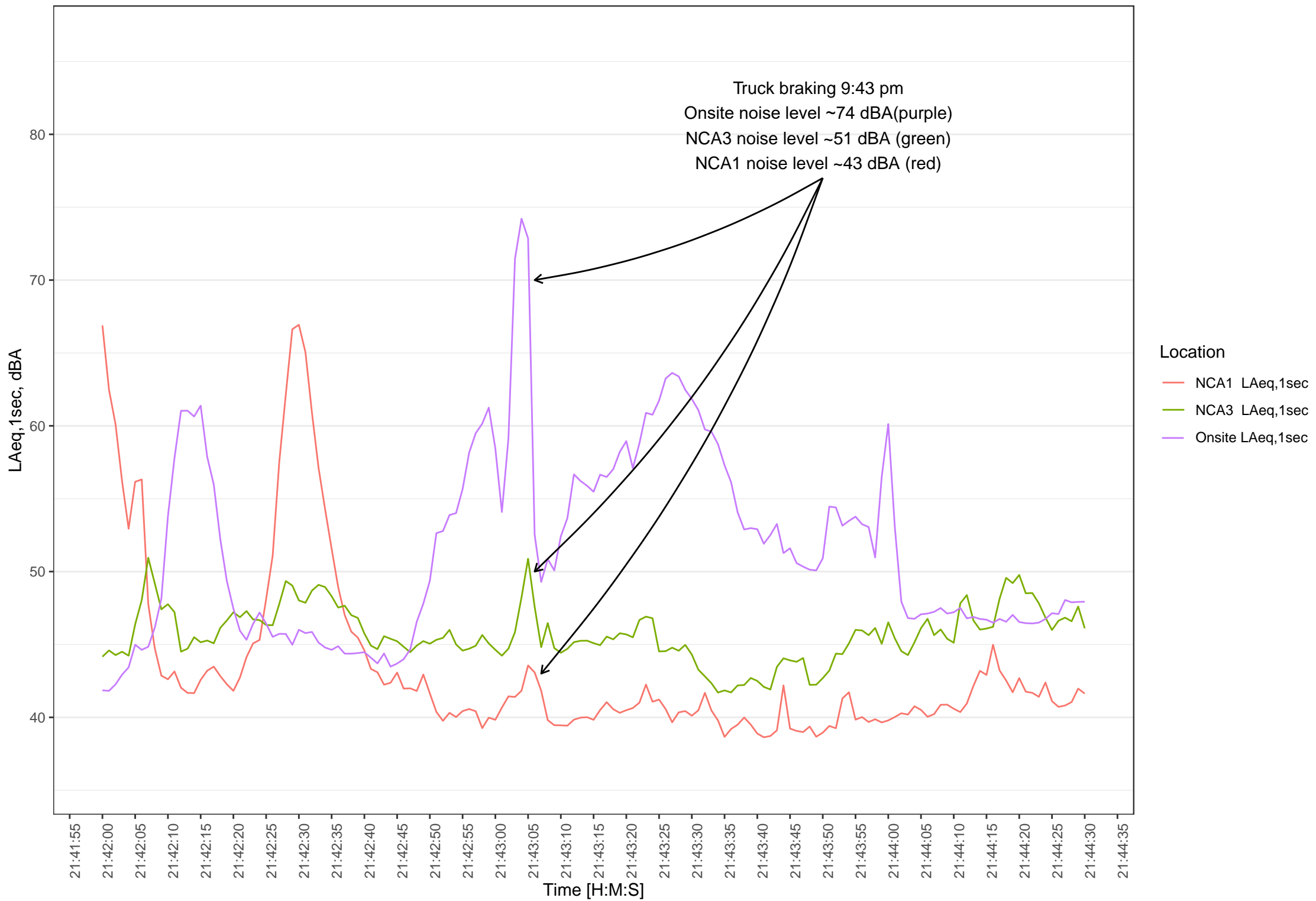
Concrush 17-April-2024 9:26 pm Truck tipping



Concrush 17-April-2024 9:36pm Potential Loader Reversing



Concrush 17-April-2024 Truck braking on site



Concrush 17-April-2024 Tipping and other site noise

