

Appendix 8.2: Baseline Noise Survey Methodology and Results

Cherryfield Drive, Kirkby

December 2023



Experts in noise and vibration
assessment and management

Document Control

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8.2.1 Baseline Survey Methodology

Summary

- 8.2.1.1 An environmental noise survey has been undertaken by Noise Consultants Limited (NCL) to characterise the noise climate within and around the curtilage of the proposed development.
- 8.2.1.2 Measurements have been made to enable the assessment of;
- construction activity during the enabling and construction phase at existing sensitive receptors; and,
 - noise from existing sources affecting the proposed development

Noise Survey Methodology

- 8.2.1.3 To quantify current levels of ambient noise on the site, a noise survey has been undertaken at the locations shown in **Figure 8.2.1** and presented in **Table 8.2.1**.
- 8.2.1.4 Measurement locations were chosen to characterise key noise sources in the vicinity of the site and to determine the ambient and background sound level, representative of proposed and existing noise sensitive receptors (NSRs) as described in **ES Volume 2, Chapter 8, Table 8.9**. These receptors are identified in **Figure 8.2.1** and **Table 8.2.1**. Timber hoarding is currently in place along a significant length of the northern boundary with Cherryfield Drive, and therefore it was not feasible to measure representative environmental noise levels in this area of the site. Nevertheless, road traffic along this boundary is the main source of noise.
- 8.2.1.5 Existing baseline road traffic noise levels for the day and night were measured over a 24hr period at long-term (LT) locations LT1-LT4. The day and night-time L_{Aeq} noise levels have been determined by the log-average of the measured 5-minute L_{Aeq} noise levels for the day (16-hour) and night (8-hour) periods.
- 8.2.1.6 At locations CRTN1-4, daytime road traffic noise levels have been established based on the principles of the 'shortened measurement procedure' described at Section 43 of Calculation of Road Traffic Noise (CRTN). At night, the log-average of the noise levels measured between 05:00-07:00hrs has been used to establish an indicative night-time $L_{Aeq,8hr}$ noise level and therefore represents a worst-case scenario.
- 8.2.1.7 At locations ST1-5, noise levels were only measured during the daytime. ST1 was used to determine typical noise levels for use in the assessment of construction activities on existing receptors to the south. ST2-5 were used to assess noise from the Kirkby Leisure Centre at proposed dwellings.
- 8.2.1.8 At ST2-5, noise levels were logged in 10-second periods to allow a more detailed analysis of noise emission from the adjacent sports pitches, and was undertaken during intensive use by junior football teams for training/matches with all pitches in use. The outdoor sports pitch was divided into 6 pitches for training and matches between 19:00-20:00hrs. Approximately 80 juniors were present, during which their voices was the main source of noise. From 20:00hrs, the number of pitches was reduced to five, and noise levels fell slightly by comparison.
- 8.2.1.9 The sound level meters (SLMs) and microphones used were Class 1 confirming to BS EN 61672-1: 2013, with detailed provided in **Table 8.2.2**. The calibration levels of the SLMs were checked before and after each measurement period with no significant drift in sensitivity recorded. Calibration certificates can be provided on request.

- 8.2.1.10 Windshields were fitted to the microphones to minimise the effects of any wind-induced noise. All instrumentation was configured to report the broadband and spectral parameters L_{Aeq} , L_{A10} , L_{A90} and L_{AFmax} .
- 8.2.1.11 The weather conditions during the surveys were generally cool, cloudy with wind speeds less than 5 m/s. There were no periods of high winds or rain during the survey. There were no adverse traffic conditions on nearby roads during the survey.

Figure 8.2.1: Baseline Noise Monitoring Locations and Construction Activity NSRs



Table 8.2.1: Description of Noise Measurement Locations and Associated Construction Activity Noise Sensitive Receptors

Location	Description	Condition	Survey Type	Survey Date(s) and Time(s)	Associated NSR	
					NSR Ref	NSR Type ¹
LT1	8m from kerb of Cherryfield Drive	Free-field. 1.4m above local	24hr logging	14:19 18/10/22 - 13:14 19/10/22	NSR5 & 12	Residential
LT2	Edge of the rear service area, overlooking Valley Road			13:08 18/10/22 - 13:08 19/10/22	NSR6	Offices
LT3	Approx 17. From the site boundary with Valley Road and Cherryfield Drive			13:29 18/10/22 - 13:34 19/10/22	NSR11	St Chad's Church
LT4	5m from northern boundary with Cherryfield Drive,	Façade, 1m from rear of structure, 1.m above local		13:17 18/10/22 - 13:17 19/10/22	NSR8	Art Centre
CRTN1	40m back from Valley Road	Free-field. 1.4m above local	Day - Shortened CRTN Night - 05:00-07:00	05:25-07:00 and 10:29-12:41 23/09/2022	NSR9 & 10	Residential
CRTN2	Boundary with Public Open Space			05:45-07:00 and 11:03-12;21 23/09/2022		
CRTN3	In line with dwelling frontage, 10m back from southern boundary with Bewley Drive			05:12-12:25 23/09/2022	NSR1-3 & 13	Residential
CRTN4	On path, 10m back from Cherryfield Drive			05:45-06:26 23/09/2022 12:42-15:12 18/10/22	NSR7	Offices
ST1	Rear of existing dwellings on Whinberry Drive		Daytime AM	09:49-10:21 23/09/22	NSR2	Residential
ST2 - 5	Boundary of the Leisure Centre sports pitch		Evening sample of use of sports pitches	19:15-21:02 29/09/22	-	

Table 8.2.2: Noise Survey Equipment

Equipment	Manufacturer	Type	Serial number	Date of Last Calibration
Sound Level Meter	Rion	NL-52	01176453	7/26/2021
Sound Level Meter	Rion	NL-52	00909494	11/10/2021
Sound Level Meter	Rion	NL-52	01176433	7/26/2022
Sound Level Meter	Rion	NL-52	01009670	3/10/2021
Acoustic Field-Calibrator	Rion	NC-57	34291339	7/25/2022

¹ As defined in ES Volume 2, Chapter 8, Table 8.10

8.2.2 Survey Observations

8.2.2.1 Monitoring was supplemented by observations of the noise climate at each monitoring location during the survey. **Table 8.2.3** details the noise survey observations.

Table 8.2.3: Noise Survey Observations

Measurement Location	Observations
LT1	Road traffic on Cherryfield Drive is the dominant noise source in the day and night.
LT2	Road traffic on Valley Road is the dominant noise source in the day and night.
LT3	Road traffic on Valley Road and Cherryfield Drive is the dominant noise source in the day and night.
LT4	Road traffic on Cherryfield Drive is the dominant noise source in the day and night.
CRTN1	Road traffic on Valley Road is the dominant noise source in the day and night.
CRTN2	Distant traffic on Valley Road is the dominant noise source throughout the day and night.
CRTN3	Road traffic on Bewley Drive is the dominant noise source in the day and night.
ST1	Distant traffic on surrounding roads is the dominant noise source throughout the day and night.
ST2 - 5	Distant traffic on surrounding roads is the main noise source throughout the day and night. Voices on sports pitch is the main source when in intensive use.

8.2.3 Summary and Analysis

Summary

- 8.2.3.1 A summary of the measured ambient noise levels is presented in **Table 8.2.4**. Detailed results are provided in **Table 8.2.5** to **Table 8.2.8** for some locations.
- 8.2.3.2 Due to the amount of noise data obtained over the survey period, the measured noise levels at **LT1-LT4** and **ST2-5** are shown graphically in **Figure 8.2.2** to **Figure 8.2.12**.
- 8.2.3.3 The analysis of the L_{AFmax} noise levels;
- At **LT1-LT4** are based on the measured 5-minute sample periods at night.
 - At **CRTN1-4** are based on the measured 1-minute sample periods due to the short night-time survey duration
 - At **ST2-5** are based on the measured 10-second sample periods due to the nature of noise being considered.

Table 8.2.4: Summary of Measured Ambient Sound Levels

Measurement Location	Period	dB L _{Aeq,T}	n th Highest dB L _{AFmax}				
			1	5	10	15	20
LT1	Daytime (07:00-23:00hrs)	60	-	-	-	-	-
	Night-time (23:00-07:00hrs)	50	74	72	71	69	69
LT2	Daytime (07:00-23:00hrs)	60	-	-	-	-	-
	Night-time (23:00-07:00hrs)	54	74	70	69	68	67
LT3	Daytime (07:00-23:00hrs)	57	-	-	-	-	-
	Night-time (23:00-07:00hrs)	50	70	63	60	60	59
LT4	Daytime (07:00-23:00hrs)	63	-	-	-	-	-
	Night-time (23:00-07:00hrs)	56	88	75	74	74	73
CRTN1	Daytime (07:00-23:00hrs)	59	-	-	-	-	-
	Night-time (23:00-07:00hrs)	59	71	70	68	67	66
CRTN2	Daytime (07:00-23:00hrs)	47	-	-	-	-	-
	Night-time (23:00-07:00hrs)	51	62	56	54	54	53
CRTN3	Daytime (07:00-23:00hrs)	58	-	-	-	-	-
	Night-time (23:00-07:00hrs)	55	75	70	69	68	68
CRTN4	Daytime (07:00-23:00hrs)	64	-	-	-	-	-
	Night-time (23:00-07:00hrs)	58	75	73	71	68	67
ST1	Daytime (07:00-23:00hrs)	47	-	-	-	-	-
ST2	Evening (19:15-21:02hrs)	56	75	74	71	70	69
ST3		61	79	75	74	73	72
ST4		59	79	75	74	73	72
ST5		56	78	73	71	70	68

Analysis

- 8.2.3.4 The measured noise data at location **LT1 - LT4** exhibits diurnal variation consistent with a semi-suburban environment exposed to road traffic noise. Peaks in noise are attributable to passing vehicles.
- 8.2.3.5 At **CRTN1-4**, the main source of noise was road traffic with peaks in noise attributable to passing vehicles.
- 8.2.3.6 At location **ST1**, distant road traffic from surrounding roads was the main source of noise.
- 8.2.3.7 At locations **ST2-ST5**, voices from juniors using the pitch for training and matches was the main source of noise. Throughout the survey, peaks in noise from balls impacting the steel fencing around the pitch were highly infrequent, and lower in level than voices.
- 8.2.3.8 An inspection of the wire mesh fencing around the perimeter of the pitches found no impact/anti-vibration isolators present. It has been assumed that no damping material is present in the steel fencing posts.
- 8.2.3.9 By comparison to the typical objective noise immission levels set out in the AGP (50 dB L_{Aeq,T} 10 meters from the sideline and aligned with the halfway line), the measured noise levels at locations ST1-ST5 are considered to represent a reasonable worst-case scenario.

8.2.4 Noise Survey Data

Figure 8.2.2: Time History, LT1

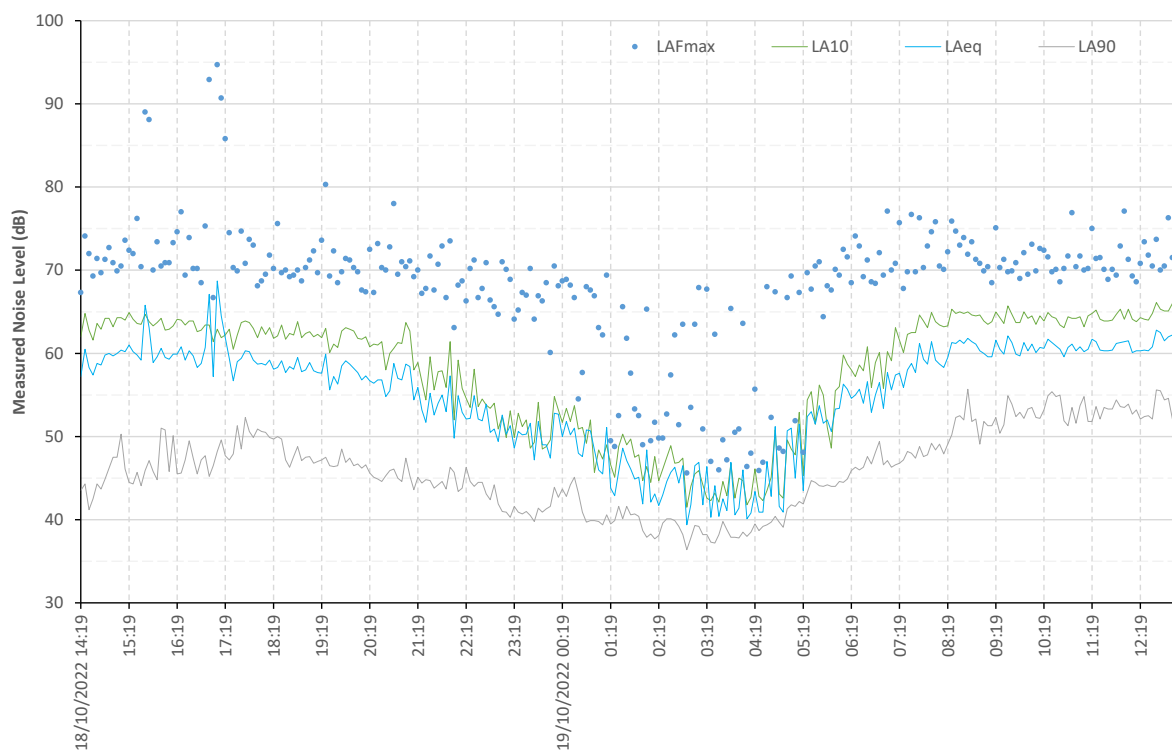


Figure 8.2.3: Time History, LT2

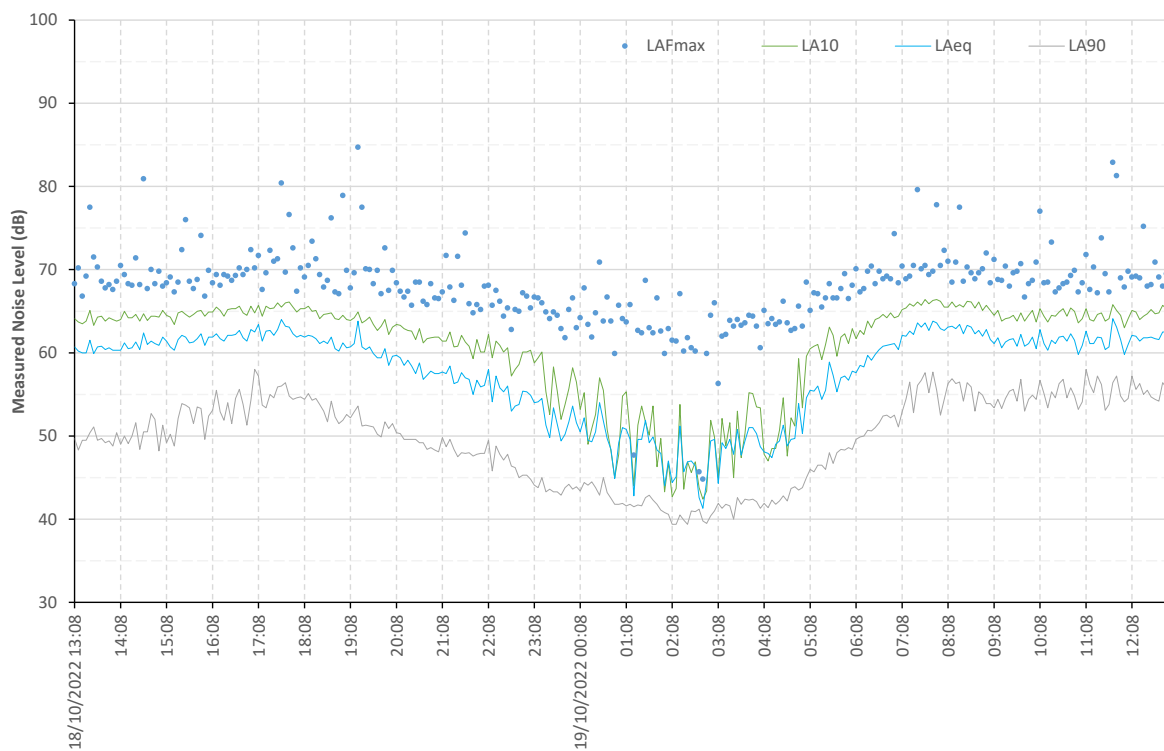


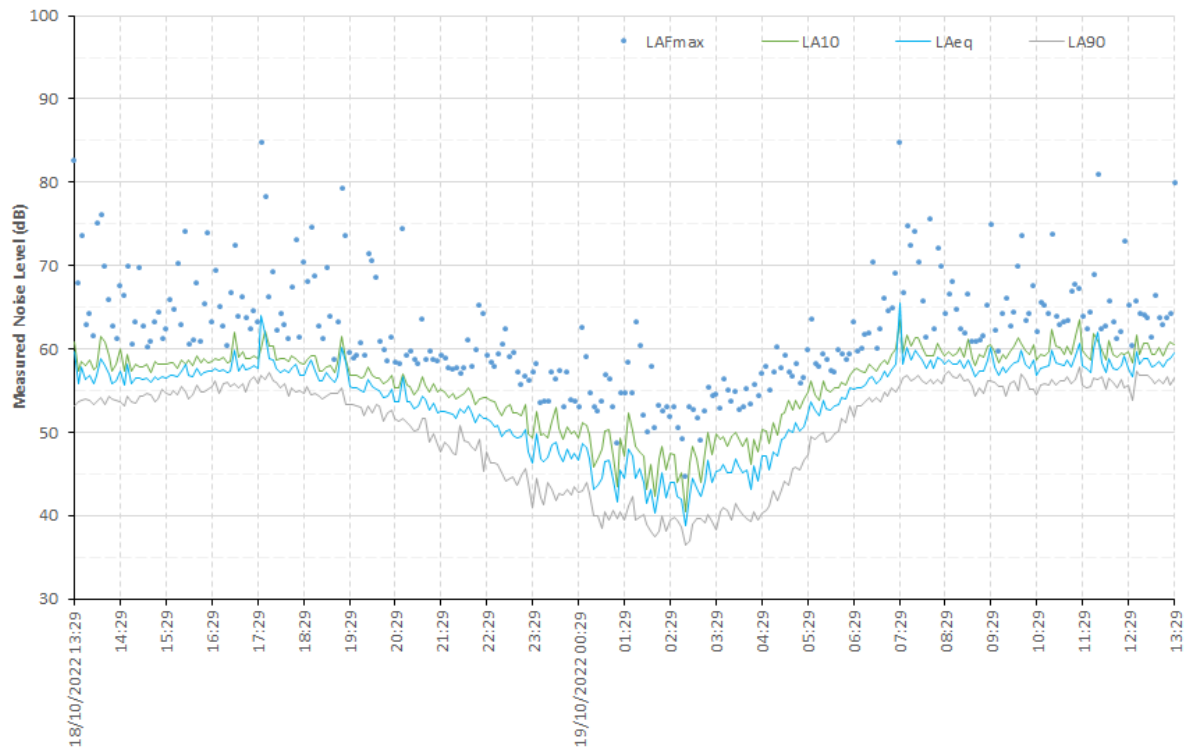
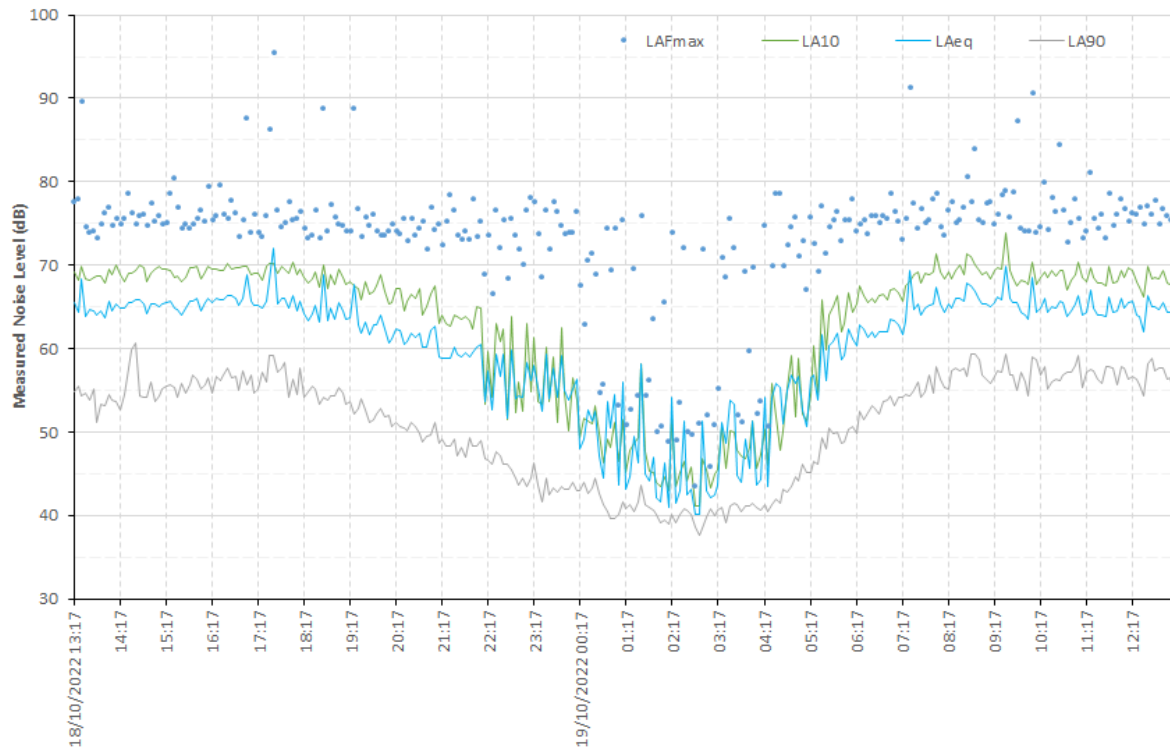
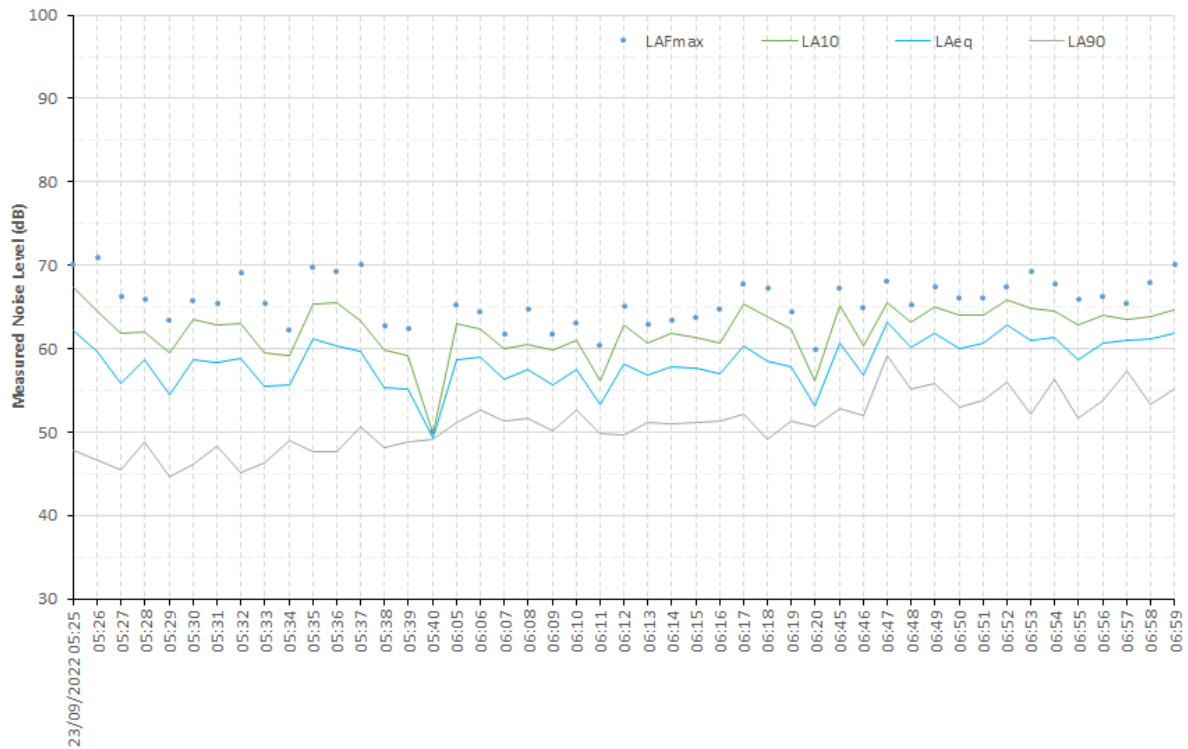
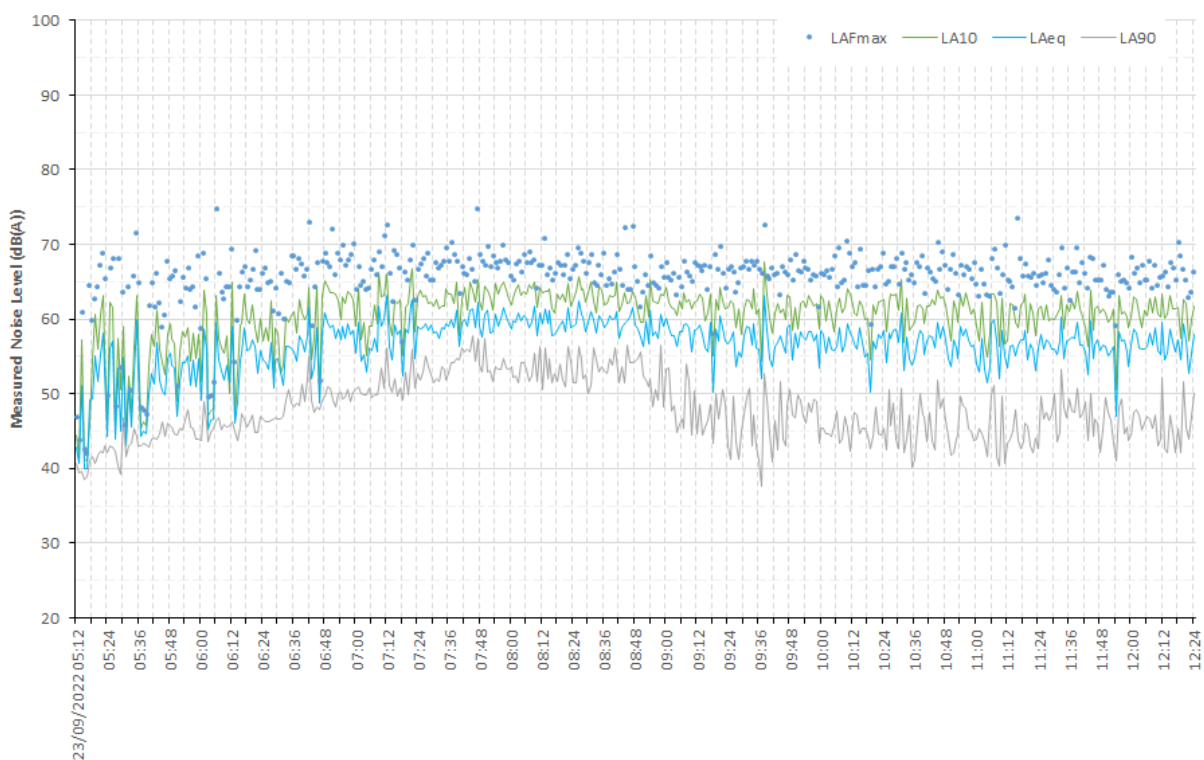
Figure 8.2.4: Time History, LT3

Figure 8.2.5: Time History, LT4


Figure 8.2.6: Time History, CRTN1 (night-time)

Table 8.2.5: CRTN1 Summary Noise Data

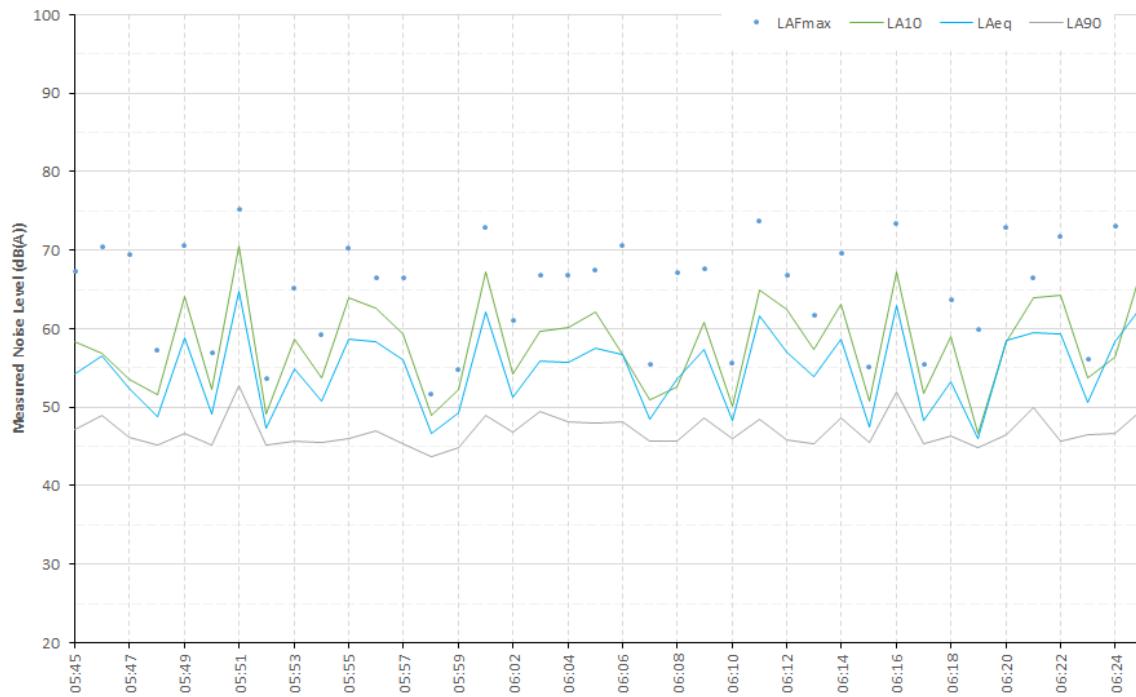
Date	Time	Duration (hh:mm:ss)	LAFmax,1min	LA10,T	LAeq,T	LA90,T
23/09/22	05:25	01:45:00	71.0	62.3	59.2	51.0
	10:29	00:15:00	72.5	61.2	58.3	50.0
	11:22	00:15:00	77.1	62.0	59.2	48.4
	12:26	00:15:00	67.7	62.5	59.6	52.5

Table 8.2.6: CRTN2 Summary Noise Data

Date	Time	Duration (hh:mm:ss)	L _A F _{max}	L _A 10,T	L _A eq,T	L _A 90,T
23/09/22	05:45	00:15:00	62.0	50.4	49.1	47.4
	06:24	00:15:0	59.8	52.4	51.5	50.1
	11:03	00:15:00	70.3	49.9	50.1	45.3
	12:06	00:15:00	60.2	50.2	48.7	47.1

Figure 8.2.7: Time-level History, CRTN3

Table 8.2.7: CRTN3 Summary Noise Data

Date	Time	Duration (hh:mm:ss)	L _A F _{max}	L _A 10,T	L _A eq,T	L _A 90,T
23/09/22	05:12	01:48:00	74.8	56.7	55.3	45.7
	07:00	05:29:00	74.7	61.6	59.1	48.6
	10:00	02:30:00	73.5	60.9	58.9	45.7

Figure 8.2.8: Time History, CRTN4 (night-time)

Table 8.2.8: ST1 Summary Noise Data

Date	Time	Duration (hh:mm:ss)	LAFmax	LA10,T	LAeq,T	LA90,T
23/09/22	09:49	00:15:00	57.4	48.4	46.7	44.9
	10:06	00:15:00	63.7	48.8	46.7	43.9

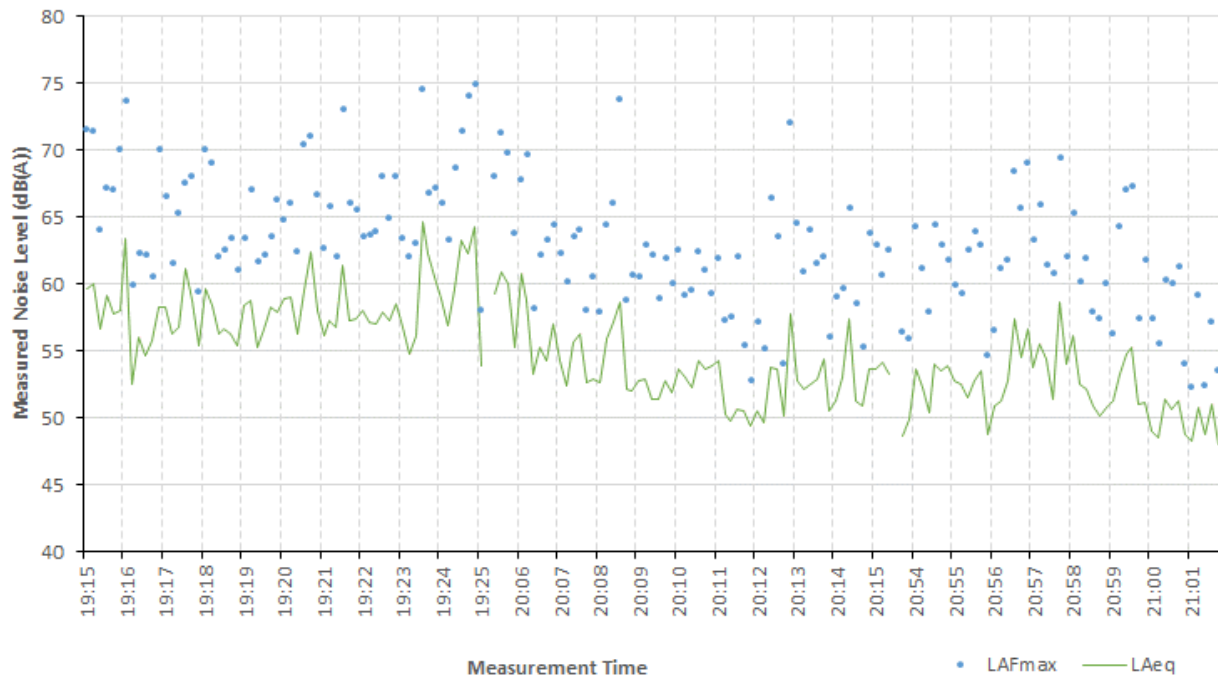
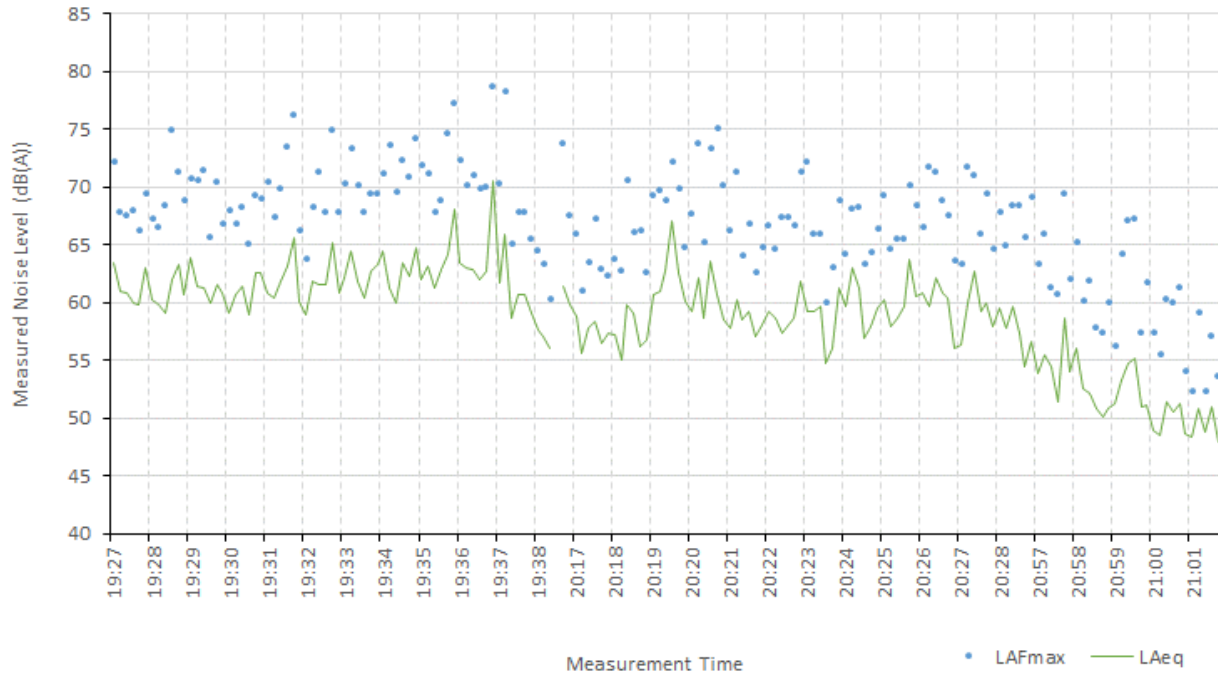
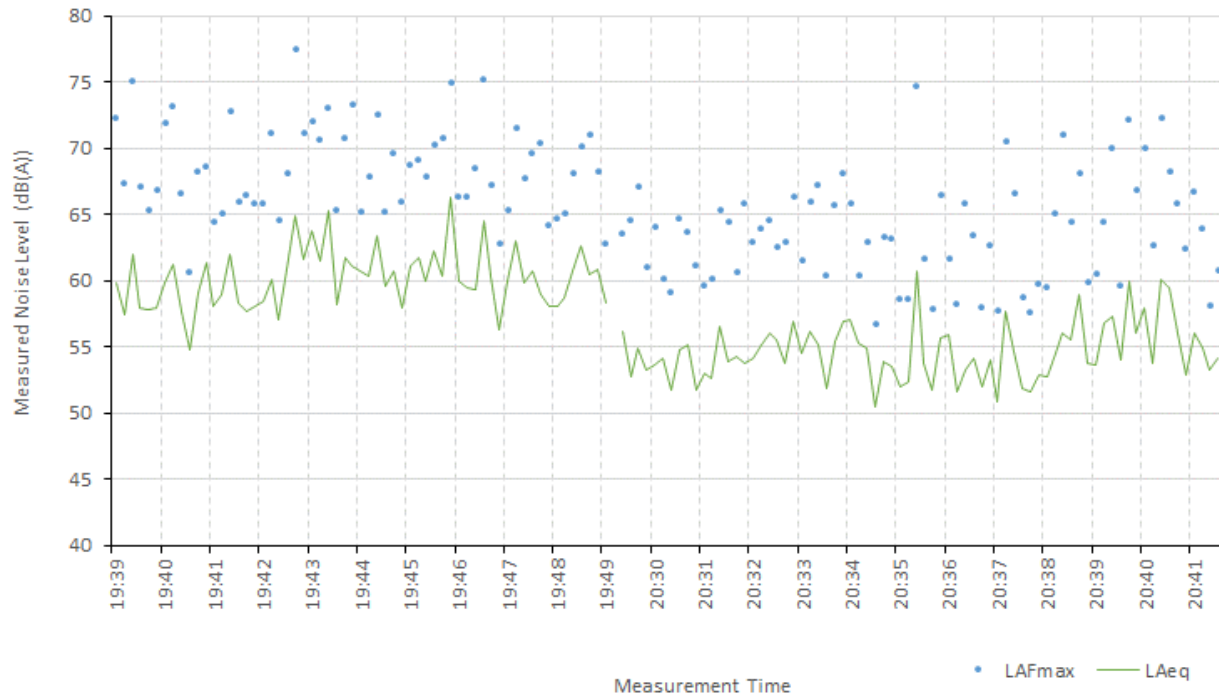
Figure 8.2.9: Time History, ST2

Figure 8.2.10: Time History, ST3


Figure 8.2.11: Time History, ST4

Figure 8.2.12: Time History, ST5
