

Appendix 15.3

Baseline Survey

Newlands Farm



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1 INTRODUCTION

- 1.1.1 This Baseline Survey Appendix presents the methodology and results of the baseline sound survey undertaken for the Newlands Farm Project (henceforth referred to as the Proposed Development).
- 1.1.2 Sound level data was measured at locations representative of the proposed residential dwellings on site, as well as noise sensitive receptors within the wider Noise and Vibration Study Area to identify baseline noise levels during the daytime, evening and night-time periods.
- 1.1.3 There are no significant sources of vibration impacting the nearest noise-sensitive receptors which require consideration. As such, no vibration survey was deemed necessary.
- 1.1.4 The information from this Appendix informs the noise baseline and the assessment of the likely significant effects of the local acoustic environment on the Proposed Development and the effect of the Proposed Development on nearby Noise Sensitive Receptors (NSRs).
- 1.1.5 The aim of the Baseline Survey is to:
 - Quantify baseline noise levels at nearby NSRs to determine the acoustic environment as well as representative background sound levels to inform an assessment of the site's suitability for residential development in line with the guidance contained in British Standard (BS) 8233:2014. It will also inform noise criteria against which operational and construction noise impacts arising from the Proposed Development may be assessed in accordance with BS 4142:2014+A1:2019 and BS 5228-1:2009+A1:2014, respectively.

2 METHODOLOGY

2.1.1 The baseline sound surveys comprised of unattended long-term measurements, involving the installation of monitors for up to two weeks in secure locations in February and March 2025. Meteorological equipment including a rain gauge and a mast for monitoring wind were also installed at one of the measurement positions to assess meteorological conditions during the survey period at the development site.

Site-Specific Surveys

2.1.2 A summary of the surveys undertaken to inform the noise baseline is outlined in Table 2.1 below.

Table 2.1 Survey details

Title	Extent of Survey	Overview of Survey	Survey Contractor	Dates
Baseline Sound Survey	Proposed development site, nearby road network and nearby NSRs	Baseline sound survey at locations representative of the proposed on-site buildings and nearby NSRs	RPS	25/02/25 to 18/03/25
Additional Baseline Sound Survey ¹	Proposed development site	Baseline sound survey at a location representative of the proposed dwellings	RPS	29/04/25 to 07/05/25

Consultation

2.1.3 A summary of the consultation activities undertaken specific to the baseline noise survey is presented in Table 2.2 below. Consultation has focused on the proposed locations of the Baseline Sound Survey.

Table 2.2 Consultation

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issues Raised
September 2024	WBC EHO – Scoping submission	Proposed noise sensitive receptors and monitoring locations	No comments received

Sample Collection

2.1.4 The locations for the long-term sound survey were selected to be representative of the proposed dwellings on-site and the selected NSRs around the site.

2.1.5 The measurement locations are presented in Table 2.3 and visually in Figure 1.

2.1.6 At all locations, measurements were undertaken in the free field, at approximately 1.5 m above local ground level.

¹ This survey was compromised by an equipment failure less than 24 hours after installation. As a result, the data from it is not considered sufficiently representative for the purposes of this assessment and has therefore been discounted

Table 2.3 Survey details

Position	X-Coordinate	Y-Coordinate	Description	Representative Receptors
LT1	474022.12	168913.06	Set up on the side of Cutbush Lane	Background sound levels of residential areas on Cutbush Lane
LT2	474511.25	167740.93	Northern section of site, approximately 220 m south of M4	To quantify noise levels from road traffic on M4 as well as background noise levels for this section of the Proposed Development
LT3	475958.87	169031.57	North-eastern corner of site, approximately 150 m from nearest NSR	Background sound levels of this section of the Proposed Development as well as the nearby NSRs on Betty Grove Lane
LT4	475444.85	167700.82	On southern edge of site boundary, adjacent to Church Lane	To quantify noise levels from road traffic on M4 as well as background sound levels of nearby NSRs on Church Lane and this section of the Proposed Development
LT5	476145.17	169431.53	On south-western corner of site, adjacent to the A327	To quantify noise levels from road traffic on the A327 as well as background sound levels of nearby NSRs on the A327 and this section of the Proposed Development
LT6	476580.81	169307.84	In the middle of the proposed development site	Background sound levels for this section of the proposed development
LT7	476946.15	169070.69	On north-eastern edge of site, adjacent to Mole Road	To quantify noise levels due to road traffic on Mole Road as well as background sound levels of the nearby NSRs on Mole Road and this section of the Proposed Development
LT8	476144	167754	Located Approximately 30 m from Church Lane and 78 m from Mole Road	Due to the measurement failure the small amount of data collected at this location was not considered sufficiently representative.
ST1	476027	167764	Located opposite Oakland Plant Nursery	Proposed dwellings. No noise was noted from Oakland Plant Nursery. Discussions with the owner confirmed that it operates to trade only, with deliveries/collections approximately once per fortnight.

2.1.7 The long-term survey equipment was initially deployed between 12:15 and 16:15 on Tuesday 25th February 2025 and was collected between 11:00 and 13:00 on Thursday 6th March 2025. During collection, it was noted that the noise monitor deployed at LT7 had malfunctioned, so a replacement monitor was set up in its place at 13:39 on Thursday 6th March and was collected at 17:04 on Tuesday 18th March 2025.

2.1.8 Further additional measurements were undertaken at LT8 / ST1 between 13:45 on 29th April 2025 and 14:25 on 7th May 2025. This survey was primarily undertaken to form the basis of a BS4142 assessment of noise from the nearby Oakland Plant Nursery at the closest proposed dwellings within the Proposed Development. An equipment failure meant that the data collected at LT8 were not sufficiently representative and have therefore not been used within this assessment, and data collected at ST1 did not include any contribution from the nearby commercial noise source, Oakland Plant Nursery. After investigation it was determined that noise from this business is limited to deliveries/collections approximately once per fortnight and is therefore considered unlikely to present any significant adverse effect to future residents of the Proposed Development, so data from these locations has not been used.

2.1.9 Long-term measurements of the L_{Aeq} and L_{A90} were undertaken at 100 millisecond (ms) intervals and temporally averaged over 15-minute periods for the duration of the survey. Measurements of the L_{Amax} were undertaken at 100 ms intervals and temporally averaged over 1-minute periods for each night-time period.

Instrumentation

2.1.10 The equipment listed in Table 2.4 below was used to conduct the baseline sound survey.

Table 2.4 Survey equipment

Position	Make / Model	Serial Number	Calibration at Start (dB)	Calibration at end (dB)	Last Calibration Date
LT1	Rion NL-52	943366	94.0	93.9	12/10/2023
LT2	Rion NL-52	998563	94.0	94.0	18/3/2024
LT3	Rion NL-52	998566	94.0	93.9	15/3/2024
LT4	Rion NL-52	998567	94.0	93.9	18/3/2024
LT5	Rion NL-52	164422	94.0	93.9	6/2/2024
LT6	Rion NL-52	386736	94.0	94.0	13/10/2023
LT7	Rion NL-52	943366	94.0	94.0	12/10/2023
LT8	Rion NL-52	998566	94.0	93.9	15/3/2024
ST1	Rion NL-52	998567	94.0	94.0	18/3/2024
Calibrator (LT1 – LT7)	Rion NC-74	34683836	N/A	N/A	19/11/2024
Calibrator (LT8, ST1)	Rion NC-74	34472822	N/A	N/A	19/11/2024

2.1.11 The long-term equipment was installed within weatherproof enclosures; the microphone was mounted externally and within a Rion WS-15 Outdoor Noise Monitor Microphone Protection Kit. The equipment was calibrated before deploying the survey equipment and after collecting it to confirm the accuracy of results. As shown in Table 2.4, no significant drift (greater than ± 0.5 dB) occurred.

2.1.12 Measurements were undertaken in accordance with British Standard 7445-2:1991 – ‘*Description and Measurement of Environmental Noise – Part 2: Guide to the Acquisition of Data*’. All sound level meters used meet the ‘Class 1’ criteria defined within BS EN 61672-2:2013+A1:2017 – ‘*Electroacoustics. Sound Level meters – Pattern Evaluation Tests*’. All calibrators used meet the ‘Class 1’ criteria defined in BS EN IEC 60942 – ‘*Electroacoustics. Sound Calibrators*’.

Survey Limitations

2.1.13 The sound level meter at LT2 was intended to be placed adjacent to the M4, however access was restricted due to localised flooding of the field, so it was placed as close to the M4 as possible.

2.1.14 The survey equipment at LT7 failed after installation. As previously stated, another monitor was put in its place and the survey at this location was repeated.

2.1.15 The survey equipment at LT8 failed within 24 hours of installation. Data from LT4 / LT6 will be used instead.

Meteorological Conditions

2.1.16 A weather station was deployed alongside the survey equipment at LT6 (and LT7 thereafter) to monitor the variation in meteorological conditions throughout the survey period. Data from this weather station was considered representative of each noise monitoring location.

2.1.17 The weather station was synchronised with the sound survey equipment. Any periods where precipitation events greater than 0.1 mm or wind speeds greater than 5 ms^{-1} occurred have been omitted during the analysis of the measured data.

Atypical Sound Events

2.1.18 Data pertaining to atypical sound events that are considered unlikely to be representative of the typical baseline have also been excluded from the dataset.

Existing Sound Climate

2.1.19 A subjective description of the prevailing noise climate at each position is presented in Table 2.5.

Table 2.5 Description of noise climate

Position	Subjective Description of Noise Climate
LT1	Dominated by road traffic from the M4 approximately 485 m to the north. Can also hear bird song, wind noise, faint plane noise overhead. There were also some light construction noises coming from a nearby house on deployment which was not audible on collection. Moderate loudness here.
LT2	Dominated by road traffic from the M4 approximately 220 m to the north. Can also hear wind noise and bird song. Reasonably quiet here.
LT3	Dominated by road traffic from the M4 approximately 465 m to the northeast, can also hear wind noise, bird song and the occasional plane overhead. Overall, fairly quiet here.
LT4	Dominated by road traffic on Church Lane, which is approximately 10 m away, close so fairly loud at this location. There is also bird song, wind noise, plane noise audible here as well as traffic on the M4 which is faintly audible to the north.
LT5	Dominated by road traffic on the A327 which is approximately 15 m away, close by and fast moving so fairly loud. Otherwise, can hear bird song, wind noise and plane noise.
LT6	Dominated by road traffic from the M4 approximately 1.12 km to the north, can also hear plane noise, bird song and plane noise overhead. This is probably the quietest location or at least seems so subjectively.
LT7	Dominated by road traffic on Mole Road which is approximately 2 m away. Fairly fast moving and regular so quite loud – probably the single loudest location. There is also bird song faintly audible.
LT8	Primary noise source is frequent traffic on Mole Road, less frequent on Church Lane, with low-level contributions from occasional aircraft and birdsong
ST1	Primary noise source is frequent traffic on Mole Road, less frequent on Church Lane, with low-level contributions from occasional aircraft and birdsong. No commercial noise, so data not used.

Results

2.1.20 The results of the baseline sound survey at the long-term monitoring positions are presented graphically in Figure 2 to Figure 8.

2.1.21 The range of measured sound levels at the long-term monitoring positions is presented in Table 2.6 below.

Table 2.6 Measured sound levels

Survey Position	Measured Sound Level					
	Day		Evening		Night	
	$L_{Aeq,16hr}$ (07:00 – 23:00)	$L_{Aeq,12hr}$ (07:00 – 19:00)	$L_{A90,1hr}$ (07:00 – 23:00)	$L_{Aeq,4hr}$ (19:00 – 23:00)	$L_{Aeq,8hr}$ (23:00 – 07:00)	$L_{A90,15min}$ (23:00 – 07:00)
LT1	41 - 62	41 - 62	39 - 55	41 - 52	40 - 58	39 - 55
LT2	48 - 65	48 - 65	46 - 63	51 - 61	46 - 65	43 - 64
LT3	41 - 60	41 - 60	38 - 58	41 - 56	42 - 60	39 - 59
LT4	41 - 58	45 - 58	34 - 53	34 - 51	32 - 60	29 - 55
LT5	55 - 71	59 - 71	36 - 68	40 - 58	40 - 66	33 - 60

Survey Position	Measured Sound Level					
	Day		Evening		Night	
	$L_{Aeq,16hr}$ (07:00 – 23:00)	$L_{Aeq,12hr}$ (07:00 – 19:00)	$L_{A90,1hr}$ (07:00 – 23:00)	$L_{Aeq,4hr}$ (19:00 – 23:00)	$L_{Aeq,8hr}$ (23:00 – 07:00)	$L_{A90,15min}$ (23:00 – 07:00)
LT6	40 - 62	40 - 60	37 - 58	43 - 56	39 - 59	38 - 58
LT7	65 - 81	69 - 81	34 - 68	38 - 60	33 - 79	31 - 63
LT8	Data Discounted					

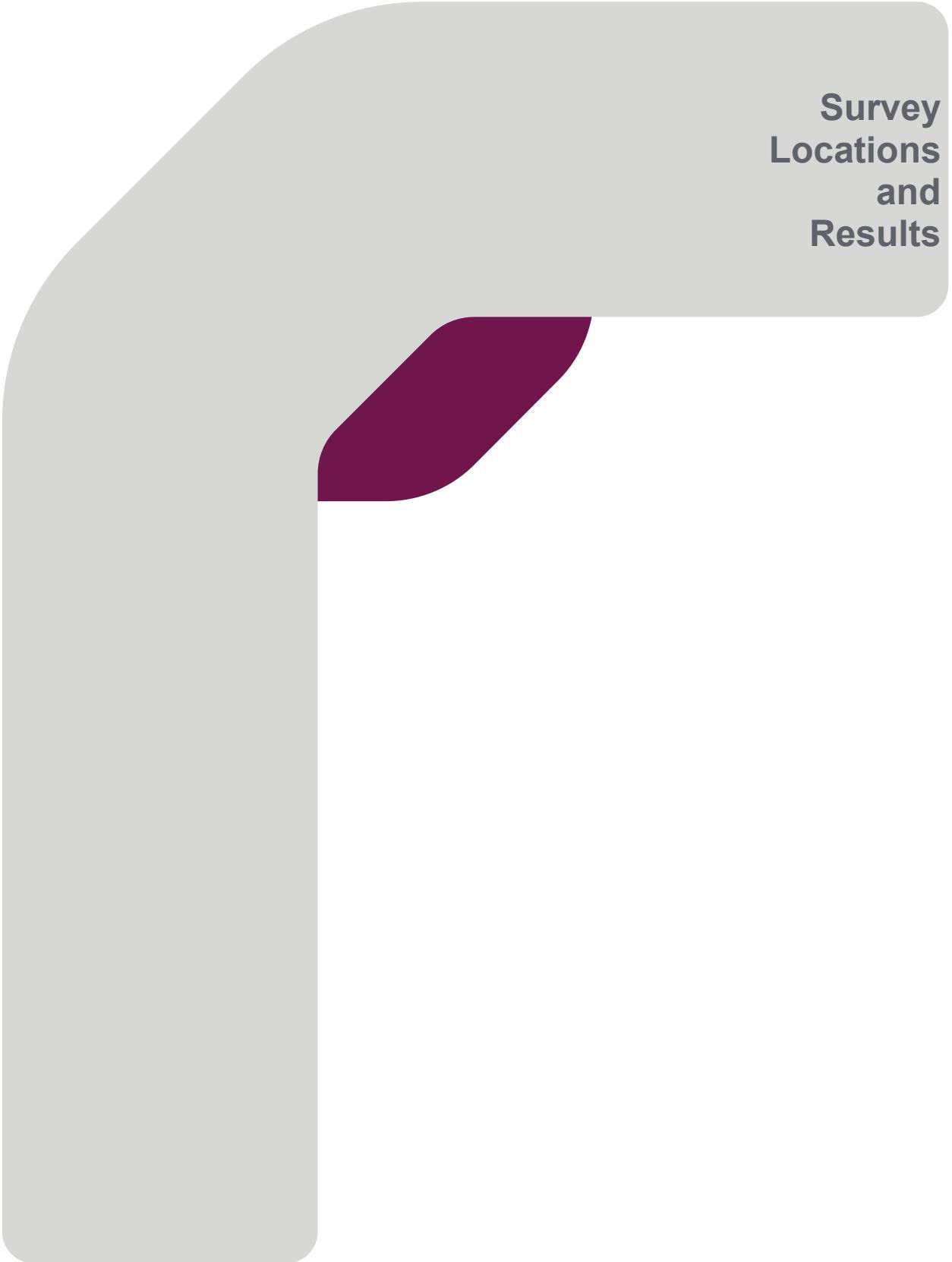
2.1.22 The typical sound levels identified from the long-term monitoring data are presented in Table 2.7 below. These are the levels upon which all noise assessments are based.

Table 2.7 Typical sound levels

Survey Position	Typical Sound Level						
	Day			Evening		Night (23:00 – 07:00)	
	$L_{Aeq,16hr}$ (07:00 – 23:00)	$L_{Aeq,12hr}$ (07:00 – 19:00)	$L_{A90,1hr}$ (07:00 – 23:00)	$L_{Aeq,4hr}$ (19:00 – 23:00)	$L_{Aeq,8hr}$ (23:00 – 07:00)	$L_{A90,15min}$ (23:00 – 07:00)	$L_{Amax,1min}$ (23:00 – 07:00)*
LT1	50	51	48	48	48	42	70
LT2	59	59	60	56	56	50	68
LT3	54	54	45	54	51	46	73
LT4	51	52	43	44	46	38	72
LT5	64	65	59	50	57	39	77
LT6	53	53	53	54	51	48	66
LT7	77	77	63	46	69	40	94

* The L_{Amax} value is based on the tenth highest $L_{Amax,1min}$ measured during the night-time period at each monitoring location.

2.1.23 It is noted that the monitor at LT7 was close to the edge of the road and therefore L_{Aeq} and L_{Amax} levels at this location were significantly higher than at other monitoring locations.



Survey Locations and Results



Figure 1 Survey Locations

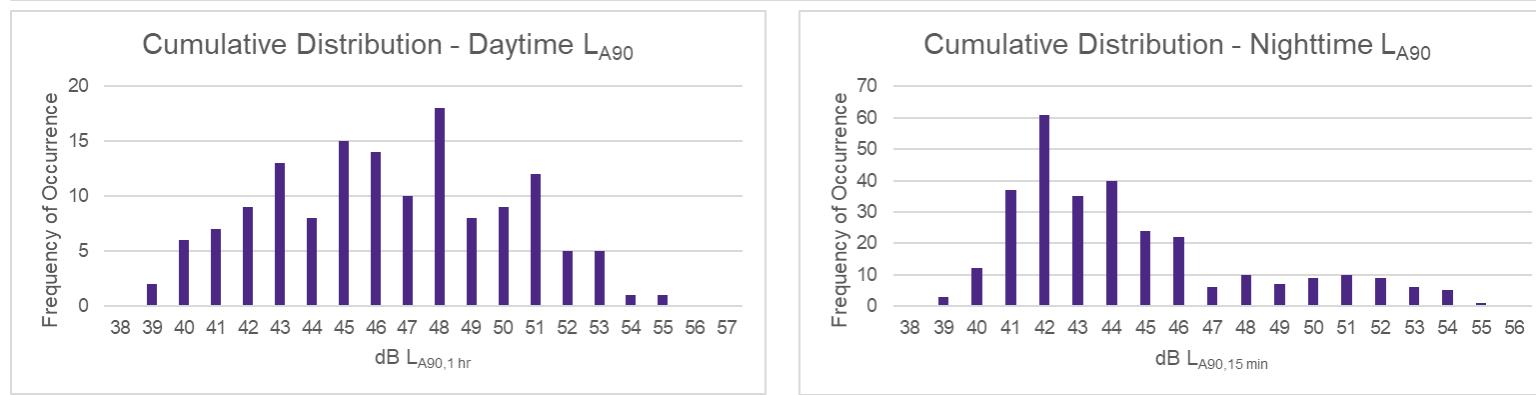
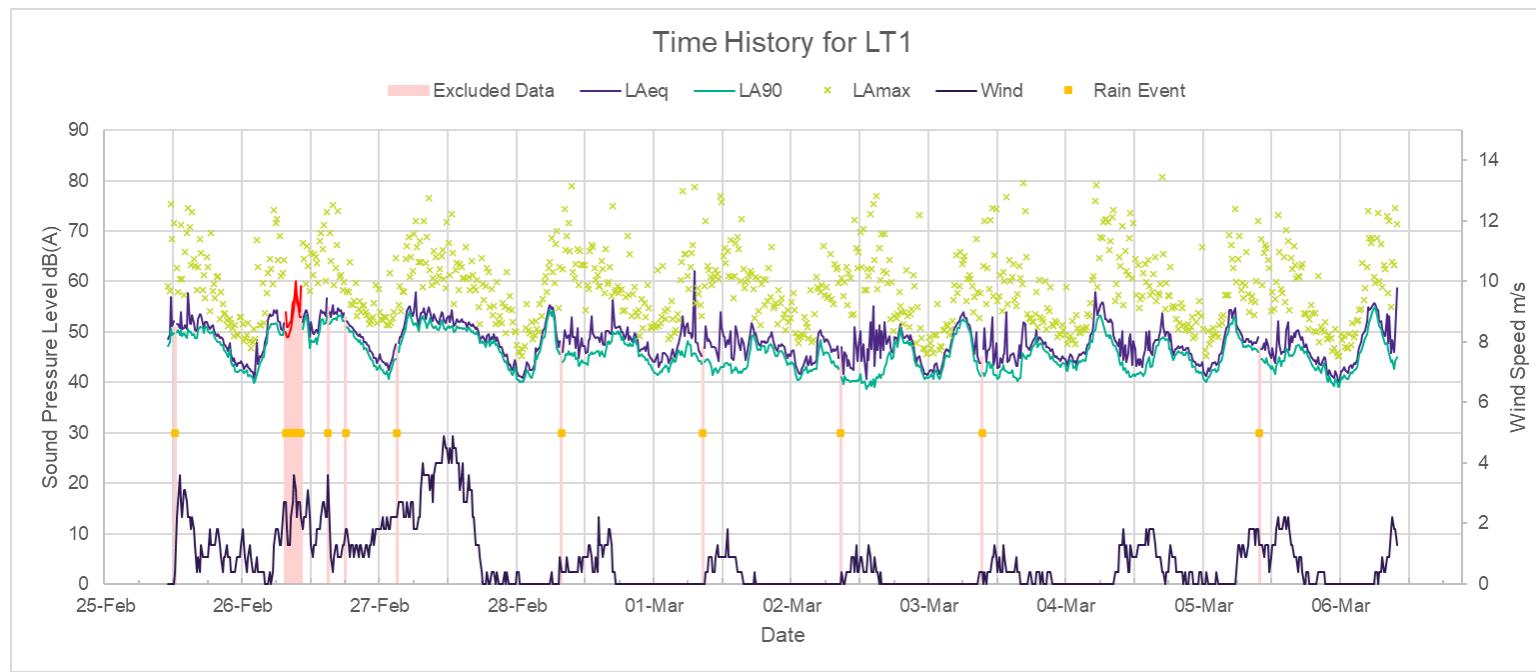


Figure 2 LT1 time history and background noise statistics

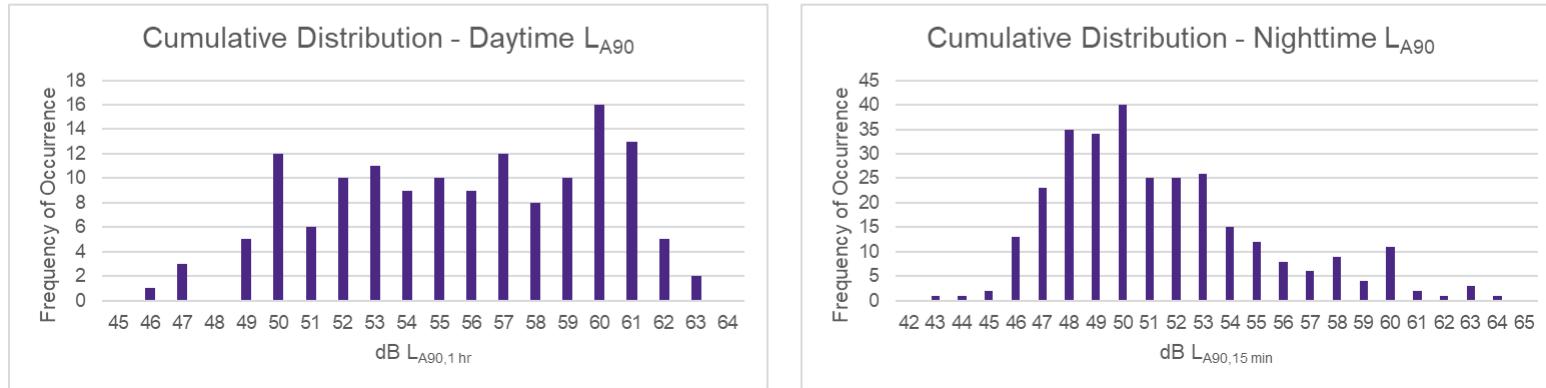
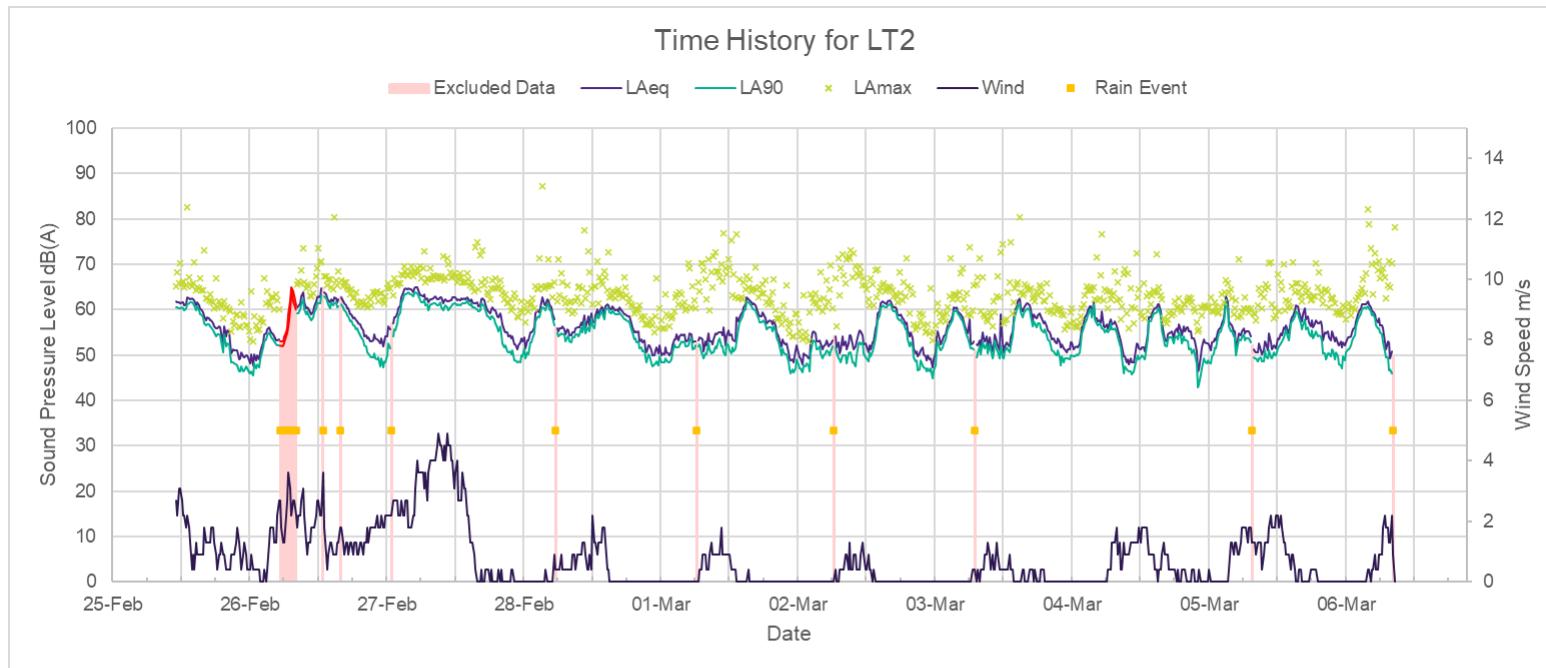


Figure 3 LT2 time history and background noise statistics

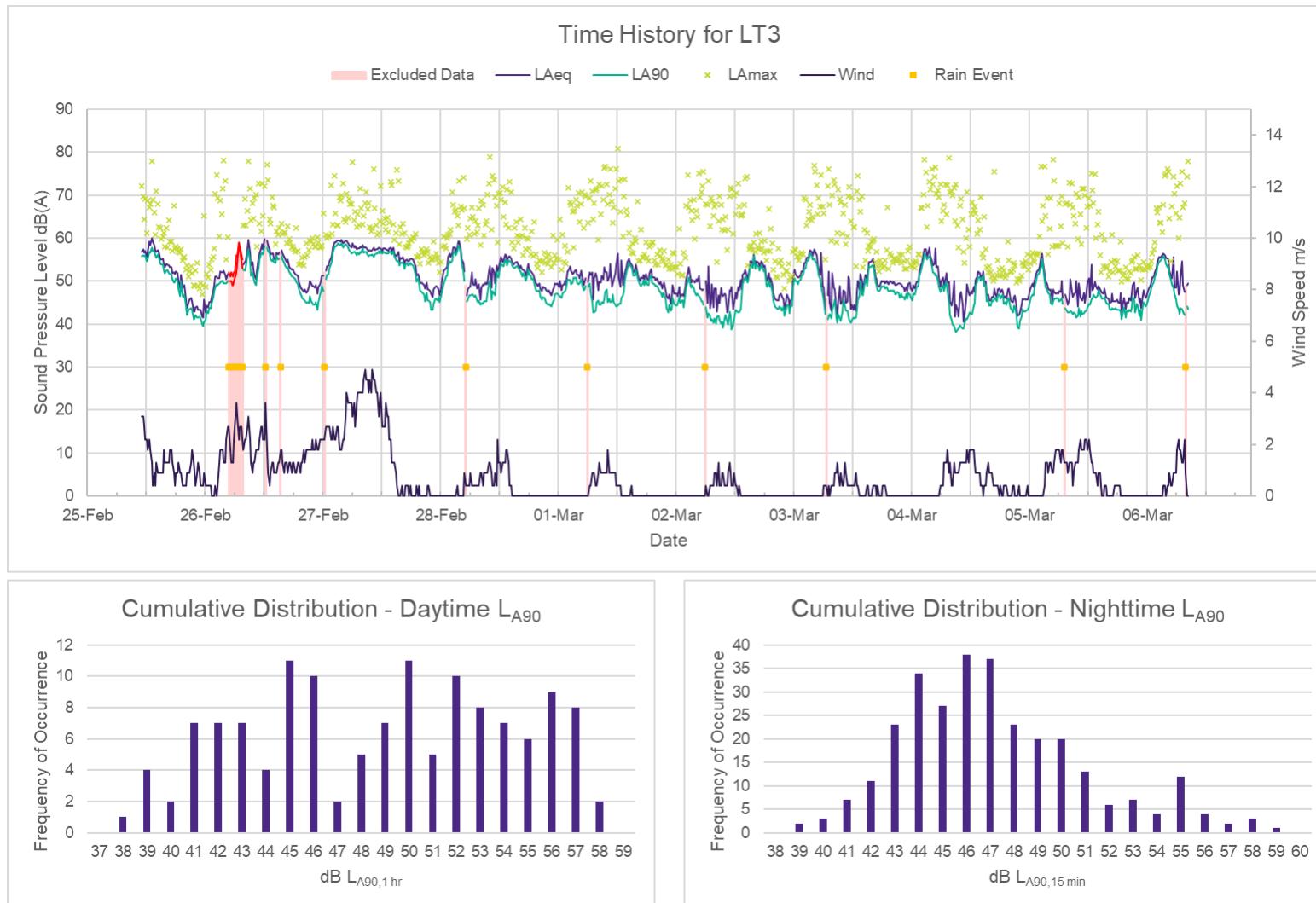


Figure 4 LT3 time history and background noise statistics

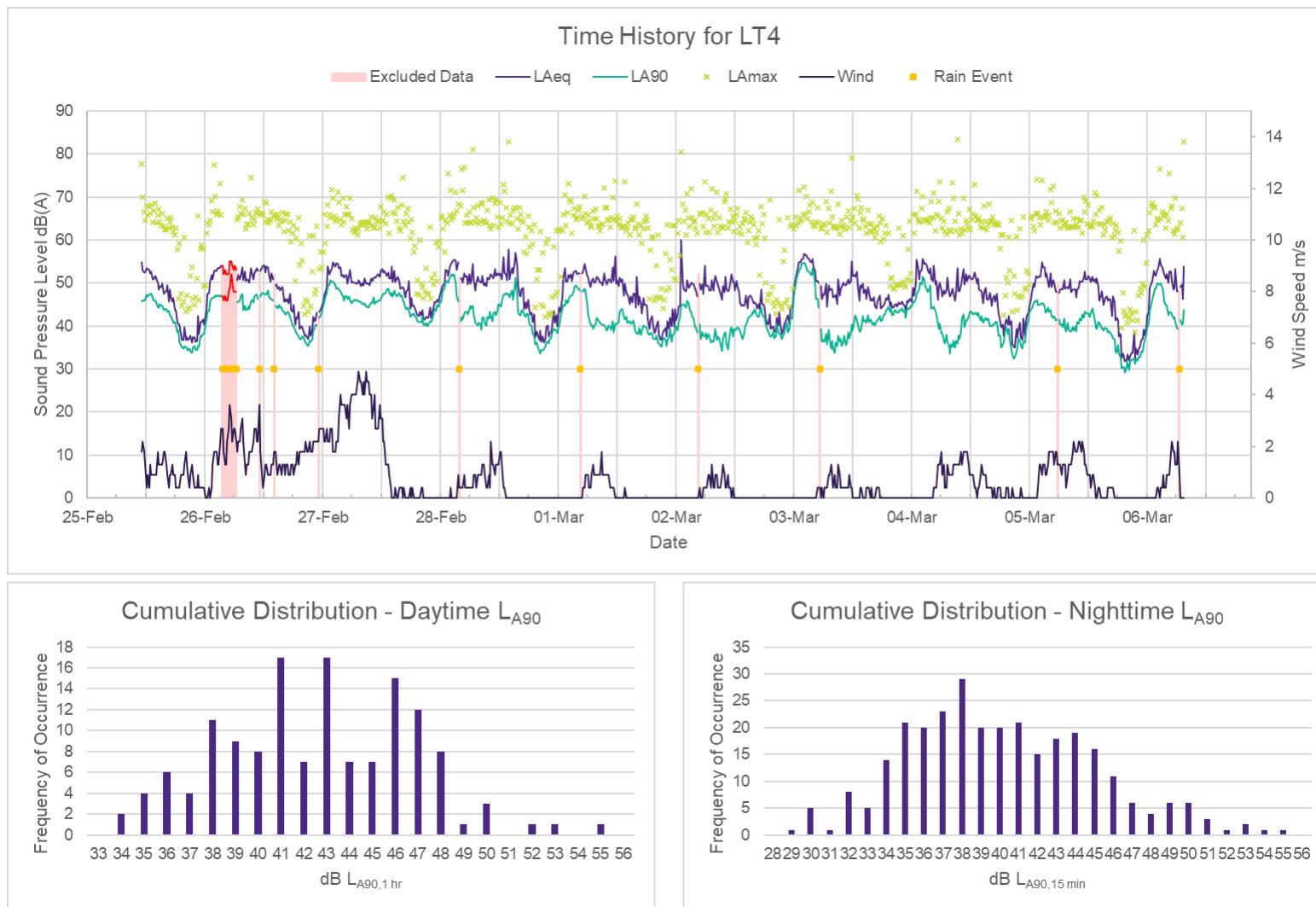


Figure 5 LT4 time history and background noise statistics

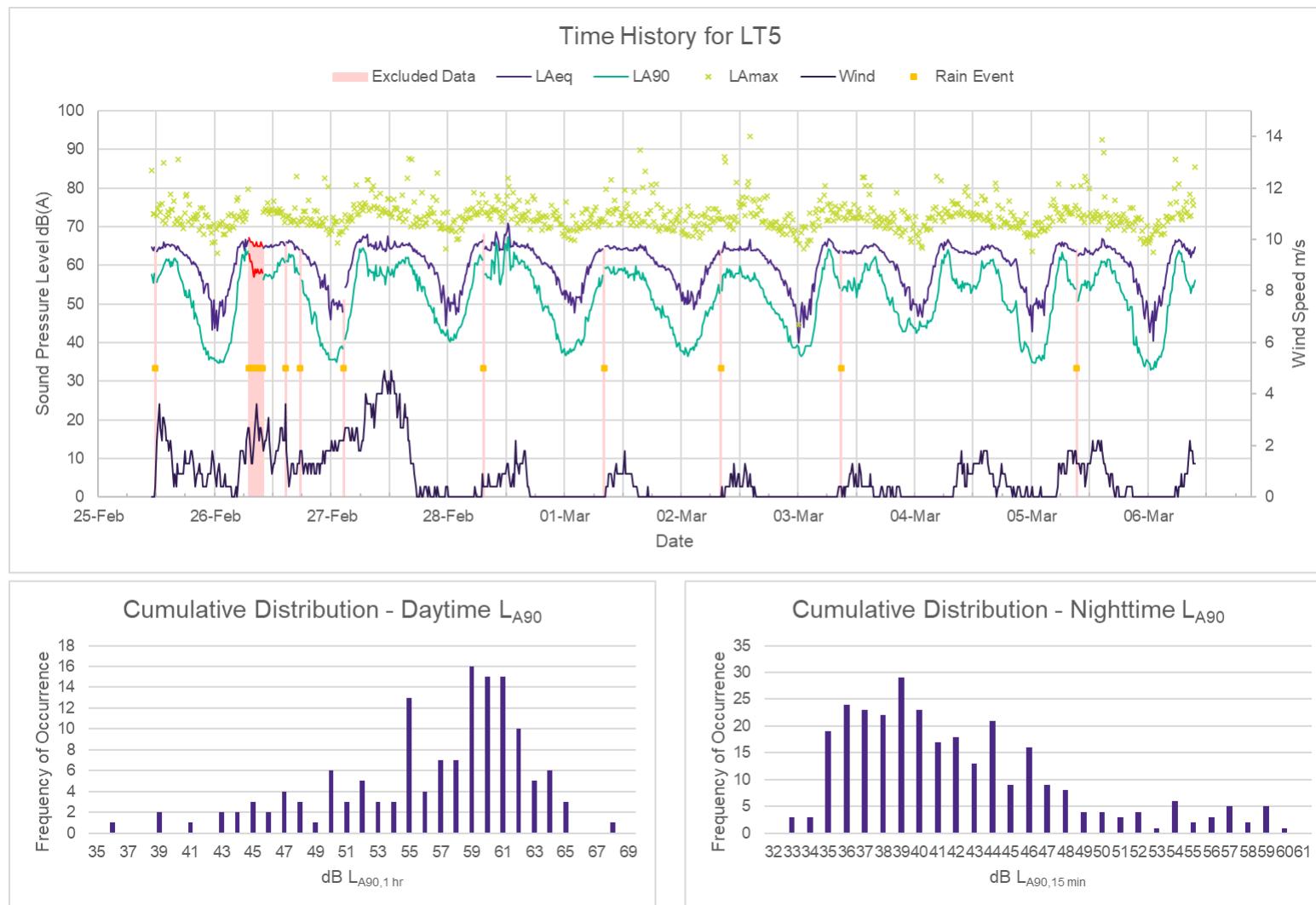


Figure 6 LT5 time history and background noise statistics

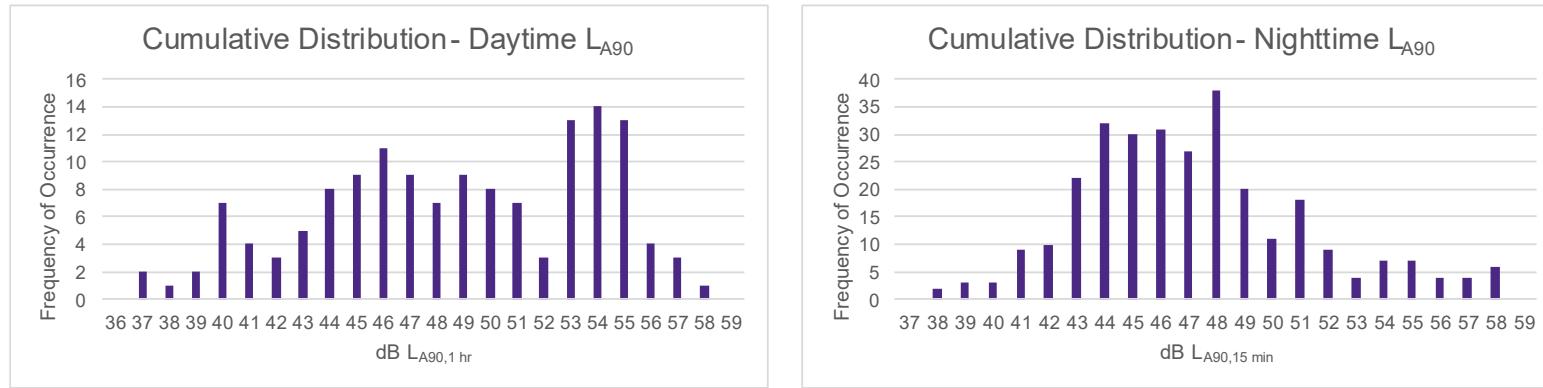
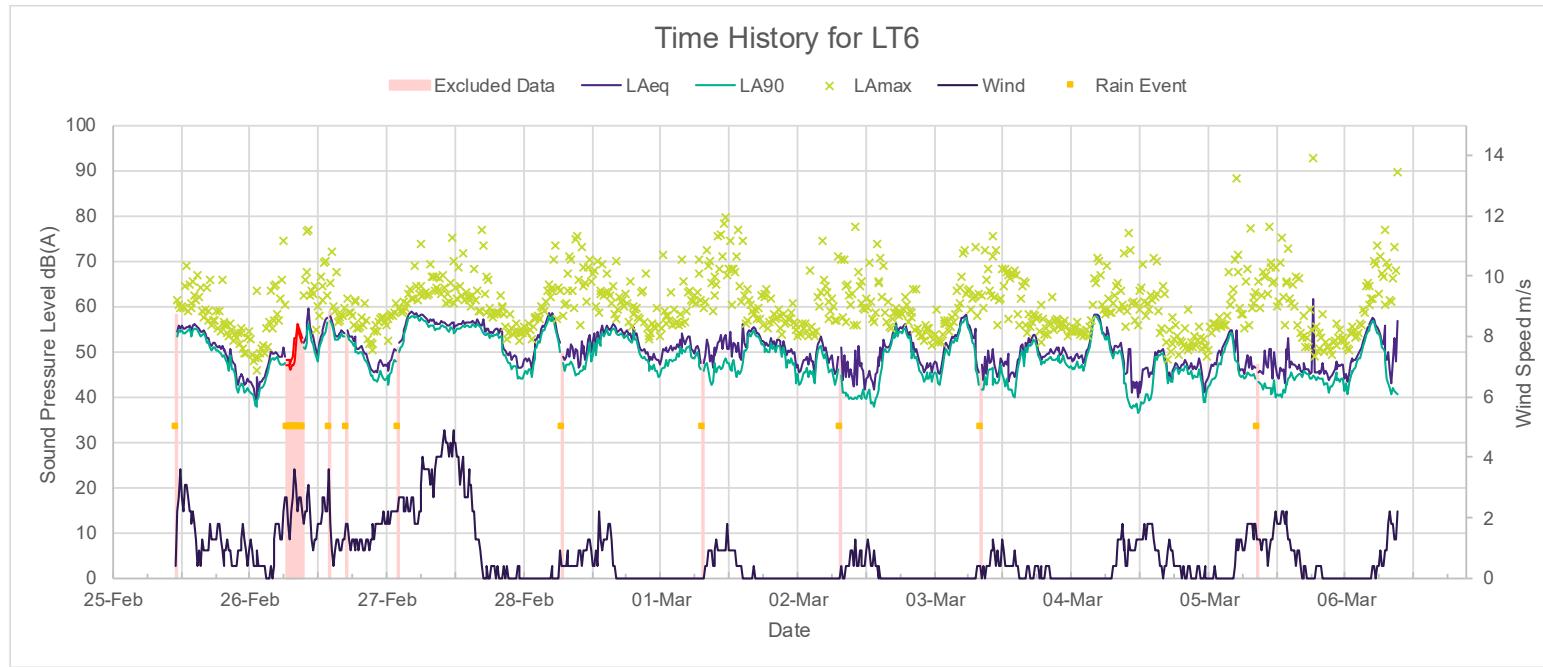


Figure 7 LT6 time history and background noise statistics

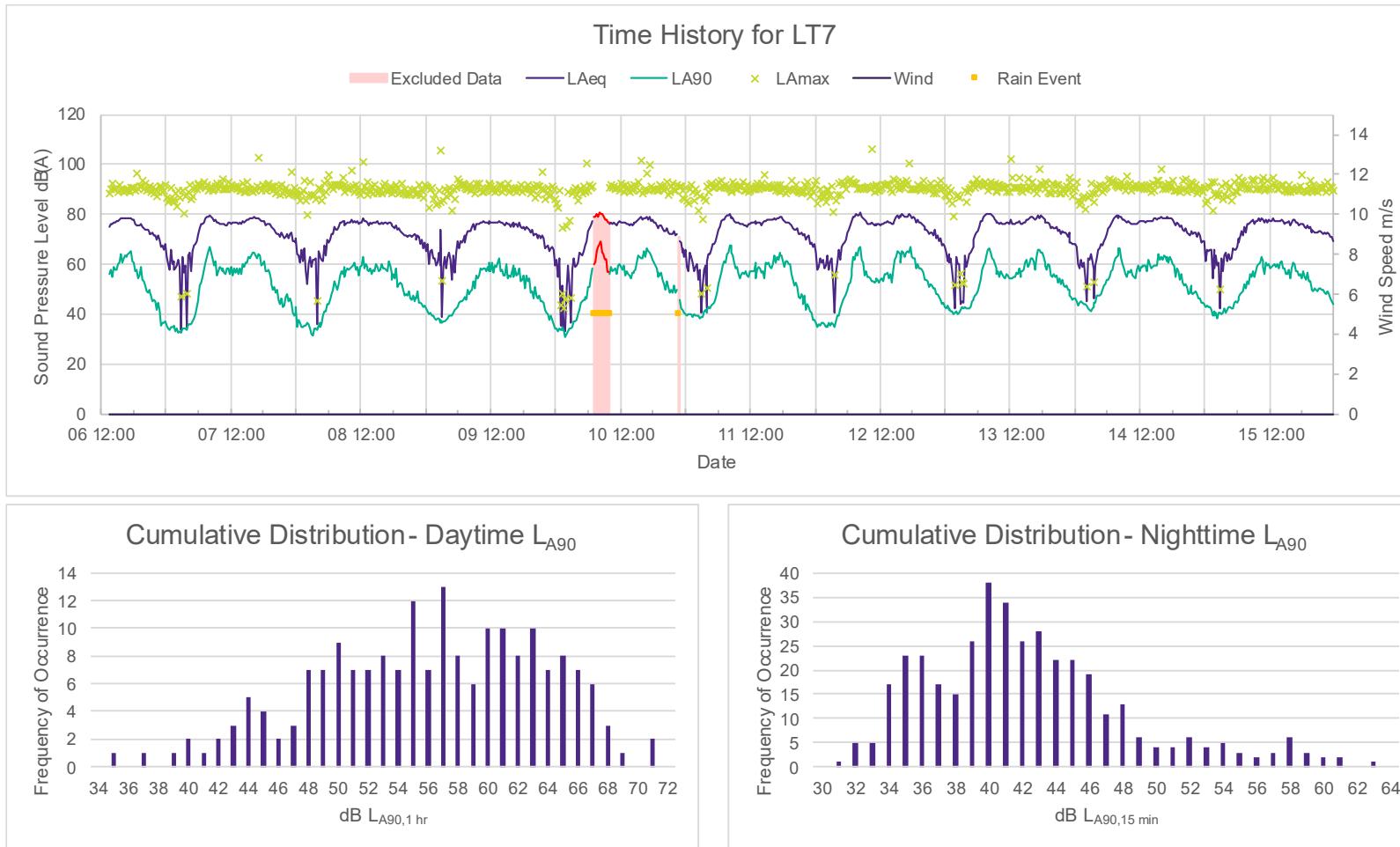


Figure 8 LT7 time history and background noise statistics

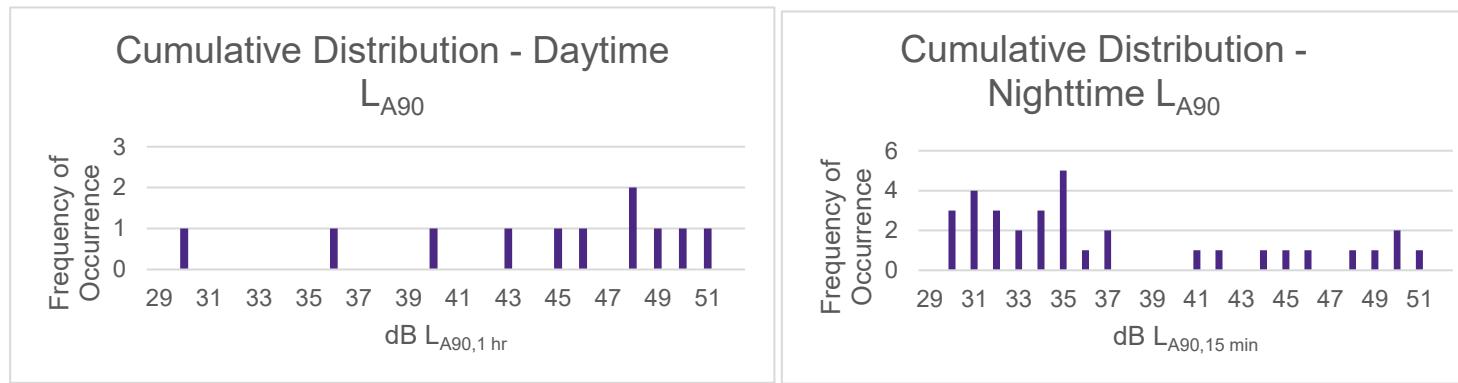
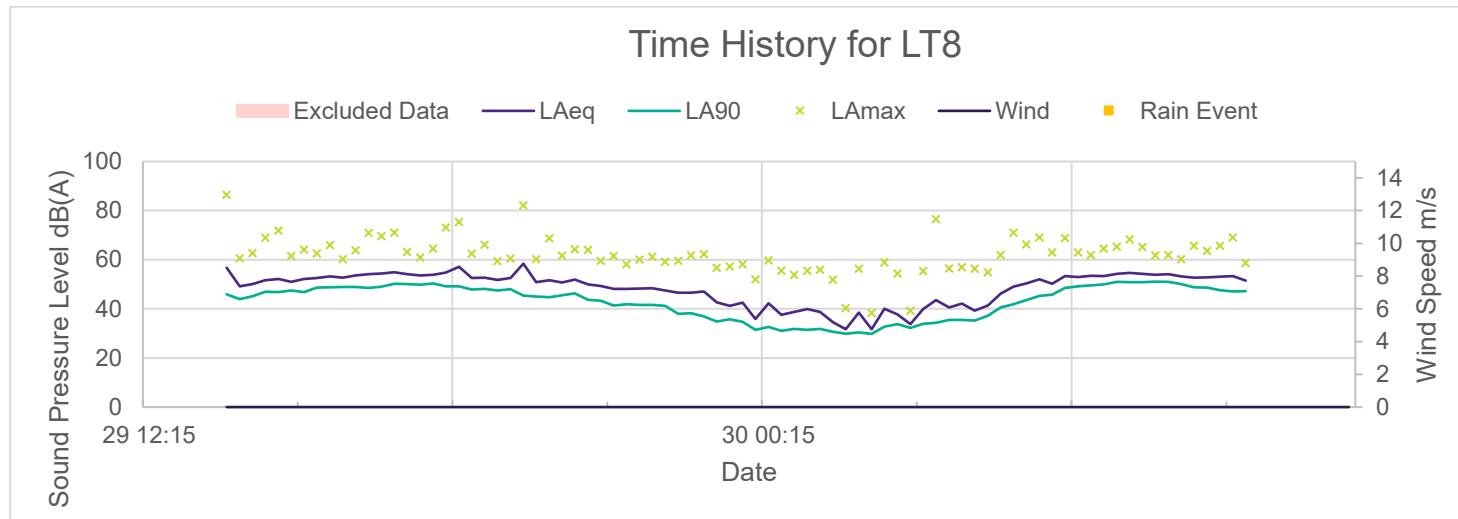


Figure 9 LT8 time history and background noise statistics