



# One Earth Solar Farm

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**Appendix 15.2: Baseline Noise Survey**

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## Glossary

Term	Meaning
dB: Decibel	The logarithmically scaled measurement unit of sound.
A-weighting	Frequency weighting applied to measured sound in order to account for the relative loudness perceived by the human ear.
$L_{Aeq,T}$	A-weighted equivalent continuous sound level over a given time period T. It is the sound level of a steady sound that has the same energy as a fluctuating sound over the same time period
$L_{A10,T}$	The A-weighted sound level exceeded for 10% of the measurement period. Typically used to describe the level individual noise events, such as vehicle passbys
$L_{A90,T}$ :	The A-weighted sound level exceeded for 90% of the measurement period. Often referred to as the background sound level.
$L_{Amax,T}$	The highest A-weighted and time-weighted noise levels measured during a given time period T. Typically used with the FFast (F) or Slow (S) time weightings.

## A.15 Appendix 15.2 Baseline Noise Survey

### A.15.1 Baseline Noise Survey

- A.15.1.1. A baseline noise measurement survey was carried out from Thursday 15th and Thursday 22<sup>nd</sup> February 2024 to quantify existing levels of ambient noise in the daytime (07:00 – 23:00hrs), and night-time (23:00 – 07:00hrs).
- A.15.1.2. **Figure 1 - 7** presents the seven unattended noise monitoring locations which continuously monitored noise throughout the 7-day measurement period under free-field conditions. These monitoring locations were selected to be representative of baseline noise levels at the residential properties that are in the vicinity of areas that are within the various study areas for the Proposed Development
- A.15.1.3. **Table 1** presents the survey observations on and around the Proposed Development which include dominant road traffic noise sources including A57, A1133, and A1.

*Table 1 Survey Observations*

Measurement Location	Description
Loc A	Microphone in a free-field position at 1.4 m above ground. Distant road traffic noise from A1 to the west dominant.
Loc B	Microphone in a free-field position at 1.4 m above ground. Distant road traffic noise from A1 to the southwest dominant.
Loc C	Microphone in a free-field position at 1.4 m above ground. Road traffic noise from A57 to the north dominant.
Loc D	Microphone in a free-field position at 1.4 m above ground. Road traffic noise from A1133 to the west is dominant, with distant road traffic noise from A57 intermittently audible during periods of reduced traffic on the A1133.
Loc E	Microphone in a free-field position at 1.4 m above ground. Distant road traffic noise from Clifton Lane to the south is dominant. Infrequent road traffic noise from Main Street to the east and an unnamed street to the north was audible
Loc F	Microphone in a free-field position at 1.4 m above ground. Distant road traffic noise from A1133 Lane to the south is dominant. Distant commercial aircraft to the south was audible.

Measurement Location	Description
Loc G	Microphone in a free-field position at 1.4 m above ground. Road traffic noise from A57 to the north dominant.

### Survey Photographs

A.15.1.4. Photographs of the noise measurement locations are provided in Figure 1 to Figure 7.



Figure 1 Noise Monitoring Location A (Loc A)



Figure 2 Noise Monitoring Location B (Loc B)





*Figure 3 Noise Monitoring Location C (Loc C)*



*Figure 4 Noise Monitoring Location D (Loc D)*



*Figure 5 Noise Monitoring Location E (Loc E)*



*Figure 6 Noise Monitoring Location F (Loc F)*





*Figure 7 Noise Monitoring Location G (Loc G)*

### **Weather Conditions**

- A.15.1.5. Weather conditions between Thursday 15th and Thursday 22<sup>nd</sup> February 2024 were mostly dry with wind speeds less than 5 ms<sup>-1</sup>. A weather station was installed at Location C to record weather conditions during the noise survey.
- A.15.1.6. All periods during which weather conditions potentially affected the measured results (i.e. wind speeds >5m/s or periods of rainfall) were excluded from the analysis. This filtering resulted in approximately 19% of the data being removed from the analysis to minimise the effect of weather conditions. The remaining survey data covered a period of 138.5 hours (or 5.8 days) and included daytime, evening and night-time periods on weekdays and weekends. During all other periods, the captured baseline noise levels are considered to be representative of the assessment periods.

### **Noise Monitoring Equipment**

- A.15.1.7. Noise monitoring was undertaken using fully calibrated Class 1 sound level meters as defined in BS EN 61672-1:2013, calibrated to traceable standards within 2 years of the survey. Prior to and following noise measurements, acoustic field-calibration of the sound level meters and microphones used in the survey was performed using an acoustic calibrator that itself had been calibrated within the preceding 12 months. No significant drift (i.e., <0.5 dB) in the field-calibrated noise level was observed. Measurement microphones were fitted with suitable windshields for the duration of the noise monitoring and were time synchronised.

- A.15.1.8. All instrumentation was configured to report the environmental parameters  $L_{Aeq}$ ,  $L_{A10}$ ,  $L_{A90}$ , and  $L_{Amax}$  in 1/3 octave bands. All measurements were conducted, where possible, in accordance with BS 7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*' (BS 7445, 2003).

## A.15.2 Noise Measurement Results

- A.15.2.1. **Table 2** presents a summary of the noise measurement results for the whole daytime (07:00 – 19:00hrs), evening (19:00 – 23:00hrs) and night-time (23:00 – 07:00) for each noise monitoring location. **Figure 8** to **Figure 14** present the time-level histories for the seven monitoring locations.
- A.15.2.2. The noise levels are rounded to the nearest decimal. For  $L_{Aeq,T}$  noise levels, the values presented in the table are the logarithmic average of measured data. For  $L_{A90}$  the arithmetic mean, mode and range are presented. For the  $L_{AFmax}$  value, the highest value is presented.

Table 2 Noise Monitoring Measurement Results Whole Period Summary

Measurement Location	Period	Measurement Descriptor (dB(A))				
		$L_{Aeq}$	$L_{Amax}$	$L_{A10}$	$L_{A90}$ (Mean)	$L_{A90}$ (Mode)
Location A	Day	51	88	47	39	37
	Evening	42	74	39	33	33
	Night	37	72	36	32	30
Location B	Day	46	82	45	39	41
	Evening	37	75	38	33	34
	Night	35	65	35	29	26
Location C	Day	54	96	56	46	49
	Evening	48	71	51	36	40
	Night	42	69	44	30	27
Location D	Day	64	101	68	48	49
	Evening	57	80	58	39	38
	Night	53	80	47	35	35
Location E	Day	46	77	48	41	42



Measurement Location	Period	Measurement Descriptor (dB(A))				
		L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>A10</sub>	L <sub>A90</sub> (Mean)	L <sub>A90</sub> (Mode)
Location F	Evening	37	60	39	32	32
	Night	33	64	33	27	25
	Day	44	94	43	36	34
	Evening	34	56	35	31	29
	Night	33	54	34	30	28
	Day	65	93	69	53	54
Location G	Evening	60	79	64	39	36
	Night	55	77	52	30	30

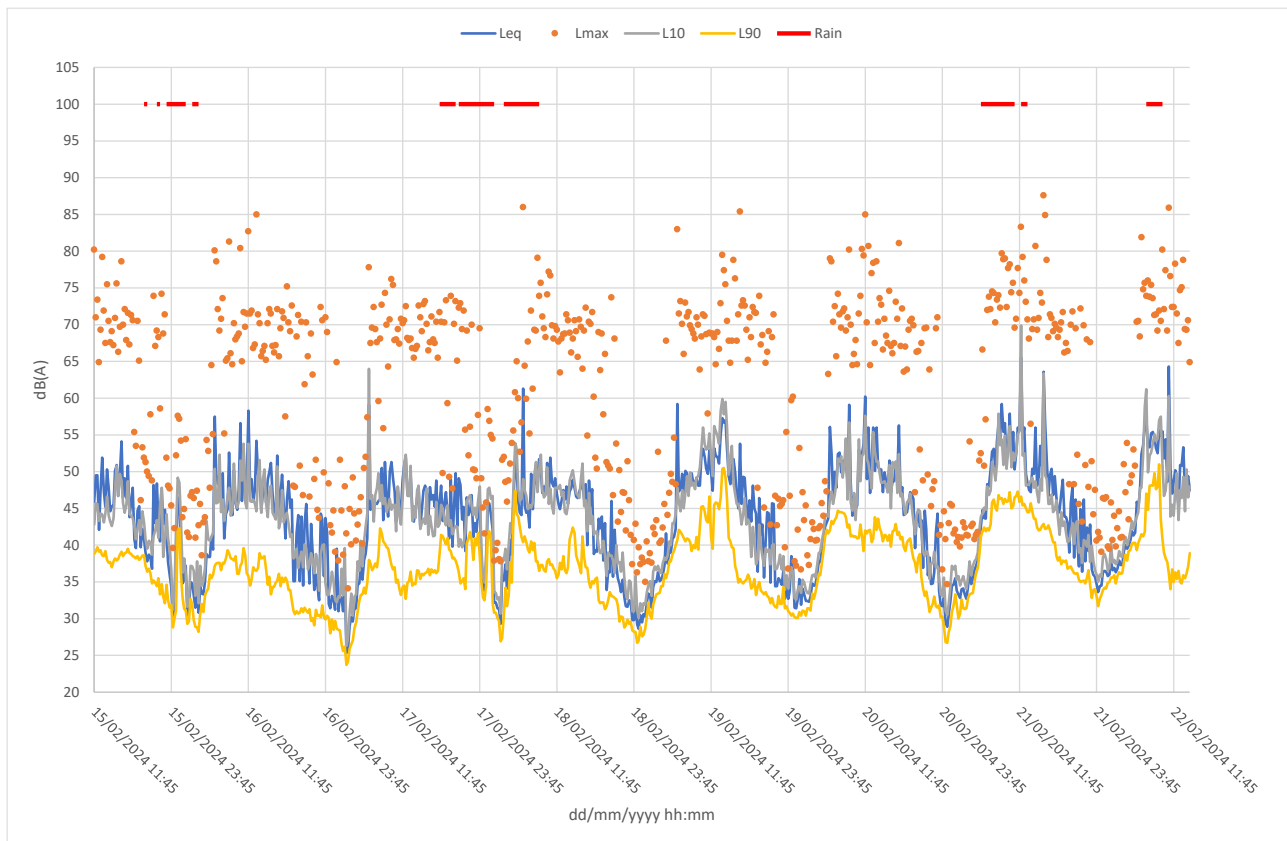


Figure 8 Time History of Baseline Noise Monitoring Data – Location A

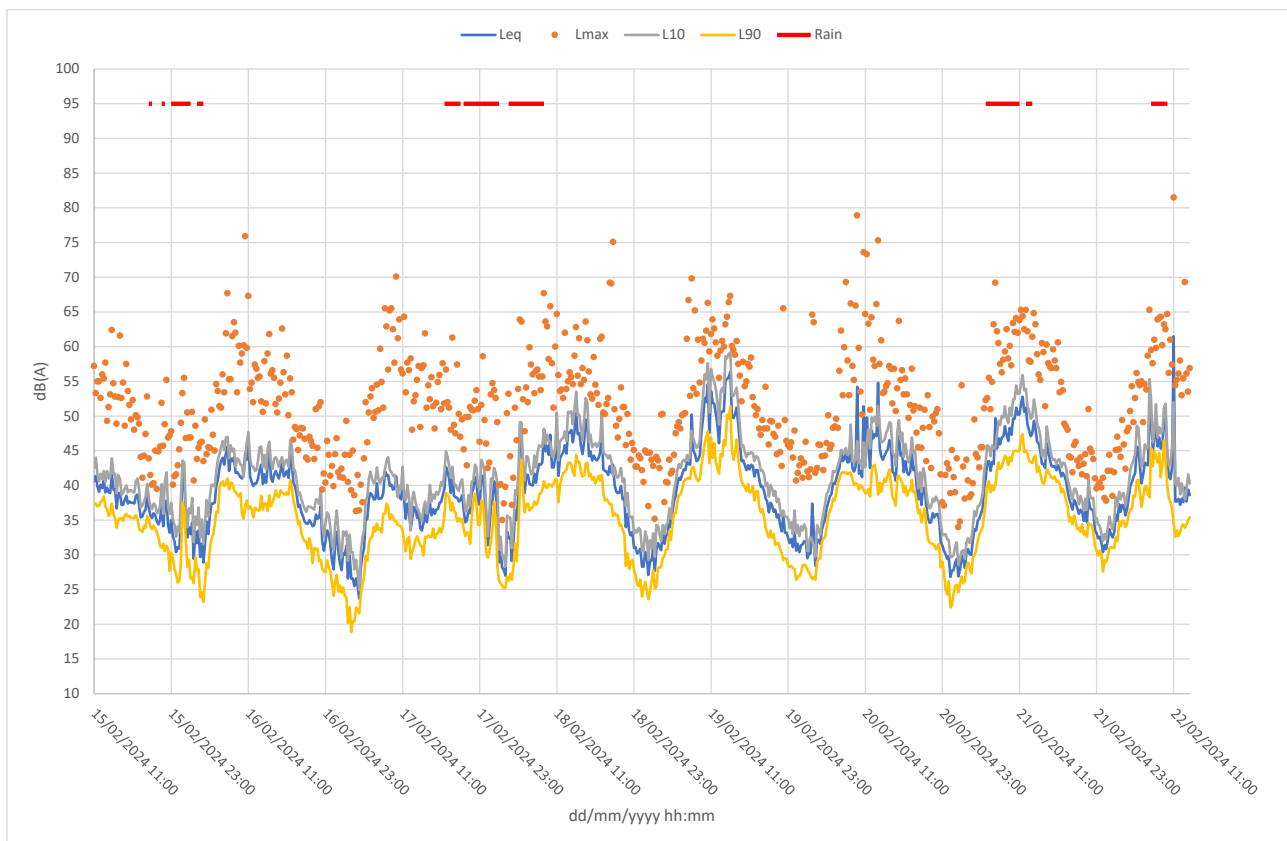


Figure 9 Time History of Baseline Noise Monitoring Data – Location B

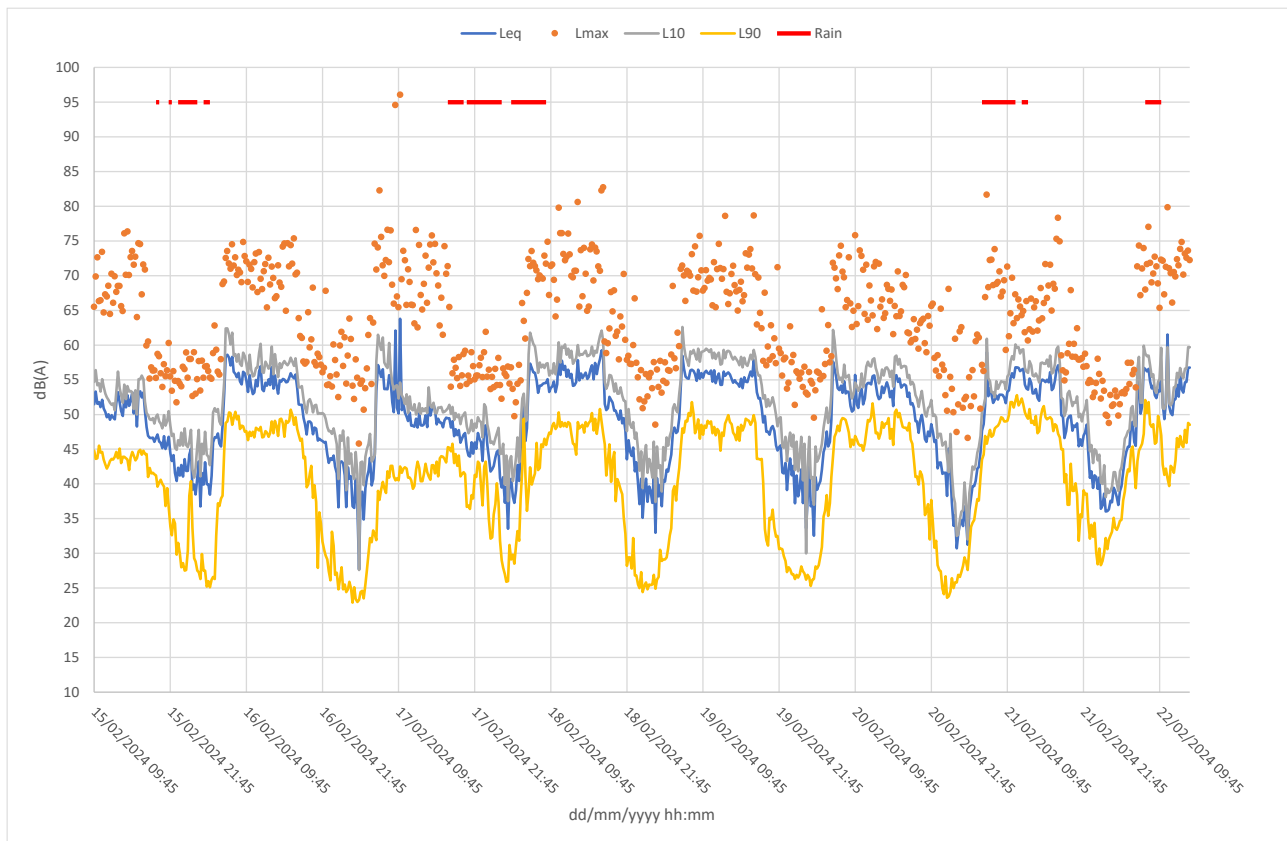


Figure 10 Time History of Baseline Noise Monitoring Data – Location C

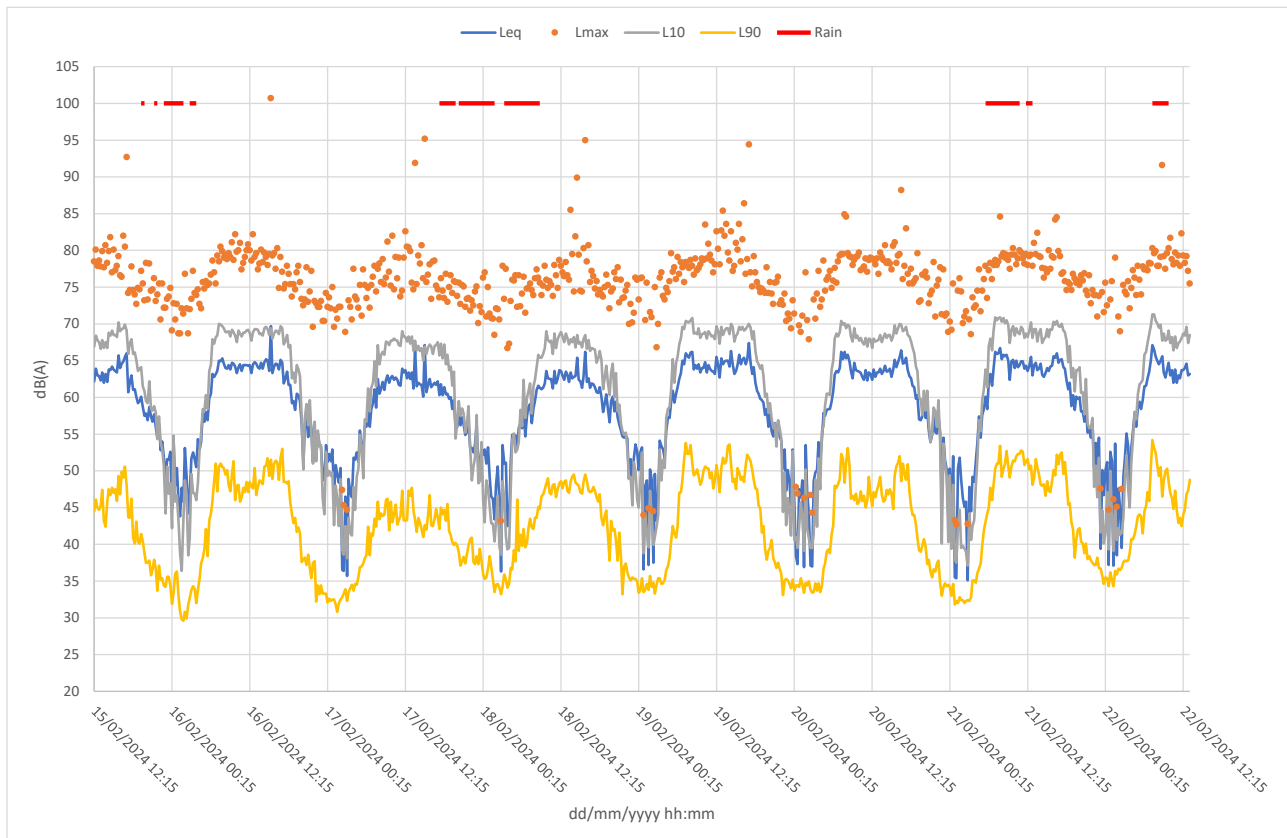


Figure 11 Time History of Baseline Noise Monitoring Data – Location D

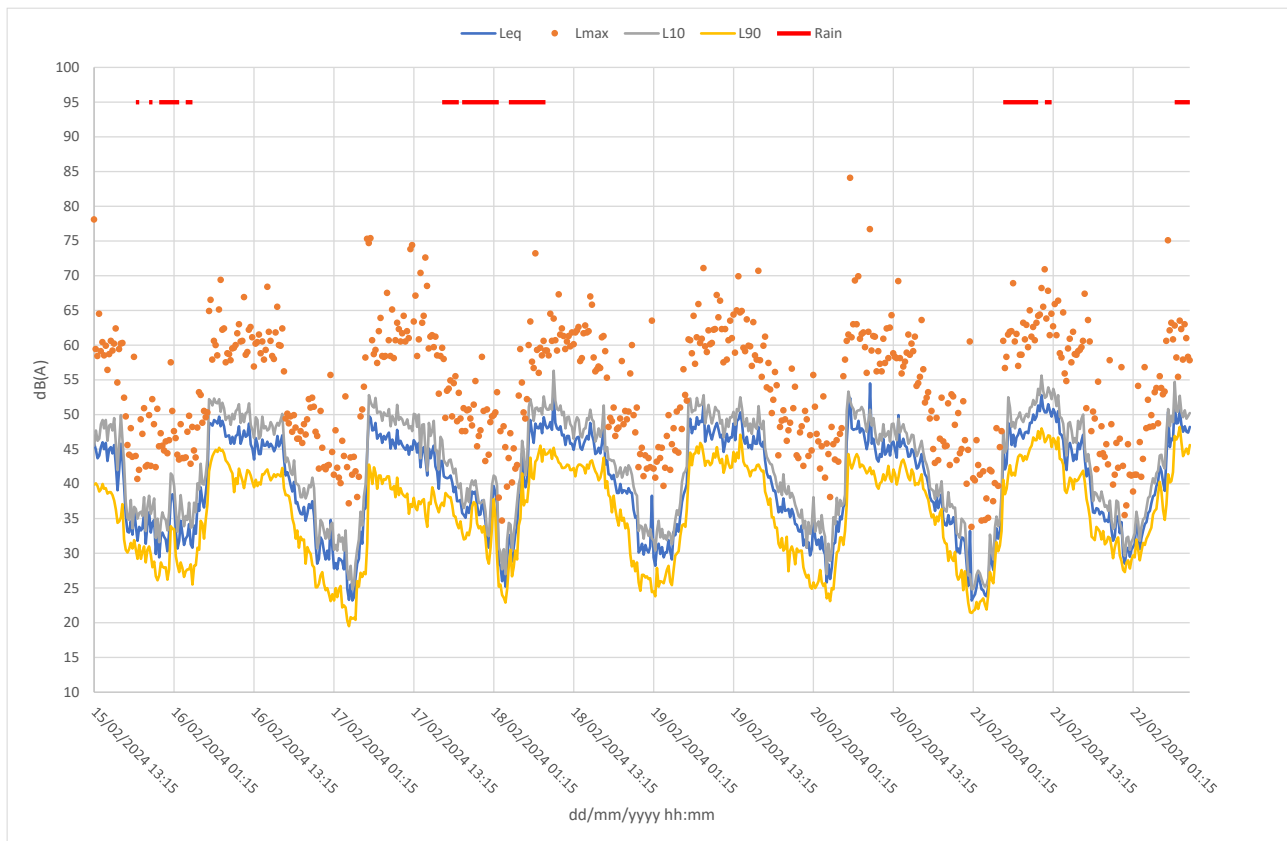


Figure 12 Time History of Baseline Noise Monitoring Data – Location E

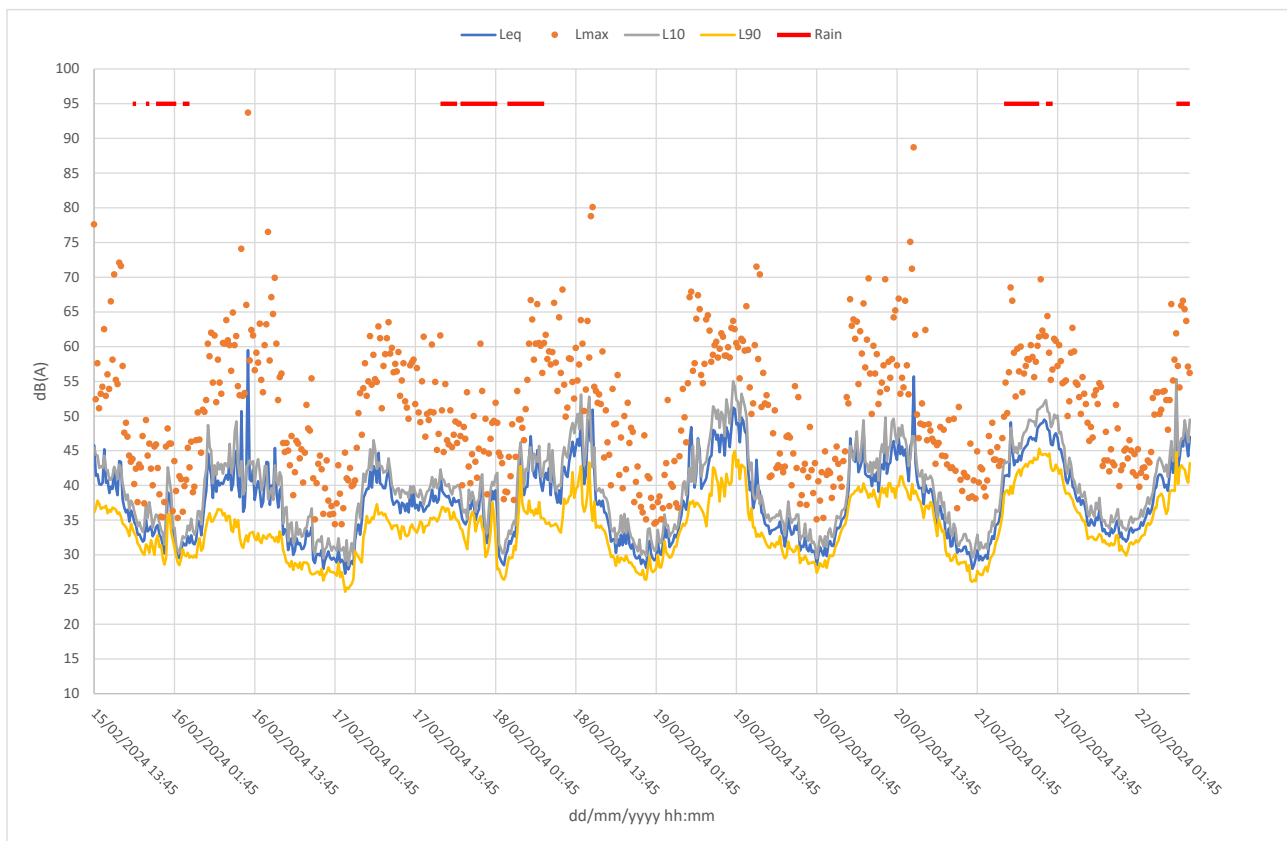


Figure 13 Time History of Baseline Noise Monitoring Data – Location F



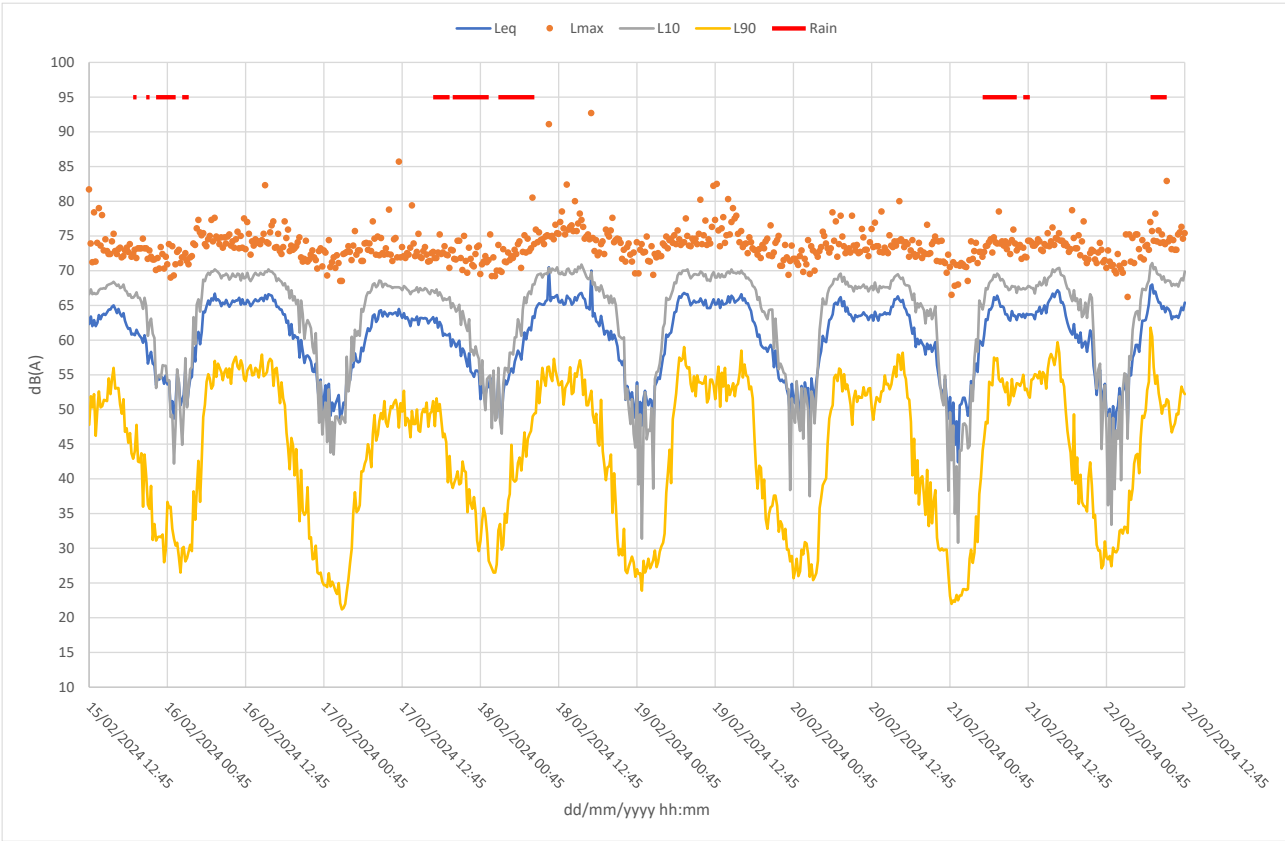


Figure 14 Time History of Baseline Noise Monitoring Data – Location G



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