

TITLE: LPT2 Eltham – Baseline Noise Monitoring
CLIENT: Hochtief Murphy Joint Venture
REPORT REFERENCE: LPT2-HMV-TUN-ELTH-PLN-EN-250013
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REVIEWER: Antonio Sanchez

1. Introduction

RSK Acoustics have been commissioned by Hochtief Murphy Joint Venture (HMJV) to undertake baseline noise monitoring at the London Power Tunnels 2 project site in Eltham. This report details the methodology used to conduct the noise survey and the subsequent results.

2. Survey Methodology

Noise monitoring was undertaken between Thursday 07 December and Monday 11 December and consisted of two positions representative of the nearest or most exposed noise sensitive receptors. NML1 was located on the eastern boundary of the site and representative of receptors on Montrose Avenue, whilst NML2 was located on the southern boundary of the site and representative of receptors on Lingfield Close. The monitoring locations are geographically represented in Appendix 1.

Measurements of the L_{Aeq} , L_{A90} and L_{Amax} indices were recorded over consecutive 15-minute periods (see the glossary of this report for an explanation of the noise units used) for the duration of the survey at both measurement positions using the equipment listed within Table 1 below.

Item	Manufacturer	Type	Serial No.	Calibration Due
Sound Level Analyser	Rion	NL-52	00553877	11/10/2025
Sound Level Analyser	Rion	NL-52	01054197	28/01/2024
Acoustic Calibrator	Rion	NC-75	34625616	13/07/2024
Weatherproof Windshield x2	Rion	WS-15	N/A	N/A

Table 1 Equipment used during Noise Survey

Noise measurements were undertaken to the requirements of BS 7445-1: 2003 'Description and measurement of environmental noise. Guide to quantities and procedures'.

The microphones were fitted within a weatherproof windshield and the sound level meters were calibrated before and after the survey to confirm an acceptable level of accuracy. A calibration drift within the accepted tolerance of ± 0.5 dB was noted for both positions.

Representative weather conditions were obtained from the online *Wunderground* weather service website. Weather conditions were considered suitable for monitoring purposes in accordance with BS 7445 for all night-time periods. The entire night-time dataset has therefore been included within the

analysis. For daytime periods, 07:15 – 12:45 09/12/2023 and 11:00 – 15:45 10/12/2023 have been excluded due to adverse weather conditions.

3. Results

A summary of the long-term, continuous measured L_{Aeq} , and L_{Amax} noise levels at NML1 is presented in Table 2. A summary for NML2 is presented in Table 3. Graphical output of the survey data is provided in Appendix 2.

Date	Time Period	Measured Noise Level, dB	
		$L_{Aeq, T}$	$L_{Amax}^{(a)}$
07/12/2023	14:45 – 23:00	54	78
07/12/2023	23:00 – 07:00	53	70
08/12/2023	07:00 – 23:00	59	90
08/12/2023	23:00 – 07:00	52	71
09/12/2023	07:00 – 23:00	59	86
09/12/2023	23:00 – 07:00	53	70
10/12/2023	07:00 – 23:00	59	103.7
10/12/2023	23:00 – 07:00	54	70
11/12/2023	07:00 – 12:15	56	82
Resultant Noise Level (b)	Daytime	58	103.7
	Night-time	53	71

(a) Highest individual L_{Amax} throughout the monitoring period
(b) Resultant $L_{Aeq, T}$ values are the logarithmic average of $L_{Aeq, 15min}$ samples,

Table 2 NML1 L_{Aeq} and L_{Amax} Summary

Date	Time Period	Measured Noise Level, dB	
		$L_{Aeq, T}$	L_{Amax}
07/12/2023	14:15 – 23:00	63	105
07/12/2023	23:00 – 07:00	58	92
08/12/2023	07:00 – 23:00	64	101
08/12/2023	23:00 – 07:00	56	83
09/12/2023	07:00 – 23:00	65	97
09/12/2023	23:00 – 07:00	60	93
10/12/2023	07:00 – 23:00	63	99

Date	Time Period	Measured Noise Level, dB	
		L _{Aeq, T}	L _{Amax}
10/12/2023	23:00 – 07:00	61	92
11/12/2023	07:00 – 12:00	63	88
Resultant Noise Level (b)	Daytime	64	105
	Night-time	59	93

(a) Highest individual L_{Amax} throughout the monitoring period
(b) Resultant L_{Aeq, T} values are the logarithmic average of L_{Aeq, 15min} samples. L_{AF, max15min} is the highest sample within the period. All values rounded to the nearest whole number.

Table 3 NML2 L_{Aeq} and L_{Amax} Summary

A summary of the minimum background noise level (L_{A90,15min}) for both positions have been summarised in Table 4 and Table 5 below.

Position	Date and Time	Minimum Background Noise Level, L _{A90,15min} (dB) Daytime Hours (07:00–23:00)
NML1	07/12/2023, 22:30hrs	46
NML2	07/12/2023, 22:30hrs	48

Table 4 Minimum Daytime Background Noise Levels

Position	Date and Time	Minimum Background Noise Level, L _{A90,15min} (dB) Night-time Hours (23:00 – 07:00)
NML1	10/12/2023, 04:45hrs	45
NML2	10/12/2023, 04:45hrs	47

Table 5 Minimum Night-Time Background Noise Levels

It is understood that the results of this background noise survey are to be used within an assessment in line with BS4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound.

Section 8.1.3 and 8.1.4 of BS 4142:2014+A1:2019 state the following:

“... the background sound level used for the assessment should be representative of the period being assessed...”

“This level should account for a range of background sound levels and should not automatically be assumed to be either the minimum or modal value.”

A representative background noise level has thus been derived for NML1 and NML2. These are summarised in Table 6 below. Histograms of these results are illustrated within Appendix 3.

Position	Description	Representative Background Noise Level, $L_{A90,15min}(dB)$ Daytime Hours (07:00–23:00)	Representative Background Noise Level, $L_{A90,15min}(dB)$ Night-time Hours (23:00 – 07:00)
NML1	Located at eastern boundary of LPT2 Eltham site	53	48
NML2	Located at southern boundary of LPT2 Eltham site	55	50

Table 6 Representative Background Noise Levels

4. Summary

RSK Acoustics have been instructed by HMJV to undertake a night-time baseline noise survey at the LPT2 Eltham site. A comprehensive baseline noise survey has been undertaken between 07 and 11 December 2023 to quantify existing background noise levels at positions, representative of the nearest or most exposed noise sensitive residential receptors on Montrose Avenue and Lingfield Close.

This report has detailed the results of the baseline noise survey with the minimum and representative background noise levels displayed for use within a BS4142:2014 assessment.

APPENDIX 1 – MONITORING LOCATIONS



Figure 1 Measurement Locations

APPENDIX 2 – Measured Noise Levels

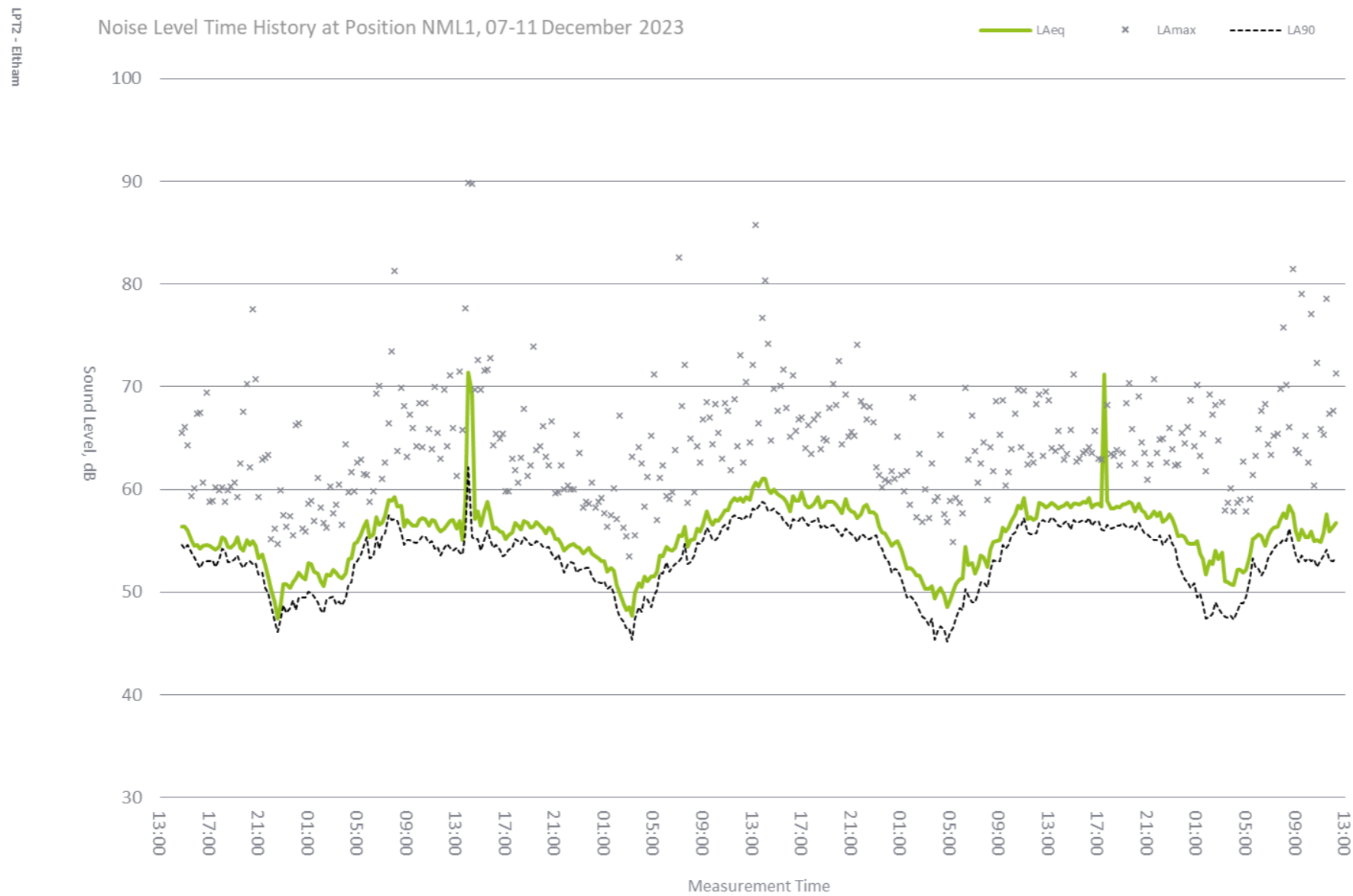


Figure 297924/TH01

Figure 2 NML1 Time History

LPT2 - Eltham

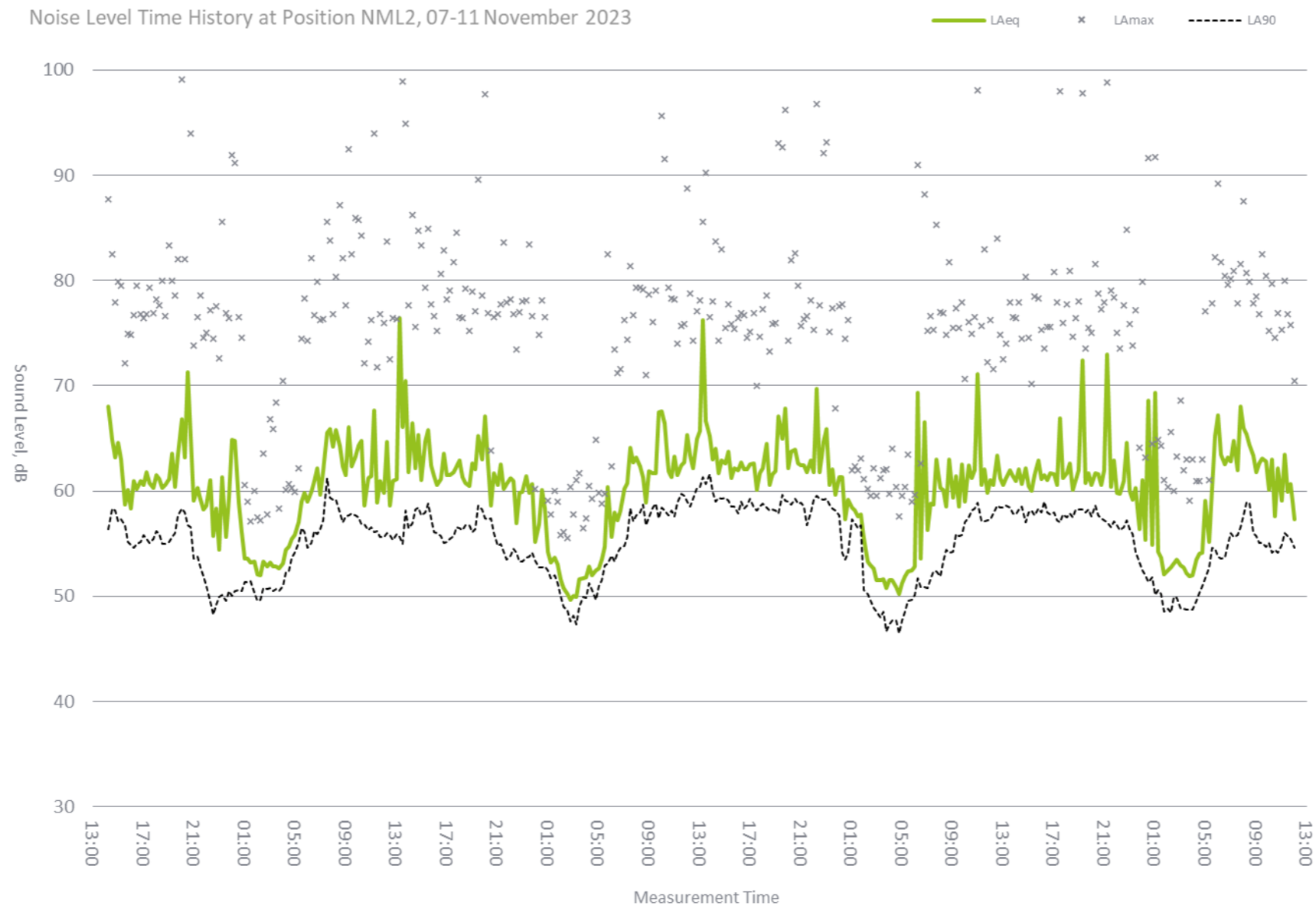


Figure 297924/TH02

Figure 3 NML2 Time History

APPENDIX 3 – Background Noise Level (L_{A90}) Histograms

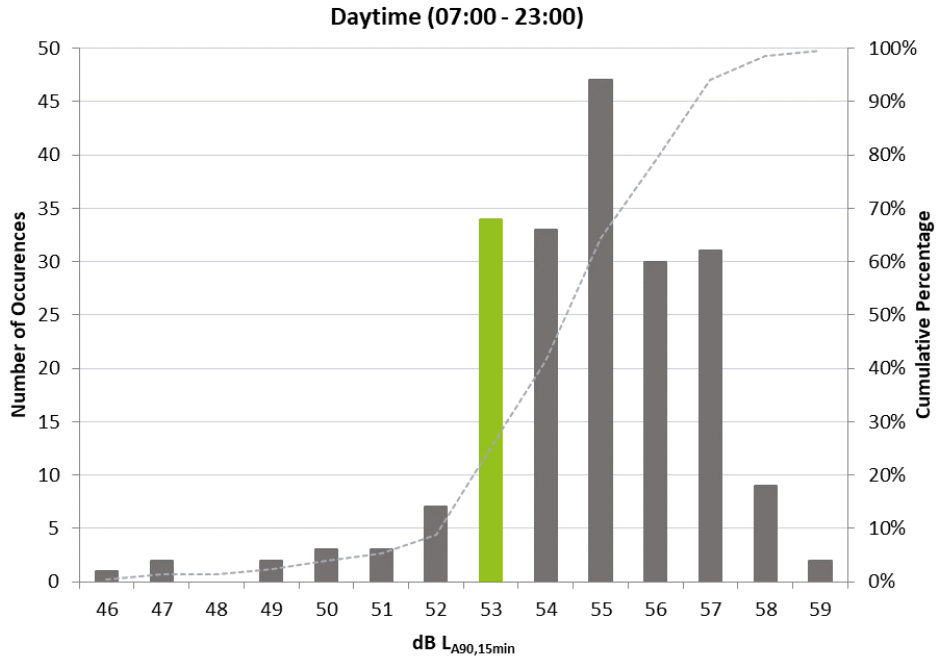


Figure 4 NML1 LA90 Daytime Histogram

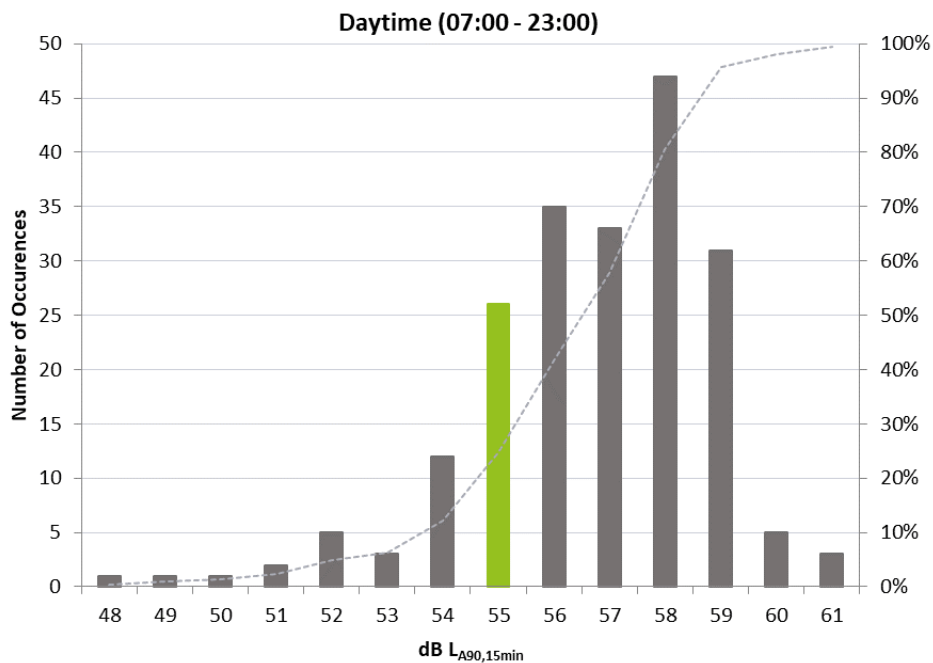


Figure 5 NML2 LA90 Daytime Histogram

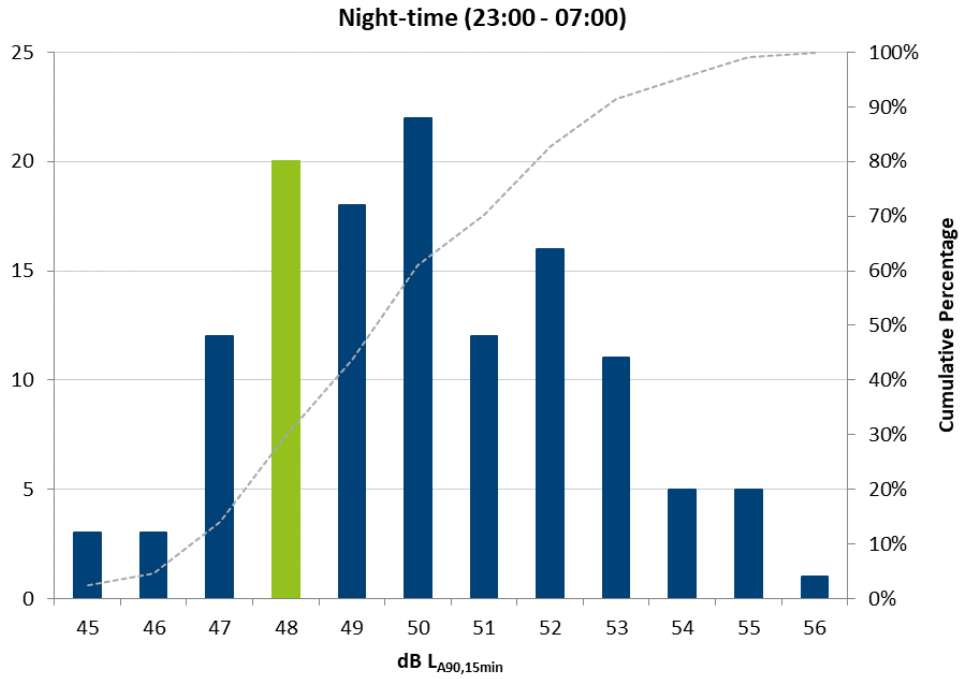


Figure 6 NML1 L_{A90} Night-Time Histogram

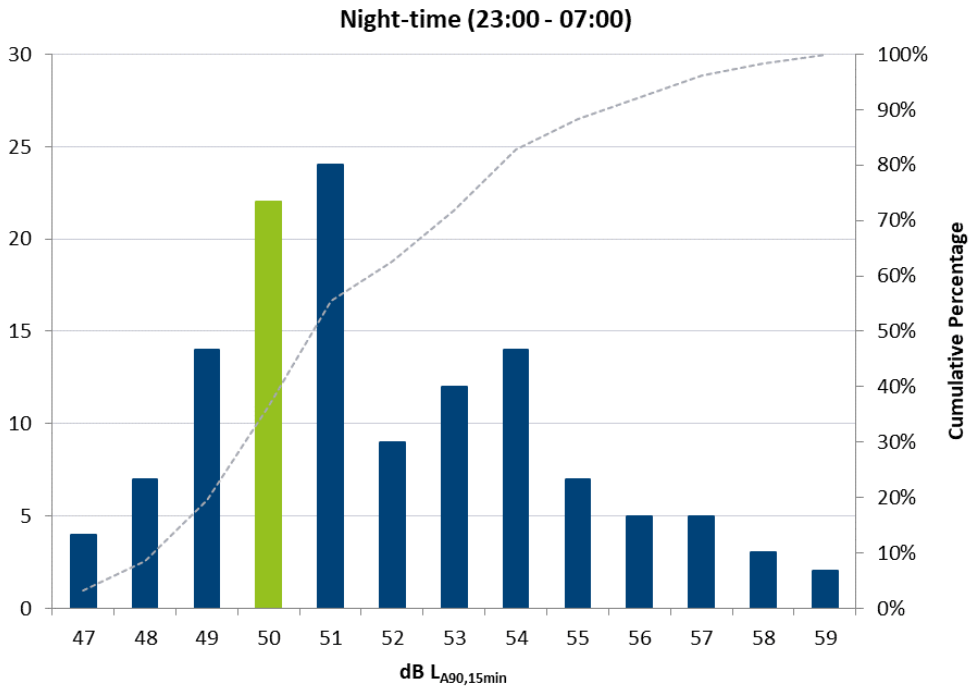


Figure 7 NML2 L_{A90} Night-Time Histogram

APPENDIX 3 – SITE PHOTOGRAPHS



Figure 8 NML1



Figure 9 NML2

Glossary of Acoustic Terms

Ambient Sound Level:

The total sound at a given place, usually a composite of sounds from many sources near and far.

dB (decibel):

Scale for expressing sound pressure level. It is defined as 20 times the logarithm of the ratio between the root mean square pressure of the sound field and a reference pressure i.e. 2×10^{-5} Pascal.

dB (A):

A-weighted decibel. This provides a measure of the overall level of sound across the audible spectrum with a frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq}:

The notional steady sound level (in dB) which over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measurement over that period. Values are sometimes written using the alternative expression dB(A) Leq.

L_{Amax}:

The maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment.:

L_{A90}:

If non-steady noise is to be described, it is necessary to know both its level and degree of fluctuation. The L_{An} indices are used for this purpose. The term refers to the A-weighted level (in dB) exceeded for n % of the time specified. LA90 is the level exceeded for 90 % of the time and as such gives an indication of the upper limit of fluctuating noise. LA90 gives an indication of the lower levels of fluctuating noise. It is often used to define the background noise.

Free-field Level:

A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.