THE GENERAL COUNCIL OF THE BAR
HIGH HOLBORN, LONDON

PLANT NOISE IMPACT ASSESSMENT

PLANNING STAGE
VC-102779-EN-RP-0001
R00

12TH FEBRUARY 2019

VANGUARDIA

DOCUMENT CONTROL			
DOCUMENT TITLE	PLANT NOISE IMPACT ASSESSMENT	**REVISION**	R00
DOCUMENT NUMBER	VC-102779-EN-RP-0001	**ISSUE DATE**	12TH FEBRUARY 2019
PROJECT NUMBER	102779	**AUTHOR**	I ALLI-BALOGUN
STATUS	PLANNING	**CHECKED**	C GOFF
ISSUED TO	THE GENERAL COUNCIL OF THE BAR	**PASSED**	I ALLI-BALOGUN

REVISION HISTORY		
REVISION	**NOTES**	**DATE ISSUED**
R00	ISSUED	12TH FEBRUARY 2019

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CONTENTS

1. INTRODUCTION

1.1. Vanguardia has been appointed by The General Council of the Bar to assess the potential noise impact at nearby noise-sensitive properties due to the proposed changes to the rooftop plant items at 289-293 High Holborn, London, WC1V 7HZ.

1.2. The proposal includes the removal of five plant units which will then be replaced by five new plant units of equivalent size.

2. ASSESSMENT CRITERIA

2.1. The proposed replacement of plant units on the roof must comply with local planning policy on noise.

2.2. The London Borough of Camden planning policies are set out in the Camden Local Plan, which was adopted in July 2017. Policy A4 "*Noise and Vibration*" of the plan states:

"*Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:*

a) Development likely to generate unacceptable noise and vibration impacts; or

b) Development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.

We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of the development."

2.3. The noise thresholds are stated in Appendix 3 of the Camden Local Plan. These values follow the concept of observed effect levels, as referenced in the National Planning Practice Guidance (NPPG). Appendix 3 of the plan states:

"*The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:*

- *NOEL – No Observed Effect Level*
- *LOAEL – Lowest Observed Adverse Effect Level*
- *SOAEL – Significant Observed Adverse Effect Level*

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning

application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

- *Green – where noise is considered to be at an acceptable level.*
- *Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.*
- *Red – where noise is observed to have a significant adverse effect."*

2.4. The corresponding noise thresholds relevant to the proposed replacement of plant units is given in Table C of Appendix 3 of the Camden Local Plan. This is reproduced in Table 1, below.

Table 1 Noise Thresholds (from Camden Local Plan, Appendix 3, Table C)

Existing Noise Sensitive Receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAEL (Red)
Dwellings	Garden and outside living room/bedroom window	Day (07:00-23:00)	Rating Level 10 dB* below Background Level	Rating Level between 9 dB below and 5 dB above Background Level	Rating Level greater than 5 dB above Background Level
	Outside bedroom window	Night (23:00-07:00)	Rating Level 10 dB* below Background Level and no events exceeding 57 dB L_{AFmax}	Rating Level between 9 dB below and 5 dB above Background Level or events between 57 dB and 88 dB L_{AFmax}	Rating Level greater than 5 dB above Background Level and/or events exceeding 88 dB L_{AFmax}

* 10 dB should be increased to 15 dB if the noise contains audible tonal elements (day and night).

2.5. In relation to industrial and commercial noise sources (including mechanical plant items), Appendix 3 of the Camden Local Plan states:

"*A relevant standard or guidance document should be referenced with determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Method for rating and assessing industrial and commercial sound (BS 4142) will be used.*"

2.6. BS 4142:2014 details a method for rating and assessing the noise emitted by an existing or proposed industrial or commercial noise source in order to determine the likelihood that the source is having, or will have, an adverse impact on neighbouring noise-sensitive receptors.

2.7. The method involves obtaining an initial estimate of the impact by comparing the rated level of the industrial or commercial sound source (i.e. the sound source level corrected for certain characteristics if present) with the typical existing background sound level at the sensitive receptors. This estimate

is modified if necessary, based on the context (for example consideration of the absolute level of the sound).

2.8. Section 11 of BS 4142:2014 details the comparison of the rated sound level from the assessed source against the existing background:

"*a) Typically, the greater this difference, the greater the magnitude of the impact.*

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact

c) A difference of around + 5dB is likely to be an indication of an adverse impact, depending on the context

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

3. NOISE SURVEY

3.1. An unattended noise level survey was conducted between Friday 17th and Monday 20th August 2018 at a location representative of the nearest noise-sensitive property to establish the existing environmental noise levels. Figure 1 presents the locations of the rooftop plant, survey position and nearest noise-sensitive property.

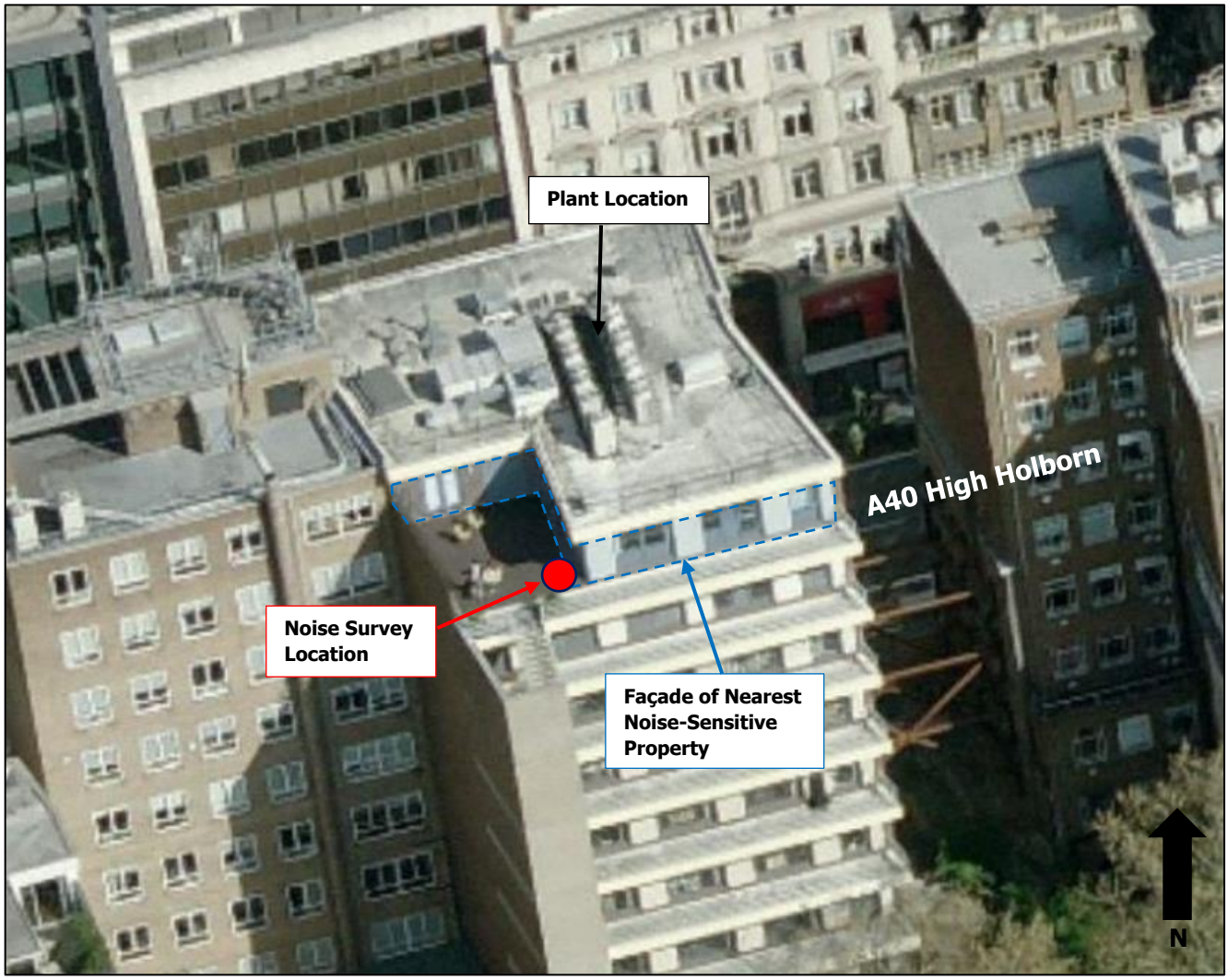


Figure 1 Plant and Noise Survey Location

3.2. The dominant source of noise at the nearest noise-sensitive property is road traffic on High Holborn. Noise from plant units on the roof and other rooftops was also audible at the survey location.

3.3. A summary of the typical background sound levels, as derived from the noise survey results, is presented in Table 2. Full survey results, including analysis of the typical background sound levels, are given in Appendix A.

Table 2 Measured Background Sound Levels

Period	Typical Background Sound Level
Day (07:00-23:00)	57 dB $L_{A90,15min}$
Night (23:00-07:00)	51 dB $L_{A90,15min}$

4. NOISE IMPACT ASSESSMENT

4.1. The new plant will comprise of five Daikin REYQ16T units. Manufacturer's noise data for each unit is presented in Table 3.

Table 3 Daikin REYQ16T Sound Levels

Plant Item	Sound Pressure Level at 1 m, dB Octave Band Centre Frequency								L_{pA}
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Daikin REYQ16T	70	69	68	62	57	53	48	42	64 dB

4.2. It is anticipated that the plant installation may be in operation during both daytime and night-time periods. Therefore, the predicted plant noise will be compared with both background sound levels stated in Table 2. It is not expected that noise from the plant units will have any acoustically distinguishing characteristics at the noise-sensitive property. Consequently, no penalty has been applied.

4.3. The likely noise level at the façade of the nearest noise-sensitive property (shown in Figure 1) due to the new plant items has been predicted and is presented in Table 4 as A-weighted single figure values.

Table 4 Predicted Plant Noise Level at the Noise-Sensitive Property

Description	Noise Level, dB
Daikin REYQ16T sound pressure level (at 1 m)	64
Correction for number of units (5 units)	+7
Correction for distance between plant and noise-sensitive property (11 m)	-21
Correction for shielding by the roof and parapet wall	-10
Penalty for acoustic features (tonality, intermittency and/or impulsivity)	0
Resultant sound pressure level at noise-sensitive property	40

4.4. Table 5 presents the comparison between the predicted plant noise level and the existing background sound level.

Table 5 Assessment of Noise Impact

Period	Rating Level, dB	Background Level, dB $L_{A90,T}$	Excess of Rating Level over Background Level	Camden Local Plan Noise Threshold
Day (07:00-23:00)	40	57	-17	**LOAEL**
Night (23:00-07:00)		51	-11	

4.5. It can be seen, from Table 5, that the comparison between the rating level and background levels indicate that noise from the new plant units are expected to be within the Camden Local Plan noise threshold for LOAEL during the day and night. Therefore, it can be concluded that adverse impacts due to noise from the proposed plant are unlikely to occur.

5. CONCLUSION

5.1. A noise impact assessment has been conducted following the principles of the relevant policy documents/guidance.

5.2. A noise survey was carried out at a local representative of the nearest noise-sensitive property to establish the existing background sound levels.

5.3. Noise level predictions of the new plant items have been conducted. The assessment of plant noise indicates that impacts at the nearest noise-sensitive property are unlikely to occur.

APPENDIX A

NOISE SURVEY DETAILS

Instrumentation: Larson Davis SoundExpert LxT sound level meter, serial number 3317. The instrument was calibrated before and after the survey with the appropriate field calibrator. No significant drift was recorded.

Measurement Period: The survey was conducted between 10:00 on Friday 17th August and 13:30 on Monday 20th August 2018.

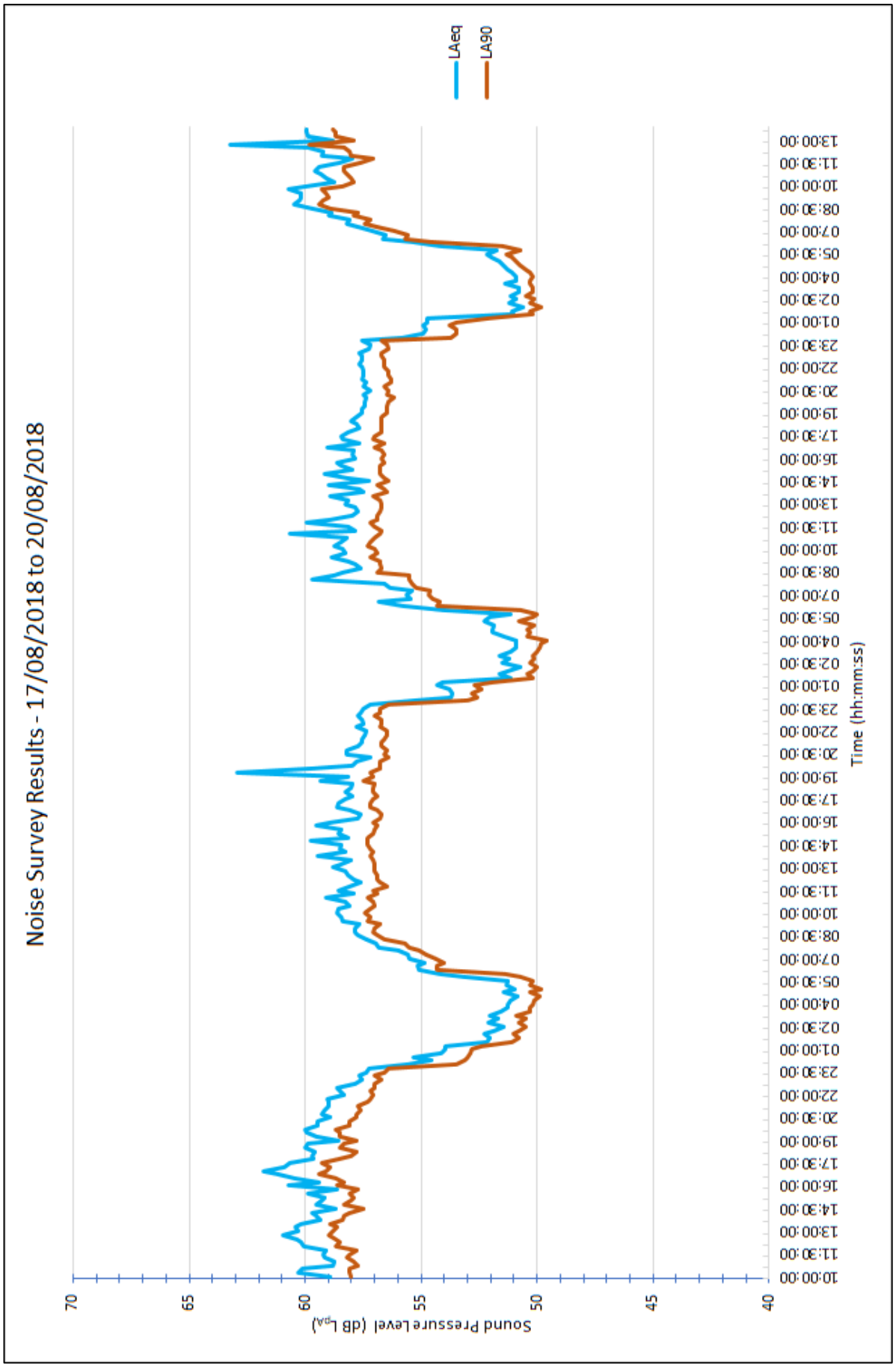
Weather Conditions:

Date	Temperature, Average °C	Wind Speed, Average km/h	Wind Direction, Average	Precipitation, Rate mm
17/08/2018	18	2	ESE	0
18/08/2018	20	1	ESE	0
19/08/2018	23	2	E	0
20/08/2018	23	1	E	0

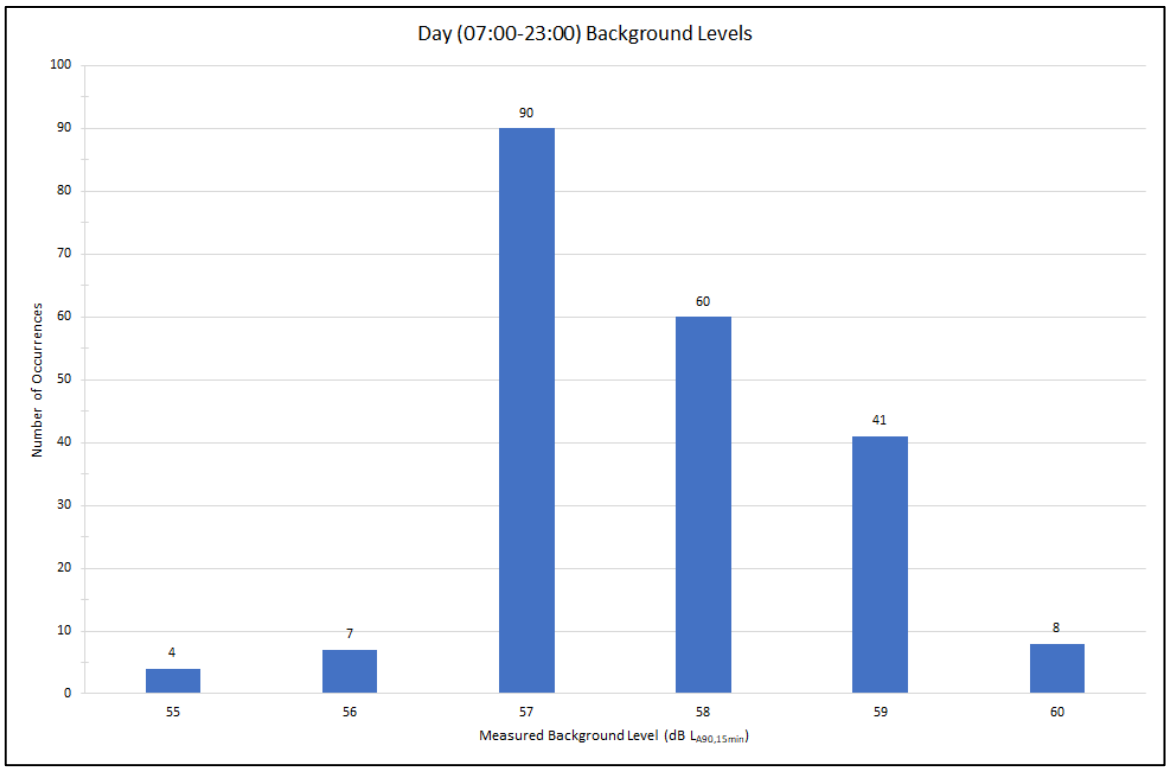
Weather Station: ILONDON636

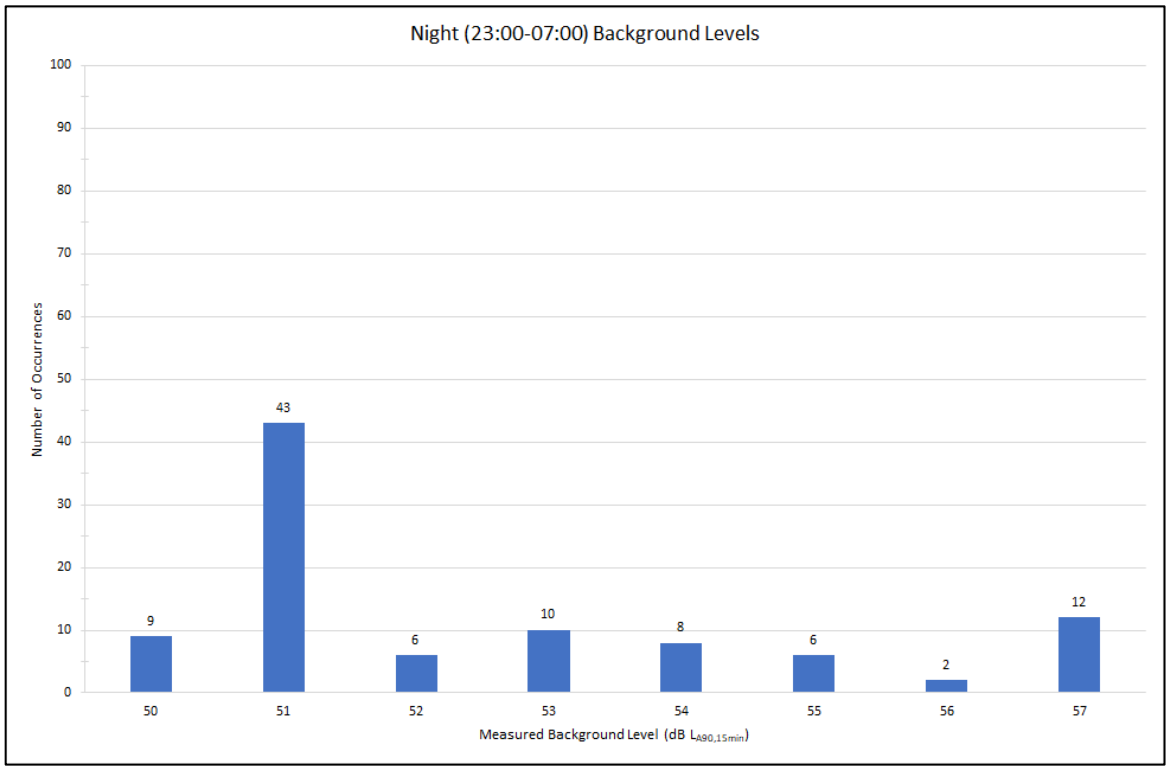
Personnel: I Alli-Balogun MIOA BSc (Hons)

Results: The measured ambient and background sound levels over the entire survey period are presented below in graphical form.


LAeq
LA90
Noise Survey Results - 17/08/2018 to 20/08/2018
Time (hh:mm:ss)
Sound Pressure Level (dB L$_{pA}$)
70
65
60
55
50
45
40

A statistical analysis of the measurement data ahs been performed to determine the typical background sounds levels, as described in BS 4142:2014. This is presented below for daytime and night-time.





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