

Lloyds Worthing

Environmental Noise Survey and Plant Noise Assessment Report

33195/PNA1/Rev1

25 June 2026

For:
Wates SmartSpace
Wates House
Station Approach,
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Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
0	25/06/2026	Updated Plant Noise Assessment			
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Executive Summary

Wates SmartSpace are proposing to install 2No. condenser units at Lloyds Worthing, to replace existing units.

An environmental noise assessment has been undertaken to determine baseline conditions, and to assess potential noise impacts associated with the operation of the proposed plant at the nearest noise sensitive receptors.

The assessment has established plant noise emission criteria based on the results of the noise survey and with reference to the Local Authority's requirements and an assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive window.

The assessment indicates that the proposed plant, should be capable of achieving the proposed environmental noise criteria at the nearest noise sensitive residential window



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Contents	Page
1.0 Introduction	1
2.0 Acoustic Terminology	1
3.0 Site Description	1
4.0 Planning Policies, Standards & Guidance	3
5.0 Baseline Noise Survey	4
6.0 Plant Noise Emission Criteria	8
7.0 Plant Noise Impact Assessment	8
8.0 Conclusion	11

Attachments

Appendix A – Acoustic Terminology

Appendix B – Relevant Planning Policies and Guidance

Appendix C – Time History Graphs



1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by Wates SmartSpace to undertake a noise assessment for a site in Worthing, West Sussex.

The site, which is located on South Street, Worthing, is proposing to install new external building services plant.

Hann Tucker Associates have therefore been instructed to undertake an environmental noise survey to establish the existing L_{Amax} , L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at selected accessible positions.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 + A1:2019 and to minimise the possibility of noise nuisance to neighbours.

2.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

3.0 Site Description

3.1 Location

The site is located on South Street, Worthing. The location is shown in the Location Map below.

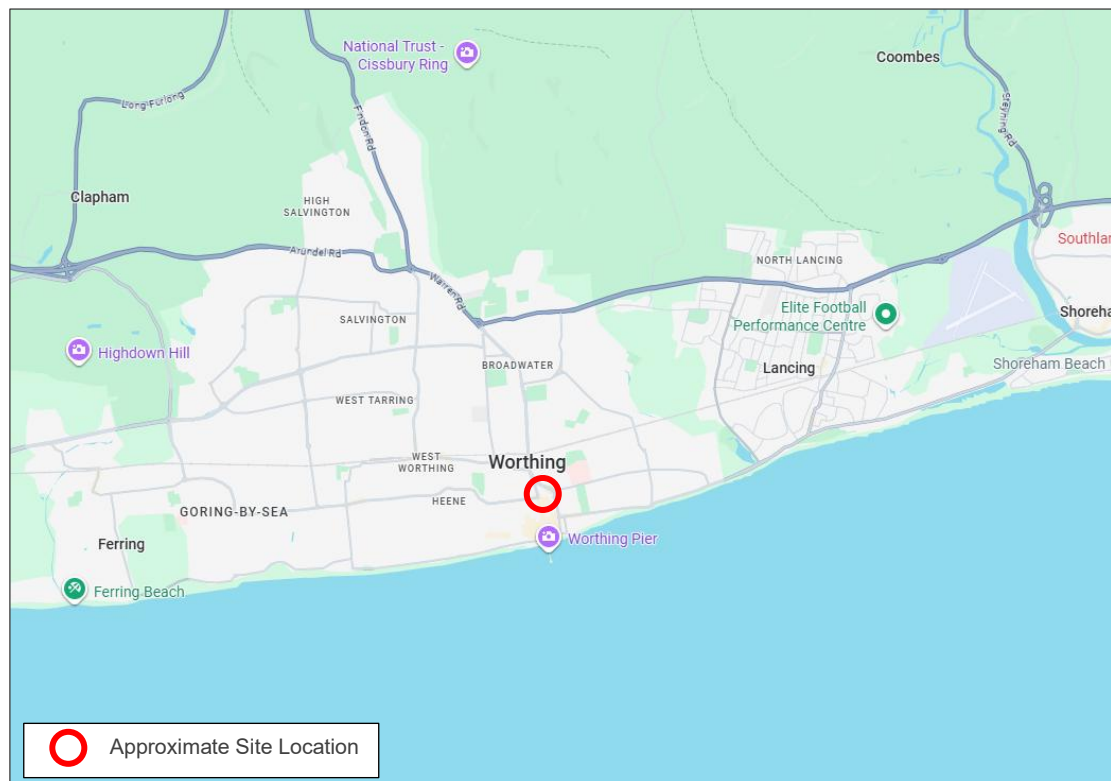


Figure 1 Location Map (Imagery © 2026, Map Data © 2026)

The site falls within the jurisdiction of West Sussex County Council.

3.2 Description

This site is located on the corner of South Street and Liverpool Road. The site consists of a ground floor that's a commercial banking establishment and then 2No. storeys of office space belonging to the bank.

Adjacent to the bank on South Street is a building of similar height and consist of a commercial unit on the ground floor and the residential dwellings on the first and second floors.

The site is shown in the Site Plan below.



Figure 2 Site Plan (Imagery © 2026, Imagery, Map Data © 2026)

4.0 Planning Policies, Standards & Guidance

4.1 Policies & Guides

In order to provide a suitable assessment a number of national planning policies have been considered.

All guidance used to form a noise impact assessment is taken from various standards, guidance, and Local Authority requirements as summarised below:

- Local Planning Policy
- British Standard 4142:2014 + A1:2019
- Statutory Noise Nuisance

Detailed information for relevant planning policies and guidance can be found within Appendix B.

4.2 Specific Local Authority Criteria

The site lies within West Sussex council's jurisdiction. The following section outlines their noise requirements.



“The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014 + A1: 2019.”

5.0 Baseline Noise Survey

5.1 Procedure

Fully automated environmental noise monitoring was undertaken by Greg Moore B.A (Hons) AMIOA from approximately 14:15 hours on Tuesday 16 June 2026 to 12:30 hours on Thursday 18 June 2026 to establish existing baseline noise levels. Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} , and L_{max} sound pressure levels over discrete 15-minute periods.

5.2 Measurement Position

The microphone was attached to a pole approximately 2 metres above roof level. This position was located on the south façade of the building attached to the drain gutter. This position was within 1 metre of the façade and therefore includes local reflections.

The position is shown on the plan below.

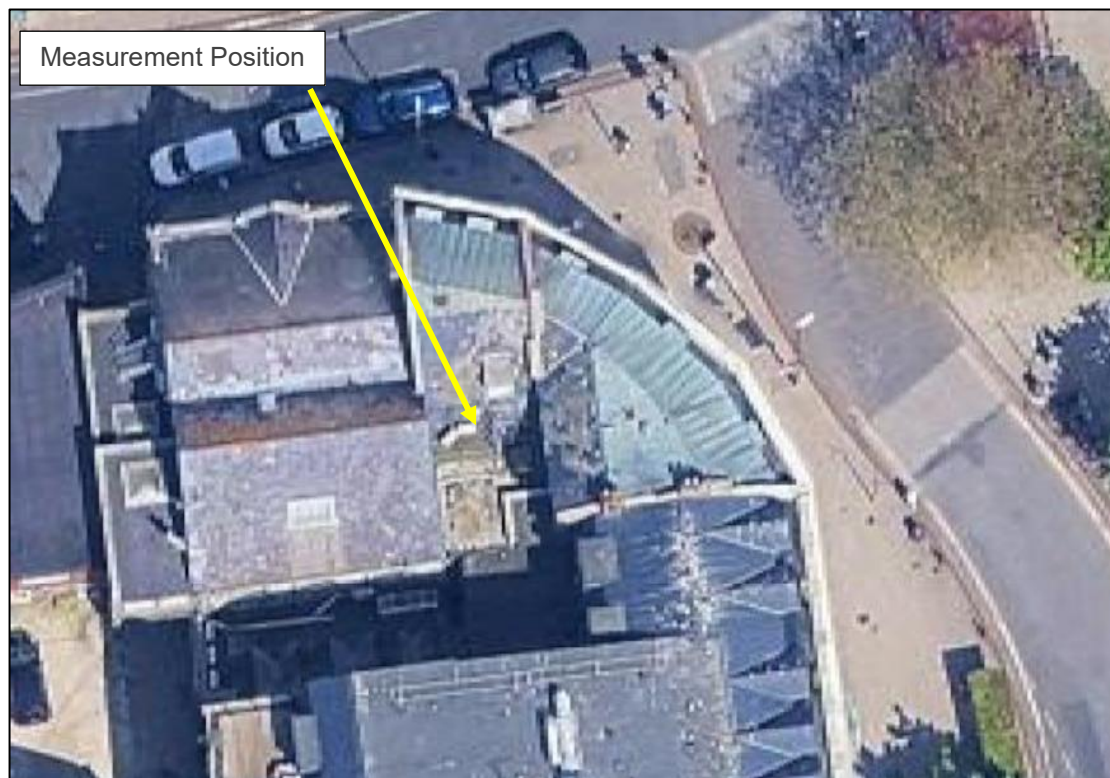


Figure 3 Plan Showing Measurement Positions (Imagery © 2026, Imagery, Map Data © 2026)

5.3 Weather Conditions

For the unattended survey between Tuesday 16 June 2026 and Thursday 18 June 2026, local weather reports indicated no notable periods of rainfall, with temperatures ranging from 25 °C (night) to 16 °C (day) and wind speeds less than 1 m/s. During our time on site, skies were clear, wind conditions were calm and from a westerly direction and road surfaces were dry.

5.4 Instrumentation

The instrumentation used during the survey is presented in Table 1.

Table 1 Equipment Details & Calibration Information

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 ½" Condenser Microphone	PCB	377B02	107842	Calibration on 22/04/2026
Preamp	Larson Davis	PRM902	0880	Calibration on 22/04/2026
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3541	Calibration on 22/04/2026



Description	Manufacturer	Type	Serial Number	Calibration
Type 1 Calibrator	Brueel & Kjaer	4230	494325	Calibration on 12/08/2025

The sound level meter, including the extension cable, was calibrated prior to and on completion of the survey. No significant change was found to have occurred (no more than 0.1 dB).

The sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. The microphone was fitted with a windshield.

5.5 Results

The results have been plotted on Time History Graph 33195/TH1 enclosed presenting the 15 minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at the measurement position throughout the duration of the survey.

BS 4142 states that *“the background sound level must be reliable and suitably represent the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.”* Taking this into account, the following histograms have been created which display the occurrence of each sound level (L_{A90}) for the operating hours (09:30-17:00)

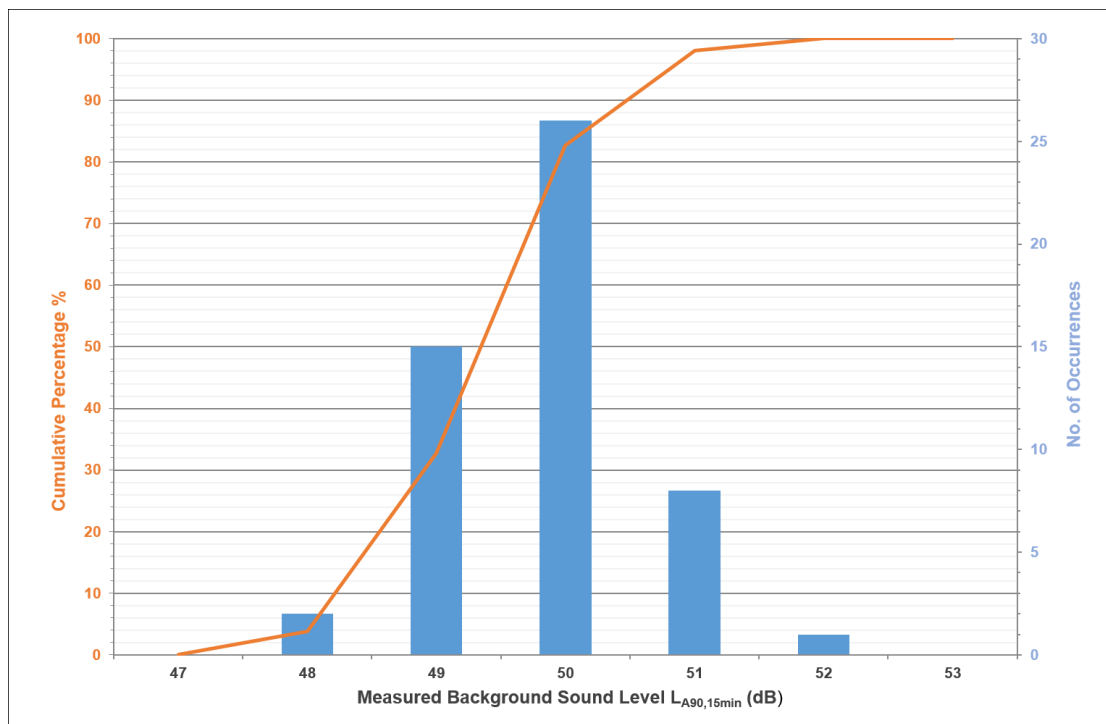


Figure 4 Histogram of Proposed Operating Hours (09:30-17:00 hours)

Based on the above plots the L_{A90} values presented in Table 25 is considered to be the 'representative' background sound levels determined through statistical analysis of the 15-minute readings in line with BS 4142.

Table 2 Measured Background Noise Levels in Unattended Survey Locations

Representative Measured $L_{A90(15min)}$ Background Sound Level (dB re 2×10^{-5} Pa)
Operating Hours (09:30 – 17:00) Hours
49

5.6 Discussion Of Noise Climate

Due to the nature of the survey, i.e. unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the noise climate was noted to be dominated by the existing plant for Lloyds.



6.0 Plant Noise Emission Criteria

Building services plant external noise emission levels will need to comply with local authority requirements and statutory noise nuisance legislation.

Based on the results of the noise survey and the requirements of the Local Authority (as outlined in Section 4.2), we propose that the following plant noise emission criteria be achieved incident at the nearest noise sensitive residential windows, in free-field conditions, with all plant operating simultaneously.

Table 6 Proposed Plant Noise Egress Limits

Location	Plant Noise Emission Criteria ($L_{Aeq,T}$ dB)
	Operating Hours (09:30 – 17:00) Hours
Flats at 35 A South Street	49

The above criteria are to be achieved with all of the proposed plant operating simultaneously.

Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality.

It should be noted that the above are subject to the final approval of the Local Authority.

7.0 Plant Noise Impact Assessment

7.1 Proposed Plant

7.1.1 Plant Location

We understand there are 2No. items of plant to replace the existing units at the rear of the building on the roof. The nearest noise sensitive window is located approximately 5 meters away.

The proposed plant location is shown on the plan below



Figure 5 Plan showing the proposed location and location of the nearest noise sensitive window

7.1.2 Plant Operation

We understand the plant is proposed to run from 09:30-17:00 hours during the week.

7.1.3 Plant Noise Data

We understand the manufacturer's noise data for the equipment to be as follows:

Table 7 Plant Noise Information

Plant Description	Sound Pressure Level (dB re 2×10^{-5} Pa) at 1 metre at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
RZAG60B	50	55	53	49	44	38	33	31	50
RZAG50B	48	53	51	48	44	38	31	24	49

7.2 Plant Noise Impact Assessment

The following tables summarise our predictions of atmospheric noise emissions from the proposed plant to the nearest noise sensitive residential window.



Table 8 Plant Noise Assessment for RZAG60B

Description	Sound Pressure Level (dB re 2x10 ⁻⁵ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
RZAG60B Sound Pressure Level at 1m	50	55	53	49	44	38	33	31	50
Distance Correction	-8	-8	-8	-8	-8	-8	-8	-8	
Facade Correction	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Receptor	45	50	48	44	39	33	28	26	45

Table 9 Plant Noise Assessment for RZAG50B

Description	Sound Pressure Level (dB re 2x10 ⁻⁵ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
RZAG50B Sound Pressure Level at 1m	48	53	51	48	44	38	31	24	49
Distance Correction	-8	-8	-8	-8	-8	-8	-8	-8	
Facade Correction	+3	+3	+3	+3	+3	+3	+3	+3	
Calculated Noise Level at Receptor	43	48	46	43	39	33	26	19	44

Table 10 Cumulative Plant Noise Assessment

Description	Sound Pressure Level (dB re 2x10 ⁻⁵ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
RZAG60B Calculated Noise Level at Receptor	45	50	48	44	39	33	28	26	45
RZAB50B Calculated Noise Level at Receptor	43	48	46	43	39	33	26	19	44
Cumulative Calculated Noise Level at Receptor	47	52	50	47	42	36	30	27	48

Our calculations indicate that the proposed plant, should be capable of achieving the requirements of the Local Authority outlined in Section 6.0.

The following table shows our BS: 4142:2014 Assessment.



Table 11 BS 4142:2014 Assessment

Results		Relevant Clause	Commentary
Predicted Plant Noise Level at Receptor (Ambient Level)	48 dB	7.3.2	Specific sound source on.
Assessment made during the daytime, so reference period is 1 hour		7.2	Plant is proposed to operate during daytime periods.
On-time Correction	0 dB	7.3.15	Plant is proposed to run continuously throughout the daytime period, As such no on-time correction has been added.
Specific Sound Level	48 dB	7.3.8 7.3.9 7.3.10	Specific level of source corrected for on-time.
Acoustic feature correction	0 dB	9.2	There are no acoustic features identified.
Rating level	48 dB	9.2	Calculated by adding acoustic feature corrections to the specific sound level.
Background sound level	49 dB	8.1.1 8.1.3 8.3	Typical background sound level measured at the proposed development site during the daytime/night-time.
Excess of rating over background sound level	-1 dB	11	
Assessment indicates low impact to residents.		11	The excess of the rating level is 1 dB lower than the background noise level during the daytime indicating low impact in line with BS4142:2014.
Uncertainty of the assessment	Low	10	The background sound level is based on repeatable measurements made over the duration of 2 days. The measurements of noise from the industrial remained consistent throughout measurement period

8.0 Conclusion

An environmental noise survey has been undertaken in order to establish the currently prevailing noise levels.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the Local Authority's requirements.

An assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive window.

The assessment indicates that the proposed plant, should be capable of achieving the proposed environmental noise criteria at the nearest noise sensitive residential window.

Appendix A

The acoustic terms used in this report are defined as follows:

dB Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The _A subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

L_{90,T} L₉₀ is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

L_{eq,T} L_{eq,T} is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Planning Policies, Standards & Guidance

B.1 BS 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to BS 4142:2014 *“Methods for rating and assessing industrial and commercial sound”*.

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains “a tone, impulse or other characteristic” then various corrections can be added to the specific (source) noise level to obtain the “rating level”.

BS 4142 states that: *“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs”. An estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

- *“Typically, the greater this difference, the greater the magnitude of the impact.”*
- *“A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.”*
- *“A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.”*
- *“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.”*

The determination of the “rating level” and the “background level” are both open to interpretation, depending on the context.

B.2 Statutory Noise Nuisance

S79(1)(g) of the Environmental Protection Act 1990 defines a statutory nuisance as “*noise emitted from a premises so as to be prejudicial to health or a nuisance*”. A duty is placed on the Local Authority to serve an abatement notice under S80 if it becomes satisfied that a statutory nuisance exists.

There is however no quantitative definition/objective method in determining statutory noise nuisance, and as such we are not able to definitively advise or determine on such matters. Noise nuisance is subjective and requires multiple factors to be considered, including but not limited to:

- Straining to hear something is *generally* considered not a nuisance, however,
- Noise level (of source and relative to background), timing, duration, type of noise, frequency, location, continuous or repetitive, all factor into judging nuisance.

To mitigate against, though not remove entirely, the risk of a statutory noise nuisance, a noise assessment should be undertaken by a Suitably Qualified Acoustician. Adoption of appropriate and relevant industry standards/guides can provide a structured framework for such assessments, improving the credibility of mitigation efforts. It is also important to also recognise that ongoing management (both active and passive) may also be necessary depending on the context of the situation.

Appendix C

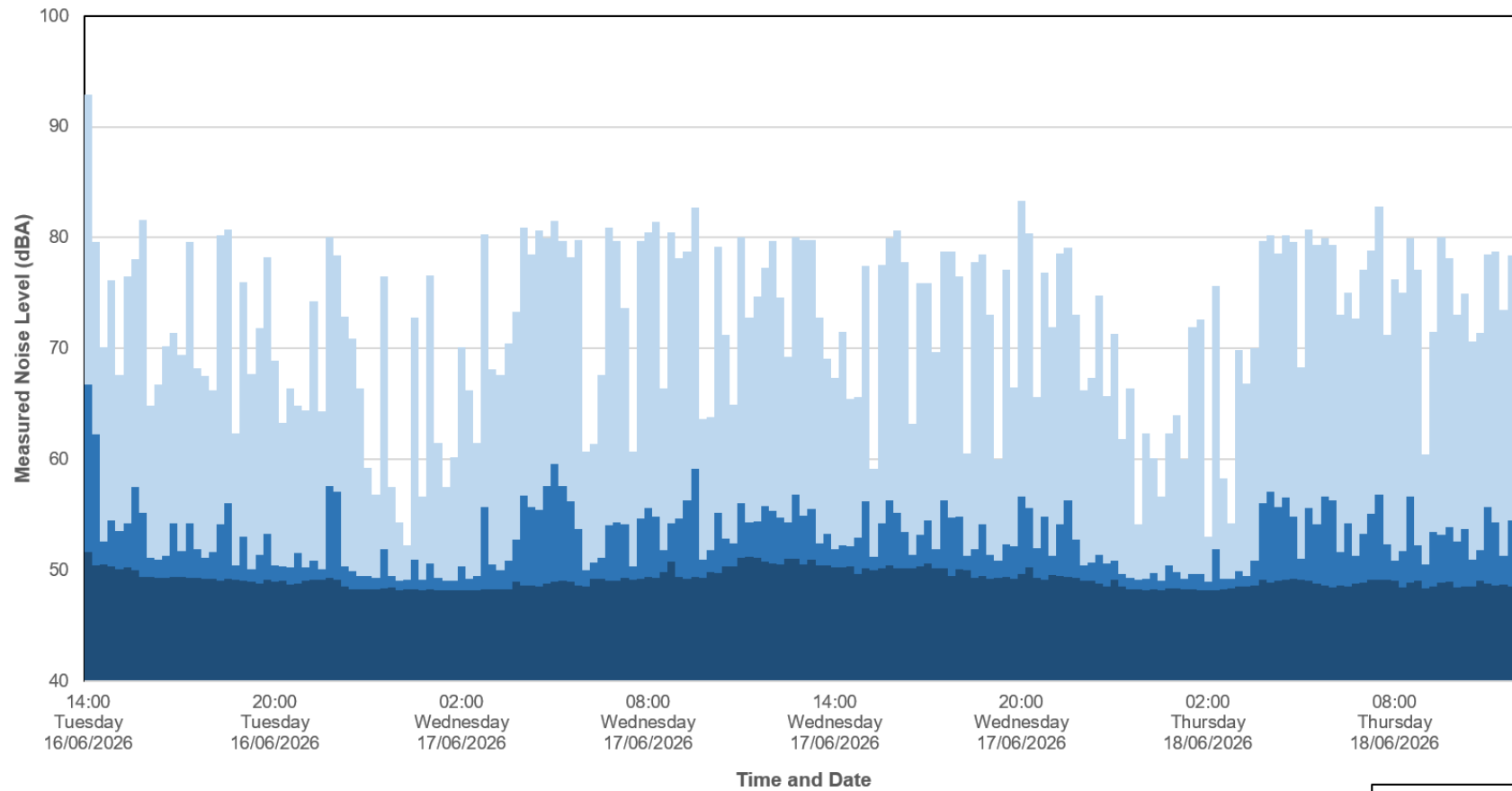
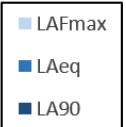
Time History Graphs

Lloyds Worthing

Position 1

L_{eq} , L_{max} and L_{90} Noise Levels

16 June 2026 to 18 June 2026



33195/TH1