Barclays, Wrexham

Environmental Noise Survey and Plant Noise Assessment Report

32826/PNA1 R1

1 May 2026

For:

Wates
Wates House
Station Approach
Leatherhead
Surrey
KT22 7SW

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Document Control

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1	01/05/2026	Plant information provided.	[redacted] Sandy Wilson Consultant BSc(Hons)	[redacted] Gareth Evans Director BSc(Hons), MIOA	
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1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by Wates to undertake a plant noise assessment for a Barclays Bank site in Wrexham, Wrexham County Borough.

New building services plant is to be installed at the site, which is located on Hope Street.

Hann Tucker Associates has therefore been commissioned to undertake a detailed environmental noise survey at the site to establish baseline noise conditions as presented herein.

Suitable plant noise emission criteria based on the requirements of the Local Authority and the application of BS 4142: 2014+ A1:2019 have been established.

Measures required to mitigate noise impacts for the proposed development (when operational) have been discussed in context with relevant national & local planning policies, design standards and good practice guides.

2.0 Objectives

To undertake an environmental noise survey to establish the existing L_{Amax}, L_{Aeq} and L_{A90} environmental road 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.

To assess the noise emissions from the proposed plant, based upon data with which we are provided, and comment upon the acceptability.

To advise on noise control measures if required.

3.0 Acoustic Terminology

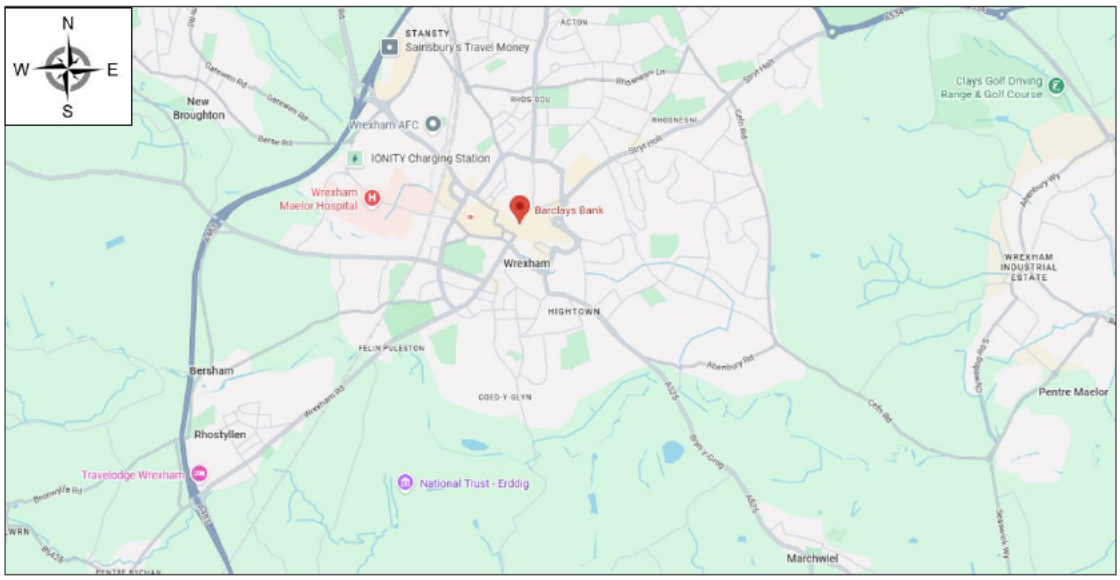
For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Site Description

4.1 Location

The site lies along Hope Street in the town centre of Wrexham. The site falls within the jurisdiction of Wrexham County Borough Council.

The Location Map is shown below.



Location Map (Map data ©2025 Google)

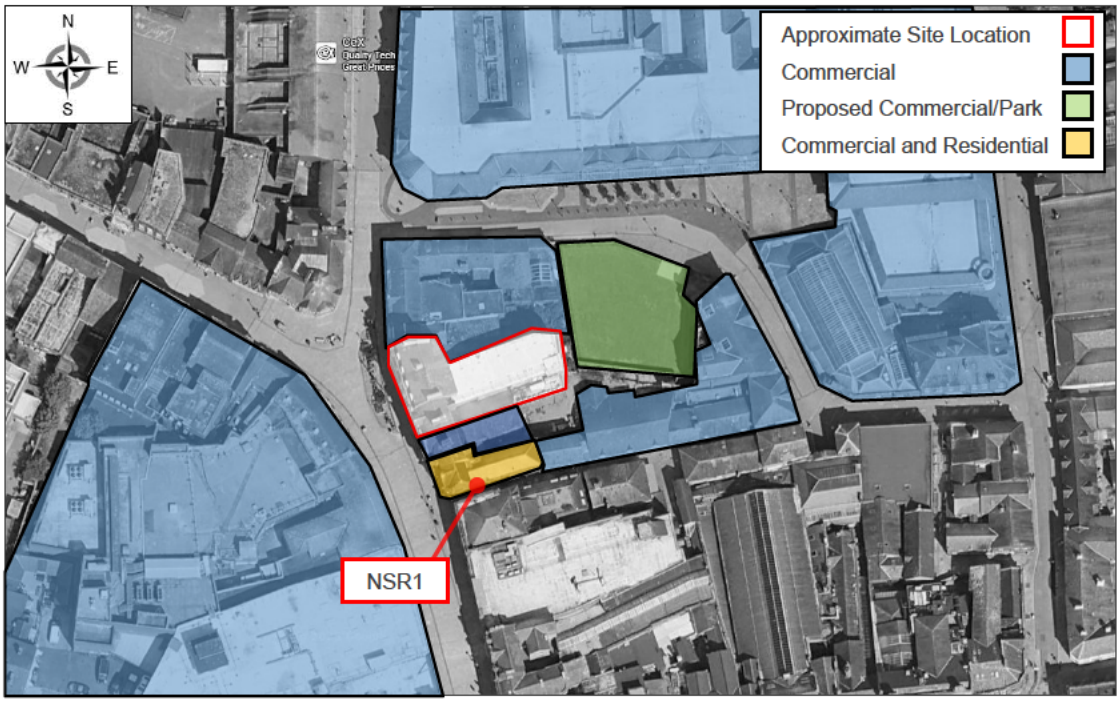
4.2 Description

The site is located in the town centre of Wrexham and is bounded by Hope Street to the west and southwest, Henblas Street to the north and Bank Street to the south. Adjoining the site to the north and south are commercial properties which are currently "to let" to the north and estate agents to the south.

To the east of the site is The Ryan Rodney Reynolds Memorial Park which is to be a public park and surrounding commercial units once works begin.

The nearest identified noise sensitive receptor is understood to be the flats within No. 26 Bank Street.

The site is shown in the Site Plan below.



Site Plan (Imagery ©2025 Bluesky, Infoterra Ltd & COWI A/S, Maxar Technologies, Map data ©2025)

5.0 Planning Policies, Standards & Guidance

5.1 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
- World Health Organisation 2018

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

5.2 Specific Local Authority Criteria

It is understood that Wrexham County Borough Council require that noise egress from new building services plant is designed to not exceed the prevailing background level at the nearest noise sensitive receptor. As such it has been deemed suitable to assess to BS 4142:2014.

6.0 Baseline Noise Survey

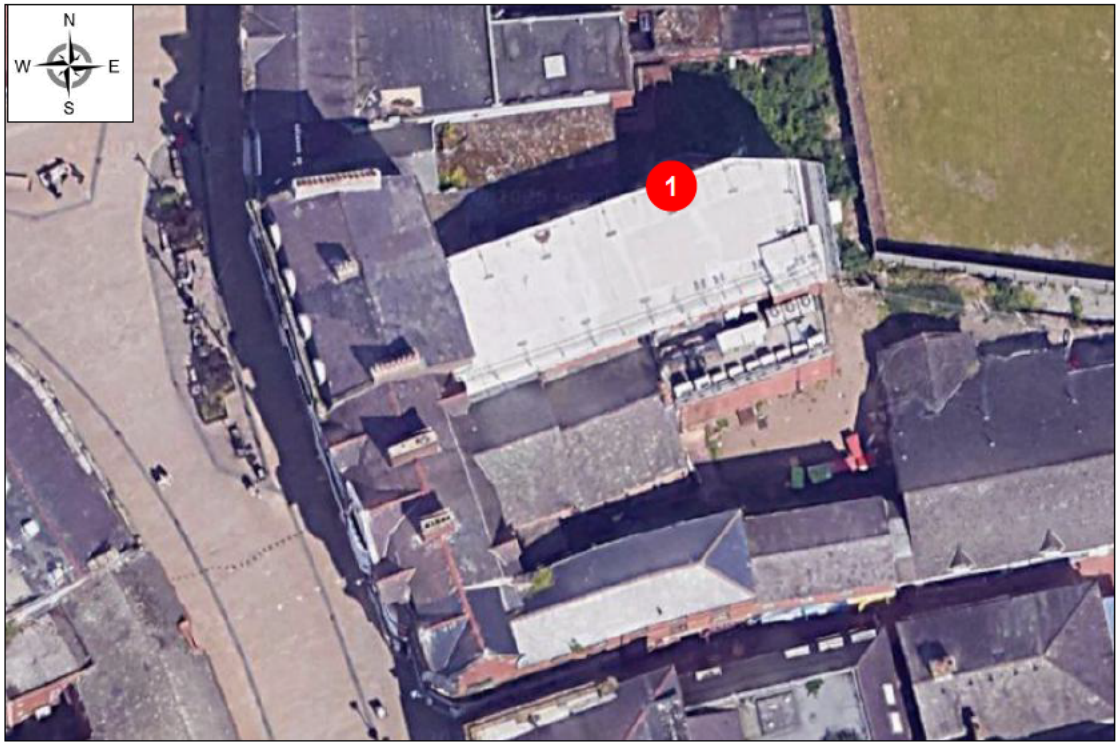
6.1 Procedure

Fully automated environmental noise monitoring was undertaken by Naveen Simha assisted by Will Robertson from approximately 15:00 hours on Tuesday 09 December 2025 to 17:30 hours on Sunday 14 December 2025, 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.

6.2 Measurement Position

The microphone was attached to a pole approximately 15-metres above ground level on a flat roof to the eastern rear of the site.

The approximate measurement position is shown on the plan below.



Plan Showing Measurement Position (©2025 Google)

6.3 Weather Conditions

For the unattended survey between Tuesday 09 December 2025 and Sunday 14 December 2025, local weather reports indicated no notable periods of prolonged or heavy rainfall, with temperatures ranging from 3°C (night) to 16°C (day) and wind speeds of less than 5 m/s. During our time on site, skies were overcast, wind conditions were calm, and road surfaces were dry.

6.4 Instrumentation

The instrumentation used during the survey is presented in the table below:

Position	Description	Manufacturer	Type	Serial Number	Calibration
1	Type 1 Data Logging Sound Level Meter	ACOEM	CUBE	10623	Calibration on 22/10/2025
	Type 1 Calibrator	Larson Davis	Cal200	3083	Calibration on 28/02/2025

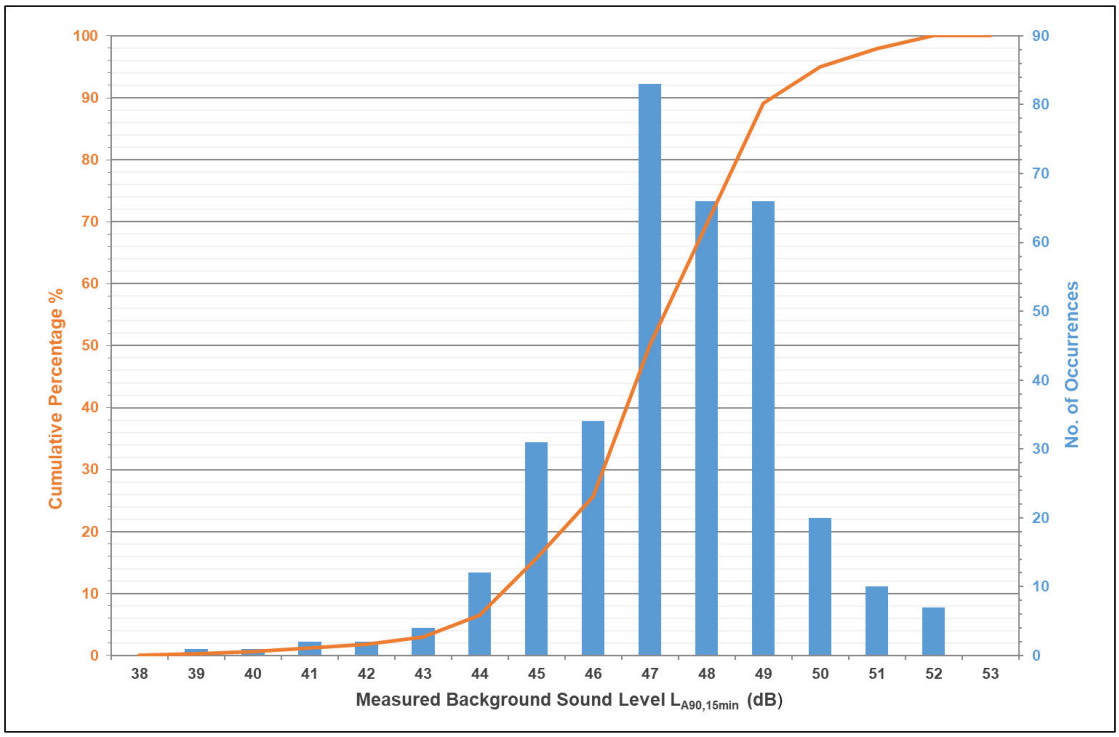
The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant change was found to have occurred (no more than 0.2 dB).

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.

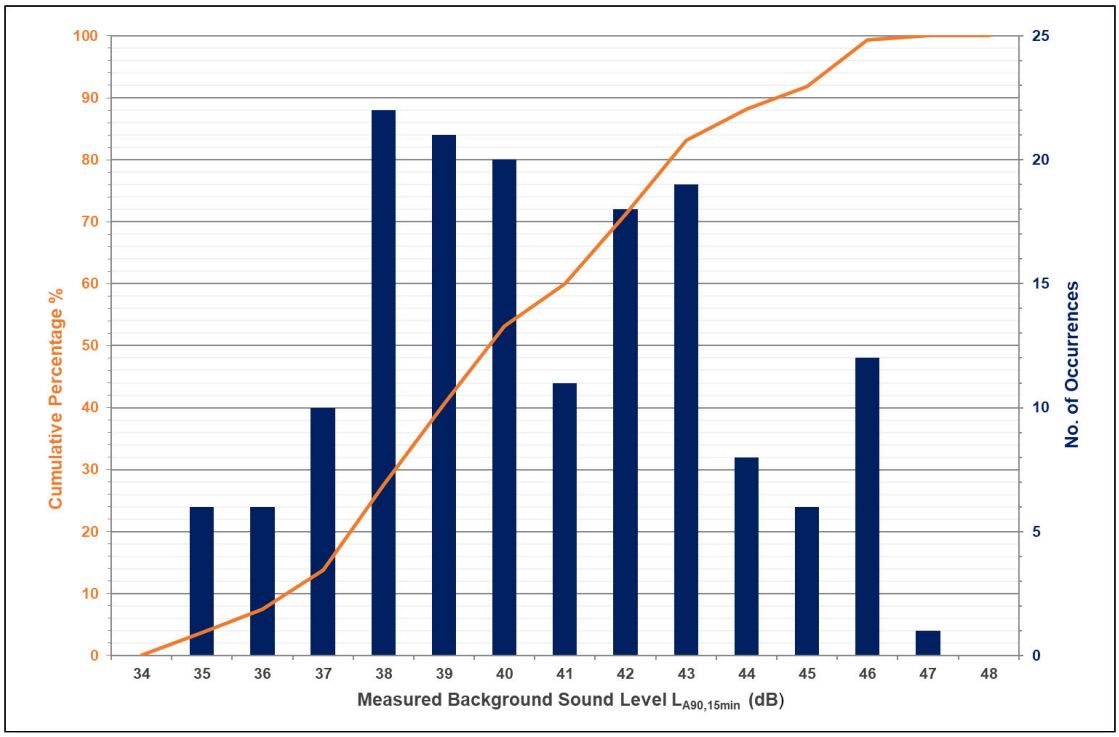
6.5 Results

The results have been plotted on Time History Graph 32826/TH1 to enclosed presenting the 15-minute A-weighted (dBA) L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

BS 4142 states that “the background sound level must be reliable and suitably represent he 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 day and night-time periods.



Measured Daytime $L_{A90,15min}$



Measured Night-time $L_{A90,15min}$

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

Representative Measured $L_{A90(15min)}$ Background Sound Level (dB re 2 x 10^{-5} Pa)	
Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
45	38

6.6 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 road traffic associated with the surrounding road networks to the east of the site, as well as pedestrian chatter from the surrounding streets.

7.0 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 it is proposed 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.

Location	Plant Noise Emission Criteria ($L_{Ar,Tr}$, dB)	
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
NSR1	45	38

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 criteria are subject to the final approval of the Local Authority.

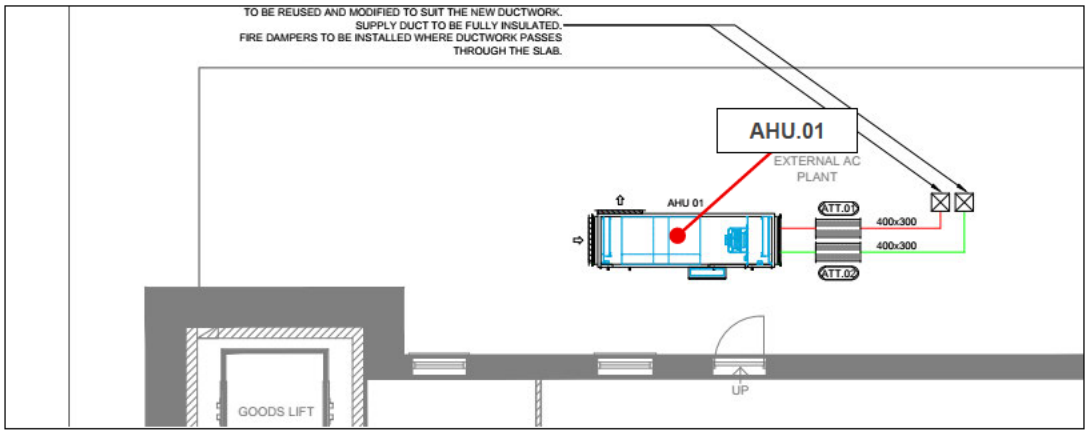
8.0 Plant Noise Impact Assessment

8.1 Proposed Plant

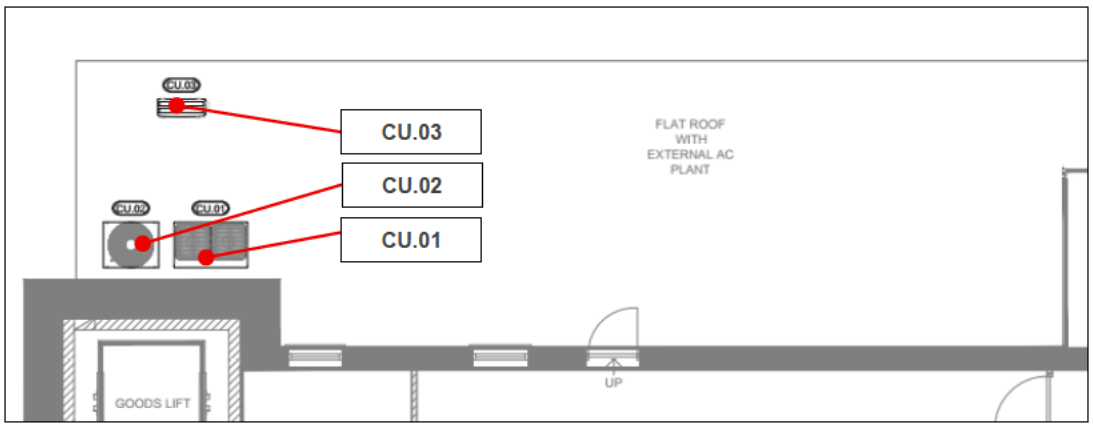
The proposed plant consists of the following:

- CU.01 – Daikin REYA14A
- CU.02 – Daikin REYA8A
- CU.03 – Daikin RZA60A
- AHU.01 – Envistar Compact
- EF.01 – Nuaire ILMEC-200

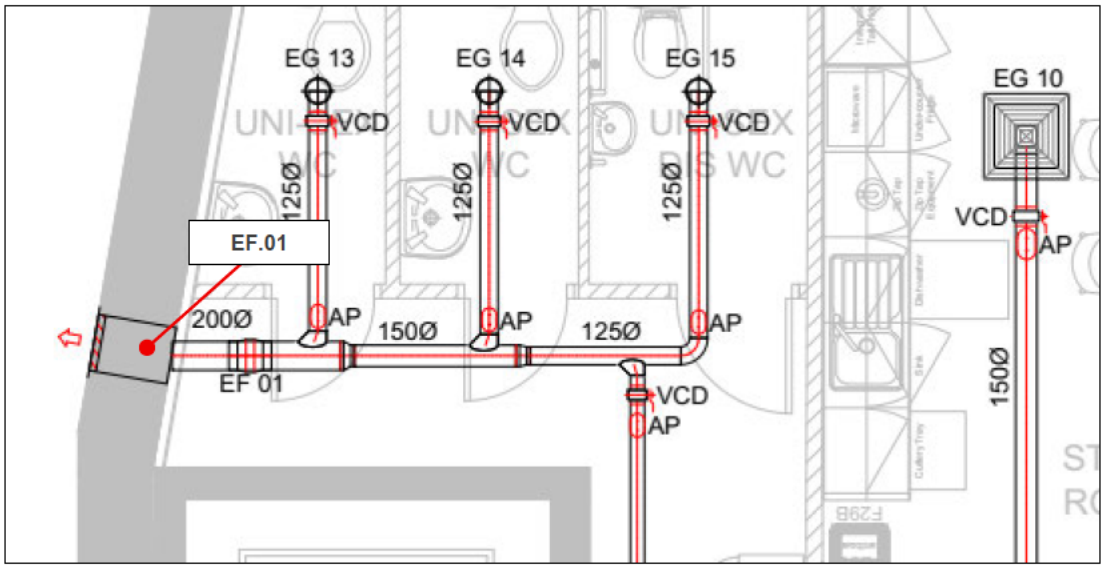
The plans below indicate the current proposals.



Roof Plan presenting AHU location (provided by AMD Group)



Roof Plan presenting condenser locations (provided by AMD Group)



First Floor Plan presenting plant locations (provided by AMD Group)

8.2 Plant Operation

It is understood that the hours of operation of the proposed site are:

- Monday to Friday: 09:30 to 16:30
- Saturday: 09:30 to 13:00
- Sunday: Closed.

The staff arrive between 09:00 to 09:30 and leave within an hour of closure. Therefore, the plant assessment will be carried out during the daytime period only.

8.3 Plant Noise Data

It is understood that the manufacturer's noise data for the equipment to be as follows:

Plant Description	Lw/Lp	Noise Level (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1000	2000	4000	8000	
Daikin REYA14A [1]	L_p at 1m	64	63	54	55	51	51	47	46	58
Daikin REYA8A [1]	L_p at 1m	62	61	52	53	49	49	45	44	56
Daikin RZAG60A [1]	L_p at 1m	58	53	50	49	45	38	33	26	50
IV Produkt Envistar Compact Extract [2]	L_w	57	60	60	58	51	49	43	30	59
IV Produkt Envistar Compact Exhaust [2]	L_w	66	72	72	70	72	68	64	58	76

Plant Description	Lw/Lp	Noise Level (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1000	2000	4000	8000	
Nuaire ILMEC-200 [3]	L_w	53	56	56	54	47	45	39	26	55

[1] Only a single figure sound pressure level was provided in the technical datasheet for the proposed Daikin REYA14A9, REYA8A and RZAG60A condenser units, therefore for the basis of our assessment, we have adjusted a typical spectrum for the condenser units to align with the single figure sound pressure level provided in the technical datasheets.

[2] The manufacturer's data sheet does not specify whether the noise levels are 'open' radiated, or 'induct' sound power levels. We have therefore assumed the noise levels to be in-duct sound power levels for the basis of our assessment.

[3] The manufacturer's data sheet only provides a single figure sound power level. We have therefore adjusted a typical spectrum for an extract fan to align with the single figure sound power level provided in the technical datasheets. It also does not specify if it is an 'open' sound power levels or 'induct' sound power levels. We have therefore not considered any duct or end grille reflection loses in our assessment.

8.4 Recommended Mitigation Measures

In order to control plant noise emissions in line with requirements of the Local Authority, we recommend installing atmospheric attenuators to the following ducted plant. The attenuators should achieve the following minimum dynamic insertion loses:

Plant Unit	Minimum Dynamic Insertion Loss (dB) for Attenuators at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
IV Produkt Envistar Compact Exhaust	2	4	9	15	17	14	10	8

The above insertion losses have been used in our prediction of atmospheric noise emissions from the plant to the nearest noise sensitive residential window.

The above could be achieved with 900mm long attenuator with an approx. free area of 50%. However, it should be noted that the above are specified as dynamic insertion losses and include any contribution from re-generated noise. The above should be given to a reputable attenuator supplier and it should be highlighted that the above are Dynamic Insertion Losses.

Please find enclosed a list of suitable suppliers for attenuators in Appendix E.

8.5 Plant Noise Impact Assessment

8.5.1 Noise Egress Assessment

Appendix D presents detailed tables outlining our predicted atmospheric noise emissions from the proposed plant, in conjunction with the recommended mitigation measures, at the nearest noise-sensitive residential window.

Receptor	Calculated Plant Noise Egress Level, L_{ArTr} (dB)	Criterion, L_{ArTr} (dB)	Compliance
NSR1	45	45	Yes

Our calculations indicate that the proposed plant should be capable of achieving the requirements of the Local Authority outlined in Section 7.0.

9.0 Conclusions

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, in conjunction with the proposed mitigation measures, 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.

$L_{90,T}$ — L_{90} 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 World Health Organisation

The current Environmental Noise Guidelines 2018 for the European Region (ENG) supersede the Guidelines for Community Noise from 1999 (CNG). Nevertheless, the ENG recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) remain valid.

A summary of the guidance from the ENG and CNG is shown in the table below.

Source	CNG guideline indoors all sources	ENG guideline outdoors noise from specific source only
Road traffic noise	35 $L_{Aeq,\ 16h}$	53 dB L_{den}
	30 $L_{Aeq,\ 8h}$	45 dB L_{night}
Railway noise	35 $L_{Aeq,\ 16h}$	54 dB L_{den}
	30 $L_{Aeq,\ 8h}$	44 dB L_{night}
Aircraft noise	35 $L_{Aeq,\ 16h}$	45 dB L_{den}
	30 $L_{Aeq,\ 8h}$	40 dB L_{night}

With regard to single-event noise indicators, Section 2.2.2 of the WHO Environmental Noise Guidelines 2018 state:

"In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level ($L_{A,max}$) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit awakenings and other physiological reactions that are mostly determined by $L_{A,max}$. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators."

B.3 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.

These WHO guidelines are based, in almost all cases, on the lower threshold below which the occurrence rates of any particular effect can be assumed to be negligible.

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Appendix C

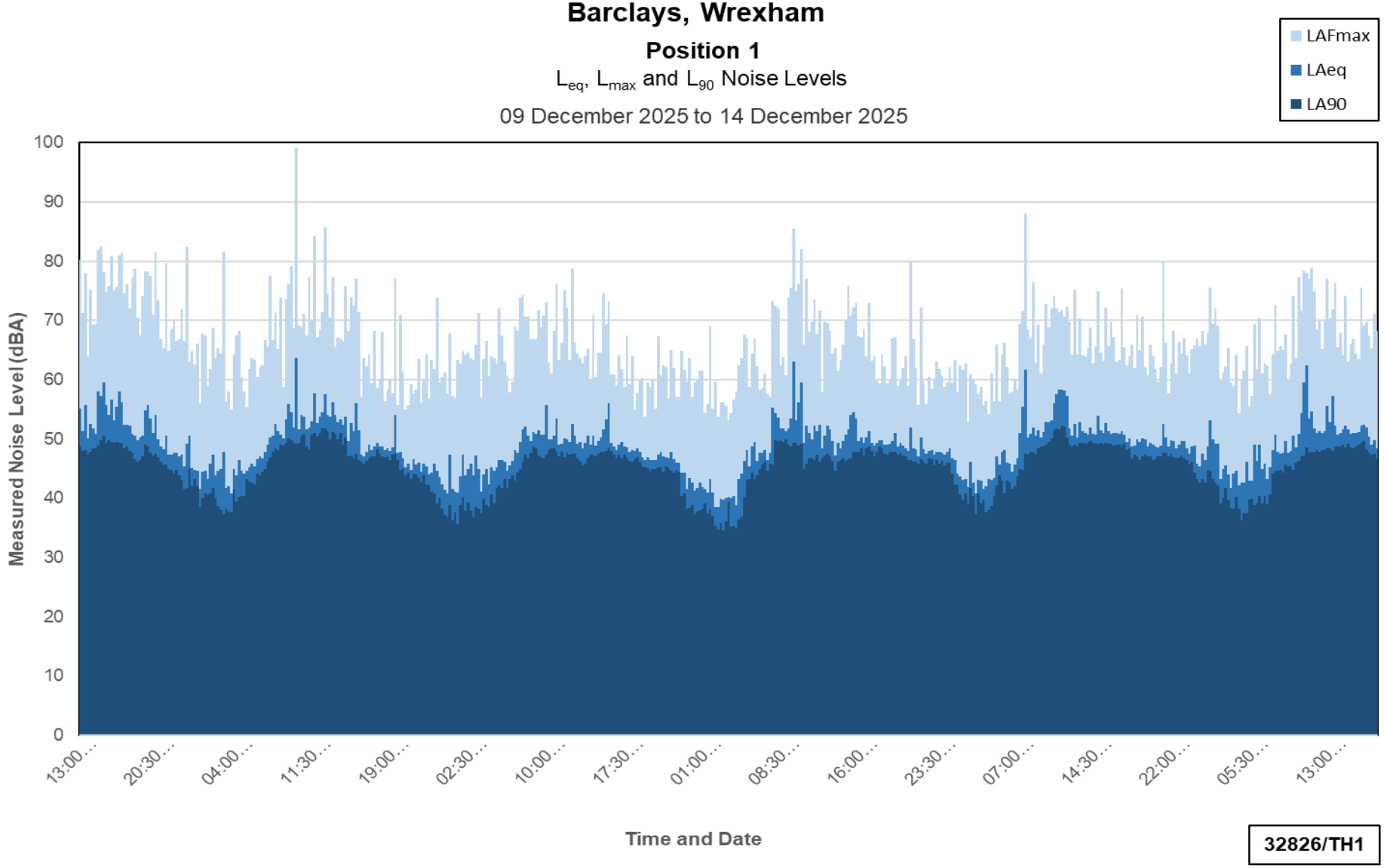
Time History Graphs

Barclays, Wrexham

Position 1

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

09 December 2025 to 14 December 2025



32826/TH1

Appendix D

Assessment Breakdown

Description	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
(EF01) Exhaust Sound Power Level at the Grille Lw	53	56	56	54	47	45	39	26	
Barrier Loss (ISO 9613-2)	-7	-8	-10	-12	-15	-17	-20	-20	
Distance Loss (SWL to SPL 0-21m)	-34	-34	-34	-34	-34	-34	-34	-34	
Calculated Noise Level at Receptor	**12**	**14**	**12**	**8**	**<0**	**<0**	**<0**	**<0**	**8**
(AHU01) Extract Sound Power Level at the Grille Lw (including ductwork and grille loses)	51	60	60	58	51	49	43	30	
Directivity Correction	-1	-1	-4	-18	-22	-22	-22	-22	
Distance Loss (SWL to SPL 0-18m)	-33	-33	-33	-33	-33	-33	-33	-33	
Calculated Noise Level at Receptor	**17**	**23**	**23**	**7**	**<0**	**<0**	**<0**	**<0**	**16**
(AHU01) Exhaust Sound Power Level at the Grille Lw (including ductwork, grille and proposed attenuator loses)	58	65	63	55	55	54	54	50	
Directivity Correction	+1	+2	+3	+3	+4	+4	+4	+4	
Distance Loss (SWL to SPL 0-17m)	-33	-33	-33	-33	-33	-33	-33	-33	
Calculated Noise Level at Receptor	**26**	**34**	**33**	**25**	**26**	**25**	**52**	**21**	**33**
(CU01) 1no. Daikin REYA14A Sound Pressure Level at 1m	64	63	54	55	51	51	47	46	
Distance Loss (1-19m)	-19	-19	-19	-19	-19	-19	-19	-19	
Calculated Noise Level at Receptor	**45**	**44**	**35**	**36**	**32**	**32**	**28**	**27**	**39**
(CU02) 1no. Daikin REYA8A Sound Pressure Level at 1m	62	61	52	53	49	49	45	44	
Distance Loss (1-19m)	-19	-19	-19	-19	-19	-19	-19	-19	
Calculated Noise Level at Receptor	**43**	**42**	**33**	**34**	**30**	**30**	**26**	**25**	**37**
(CU03) 1no. Daikin RZAG60A Sound Pressure Level at 1m	**58**	**53**	**50**	**49**	**45**	**38**	**33**	**26**	
Distance Loss (1-17m)	-17	-17	-17	-17	-17	-17	-17	-17	
Calculated Noise Level at Receptor	**41**	**36**	**33**	**32**	**28**	**21**	**16**	**9**	**33**

Plant Noise Impact Assessment from proposed units to Receptor	
Description	**Result**
Proposed Daytime criteria	45
Specific Noise Level, L_{Aeq}	42
+3 dB intermittency correction	+3
Cumulative Noise level from all plant	45
Excess of criteria	0

Appendix E

List of Suitable Suppliers for Attenuators

Name & Address	Telephone Number
Allaway Acoustics Ltd 1 Queens Road Hertford SG14 1EN	[redacted]
Caice Riverside House 3 Winnersh Fields Gazelle Close Winnersh Wokingham RG41 5QS	[redacted]
IAC Acoustics IAC House Moorside Road Winchester SO23 7US	[redacted]