Unit 2
One Port Street
Manchester

Plant Sound
Assessment Report
1605/PSA1

22 May 2025

For:

The Wilco Test Ltd

2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

☎ 0161 457 0515 ▪ 07415 151 901
✉ Enquiry@LighthouseAcoustics.co.uk
🌍 www.LighthouseAcoustics.co.uk

Plant Sound Assessment Report
1605/PSA1

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Plant Schedule 1605/PS1

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Registered Office: 2nd Floor 3 Hardman Square Spinningfields Manchester M3 3EB
Registered in England and Wales Company No. 09085491

1.0 Introduction

Lighthouse Acoustics has been appointed by The Wilco Test Ltd to review atmospheric plant noise emissions to the nearest noise sensitive receptors and to propose mitigation measures where required in order to achieve the requirements of the Landlord and Local Authority.

The survey methodology, results and assessments are presented in this report.

2.0 Objectives

To establish the Landlord and Local Authority acoustic requirements for the proposed items of building services plant.

To undertake an assessment of atmospheric sound emissions from the proposed items of building services plant to the nearest noise sensitive receptors and to propose mitigation measures where required in order to achieve the requirements of the Landlord and Local Authority.

3.0 Site Description

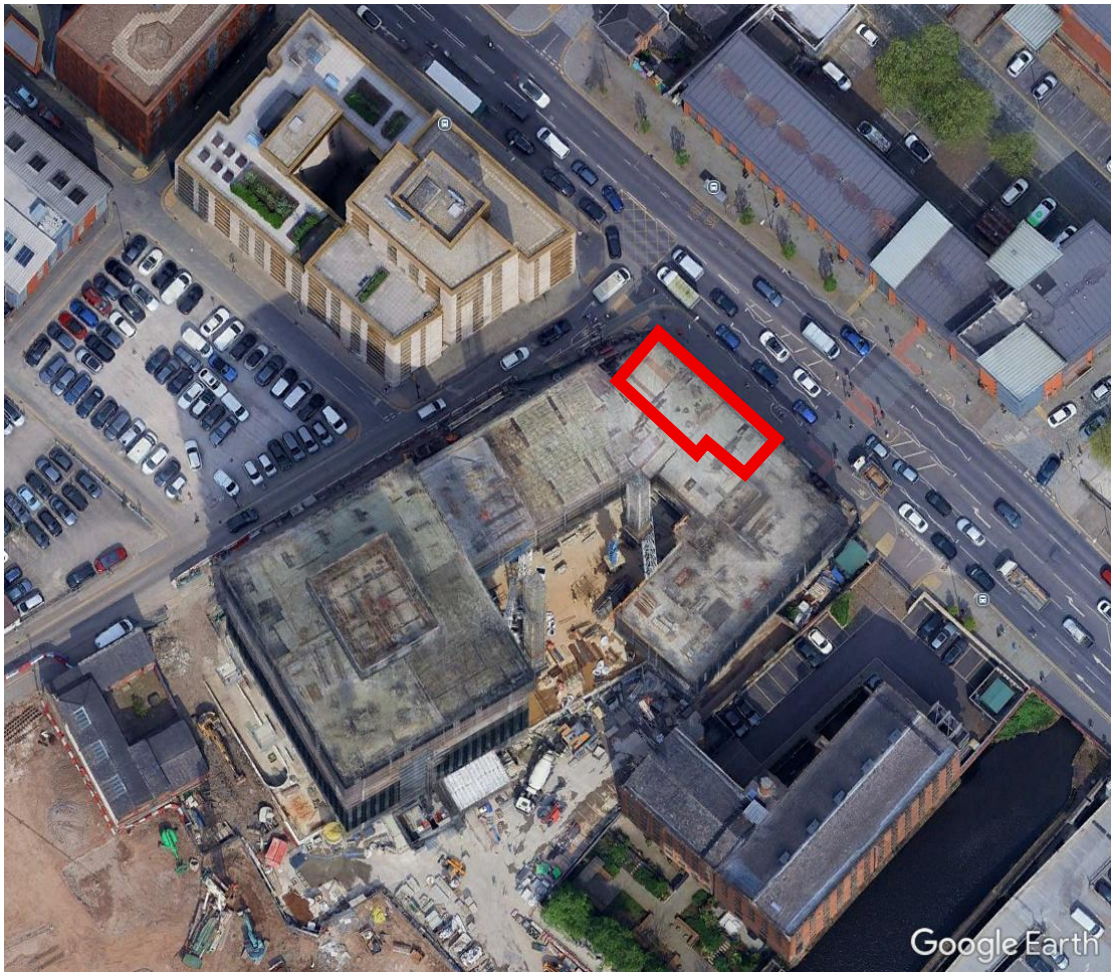
Unit 2 is situated at ground floor level to the northern corner of One Port Street, Manchester and adjoins Unit 3 and service corridors at ground floor level with residential apartments above at 1st floor level.

One Port Street, Manchester is bound by Great Ancoats Street (A665) to the north east, residential apartments to the south east (Avro), residential apartments (The Joinery) and commercial premises (Sam's Yard) to the south west and Port Street to the north west. Residential apartments are also situated to the north east of the site opposite Great Ancoats Street (MM2) and to the north west of the site opposite Port Street (The Astley).

The proposed items of building services plant are to be situated within Unit 2 with air intakes and exhausts ducted to high level louvres in the north east and north west facades. A condenser unit will also be situated in the basement car park.

The nearest affected noise sensitive receptors are understood to be the windows of the development itself at 1st floor and the residential apartments situated to the north east of the site opposite Great Ancoats Street (MM2) and to the north west of the site opposite Port Street (The Astley).

The site plan below indicates the extent of the site, the proposed plant location and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment

4.0 Landlord Requirements

The Port Street Retail Unit Shell Specification for Unit 2 dated 19 January 2026 states the following in Section 4 Acoustics:

> *"4.1 General*
>
> *Noise generated in a retail unit or a retail unit plant space must not result in noise levels which may cause a statutory noise nuisance.*
>
> *4.2 Design and operational Requirements*
>
> *In accordance with the Planning Approval (MCC Planning Ref: 132489/FO/2021) the Tenant must ensure that the fit-out design and occupation of the unit complies with the relevant Conditions. The Tenant will need to submit the relevant information to the Landlord and the Local Authority for approval. The reports referenced in the Planning Conditions are available upon request.*

The relevant planning Conditions are:

Condition 15b – Acoustic insulation for externally mounted equipment"

5.0 Local Authority Requirements

Condition 15b of MCC Planning Application number 132489/FO/2021 states the following:

"15) Prior to occupation of

(b The ground floor commercial units

a scheme for the acoustic insulation of any externally mounted ancillary equipment associated with the development to ensure that it achieves a background noise level of 5dB below the existing background (La90) at the nearest noise sensitive location shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment. The approved scheme shall be completed before the premises is occupied and a verification report submitted for approval by the City Council as local planning authority and any non compliance suitably mitigated in accordance with an agreed scheme prior to occupation. The approved scheme shall remain operational thereafter."

6.0 Environmental Sound Survey

The Fisher Acoustics, Environmental Noise Study, Report Reference: PR0665-REP01A-MPF, dated 3 December 2021 details the environmental noise survey undertaken at the development and the subsequent results.

Plant noise limits are provided based on the results of the environmental noise survey which are to be achieved at the nearest residential receptors to Unit 2 as detailed in the table below.

Location	**Rating Noise Level Limit L_{Aeq} (dB)**	
	Daytime (07:00–23:00)	**Night-time (23:00–07:00)**
Proposed Development, Great Ancoats Street Elevation	53	42
Proposed Development, Port Street Elevation	46	40
MM2, Great Ancoats Street	53	42
The Astley, Port Street	49	42

7.0 BS 4142: 2014

BS 4142: 2014 "Methods for rating and assessing industrial and commercial sound", describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

Sound of an industrial and/or commercial nature does not include sound from the passage of vehicles on public roads and railway systems.
It should be noted that the determination of noise amounting to a nuisance is beyond the scope of BS 4142.

The likely impact is indicated by subtracting the existing background sound level from the rating level of the industrial and/or commercial sound. The standard states that:

> *"a) Typically, the greater this difference, the greater the magnitude of the impact.*
> *b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
> *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.*
>
> *Note 2 Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."*

The industrial and/or commercial sound is expressed as the specific sound level and given as a $L_{Aeq,Tr}$ sound level. Should the specific sound level exhibit any acoustic features (i.e. tonality, irregularity or impulsiveness) a character correction is applied. The rating level is the specific sound level with character correction applied (if applicable) and is given as a $L_{Ar,Tr}$ sound level.

The existing background sound level is given as a L_{A90}, T sound level.

The reference time interval, T_r, is 1 hour during the daytime period (07:00 to 23:00 hours) and 15 minutes during the night-time period (23:00 to 07:00 hours).

8.0 Plant Sound Emission Assessment

8.1 Plant Sound Data

Atmospheric building services sound levels have been assessed based on the manufacturers noise data detailed in the Plant Schedule 1605/PS1 enclosed at the rear of the report.

Whilst it is not possible to assess plant irregularity or impulsiveness based on manufacturer's sound data, BS 4142: 2014 provides an objective method for assessing the audibility of tones in sound. The one-third octave method states that if the level of a one third octave band exceeds the level of both adjacent one third octave bands by the following amounts, then a tonal component may be identified as present:

- 15dB in the low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in the mid-frequency one-third-octave bands (160Hz to 400Hz);
- 5dB in the high-frequency one-third-octave bands (500Hz to 10kHz).

However, one third octave band sound data is rarely available from manufacturers as is the case in this instance.

By applying the same principal to the octave band sound data in the enclosed Plant Schedule, a review indicates that these items are unlikely to exhibit a tonal component. As such, no character correction has been applied to the specific sound level for these items. Should one third octave band sound data become available a revised assessment should be undertaken.

8.2 Attenuation Proposals

The 1No. MVHR unit, 1No. kitchen extract fan, 1No. pot wash extract fan and 1No. toilet extract fan are proposed to be fitted with the silencers specified in the Silencer Schedule 1605/SS1 enclosed at the rear of the report in order to achieve the Landlord and Local Authority requirements.

The 1No. kitchen extract fan unit and any ductwork between the extract and exhaust silencers should be acoustically lagged comprising 50mm (min.) mineral wool slab (min. 16kg/m^3) wrapped with a polymeric heavy mass barrier material of at least 10kg/m^2.

In addition, all proposed items of building services plant/ductwork should be mounted on appropriate anti-vibration mounts in order to minimise structure borne noise to the adjoining spaces.

8.3 Operating Hours

It is understood that the proposed items of building services plant have the potential to operate between 09:00 and 23:00 hours, 7 days a week.

In order to undertake a worst case assessment, it is assumed that the proposed items of building services plant will operate for the full 1 hour daytime assessment period.

8.4 Plant Locations

The location of the proposed items of building services plant has been taken from the following drawings.

Author	Drawing No.	Revision	Date
Rische Group	2122 Ground Floor	-	07/04/2026
	Basement	-	19/03/2026

These indicate that the proposed 1No. MVHR unit, 1No. kitchen extract fan, 1No. pot wash extract fan and 1No. toilet extract fan are situated within Unit 2 with air intakes and exhausts ducted to high level louvres in the north east and north west facades whilst the 1No. condenser unit is situated in the basement car park.

8.5 Nearest Noise Sensitive Receptors

The nearest affected noise sensitive receptors are understood to be the windows of the development itself at 1st floor and the residential apartments situated approximately 27m to the north east of the site opposite Great Ancoats Street (MM2) and approximately 16m to the north west of the site opposite Port Street (The Astley).

8.6 Assessment

The table below details the calculated L_{Ar} rating levels for the proposed items of building services plant at the nearest noise sensitive receptors along with the plant noise limits and the differences between them.

Descriptor	Noise Sensitive Receptor			
	North East (One Port Street)	North West (One Port Street)	North East (MM2)	North West (The Astley)
Rating Level $L_{Ar,Tr}$ at Receptor (dB)	51	35	37	25
Rating Noise Level Limit $L_{Ar,Tr}$ at Receptor (dB)	53	46	53	49
Difference (dB)	-2	-11	-16	-24

The calculated L_{Ar} rating levels for the proposed items of building services plant at the nearest noise sensitive receptors are between 2dB and 24dB below the plant noise limits.

The assessment therefore indicates that atmospheric plant sound emissions from the proposed items of building services plant are likely to have a low impact at the nearest noise sensitive receptors whilst achieving the requirements of the Landlord and Local Authority for the daytime period.

9.0 Context

BS 4142: 2014 states the following with regard to the context of the industrial/commercial sound:

> *"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 effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."*

In order to place the industrial sound in context the following points have therefore been considered:

- Proposed industrial sound is in excess of 5dB below the lowest representative daytime and night-time L_{A90} background sound levels;
- Proposed industrial sound is only during the daytime period (09:00 to 23:00 hours);
- BS 4142:2014 only uses outdoor sound levels to assess the likely effects of sound.

Based on the above, it is considered that the proposed industrial sound is likely to have a have a low impact at the nearest noise sensitive receptors with the incorporation of the proposed attenuation proposals. This conclusion is reached by professional judgement, taking context into consideration.

10.0 Uncertainty

Weather conditions during the survey period are considered to be suitable for undertaking measurements of sound levels. The measurement positions were selected that were representative of the nearest noise sensitive receptors.

Manned measurements were undertaken to establish the lowest representative environmental sound levels. Whilst environmental sound levels have the potential to be lower than those measured on some occasions, they are likely to be similar to those measured for the vast majority of the time. As such, uncertainty in the survey methodology is considered to be of marginal significance.

The survey was undertaken using Class 1 equipment which had been calibrated within the required intervals. As such, uncertainty in the survey equipment is considered to be of negligible significance.

Assessment data including sound data and operating hours has been based on manufacturers sound data, measured sound data and information received from others. A character correction has been applied as deemed appropriate. As such, uncertainty in the assessment data is considered to be of marginal significance.

Calculations have been undertaken in accordance with recognised procedures and have been performed in a spreadsheet. As such, uncertainty in the assessment is considered to be of negligible significance.

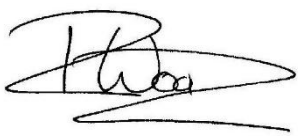
Based on the above, overall uncertainty in the assessment is considered to be of marginal significance.

11.0 Conclusion

The Landlord and Local Authority acoustic requirements for the proposed items of building services plant have been established.

An assessment of atmospheric sound emissions from the proposed items of building services plant to the nearest noise sensitive receptors has been undertaken.

The assessment indicates that atmospheric plant sound emissions from the proposed items of building services plant are likely to have a low impact at the nearest noise sensitive receptors whilst achieving the requirements of the Landlord and Local Authority.



Robin Wood
LIGHTHOUSE ACOUSTICS

Ref: 1605/PS1

Date: 22 May 2026

Revision: -

Comments: -

Unit 2 One
Port Street
Manchester

LIGHTHOUSE ACOUSTICS

2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

☎ 0161 457 0515 ▪ 07415 151 901
✉ Enquiry@LighthouseAcoustics.co.uk
🌍 www.LighthouseAcoustics.co.uk

Plant Ref.	Description	Location	Duty		Data (Inlet/Outlet/Casing)	L_w / L_p at dist. (m)	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
			m^3/s	Pa			63	125	250	500	1k	2k	4k	8k
-	1No. MVHR Unit Mitsubishi LGH-200RVX3-E	Ground Floor Unit 2	Speed 4		Casing*	Lp at 1.5m	58	49	42	39	32	26	22	14
-	1No. Kitchen Extract Fan Woods 50 MaXfan Compac	Ground Floor Unit 2	2.000	402	Extract	Lw	81	82	89	85	87	87	83	79
					Exhaust	Lw	81	82	91	86	87	87	85	81
					Casing	Lw	71	64	69	63	62	59	63	57
-	1No. Pot Wash Extract Fan Vent Axia ACM 150T	Ground Floor Unit 2	0.112	100	Extract	Lw	40	49	59	63	59	63	55	47
					Exhaust	Lw	36	48	54	60	58	61	54	46
					Casing	Lw	26	28	41	45	48	54	41	29
-	1No. Toilet Extract Fan Vent Axia ACM 150T	Ground Floor Unit 2	0.112	100	Extract	Lw	40	49	59	63	59	63	55	47
					Exhaust	Lw	36	48	54	60	58	61	54	46
					Casing	Lw	26	28	41	45	48	54	41	29
-	3No. Condenser Unit Samsung AC071RN4PKG/EU	Ground Floor Unit 2			Casing*	Lp at 1.5m	40	42	38	33	30	25	20	13
-	1No. Condenser Unit Samsung AC140RXADKG/EU	Basement Car Park	-	-	Casing	Lw	65	65	62	60	56	50	45	43

* Manufacturers noise data limited to 1.5m beneath unit – inlet/outlet data not provided.

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Plant Ref.	Description	Inlet/Outlet	Vol. (m^3/s)	Typical Length (mm)	Face Velocity (m/s)	Pressure Drop (Pa)	Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
							63	125	250	500	1k	2k	4k	8k
-	1No. MVHR Unit Mitsubishi LGH-200RVX3-E	FAI*	0.555	900	<6.0	<55	5	7	13	23	25	20	15	10
		Supply*	0.555	900	<6.0	<55	5	7	13	23	25	20	15	10
		Extract*	0.555	900	<6.0	<55	5	7	13	23	25	20	15	10
		Exhaust*	0.555	900	<6.0	<55	5	7	13	23	25	20	15	10
-	1No. Kitchen Extract Fan Woods 50 MaXfan Compac	Extract	2.000	1500	<3.5	<55	9	17	25	43	47	46	36	24
		Exhaust	2.000	1500	<4.5	<55	8	15	23	40	46	41	33	20
-	1No. Pot Wash Extract Fan Vent Axia ACM 150T	Extract	0.112	900	<6.0	<55	5	7	13	23	25	20	15	10
		Exhaust	0.112	900	<6.0	<55	5	7	13	23	25	20	15	10
-	1No. Toilet Extract Fan Vent Axia ACM 150T	Extract	0.112	900	<6.0	<55	5	7	13	23	25	20	15	10
		Exhaust	0.112	900	<6.0	<55	5	7	13	23	25	20	15	10

* Manufacturers noise data limited to 1.5m beneath unit – inlet/outlet data not provided.