

Acoustic assessment of proposed new mechanical services equipment

52 Milford Commercial Estate, Reading



Client: Hampshire Pension Fund c/o CBRE Investment Management (UK) Limited

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0. SUMMARY

- 0.1. ACA Acoustics Limited has been commissioned to assess the acoustic impact of proposed new mechanical services equipment associated with an industrial unit to be installed at 52 Milford Commercial Estate, Reading.
- 0.2. The assessment is required to provide evidence that noise emissions from the equipment will not be detrimental to the amenity of nearby noise-sensitive properties and complies with the Local Authority's requirements.
- 0.3. A survey has been carried out in the vicinity to establish existing background sound levels. Based on Reading Borough Council's criteria, the rating level of the new plant should not exceed the background sound level and the specific level should be at least 10dB below the background sound level at the most noise-sensitive receptor.
- 0.4. A computer calculation model has been used to determine equipment sound levels to outside the noise-sensitive receptors, based on manufacturer's sound level data for the new equipment. The model allows for the noise mitigation scheme set out in this report. Table 1 below summarises the assessment details of the plant to the most noise-sensitive receptors.

Ref	Description	Background Level, LA90	Calculated Rating Level, LAr	Excess of Rating Level Over Background Sound Level
NSR1	Rear windows of 24 Denbeigh Place	32dB	18dB	-14dB

Table 1: Summary of assessment

- 0.5. Noise from the proposed equipment will not be disturbing or detrimental to the amenity of any nearby residential or other noise-sensitive receptors and complies with the planning requirements of Reading Borough Council.

1. INTRODUCTION

New mechanical services equipment associated with an industrial unit is to be installed at 52 Milford Commercial Estate, Reading.

ACA Acoustics Limited has been commissioned by Hampshire Pension Fund c/o CBRE Investment Management (UK) Limited to carry out an assessment of noise emissions from the proposed mechanical plant and, where necessary, to make recommendations for a mitigation scheme to ensure that the amenity of nearby noise-sensitive properties is not compromised.

This report presents results of the sound level survey, computer modelling, and assessment.

2. ACOUSTIC CRITERIA

Reading Borough Council have issued Policy EN17 within the local plan. This states:

“Where noise generating equipment is proposed, the noise source specific level (plant noise level) should be at least 10dBA below the existing background level as measured at the nearest noise sensitive receptor.”

In addition to this an EHO for Reading Borough Council has also stated that they would look for the calculated rating level from the proposed equipment to not exceed the background sound level.

This criteria would be assessed in accordance with BS 4142:2014+A1:2019.

The criteria are applicable over a period of 60 minutes during the daytime (07:00 to 23:00 hours) and 15-minutes overnight (23:00 to 07:00 hours) and measured at a position 1m external to noise sensitive façades (typically outside residential windows).

At this level noise from the new equipment will be low, should not increase the prevailing background sound level and would not be detrimental to the amenity of nearby residents.

3. REVIEW OF SITE LOCATION

New mechanical equipment, comprising of 3 air conditioning units are being installed to the northern façade of Unit 52 Milford Commercial Estate, Reading.

The most noise-sensitive residential receptors (NSR) are discussed in Table 2 below. As the equipment operates only during the day time period assessment to the ground floor windows is most appropriate.

Receptor	Description
NSR1	Rear ground floor windows of 24 Denbeigh Place

Table 2: NSR Description

Other receptor locations in the vicinity have also been considered and may be affected by the proposed plant, however the receptor location used in the assessment is the most sensitive – sound levels at other positions will be lower.

A marked-up aerial image is included in Figure 1, identifying the location of the proposed equipment and sound level survey measurement position.



Figure 1: Equipment location, measurement position, and closest receptor (available at [google.com/maps](https://www.google.com/maps))

Proposed operating times of the equipment are between 08:00 – 18:00 hours.

4. SOUND LEVEL SURVEY

To assess sound levels from the new mechanical equipment, it is necessary to establish representative background sound levels in the vicinity during the proposed plant operating times.

The background sound level was measured via an unattended survey at the position indicated in Figure 1. This position was considered as being representative of the NSR1 receptor. The survey was set up by Tommy Burn of ACA Acoustics and conducted between the 2nd and 4th July 2025.

During the survey, the soundscape in the vicinity was influenced predominantly by low level traffic noise from nearby roads, along with occasional low level operating activity from nearby goods vehicles in nearby industrial units.

The following equipment was used during the survey. An on-site calibration check was conducted on the sound level meter prior to the survey and repeated after with no deviation noted.

Equipment	Serial Number
Svantek Class 1 sound level meter type SVAN971, complete with MOLES weatherproof outdoor environmental kit	84045
Svantek calibrator type SV33B. Compliant to IEC 60942-1:2003	83826

Table 3: Equipment used for the sound level survey

Weather conditions at the time of setting up the survey were bright, warm, calm, and clear. Weather conditions have been reviewed at www.worldweatheronline.com, using the closest available commercial weather station. Weather conditions remained predominantly calm and dry with wind speeds below recommended limits during the proposed equipment operation times. Meteorological conditions are considered acceptable and will not have adversely impacted the survey results.

Results of the survey are shown in graphical form in Figure 2 below.

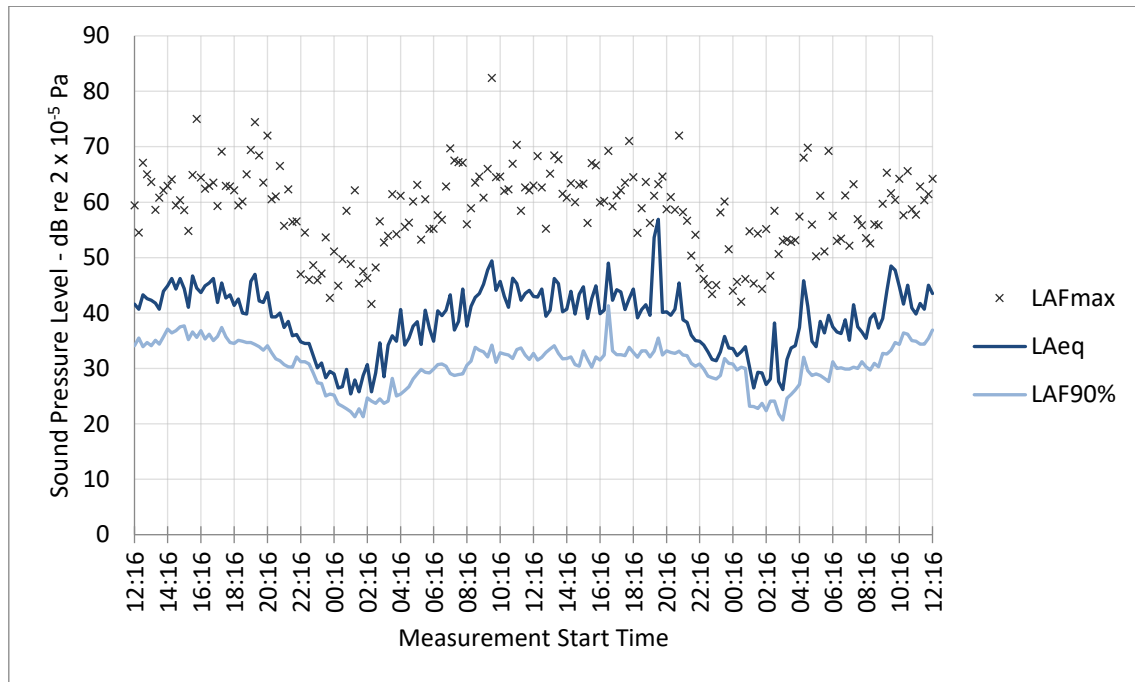


Figure 2: Sound level survey results – 2nd – 4th July 2025

In accordance with the methodology set out in BS 4142:2014+A1:2019, the background sound level is not necessarily the lowest recorded value. Instead, the background sound level should be a level which is representative of the underlying soundscape at the receptor location.

A statistical analysis of the measured LA90 results during the proposed operating times of the proposed equipment is shown in Figure 3 below, following guidance set out in the Standard.

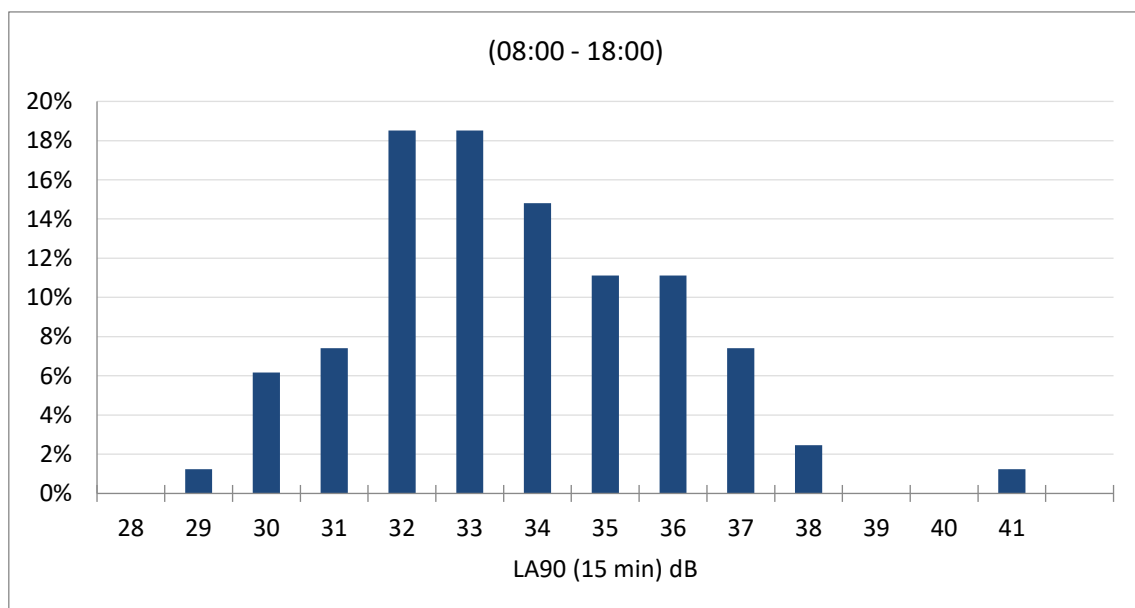


Figure 3: Statistical analysis of measured LA90 sound levels during the assessment period

Based on the statistical analysis of the survey results, the author considers a level of LA90 32dB is representative of the background sound level in the vicinity.

Summary results of the survey are provided in Table 4 below.

Receptor	Period	Background Sound Level During Operating Period LA90
NSR1	08:00 to 18:00	32dB

Table 4: Summary sound level survey results

5. ACOUSTIC ASSESSMENT

The development includes the installation of new air conditioning units. Confirmation of the equipment models used in the assessment is provided in Table 5 below.

Description	Equipment Model	Airflow (m3/s)	Sound Level (LwA)	Quantity
AC unit	Mitsubishi SUZ-M60VA	N/A	65dB	3

Table 5: Proposed new mechanical equipment used in the assessment

A computer model has been used to calculate the noise contribution from the proposed plant to outside nearest noise-sensitive windows, using manufacturer's published sound data for the proposed new plant. Environmental corrections have been calculated in accordance with ISO 9613-2.

The assessment has been undertaken using drawing reference JHP RS453-004 Revision A, annotated by the client to indicate the condenser units location (as shown in Figure 1), as provided by the client.

The cumulative calculated specific sound level to outside the most sensitive receptors with all equipment operating is shown in Table 6 below. Summary printouts from the calculation models are included in Appendix A.

Receptor Location	Calculated Equipment Sound Level (All plant operating)	Excess beneath background sound level
NSR1	18dBA	-14dB

Table 6: Calculated cumulative equipment sound levels at 1m outside noise-sensitive windows

The calculated specific sound level is at least 10dB below the measured background sound level, achieving the first requirement of EN17.

Assessment of the calculated rating levels in accordance with BS 4142:2014+A1:2019 is provided in Table 7 below.

Description	R1 Receptor (All Plant)	Relevant Clause	Commentary
Calculated specific sound level to receptor	LAeq 18dB	7.1 7.3.6	New equipment operating. Refer to calculation sheets in Appendix A.
Background sound level	LA90 32dB	8.1.3 8.3	Measured representative background sound level.
Acoustic feature correction	0dB	9.2	The calculations do not indicate any tonal characteristics and the specific sound level is significantly beneath the measured background sound level, so any remaining acoustic characteristics will not be identifiable over the acoustic climate.
Rating level	LAr 18dB	9.2	
Excess of rating level over background sound level	-14dB	11	Assessment indicates a low likelihood of adverse impact

Table 7: Assessment of results in accordance with BS 4142:2014+A1:2019

Table 7 shows the rating level of the proposed new equipment will not exceed the background LA90 sound level to outside the closest noise-sensitive properties.

BS 4142:2014+A1:2019 requires an assessment to consider the context of the development, rather than simply adhering to numerical values. Considering the calculated numerical value of the specific sound, allowing a reduction through partially open windows of 15dBA, as recommended in BS 8233:2014, sound levels inside the neighbouring dwellings due to the proposed new equipment will be approximately 3dBA (29dBA – 15dBA). This is significantly below guideline levels for resting in living rooms and bedrooms of LAeq 35dB, set out in BS 8233:2014 and is further confirmation that sound levels from the new mechanical equipment should not be detrimental to the amenity of any noise-sensitive receptors in the vicinity.

Additionally, the proposals involve new items of mechanical equipment being introduced to an area with other commercial and retail uses in the vicinity. In this scenario, the change in acoustic character, and subsequent potential for loss of amenity, is lower than if, say, there were no other similar businesses in the area.

The author considers that the context of the assessment does not alter the initial estimate of the impact, and that sound levels from the new mechanical equipment should not be detrimental to the amenity of any residential occupiers in the vicinity

6. ACOUSTIC MITIGATION TREATMENTS

As discussed in Section 5, noise control treatments have been included in the calculation model. Acoustic specification for the mitigation scheme is provided below.

6.1. Vibration Isolators

To control the potential for structure-borne noise and vibration from the mechanical equipment affecting the adjoining commercial occupants, it is recommended that the plant is installed on vibration isolators.

Suitable vibration isolators for the condensers are typically rubber or neoprene turret type mounts or pads, providing minimum 8mm deflection at the working load. The isolator supplier should ensure their selection is suitable allowing for the condenser operating speed, point load, and installation location.

7. CONCLUSION

A planning application is to be submitted for the installation of new mechanical plant and equipment associated with an industrial unit at Unit 52 Milford Commercial Estate, Reading.

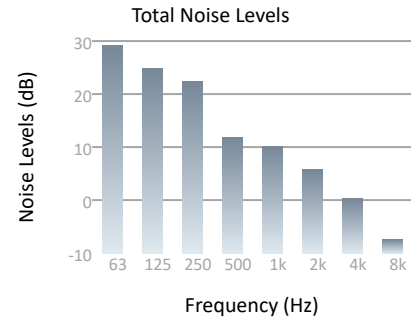
ACA Acoustics have undertaken an assessment of noise from the proposed equipment using manufacturer's published acoustic data. Calculated specific sound levels are at least 10dB below the measured background sound levels, and rating sound levels for the plant does not exceed the background sound level during proposed operating times of the equipment when assessed at 1m from the closest noise-sensitive windows of residential receptors.

The author considers that allowing for the proposed mitigation scheme in this report, the proposed equipment achieve the Local Authority's planning requirements for this development and will not be detrimental to the amenity of nearby noise-sensitive occupants.

Appendix A

Acoustic Calculations

Project Name	52 Milford Commercial Estate, Reading
Project Reference	250614
Reference	24 Denbeigh Place
Description	
Noise Limit	-
dBA	17.6



Calculated Lp at Receptor

Reference	Quantity	Noise Levels (dB)							
		63	125	250	500	1k	2k	4k	8k
CUs	1	24.4	20.1	17.6	7.1	5.4	1.0	-4.5	-12.1
CUs	1	24.4	20.1	17.6	7.1	5.4	1.0	-4.5	-12.1
CUs	1	24.4	20.1	17.6	7.1	5.4	1.0	-4.5	-12.1

250614-ER-1-R001A

Calculation Sheet

CUs to 24 Denbeigh Place

	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Noise Source								
Noise Source - CUs								
Sound Power Levels	69.0	68.0	69.0	60.0	59.0	55.0	50.0	44.0
Noise Control Treatments								
Treatment - none								
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dc - Condenser Directivity								
	6.0	5.4	4.7	4.1	3.5	3.2	3.2	3.2
Adiv - Geometrical Divergence								
	-37.0	-37.0	-37.0	-37.0	-37.0	-37.0	-37.0	-37.0
Aatm - Atmospheric Absorption								
	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.7	-2.3
Agr - Ground Attenuation								
	3.0	1.3	-0.8	-0.1	1.3	1.5	1.5	1.5
Abar - Barrier Attenuation								
	-16.6	-17.5	-18.3	-19.9	-21.3	-21.5	-21.5	-21.5
External Receiver								
External Receiver - 24 Denbeigh Place								
Sound Pressure, Lp:	24.4	20.1	17.6	7.1	5.4	1.0	-4.5	-12.1

Calculation Sheet

CUs to 24 Denbeigh Place

	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Noise Source								
Noise Source - CUs								
Sound Power Levels	69.0	68.0	69.0	60.0	59.0	55.0	50.0	44.0
Noise Control Treatments								
Treatment - none								
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dc - Condenser Directivity								
	6.0	5.4	4.7	4.1	3.5	3.2	3.2	3.2
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Calculation Sheet

CUs to 24 Denbeigh Place

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Noise Source - CUs								
Sound Power Levels	69.0	68.0	69.0	60.0	59.0	55.0	50.0	44.0
Noise Control Treatments								
Treatment - none								
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	6.0	5.4	4.7	4.1	3.5	3.2	3.2	3.2
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