

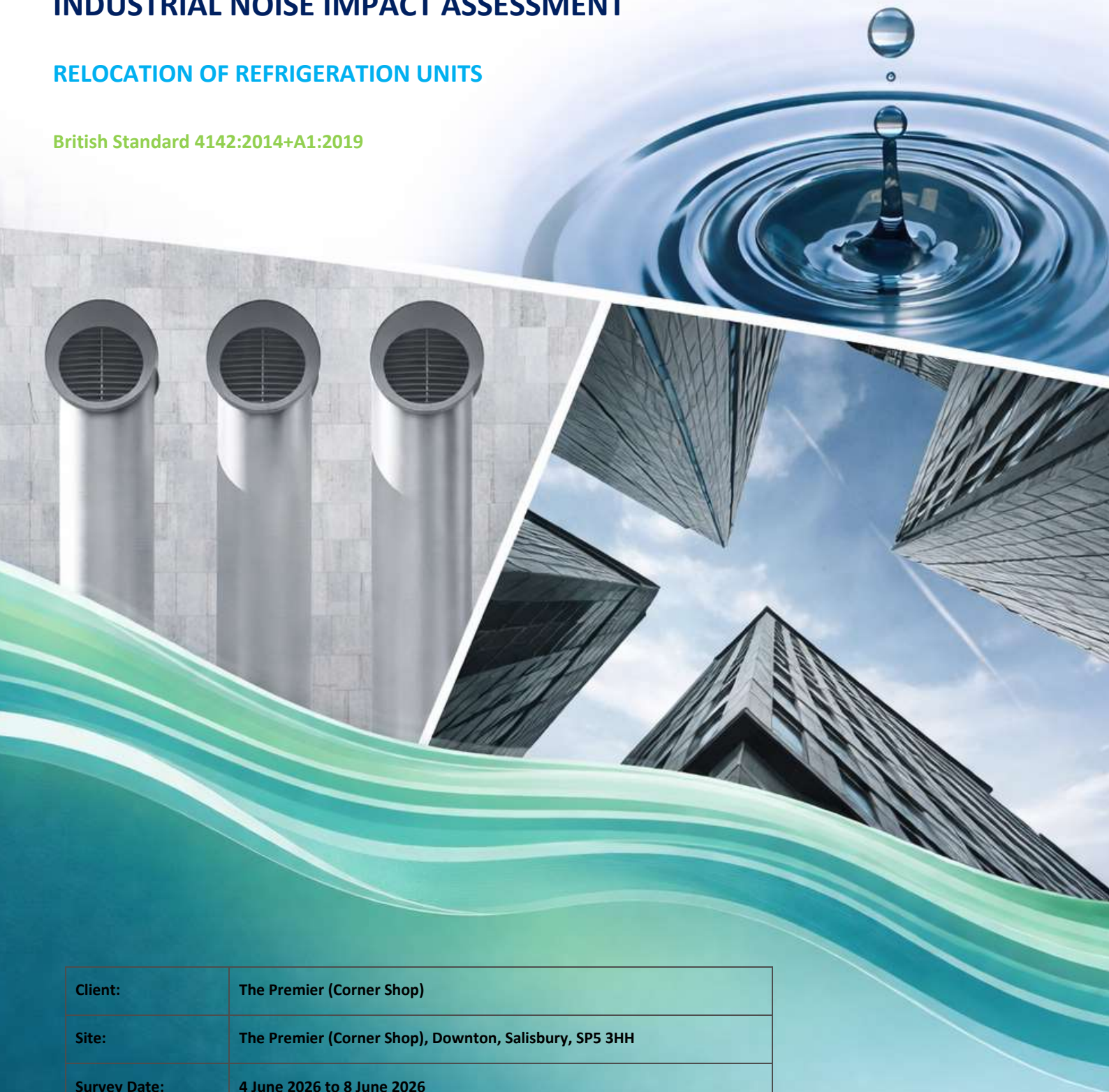


IMP8150

INDUSTRIAL NOISE IMPACT ASSESSMENT

RELOCATION OF REFRIGERATION UNITS

British Standard 4142:2014+A1:2019



Client:	The Premier (Corner Shop)
Site:	The Premier (Corner Shop), Downton, Salisbury, SP5 3HH
Survey Date:	4 June 2026 to 8 June 2026
Report by:	I.Broom aMIOA

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Version History

Version	Date	Author	Summary of changes
1.0	June 2026	I. Broom aMIOA	Original
1.1	September 2026	I. Broom aMIOA	Public Protection response revision - strict background/weather reanalysis, 3.0 m wall, unmitigated and source sensitivity cases.

1 EXECUTIVE SUMMARY

1.1 Instruction

Impact Acoustics Ltd has been instructed to prepare a revised noise impact assessment for the proposed relocation of existing refrigeration condensing plant serving The Premier / Corner Shop, The Headlands, Downton, Salisbury, SP5 3HH. The assessment has been prepared to support a revised planning submission following refusal of application PL/2026/01885, where Wiltshire Council identified insufficient information regarding night-time fixed-plant noise and residential amenity.

1.2 Scope of Report

The report considers two existing J&E Hall JEHS-0300-B2-M-1 refrigeration condensing units. The current installation has the two units vertically stacked in a narrow rear enclosure. The revised proposal is to relocate the units to the low-level bin-store area, mounted side-by-side on floor supports and discharging east. The client does not wish to enclose the plant, so the assessment relies on relocation, low source height, a continuous 3.0 m masonry acoustic wall, operating control and post-installation verification.

The assessment has been undertaken on an octave-band basis using the manufacturer octave-band sound pressure data from the J&E Hall datasheet. The manufacturer single-unit A-weighted sound pressure level of 56 dB(A) at 1 m is consistent with the site check measurement of approximately 59 dB(A) at 1 m with both units operating, because two equal sources add logarithmically by approximately 3 dB. A $Q=2$ / +3 dB directivity correction has been included for the proposed low-level ground-mounted arrangement.

1.3 Summary of Background Noise Measurement

Background sound monitoring was undertaken between 4 and 8 June 2026. Following the Public Protection review, the raw dataset has been reprocessed using a stricter screening approach. Incomplete/overload records are excluded and, because no contemporaneous on-site meteorological station was deployed, the entire 8 June dataset is excluded from representative-background selection. The resulting 4-7 June dataset gives representative levels of 46 dB LA90 daytime, 42 dB LA90 evening, 30 dB LA90 during 23:00-06:00 and 38 dB LA90 during 06:00-07:00.

1.4 Summary of Assessment and Mitigation

The governing receptor is the first-floor rear bedroom window overlooking the relocation area. The revised design requires two JEHS-0300-B2-M-1 condensers side-by-side at low level and a continuous minimum 3.0 m masonry acoustic wall. Both units are assessed during daytime/evening and 06:00-07:00; one unit is assessed during 22:00-06:00. The central night-time rating level is 29.4 dB LA_{r,Tr} against 30 dB LA90 background, with +3 dB and +5 dB source-output sensitivity cases also assessed.

Scenario	Units operating	Specific level	Correction	Rating level	Background	Difference	Outcome
Daytime 07:00-19:00	2	27.4	+5	32.4	46	-13.6	Low Impact
Evening 19:00-22:00	2	27.4	+5	32.4	42	-9.6	Low Impact
Late evening 22:00-23:00	1	24.4	+5	29.4	42	-12.6	Low Impact
Night 23:00-06:00	1	24.4	+5	29.4	30	-0.6	Low Impact central case
Early morning 06:00-07:00	2	27.4	+5	32.4	38	-5.6	Low Impact

1.5 Executive Summary Conclusion

Subject to the relocation being implemented as assessed, including a continuous minimum 3.0 m high masonry acoustic wall, the central night-time one-unit rating level is approximately 29.4 dB L_{Ar,Tr}, 0.6 dB below the adopted 30 dB L_{A90} background. A +3 dB source-output sensitivity gives +2.4 dB relative to background and a +5 dB sensitivity gives +4.4 dB, remaining below the BS4142 around +5 dB adverse-impact indication. Post-installation verification remains an integral control.

2 CRITERION

2.1 National Planning Policy Framework and Noise Policy Statement for England

The National Planning Policy Framework requires planning decisions to ensure that development is appropriate for its location, taking account of the likely effects of pollution, including noise, on health, living conditions and the natural environment. Development should mitigate and reduce to a minimum potential adverse noise impacts and avoid significant adverse effects. The Noise Policy Statement for England sets the policy aims of avoiding significant adverse effects on health and quality of life, mitigating and minimising adverse effects, and where possible contributing to improvements in health and quality of life.

These policy aims are expressed through three recognised effect-level thresholds: the no observed effect level (NOEL), the lowest observed adverse effect level (LOAEL) and the significant observed adverse effect level (SOAEL). The BS4142 assessment summary tables in this report (Sections 1.4 and 9) are colour-coded against this framework, as set out below.

Effect level	Meaning	Policy response	Colour used in this report
No observed effect level (NOEL)	No effect on health or quality of life	No specific measures required	Green - at or below background / low impact
Between NOEL and LOAEL	Noise noticeable but not intrusive	Good design; no adverse effect expected	Lemon - marginal / within uncertainty
Lowest observed adverse effect level (LOAEL)	Noise noticeable and intrusive	Mitigate and minimise adverse effects	Amber - around +5 dB above background
Significant observed adverse effect level (SOAEL)	Noise causes material change in behaviour	Avoid - significant adverse impacts should not occur	Red - around +10 dB or more above background

2.2 Wiltshire Planning and Local Policy Context

The site falls within Wiltshire Council. The previous decision notice for PL/2026/01885 refused retrospective permission because the submitted assessment was not considered compliant with Wiltshire Council Noise and Planning Technical Guidance and did not demonstrate that residential amenity would be adequately protected during night-time operation. The refusal reason cited paragraph 198 of the NPPF and Wiltshire Core Policy 57, which requires development to have regard to the amenities of existing occupants, including the consideration of noise pollution. This report has therefore been prepared to address the refusal reason directly, not merely to provide a generic plant-noise calculation.

Wiltshire Council Noise and Planning Technical Guidance V.1 (October 2023) supports the application of BS4142:2014+A1:2019 to industrial and commercial sound, including fixed building services or commercial plant where noise-sensitive premises may be affected. The present report has therefore been prepared as a full BS4142 fixed-plant assessment and includes representative background selection, explicit daytime/evening/night criteria, octave-band source propagation, character correction, barrier calculation, uncertainty and a clear mitigation/control specification.

The assessment has therefore been written as a compliance document as well as a calculation report. The table below signposts how the report addresses the policy and guidance items that were material to the previous refusal.

Policy / guidance item	Relevant requirement	How this report addresses it
NPPF paragraph 198	Avoid significant adverse effects and mitigate/minimise adverse noise impacts.	Full BS4142 fixed-plant assessment, required masonry wall, conservative character correction and verification requirement.
NPSE	Avoid significant adverse effects; mitigate and minimise adverse effects where they occur.	Low Impact target adopted where practicable; night-time residual effect considered with context and verification.
Wiltshire Core Policy 57	Development to have regard to the amenity of existing occupants, including noise pollution.	Nearest residential windows identified and assessed; first-floor bedroom treated as governing receptor.

Policy / guidance item	Relevant requirement	How this report addresses it
Wiltshire Noise and Planning Technical Guidance V.1	Noise assessment to be appropriate to source, receptor and context, using relevant standards.	BS4142:2014+A1:2019 used; source data, background, character, mitigation, uncertainty and reporting information provided.
Previous refusal PL/2026/01885	Previous submission did not demonstrate adequate night-time residential amenity protection.	Revised scheme relocates plant to low level, requires masonry wall, assesses day/evening/night/early morning and includes full barrier working.

2.3 British Standard 4142:2014+A1:2019 Methodology

British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound, is the principal assessment method for the refrigeration condensing units. The standard compares the rating level of the specific sound source at the receptor with the representative background sound level. The rating level is the specific sound level plus any appropriate acoustic feature corrections for tonality, impulsivity, intermittency or other distinctive characteristics.

Rating level relative to background	BS4142 initial indication	Application in this report
At or below background	Low Impact	Target design outcome where practicable.
Around +5 dB	Adverse Impact	Requires context and mitigation review.
Around +10 dB or more	Significant Adverse Impact	Not acceptable for this residential receptor context.

2.4 Character Correction

A +5 dB acoustic character correction has been adopted at design stage. This comprises +2 dB for just perceptible tonal character and +3 dB for intermittency/distinctiveness, reflecting potential fan/compressor tonality, refrigeration cycling and start/stop behaviour. This is deliberately more conservative than the previous Hayes McKenzie assessment, which applied no character correction, and is appropriate for a refusal-response assessment where night-time residential amenity is the key issue.

2.5 Relevance of IOA Air Source Heat Pump Guidance

The IOA/CIEH/ANC air source heat pump guidance has not been used as the governing assessment framework because the source is commercial refrigeration condensing plant rather than domestic or non-domestic ASHP/AAHP plant. The principal framework remains Wiltshire Council noise guidance and BS4142. However, relevant good-practice principles are consistent: source selection, cumulative operation, low-noise control, receptor proximity, acoustic character, uncertainty and verification should all be addressed. Those principles are reflected in the mitigation and verification recommendations.

2.6 Adopted Criterion

The adopted design criterion is that the calculated BS4142 rating level should not normally exceed the representative background sound level for the relevant operating period. Given the previous refusal and the night-time sensitivity of the nearest dwellings, the assessment also considers absolute level, acoustic character, barrier robustness and the need for post-installation verification.

Operating period	Units assumed	Representative background adopted	Low impact target	Comment
Daytime 07:00-19:00	2 units	46 dB LA90	Rating <= 46 dB LAr,Tr	Both units may operate.
Evening 19:00-22:00	2 units	42 dB LA90	Rating <= 42 dB LAr,Tr	Both units may operate until 22:00.
Late evening 22:00-23:00	1 unit	42 dB LA90	Rating <= 42 dB LAr,Tr	Only 24/7 unit assumed.
Night 23:00-06:00	1 unit	30 dB LA90	Rating should remain below adverse threshold and be low in absolute terms	Most sensitive period.
Early morning 06:00-07:00	2 units	38 dB LA90	Rating <= 38 dB LAr,Tr	Lower mode / 10th-percentile adopted conservatively.

3 SITE LOCATION AND CONTEXT

3.1 General Site Description and Response to Refusal

The site comprises The Premier / Corner Shop, The Headlands, Downton, Salisbury, SP5 3HH. The surrounding context includes residential accommodation immediately adjacent to the rear service area and road traffic associated with The Headlands, Salisbury Road/A338 and Long Close West. The previous application was refused because the submitted assessment did not provide sufficient evidence that the installed plant would protect residential amenity during the night-time period.

The revised scheme is materially different from the previously assessed arrangement. The plant is to be relocated from the existing stacked position to a lower-level side-by-side arrangement within the bin-store area, with fan discharge directed east and with a robust 3.0 m masonry acoustic wall replacing reliance on close-board timber fencing. The design reduces source height, improves barrier geometry and provides a more durable mitigation measure capable of being controlled by planning condition.

The table below summarises the principal differences between the previously assessed arrangement and the revised scheme. This is important because the current report is not simply a re-presentation of the earlier design; it assesses a materially altered mitigation strategy intended to address the refusal reason.

Issue	Previous assessed arrangement	Revised IMP8150 arrangement
Plant arrangement	Two JEHS units vertically stacked in rear enclosure.	Two JEHS units side-by-side at low level on floor mounts.
Source height	Upper fan elevated relative to boundary screening.	Low-level fan centres, assessed at 0.55 m source height.
Mitigation relied upon	Previous report recommended upgraded enclosure/roofed structure and one-unit night restriction.	No plant enclosure relied upon; continuous 3.0 m masonry acoustic wall is required and one-unit core-night operation retained.
Screening robustness	Timber/fenced enclosure and proposed upgrade vulnerable to detail and airflow concerns.	Masonry wall is durable, imperforate, enforceable and assessed by octave-band path-difference calculation.
Character correction	Hayes McKenzie applied 0 dB character penalty.	Impact Acoustics adopts +5 dB (+2 dB tonal +3 dB intermittency/distinctiveness).
Night-time evidence	Previous application refused because adequate night-time protection was not demonstrated.	Separate 23:00-06:00 one-unit and 06:00-07:00 two-unit scenarios assessed against representative background data.

3.2 Noise-Sensitive Receptors

Noise-sensitive receptors have been identified from the supplied site photographs, aerial imagery and site context information. Figure 1 is used to show the two receptor windows directly overlooking the proposed low-level plant area. Figure 2 is used only as a wider site-context figure and not as the basis for the barrier calculation. The first-floor rear bedroom window is treated as the governing receptor because it has the clearest potential exposure to the proposed plant area and the lowest margin of acoustic benefit from the 3.0 m wall. Ground-floor receptors benefit from substantially greater barrier screening.

Ref	Description	Height used	Assessment role
R1	First-floor rear bedroom window to adjacent dwelling	4.5 m	Governing receptor.
R2	Ground-floor rear habitable room/window	1.5 m	Screened by 3.0 m wall.
R3	Western residential window/rear elevation	4.5 m	Cross-check receptor.
R4	Dwelling across access/car park	4.5 m	Distance cross-check.
R5	North-east dwelling/window context	4.5 m	Distance cross-check.



Figure 1: Existing bin-store / proposed relocation area. The two proposed JEHS condensers will replace the bins at low level, side-by-side on floor mounts, with fan discharge directed towards the photographer/east. The acoustic design requirement is a separate minimum 3.0 m continuous masonry wall on the assessed boundary alignment; this photograph is not a scaled construction elevation.



3.3 Contextual Acoustic Environment

The acoustic environment is influenced by local road traffic, residential activity, car park movements and service-yard activity. Background sound levels reduce materially at night, making the 23:00-06:00 one-unit scenario the most sensitive BS4142 condition. The early-morning 06:00-07:00 period is treated separately because background levels increase during that hour and the second unit may begin operation from 06:00.

4 APPARATUS AND MEASUREMENT METHODOLOGY

4.1 Background Noise Measurement Position

The background sound measurement position was located in the rear external area identified by the yellow marker on Figure 2. Figure 2 is retained specifically to make the monitoring location unambiguous. The position represents the residual acoustic environment affecting the nearest residential receptors while remaining separate from the proposed relocated plant.

4.2 Instrumentation

The measurement system used for the survey was a Pulsar Instruments Quantifier Model 91 Class 1 sound level meter, serial C22528, compliant with IEC 61672-1. The uploaded measurement workbook identifies the same instrument and serial number. The meter was calibrated before and after the measurement period and no significant calibration drift was recorded; calibration certificates are available upon request.

Description	Make	Type	Serial No.	Class / standard	Dataset metadata	QA status
Integrated sound level meter	Pulsar Instruments	Quantifier Model 91	C22528	Class 1 / IEC 61672-1	Recal. due 18/09/26	Calibrated before and after the survey; no significant drift recorded.
Microphone / pre-amplifier	Pulsar Quantifier system	Class 1 system components	Associated with C22528	Model 91 Class 1 system	Integral to the Model 91 Class 1 system.	Covered by the same calibration record as the integrated meter.
Field calibration	Project survey record	Pre/post survey	-	IEC 60942 calibrator normally applicable	Undertaken before and after the survey per standard field protocol.	No significant drift recorded; certificate available upon request.

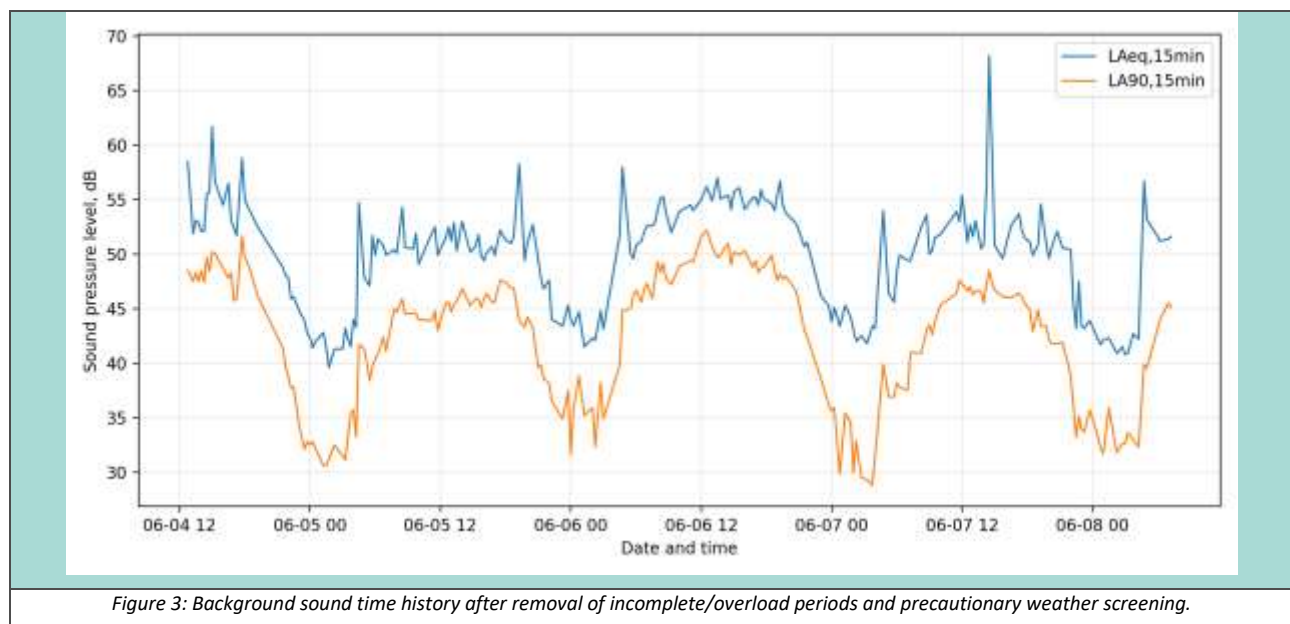
5 BACKGROUND NOISE LEVELS

5.1 Weather Review and Data Screening

The measurement dataset covered 4 to 8 June 2026. No site-specific meteorological station was deployed. Historical observations reviewed for the wider Salisbury/Netheravon area identify rain/light rain on 8 June. The entire 8 June acoustic dataset is therefore excluded from representative-background selection. The retained 4-7 June dataset contains 333 complete 15-minute records after removal of incomplete/overload measurements. This whole-day exclusion is intentionally conservative.

5.2 Measurement Results

Period	Clock time	No. 15-min periods	Energy average LAeq	Mean LA90	Median LA90	Rounded modal LA90	10th percentile LA90	Minimum LA90
Daytime	07:00-19:00	169	54.3	46.9	46.8	46	43.8	37.5
Evening	19:00-23:00	64	51.3	41.9	42.3	43	37.8	33.2
Night	23:00-06:00	88	47.4	35.5	35.4	36	30.6	28.3
Early morning	06:00-07:00	12	50.2	41.9	41.4	38	37.8	37.8



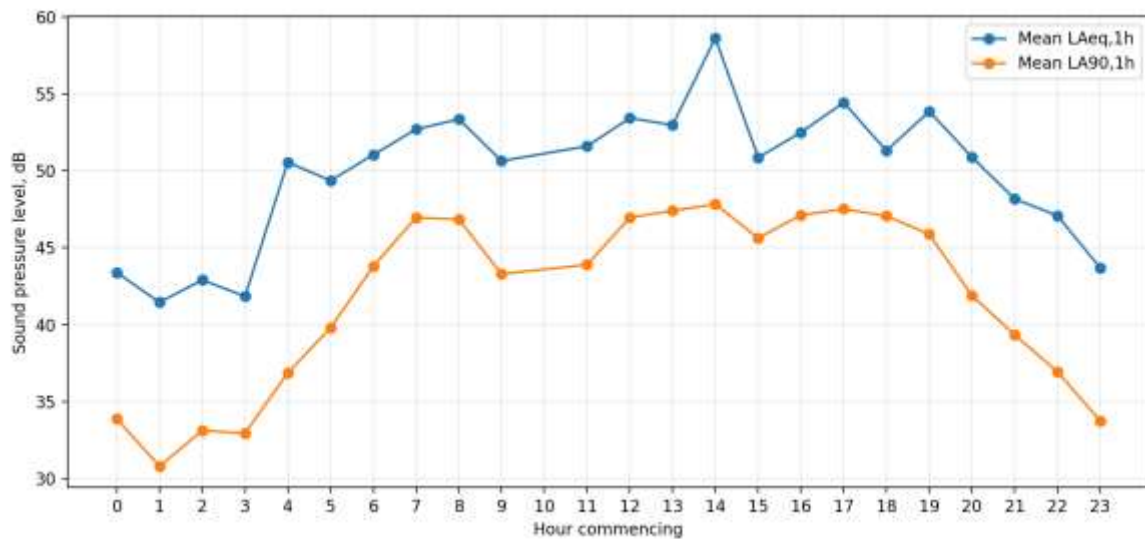


Figure 4: Average diurnal acoustic profile showing mean LAeq,1h and LA90,1h by hour commencing.

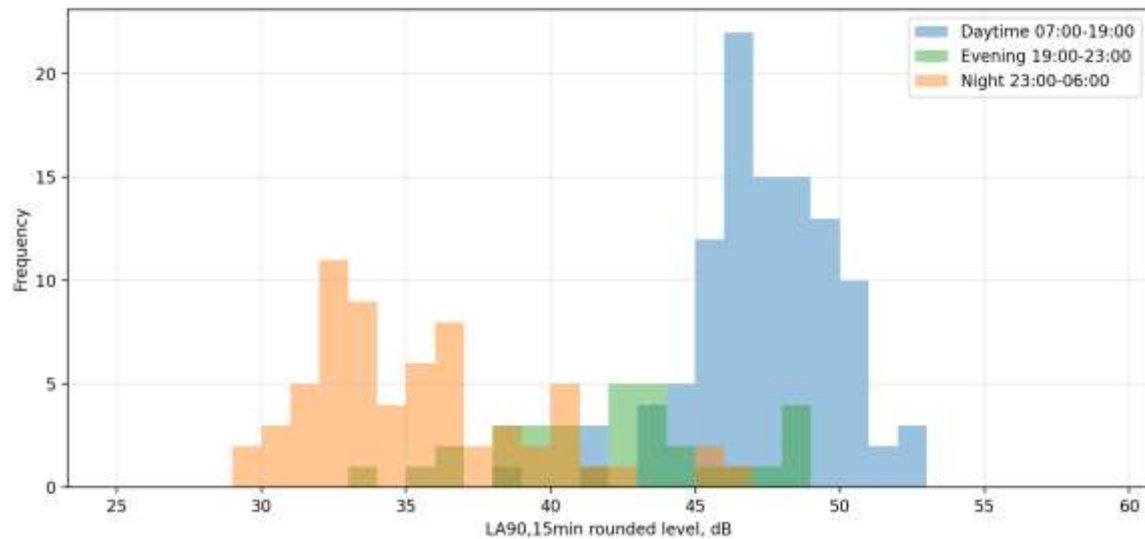


Figure 5: Distribution of LA90,15min values for daytime, evening and night periods.

5.3 Comparison with Hayes McKenzie Background Data

The previous Hayes McKenzie report measured between 8 and 19 January 2026 and adopted 42 dB LA90 for daytime and 27 dB LA90 for night-time assessment. The current Impact Acoustics dataset is generally in line with the previous survey in showing a road-traffic-influenced daytime/evening environment and a much quieter night-time background, but the current daytime and evening LA90 values are higher. Given the previous refusal, the present assessment does not rely on elevated short-term weather/activity periods and adopts a conservative night-time criterion.

The two datasets are sufficiently consistent for planning purposes. The Impact Acoustics survey is not materially lower than the Hayes McKenzie survey; if anything, daytime and evening background levels are higher, while the adopted core-night criterion remains deliberately conservative and close to the lower part of the previous Hayes McKenzie night-time dataset. This avoids overstating the available masking environment and directly responds to the refusal concern regarding night-time amenity.

Comparison item	Technical interpretation
Daytime	Impact Acoustics adopts 46 dB LA90 compared with Hayes McKenzie 42 dB LA90. The difference is reasonable given different survey dates/seasons and road-influenced local activity.
Evening	Impact Acoustics adopts 42 dB LA90; this is higher than Hayes McKenzie evening average, but the assessment still requires a rating level at or below this criterion and does not rely on a marginal result.
Night	Impact Acoustics adopts 30 dB LA90 for 23:00-06:00, only 3 dB above Hayes McKenzie's conservative 27 dB adopted night value and below Hayes McKenzie's 31.2 dB average night LA90.
Overall	The background climate is broadly in line with the earlier assessment and confirms a road-influenced rear environment, but the revised report uses conservative night selection and a robust mitigation design.

Period	Hayes McKenzie reported background	Impact Acoustics comparison / conclusion
Daytime 07:00-19:00	42.3 dB LA90 average; 42 dB LA90 adopted	Impact data modal 46 dB LA90; higher than Hayes by approx. 4 dB. This is still comparable for a road-influenced rear setting, but 46 dB is used only for daytime.
Evening 19:00-23:00	35.9 dB LA90 average	Impact data median/mode around 42 dB LA90. Evening data are higher than Hayes, likely reflecting survey-period/local activity variation.
Night 23:00-07:00	31.2 dB LA90 average; 27 dB LA90 adopted	Impact data night mode around 32 dB LA90; adopted 30 dB LA90 is deliberately conservative and closer to the lower part of the dataset/refusal context.

5.4 Representative Background Selection

In accordance with BS4142, representative background levels are selected from the distribution rather than the absolute minimum. Daytime 46 dB LA90 is supported by the dominant rounded mode. Evening 42 dB LA90 is slightly below the 42.3 dB median. Core night 30 dB LA90 is deliberately conservative and close to the 30.6 dB 10th percentile. For 06:00-07:00 the previous 44 dB value is withdrawn. The revised criterion is 38 dB LA90, matching the lower rounded mode and the 37.8 dB 10th-percentile value.

6 OPERATION OF SITE AND SOURCE DATA

6.1 Plant Description and Source Data Reconciliation

The assessed plant comprises two J&E Hall JEHS-0300-B2-M-1 refrigeration condensing units. The manufacturer specification gives 56 dB(A) at 1 m per unit and octave-band sound pressure levels from 125 Hz to 8 kHz. These manufacturer data remain the primary source input. The supplementary approximately 59 dB(A) at 1 m observation with both units is consistent with logarithmic addition of two 56 dB(A) sources but is treated only as corroborative evidence because exact duty, meteorology and measurement time were not fully documented. The governing night case is therefore additionally assessed at +3 dB and +5 dB above the manufacturer octave-band source terms.

Input	Value	Use in assessment
Single-unit manufacturer level	56 dB(A) at 1 m	Primary source term.
Two-unit logarithmic check	59.0 dB(A) at 1 m	Theoretical equal-source sum.
Supplementary attended observation	Approx. 59 dB(A) at 1 m	Corroborative only.
Source-output sensitivity	+3 dB and +5 dB	Tests elevated refrigeration duty.
Directivity correction	Q=2 / +3 dB	Applied to low-level arrangement.
Proposed arrangement	Side-by-side, floor mounted, discharge east	Assessed design condition.

6.2 Octave-Band Source Data

Octave band, Hz	Single-unit linear octave SPL at 1 m	A-weighted contribution / check
125	61.3	45.2
250	57.4	48.8
500	53.6	50.4
1000	50.2	50.2
2000	47.5	48.7
4000	39.3	40.3
8000	32.0	30.9
Superseded uncertainty treatment	Replaced by component uncertainty review and explicit +3 dB / +5 dB source-output and no-barrier sensitivity testing.	

6.3 Operating Periods

Period	Operating assumption	Reason
07:00-19:00 daytime	Both units operating	Worst-case daytime.
19:00-22:00 evening	Both units operating	Second unit operates until 22:00.
22:00-23:00 late evening	One unit operating	24/7 unit only.
23:00-06:00 night	One unit operating	24/7 unit only.
06:00-07:00 early morning	Both units operating	Second unit can restart from 06:00.

7 MITIGATION AND OPERATIONAL CONTROL

7.1 Required Masonry Acoustic Wall

The assessment requires a continuous minimum 3.0 m high masonry acoustic wall around the proposed plant area. The increase from the earlier 2.0 m concept is derived from the octave-band path-difference calculation for the governing first-floor receptor. At 3.0 m the central one-unit night-time rating level is approximately 29.4 dB L_{Ar,Tr}, below the adopted 30 dB LA₉₀ background. Existing timber fencing is not relied upon acoustically.

The wall is not an acoustic enclosure over the plant. It is a boundary screening measure. Adequate airflow, heat rejection, access, maintenance clearances and safe discharge path must be confirmed by the refrigeration installer. The plant shall remain side-by-side at low level with fan discharge directed east, unless any revised arrangement is acoustically reviewed.

7.2 Minimum Control Specification

Control item	Minimum requirement
Masonry wall	Continuous minimum 3.0 m high imperforate masonry acoustic wall around the proposed plant area, built to the assessed alignment; timber fencing is not relied upon.
Plant position	Two JEHS-0300-B2-M-1 units side-by-side at low level on floor mounts, discharging east.
Operation	One unit may operate 24/7; second unit limited to 06:00-22:00.
Vibration control	Suitable anti-vibration mounts/fixings to avoid structure-borne noise. No airborne acoustic reduction is credited for mounts.
Post-installation verification	BS4142 verification measurement and subjective character review at representative receptor/near-field positions.

8 ASSESSMENT METHODOLOGY

8.1 Propagation Method

The assessment has been undertaken on an octave-band basis. The manufacturer 1 m octave-band sound pressure levels are used as the source basis. Propagation to each receptor includes distance divergence from 1 m, $Q=2$ / +3 dB directivity, octave-band diffraction over the proposed minimum 3.0 m masonry wall, A-weighting and logarithmic recombination. No ground absorption, atmospheric absorption or timber-fence attenuation has been credited.

8.2 Barrier Calculation Method

Barrier attenuation has been calculated separately by octave band from source-wall-receptor geometry using a source acoustic centre height of 0.55 m, 3.0 m wall height, 1.5 m ground-floor receptor height and 4.5 m first-floor receptor height. Path difference is converted to Fresnel number $N = 2 \Delta / \text{wavelength}$ and diffraction loss $D_z = 10 \log_{10}(3 + 20N)$, capped at 20 dB. No beneficial ground, atmospheric or timber-fence attenuation is credited.

Parameter	Symbol	Value / method
Source height	hs	0.55 m
Wall height	hb	3.0 m
Direct path	d	$\sqrt{(d_1+d_2)^2+(h_r-h_s)^2}$
Diffacted path	a+b	$\sqrt{d_1^2+(h_b-h_s)^2}+\sqrt{d_2^2+(h_r-h_b)^2}$
Path difference	delta	$(a+b)-d$
Fresnel number	N	$2 \Delta / \text{wavelength}$
Barrier loss	Dz	$10 \log_{10}(3+20N)$, capped at 20 dB

9 CALCULATIONS AND ASSESSMENTS

9.1 Source and Receptor Summary

Receptor	Scenario	Source-receiver distance m	Path difference m	Specific level	Rating level
R1 first-floor rear bedroom	2 units	7.86	0.898	27.4	32.4
R1 first-floor rear bedroom	1 unit	7.86	0.898	24.4	29.4
R2 ground-floor rear	2 units	6.37	1.907	27.2	32.2
R2 ground-floor rear	1 unit	6.37	1.907	24.2	29.2
R3 western window	2 units	10.01	0.855	25.5	30.5
R3 western window	1 unit	10.01	0.855	22.5	27.5
R4 across access	2 units	14.07	0.900	22.4	27.4
R4 across access	1 unit	14.07	0.900	19.3	24.3
R5 north-east	2 units	11.88	0.964	23.6	28.6
R5 north-east	1 unit	11.88	0.964	20.6	25.6

9.2 Governing Receptor Octave-Band Calculation

Hz	1 unit SPL @1m	2 units SPL @1m	Barrier loss	2-unit receptor linear	2-unit A-wtd	1-unit receptor linear	1-unit A-wtd
125	61.3	64.3	12.1	37.3	21.2	34.3	18.2
250	57.4	60.4	14.7	30.8	22.2	27.8	19.2
500	53.6	56.6	17.4	24.3	21.1	21.3	18.1
1000	50.2	53.2	20.0	18.3	18.3	15.3	15.3
2000	47.5	50.5	20.0	15.6	16.8	12.6	13.8
4000	39.3	42.3	20.0	7.4	8.4	4.4	5.4
8000	32.0	35.0	20.0	0.1	-1.0	-2.9	-4.0
A-total	56.0	59.0	-	27.4	-	24.4	-

9.3 Barrier Path-Difference Calculations

Receptor	d1	d2	hr	Path a	Path b	Direct path	delta	Indicative Dz
R1 governing	0.80	6.00	4.5	2.58	6.18	7.86	0.898	20 dB @1kHz capped
R2 ground floor	0.80	5.50	1.5	2.58	5.70	6.37	1.907	20 dB @1kHz capped
R3 west	1.20	8.00	4.5	2.73	8.14	10.01	0.855	20 dB @1kHz capped
R4 access	1.50	12.00	4.5	2.87	12.09	14.07	0.900	20 dB @1kHz capped
R5 north-east	1.20	10.00	4.5	2.73	10.11	11.88	0.964	20 dB @1kHz capped

Governing receptor worked example: the R1 first-floor bedroom calculation uses $d_1 = 0.80$ m, $d_2 = 6.00$ m, $h_s = 0.55$ m, $h_b = 3.00$ m and $h_r = 4.50$ m. The diffracted path is $\sqrt{0.80^2 + 2.45^2} + \sqrt{6.00^2 + 1.50^2} = 2.58$ m + 6.18 m = 8.76 m. The direct path is $\sqrt{6.80^2 + 3.95^2} = 7.86$ m. The path difference is therefore 0.898 m. This path difference is then converted to octave-band diffraction attenuation, giving 12.1 dB at 125 Hz, 14.7 dB at 250 Hz, 17.4 dB at 500 Hz and 20.0 dB at 1 kHz, with higher-frequency attenuation capped at 20 dB to avoid over-reliance on idealised barrier performance.

Receptor	125	250	500	1000	2000	4000	8000
R1 governing	12.1	14.7	17.4	20	20	20	20
R2 ground floor	14.9	17.7	20	20	20	20	20
R3 west	11.9	14.5	17.2	20	20	20	20
R4 access	12.1	14.7	17.4	20	20	20	20
R5 north-east	12.3	14.9	17.7	20	20	20	20

9.4 BS4142 Assessment Summary

Period	Units	Specific level	Correction	Rating level	Background	Difference	Outcome
Daytime 07:00-19:00	2	27.4	+5	32.4	46	-13.6	Low Impact
Evening 19:00- 22:00	2	27.4	+5	32.4	42	-9.6	Low Impact
Late evening 22:00-23:00	1	24.4	+5	29.4	42	-12.6	Low Impact
Night 23:00- 06:00	1	24.4	+5	29.4	30	-0.6	Low Impact central case
Early morning 06:00-07:00	2	27.4	+5	32.4	38	-5.6	Low Impact

9.5 Assessment Discussion

The calculations show that R1 remains the governing receptor. With the revised 3.0 m wall the central one-unit night-time specific level is approximately 24.4 dB LAeq,T and the +5 dB design-stage character correction gives 29.4 dB LAr,Tr, 0.6 dB below the 30 dB LA90 representative background. The two-unit 06:00-07:00 rating level is 32.4 dB LAr,Tr, 5.6 dB below the revised 38 dB LA90 early-morning criterion.

The early-morning 06:00-07:00 scenario is assessed separately because the second unit may operate from 06:00. The revised 38 dB LA90 criterion is based on the lower mode and 10th-percentile behaviour of the strictly screened 4-7 June dataset. The calculated two-unit rating level of 32.4 dB remains materially below that criterion.

Unmitigated and mitigation-effectiveness check. At R1, one unit without barrier attenuation gives approximately 41.2 dB LAeq,T / 46.2 dB LAr,Tr. With the minimum 3.0 m masonry wall this reduces to 24.4 dB LAeq,T / 29.4 dB LAr,Tr, an A-weighted benefit of approximately 16.8 dB.

Source-output sensitivity check. The governing one-unit night case is re-run at +3 dB and +5 dB above the manufacturer octave-band source terms.

Night source case		Rating	Background	Difference
Manufacturer		29.4	30	-0.6
+3 dB source		32.4	30	+2.4
+5 dB source		34.4	30	+4.4
R1 scenario	Specific	Rating	Background	Difference
1 unit - no wall	41.2	46.2	30	+16.2
1 unit - 3.0 m wall	24.4	29.4	30	-0.6
2 units - no wall	44.2	49.2	38	+11.2
2 units - 3.0 m wall	27.4	32.4	38	-5.6

The 23:00-06:00 one-unit case is the controlling residual condition and has therefore been deliberately treated conservatively. The predicted rating level is approximately +3 dB above the adopted representative core-night background, which is below the BS4142 indication of adverse impact of around +5 dB. The calculated absolute rating level is also low, and the result assumes the conservative +5 dB acoustic character correction. In planning terms, the result is therefore considered acceptable only in combination with the proposed masonry wall, the restriction to one unit during 23:00-06:00, and a post-installation verification condition to confirm final installed sound output and acoustic character.

10 CONCLUSIONS

Impact Acoustics has assessed the proposed relocation of two J&E Hall JEHS-0300-B2-M-1 refrigeration condensing units serving The Premier / Corner Shop, The Headlands, Downton, Salisbury, SP5 3HH. The assessment has been prepared following the previous refusal of application PL/2026/01885 and directly addresses fixed-plant noise and night-time residential amenity.

The assessment uses source data that align with the manufacturer datasheet and site verification measurement: 56 dB(A) at 1 m for one unit and approximately 59 dB(A) at 1 m for two units. Calculations have been undertaken on an octave-band basis and include Q=2 directivity, masonry-wall barrier diffraction, A-weighted recombination and a conservative +5 dB BS4142 character correction.

Subject to the required 3.0 m masonry acoustic wall, side-by-side low-level plant arrangement, operating hours and post-installation verification, the relocated plant is predicted to achieve a Low Impact indication for the central daytime, evening, late-evening, night and early-morning scenarios. The central night rating level is 29.4 dB L_{Ar,Tr}, 0.6 dB below background. A +5 dB source-output sensitivity gives 34.4 dB L_{Ar,Tr}, remaining below the BS4142 around +5 dB adverse-impact indication.

10.1 Recommended Planning Condition / Control Specification

Item	Requirement
Plant arrangement	Two JEHS-0300-B2-M-1 units side-by-side at low level on floor-mounted supports, fan discharge east.
Masonry wall	Continuous minimum 3.0 m high imperforate masonry acoustic wall around the proposed plant area, built to the assessed alignment; timber fencing is not relied upon.
Operating hours	One unit may operate 24/7. Second unit limited to 06:00-22:00.
No enclosure relied upon	The plant is not required to be enclosed, but the masonry acoustic wall is required.
Verification	Post-installation BS4142 verification measurement, including subjective review of tonal/intermittent character and comparison with the rating levels in this report.

10.2 Uncertainty

The uncertainty review has been revised because the previous ± 6.1 dB expanded uncertainty could be read as a deterministic correction to the predicted rating level. The component uncertainties are not all independent random variables and several are bounded conservative assumptions already embedded in the calculation. The revised assessment therefore uses explicit adverse sensitivity tests, including no-barrier and +3/+5 dB source-output cases, rather than adding one expanded-uncertainty value arithmetically to the BS4142 difference.

Source of uncertainty	Commentary	Half-width	Standard uncertainty
Manufacturer source data	Datasheet provides octave-band SPL at 1 m; site two-unit measurement aligns with datasheet.	1.5 dB	0.87 dB
Site verification measurement	Approx. 59 dB(A) at 1 m with both units; measurement position/operating condition not a formal sound power test.	1.5 dB	0.87 dB
Implementation tolerance - unit position and spacing	Side-by-side floor-mounted arrangement confirmed; final install must not move closer to receptors or increase source height without review.	2.0 dB	1.15 dB
Source height	Assumed 0.55 m fan/acoustic centre. Different mounts could change barrier geometry.	1.0 dB	0.58 dB
Receptor heights	Ground-floor and first-floor receptor heights are supported by site photographs and visible window positions; uncertainty is low to moderate.	1.5 dB	0.87 dB
Implementation tolerance - wall alignment / path difference	Wall height and assessed alignment are known from the site layout; final construction must maintain the assessed path-difference geometry and remain imperforate.	2.0 dB	1.15 dB
Barrier construction	Masonry assumed imperforate and continuous to ground. Gaps or lightweight construction would reduce performance.	1.5 dB	0.87 dB
Meteorological screening	No on-site weather station export provided; precautionary screening applied using dataset and public weather review.	1.5 dB	0.87 dB
Representative background selection	Night criterion deliberately conservative due previous refusal and lower night-time distribution.	2.0 dB	1.15 dB
Acoustic character	+5 dB design-stage correction adopted; final character should be verified.	1.0 dB	0.58 dB
Operational duty/cycling	Worst-case number of units assumed for each period; actual duty may be lower.	1.5 dB	0.87 dB

11 APPENDIX A - OPERATIONAL BACKGROUND DATA SUMMARY

The table below summarises the representative period statistics used in the assessment.

Period	Clock time	No. 15-min periods	Energy average LAeq	Mean LA90	Median LA90	Rounded modal LA90	10th percentile LA90	Minimum LA90
Daytime	07:00-19:00	169	54.3	46.9	46.8	46	43.8	37.5
Evening	19:00-23:00	64	51.3	41.9	42.3	43	37.8	33.2
Night	23:00-06:00	88	47.4	35.5	35.4	36	30.6	28.3
Early morning	06:00-07:00	12	50.2	41.9	41.4	38	37.8	37.8

12 APPENDIX B - INFORMATION TO BE REPORTED UNDER BS4142

Requirement	Site-specific information
Competency	Assessment prepared by Impact Acoustics Ltd / I. Broom aMIOA.
Source under investigation	Two J&E Hall JEHS-0300-B2-M-1 refrigeration condensing units serving The Premier / Corner Shop.
Operating periods	One unit 24/7; second unit 06:00-22:00. Day, evening, night and early-morning scenarios assessed.
Specific sound level	Calculated on an octave-band basis using datasheet source levels and checked against 59 dB(A) at 1 m for two units.
Rating level	Specific level plus +5 dB character correction.
Background sound level	46 dB daytime, 42 dB evening, 30 dB core night, 38 dB early morning.
Mitigation	Continuous minimum 3.0 m masonry acoustic wall; timber fence not relied upon.
Uncertainty	Expanded uncertainty budget included and verification recommended.

13 APPENDIX C - CHARACTER CORRECTION

Element	Correction	Justification
Tonality	+2 dB	Fan/compressor components may be just perceptible at residential receptors, particularly at night.
Intermittency/distinctiveness	+3 dB	Refrigeration plant may cycle and start/stop; source is distinguishable from road traffic during quieter periods.
Impulsivity	0 dB	No impulsive source characteristic expected.
Total	+5 dB	Conservative design-stage correction adopted.

14 APPENDIX D - CALCULATION ASSUMPTIONS

Ref	Assumption
C1	Two JEHS-0300-B2-M-1 units are relocated side-by-side at low level with fan discharge east.
C2	Single unit source data are taken from the datasheet: 56 dB(A) at 1 m and octave-band levels from 125 Hz to 8 kHz.
C3	Two units at 1 m align with the observed 59 dB(A) site measurement by logarithmic addition.
C4	$Q=2$ / +3 dB directivity correction is applied to the low-level ground/facade-adjacent arrangement.
C5	A continuous minimum 3.0 m masonry wall is built to the assessed alignment; timber fencing is not credited.
C6	Source centre height is 0.55 m; final mount height must not materially increase source height unless reviewed.
C7	R1 first-floor rear bedroom is the governing receptor.
C8	Night-time operation is one unit only during 23:00-06:00; two units may operate during 06:00-07:00 and are separately assessed.

15 APPENDIX E - DATA SHEET

The following manufacturer datasheet pages are included because the octave-band calculations rely directly on the J&E Hall JEHS-0300-B2-M-1 sound pressure level data.

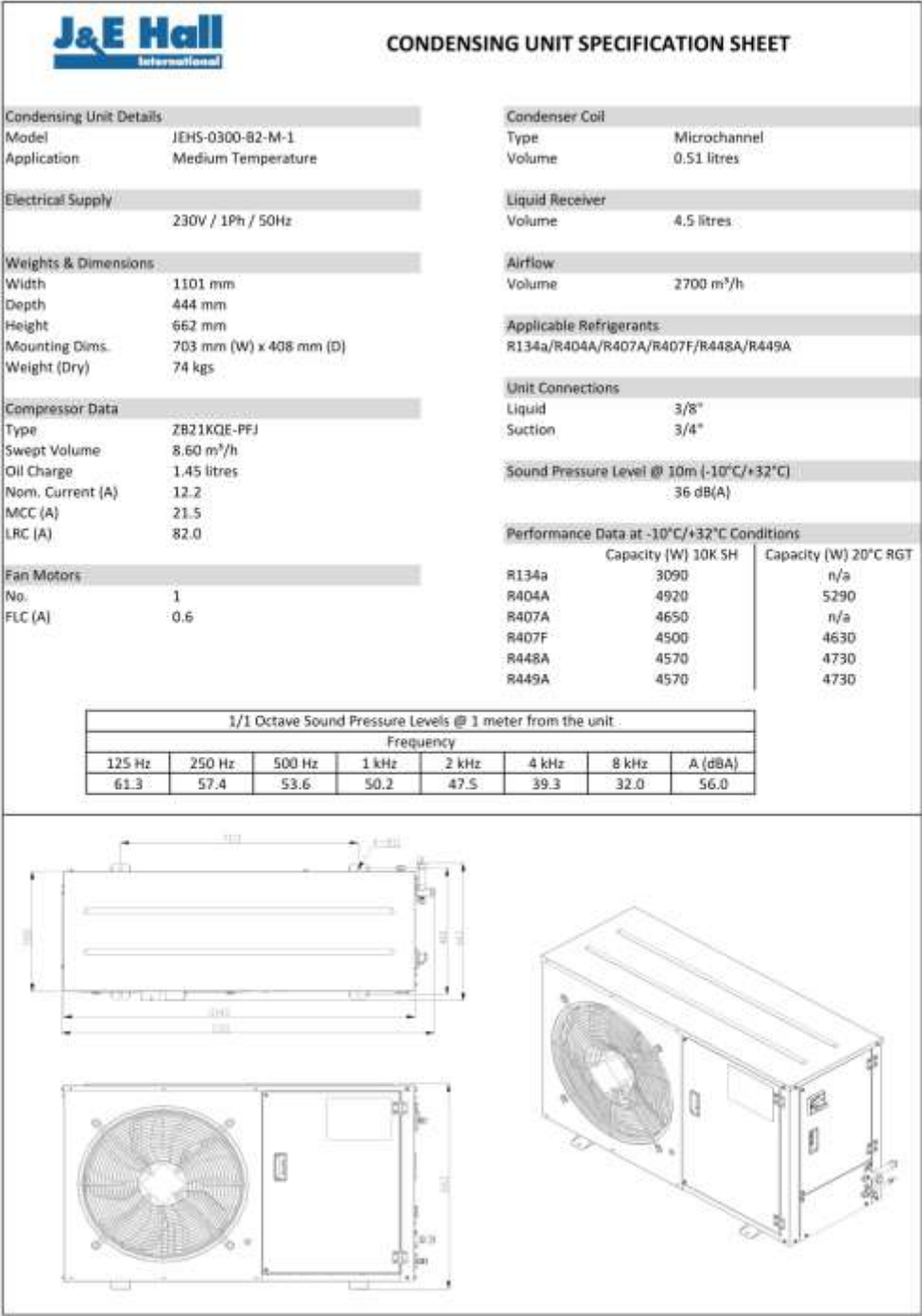


Figure E1: J&E Hall JEHS-0300-B2-M-1 datasheet page 1.

Product Information based on the requirements of Commission Regulation EU 2015/1095

Model : JEHS-0300-B2-M-1

Refrigerant fluid		R404A	
Item	Symbol	Value	Unit
Evaporating temperature*	T	-15	°C
Annual electricity consumption	G	12093	kWh/a
Seasonal Energy Performance Ratio	SEPR	3.09	
Parameters at full load and ambient temperature 32 °C (Point A)			
Rated cooling capacity	P _A	5.25	kW
Rated power input	D _A	2.62	kW
Rated COP	COP _A	3.03	
Parameters at part load and ambient temperature 25 °C (Point B)			
Declared cooling capacity	P _B	5.890	kW
Declared power input	D _B	2.380	kW
Declared COP	COP _B	3.30	
Parameters at part load and ambient temperature 15 °C (Point C)			
Declared cooling capacity	P _C	6.390	kW
Declared power input	D _C	2.080	kW
Declared COP	COP _C	2.97	
Parameters at part load and ambient temperature 5 °C (Point D)			
Declared cooling capacity	P _D	6.480	kW
Declared power input	D _D	2.940	kW
Declared COP	COP _D	3.36	
Parameters at full load and ambient temperature 43 °C			
Cooling capacity	P _E	4.62	kW
Power input	D _E	3.21	kW
Declared COP	COP _E	1.58	
Other items			
Capacity control	Fixed		
Coefficient of degradation for fixed and staged capacity units*	C _d	0.25	
Contact details	Dakin Refrigeration Malaysia Sdn. Bhd. Lot 20, Jalan Perusahaan 8, Kawasan Perusahaan Petron Ringing, 42700 Randing, Selangor Darul Ehsan.		

Note: Published data based on condition - Return Gas Temperature 20° C



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Refrigerant fluid		R407F	R448A	R449A	
Item	Symbol	Value			Unit
Evaporating temperature*	T	-10			°C
Parameters at full load and ambient temperature 32°C					
Rated cooling capacity	P _A	4.63	4.79	4.79	kW
Rated power input	D _A	3.44	2.56	2.56	kW
Rated COP	COP _A	1.74	1.85	1.85	
Parameters at full load and ambient temperature 25°C					
Cooling capacity	P _B	5.89	5.07	5.07	kW
Power input	D _B	2.31	2.27	2.27	kW
COP	COP _B	2.21	2.25	2.25	
Parameters at full load and ambient temperature 43°C					
Cooling capacity	P _E	N/A	4.12	4.12	kW
Power input	D _E	N/A	3.14	3.14	kW
COP	COP _E	N/A	1.31	1.31	
Other items					
Capacity control	Fixed				
Coefficient of degradation for fixed and staged capacity units*	C _d	0.25			
Contact details	Dakin Refrigeration Malaysia Sdn. Bhd. Lot 20, Jalan Perusahaan 8, Kawasan Perusahaan Petron Ringing, 42700 Randing, Selangor Darul Ehsan.				

Figure E2: J&E Hall JEHS-0300-B2-M-1 datasheet page 2.

16 APPENDIX F - REFERENCES

Ref	Citation / reference
R1	British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound.
R2	Wiltshire Council, Noise and Planning Technical Guidance V.1, October 2023.
R3	Wiltshire Core Strategy, Core Policy 57 - Ensuring high quality design and place shaping.
R4	National Planning Policy Framework and Noise Policy Statement for England.
R5	Hayes McKenzie Partnership Ltd, The Corner Shop BS4142 Assessment, 3871_N01_EXT1, 11 March 2026.
R6	J&E Hall International, JEHS-0300-B2-M-1 Condensing Unit Specification Sheet.
R7	ANC BS4142 Technical Note, March 2020, used as good-practice context.

17 APPENDIX G - GLOSSARY

Term	Definition
L _{Aeq,T}	Equivalent continuous A-weighted sound pressure level over time T.
L _{A90,T}	A-weighted sound pressure level exceeded for 90% of time T, commonly used as background sound level.
Specific sound level	The sound level from the source under assessment at the receptor.
Rating level	Specific sound level plus acoustic character correction.
Q=2	Hemispherical/directivity condition corresponding to +3 dB.
Path difference	Difference between diffracted path over a barrier and direct source-receiver path.
BS4142	British Standard method for rating and assessing industrial and commercial sound.

18 APPENDIX H - CALCULATION AND DEFENSIBILITY QA

A calculation and defensibility QA has been undertaken before issue of this draft. The check confirms that the source basis, logarithmic addition, Q=2 directivity correction, octave-band barrier calculation, A-weighted recombination, BS4142 character correction and rating-background differences have been checked for internal consistency.

QA item	Outcome
Source data	Single-unit datasheet 56 dB(A) at 1 m checked against two-unit 59 dB(A) site measurement.
Logarithmic addition	Two equal units = +3.0 dB, used in source octave-band calculation.
Directivity	Q=2 / +3 dB applied to low-level ground-mounted/facade-adjacent arrangement.
Barrier calculation	Path difference calculated for each receptor and converted to octave-band diffraction loss.
A-weighting	Linear octave receptor levels A-weighted and logarithmically recombined.
BS4142 correction	+5 dB character correction applied consistently to all scenarios.
Critical receptor	R1 first-floor rear bedroom confirmed as governing receptor.
Mitigation	Continuous minimum 3.0 m masonry acoustic wall; timber fence not relied upon.
Residual limitation	Post-installation verification recommended to confirm installed sound output and acoustic character.
Night-time defensibility	23:00-06:00 one-unit case treated as controlling residual condition; result below BS4142 adverse threshold, with masonry wall, one-unit restriction and verification requirement.

19 APPENDIX I - DISCLAIMER

This report was prepared by Impact Acoustics Ltd. The material in it contains Impact Acoustics best judgement in light of the information available at the time of preparation. All acoustic surveys, technical assessments, calculations, interpretation, professional judgements, conclusions and recommendations have been completed, reviewed and verified by Impact Acoustics. Any use which a third party makes of this report, or any reliance on, or decisions based on it, are the responsibility of such third parties. Impact Acoustics accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

#END OF REPORT#