



IMP8215

INDUSTRIAL NOISE IMPACT ASSESSMENT

PROPOSED DOMESTIC AIR CONDITIONING UNIT

British Standard 4142:2014+A1:2019



Client:	Colin and Venessa Murray Hill
Site:	6 The Stables, Lower Road, Netheravon, Salisbury, SP4 9SY
Survey Date:	2 July 2026 to 6 July 2026
Report by:	I.Broom aMIOA

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1 **Version History**

Version	Date	Author	Summary of changes
1.0	July 2026	I. Broom aMIOA	Original

2 EXECUTIVE SUMMARY

2.1 Instruction

Impact Acoustics Ltd has been instructed to prepare a noise impact assessment for the proposed external air-conditioning condenser serving 6 The Stables, Lower Road, Netheravon, Salisbury, SP4 9SY. The assessment has been prepared to support the planning application and to address the request for a noise assessment in relation to fixed external plant associated with the proposed Toshiba split air-conditioning system.

2.2 Scope of Report

The report assesses the likely noise impact of the proposed external Toshiba air-conditioning condenser at the nearest noise-sensitive receptors in accordance with British Standard 4142:2014+A1:2019. The current application relates to a single external condenser serving the principal bedroom, together with a roof vent associated with a portable unit serving the guest bedroom. The assessment also includes a design-capacity review to identify the maximum permissible external sound power level that could be accommodated at the proposed source position, and the additional mitigation that would be required for larger or multiple-unit options.

No acoustic benefit has been attributed to the proposed hit-and-miss Iroko cover. It is treated as a visual/heritage screening feature only. The only beneficial screening correction relied upon in the calculation is the calculated geometric screening provided by the roof/eaves geometry to the nearest Velux rooflight receiver.

2.3 Summary of Background Noise Measurement

Background sound monitoring was undertaken between 2 July 2026 and 6 July 2026 at a representative position within the rear garden environment. Complete 15-minute periods have been processed. The representative background sound levels adopted for assessment are 43 dB LA90 for daytime, 38 dB LA90 for evening, 25 dB LA90 for night-time 23:00-07:00 and 36 dB LA90 for the 06:00-07:00 early-morning period. The night-time period is the governing BS4142 condition because the proposal serves bedroom accommodation and because the surrounding setting is a quiet rural residential environment.

2.4 Summary of Assessment and Mitigation

The governing receptor is the nearest neighbouring Velux rooflight on the pitched rear roof plane. The source is located at low level adjacent to the rear wall. The revised geometry recognises that the rooflight is set back only approximately 1.0 m from the eaves along the pitched roof plane. The source-to-eaves path remains broadly vertical and plausible from the site photographs, but the shorter eaves-to-Velux distance materially reduces the available diffraction benefit. On this basis, unrestricted night operation of the proposed 59 dB LWA cooling condition is not supported without either verified lower night/quiet-mode sound power or additional purpose-designed acoustic attenuation.

Scenario	Units	Source level	Specific level	Correction	Rating level	Background	Difference	Outcome
Cooling mode, proposed Toshiba	1 condenser	59 dB LWA	27.4	+3	30.4	25	+5.4	Not supported unrestricted at night; requires quiet mode or approx. 5.4 dB additional mitigation
Heating/max mode sensitivity	1 condenser	61 dB LWA	29.4	+3	32.4	25	+7.4	Not supported unrestricted at night; requires quiet mode/mitigation or restriction
Night quiet sensitivity	1 condenser	56 dB LWA	24.4	+3	27.4	25	+2.4	Below adverse threshold but above background; verify final night setting
Maximum permissible combined outdoor LWA	Design limit	53.6 dB LWA	-	+3	25.0	25	0.0	Design limit for around-background night rating

2.5 Executive Summary Conclusion

Subject to the final installed condenser being controlled so that night-time sound power does not exceed the revised design limit, being installed on suitable anti-vibration mounts, and with no increase in source height or exposure relative to the assessed arrangement, the daytime and evening operation of the proposed condenser is expected to be acceptable. The roof/eaves calculation shows that unrestricted night-time operation at 59 dB LWA is marginal/adverse against the adopted quiet rural night-time criterion and should not be relied upon unless a lower verified night/quiet-mode output or additional acoustic mitigation is provided.

The design-capacity matrix demonstrates that the source-eaves-Velux geometry gives limited acoustic capacity for additional or larger external plant at this location. The maximum combined night-time sound power is approximately 53.6 dB LWA if the rating level is to remain at the adopted 25 dB LA90 night-time background criterion using the +3 dB character correction. Larger equipment can only be supported with verified quiet-mode sound power, relocation, or purpose-designed acoustic mitigation; the hit-and-miss Iroko visual cover is insufficient for this purpose.

3 CRITERION

3.1 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.

3.2 Wiltshire Planning and Local Policy Context

The site is within Wiltshire Council. The relevant planning consideration is whether the proposed fixed external air-conditioning plant can operate without unacceptable adverse effect on neighbouring residential amenity, having regard to the quiet rural setting, the listed building context, the proximity of bedroom rooflights, and the potential for night-time operation during warm weather.

3.3 British Standard 4142:2014+A1:2019 Methodology

British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound, 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. The difference between the rating level and the representative background sound level is then considered together with context.

Rating level relative to background	BS4142 initial indication	Application in this report
At or below background	Low impact	Target design outcome where practicable, especially for night-time.
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.

3.4 Character Correction

A +3 dB acoustic character correction has been adopted for the primary assessment. This reflects the potential for the fan/compressor sound from a single inverter condenser to be just perceptible and distinctive in a quiet rural night-time soundscape. A +5 dB sensitivity case is also considered within the design-capacity review to demonstrate robustness if the installed equipment exhibits more noticeable tonal or intermittent character.

3.5 Relevant ASHP / AC Good-Practice Guidance

The IOA/CIEH/ANC air source heat pump guidance is relevant good-practice context for domestic and small-scale external air-conditioning/heat-pump plant. The present assessment remains a BS4142 planning assessment, but the good-practice principles of quiet plant selection, proportionality, receptor proximity, acoustic character, uncertainty, context and suitable installation controls have been applied.

3.6 Adopted Criterion

Operating period	Representative background adopted	Low impact target	Comment
Daytime 07:00-19:00	43 dB LA90	Rating <= background	Daytime use is not expected to govern.
Evening 19:00-23:00	38 dB LA90	Rating <= background	Evening use is more sensitive but still materially higher than night.
Night 23:00-07:00	25 dB LA90	Rating around or below background where practicable	Governing design period.
Early morning 06:00-07:00	36 dB LA90	Rating <= background	Background rises materially after the core night period.

4 SITE LOCATION AND CONTEXT

4.1 General Site Description

The site comprises 6 The Stables, Lower Road, Netheravon, Salisbury, SP4 9SY. The property forms part of a converted former stable building within a high-quality landscaped rural residential setting. The rear elevation faces landscaped gardens, mature trees and open grounds. The building is Grade II Listed and the proposed condenser location has therefore been selected to minimise visual, heritage and acoustic impact as far as practicable.

The proposed external condenser is located adjacent to the rear elevation near the rear door/patio area and below the pitched roof/eaves. The current architectural drawings indicate a timber/Iroko cover. That cover is treated in this assessment as visual screening only. No acoustic insertion loss has been attributed to the cover because the proposed hit-and-miss/slatted construction has no verified acoustic performance and must maintain airflow around the condenser.

4.2 Noise-Sensitive Receptors

Ref	Description	Height / geometry used	Assessment role
R1	Nearest neighbouring Velux rooflight on rear roof slope	Calculated from roof/eaves geometry; receiver at open rooflight aperture centre	Governing receptor due to bedroom rooflight and night-time sensitivity.
R2	Neighbouring rear ground-floor window/patio context	Approx. 1.5 m receptor height	Secondary receptor; screened by building/eaves and less onerous than R1.
R3	Further residential windows/rooflights along stable block	Upper-floor rooflight/window context	Distance cross-check; not governing.
R4	Wider estate/rear garden receptors	Greater separation distance	Contextual only.

Ref	Description	Height / geometry used	Assessment role
			
Figure 1: Measurement position and rear garden context showing the quiet landscaped rural setting.			

Ref	Description	Height / geometry used	Assessment role
	 A photograph showing the rear elevation of a two-story brick building. The building has a dark grey tiled roof with several skylights. The lower part of the wall is made of rough-hewn stone, and the upper part is red brick. There are three windows visible on the ground floor. A white door is set into the stone wall. In the foreground, there is a paved patio area with a round glass table and four chairs under a large white umbrella. A garden bed with purple flowers is in the bottom left corner. A blue circle is overlaid on the stone wall near the door. Figure 2: Rear elevation showing proposed plant area, nearby windows and rooflights.		

Ref	Description	Height / geometry used	Assessment role
			
Figure 3: Proposed condenser location and relationship to the pitched roof/eaves geometry.			

4.3 Contextual Acoustic Environment

The acoustic environment is characteristic of a quiet rural residential location. During the attended observations the dominant sound sources were natural environmental sounds, including birdsong and vegetation movement, with occasional distant road traffic and aircraft. No continuous industrial or commercial noise source was observed to control the acoustic climate. The night-time background sound level is therefore low and the BS4142 assessment is most sensitive during the night-time period.

5 APPARATUS AND MEASUREMENT METHODOLOGY

5.1 Background Noise Measurement Position

Background sound measurement was undertaken within the rear garden environment at a position representative of the nearest residential receptor context. The proposed plant was not installed or operational during the measurement period. The measurement position was selected to represent the residual/background acoustic environment without direct contribution from the proposed condenser.

5.2 Instrumentation

Description	Make	Type	Serial No.	Calibration interval	Last calibrated	Next due
Integrated sound level meter	Norsonic	118	31632	2 years	01.05.2025	01.05.2027
12.5 mm microphone and windshield	Norsonic	1225	91720	2 years	01.05.2025	01.05.2027
Pre-amplifier	Norsonic	1201	29307	2 years	01.05.2025	01.05.2027

The sound level meter was field calibrated before and after the measurement period. No significant calibration drift was identified. Full calibration certificates are retained by Impact Acoustics and can be provided on request.

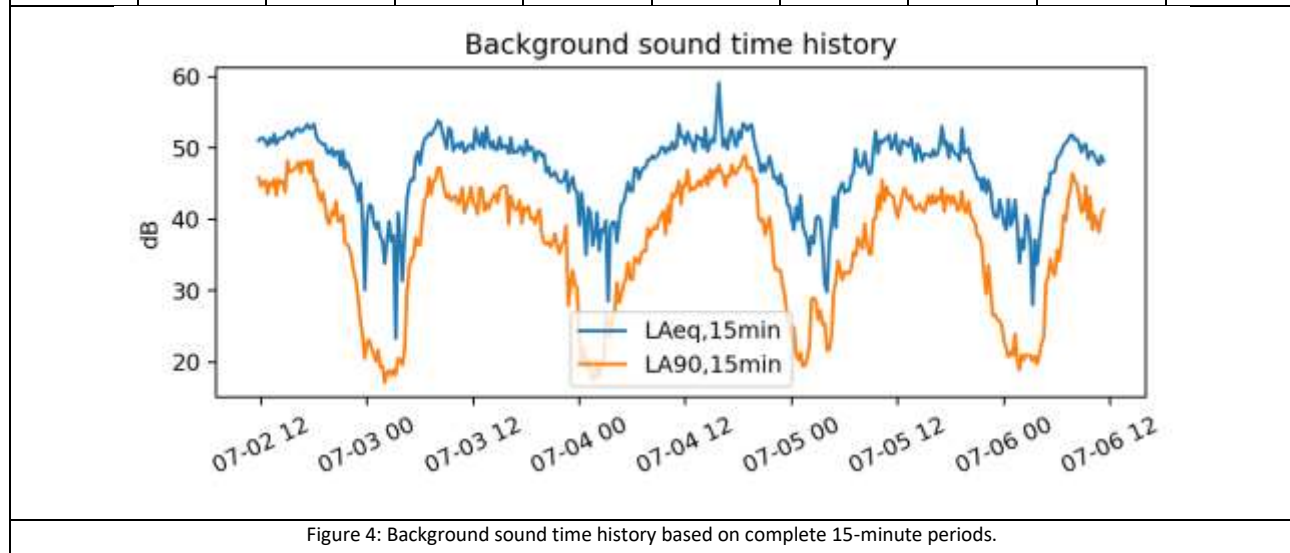
6 BACKGROUND NOISE LEVELS

6.1 Weather Review and Data Screening

The dataset has been processed using complete 15-minute measurement periods. Incomplete periods at the beginning and end of the unattended survey have not been relied upon for representative statistics. No plant noise from the proposed condenser was present during the measurements. The representative levels have not been selected from the lowest measured values; they have been selected using the distribution of measured LA90 values, the temporal pattern of the survey and the BS4142 requirement for a representative background sound level.

6.2 Measurement Results

Period	Clock time	No. periods	Energy LAeq	Mean LA90	Median LA90	Rounded modal LA90	10th percentile	Minimum	Adopted LA90
Daytime	07:00-19:00	191	50.9	43.0	43.3	43	39.3	34.9	43
Evening	19:00-23:00	64	48.3	38.1	38.5	40,41	32.7	26.5	38
Night	23:00-07:00	128	43.2	26.1	24.8	20	19.4	17.1	25
Core night	23:00-06:00	112	41.6	24.6	23.1	20	19.3	17.1	25
Early morning	06:00-07:00	16	48.2	35.9	34.5	32,34,36	32.5	31.5	36



Period	Clock time	No. periods	Energy LAeq	Mean LA90	Median LA90	Rounded modal LA90	10th percentile	Minimum	Adopted LA90
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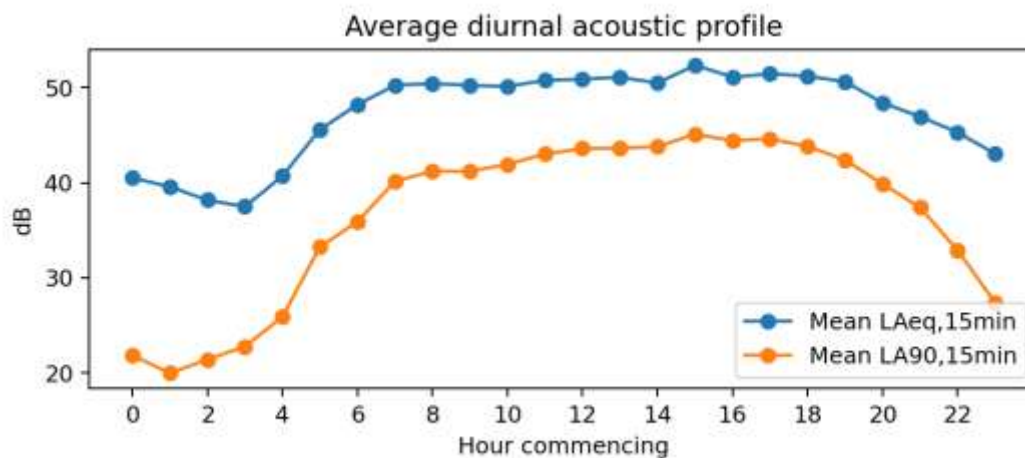


Figure 5: Average diurnal acoustic profile showing mean LAeq and LA90 by hour commencing.

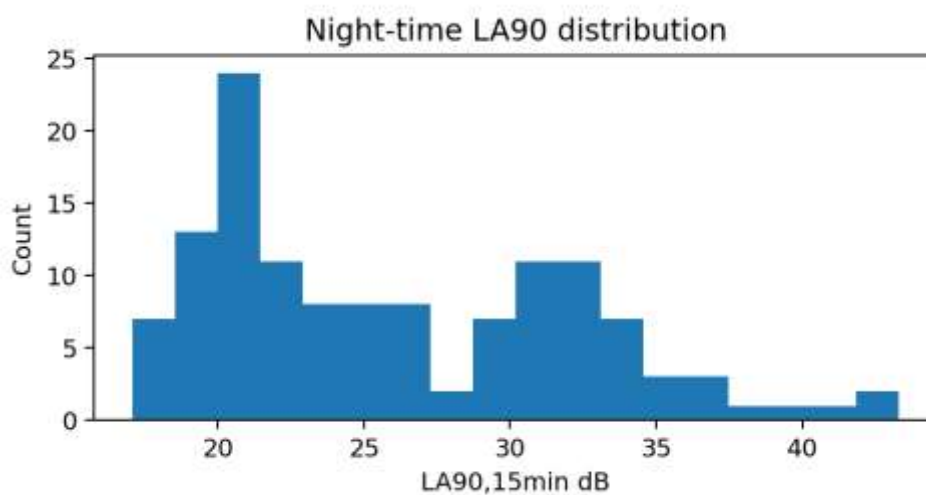


Figure 6: Night-time LA90 distribution supporting the representative night-time background selection.

6.3 Representative Background Selection

The adopted daytime background sound level is 43 dB LA90, the adopted evening level is 38 dB LA90 and the adopted night-time level is 25 dB LA90. The night-time value is deliberately representative/conservative for the quiet rural context and is the governing assessment criterion. A separate 36 dB LA90 criterion is used for the early-morning 06:00-07:00 period because the measured background sound level rises materially during that hour.

7 OPERATION OF SITE AND SOURCE DATA

7.1 Plant Description and Source Data

The proposed installation comprises a Toshiba Haori split air-conditioning system with one external condenser serving the principal bedroom. The submitted planning information identifies published outdoor sound power levels of approximately 59 dB(A) in cooling mode and 61 dB(A) in heating/maximum mode. Sound power is used as the primary source term because it is independent of measurement distance and is the correct basis for propagation calculations.

Input	Value	Use in assessment
Proposed cooling sound power	59 dB LWA	Primary assessment source level.
Heating / maximum sensitivity	61 dB LWA	Sensitivity case and design-control check.
Night / quiet mode sensitivity	56 dB LWA	Illustrative low-noise setting; to be confirmed by installer/manufacture if relied upon.
Directivity / local reflection	Q=2 / +3 dB	Applied because the condenser is located close to the rear wall.
Hit-and-miss Iroko cover	0 dB acoustic attenuation	Visual/heritage screening only; no acoustic credit.

7.2 Operating Periods

Period	Operating assumption	Reason
Daytime	Cooling/heating as required	Non-governing period due higher background levels.
Evening	Cooling may continue during warm weather	Included for amenity context.
Night-time	Bedroom cooling potentially required	Governing condition; quietest background and most sensitive receptors.
Heating mode	Sensitivity only	Could occur if reverse-cycle heating is used; should be controlled at night if installed.

8 MITIGATION AND OPERATIONAL CONTROL

8.1 Proposed Visual Cover / Enclosure

The proposed Iroko cover is understood to be a hit-and-miss/slatted visual screening feature. It has not been assessed as an acoustic enclosure. No acoustic attenuation is credited for the cover in the calculations. If a future design seeks to rely on the cover as acoustic mitigation, it would need to be redesigned as a purpose-made acoustic enclosure/louvre system with verified octave-band insertion loss and confirmed airflow/heat-rejection compatibility.

8.2 Minimum Control Specification

Control item	Minimum requirement
Plant model/output	Final installed condenser shall not exceed the assessed sound power levels unless acoustically reviewed.
Mounting	Condenser to be installed on suitable anti-vibration mounts/feet to control structure-borne vibration.
Location/source height	Unit to remain at the assessed low-level rear elevation position. Source height should not be materially increased.
Visual cover	Hit-and-miss Iroko cover may be installed for visual/heritage purposes but is not relied upon acoustically.
Night control	Lowest practicable quiet/night setting to be enabled where night-time operation is possible, especially for heating/max-output operation.
Future larger plant	Any larger condenser or multiple external units to comply with the design-capacity matrix or be separately assessed.

9 ASSESSMENT METHODOLOGY

9.1 Propagation Method

The assessment uses manufacturer A-weighted sound power levels with distance divergence from source to receiver, a +3 dB local reflection/directivity correction for the rear-wall location, calculated roof/eaves diffraction screening and the BS4142 character correction. The roof/eaves geometry reflects the approximately 40 degree roof pitch and the Velux being set back only approximately 1.0 m from the eaves along the pitched roof plane. No ground absorption, atmospheric absorption or attenuation from the hit-and-miss Iroko cover has been credited.

9.2 Roof/Eaves Screening Calculation Method

The governing receiver is a Velux rooflight on the pitched roof plane. The revised calculation treats the eaves as the diffraction edge and uses an approximately 40 degree roof pitch, with the Velux aperture approximately 1.0 m up the roof slope from the eaves. This is a materially shorter eaves-to-receiver path than previously adopted and has therefore been recalculated throughout. The path difference is calculated as $\delta = A + B - C$, where A is the source-to-eaves path, B is the eaves-to-Velux path along the roof slope and C is the direct source-to-receiver path. The resulting octave-band diffraction losses are then capped at 20 dB for practical uncertainty and side-diffraction robustness.

Parameter	Symbol	Value / method
Source height	h_s	0.75 m above patio/plant base level
Eaves diffraction height	h_e	3.05 m above patio level, derived from elevation/door calibration
Roof pitch	θ	40 degrees
Distance from eaves to Velux along roof slope	s	1.00 m along pitched roof plane, from site-photo/video review
Direct path	C	$C = \sqrt{(x_{\text{receiver}} - x_{\text{source}})^2 + (z_{\text{receiver}} - z_{\text{source}})^2}$
Diffacted path	$A+B$	$A+B$ = source-to-eaves path plus eaves-to-Velux path along the pitched roof plane
Path difference	δ	$\delta = (A+B)-C$
Barrier loss	D_z	$D_z = 10\log_{10}(3+20N)$, $N=2\delta/\lambda$, capped at 20 dB for practical uncertainty

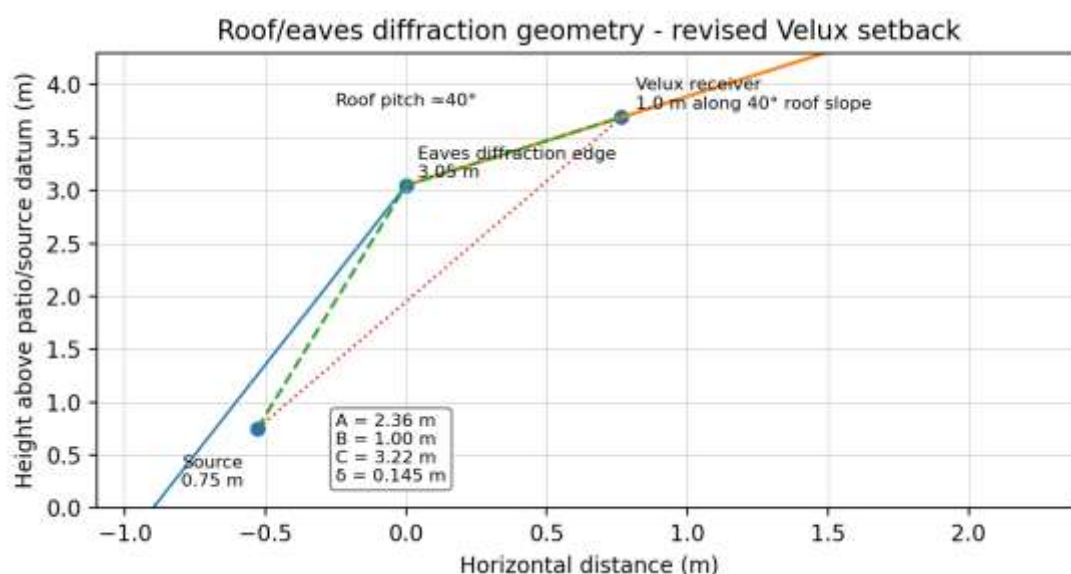


Figure 7: roof/eaves diffraction geometry using circa 40 degree roof pitch and Velux approximately 1.0 m from the eaves along the pitched roof plane.

10 CALCULATIONS AND ASSESSMENTS

10.1 Roof/Eaves Path-Difference Calculation

Item	Value
Roof pitch	40 degrees
Source to eaves path A	2.36 m
Eaves to Velux path B	1.00 m along roof slope
Velux height above datum	3.69 m
Diffracted path A+B	3.36 m
Direct path C	3.22 m
Path difference δ	0.145 m
Adiv using true 3D distance	21.1 dB
Broadband/A-weighted screening used	13.5 dB

Octave band Hz	125	250	500	1000	2000	4000	8000
Screening loss dB	7.1	8.6	10.6	13.0	15.7	18.5	20.0

10.2 BS4142 Calculation Summary

Scenario	Outdoor LWA	Directivity	Adiv	Screening	Specific level	Character	Rating level	Night background	Difference
Cooling mode	59	+3	21.1	13.5	27.4	+3	30.4	25	+5.4
Heating / maximum sensitivity	61	+3	21.1	13.5	29.4	+3	32.4	25	+7.4
Night quiet sensitivity	56	+3	21.1	13.5	24.4	+3	27.4	25	+2.4

10.3 Maximum Permissible Sound Power and Future Capacity Matrix

Working backwards from the adopted night-time criterion, the maximum permissible combined outdoor sound power at the assessed source position is approximately 53.6 dB LWA where the +3 dB character correction and roof/eaves screening are retained. This is the design capacity for all external equipment operating simultaneously at night at this position if the rating level is to remain at or below the adopted 25 dB LA90 night-time background level. The currently proposed 59 dB LWA cooling condition therefore requires approximately 5.4 dB additional night-time reduction or equivalent acoustic mitigation if unrestricted night operation is proposed.

No. units	Max combined LWA	Max LWA per unit	Margin	Mitigation required	Status
1	53.6 dB LWA	53.6 dB LWA	0.0 dB	None if combined LWA <= limit.	At night criterion.
2	53.6 dB LWA	50.6 dB LWA	0.0 dB	None if combined LWA <= limit.	At night criterion.
3	53.6 dB LWA	48.8 dB LWA	0.0 dB	None if combined LWA <= limit.	At night criterion.
4	53.6 dB LWA	47.6 dB LWA	0.0 dB	None if combined LWA <= limit.	At night criterion.

Candidate LWA	Predicted night rating	Difference vs 25 dB LA90	Extra attenuation required	Mitigation implication
53 dB LWA	24.4 dB LAr,Tr	-0.6 dB	0.0 dB	No further acoustic mitigation.
54 dB LWA	25.4 dB LAr,Tr	+0.4 dB	0.4 dB	Quiet mode/lower-noise model.
56 dB LWA	27.4 dB LAr,Tr	+2.4 dB	2.4 dB	Quiet mode/lower-noise model.
59 dB LWA	30.4 dB LAr,Tr	+5.4 dB	5.4 dB	Acoustic attenuation or relocation required.
61 dB LWA	32.4 dB LAr,Tr	+7.4 dB	7.4 dB	Substantial mitigation; separate review.
63 dB LWA	34.4 dB LAr,Tr	+9.4 dB	9.4 dB	Substantial mitigation; separate review.
65 dB LWA	36.4 dB LAr,Tr	+11.4 dB	11.4 dB	Major enclosure/relocation; separate review.
66 dB LWA	37.4 dB LAr,Tr	+12.4 dB	12.4 dB	Major enclosure/relocation; separate review.

10.4 Assessment Discussion

The calculation shows that the proposed 59 dB(A) cooling sound power level is suitable for daytime/evening context but is not supported as an unrestricted night-time condition against the adopted 25 dB LA90 criterion without further control. The predicted night rating level is approximately +5.4 dB above the representative night background, which is around the BS4142 adverse indication range. The 61 dB(A) heating/maximum sensitivity case is more onerous and should not occur unrestricted at night unless a verified quiet mode or additional attenuation is provided.

The future-capacity matrix shows that the proposed location has very limited spare acoustic. It can support a maximum combined night-time external plant sound power of approximately 53.6 dB LWA at this location for a rating level at the adopted background criterion. Multiple external units would therefore need to be significantly quieter on a per-unit basis or would require additional mitigation/relocation.

11 CONCLUSIONS

Impact Acoustics has assessed the proposed external Toshiba air-conditioning condenser serving 6 The Stables, Lower Road, Netheravon, Salisbury, SP4 9SY. The assessment has been prepared in accordance with BS4142:2014+A1:2019 and uses measured background sound levels, manufacturer sound power data, roof/eaves diffraction geometry, reverse sound-power calculations and professional acoustic judgement.

The governing night-time assessment predicts a rating level of approximately 30.4 dB L_{Ar,Tr} for the proposed 59 dB(A) cooling sound power level. This is +5.4 dB relative to the adopted 25 dB LA90 night-time background level and is therefore not recommended as an unrestricted night-time operating condition without either verified lower night/quiet-mode sound power or additional purpose-designed acoustic attenuation. A night-time combined sound power limit of approximately 53.6 dB LWA would be required to achieve a rating level at the adopted background criterion using the geometry.

Heating/maximum operation at 61 dB(A) is more sensitive and is predicted to be approximately +7.4 dB above the adopted night-time background using the roof/eaves geometry. It should therefore be controlled by verified night/quiet-mode operation, additional acoustic mitigation or restricted from night-time operation unless separately demonstrated to comply.

11.1 Recommended Planning Condition / Control Specification

Item	Requirement
Plant arrangement	One external Toshiba condenser at the assessed low-level rear elevation position.
Source sound power	Night-time combined sound power should not exceed 53.6 dB LWA at the assessed source position unless further acoustic mitigation or separate assessment is provided.
Heating/night control	If cooling/heating operation can occur at night, verified quiet/night mode or additional mitigation is required. The assessed 59-61 dB LWA conditions are not supported as unrestricted night operation using the geometry.
Visual cover	Hit-and-miss Iroko cover permitted as visual screening only; no acoustic attenuation relied upon.
Vibration control	Install on suitable anti-vibration mounts/feet and avoid rigid bridging via pipework/supports.
Future larger plant	Any larger condenser/multiple external units to comply with the maximum sound power matrix or be separately assessed with confirmed night sound power and mitigation data.
Post-installation verification	Recommended to confirm final sound output/acoustic character and night-mode performance if night operation is proposed.

11.2 Uncertainty

The main uncertainties are manufacturer source data, final installation height/position, exact Velux aperture condition, acoustic character and night operating mode. The roof/eaves geometry has been recalculated using a 40 degree roof pitch and a Velux setback of approximately 1.0 m from the eaves along the pitched roof plane. This geometry materially reduces the screening benefit relative to the earlier longer-setback assumption and has been applied consistently throughout the assessment and design-capacity matrix.

Source of uncertainty	Commentary	Half-width	Standard uncertainty
Manufacturer sound power data	Published A-weighted LWA values used; octave data not available.	2.0 dB	1.15 dB
Geometry calibration	Based on drawings/photos/videos and 40 degree roof pitch; final installation to match assessed position.	1.5 dB	0.87 dB
Roof/eaves screening	Calculated from path difference; high-frequency attenuation capped at 20 dB.	2.0 dB	1.15 dB
Character correction	+3 dB adopted with +5 dB sensitivity considered.	1.0 dB	0.58 dB
Night operating mode	Heating/max mode may be louder; quiet mode should be confirmed if required.	2.0 dB	1.15 dB
Combined standard uncertainty	Root-sum-square of standard uncertainties.	-	2.33 dB
Expanded uncertainty	k=2 approximate 95% confidence.	-	4.7 dB

12 APPENDIX A - OPERATIONAL BACKGROUND DATA SUMMARY

The table below summarises the period statistics used in the assessment. Complete 15-minute periods have been used.

Period	Clock time	No. periods	Energy LAeq	Mean LA90	Median LA90	Rounded modal LA90	10th percentile	Minimum	Adopted LA90
Daytime	07:00-19:00	191	50.9	43.0	43.3	43	39.3	34.9	43
Evening	19:00-23:00	64	48.3	38.1	38.5	40,41	32.7	26.5	38
Night	23:00-07:00	128	43.2	26.1	24.8	20	19.4	17.1	25
Core night	23:00-06:00	112	41.6	24.6	23.1	20	19.3	17.1	25
Early morning	06:00-07:00	16	48.2	35.9	34.5	32,34,36	32.5	31.5	36

13 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	External Toshiba air-conditioning condenser serving 6 The Stables.
Operating periods	Day, evening, night and early-morning context considered; night-time governs.
Specific sound level	Calculated from published sound power, distance attenuation, directivity and roof/eaves screening using Velux approximately 1.0 m from the eaves.
Rating level	Specific level plus +3 dB character correction; +5 dB sensitivity considered in design judgement/matrix.
Background sound level	43 dB daytime, 38 dB evening, 25 dB night, 36 dB early morning.
Mitigation	No hit-and-miss cover attenuation credited; calculation indicates quiet-mode/additional attenuation is required for unrestricted night operation at 59 dB LWA.
Uncertainty	Uncertainty budget included; final installation should match assessed geometry and any night-mode sound power must be verified.

14 APPENDIX C - CHARACTER CORRECTION

Element	Correction	Justification
Tonality / distinctiveness	+3 dB	Single inverter fan/compressor may be just perceptible in quiet rural night-time setting.
Impulsivity	0 dB	No impulsive source characteristic expected.
Sensitivity case	+5 dB	Used as robustness check for more distinctive tonal/intermittent character.

15 APPENDIX D - CALCULATION ASSUMPTIONS

Ref	Assumption
C1	The assessed condenser is installed at low level adjacent to the rear elevation as shown in the planning drawings/photos.
C2	Cooling sound power is 59 dB LWA; heating/max sensitivity is 61 dB LWA.
C3	A +3 dB directivity/reflection correction is applied for the rear-wall location.
C4	The hit-and-miss Iroko cover provides 0 dB acoustic attenuation.
C5	The roof pitch is 40 degrees and the eaves act as the diffraction edge to the Velux receiver, which is approximately 1.0 m from the eaves along the roof slope.
C6	The roof/eaves path difference is 0.145 m and the adopted broadband screening is 13.5 dB.
C7	The maximum permissible combined outdoor sound power at the assessed location is 53.6 dB LWA for a rating level at the adopted night background.
C8	Any larger condenser or multiple external units require separate review unless compliant with the matrix and verified night sound power limits.

16 APPENDIX E - REFERENCES

Ref	Citation / reference
R1	British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound.
R2	National Planning Policy Framework and Noise Policy Statement for England.
R3	IOA/CIEH/ANC Air Source Heat Pumps Professional Advice Note, used as good-practice context.
R4	Architectural drawings 4079.2-PR-001, 4079.2-PR-002 and associated application information.
R5	Toshiba Haori / project planning acoustic data provided with the application.
R6	Impact Acoustics Ltd unattended background sound dataset IMP8215-1 DATA.csv, July 2026.

17 APPENDIX F - 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.
Path difference	Difference between diffracted path over a barrier/edge and direct source-receiver path.
BS4142	British Standard method for rating and assessing industrial and commercial sound.

18 APPENDIX G - CALCULATION QA

A calculation QA has been undertaken before issue. The check confirms that source levels, distance attenuation, roof/eaves diffraction, character correction, background selection, reverse sound-power calculation and future capacity matrix are internally consistent.

QA item	Outcome
Source data	Toshiba sound power values used as primary source terms.
Background selection	Complete 15-minute data processed and representative LA90 values selected.
Screening	Roof/eaves screening recalculated using 40 degree roof geometry and Velux approximately 1.0 m from the eaves; values updated throughout.
Hit-and-miss cover	0 dB acoustic attenuation credited.
Future capacity	maximum permissible combined and per-unit LWA matrix included.
Residual limitation	Unrestricted night operation at 59-61 dB LWA is not supported without quiet mode/additional mitigation or separate review.

19 APPENDIX H - 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#