



Proposed Residential Development Noise Assessment

Site:

**138 – 140 Commercial Street
Newport
NP20 1LN**

For:

Skystone Design & Build Ltd

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1 Introduction

1.1 Overview

Parker Acoustics Ltd (PAL) has been commissioned by Skystone Design & Build Ltd to undertake a noise survey and assessment for the proposed residential conversion development at 138 – 140 Commercial Street, Newport, NP20 1LN (hereafter referred to as ‘the site’).

The assessment has been requested to address a local authority planning condition for the scheme.

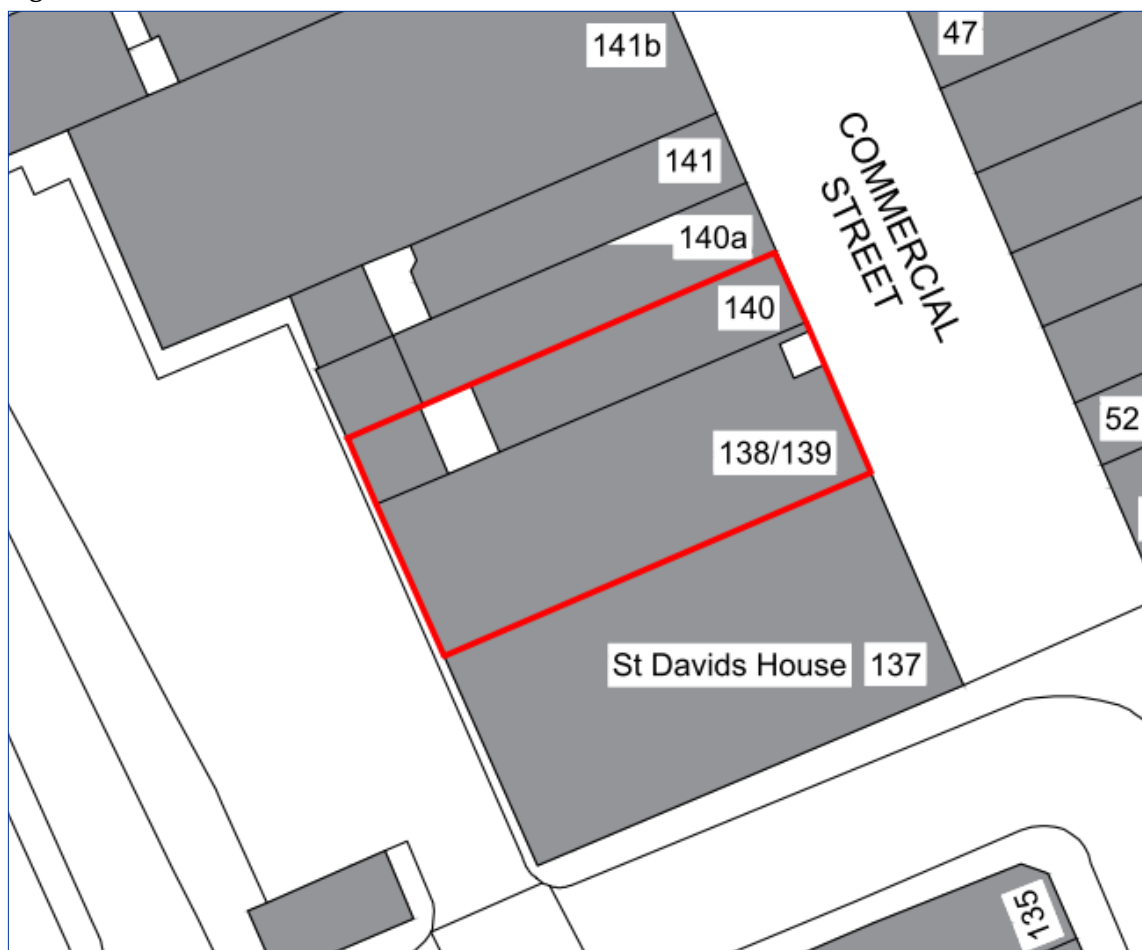
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A glossary of acoustic terms used in the main body of the text is contained in Appendix A.

1.2 Site Description

The site is located to the south-west of Commercial Street in the city centre of Newport, as shown (highlighted in red) in Figure 1.1.

Figure 1.1: Site Location



The site is bound by:

- Commercial Street (pedestrianised) to the front (north-east) with mixed use / commercial buildings opposite
- Mixed use / commercial buildings immediately adjacent to the north-west and south-east
- A car park to the rear (south-west) with Talbot Street further beyond

The proposal comprises the conversion, extension and partial change of use of existing commercial buildings to create 13 no. flats over three floors (1st, 2nd and 3rd).

2 Noise Criteria

2.1 Local Authority Requirements

Planning permission¹ for the scheme was granted by Newport City Council in November 2023 subject to conditions.

Condition 11 relates to external noise ingress and states:

'The design and structure of the development shall be of such a standard that it will protect residents within it from existing external noise so that they are not exposed to levels indoors of more than 35 dB LAeq 16 hrs daytime and of more than 30 dB LAeq 8 hrs in bedrooms at night.'

3 Noise Survey

3.1 Methodology

Noise monitoring was carried out at the site between Friday 27th and Monday 30th March 2026 to establish existing external noise levels affecting the proposed development.

The adopted external noise monitoring positions (indicative locations shown in Appendix B) were:

- 1: at the front elevation of the building (overlooking Commercial Street) at first floor level
- 2: attached to temporary scaffolding representing the rear extension (overlooking the car park and Talbot Street) at first floor level

Noise measurements were undertaken using the following equipment connected to windshield covered microphones:

- Norsonic Nor 140 Class 1 integrating sound level meter² at Position 1
- Norsonic Nor 118 Class 1 integrating sound level meter³ at Position 2

The calibration of each measurement system was verified immediately before and after the survey using a Norsonic Nor 1255 portable calibrator⁴. No significant drift in calibration level was noted (≤ 0.4 dB in this instance).

Measurements consisted of A-weighted broadband parameters including L_{Aeq} together with linear frequency data.

¹ Ref: 22/0542

² Serial number 1404079; UKAS calibration certificate number U51064 valid until 21st May 2027

³ Serial number 31839; UKAS calibration certificate number U52828 valid until 3rd December 2027

⁴ Serial number 125525543; UKAS calibration certificate number U52830 valid until 3rd December 2026

The microphone at Position 1 was 1 metre from the façade of the building and the microphone at Position 2 was 'free field' (i.e. at least 3.5 metres from a vertical reflective surface).

Weather conditions during survey commissioning and decommissioning were as follows:

- 27/03/2026: Light rain, cloudy (100% cover), mild and calm
- 30/03/2026: Dry, partially cloudy (50% cover), mild and slightly breezy

Reference has been made to online meteorological data measured at a local weather station to identify periods of adverse weather if they occurred during the remainder of the survey. Where appropriate, these periods have been identified and the corresponding noise data excluded from analysis, as detailed further in Section 3.3.

3.2 Summary of Measured Noise Data

Figures 3.1 and 3.2 present the external ambient noise level time history measured at each survey position.

Figure 3.1: Measured Noise Time History at Position 1, Friday 27th – Monday 30th March 2026

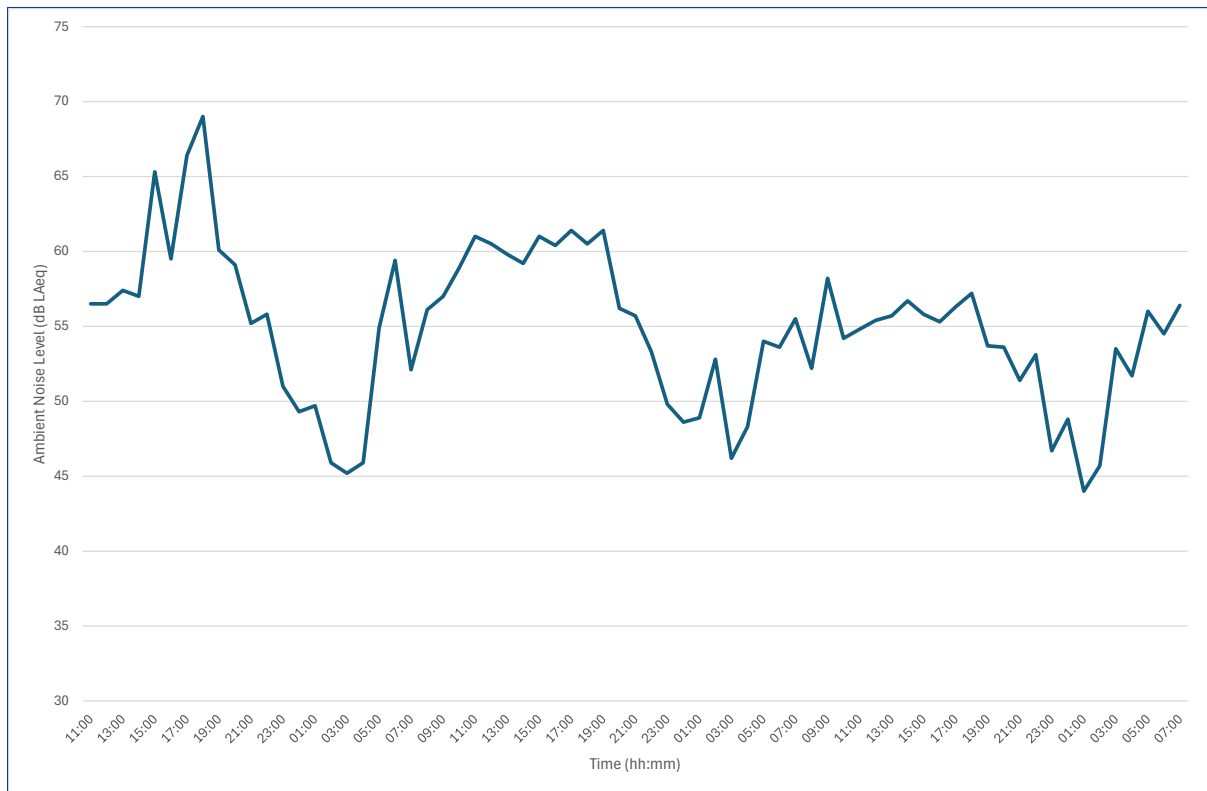


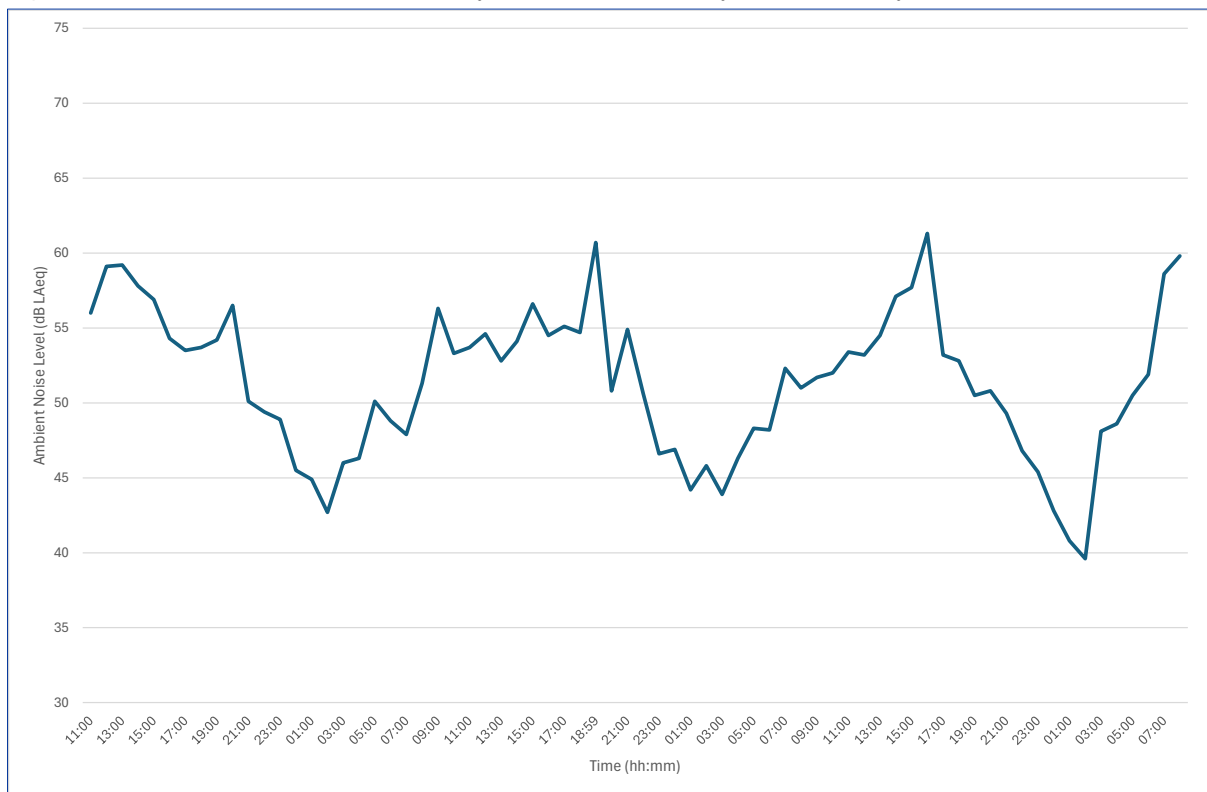
Figure 3.2: Measured Noise Time History at Position 2, Friday 27th – Monday 30th March 2026

Table 3.1 presents a summary of the ambient noise level data, measured at each position and during each day/night session, rounded to the nearest decibel.

Table 3.1: Summary of Noise Survey Data

Position	Date	Time (hh:mm)	Ambient Noise Level (dB L _{Aeq, T})	Weather Conditions
1	27/03/2026	11:00 – 23:00	62	Light rain/drizzle between 11:00 – 12:20 hrs; windspeeds 4 – 7 m/s
	27/03/2026 – 28/03/2026	23:00 – 07:00	53	Dry; windspeeds 3 – 5 m/s
	28/03/2026	07:00 – 23:00	59	Dry; windspeeds 2 – 10 m/s
	28/03/2026 – 29/03/2026	23:00 – 07:00	51	Dry; windspeeds 2 – 4 m/s
	29/03/2026	07:00 – 23:00	55	Light rain/drizzle between 15:50 – 20:20 hrs; windspeeds 3 – 11 m/s
	29/03/2026 – 30/03/2026	23:00 – 07:00	52	Dry; windspeeds 3 – 8 m/s
	30/03/2026	07:00 – 08:00	56	Dry; windspeeds 4 – 5 m/s
2	27/03/2026	11:00 – 23:00	56	Light rain/drizzle between 11:00 – 12:20 hrs; windspeeds 4 – 7 m/s
	27/03/2026 – 28/03/2026	23:00 – 07:00	47	Dry; windspeeds 3 – 5 m/s
	28/03/2026	07:00 – 23:00	55	Dry; windspeeds 2 – 10 m/s
	28/03/2026 – 29/03/2026	23:00 – 07:00	47	Dry; windspeeds 2 – 4 m/s
	29/03/2026	07:00 – 23:00	55	Light rain/drizzle between 15:50 – 20:20 hrs; windspeeds 3 – 11 m/s
	29/03/2026 – 30/03/2026	23:00 – 07:00	48	Dry; windspeeds 3 – 8 m/s
	30/03/2026	07:00 – 09:00	59	Dry; windspeeds 4 – 5 m/s

3.3 Analysis

Overview

Adverse weather (i.e. rain and / wind speeds > 5 m/s) affected the site during the following periods:

- 11:00 – 18:20 hrs Friday 27th March 2026
- 08:50 – 18:20 hrs Saturday 28th March 2026
- From 09:50 onwards Sunday 29th March 2026
- 00:00 – 02:50 hrs on Monday 30th March 2026

Further to the above, it is understood that construction work was occurring on site (resulting in unrepresentatively high noise levels) during the following periods:

- 11:00 - 16:00 hrs on Friday 27th March 2026
- From 07:00 hrs on Monday 30th March 2026

All data measured during the above periods have been excluded from the analysis set out below:

Position 1

During survey commissioning and decommissioning, it was noted that (other than the temporary construction noise occurring on site) external ambient noise levels at this position were primarily due to pedestrians on Commercial Street and distant road traffic.

Average⁵ ambient noise levels were around 57 dB $L_{Aeq,T}$ during the day and 53 dB $L_{Aeq,T}$ at night.

Position 2

During survey commissioning and decommissioning, it was noted that (other than the temporary construction noise occurring on site) external ambient noise levels at this position were primarily due to local vehicle movements and birdsong.

Average⁵ ambient noise levels were around 54 dB $L_{Aeq,T}$ during the day and 48 dB $L_{Aeq,T}$ at night.

4 Noise Assessment

4.1 Internal Noise Levels

As a starting point, it is assumed that:

- The lowest specification of glazing that would be installed on site would be basic double glazing (e.g. 4/12/4 or similar) with a minimum sound reduction of 26 dB $R_w + C_{tr}$; where necessary, this specification can be adjusted (in conjunction with the ventilation specification) in order to satisfy the indoor noise criteria
- The preferred ventilation strategy to be employed at the site will be background ventilators and intermittent extract fans (typically the most cost effective) – calculations incorporate this assumption; where an alternative ventilation strategy is preferred (e.g. mechanical ventilation), alternative sound reduction performances may be appropriate for glazing (i.e. typically a lower specification)

⁵ Derived via logarithmic average of the data

In order to determine sound reduction requirements for the glazing and ventilation, noise ingress calculations have been performed using:

- The measured external noise level data on site
- The calculation methodology outlined in BS 8233:2014⁶
- Room dimensions and façade element surface areas determined from the proposed layout and elevation drawings issued by Covest Architecture⁷
- Typical masonry external wall construction
- Typical tiled roof / plasterboard ceiling construction (with mineral wool insulation in the ceiling void)
- Assumed room reverberation time of 0.5 seconds

In order to satisfy the internal noise criteria detailed in Section 2 it is necessary to incorporate mitigation measures in the form of appropriate ventilation / glazing with the minimum specifications presented in Table 4.1.

Table 4.1: Ventilation and Glazing Recommendations

Elevation	Room	Element	Required Sound Reduction	Indicative Specification ^A
Front	Living Rooms	Glazing	26 dB $R_w + C_{tr}$	'4 (12) 4' Double Glazing
		Ventilation ^B	19 dB $D_{n,e,w} + C_{tr}$	Greenwood 8000HD (or equivalent) Window Trickle Vent
	Bedrooms	Glazing	26 dB $R_w + C_{tr}$	'4 (12) 4' Double Glazing
		Ventilation ^B	25 dB $D_{n,e,w} + C_{tr}$	Greenwood 8000HD (or equivalent) Window Trickle Vent
Rear	Living Rooms	Glazing	26 dB $R_w + C_{tr}$	'4 (12) 4' Double Glazing
		Ventilation ^B	20 dB $D_{n,e,w} + C_{tr}$	Greenwood 8000HD (or equivalent) Window Trickle Vent
	Bedrooms	Glazing	26 dB $R_w + C_{tr}$	'4 (12) 4' Double Glazing
		Ventilation ^B	23 dB $D_{n,e,w} + C_{tr}$	Greenwood 8000HD (or equivalent) Window Trickle Vent

Notes:

^A For more information, Appendix C and Appendix D present lists of various commercially available glazing and ventilation units along with associated sound reduction performances

^B Requirements apply to trickle vents per habitable room (i.e. living room / bedroom) in open position

It can be seen that the internal noise criteria can be satisfied with a relatively basic configuration of glazing and ventilation (i.e. standard 4/12/4 glazing and basic window trickle vents).

The following should be noted:

- When selecting a glazing system to satisfy the requirements outlined in Table 4.1, it is important to ensure that both the R_w and $R_w + C_{tr}$ requirements are satisfied. Published R_w values tend to be higher than corresponding $R_w + C_{tr}$ values; therefore, incorrect selection could result in an overestimation of sound reduction performance which in turn could result in higher internal noise levels
- The opening and free area of the ventilation unit should be checked by a mechanical service engineer before designs are finalised

⁶ British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings. BSI (2014)

⁷ Drawing ref:

- T/110 Rev A 'Production First Floor Plan'
- T/111 Rev A 'Production Second Floor Plan'
- T/112 Rev A 'Production Third Floor Plan'
- T/108 'Proposed Elevations'

- Should the equivalent open area be insufficient to meet the minimum requirements of Part F of the Building Regulations, it may be necessary to increase the number of units per habitable room. Where this applies, the required sound reduction of the ventilation units should be increased accordingly (3 dB per doubling of required no. of vent units)
- Where mechanical ventilation is provided, the system should be designed such that internal ambient noise levels from mechanical services do not exceed 30 dB $L_{Aeq,T}$ in living rooms and 26 dB $L_{Aeq,T}$ in bedrooms

5 Summary and Conclusions

A noise survey and assessment have been performed for a proposed residential conversion development at 138 – 140 Commercial Street, Newport, NP20 1LN.

Noise monitoring was carried out at the site between Friday 27th and Monday 30th March 2026 to establish existing external noise levels affecting the proposed development.

Section 4 provides recommendations to mitigate external noise to satisfy the local authority indoor noise criteria set out in the planning condition. Mitigation measures include the specification of appropriate configurations of glazing and ventilation.

Appendix A – Abbreviations and Definitions

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μPa).

A-weighting

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Human Perception of Sound

Audibility of sound covers a range of approximately 0 to 140 dB. The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure noise is weighted to represent the performance of the ear, using the 'A weighting' [dB (A)]. Table A1 lists the sound pressure level in dB (A) for common situations:

Table A.1: Noise levels for Common Situations

Typical Noise Level dB(A)	Example
0	Threshold of hearing
30	Rural area at night, still air
40	Public library, refrigerator humming at 2m
50	Quiet office, no machinery Boiling kettle at 0.5m
60	Normal conversation
70	Telephone ringing at 2m Vacuum cleaner at 3m
80	General factory noise level Heavy goods vehicle from pavement
90	Powered lawn motor at operator's ear
100	Pneumatic drill at 5m
120	Discotheque – 1m in front of loudspeaker
140	Threshold of pain

Human Perception of Loudness

Because of the logarithmic nature of the decibel scale, it should be borne in mind that noise levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) is not twice as loud as 50 dB(A) sound level. It has been found experimentally that changes in the average level of fluctuating sound, such as traffic noise, need to be of the order of 3 dB(A) before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10 dB(A) is perceived by the average listener as a doubling or halving of loudness.

Equivalent Continuous A-weighted Sound Pressure Level ($L_{Aeq, T}$)

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

 $L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

 $L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

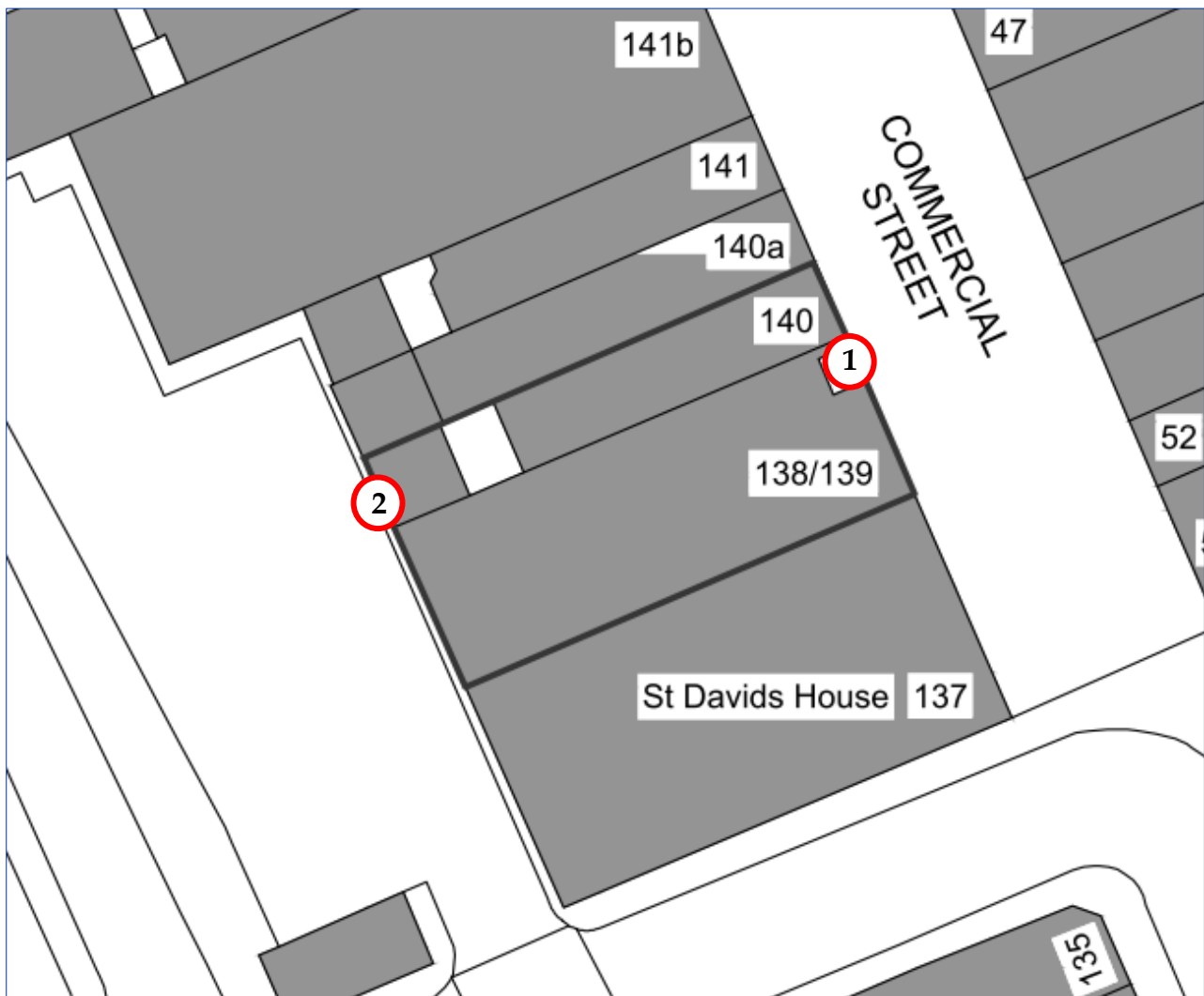
Single Event Level / Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, regardless of event duration. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix B – Noise Monitoring Positions



Appendix C – Example Glazing Units

Table C.1 presents a range of example glazing configurations along with their associated sound reduction performance. The following should be noted:

- Data is as per manufacturers publications; therefore, it is the responsibility of the manufacturer in ensuring the product achieves the specified performance
- These are example solutions only, alternative solutions are available and may be considered; however, where alternatives are sourced, the sound reduction data should be obtained from the manufacturer to ensure the required sound reduction performance is satisfied
- The stated dimensions are in millimetres with the void size indicated in brackets e.g. '4 (16) 6' refers to a double-glazed unit comprising a 4mm glass pane and a 6mm glass pane separated by a 16mm air void
- The use of letters (beside the dimensions) denotes laminated or acoustic glass, see notes at the bottom of the table

Table C.1: Example Glazing Units and Associated Sound Reduction Performances

Configuration	Manufacturer	Sound Reduction (dB)	
		R_w	$R_w + C_{tr}$
4 (16) 4	Saint Gobain	30	26
6 (12) 4	Saint Gobain	32	29
6 (15) 4	Saint Gobain	33	29
6 (25) 4	Saint Gobain	34	30
4 (16) 8	Saint Gobain	35	30
4 (6) 10	Saint Gobain	36	33
4 (12) 6.8P	Pilkington	36	30
6 (12)10	Saint Gobain	37	33
10 (6) 8.8S	Saint Gobain	38	35
6 (12) 6.8P	Pilkington	38	33
6 (15) 8.8A	Saint Gobain	39	33
5 (16) 8.8P	Pilkington	39	33
6 (27) 10	Saint Gobain	40	36
10.8L (12) 6.8P	Pilkington	40	34
8 (15) 8.8A	Saint Gobain	41	35
6 (16) 8.8P	Pilkington	41	34
10 (12) 8.8A	Saint Gobain	42	37
8 (16) 8.8P	Pilkington	42	34
12 (15) 8.8A	Saint Gobain	43	39
8 (16) 10.8P	Pilkington	43	36
8.4A (16) 10.4A	Saint Gobain	44	38
10 (16) 8.8P	Pilkington	44	37
10 (16) 12.4A	Saint Gobain	45	40
10 (16) 9.1P	Pilkington	45	39
8.8S (20) 10.8A	Saint Gobain	46	40
9.1P (12) 4 (12) 10	Pilkington	46	40
12.8A (15) 12.8A	Saint Gobain	47	41
8.8P (16) 12.8P	Pilkington	47	39
16.8A (15) 16.8A	Saint Gobain	48	44
9.1P (20) 13.1P	Pilkington	49	42
14.8A (24) 12.8A	Saint Gobain	50	46
9.1P (20) 17.1P	Pilkington	50	43
11.1P (20) 17.1P	Pilkington	51	46
9.1P (20 Arg) 17.1P	Pilkington	52	44

A = 'Stadip Silence' (Saint Gobain); S = 'Stadip' (Saint Gobain); P = 'Optiphon' (Pilkington); L = 'Optilam' (Pilkington); Arg = Argon Filled Cavity

Appendix D – Example Ventilation Units

Table D.1 presents a range of example ventilators, including trickle vents and acoustic air bricks, along with their associated sound reduction performance. The following should be noted:

- Data is as per manufacturers publications; therefore, it is the responsibility of the manufacturer in ensuring the product achieves the specified performance
- These are example solutions only, alternative solutions are available and may be considered; however, where alternatives are sourced, the sound reduction data should be obtained from the manufacturer to ensure the required sound reduction performance is satisfied
- The units listed may not always provide the required free area through one ventilator alone; for each additional ventilator, the required $D_{n,e,w}$ should be increased by $10 \log(n)$, where 'n' is the number of ventilators

Table D.1: Example Ventilation Units and Associated Sound Reduction Performances

Manufacturer	Model	Type	Equivalent Area (mm ²)	Sound Reduction (dB)	
				$D_{n,e,w}$	$D_{n,e,w} + C_{tr}$
Greenwood	8000HD	Window Vent	6400	30	31
Titon	Trimvent Select Xtra S16	Window Vent	4600	31	31
Greenwood	6000S	Window Vent	4200	32	31
Titon	SF Xtra	Window Vent	4000	32	32
Titon	Trimvent Select Xtra S13	Window Vent	5000	32	33
Greenwood	5000EA	Window Vent	5300	33	33
Greenwood	2500F	Window Vent	2500	33	34
Greenwood	4000L	Window Vent	3200	34	33
Greenwood	3000S	Window Vent	2500	35	34
Greenwood	2500EA	Window Vent	2723	36	36
Ryton	TAL9H&M	Thru-Wall Vent	12800	38	35
Ryton	TAL4H&M	Thru-Wall Vent	6300	38	37
Airvent	SM Ultima 5000	Window Vent	5000	39	37
Greenwood	5000EAW.AC1	Window Vent	5713	39	37
Greenwood	AWV39	Thru-Wall Vent	2500	39	37
Ryton	TALH&M	Thru-Wall Vent	10500	39	37
Ryton	TAL4HMCWL	Thru-Wall Vent	6300	39	38
Ryton	TAL9HMCWL	Thru-Wall Vent	12700	40	37
Greenwood	5000EAW.AC2	Window Vent	5493	42	38
Ryton	TALHMCWL	Thru-Wall Vent	9800	42	39
Greenwood	2500EAW.AC1	Window Vent	2749	42	40
Greenwood	EAR 42W	Window Vent	3325	42	42
Ryton	AAC125HP	Thru-Wall Vent	8500	43	41
Ryton	AAH125HP	Thru-Wall Vent	7700	44	42
Greenwood	AAB4000	Thru-Wall Vent	2500	44	44
Greenwood	2500EAW.AC2	Window Vent	2736	45	42
Ryton	AAC125HPCWL	Thru-Wall Vent	8400	45	42
Airvent	SM Ultima 2960	Window Vent	2960	47	45
Greenwood	MA3051	Thru-Wall Vent	2500	55	52