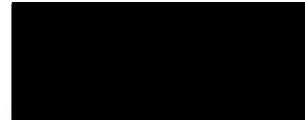


Consultancy Report
Ref: 11732-R01

Submitted to:

Mr Singh
Chrome Assets Ltd
Cranlea
Hutwood Rd
Chilworth
SO16 7LL

Prepared by:



Andy Varley (MIOA)
Senior Consultant

NOISE ASSESSMENT OF PROPOSED FLATS AT
5 LEIGH ROAD
EASTLEIGH

July 2024

Contents

1.	Introduction.....	3
2.	Planning Guidance	4
3.	Site Description and Noise Sources	6
4.	Site Noise Survey.....	8
5.	Noise Impact Assessment	10
6.	Noise Mitigation	12
7.	Conclusions.....	14

1. Introduction

ISVR Consulting was asked to carry out a noise assessment for the proposed permitted development of 2 residential flats on the first floor of the existing building at 5 Leigh Road, Eastleigh. The assessment is intended to assess the potential noise impact of commercial activities in the vicinity and recommend appropriate noise mitigation measures if required.

The noise level of commercial activities in the vicinity of the proposed development has been assessed with regards to BS4142:2014. Appropriate noise mitigation has been recommended with regards to BS8233:2014

2. Planning Guidance

The following comments have been received from the local authority:

1. Transmission of noise through the building structure from ground floor uses (transmitted through the floor ceiling partition or by flanking through adjacent walls).

My understanding is that Building Regulations would require a certain level of sound insulation to be provided between the ground floor and residential uses proposed on the first floor. The EBC Building Control team would be able to advise on the details. This level of sound insulation would probably be acceptable for ground floor uses generating only modest levels of noise. From street view it appears that the current use may be as a Tanning Studio. This probably poses minimal risk to occupants of the first floor through noise generation. However, should occupation of the ground floor unit change without the need for further planning consent this may change the picture. I do not know the extant use class or established rights for the the ground floor premises and you may wish to explore this further. Generically by way of example; if any use within Use Class E is permitted; uses within category E(b) and E(d) can include provision for the playing of amplified music at significant volumes, such that sound insulation to the usual Building Regulation requirements would likely be inadequate for protecting residential amenity.

2. Transmission of noise through the party walls from adjacent commercial uses at first floor or by flanking transmission through the party walls from adjacent ground floor uses

Noise from adjacent uses is likely a much lower risk. There is no current uses visible on street view that would pose a particular risk. However, my comments regarding extant consents above applies here also albeit to a lesser extent.

3. Transmission of noise from externally located fixed items of plant impacting the balcony area or habitable rooms

From google streetview, I cannot see any fixed plant to the front elevation. To the rear, streetview is limited, but there appears to be a cooking extract system to a premises in Market Street (Istanbul Grill) and some condenser plant. The planning

agent suggests generically, that the windows would be replaced with uPVC double glazing (including acoustic glazing).

If noise from fixed plant is sufficient to impact upon amenity, this proposal would not protect the balcony area. This will be relevant if part of your consideration relate to the quality of this space as an external amenity space.

In respect of internal spaces; acoustic secondary glazing would only have some benefit, if the windows remain closed which then begs the question; how will the rooms be ventilated in such a way that noise does not enter the building through the ventilation system. Further, if the plant produces distinct tonal elements for example, even with closed windows and a suitable ventilation system, the internal noise climate might still be unacceptable because the tonal elements might still be dominant. A better solution would be to address any unacceptable offending noise at source. This might be achievable through Grampian style conditions attached to any consent for example. However, this is all jumping the gun somewhat. The first priority should be to assess the significance of plant noise at this location using BS4142 methodology and this should be done prior to grant of consent, so that if remedial measures are needed these can be properly understood and the appropriate planning response determined.

3. Site Description and Noise Sources

It is proposed to develop the first floor of the existing building at 5 Leigh Road, Eastleigh to provide 2 residential flats. The front flat overlooks Leigh Road, the rear flat overlooks a parking area service the rear of the number of businesses in the immediate vicinity.

The proposed flats are above a Tanning Salon on the ground floor which is not considered to be a significant source of noise.

There is a coffee shop on the corner of Leigh Road and Market Street with an outdoor seating area. The seating area is covered by a glass canopy screening it from the front facade of the proposed development. Observations carried out on site indicate that this commercial activity is not noticeable above the existing traffic and pedestrian activity and as such does not present a specific noise issue to be considered.

There are a number of plant items fitted to the rear of businesses on Market Street including Istanbul Grill, Anglo Vapour and Fox and Sons Estate Agents. These items are considered to be the most significant noise sources in the vicinity of the site and are the main subject of this assessment. The site location and identified noise sources are shown in Figure 1, the proposed floors plans are shown in Figure 2.

The identified plant and its operation are described below:

Istanbul Grill

Plant installed to the rear of the premises includes 2 x Hispania air conditioning units as well as a kitchen extract system. These units are in continuous use between 12.00 - 00.00 hrs on Sunday- Thursday, and 12.00 – 02.00 hrs on Friday and Saturday. The units are located approximately 10m from the rear of the proposed flats.

Anglo Vapour

2 Fujitsu air conditioning units are installed to the rear of this property. The units are in occasional use subject to requirement in business hours 09.00 – 17.30 hrs. The units are located approximately 11m from the rear of the proposed flats.

Fox and Sons

A single Mitsubishi air conditioning system is installed to the rear of this property. The unit is in occasional use subject to requirement in business hours 08.30 – 18.00 hrs. The unit is located approximately 15m from the rear of the proposed flats.

4. Site Noise Survey

Attended noise surveys were carried out during the afternoon (15.00 – 16.00 hrs) of Friday 12th July 2024 and the late evening (23.00 – 23.30 hrs) and early night time (01.30 – 02.00 hrs) of Friday 19th July 2024. During these periods the weather remained calm and dry. During the afternoon visit the A/C units of Anglo Vapour and Fox and Sons were not operating but on request were turned on to allow noise measurements. The 2 A/C units and extract system of Istanbul Grill were in operation at their normal operating condition. During the late evening and early night time visits only the extract and A/C units of Istanbul Grill were in operation. During the visits the background and ambient noise levels were measured on Mitchell Road at a sufficient distance from the plant items that they did not contribute to the background noise level.

Measurements of the operating noise levels of the A/C units and extract system were carried out and the noise levels are reported below:

Istanbul Grill

The combined noise level of the Extract System as well as the 2 A/C units was measured to be 58 dB(A) at a distance of 4m from the units. The noise exhibited slight tonality in the 160 Hz One third octave band. The measurement was repeated during the late evening site visit at which time the noise level adjacent to the proposed rear flat was 52 dB(A).

Anglo Vapour

The noise level of the Anglo Vapour Fujitsu A/C units, located approximately 4m from the extract system of Istanbul Grill, were inaudible over the noise of the Istanbul Grill system. As such it is considered that these units have a noise level no greater than 48 dB(A) at a distance of 1m.

Fox and Sons

The noise level of the Mitsubishi A/C unit was 58 dB(A) at 2m from the unit. It was not considered to exhibit any tonal characteristics.

Background and Ambient Noise Levels

The measured background and ambient noise levels were controlled by local traffic and are shown in Table 1 below:

Time	Background Noise Level dBL_{A90,15mins}	Ambient Noise Level dBL_{Aeq,15mins}
15.30 hrs	49	53
23.00 hrs	41	43
01.30 hrs	36	37

Table 1 Background and Ambient Noise Levels

Plant Noise Levels at Rear Flat

Based on the measured noise levels, the noise level of each plant item outside the proposed rear flat is shown in Table 2 below:

Plant Item	Distance to Flat (m)	Noise Level at Rear Flat dB(A)
Istanbull Grill	10m	52 (measured)
Anglo Vapour	11m	27 (predicted)
Fox and Sons	15m	41 (predicted)
Total		52

Table 2 Noise Levels outside Rear Flat

5. Noise Impact Assessment

BS4142:2014 Noise Impact Assessment

The noise level of the commercial activities has been assessed with regards to BS4142:2014. The standard compares the 'Rating' noise level of the activity against the background noise level at the noise sensitive property. The greater the difference the greater the magnitude of the impact.

A difference of around + 10 dB or more is likely to be an indication of a significant adverse impact, depending on context.

A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific source having a low impact, depending on the context.

The 'Rating' noise level takes account of the specific noise level of the activity (i.e. measured noise level of activity alone), with penalties applied for acoustic features such as tonality and impulsiveness. Distance and screening between the source and receiver will reduce the specific noise level of the activity, as will the period of use.

The noise measurements indicate that the extract system and A/C units associated with Istanbul Grill are the most dominant source of noise, and occur late as night, therefore the noise assessment just considers this aspect.

For the purpose of this assessment a number of assumptions have been made:

Tonality: It is considered that tonality of extract and A/C system was only slightly perceptible. As such a penalty of 2 dB has been applied for tonality.

Impulsivity: It is considered that there would not be impulsivity associated with the extract and A/C system. As such no penalty has been applied for impulsivity.

Intermittency: It is considered that there would not be intermittency associated with the extract and A/C system. As such no penalty has been applied for intermittency.

On-time correction: It is assumed that the extract and A/C system will operate continuously therefore no 'on-time' correction has been applied.

Based on the measured noise levels and the above assumptions the noise impact of the Istanbul Grill extract and A/C system at the rear of the property is shown in Table 3 below:

Noise Source	Noise Level
Extract System	52 dB(A)
Acoustic Penalty (Tonality) dB	2 dB
Acoustic Penalty (Impulsivity) dB	0 dB
Acoustic Penalty (Intermittency) dB	0 dB
'On Time' Correction	0 dB
Rating Noise Level dB	54 dB(A)
Typical Background Noise Level dB L _{A90} (Afternoon/Evening/Night)	49/41/36 dB
Excess of Rating over Background (Afternoon/Evening/Night)	+5/13/18 dB
Impact Assessment	Adverse to Significant Adverse Impact

Table 3: Noise Impact of Extract and A/C System

6. Noise Mitigation

The noise levels recommended by BS8233:2014 suggest interior noise levels of 35 dB $L_{Aeq,16 \text{ hour}}$ in bedrooms and living rooms and 40 dB $L_{Aeq,16 \text{ hour}}$ in dining rooms for the daytime period, and 30 dB $L_{Aeq,8 \text{ hour}}$ within bedrooms for the night time period. It is recommended that the maximum noise levels within bedrooms at night should not regularly exceed 45 dB L_{Amax} .

For a property of traditional construction, the sound insulation provided by the building envelope is normally controlled by the acoustic performance of the glazing system. For standard double glazed units the acoustic performance is typically in the range $R_w = 30 - 35$ dB without trickle vents, reducing to 25 dB with standard trickle vents. The acoustic performance of specialised glazing and vents is provided by the manufacturers. It is typically assumed that the sound insulation provided by an open window is 15 dB.

In order to control the interior noise levels to the required level, the average interior noise levels have been assessed in accordance with the simple method provided in BS8233:2014. Using this method the interior noise level may be predicted by simply subtracting the sound reduction index of the building element from the exterior noise level. This method is deemed sufficiently robust if the predicted interior noise level is at least 5 dB below the required level.

The floorplans indicate that the kitchen/dining room and bedroom are exposed to noise from Istanbul Grill.

The noise levels recommended by BS8233:2014 suggest interior noise levels of 40 dB $L_{Aeq,16 \text{ hour}}$ in dining rooms for the daytime period and 30 dB $L_{Aeq,8 \text{ hour}}$ within bedrooms at night.

Based on a Rating Noise Level of 54 dB(A), the recommended level of sound insulation required to the kitchen/dining room and bedroom is shown in Table 4 below:

Room Type	Time Period	Sound Insulation R_w dB
Dining Room	Daytime	19 (54-40+5)
Bedroom	Night time	29 (54-30+5)

Table 4: Recommended Sound Insulation Levels

In order to achieve the required levels of sound insulation and ventilation, the glazing and ventilation specifications required to meet the sound insulation levels presented in Table 4 are shown in Table 5 below:

Room Type	Recommended Sound Insulation	Glazing	Ventilation
Dining Room	$R_w = 19$	Standard Double Glazed Units	Standard Trickle Vents
Bedroom	$R_w = 29$	Standard Double Glazed Units	Acoustic Trickle Vents and/or Acoustic Airbrick with $D_{n,e,w} > 39$ dB

Table 5: Recommended Glazing and Ventilation Specifications

Examples of typical acoustic ventilators are shown in the Appendix.

With regards to the other issues presented in the Planning Guidance section of this report it is recommended that the party floor between the ground floor commercial premises and the proposed first floor flats should comply with the airborne sound insulation requirements Building Regulations Part E for properties converted by material change of use.

With regards the front flat, it is considered that there are no specific external commercial activities requiring noise mitigation and as such no specific guidance has been provided on this aspect.

7. Conclusions

ISVR Consulting was asked to carry out a noise assessment of commercial activities that might have an adverse effect on the proposed permitted development of 2 flats on the first floor of the building at 5 Leigh Road, Eastleigh.

This report presents the typical background noise levels affecting the site as well as an assessment of the potential noise impact of 3 identified commercial activities in the vicinity of the proposed development. The findings of the assessment are summarised below:

- It is proposed to develop the first floor of the building to provide 2 residential flats.
- A number of potential commercial noise sources were identified within the vicinity of the proposed site, located to the rear of Istanbul Grill, Anglo Vapour and Fox and Sons.
- It was considered that most significant commercial noise source was associated with the extract system and A/C units of Istanbul Grill. These units may be in operation between 12.00 – 02.00 hrs.
- The plant items of Istanbul Grill may have a significant adverse impact on the proposed rear flat according to BS4142:2014.
- Appropriate glazing and ventilation has been recommended in order to mitigate the noise levels of Istanbul Grill sufficiently in order to meet the interior noise levels recommended by BS8233:2014.
- It is recommended that the party floor between the ground floor commercial premises and the proposed first floor flats should comply with the airborne sound insulation requirements Building Regulations Part E for properties converted by material change of use.
- It is considered that no specific sound insulation measures are required to control external noise affecting the proposed front flat.

Figures

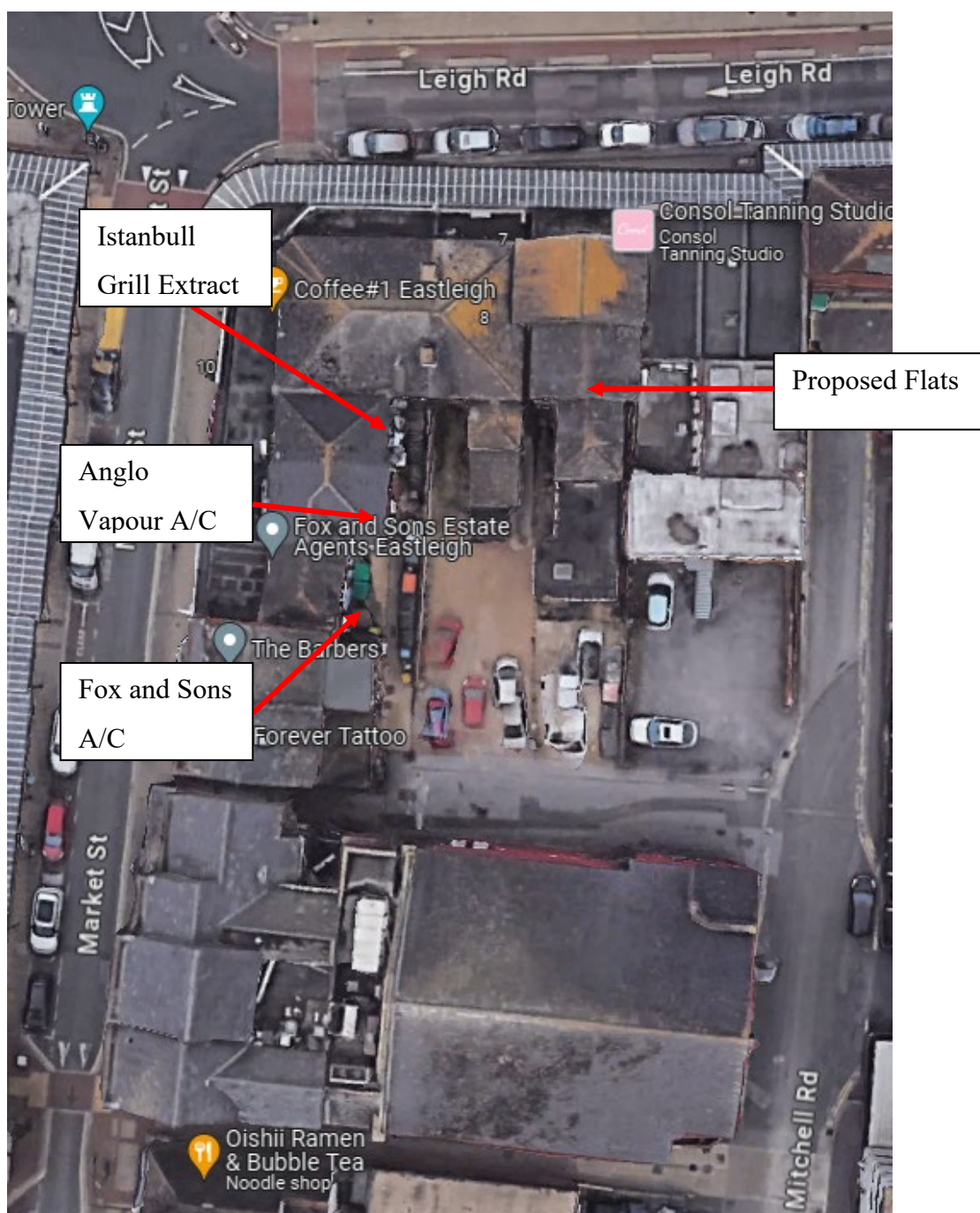


Figure 1 Site Location and Plant Positions

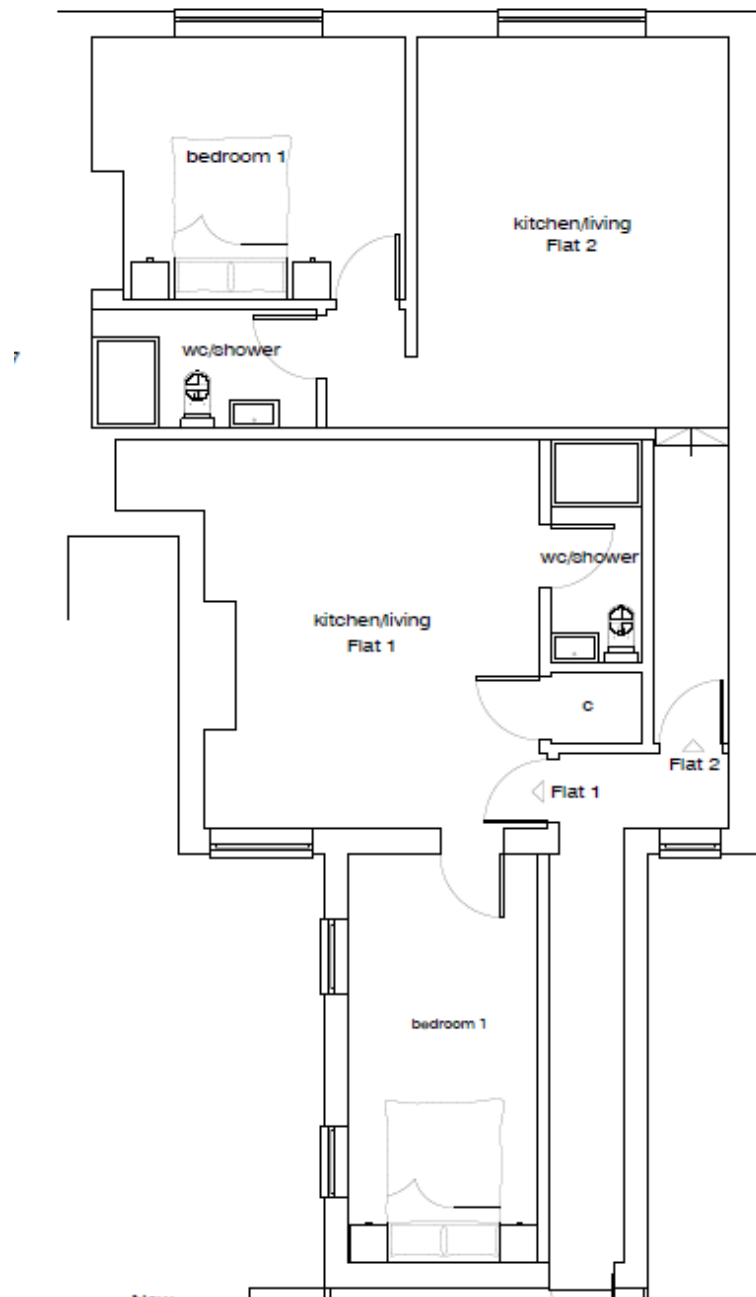


Figure 2 Proposed Floor Plans

Appendix

136 Acoustic Ventilation



EAR42W

Acoustic window ventilator



Physical specification

All measurements in millimetres unless otherwise indicated

Materials: ABS



Internal



Acoustic spacer



External

Features and benefits

- One of the best performing acoustic window ventilators available in the UK
- Provides an outstanding $D_{n,e,w}$; 42dB(A) for areas with high external noise transmission
- Humidity control to regulate supply of fresh air effectively throughout the day in response to changing indoor humidity levels
- Manual override control option for occupants to ensure a comfortable environment at all times
- Upward air deflection to eliminate replacement air causing draughts
- Manufactured from ABS – available in white as standard
- May require add on section in some window installations

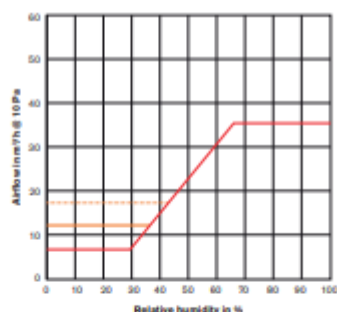
Slot size

Height: 12mm

Length	Central gap	Length
172mm	10mm	172mm

Route slot in window frame as required and screw ventilator over holes.

Performance



Key

EAR² 5-35m³/h

EAR² 17-35m³/h

EAR² 11-35m³/h

.....

Acoustic performance

Dn,e,w: Average weighted performance across frequency range
Ct: Pink noise
Ctr: Road noise

Models, control options and key data

Product code	Controls	Acoustic performance			Equivalent area mm ²	Colour
		Dn,e,w	Dn,e,w (C)	Dn,e,w (Ctr)		
EAR42W *	Bottom	42dB(A)	42dB	42dB	3912	White



EAR42W

Acoustic window ventilator



Physical specification

All measurements in millimetres unless otherwise indicated

Materials: ABS



Internal



Acoustic spacer



External

Features and benefits

- One of the best performing acoustic window ventilators available in the UK
- Provides an outstanding $D_{n,e,w}$; 42dB(A) for areas with high external noise transmission
- Humidity control to regulate supply of fresh air effectively throughout the day in response to changing indoor humidity levels
- Manual override control option for occupants to ensure a comfortable environment at all times
- Upward air deflection to eliminate replacement air causing draughts
- Manufactured from ABS – available in white as standard
- May require add on section in some window installations

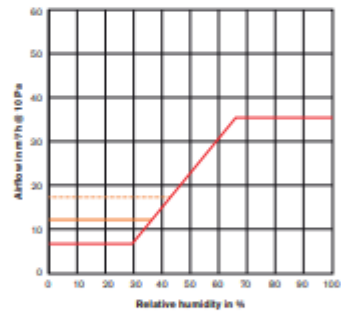
Slot size

Height: 12mm

Length	Central gap	Length
172mm	10mm	172mm

Route slot in window frame as required and screw ventilator over holes.

Performance



Key

EAR² 5-35m³/h

EAR² 17-35m³/h

EAR² 11-35m³/h

Acoustic performance

$D_{n,e,w}$: Average weighted performance across frequency range

C: Pink noise

Ctr: Road noise

Models, control options and key data

Product code	Controls	Acoustic performance			Equivalent area mm²	Colour
		$D_{n,e,w}$	$D_{n,e,w}$ (C)	$D_{n,e,w}$ (Ctr)		
EAR42W *	Bottom	42dB(A)	42dB	42dB	3912	White