
Acoustic Design Note 0132022_AC01

To: Edge Lane Design Team

From: Complete Sustainability Solutions Ltd

Date: 01/03/2022

Subject: Discharge of Condition 17, Part A – Noise Assessment

Overview

Complete Sustainability Solutions has been appointed to provide an assessment of noise impact at a consented residential development for 168 dwellings and 48 apartments at Edge Lane, Manchester (post code M11 1DG).

The planning permission for the development (reference: 126674/FO/2020) includes several noise related Planning Conditions. This design note aims to provide information pursuant to part (a) of Condition 17, such that the Condition may be partially discharged. Condition 17 is repeated below for ease of reference:

“(a) Notwithstanding the noise assessment stamped stamped [sic] as received by the City Council, as Local Planning Authority, on the 5 June 2020, a scheme for acoustically insulating the proposed residential accommodation against noise from the local traffic network shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved noise insulation scheme shall be completed before the first occupation of the development.

Noise survey data must include measurements taken during a rush-hour period and night-time to determine the appropriate sound insulation measures necessary. The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB Aeq (individual noise events shall not exceed 45 dB Amax,F by more than 15 times)

Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq

Gardens and terraces (daytime) 55 dB LAeq (where practically possible)”

(b) Prior to the first occupation of of [sic] the development, a verification report for the development will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.”

Summary of Previously Noise Impact Assessment

In December 2019 Complete Sustainability Solutions (CSS) undertook a detailed noise impact assessment to support the planning application for the scheme. An electronic link to the noise impact assessment, which is saved on the planning portal, is [here](#).

Section 4.0 of the report presents the results of a detailed baseline noise survey which included unattended noise monitoring over a 65-hour period at multiple measurement positions. The surveys included weekday and weekend periods, including weekday rush-hour and night-time periods as stipulated in Condition 17. The assessment also presents the results of a detailed noise modelling exercise which was used to predicted noise propagation across the site.

The assessment presented calculations of noise break-in to dwellings across the site to determine the minimum sound insulation performance requirements for external glazing and ventilators in the façade of dwellings to achieve internal noise levels of 35 dB $L_{Aeq,16hr}$ in living rooms during the day (07:00 – 23:00) and 30 dB $L_{Aeq,8hr}$ / 45 dB L_{AFmax} in bedrooms at night (i.e. the limits outlined in Condition 17). The assessment split the site into two Zones (A and B) and provided minimum sound insulation performance specifications for glazing and ventilators to habitable rooms in each Zone. The minimum performance specifications are presented in Section 5.4 of the report and are summarised below for ease of reference.

Figure 1 – Reproduction of Figure 4 from CSS planning report which presents mitigation Zones



- Zone 1 – Glazing to bedrooms to achieve a sound insulation performance ≥ 38 dB R_w
- Zone 1 – Trickle Ventilators to bedrooms to achieve a sound insulation performance ≥ 39 dB $D_{ne,w}$
- Zone 1 - Glazing to living rooms to achieve a sound insulation performance ≥ 38 dB R_w
- Zone 1 – Trickle Ventilators to living rooms to achieve a sound insulation performance ≥ 38 dB $D_{ne,w}$
- Zone 2 – Glazing to all rooms to achieve a sound insulation performance ≥ 33 dB R_w
- Zone 2 – Trickle Ventilators to all rooms to achieve a sound insulation performance ≥ 29 dB $D_{ne,w}$

Mitigation Measures Incorporated into Scheme Design

Since the noise impact assessment was undertaken the scheme design has progressed to omit trickle ventilators in the building façade for all dwellings across the site. Background ventilation will be achieved using mechanical extraction and a specifically designed air permeability rate in excess of $5\text{m}^3/(\text{h.m}^2)$ as per guidance from Approved Document F: Ventilation of the Building Regulations. As such, the minimum trickle ventilator performance specifications from the CSS noise impact assessment submitted at planning stage can be omitted.

The proposed glazing configurations scheduled for installation across the scheme are as follows:

- **Zone 1:** 6.8mm acoustic laminate / 16mm cavity / 6mm float glass to all habitable spaces. Acoustic performance: **40 dB R_w**
- **Zone 2:** Either 4mm float glass / 20 mm cavity / 4 mm float glass (acoustic performance **33 dB R_w**) or 6.8 laminate / 18mm cavity / 4 mm float glass (acoustic performance **33 dB R_w**) to habitable spaces across Zone 2.

Manufactures datasheets for the proposed glazing systems are included in **Appendix A**.

The proposed glazing systems meet the minimum performance requirements detailed in CSS's noise impact assessment submitted at planning stage. As such, with the incorporation of the proposed glazing systems, the noise level limits outlined in Condition 17 are predicted to be achieved with windows closed. It is therefore considered that Part A of Condition 17 may be discharged.

Appendix A – Details of Proposed Glazing Systems

Figure A1 – Proposed Glazing Solutions to All Habitable Spaces in Zone 1 and Spaces in Zone 2 Where Safety Glass is Required

Acoustics and Sound Attenuation Units				Technical Guides
Acoustic control units, typical examples:				Zone 2 (selected spaces where safety glass is required for non-acoustic reasons)
Construction	Rw	C	Ctr	Notes:
4mm float // 4mm float	31	29	26	Standard unit.
6mm float // 6mm float	31	30	27	Heavier 6mm version.
6.8mm laminate // 4mm float	33	32	28	Addition of standard 6.8mm laminate.
6.8mm acoustic lam // 4mm float	36	34	30	Addition of acoustic 6.8mm laminate.
6.8mm acoustic lam // 6mm float	40	38	34	Acoustic laminate and heavier glass.
10mm float // 4mm float	38	36	32	Non-laminate improved acoustic values.
10mm float // 6mm float	40	38	35	Heavy and different thicknesses.
10mm float // 8.8mm laminate	40	39	36	Heavy and laminate.
10 mm float // 8.8mm acoustic lam	42			Zone 1 (All Habitable Spaces)
12.8mm ac lam // 8.8mm ac lam	48			
4mm float single glazed	29	27	26	Similar performance as 4mm DGU.
4mm float triple glazed	32	31	27	Similar performance to single/4mm DGU.

Figure A2 – Proposed Glazing Solutions to Spaced in Zone 2 where Safety Glass Is Not Required



Acoustic Performance

Guardian Float Glass

The acoustic performance data within this document is determined by calculation, based on factors derived from certified data. Due to inherent variations in acoustic performance when testing in accordance with EN ISO 140-3, some variation in the calculated performance can also be expected. As such, the weighted performance, R_w , and adaptation terms, C and C_{tr} , should typically be considered to be accurate within ± 2 dB. However, wider deviations can occur.

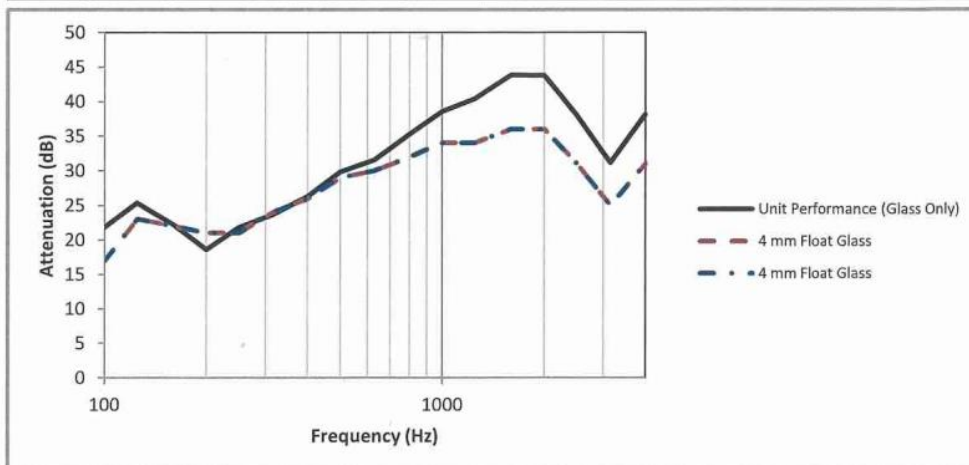
4 mm Float Glass

(6-24 mm Cavity)

4 mm Float Glass

Sound Reduction Indices - dB

Frequency - Hertz						$R_w(C;C_{tr})$	R_w	$R_w + C$	$R_w + C_{tr}$
125	250	500	1000	2000	4000				
25	22	30	39	44	38	33(-1;-4)	33	32	29



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