Central Somers Town
Plots 5 & 6
London

RIBA Stage 4
Report

30538/RIBA Stage 4

7 July 2023

For:
Morgan Sindal Construction (Plc)
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Hann Tucker Associates

DRAFT RIBA Stage 4 Report
30538/RIBA Stage 4

Document Control

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1	07/07/2023	First Issue		
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Contents

Attachments

Section A

1.0 Introduction

1.1 Description of Scheme

This report gives out construction guidance for Plots 5 and 6 of the Central Somers Town development – Purchese Street Housing North and Community Hall ("Plot 5") and Purchese Street Housing South ("Plot 6"). These plots consist of two residential housing blocks – blocks B and C. Block A is also on the Central Somers Town site, at Plot 2 (Charrington Street Housing).

The advice presented herein has been formulated on the basis of achieving the minimum requirements of Building Regulations, the Local Authority requirements, other relevant British Standards/design guides and the requirements of the Employer's brief.

1.2 Referenced Documents

The acoustic design strategy takes account of criteria set out in the following documents:

- Building Regulations' Approved Document E: 2003 Edition (2004, 2010, 2013, 2015 amendments). – ADE.
- Planning requirements (consent includes acoustics-related conditions).
- Statutory noise nuisance legislation.
- British Standard BS 8233: 2014 '*Guidance on sound insulation and noise reduction for buildings'*.
- British Standard BS 4142: 2014 '*Methods for rating and assessing industrial and commercial sound'*.
- BS 6472-1: 2008 '*Guide to Evaluation of Human Exposure to Vibration in Buildings'*.
- CIBSE Guides issued by the Chartered Institution of Building Services Engineers.
- Construction (Design & Management) Regulations.
- Employer's Brief

1.3 Employer's Brief

It is proposed that a performance uplift of 5 dB with respect to the airborne sound insulation and impact noise performance is targeted for Plots 5 and 6.

Note, the 5 dB uplift over Approved Document E standards also aligns with the Mayor's preferred standards set out in the Mayor's Sustainable Design and Construction SPG (2006)

Section B

2.0 Acoustic Design Criteria

A stage 3 Acoustic Design Report has been Issued by Max Fordham Ltd titled "Central Somers Town Plots 2,5 and 6 – Charrington Street Housing, Purchese Street Housing and Community Hall Stage 3 Report Rev " and dated 23 January 2016.

The report sets out acoustic design criteria in Section 4.0 "Proposed Acoustic Performance Standards"

These are summarised below:

Residential Elemets	
Description	**Proposed Performance Standard**
Maximum Indoor Ambient Noise Levels	
Living Room/Dining Area (07:00 – 23:00)	35 dB $L_{Aeq,\ 16hr}$
Bedrooms (07:00 – 23:00)	35 dB $L_{Aeq,\ 16hr}$
Bedrooms (23:00-07:00)	45 dB $L_{AFmax\ ,}$ (Typical Maxima)
Sound Insulation	
Separating walls and floors – airborne sound insulation (min)	50 dB $D_{nTw} + C_{tr}$
Separating floors only – impact sound insulation (max)	57 dB L'_{nTw}
Internal walls with no door – airborne sound insulation (min)	45 dB R_w
Internal walls with doors – airborne sound insulation (min)	40 dB R_w
Community Hall / Residential separating wall and floor (min)	60 dB $D_{nTw} + C_{tr}$
Maximum Activity Noise from the Community Hall inside an adjoining Residential Unit	
Equivalent sound pressure level (07:00 – 23:00)	30dB $L_{Aeq,5min}$
Community Hall / Residential separating wall and floor (max)	See sound insulation section
Maximum Internal noise from normal operation of building services systems at design duty	
Bedrooms and living rooms	30 dB L_{Aeq}
Kitchens and WCs	35 dB L_{Aeq}
Maximum external noise from normal operation of building services systems at design duty at 1m from façade	40 dB L_{Aeq}

Community Hall and Commercial Unit	
Description	**Proposed Performance Standard**
Reverberation Time in the Community Hall	1.0 s T_{mf}
Plant and Building Services noise (Community Hall and Commercial Unit)	NR 30-35

An environmental noise survey had been previously undertaken by Hann Tucker Associates and a subsequent report issued titled “30538-rp-ENS-Rev0-STG” and dated 19 April 2023. The report sets out criteria for plant noise emission limits.

Block (Survey Position)	Noise Emission Limit (dBA)		
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
Block B (Position 1)	35	33	33
Block C (Position 2)	32	30	30

2.1 Planning Condition

We understand that the following condition applies.

Planning condition 71 Sound Insulation – residential commercial Plot 5

“Prior to commencement of the development of this plot, details shall be submitted to and approved in writing by the Council, of an enhanced sound insulation value $D_{nT,w}$ of at least 5dB above the Building Regulations value, for the floor/ceiling/wall structures separating different types of rooms/uses in adjoining dwellings, namely eg. living room and kitchen above bedroom of separate dwelling. Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.”

Section C

3.0 Documents Reviewed

All documents reviewed for our assessments are included in Appendix B.

Section D

4.0 Environmental Noise survey

4.1 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by Morgan Sindal to undertake a noise assessment for a site in Central Somers Town, NW1 1HW, London.

The site, which is located on Purchese Street, is being considered for residential development.

The site is subject to road/rail noise from the nearby road and rail network.

Baseline noise conditions have been established by means of a detailed noise survey, presented herein.

4.2 Objectives

To inspect the site to familiarise ourselves with its layout and surroundings in order to identify suitable accessible locations for environmental noise measurements.

To establish by means of an unattended survey the existing $L_{Amax,}$ L_{Aeq} and L_{A90} environmental noise levels at to 2No. secure and accessible on-site positions, using fully computerised noise monitoring equipment.

Measurement procedures shall be in general accordance with British Standard BS 7445 “Description and measurement of environmental noise”.

Measurement procedures shall be in general accordance with those described in BS 4142: 2014, Method for rating industrial noise affecting mixed residential areas, published by the British Standards Institution.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.

4.3 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.4 Site Description

4.4.1 Location

The site is located at Somers Town, London, NW1 1HW. The location is shown in the Location Map overleaf.

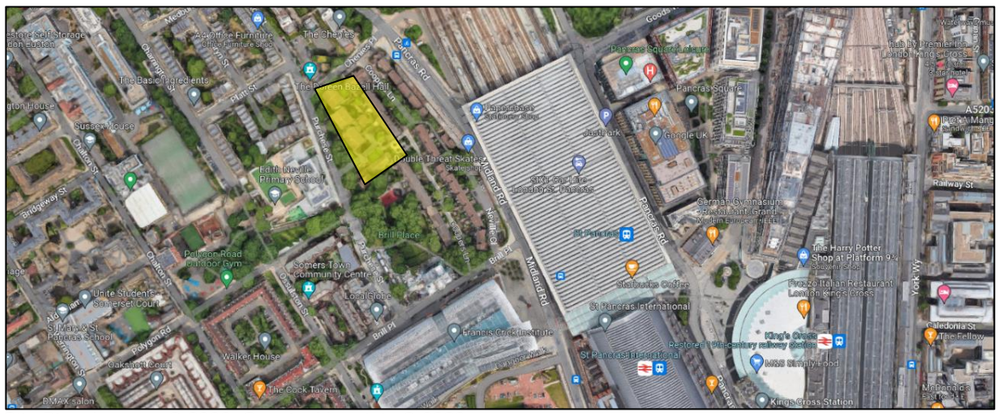
Location Map, Imagery © 2023, Google, Map data © 2023,

The site falls within the jurisdiction of Royal Borough of Camden.

4.4.2 Description

The site is bounded by Purchese street to the west and Hampden Close to the north. To the east and south are 3No. storey residential premises. Buildings across the road on Purchese street comprise 3No. storey residential units and a school to the northwest. To the south is Brill Tower, a 22No. Storey residential building.

The site is shown in the Site Plan below.



Site Plan, Imagery © 2023, Google, Map data © 2023,

4.5 Planning Policies, Standards & Guidance

In order to provide a suitable assessment a number of national planning policies have been considered, including:

- The National Planning Policy Framework (NPPF), 2021
- The Noise Policy Statement for England (NPSE), 2010
- Planning Practice Guidance – Noise (PPGN), 2019

The above documents highlight the importance of considering the potential noise effects on any new residential development and provide a qualitative approach to assessment. However, each of the above does not provide any quantitative guidance. As such, all quantitative guidance used to form a noise impact assessment is taken from various other standards, guidance, and Local Authority requirements as summarised below:

- Local Planning Policy
- The London Plan (2021)
- London Plan Sustainable Design and Construction SPG
- World Health Organisation: 2018
- British Standard BS8233: 2014
- ProPG : Planning & Noise: 2017
- Building Regulations Approved Document O: 2021

Detailed information for relevant planning policies and guidance can be found within Appendix B.

4.6 Survey Methodology

The survey was undertaken by Stavros Tagios MSc.

4.7 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on Thursday 30th March 2023 to 07:00 hours on Monday 4th April, to establish full daytime and night-time noise levels over a typical weekday and weekend period. Measurements were taken continuously of the A-weighted (dBA) L_{90}, L_{eq}, and L_{max} sound pressure levels over discreet 15-minute periods.

We understand that during the time of the survey, demolition works were being carried out on site. We have not included any data we think might have been affected by those works.

4.8 Measurement Positions

The noise level measurements were undertaken at 2No. positions as described in the table below.

Position	Type	Description
1	Unattended	To the southeast corner of the site, attached on a fence at least 3m away from the nearest neighbouring building. Microphone in free-field conditions approx. 3m above ground.
2	Unattended	To the northwest corner of the site, attached on a fence overlooking the junction of Purchese Street and Hampden Close. Microphone in free-field conditions approx. 3m above ground.

The positions are shown on the plan below.

Plan Showing Measurement Positions, Imagery © 2023, Google, Map data © 2023,

4.9 Weather Conditions

For the unattended survey between Thursday 30 March 2023 and Monday 3 April 2023, local weather reports indicated rainfall throughout Friday 31 March, with temperatures ranging from 1 °C (night) to 17 °C (day) and wind speeds less than 6.7 m/s. During our time on site, skies were largely clear with patchy cloud cover, wind conditions were calm and from a southwestern direction and road surfaces were largely dry. The above are conditions are considered suitable to acquire representative results. The levels measured during periods of rainfall have not been used, as those periods coincided with demolition works (i.e Friday 31st March).

4.10 Instrumentation

The instrumentation used during the survey is presented in the table below:

Position	Description	Manufacturer	Type	Serial Number	Calibration
1	Type 1 Data Logging Sound Level Meter	Svantek	971	74415	Calibration on 09/08/2022
	Type 1 ½" Condenser Microphone	ACO Pacific	7052E	71786	Calibration on 09/08/2022
	Preamp	Svantek	SV18	75754	Calibration on 09/08/2022
2	Type 1 Data Logging Sound Level Meter	Svantek	971	80232	Calibration on 06/07/2022
	Type 1 ½" Condenser Microphone	ACO Pacific	7052E	67976	Calibration on 06/07/2022
	Preamp	Svantek	SV18	71473	Calibration on 06/07/2022
-	Type 1 Calibrator	Bruel & Kjaer	4230	1511010	Calibration on 26/07/2022

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.1 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

4.11 Results

The results have been plotted on Time History Graphs 30538/TH1 to 30538/TH2 enclosed presenting the 15 minute A-weighted (dBA) L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

In order to compare the results of our survey with the relevant guidelines it is necessary to convert the measured $L_{Aeq(15\ minute)}$ noise levels into single figure daytime $L_{Aeq(16\text{-}hour)}$ (07:00-23:00 hours) and night-time $L_{Aeq(8\text{-}hour)}$ (23:00-07:00 hours) levels.

A summary of the results, as used to inform subsequent assessments against current guidelines, is presented in the table below. The L_{A90} values presented are the 'representative' levels determined through statistical analysis of the 15-minute readings, in line with BS 4142. L_{Afmax} values are the '10th

highest' 2-minute value in line with Approved Document O (Part O) requirements.

Position	Daytime (07:00 – 23:00 hrs)		Night-time (23:00 – 07:00 hrs)		
	$L_{Aeq,16hr}$	Representative $L_{A90(15\ min)}$	$L_{Aeq,8hr}$	Representative $L_{A90(15\ min)}$	L_{Amax}
1	68	45	50	43	81
2	45	42	45	40	67

The above levels are as measured at the measurement positions and include local reflections.

4.12 Discussion of Noise Climate

Due to the nature of the survey, i.e. unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the noise climate was noted to be dominated by road traffic on Purchese Street.

4.13 Operational Noise Impacts

Building services plant external noise emission levels will need to comply with local planning/environmental authority requirements and statutory noise nuisance legislation.

The Local Authority requirements are outlined in Appendix B, Section B.4.

On the basis of the Local Authority requirements and the results of the environmental noise survey, we propose that the following plant noise emission criteria be achieved at 1 metre from the nearest noise sensitive residential window.

Position	Noise Emission Limit (dBA)		
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
1	35	33	33
2	32	30	30

The above criteria are to be achieved with all of the proposed plant operating simultaneously.

It should be noted that the above are subject to the final approval of the Local Authority.

For life safety standby plant, only used in emergencies and occasional testing - e.g. smoke extract fans and life safety generators - relaxations of the internal and external criteria are normally acceptable but should comply with local authority and occupational requirements and must not interfere with internal audible emergency alarms.

4.14 Conclusions

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

The environmental noise impact upon the proposed dwellings has been assessed in the context of building regulations, and national and local planning policies.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the Local Authority's requirements.

Section E

5.0 External Building Fabric

5.1 External Noise levels

A summary of the results, as used to inform subsequent assessments against current guidelines, is presented in the table below.

Position	Period	Sound Pressure Level (dB re 2 x 10^{-5} Pa) at Octave Band Centre (1/1 Oct) Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
1	Daytime (07:00-23:00)	57	52	49	47	46	42	36	27
	Night-time (23:00-07:00)	57	52	49	47	46	42	36	27
	L_{max}	84	80	77	75	77	74	69	62
2	Daytime (07:00-23:00)	58	53	51	47	45	42	37	32
	Night-time (23:00-07:00)	55	49	47	43	40	35	27	18
	L_{max}	76	70	66	63	62	59	53	46

The above levels are as measured at the measurement positions and include local reflections.

5.2 Architectural Assumptions

5.2.1 Room Finishes

In our calculations we have assumed the bedrooms and living areas will have typical furnishings including beds, sofas, chairs etc.

5.2.2 Acoustic Design Criteria

Detailed acoustic design criteria are as shown in Section 2.0

5.3 Acoustic Performance Requirements

The composite acoustic performance required of any portion of the building envelope will depend on its location relative to the principal noise sources around the site and the nature of the spaces behind it (noise criteria, size, room finishes etc).

The levels of noise incident upon each façade of the building are different. Consequently, each façade therefore has its own unique sound insulation requirement.

In all cases, it is essential that the proposed external building fabric is tested in accordance with BS EN ISO 10140-2:2010 and that the quoted minimum sound reduction specifications are met by the system as a whole, including frames, ventilators etc., as appropriate - not just the glass.

Where structural glass or non-vision spandrel panels are proposed, they should provide sound reduction performance at least equal to that required of the external building fabric in order to maintain the acoustic integrity of the building envelope.

5.4 Proposed External Building Fabric (Non-Glazed Element)

The proposed external building fabric build-up details have been provided to us by Morgan Sindall. The proposed external building fabric details of non-glazed façade are as described in the following table:

Wall Type	Construction Details
EW10a Brick and LGS - External Wall for Blocks	– 1No. Layer of 15mm BG SoundBLoc or equivalent – BG 60I50 Studs at 400mm c/c (50mm thick) – 60mm mineral wool insulation (Isover APR 1200 or equivalent). Studs at 400mm c/c – 2No. layers of 15mm BG SoundBloc – 100mm LGS infill Wall, with Rockwool RWA mineral fibre insulation between studs at 60mm c/c – 1No. Layer of 12mm Fire Rated Sheathing Board – 180mm of Mineral Fibre Insulation – 51mm Drained Cavity – 102mm Brick with brickwork / LGS restraint system (Ancon 25/14 or equivalent) **Total Thickness 600mm**
EW10b Brick and LGS - External Wall for blocks to cover deeper structural columns	– 1No. Layer of 15mm BG SoundBLoc or equivalent – BG 60I50 Studs at 400mm c/c (70mm thick) – 60mm mineral wool insulation (Isover APR 1200 or equivalent). Studs at 400mm c/c – 2No. layers of 15mm BG SoundBloc – 100mm LGS infill Wall, with Rockwool RWA mineral fibre insulation between studs at 60mm c/c – 1No. Layer of 12mm Fire Rated Sheathing Board – 180mm of Mineral Fibre Insulation – 51mm Drained Cavity – 102mm Brick with brickwork / LGS restraint system (Ancon 25/14 or equivalent) **Total Thickness 620mm**
EW10c RC and LGS - External Wall for blocks	– 1No. Layer of 15mm BG SoundBLoc or equivalent – BG 60I50 Studs at 400mm c/c (50mm thick) – 60mm mineral wool insulation (Isover APR 1200 or equivalent). Studs at 400mm c/c – 2No. layers of 15mm BG SoundBloc – 100mm LGS infill Wall, with Rockwool RWA mineral fibre insulation between studs at 60mm c/c – 1No. Layer of 12mm Fire Rated Sheathing Board – 180mm of Mineral Fibre Insulation – 51mm Drained Cavity – 102mm Reinforced Precast Concrete Panels / LGS Restraint System (Ancon 25 / 14 or equivalent) **Total Thickness 600mm**
EW11 Retaining wall – Lower Ground Wall for blocks	– 1No. Layer of 15mm BG SoundBLoc or equivalent – BG 60I50 Studs at 400mm c/c (50mm thick) – 60mm mineral wool insulation (Isover APR 1200 or equivalent). Studs at 400mm c/c – 2No. layers of 15mm BG SoundBloc – 100mm LGS infill Wall, with Rockwool RWA mineral fibre insulation between studs at 60mm c/c – 180mm of Mineral Fibre Insulation – 51mm Drained Cavity – 250mm Reinforced Concrete retaining wall. **Total Thickness 685mm**

Wall Type	Construction Details
EW12 Brick with RC inner leaf – Core and lift shaft walls with insulation and brick outer leaf	– 1No. Layer of 15mm BG SoundBLoc or equivalent – 1No. Layer of 10mm Plaster Dabs – 200mm Concrete Structure – 180mm Mineral Fibre Insulation (Rockwool Rainscreen DUO or equivalent) – 50.5mm Drained Cavity – 102.5 Brick with Brickwork / LGS restraint System (Ancon 25 /14 or equivalent) **Total Thickness 558mm**
EW20 Rainscreen and LGS – External Wall for balconies and feature panels	– 2No. Layer of 15mm BG SoundBLoc or equivalent – 100mm LGS infill Wall, with Rockwool RWA mineral fibre insulation between studs at 60mm c/c – 1No. Layer of 12mm Fire Rated Sheathing Board – 200mm Mineral Fibre Insulation (Rockwool Rainscreen DUO or equivalent) – 58mm Drained Cavity – 1No. Layer of 3mm PPC aluminum sheet on carrier frame **Total Thickness 400mm**
EW30 Solid Wall – External Wall for bin store	– 225mm Brick – stretcher course **Total Thickness 225mm**
EW40 Lift Shaft Overrun – External Wall for Lift Shaft	– 200mm Concrete structure – 10mm Rigid XPS Insulation (Bauder JFRI 300 or equivalent) **Total Thickness 300mm**
EW60 Brick and Block – External Wall for blocks – ancillary spaces	– 2No. Layer of 15mm BG SoundBLoc or equivalent – 1No. Layer of 10mm Plaster Dabs – 100mm Dense Blockwork (Min 1800 kg/m^3), Max 20kg/block – 180mm Mineral Fibre Insulation (Rockwool Rainscreen DUO or equivalent – 63mm Drained Cavity – 102mm Brick and Ancon Teplo Tie **Total Thickness 470mm**

The above proposed build-ups are expected to provide sufficient control of noise ingress subject to flanking being suitably controlled and incorporating good workmanship.

In all cases, it is essential that the system is tested in accordance with BS EN ISO 10140-2:2010 and that the quoted minimum sound reduction specifications are met.

Our assessment of external noise intrusion considers noise limits set out in 2.0, the proposed external wall build-ups set out in section 6.0, the proposed roof build-ups and the following:

Windows: Punched in windows.
Ventilation: MVHR throughout.

5.5 Specifications and guidance

5.5.1 Windows

The following specification for glazing details our recommended minimum octave band sound reduction indices. In all cases, it is essential that the system is tested in accordance with BS EN ISO 10140-2 and that the quoted minimum sound reduction specifications are met by the system as a whole (not just the glass).

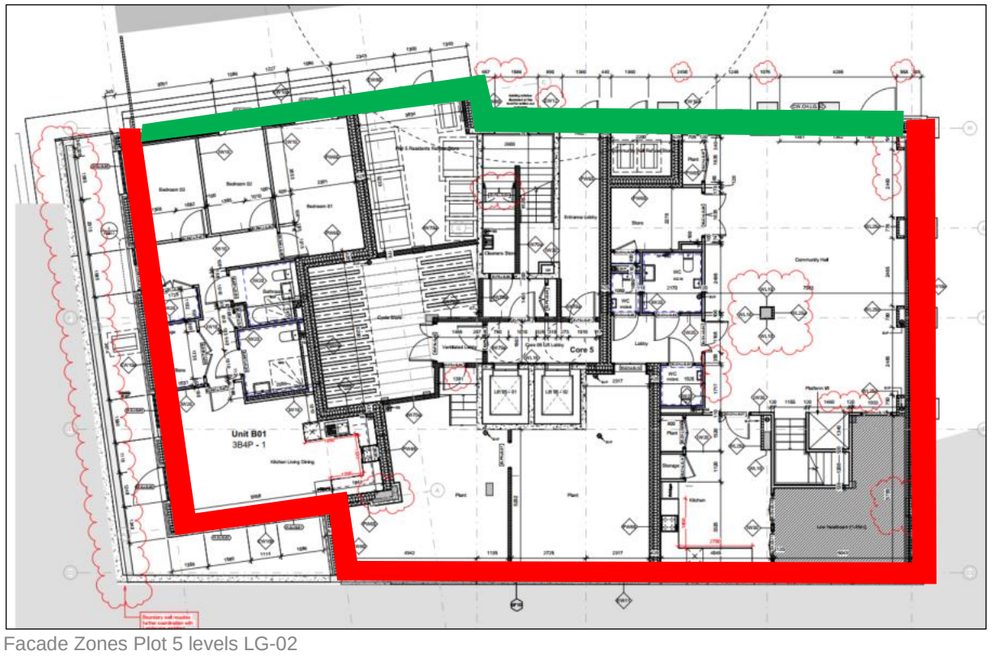
Where openable louvres are used for purge ventilation, they should provide a sound reduction performance at least equal to that required of the glass for the zone in which they are located, when in the closed position.

Zone		HTA Recommended Minimum Sound Insulation Performance of Glazing R_w (dB)								Estimated Sound Insulation Performance R_w+C_{tr} (dB)
		63	125	250	500	1k	2k	4K	8K	
A	Red	21	25	25	31	34	36	38	40	31
B	Green	19	24	23	30	33	33	30	32	29

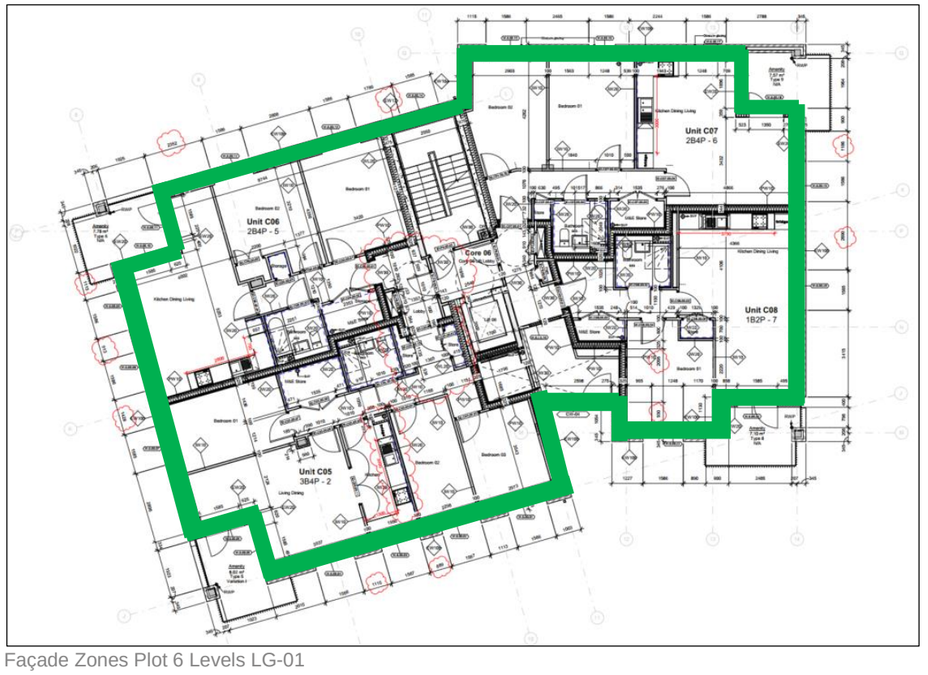
Whilst the above configurations can typically be expected to provide the required levels of sound insulation, ultimately it is critical for glazing suppliers to demonstrate compliance with the performances detailed above rather than simply offering a generic glazing configuration.

Glazing to the non-residential areas and residential common parts should be specified to achieve a sound reduction performance of R_w + C_{tr} 29 dB. This performance is typical of conventional thermal double glazing.

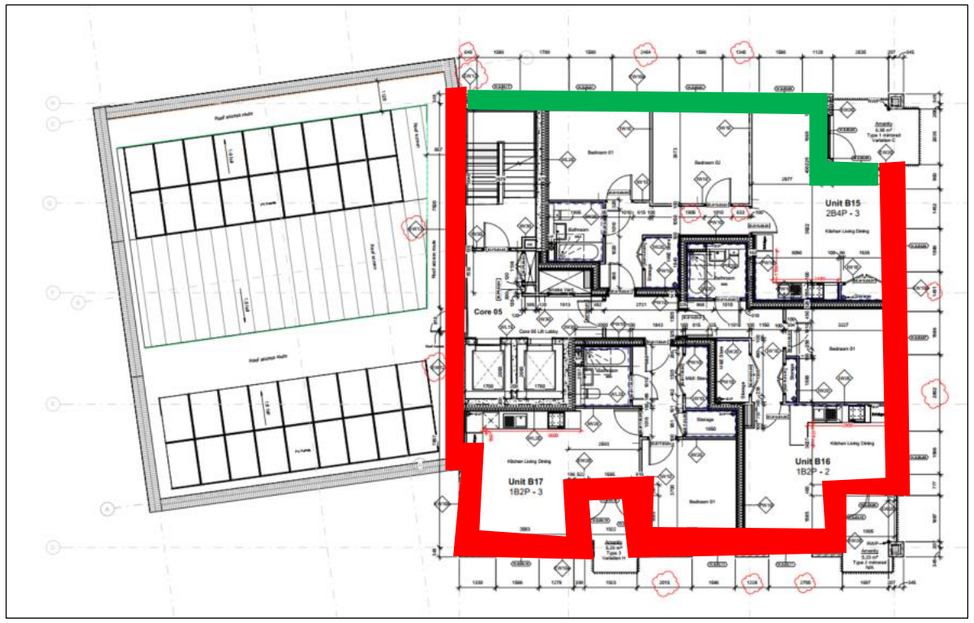
The sketched overleaf illustrate the extent of the above glazing zones.



Facade Zones Plot 5 levels LG-02



Façade Zones Plot 6 Levels LG-01



Facade Zones Plot 5 levels 03-04

Façade Zones Plot 6 Level 02

It is acknowledged that alternative SRI shapes may also comply with the internal noise criteria. In all cases, it is essential that the glazing system is tested in accordance with BS EN ISO 10140-2:2010 and that the quoted minimum sound reduction specifications are met by the system as a whole, including frames, vents etc as appropriate - not just the glass.

5.5.2 Doors

Where external doors are proposed, they should provide a sound reduction performance at least equal to that required of the glass (see Section 5.5.1) to maintain the acoustic integrity of the building envelope.

5.6 Proposed External Building Fabric Assessment

We understand a fully mechanical ventilation strategy is proposed in all residential spaces.

Based on our environmental noise survey data and our recommended minimum octave band SRI's required for glazing, we have predicted the achievable internal noise levels in the worst-case dwellings with windows closed to determine the suitability of proposed external building fabric.

Our calculations are based on the following assumption:

- Worst-case bedroom located in Block 5 facing West
- Proposed external building fabric build-up – see Section 6.0
- 27m^3 approximate room volume
- 4m^2 approximate window area.
- 9m^2 approximate non-glazed area
- HTA recommended minimum octave band SRI's of glazing on Block 5– see Section 6.0
- Typical bedroom furnishings including beds, sofas, chairs etc.
- Mechanical Ventilation

The following table summarises our assessment within the worst-case habitable room with windows closed.

Description	Predicted Worst Case Internal Noise Levels with Windows Closed		
	Daytime $L_{Aeq(16\text{-}hour)}$	Night-time $L_{Aeq(8\text{-}hour)}$	Night-time L_{Amax}
Block 5			
Environmental Noise Survey Result	68dBA	50dBA	81dBA
Noise Reduction from Proposed External Building Fabric Incorporating Minimum Octave Band SRI's for Glazing	-37dBA	-29dBA	-37dBA
Predicted Internal Ambient Noise Levels	31dBA	21dBA	44dBA
Block 6			
Environmental Noise Survey Result	45dBA	45dBA	67dBA
Noise Reduction from Proposed External Building Fabric Incorporating Minimum Octave Band SRI's for Glazing	-29dBA	-29dBA	-29dBA
Predicted Internal Ambient Noise Levels	16dBA	16dBA	38dBA

Calculated in accordance with BS8233:2014 assuming mitigation measures outlined above.

The predicted internal noise levels with windows closed meet the target levels in Section 2.0.

Section F

6.0 Internal Building Fabric

6.1 Acoustic Design Criteria

Detailed acoustic design criteria are as shown in Section 2.0

6.2 Separating Floors/Ceilings

Based on the information provided to us, we understand the following floor constructions are proposed across the development.

Floor Types	Construction Details
GF10 Groundbearing Cocnrete + Insul + Screed – Groundbearing (waterproofing below slab) to dwellings / communal areas	– 1No. layer of 10mm Norament 926 Article Satura 1880 – 75mm levelling screed to BS8204-1 – 175mm Rigid Insulation – 260mm In Situ Concrete Slab – 25mm bedding layer – 275 Below Ground Buildup **Total thickness 810mm**

Floor Types	Construction Details
GF20 Groundbearing Cocnrete + Screed – Groundbearing to unheated service spaces	– 40mm fully bonded Wearing Screed to BS8204-2 – 250mm Ground Bearing In Situ Concrete Slab – 25mm bedding layer – 275 Below Ground Buildup **Total thickness 590mm**
IF10a Between Dwellings	– 1No. Layer of 10mm Timber effect Vinyl Flooring (Tarkett - LVT iD Essential 30) – 85mm levelling screed to BS8204-1 – 10mm Acoustic Insulating Layer (Yelofon HD10 or equivalent) – 250mm Concrete structure to Engineers' Details – 200mm Services Void – 25mm BG MF System Ceiling – 1No. Layer of BG Wallboard or equivalent **Total thickness 640mm**
IF10b Between Dwellings Additional Service Zone	– 1No. Layer of 10mm Timber effect Vinyl Flooring (Tarkett - LVT iD Essential 30) – 85mm levelling screed to BS8204-1 – 10mm Acoustic Insulating Layer (Yelofon HD10 or equivalent) – 250mm Concrete structure to Engineers' Details – 300mm Services Void – 25mm BG MF System Ceiling – 1No. Layer of BG Wallboard or equivalent **Total thickness 740mm**
IF15 Plot 5 Entrance	– 1No. Layer of 10mm ceramic floor tile – 78mm levelling screed to BS8204-1 – 200mm Rigid Insulation – 250mm In Situ Concrete Slab **Total thickness 540mm**
IF20 Dwellings above internal unheated communal space	– 1No. Layer of 10mm Timber effect Vinyl Flooring (Tarkett - LVT iD Essential 30) – 85mm levelling screed to BS8204-1 – 10mm Acoustic Insulating Layer (Yelofon HD10 or equivalent) – 250mm Concrete Structure – 145mm Mineral Fibre Insulation – 100mm Services void – 25mm BG MF System Ceiling – 1No. Layer of 15mm BG Wallboard or equivalent **Total thickness 640mm**
IF21 (Dwelling above Community Hall)	– 1No. Layer of 10mm finish – 105mm levelling screed to BS8204-1 – 10mm Acoustic Insulating Layer – 250mm Concrete structure to Engineers' Details – 145mm Acoustic Insulating Layer – 125mm Services Void – 1No. layer of 15mm BG SoundBloc or equivalent **Total thickness 640mm**

Floor Types	Construction Details
IF30 Dwellings above external or ancillary space	– 1No. Layer of 10mm Timber effect Vinyl Flooring (Tarkett - LVT iD Essential 30) – 85mm Levelling screed to BS8204-1 – 10mm Acoustic Insulating Layer – 250 Concrete Structure to Engineer's details – 210mm Mineral Fibre Insulation (Rockwool soffit slab or equivalent) with stainless steel fixings – 160mm Services void – 15mm soffit cladding **Total thickness 740mm**
RF10 Warm Roof	– Min 50mm Ballast – 10mm Capping Sheet and elastometric underlayer – 315mm Rigid Insulation (Bauder PIR or Equivalent) – 160mm Tear Resistant Vapour Control Layer, Fully bonded to slab – 250mm Concrete Structure – 245mm Services Void – 25mm BG MF System Ceiling – 1No. layer of 15mm BG SoundBloc or equivalent **Total thickness 1070mm**
RF50 Ram Roof – Landscaping J41 / 110	– 90mm external ground buildup – 30mm drainage matt – 10mm Elastometric underlayer – 150mm Rigid Insulation (Bauder PIR or Equivalent) – 250mm Concrete structure **Total thickness 530mm**
RF70 Lift shaft Overrun	– 100mm Rigid XPS Insulation (Bauder JFRI 300 or Equivalent) – 200mm Concrete Structure **Total thickness 300mm**

We understand that the current proposed party floor build-up between flats comprises floor types IF10a and IF10b. Both floor build-ups include a 10mm resilient layer. The resilient layer shall achieve a weighted reduction in impact sound pressure level (ΔL_w) of not less than 22dB when measured in accordance with BS EN ISO 140-8:1998 and calculated in accordance with BS EN ISO 717-2:1997.

The above constructions should be capable of achieving the project criteria subject to suitable detailing to control flanking transmission and workmanship.

Although it is not a mandatory requirement to control the horizontal transmission of footfall noise from stairwells to dwellings, we would recommend a resilient layer or carpet finish floor.

6.3 Partitions & Lining

Based on the proposed acoustic strategies, Dry-lining Wall Types drawings and relevant test data provided to us, we understand the following partitions are proposed across the development.

Wall Type	Specification
Internal Walls	
IW10 Dwellings	– 1No. Layer of 15mm BG SoundBloc or equivalent – 70mm BG 70S50 Stud at 600mm c/c – 1No. Layer of 15mm BG SoundBloc or equivalent – **Thickness 100mm**
IW30 Common Areas	– 2No. Layers of 13mm BG Fireline – 70mm BG 70S50 Stud at 600mm c/c – 2No. Layers of 13mm BG Fireline **Thickness 120mm**
IW20 Dwellings with Patress	– 1No. Layer of 15mm BG SoundBloc or equivalent – 70mm BG 70S50 Stud at 600mm c/c – 18mm Plywood – 1No. Layer of 15mm SoundBloc or equivalent **Thickness 100mm**
IW70a Blockwork and Plaster (Non-Loadbearing)	– 1No. Layer of 15mm Impact Resistant Plaster Finish – 140mm Dense Blockwork (Min 1800 kg/m^3, Max 20kg/block – 1No. Layer of 15mm Impact Resistant Plaster Finish **Thickness 170mm**
IW70b Blockwork (Non-Loadbearing	– 140mm Dense Blockwork (Min 1800 kg/m^3, Max 20kg/block **Thickness 140mm**
Party Walls	
PW10 Plaster board - Common area to residential dwelling	– 2No. Layers of 15mm BG SoundBLoc – 1No. Layer of 18mm Plywood (full height between studs) – 42mm BG 60I50 Stud Fully Filled with Mineral Wool Insulation (Isover APR 1200 or Equivalent) Studs at 600mm c/c – 145mm Mineral Wool Insulation(Isover APR 1200 or Equivalent) Studs at 400mm c/c – 42mm BG 60I50 Stud Fully Filled with Mineral Wool Insulation (Isover APR 1200 or Equivalent) Studs at 600mm c/c – 1No. Layer of 18mm Plywood (full height between studs) – 2No. Layers of 15mm BG SoundBLoc – Thickness 325mm
PW65 Blockwork , Plaster – Refuse store to residential dwellings	– 1No. Layer of 15mm BG SoundBloc or equivalent – 1No Layer of 10mm Plaster Dabs – 100mm Medium Density Blockwork Min 1600 kg/m^3, with Part E type A Wall Ties – 175mm Isover RD Party Wall Roll – 100mm Medium Density Blockwork Min 1600 kg/m^3, with Part E type A Wall Ties – 1No Layer of 10mm Plaster Dabs – 1No. Layer of 15mm BG SoundBloc or equivalent – Thickness 425mm
PW66 (Community Hall / dwelling B04)	– 3No. Layers of 15mm BG SoundBloc – BG 60I50 Studs at 40mm c/c – 120mm Mineral Wool Insulation (Isover APR 1200 or equivalent) Studs at 400mm c/c – 140 Dense Blockwork (min 1880kg/m^3) max 20kg/block – 1No. Layer of 10mm Plaster Dabs – 1No. Layer of 15mm BG SoundBloc or equivalent **Total Thickness 390mm**

Based on proposed acoustic strategies provided to us, we understand the typical party wall construction will incorporate partition type PW10 and PW65.

The partitions will need to be built full height (slab to slab).

The above recommended constructions should be capable of meeting the aforementioned project criteria, subject to suitable detailing to control flanking transmission and good workmanship.

6.4 Walls Separating Apartments from Lift Shafts

We understand from the provided plans that the lift shaft is adjacent to bedrooms.

Therefore, the noise from the lift will need to be controlled to adjacent noise sensitive areas. Our specification for lift installations can be found attached to this report. Compliance with the specification should be confirmed by the lift supplier based on the proposed build-ups. We would note that achieving the lift specification with partition type W19 (ShaftWall) may be difficult with the proposed build-up and there is significant chance of complaints due to lift noise.

We understand lining type WL20 is proposed for the wall separating the lift shaft from the residential dwellings.

- Mineral Wool Insulation (Isover APR 1200 or equivalent) Studs at 400mm c/c
- 60I50 Stud filled with mineral wool Insulation (Studs at 400mm c/c)
- Continuous vapour control Layer (sealed at all junctions and penetrations.
- 1No. Layer of 15mm SoundBloc or equivalent

We would advice that there is a 10mm clearance between the concrete shaft and the studwork.

Subject to the above recommendations, the proposed constructions should be acoustically acceptable.

6.5 Smoke Vent

The proposed smoke vent is separated from the apartments by partition type PW10 (Plasterboard). This partition type should be suitable, subject to appropriate mitigation of plant noise as detailed in Section 10.1.3.

6.6 Apartment Front Doors

ADE advises that apartment front door sets should achieve a minimum rating of R_w 29dB. We understand that the proposed development is targeting a +5dB uplift from the Building Regulation criteria. We would recommend that Building Control confirm if the +5 dB uplift applies to the doors.

The centre meeting stiles of leaf-and-a-half doors should be rebated and fitted with a compressible neoprene acoustic seal. Neoprene compression seals should be provided at the threshold, jambs and head of the frame. Their effectiveness relies on them being continuously and evenly compressed around the entire perimeter. Adequate door furniture, careful detailing and a high standard of workmanship are thus essential.

Examples of suitable door seals and contact supplier details are given below:

Head and Jamb Seals : Sealmaster Type CA, ARH, RCX or RC2 (or equal approved)

Threshold Seals : Lorient Type IS8010 si or IS8040 si (or equal approved)

6.7 Service Risers

ADE states that pipes and ducts (excluding gas pipes) are required to be enclosed (full height) where they penetrate a floor separating habitable rooms.

ADE states that the enclosure should be constructed of material having a mass per unit area of at least 15kg/m^2 and that the enclosure should be lined or the duct or pipe should be wrapped within the enclosure with 25mm unfaced mineral wool.

6.8 Soil and Rainwater Pipes

Soil and rainwater pipers shall be enclosed as described above in order to comply with ADE.

Although not an ADE requirement, in order to further mitigate noise from the pipes we would advise as follows:

- Soil and rainwater pipes shall be cast iron or acoustically enhanced HDPE (e.g. Geberit Silent-dB20) not standard HDPE or PVC.
- Minimise the use of transitional sections;
- Wrap pipe in 25mm thick unfaced mineral wool throughout. This could be upgraded;
- Box in with double layer of 12.5mm SoundBloc (or equivalent) grade plasterboard;
- Minimum gap of 10mm between pipes and enclosure to be maintained throughout.

Pipework shall be supported in a manner which prevents structure borne noise transmission to walls and floors. This shall be achieved by:

- Supporting off the structural load bearing walls and concrete floors.
- Supporting via unistrut which is fully independent of all partitions (minimum 10mm clearance).
- Using oversized brackets containing neoprene inserts.
- Incorporating acoustic dampeners where pipework is suspended from floor slabs.
- Using rubber lined pipe brackets.

Access to soil pipes can be provided by an access hatch comprising 2No. layers of plasterboard with compressible seals to maintain the integrity of the treatment.

6.9 Socket/Switches

Penetrations within party walls for electrical sockets will inevitably increase the risk of failures and must be avoided where possible (e.g. located within internal walls, located within a sacrificial plasterboard lining or boxed in). Party walls must not include large penetrations, e.g. for recessed AV boxes, TV's speakers etc.

Sockets must not be back-to-back in any instance, and thus mirrored apartment service layouts must consider staggered services with the inclusion of backing boxes or putty pads (to maintain acoustic integrity) where necessary and a minimum back-to-back stagger of 150 mm.

6.10 Reverberation in Common Parts

In terms of the potential noise impact from noise generated in common areas into apartments, the common areas can be divided into two categories; common areas that open directly into apartments (e.g. corridors); and common areas that do not open directly into apartments (e.g. fire escape stairs, areas separated from apartments by a lobby).

6.10.1 Common Areas that open directly into Apartments

For corridors and common areas that open directly into residential apartments it will normally be convenient to cover the entire ceiling area with the additional absorption in the form of a proprietary Absorption Class C acoustic ceiling; however, the absorptive material can be applied to any surface that

faces into the space.

A Class C absorber is one which has an overall weighted absorption coefficient (α_w) of between 0.60 and 0.75. Typically British Gypsum's Gyptone (perforated plasterboard) systems fall into Class C depending on the pattern of perforation. Most acoustic suspended ceilings would fall into Classes A to C.

Evidence that Requirement E3 has been satisfied should be presented, for example on a drawing or in a report, which should include:

1. A description of the enclosed space (entrance hall, corridor, stairwell etc.);
2. The approach used to satisfy Requirement E3, in this instance Method A, stating the absorber class and the area to be covered.

For stairwells or a stair enclosure, calculate the combined area of the stair treads, the upper surface of the intermediate landings, the upper surface of the landings (excluding ground floor) and the top floor ceiling area.

Either, cover at least an area equal to this calculated area with an absorber of Class D, or cover an area equal to at least 50% of this calculated area with an absorber of Class C or better. The absorptive material should equally be distributed between all floor levels. It will normally be convenient to cover the underside of intermediate landings, the underside of the other landings and the top floor ceiling.

6.10.2 Common Areas that do not open directly into Apartments

ADE states the Requirement only applies to "corridors, stairwells, hallways, and entrance halls which give access to the flat or room for residential purposes". This is rather ambiguous but the Government's on-line planning portal clarifies this by advising that absorbent treatment should normally be applied only to common areas onto which dwellings open directly.

6.11 General Construction Guidance

We provide the following general construction guidance based on good acoustic practice.

1. To comply with HSE guidance individual blocks should not exceed 20kg. Blocks should be sized accordingly.
2. Where a mineral wool quilt is incorporated within partitions it must not fill the cavity i.e. for 48mm studs use 25mm quilt, for 70mm studs use 50mm quilt etc.
3. Cavity masonry separating walls shall only be connected with suitable acoustically resilient wall ties.
4. High performance partitions shall penetrate lightweight flanking constructions (such as internal walls), column cladding etc. and abut solid structures.
5. High performance partitions will need to be built full height i.e. slab to slab
6. Internal partitions (i.e.. not separating party walls) may span from the screed or floating floor to the plasterboard ceiling.
7. Single skin partitions can sound hollow so for higher specification apartments we would suggest a double layer of plasterboard, although this is not required by Building Regulations.
8. Where two layers of board are fixed to studs, they should be installed with staggered joints. All joints should be staggered and sealed to form an airtight seal.
9. For masonry walls lined with lightweight panels, cavities with a depth of less than 60mm should be avoided. Two linings, with small, identical sized cavities either side of a solid masonry wall, should not be specified. These cavities can interact and cause a significant downgrade in the critical low frequency zone. If a small cavity is required, one side only should be lined with a double layer of plasterboard. Optimum performance is achieved by lining one side only and having a cavity depth of at least 85mm.
10. A generous and continuous bead of mastic should be applied to all stud frames where they are fixed to the structure on all sides (soffit, floor slab, masonry wall/column).
11. Penetrations through high performance (e.g. party) walls shall be avoided wherever possible. Where they cannot be avoided they shall be detailed and constructed so as to minimise any degradation in acoustic performance.
12. Ideally sockets/switches should not be located within separating (i.e. party) wall constructions. Where absolutely necessary sockets should be separated with a minimum edge to edge stagger of 150mm and must not be located back to back. Where there is no blockwork core wall they should also be 'boxed-in' to the rear with a material having the same mass per unit area as that of the wall leaf in which they are inserted. This could comprise dry-lined baffle boxings or a suitable proprietary product is Sound Reduction Systems (SRS) Acoustic Socket Boxes or similar. We do not condone putty pads. Where there is a blockwork core wall to the full extent, then boxing of sockets and switches is not necessary. Similarly, boxing of sockets and switches is not necessary in internal walls.
13. Where wire trunking/baskets penetrate apartment walls above the front doors, they should be finished in accordance with the relevant fire stopping requirements.
14. It is unacceptable for ductwork to run directly through separating (i.e. party) walls/floors. Where this is unavoidable any instance must be bought to the attention of Hann Tucker and be considered on an individual basis.
15. Crosstalk silencers may be required where ductwork is common to two or more dwellings/rooms. We can advise further once we have reviewed the MVHR and duct specifications in apartments.
16. Soil and rainwater pipes shall be constructed from standard HDPE as per Telford Homes preference.
17. Soil and rainwater pipework routed through apartment ceiling voids shall be avoided wherever possible, especially for habitable rooms. Where this is not possible, the pipework shall be

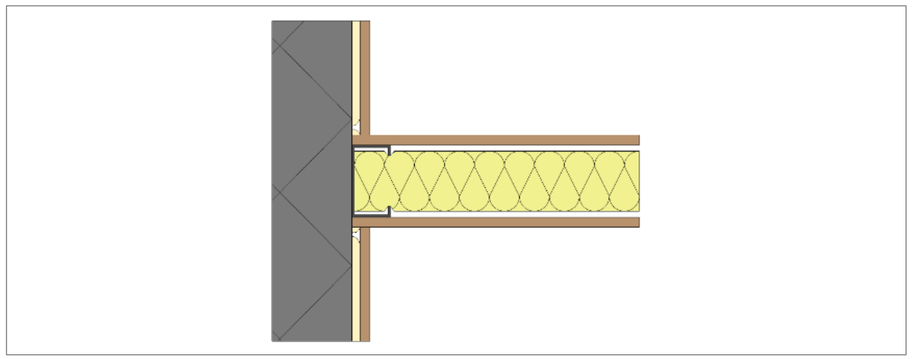
enclosed in an acoustic enclosure with acoustic access panels for any rodding eyes. The enclosure shall comprise a double layer of plasterboard and be lined with 25mm unfaced mineral wool.

18. Mechanical building services (including ducts and pipes) shall be supported off the structural load bearing walls and floors. No mechanical services shall be fixed to lightweight/drywall construction partitions.
19. Wall hung WC pans and frames shall be located and supported so as to avoid structure borne noise transmission to adjacent bedrooms or apartments.
20. Lift installations shall be located away from noise sensitive rooms where possible and lightweight constructions (including plasterboard) avoided.
21. Although it is not a mandatory requirement to control the horizontal transmission of footfall noise from stairwells to dwellings we would recommend a resilient layer or carpet finish floor.
22. Mechanical service risers shall be zoned away from sensitive rooms wherever possible.
23. External plant shall be judiciously located and not overlooked by noise sensitive residential windows.
24. Noisy plant items (e.g. transformers, chillers and generators) shall be located away from habitable rooms.

6.12 Partition Junctions

Where partitions/floors abut external cladding, the external walls' internal lining should overlap the junction full-height on both sides of the wall. In no instances should linings to the external wall or columns run continuously between rooms. Curtain walling mullions/transoms, if applicable, will need to achieve a sound flanking criterion depending on the room adjacencies. Double (rather than split) mullion/transom configurations will be required at interfaces with separating (i.e. party) walls/floors.

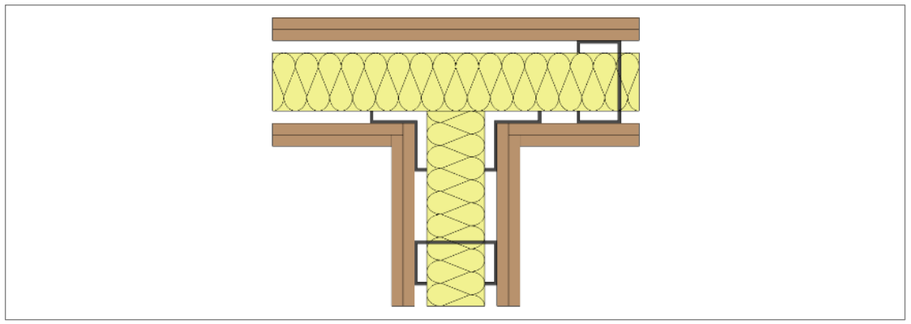
High performance partitions shall penetrate lightweight flanking constructions, column cladding etc. and abut solid structures, as illustrated below:



Junction between internal partition and lightweight flanking construction

Room-to-room partitions should penetrate corridor partitions to eliminate flanking via a continuous corridor partition cavity or a continuous room side plasterboard leaf.

Partition junctions shall be suitably detailed to prevent flanking, as illustrated below:



"T" junction between internal partitions

All other partition abutments shall be made via twin uninterrupted silicon mastic seals over the full length of the abutment. All shadow gaps and other air paths traversing the partitions shall be fitted with timber packing and thoroughly sealed with mastic.

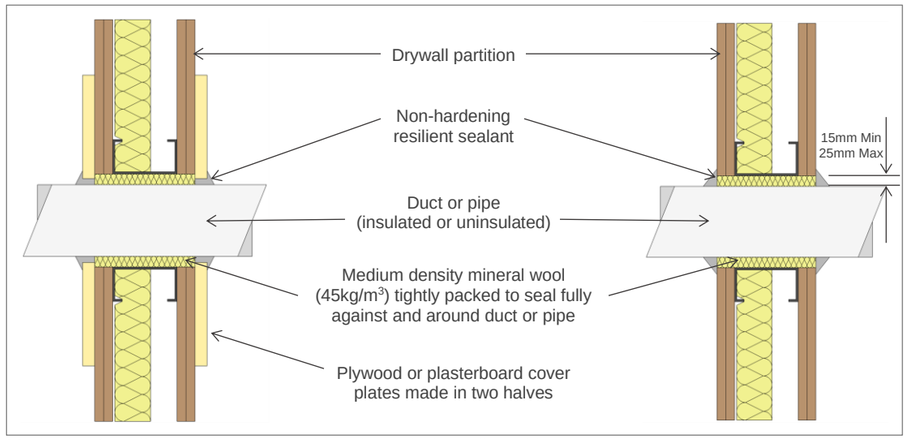
If there are any instances where the above cannot be achieved, they should be brought to the attention of Hann Tucker to agree a suitable solution.

6.13 Services Penetrations

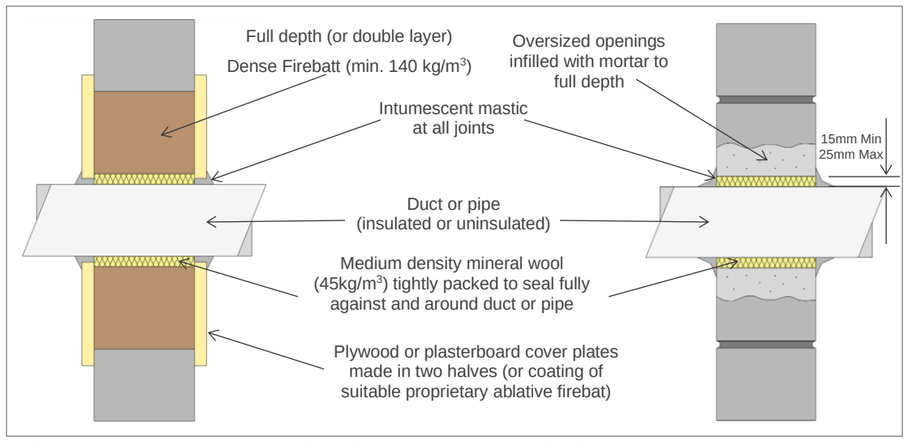
All penetrations of wall/floor constructions by ducts, pipework, electrical cables, etc. should be adequately sealed acoustically. Where live ducts or pipes penetrate the building structure, it is essential to acoustically sleeve the penetrations to prevent transmission of noise and vibration.

This should be done by sleeving penetrations with a 25 mm thickness of mineral wool having a density of at least 45 kg/m^3. Care should be taken to seal any gaps by means of heavy grout, and the whole should be finished with a liberal application of dense, soft, non-hardening mastic.

The following sketches show suitable details for duct and pipe penetrations through drywall partitions and masonry constructions.



Methods of sealing service penetrations through drywall partitions



Methods of sealing service penetrations through masonry constructions

It is unacceptable for water pipes or ducts to run directly through party walls between apartments. Where this is unavoidable any instance must be bought to the attention of Hann Tucker and be considered on an individual basis.

Where services are brought into each apartment above the entrance doors, metal cable trays should be discontinued at the point of entry and letterbox openings should be treated as above, and in accordance with the relevant fire stopping requirements (by others).

6.14 Workmanship

In most cases, the acoustic criteria are specified in terms of an on-site performance. Since the acoustic performance of on-site constructions depends on many factors, the effects of which cannot be anticipated or predicted to any great accuracy (such as buildability, flanking paths, build quality, sealing of junctions with other building elements and of service penetrations), it is not possible to provide indemnity.

The acoustic performance requirements for each building element, together with proposed forms of construction detailed in this Report, should (with appropriate avoidance of flanking paths, acoustic decoupling where appropriate and intimate site supervision) satisfy the acoustic performance requirements. It shall be the responsibility of the contractor, however, to comply with the requirements.

6.15 Pre-Completion Testing

Compliance with the criteria herein shall be demonstrated by testing in accordance with Approved Document E.

Pre-completion testing is normally required to prove compliance with the requirements of ADE Requirement E1. It is the duty of the person carrying out the building work to ensure appropriate sound insulation testing is implemented according to the guidance set out in ADE across separating walls and floors. The locations for such tests will be selected by the Building Control Body.

Building Control should stipulate at least one set of tests for every ten “dwellings”, assuming no test fails. The sound insulation criteria have built in allowances for measurement uncertainty, so if any test does not achieve the criteria by any margin the test has failed. If a test fails the Developer will need to determine the cause. It will then be necessary for the Developer to undertake appropriate remedial treatment, to the satisfaction of Building Control. The rate of testing should be increased until Building Control is satisfied the problem has been solved.

Building Regulations require that sound insulation testing “be carried out by a test body with appropriate third-party accreditation” and advise that “Test bodies conducting testing shall preferably have UKAS accreditation (or a European equivalent) for field measurements”.

Section G

7.0 Community Hall

We understand that the following are proposed for the community hall.

7.1 External Fabric

7.1.1 External Wall

Wall Type EW10c is proposed for Plot 5.

- 1No. Layer BG SoundBloc or equivalent
- BG 60I50 Studs at 400mm c/c

- 60mm Mineral Wool Insulation (Isover APR 1200 or equivalent)
- 2No. 15mm layers of BG SoundBloc
- Continuous Vapour Control Layer (Sealed at junctions and penetrations)
- 10mm LGS Infill Wall, with Rockwool RW A 45 mineral fibre insulation between studs at 600c/c
- 12mm A1 Fire Rated Sheathing Board
- Breather Membrane (Fire Class B)
- 180mm Mineral Fibre insulation
- 51mm Drained Cavity
- 102mm Reinforced Precast Concrete Panels / LGS restraint System (Ancon 24 / 14 or equivalent)

  Total thickness 600mm (255mm slab edge + 345mm external face)

7.1.2 Glazing

Specifications for glazing can be found within section 5.5.1 of this report.

7.2 Internal Walls and Floors

7.2.1 Floor separating Community Hall and Residential Dwelling

Floor Type IF21 is proposed for the dwelling above (Unit 4) the community hall.

- 1No. Layer of 10mm finish
- 105mm levelling screed to BS8204-1
- 10mm Acoustic Insulating Layer
- 250mm Concrete structure to Engineers' Details
- 145mm Acoustic Insulating Layer
- 125mm Services Void
- 1No. layer of 15mm BG SoundBloc or equivalent

  Total thickness 640mm

Based on our calculations the above proposed construction should be able to achieve the sound insulation criteria outlined in Section 2.0.

7.2.2 Wall Separating Community Hall and Residential Dwelling

wall type P66 is proposed for the wall separating the community hall from Unit 4.

- 3No. Layers of 15mm BG SoundBloc
- BG 60I50 Studs at 40mm c/c
- 120mm Mineral Wool Insulation (Isover APR 1200 or equivalent) Studs at 400mm c/c
- 140 Dense Blockwork (min 1880kg/m^3) max 20kg/block
- 1No. Layer of 10mm Plaster Dabs
- 1No. Layer of 15mm BG SoundBloc or equivalent

  Total Thickness 390mm

The above construction should be able to achieve the sound insulation criteria outlined in Section 2.0.

7.3 Limiting Noise Levels

Based on the proposed constructions and the recommended criteria detailed in Section 2.2 we would advise that the noise level for any internal airborne noise within the community hall not to exceed 88dBA. This is with all windows of the community hall closed.

Typical events during which the above noise levels would not typically be exceeded include drinks events with either no music or background music (quiet DJ). If other types of events are proposed to be held in the community hall which would typically exceed the above limiting noise levels (e.g loud amplified music), further mitigation measures might be needed.

Based on the proposed constructions and the above limiting noise level, the predicted noise breakout level to external areas from the community hall to the nearest residential window was calculated.

Description	Sound Pressure Level (dB re 2 x 10^{-5} Pa) at Octave Band Centre (1/1Oct) Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
Noise Level at 1m from Residential Window	23	28	29	34	37	33	38	39	46
Noise inside the residential dwelling with closed windows	6	-	-	4	2	5	5	8	12

The aforementioned level should be acceptable in reference to the proposed criteria detail in Section 2.2.

Section H

8.0 Building Services Noise & Vibration

8.1 Noise Criteria

Detailed acoustic design criteria are as shown in Section 2.0

8.2 Objectives

8.2.1 Ductborne Fan Noise

To assess the transmission of atmospheric-side and room-side fan noise via ductwork and provide minimum insertion loss values for silencers.

8.2.2 System Generated Noise

To provide general guidance for the control of turbulent and/or regenerated noise in air and fluid flow systems.

8.2.3 Plantroom Noise

To provide advice in relation to potential noise transfer from internal plantrooms to adjacent noise sensitive spaces.

8.2.4 Vibration Isolation

To undertake a detailed acoustic analysis of structure borne noise and vibration due to building services plant and recommend, where possible, suitable vibration isolators.

8.2.5 Lift Installation

To specify the requirements for lift ride quality.

8.3 Emergency/Standby Plant

For emergency/life safety standby plant, only used in emergencies and occasional testing - e.g. emergency smoke extract fans and life safety generators - relaxations of the internal and external criteria are normally acceptable but should comply with local authority and occupational requirements and must not interfere with internal audible emergency alarms.

Internal noise levels from emergency smoke extract fans must not interfere with audibility of smoke alarms and should therefore be attenuated to at least 10dB less than the fire alarm sounders. We would typically specify attenuators to achieve an assumed level of 60dBA at 1.5m from the inlet. This should be compared to the specification for the fire alarm sounders and advise Hann Tucker Associates if any changes are required.

8.4 Vibration

Vibration transfer from continuous sources (e.g. plant items) to internal areas should not exceed 0.01m/s^2 peak acceleration, based on W_b weighting as defined in clause 3.3 of BS 6472-1: 2008.

All items of building services plant shall be isolated on suitable anti-vibration mountings to reduce the transfer of vibration and associated structure-borne noise within the building.

9.0 Project Data

9.1 Operating Hours

It is understood that the plant operating times will be when required within any 24 hour period. It is imperative that we are advised if this is not the case for any item of plant.

9.2 Plant Data

The following Plant Noise Schedules (enclosed) detail the sound power/pressure level data used in our acoustic analysis for each item of building services plant based on the information provided:

Block 5 Plant Schedule	30538/PNS/Block5
Typical Apartment Plant Schedule	30538/PNS/Typical Apartment

This data presents “maximum” sound levels which should not, therefore, be exceeded. The sound levels shown have been based upon manufacturer’s data, and should thus be typical for these units with their respective duties.

Where the manufacturers noise data provided to us have been A-weighted or presented as open inlet/outlet, we have applied the appropriate corrections to retrieve the unweighted, in-duct sound power levels.

It is essential that we are appraised of any alterations or additions to this list. Should the selection of any item of plant differ from that shown on the schedule, provided their sound power/pressure levels are comparable to (or less than) those shown then it should not be necessary to make significant changes to our current attenuation recommendations.

10.0 Internal Building Services Plant

A central plantroom is proposed in the Lower Ground Floor in Block 5. This is as shown in the plans below:

Floor plan showing the location of Block 5 Central Plantroom

Section plan showing the location of Block 5 Central Plantroom

10.1 Basement Heating Plantroom

10.1.1 Circulation Pumps

We understand that a set of 2No. Circulation Pumps (4kW) is proposed to be installed in the Lower Ground Floor Heating Plantroom.

The noise data of the pump units have been summarised in the attached Plant Noise Schedule 30538/Block5. The units should also be installed with anti-vibration mounts as detailed within our Vibration Isolator Schedule.

10.1.2 Pressurisation Set

A single combined pressurization unit and Degasser is proposed to be installed in the lower Ground Floor Heating Plantroom.

The noise data of the pressurization unit have been summarised in the attached Plant Noise Schedule 30538/Block5.

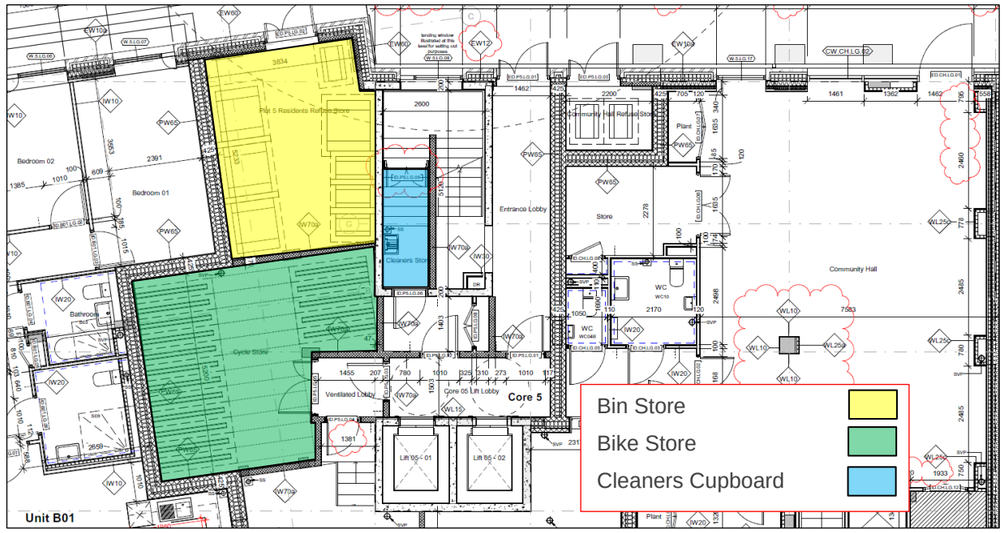
10.2 Boosted Water Plantroom

10.2.1 Cold Water Booster Sets

We understand 3No. combined sprinkler and domestic CWS Booster Pumps are proposed to be installed in the Lower Ground Floor Boosted Water Plantroom.

10.3 Community Bin Store

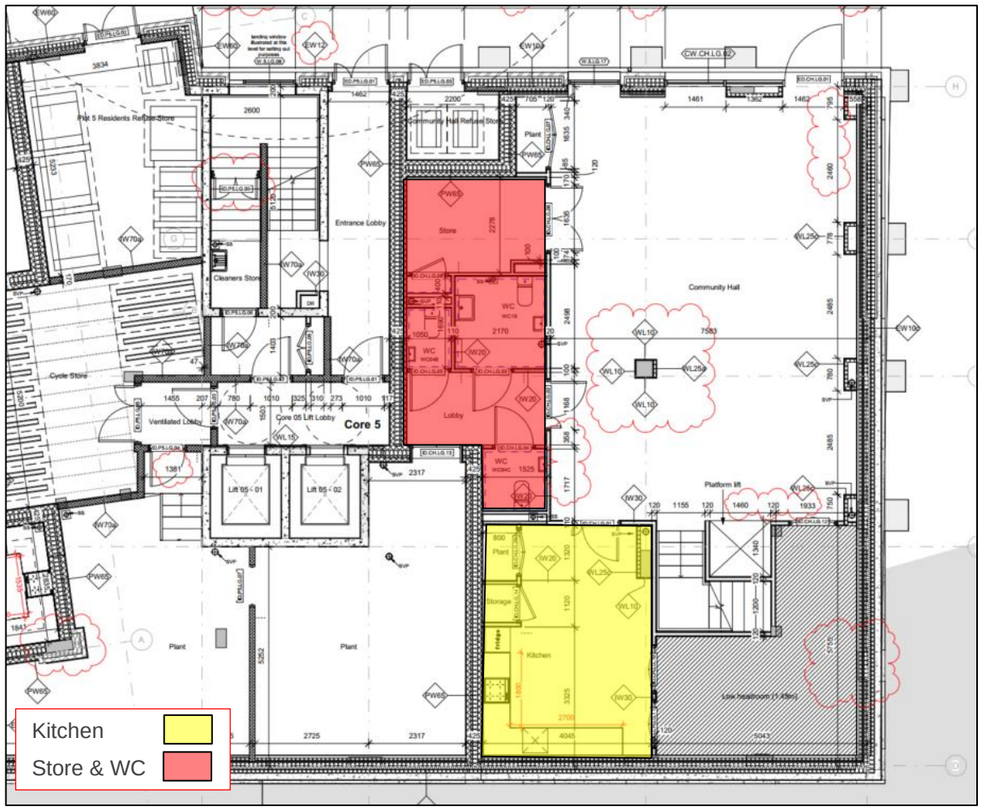
1No. box fan is proposed to be installed in the community bin store to serve the Bike Store and Cleaners Cupboard as shown in the drawing below:



The noise levels of the box fan are detailed within our attached Plant Noise Schedule 30538/PNS/Block5. We understand attenuators are proposed for the inlet and outlet of the fan. The attenuators are detailed in our Attenuator Schedule 30538/AS enclosed.

10.4 Community Hall

We understand an MVHR unit, and a Heat Interface unit are proposed to serve the community hall kitchen and a box fan is proposed to be located in the community hall store to serve WC and the store. These are shown in the drawing overleaf:



10.4.1 Kitchen (Utility Room)

MVHR

1No. MVHR unit is proposed to be installed within the utility cupboard of the Lower Groundfloor community hall kitchen.

The noise data for the MVHR unit are detailed in our attached Plant Noise Schedule 30538/PNS/Block5. We understand that attenuators are proposed to be installed on each duct of the MVHR unit. The attenuators are detailed in our Attenuator Schedule 30538/AS enclosed.

According to our understanding of the plant noise schedule and manufacturer's noise data for the proposed MVHR units as well as the criteria for internal noise levels set out in Section 2.0 of this report, the proposed attenuators should be able to achieve the NR 35 criterion that is required in the community hall kitchen.

Heat Interface Unit

A Heat Interface Unit (HIU) is proposed to serve the community hall kitchen. The noise data for the HIU are detailed in our attached Plant Noise Schedule 30538/PNS/Block5

10.4.2 Community Hall Toilet Block

Box Fan

1No. Box fan is proposed to be installed within the Lower Groundfloor community hall store to serve the toilet block and store.

1No. Box fan is proposed to be installed in the Community Bin Store to serve the Bike Store and Cleaners Cupboard.

The noise levels of the 2No. box fans are detailed within our attached Plant Noise Schedule 30538/PNS/Block5. We understand attenuators are proposed for the inlet and outlet of the fans. The attenuators are detailed in our Attenuator Schedule 30538/AS enclosed.

10.5 Typical Apartments

10.5.1 MVHR

Each apartment will be provided with 1No. MVHR unit, located within the utility cupboard. In order to control the noise breakout from the utility cupboard into the living space, the utility cupboard door should meet the enclosed acoustic specification for door set(s).

The noise data for the MVHR unit are detailed in our attached Plant Noise Schedule 30538/PNS/Resi. We understand that attenuators are proposed to be installed on each duct of the MVHR unit. The attenuators are detailed in our Attenuator Schedule 30538/AS enclosed.

When installed on site, MVHR units shall be supported by concrete slabs or masonry walls. MVHR units shall be completely independent of ceilings or lightweight partitions.

With our understanding of the proposed ductwork layout and the proposed units and attenuators across the residential flats in Block 5 and Block 6 of the development, the proposed plant items should be able to achieve the criteria set out in Section 2.0 of this report.

10.5.2 Heat Interface Unit

We understand that 1No. heating Interface (4 kW) will be installed within the cupboard of each apartment. In order to control the noise breakout from the utility cupboard into the living space, the utility cupboard door should meet the enclosed acoustic specification for door set(s).

The noise data for the HIU are detailed in our attached Plant Noise Schedule 30538/PNS/Resi.

With our understanding of the current proposals and provided that the utility cupboard meets the acoustic specification for door set(s), enclosed, the current proposals should be able to achieve the criteria set out in Section 2.0 of this report.

11.0 Pumps

There are 2No. booster pump located within Block 5 Lower Ground floor Basement Heating Plantroom.

The noise levels of these pumps are detailed within our attached Plant Noise Schedule 30538/PNS/Block 5. The pumps and associated pipeworks should also be installed with anti-vibration mounts as detailed within our Vibration Isolator Schedule 30538VIS.

12.0 System Generated Noise

12.1 Volume Control Dampers

Volume control dampers near duct terminations shall only be used to provide fine trimming of the air flow. If the dampers are likely to be used beyond fine trimming purposes (20% closed for 5m/s face velocity), 'damper attenuators' may be required between the damper and duct terminal.

The level of noise generated by airflow across an opposed blade volume control damper is proportional to the airflow through the damper and the pressure drop across it.

The table below presents the maximum pressure drop allowable in relation to the room criteria in which the volume control device is located.

Room Criteria	Maximum Pressure Drop (Pa)
NR25	50
NR30	60
NR35	75
NR40	125
NR45	150
NR50	185

If for any damper its specific duty is such that the maximum values above are exceeded, then an attenuator shall be required on the "roomside" of the damper.

In order to reduce the possibility of any dampers causing excessive noise, we recommend that they are located as far from terminals as is practicable. If this approach is followed, the requirements for damper attenuators will often be negated.

Any dampers located at terminals must be used strictly for fine trimming only.

We would be pleased to advise further upon receipt of information given damper locations, air velocities and pressure reductions.

12.2 Ductwork Design

The general parameters for ductwork or pipework design, fabrication and installation are laid down in the relevant codes of practice (HVCA and CIBSE). The following items represent a list of good acoustic practices to avoid the most commonly occurring problems with duct services:

a) Bends and bifurcations – 90º bends should either be radiused type or be fitted with equally air turning vanes.
b) All branches should be fitted with boots or coned as a standard practice.
c) Transitions should be as gradual as possible within the physical limitations preferably with that one pair of sides remaining in parallel.
d) The aspect ratio in all main and branch duct runs for rectangular and flat oval ductwork should ideally not exceed 3:1.
e) Volume control devices near duct terminations should only be used to provide fine trimming of the air flow. If dampers are likely to be used beyond fine trimming purposes "damper attenuators" may be required.
f) Duct velocities to internal areas should be limited to those stated below.

MAXIMUM VELOCITY (m/s) GUIDELINES FOR VARIOUS INTERNAL CRITERIA					
NODE	NR40 AND ABOVE	NR38	NR35	NR30	NR25
Risers	10	9	7.5	6	5
Main Branches (see note)	6	5.5	5	4	3
Ductwork to Grilles (see note)	3	2.5	2.5	2	1.5
Ductwork to Diffusers (see note)	2.5	2	2	1.5	1
Extract Stub Ducts above ceiling	4	3.5	3	2	1.5
Extract Stub Duct below ceiling (i.e. exposed soffit)	3	2.5	2.5	2	1.5

g) Duct velocities to louvres should be limited to those stated below.

NODE	MAXIMUM RECOMMENDED FACE VELOCITY (m/s)
Intake Louvres (Non-acoustic)	2.5
Discharge Louvres	2.0
Acoustic Louvres	1.5
Ductwork to Louvres (see Note)	5.0

h) Velocities in ductwork prior to grilles/diffusers/louvres must be reduced gradually down to the values shown. Where main branches are located close to terminal, the velocities in these branches may need to be reduced to a value closer to the guidelines for ductwork to grilles/diffusers.

12.3 Pipework

It is unlikely that the piped services associated with the building services plant will, if designed in accordance with HVCA/CIBSE recommendations produce any flow generated noise problems. It is worth noting, however, that the overall friction loss in pipework should be limited to 280 Pa/m across the range of pipes to be used.

12.4 Duct Attenuators

Duct attenuators can, in certain circumstances, be significant sources of noise regeneration. For this project regenerated noise through attenuators should be acceptable provided recommended sizes are adhered to and their construction conforms to our “General Specification for Acoustic and Vibration Isolation Materials and Products”.

13.0 Plantroom Enclosures

We understand that a heating plantroom and a boosted water plantroom are proposed on the lower ground floor level in Block 5. We understand that there are noise sensitive areas adjacent to the plantrooms as shown below.

Level	Adjacencies	
	Heating Plantroom	Boosted Water Plantroom
Lower Ground Floor	Unit B01 - Living room	Community Hall Kitchen
Level 00	Unit B02 - Bedroom	Unit B04 – Living Room
Level 00	Unit B04 – Living room	-

We understand the separating wall between the heating plantroom and the adjacent residential unit to be Wall Type PW65 (partition build-up detailed in Section 6.3). We understand the ceiling/floor construction between both the heating plantroom and the boosted water plantroom and the adjacent residential units above to be GF10 (floor build-up detailed in Section 6.2).

Based on our understanding of the layout of the proposed plant items within the plantroom and the manufacturer’s noise data we were provided with, in conjunction with the proposed wall and ceiling/floor constructions shall be capable of providing adequate attenuation so that the proposed criteria outline in Section 2.0 are complied with for the areas adjacent to the plantrooms.

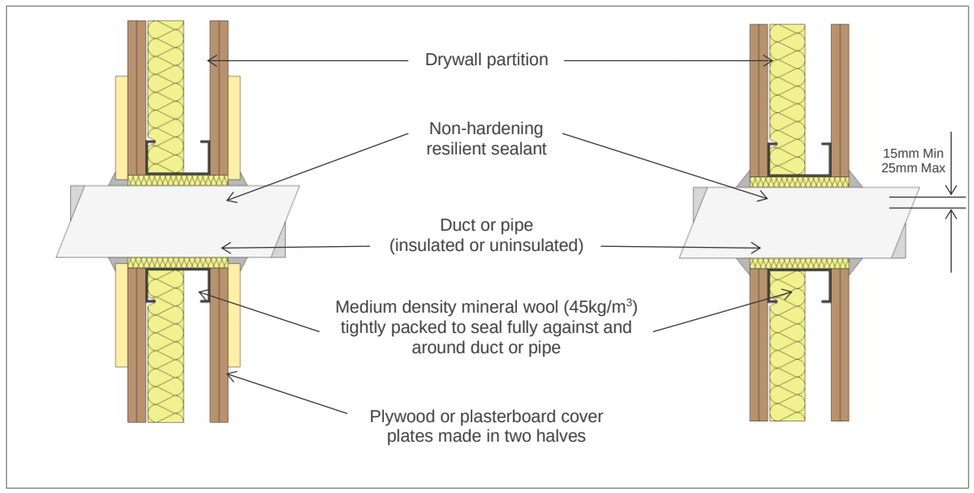
It is important to ensure that the acoustic effectiveness of the various plantroom enclosures is not compromised by flanking paths. To this end we offer the following advice.

13.1 Penetrations

All penetrations of plantroom structures by ducts, pipework, electrical cables etc. should be adequately sealed acoustically.

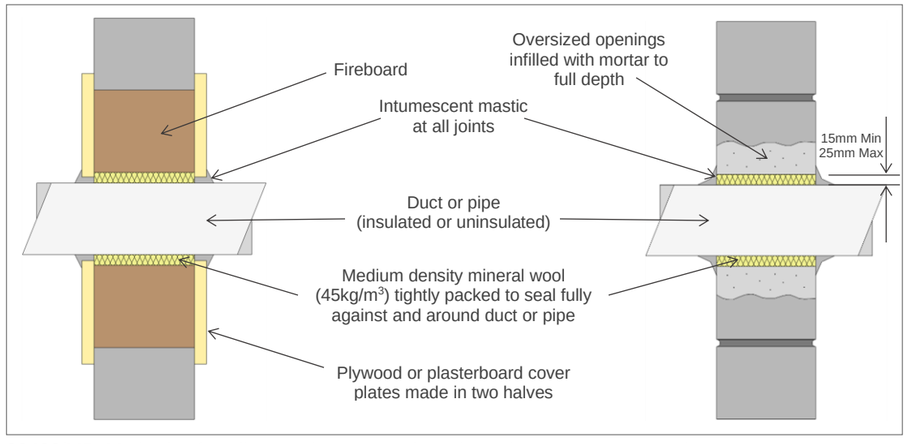
Where live ducts or pipes penetrate the building structure, it is essential to acoustically sleeve the penetrations to prevent transmission of noise and vibration. This should be done by sleeving penetrations with a 25mm thickness of mineral wool having a density of at least 45kg/m$^{3.}$ Care should be taken to seal any gaps by means of heavy grout, and the whole should be finished with a liberal application of dense, soft, non-hardening mastic.

The following sketches show suitable details for duct and pipe penetrations through drywall partitions.



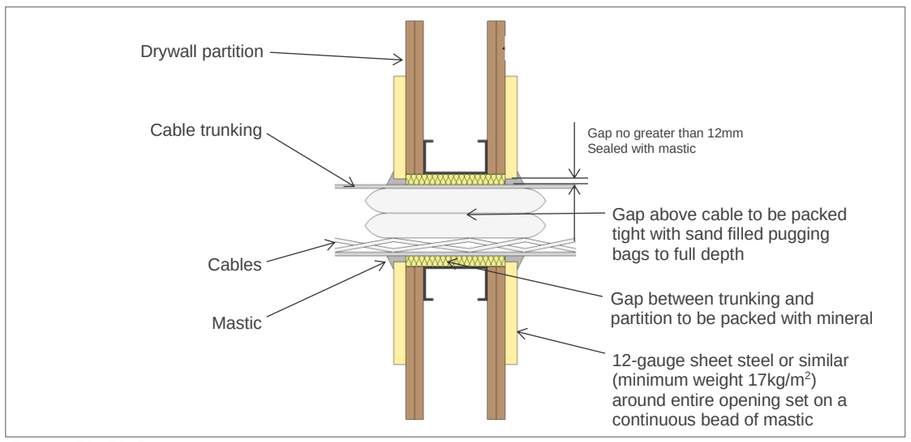
Sketch 29483/DP: Methods of sealing service penetrations through drywall partitions

The following sketches show suitable details for duct and pipe penetrations through masonry constructions.



Sketch 29483/MP: Methods of sealing service penetrations through masonry constructions

The following sketch shows suitable details for cable trunking penetrations through a drywall partition.



Sketch 29483/CP: Methods of sealing cable trunking penetrations through a drywall partition

13.2 Wall/Soffit Junctions

It is imperative that the sound reduction afforded by plantroom walls is not compromised by leakage at the junction to the soffit. This can be done by making good with mortar to full depth. Alternative methods may also be acceptable but must be referred to, and agreed by ourselves.

13.3 Masonry Walls

All masonry walls shall:

- have full depth mortar joints
- be pointed to a good standard
- have interlaced junctions/corners
- be imperforate
- be laid “frogs” up (in the case of brickwork)

To comply with HSE guidance individual blocks should not exceed 20kg. Blocks should be sized accordingly.

13.4 Plaster/Render Finishes

To ensure masonry walls are truly homogeneous in nature it is good acoustic practice to apply a plaster or render finish to masonry walls. Provided walls have full depth mortar joints and are pointed to a good standard a plaster or render finish to one side only (slab to slab) is generally acceptable unless otherwise specified.

14.0 Vibration Isolation

Vibration transfer from building services plant to office (Community Hall Level 00) should not exceed 0.01 m/s^2 peak acceleration (based on W_b weighting as defined in Clause 3.3 of BS 6472-1: 2008).

All items of building services plant should be fitted with vibration isolators to control the transmission of vibration to the building structure, as detailed Vibration Isolator Schedule 30538/VIS.

It is important that all AVM's are manufactured in accordance with our attached "General Specification for Acoustic and Vibration Isolation Materials and Products".

The following provides a general description of isolator requirements and installation procedures.

14.1 Site Installation of Vibration Isolators

In order to provide trouble-free site installation, two single considerations will eliminate the most commonly occurring faults.

14.1.1 Isolator Adjustment

When raising equipment to its final position on vibration isolators, the isolators must be adjusted progressively.

Each isolator should be adjusted several turns at a time in sequence. The continued adjustment of a single mount will result only in the unit becoming coil bound and failure to lift the equipment.

14.1.2 Pipework to Pumps, Chillers etc.

Where isolated equipment is piped-up after installation, it is imperative that associated pipework is independently supported (with appropriate vibration isolators – see below) and does not transfer any load to the isolated equipment. Pipework should also not cause any shearing force to be transmitted to the isolated equipment.

14.2 Pipework Isolation

The use of flexible connectors as an interface between plant and associated pipework cannot be considered as adequate vibration isolation. Their use as thermal and shock compensators is well known, but even under nominal line pressures the connectors become acoustically rigid. It is, therefore, recommended that all active pipework should be isolated on resilient mountings/hangers up to the structural penetration adjacent to the service shaft, the first 100 pipe diameters or the first 10m of pipe run whichever is the greatest. Thereafter oversized brackets having neoprene inserts would be advisable, generally for larger "live" pipework, but also for smaller "live" pipework where friction losses exceed 280Pa/m.

If flexible connectors are also required they should be located in the horizontal plane and be of the double arched type.

14.3 Ductwork Flexible Connections

All ductwork connections to fans and air handling units should be flexible and at least 75mm long. These should be constructed from sound barrier mat having a minimum superficial density of at least 5kg/m^2. These connections should be straight but not rigid, with no offset, in order to prevent turbulence.

14.4 Electrical Connections

It is important that isolated equipment is not mechanically shorted by the installation of conduit or cable trays, etc., which are rigidly connected to the structure. Electrical connections to plant should, therefore, be made via a looped flexible conduit. The loop should form a diameter of 300mm or more.

15.0 Lift Installations

Noise and vibration levels due to the lift installations should not exceed the limits stated in the enclosed Acoustic Specification for Lift Installations.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Reviewed Documents

Reference	Title	Date
3873-LBA-Z5-00A-DR-A-120000	GA Plan Lower Ground Plot 5	19 / 04 / 2022
3873-LBA-Z5-00A-DR-A-150000	GA Plan Lower Ground Plot 5	13 / 03 / 2023
3873-LBA-Z5-00B-DR-A-150001	GA Plan Level 00 Plot 5	13 / 03 / 2023
3873-LBA-Z5-00-DR-A-120001	GA Plan Level 00 Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-01-DR-A-120002	GA Plan Level 01 Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-01-DR-A-150002	GA Plan Level 01 Plot 5	13 / 03 / 2023
3873-LBA-Z5-02-DR-A-120003	GA Plan Level 02 Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-02-DR-A-150003	GA Plan Level 02 Plot 5	10 / 03 / 2023
3873-LBA-Z5-03-DR-A-120004	GA Plan Level 03 Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-03-DR-A-150004	GA Plan Level 03 Plot 5	10 / 03 / 2023
3873-LBA-Z5-04-DR-A-120005	GA Plan Level 04 Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-04-DR-A-150005	GA Plan Level 04 Plot 5	13 / 03 / 2023
3873-LBA-Z5-05-DR-A-120006	GA Plan Roof Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-05-DR-A-150006	GA Plan Roof Plot 5	13 / 03 / 2023
3873-LBA-Z5-ZZ-DE-A-130000	GA Elevations - Plot 5 North Elevation C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DE-A-130001	GA Elevations - Plot 5 South C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DE-A-130002	GA Elevations - Plot 5 West Elevation C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DE-A-130003	GA Elevations - Plot 5 East Elevation C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DE-A-130010	GA Elevations Plot 5 Unfolded 1/2	28 / 04 / 2022
3873-LBA-Z5-ZZ-DE-A-130011	GA Elevations Plot 5 Unfolded 2/2	28 / 04 / 2022
3873-LBA-Z5-ZZ-DP-A-300000	Flat Type Layouts – 1B2P – 1 & 2	13 / 03 / 2023
3873-LBA-Z5-ZZ-DR-A-140600	Façade Sections 01-04 – Plot 5	22 / 09 / 2022
3873-LBA-Z5-ZZ-DR-A-140601	Façade Sections 05 – Plot 5	26 / 09 / 2022
3873-LBA-Z5-ZZ-DS-A-140000	GA Section 01 - Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DS-A-140001	GA Section 02 - Plot 5 C02	10 / 03 / 2023
3873-LBA-Z5-ZZ-DS-A-140002	GA Section 03 - Plot 5 C02	10 / 03 / 2023
3873-LBA-Z6-ZZ-DR-A-640100	Core 06 Plans	14 / 03 / 2023
3873-LBA-Z5-ZZ-DR-A-140601	Façade Section 05 – Plot 5	26 / 09 / 2022
3873-LBA-Z6-00A-DR-A-120500	GA Plan Lower Ground Plot 6	25 / 04 / 2022
3873-LBA-Z6-00A-DR-A-150500	GA Plan Lower Ground Plot 6	13 / 03 / 2023

Reference	Title	Date
3873-LBA-Z6-00-DR-A-120501	GA Plan Level 00 Plot 6	13 / 03 / 2023
3873-LBA-Z6-00-DR-A-150501	GA Plan Level 00 Plot 6	13 / 03 / 2023
3873-LBA-Z6-01-DR-A-120502	GA Plan Level 01 Plot 6	13 / 03 / 2023
3873-LBA-Z6-02-DR-A-120503	GA Plan Level 02 Plot 6	13 / 03 / 2023
3873-LBA-Z6-02-DR-A-150503	GA Plan Level 02 Plot 6	13 / 03 / 2023
3873-LBA-Z6-03-DR-A-120504	GA Plan Roof Plot 6 C02	10 / 03 / 2023
3873-LBA-Z6-03-DR-A-150504	GA Plan Roof Plot 6	13 / 03 / 2023
3873-LBA-Z6-ZZ-DE-A-130500	GA Elevations - Plot 6 North Elevation C02	10 / 03 / 2023
3873-LBA-Z6-ZZ-DE-A-130501	GA Elevations - Plot 6 South Elevation C02	10 / 03 / 2023
3873-LBA-Z6-ZZ-DE-A-130502	GA Elevations - Plot 6 West Elevation C02	10 / 03 / 2023
3873-LBA-Z6-ZZ-DR-A-140610	Façade Sections 01-03 – Plot 6	10 / 03 / 2023
3873-LBA-Z6-ZZ-DS-A-140500	GA Section 01 - Plot 6 C02	26 / 09 / 2022
3873-LBA-Z6-ZZ-DS-A-140501	GA Section 02 - Plot 6 C02	13 / 05 / 2022
3873-LBA-Z6-ZZ-DS-A-140502	GA Section 03 - Plot 6 C02	10 / 03 / 2023
3873-LBA-XX-XX-SP-A-550000	Architectural Specification_C03 (2)	10 / 03 / 2023
3873-LBA-Z5-00-DD-A-700009	Pre-cast concrete panel details	13 / 03 / 2023
3873-LBA-Z5-00-DD-A-700012	Pre-cast concrete panel details 1.5	13 / 03 / 2023
3873-LBA-Z5-00-DD-A-700130	Typical Roof details	13 / 03 / 2023
3873-LBA-Z5-00-DR-A-461000	Entrance details-community hall-rear	13 / 03 / 2023
3873-LBA-Z5-00-DR-A-461001	Entrance details-Community Hall-Front	13 / 03 / 2023
3873-LBA-Z5-00-DR-A-461002	Entrance details- Dwelling	13 / 03 / 2023
3873-LBA-Z5-00-DR-A-461010	Entrance details – Plot 5 – and elevation	13 / 03 / 2023
3873-LBA-ZZ-00-DD-A-700100 DPM	DPM Details – Typical Ground Floor	12 / 01 / 2023
3873-LBA-ZZ-00-DD-A-700104 DPM	DPM Details – Typical light well	12 / 01 / 2023
3873-LBA-ZZ-00-DD-A-700105	DPM Details – Typical Retaining Wall – Community Hall	13 / 03 / 2023
3873-LBA-ZZ-XX-DD-A-700103	DPM Details – Communal Thresholds	13 / 03 / 2023
3873-LBA-ZZ-XX-DD-A-735000	Curtain Wall Details	12 / 07 / 2023
3873-LBA-ZZ-ZZ-DD-A-460002	Balcony Types – Panel Variations	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-700010	External Wall Plan Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-700011	External Wall Section details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-700140	Lift Overrun & AOV – Typical Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-720010	Roof Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-730000	Window Details – Typical 01	13 / 03 / 2023

Reference	Title	Date
3873-LBA-ZZ-ZZ-DD-A-730001	Window Details – Typical 02	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-765000	Window Details - Plans	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-765001	Internal Wall Details - Sections	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DD-A-790000	Stopping Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-450000	Wall Types External	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-451000	Wall Types - Party	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-451010	Wall Types - Internal	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-451015	Wall Types - Linings	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-452000 f	Floor Types - Ground	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-452005	Floor Types – Internal	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-453000	Roof Types	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-456000	Internal Door Types 01	29 / 11 / 2022
3873-LBA-ZZ-ZZ-DR-A-456001	Internal Door Types 02	13 / 12 / 2022
3873-LBA-ZZ-ZZ-DR-A-460000	Balcony Types Plans – Plot 5	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-460001	Balcony Types Plans – Plot 6	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-700106	Perimeter Wall Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DR-A-720001	Roof Screen Details	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DT-A-454000	Window Types – Sheet 1	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DT-A-454001	Window Types – Sheet 2	13 / 03 / 2023
3873-LBA-ZZ-ZZ-DT-A-454002	Window Types (3 of 3)	14 / 10 / 2022
3873-LBA-ZZ-ZZ-DT-A-457000	External Door Types – Sheet 1	17 / 10 / 2022
3873-LBA-ZZ-ZZ-DT-A-457001	Curtain Wall Types – Sheet 01	10 / 01 / 2022
TM54A008-QOD-XX-XX-CA-M-0004	Building Ventilation Calculation	05 / 05 / 2023
TM54A008-QOD-XX-XX-CA-M-0007	Typical Pressure Drop Calculation	05 / 05 / 2023
TM54A008-QOD-XX-XX-SH-M-0002	Schedule of Attenuators	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0009	Schedule of Grilles	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0010	Schedule of Heat Recovery Unit	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0011	Schedule of Heat Interface Units	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0012	Schedule of Louvres	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0013	Schedule of Plate Heat Exchangers	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0015	Schedule of PUMPS	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0017	Schedule of pressurization unit and vessel	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0020	Schedule of Fans	28 / 04 / 2023

Reference	Title	Date
TM54A008-QOD-XX-XX-SH-M-0021	Schedule of Extract Grilles	28 / 04 / 2023
TM54A008-QOD-ZZ-00-DR-N-0901	Site Wide External Services Layout	05 / 05 / 2023
TM54A008-QOD-ZZ-XX-DR-E-0803	Site wide typical apartment 3 bed 5 person	24 / 03 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0801	Site wide – Typical Apartment 1 Bed 2 Person	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0802	Site Wide – Typical Apartment 2 Bed 4 Person	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0803	Site Wide – Typical Apartment 3 Bed 5 Person	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-N-1002	Typical Utility Cupboard Details	05 / 05 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0131	Primary LTHW Plantroom Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0132	Block 5 Secondary LTHW Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0133 Mechanical Services Plot 6 Schematics	Block 5 Secondary LTHW Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0134 Plot 5	Block 5 Typical Apartment LTHW Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0135 Plot 5	Block 5 Typical Apartment Schematics	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0151 Plot 5	Block 5Typical Apartment Ventilation Schematics	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0152 Plot 5	Block 5 Ancillary Spaces Ventilation Schematic	21 / 04 / 2023
3873-LBA-XX-XX-SH-A-520000	External Door Schedule	13 / 03 / 2023
3873-LBA-XX-XX-SH-A-530000	Internal Door Schedule	13 / 03 / 2023
3873-LBA-XX-XX-SH-A-540000	Architectural Lintel Schedule	17 / 03 / 2023
3873-LBA-ZZ-ZZ-SA-A-500000	Accommodation Schedule	13 / 03 / 2023
3873-LBA-ZZ-ZZ-SH-A-500002	Windows Schedule	12 / 12 / 2022
3873-LBA-ZZ-ZZ-SH-A-510000	Finishes Specification	13 / 03 / 2023
TM54A008-QOD-Z5-01-DR-M-0703	Block 05 Mechanical Services Typical Corridor_P01	06 / 04 / 2023
TM54A008-QOD-Z5-ZZ-DR-M-0401	Block 5 Mechanical Services Community Hall Layout	28 / 04 / 2023
TM54A008-QOD-Z6-01-DR-N-0711	Block 6 Mechanical Services Typical Corridor	06 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0131	Block 5 Mechanical Services Primary LTHW Plantroom schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0132	Block 5 Seconcdary LTHW Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0133	Block 6 Secondary LTHW Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0134 (2)	Block 5 Typical Apartment LTHW Schematics	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0134	Block 5 Typical Apartment LTHW Schematics	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0135	Block 5 Typical Apartment LTHW Schematics	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0151	Block 5 Typical Apartment Ventilation Schematics	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0152	Block 5 Ancillary Spaces Ventilation Schematic	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0801 Mechanical Services Site Wide	Typical Apartment 1 Bed 2 Person	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0802 Mechanical Services Site Wide	Typical Apartment 2 Bed 4 Person	21 / 04 / 2023

Reference	Title	Date
TM54A008-QOD-ZZ-XX-DR-M-0803 Mechanical Services Site Wide	Typical Apartment 3 Bed 5 Person	21 / 04 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0804 Mechanical Services Site Wide	Typical Apartment 1 Bed 2 Person 1	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0805 Mechanical Services Site Wide	Typical Apartment 1 Bed 2 Person 2	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0806 Mechanical Services Site Wide	Typical Apartment 1 Bed 2 Person 4	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0807 Mechanical Services Site Wide	Typical Apartment 1 Bed 2 Person 5	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0808 Mechanical Services Site Wide	Typical Apartment 2 Bed 4 Person 1	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0809 Mechanical Services Site Wide	Typical Apartment 2 Bed 4 Person 2	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0810 Mechanical Services Site Wide	Typical Apartment 2 Bed 4 Person 5	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0811 Mechanical Services Site Wide	Typical Apartment 2 Bed 4 Person 6	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0812 Mechanical Services Site Wide	Typical Apartment 3 Bed 4 Person 1	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0813 Mechanical Services Site Wide	Typical Apartment 3 Bed 4 Person 2	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-M-0814 Mechanical Services Site Wide	Typical Apartment 3 Bed 5 Person 2	09 / 06 / 2023
TM54A008-QOD-ZZ-XX-DR-N-1002	Mechanical, Electrical & Public Health Services Block 5	21 / 04 / 2023
TM54A008-QOD-ZZ-00-DR-N-0901	Block 05 Electrical & Public Health Services Roof Layout	-
TM54A008-QOD-Z6-XX-DR-N-1011	Mechanical & Public Health Services Block 5 – Lower Ground Floor Plant Room Layout	21 / 04 / 2023
TM54A008-QOD-Z6-LGF-DR-N-0811	Electrical & Public Health Services Block 5 Risers Layout	21 / 04 / 2023
TM54A008-QOD-Z6-03-DR-N-0712	Electrical & Public Health Services Block 6 Typical Corridor	21 / 04 / 2023
TM54A008-QOD-Z6-01-DR-N-0711	Block 06 Electrical & Public Health Services Roof Layout	21 / 04 / 2023
TM54A008-QOD-Z5-LGF-DR-N-0701	Block 06 Electrical & Public Health Services Risers Layout	21 / 04 / 2023
TM54A008-QOD-Z5-05-DR-N-0704	Mechanical, Electrical & Public Health Services Site Wide External Services Layout	05 / 05 / 2023
TM54A008-QOD-Z5-01-DR-N-0703	Mechanical, Electrical & Public Health Services Typical Utility Cupboard Detail	05 / 05 / 2023
TM54A008-QOD-XX-XX-SH-M-0002	Schedule of Attenuators	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0009	Schedule of Grilles	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0010	Schedule of Heat Recovery Unit	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0011	Schedule of Heat Interface Units	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0012	Schedule of Louvres	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0013	Schedule of Plate Heat Exchangers	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0015	Schedule of Pumps	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0017	Schedule of Pressurisation Unit and Vessel	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0019	Schedule of Water Treatment Equipment	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0020	Schedule of Fans	28 / 04 / 2023
TM54A008-QOD-XX-XX-SH-M-0021	Schedule of Extract Grilles	28 / 04 / 2023

Reference	Title	Date
TM54A008-QOD-XX-XX-SH-M-0022	Schedule of Electric Water Heaters	19 / 05 / 2023

Central Somers Town

ACOUSTIC SPECIFICATION FOR DOOR SET(S)

Performance

The door set(s) shall provide the following octave band Sound Reduction Indices (SRI's) when tested in accordance with BS EN ISO 10140-2:2010:

Minimum Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)					
125	**250**	**500**	**1k**	**2k**	**4k**
21	26	30	33	35	36

The manufacturer or supplier of the acoustic door set(s) shall guarantee the specified SRI, and ensure that the method of installation does not detract from the guaranteed performance. Any failure to meet the specification because of faulty design, manufacture or installation, will result in the manufacturer or supplier being held liable for remedial or replacement costs including consequential liability.

Construction

It is imperative that prospective suppliers can demonstrate compliance with the acoustic performance detailed above in each octave band. However, we would expect the above performance would typically be achievable with an R_w35dB doorset.

The acoustic door set(s) shall be supplied complete with all the seals and frames, and with furniture as specified by the Architect.

The door furniture should be designed and installed so as to ensure that the seals are acoustically effective over the whole periphery of the door.

It is recommended that the door set(s) should be fitted with neoprene/rubber compression, or knife edge, acoustic seals to head, jambs and threshold.

Double leaves should incorporate a central jamb or overlapping leaves to ensure a good seal at the middle joint.

Wiper seals will not be permitted at thresholds; doors must be fitted with a raised threshold or rising butt hinges with a compression seal.

Vision panel (if applicable) shall comprise suitable double glazed unit.

Assembly and adjustments of door leaf, frame, acoustic seals and hinges shall take place at factory to ensure ease of installation, reliable operation and acoustic performance.

Any deviations from the above specification must be agreed by, and confirmed in writing to, Hann Tucker Associates

Stage 4

Acoustic Specification for

Lift Installations

Lift ride quality and performance characteristics shall not exceed the following levels:

	Ride Quality and Noise Criteria for Lifts
Noise in lift car [1]	55dB $L_{Amax(fast)}$
Acceleration [1]	1.0m/sec^2
Jerk [1]	1.2m/sec^3
Horizontal peak to peak vibration [1]	0.10m/sec^2 (10mg)
Vertical peak to peak vibration [1]	0.12m/sec^2 (12mg)
Vertical vibration in occupied areas [2]	0.01 m/sec^2 (1mg)
Noise in lift lobby [3]	55dB $L_{Amax(fast)}$
Noise from in car announcement and arrival gongs [3]	65dB $L_{Amax(fast)}$
Noise into bedrooms through lift shaft walls [3]	25dB $L_{Amax(fast)}$
Noise into living rooms through lift shaft walls [3]	30dB $L_{Amax(fast)}$
Noise into other areas within dwellings through lift shaft walls [3]	35dB $L_{Amax(fast)}$

1 Lift ride quality and performance characteristics shall be measured and presented in accordance with BS ISO 18738-1:2012 'Measurement of ride quality Part 1: Lifts'. N.B. The measurement parameter for vibration is peak to peak, not peak.

2 Vibration levels shall be measured in terms of peak acceleration on the floor slabs in occupied areas based on the Wb weighting, as defined in Clause 3.3 of BS 6472-1:2008.

3 Lifts shall be operated as per Section 6.4 of BS ISO 18738-1:2012. Noise levels shall be measured at 1m from the Lift Door or Shaft Wall, as appropriate, in accordance with the Association of Noise Consultants Guidelines titled "Noise Measurements in Buildings Part 1: Noise from Building Services".

For goods/vehicles/cycle lifts relaxation of the criteria for ride quality within the lift car may be acceptable but shall be agreed by the developer or acoustic consultant in writing. No relaxation is normally acceptable within occupied areas.

No perceptible vibration or re-radiated noise shall be permitted in any building outside the Client's demise.

In order to meet the above criteria, it is suggested that consideration be given to the following items.

a) All lift equipment (including the lift motor, starter electrical cabinet, car controllers, reactors and motors generators) should be suitably vibration isolated as appropriate. All connections, such as electrical grounding, shall be formed from flexible cable/conduit.

b) In the case of hydraulic lift installations, pipework shall be fitted with in-line silencers in order to effectively control noise transmission to areas outside the lift motor room via hydraulic fluid pipes.

c) All support steelwork for the installation is to be selected to avoid any resonances forced by the lift motor and the natural frequencies of steelwork should therefore fall between the dominant system frequencies. The steelwork, in particular beams supporting diverter sheaves and pulleys, should be as stiff as possible and suitably vibration isolated from the main structural building elements. The mounting arrangements for the beams should be carefully considered to ensure that the beams are not less stiff than the proposed method of isolation. To this end, long span beams should be avoided and beams should terminate as closely as possible to columns rather than other horizontal beams. The stiffness of the beam support member should be at least 3 time greater than the stiffness of the beam.

d) Rope hole penetrations shall be acoustically treated (if required) so as to ensure lift motor room noise breakout is controlled to ensure acceptable noise levels in the 'lift lobby' area as defined above.

e) The car and counterweight guides shall be so joined and fixed to their brackets that they do not deflect by more than 1.0mm under normal operating conditions, and for all panoramic passenger and goods lifts the fixings shall be at floor level only.

Central Somers Town

Maximum Velocity Guidelines

Roomside

MAXIMUM VELOCITY (m/s) GUIDELINES FOR VARIOUS INTERNAL CRITERIA					
NODE	**NR40 AND ABOVE**	**NR38**	**NR35**	**NR30**	**NR25**
Medium Pressure Systems (Fan Side of VAV Boxes, P/R Valves or Similar):					
Circular Risers	15	15	15	12	N/A
Oval Risers	12	12	12	9	N/A
Circular Main Branches	10	10	10	7	N/A
Oval Main Branches	9	8.5	8	5	N/A
Low Pressure Systems:					
Risers	10	9	7.5	6	5
Main Branches (see note)	6	5.5	5	4	3
Ductwork to Grilles (see note)	3	2.5	2.5	2	1.5
Ductwork to Diffusers (see note)	2.5	2	2	1.5	1
Extract Stub Ducts above ceiling	4	3.5	3	2	1.5
Extract Stub Duct below ceiling (i.e. exposed soffit)	3	2.5	2.5	2	1.5

Atmospheric Side

NODE	MAXIMUM RECOMMENDED FACE VELOCITY (m/s)
Intake Louvres (Non-acoustic)	2.5
Discharge Louvres	2.0
Acoustic Louvres	1.5
Ductwork to Louvres (See Note)	5.0

Note: Velocities in ductwork prior to grilles/diffusers/louvres must be reduced gradually down to the values shown. We do not recommend the use of medium pressure systems for areas below NR30. Where main branches are located close to terminal, the velocities in these branches may need to be reduced to a value closer to the guidelines for ductwork to grilles/diffusers.

Appendix C

Central Somers Town, Phase 1

Schedules

Plant Noise Schedule

Plant Noise Schedule
30538/PNS/Block5

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Central Somers Town

Revision: 0	Date: 05/07/2023	Prepared by: Stavros Tagios			Comments:								
			Duty		Data		Sound Level (dB) at Octave Band Centre Frequency (Hz)							
Plant Ref.	Location	Plant Type	m^3/s	Pa	mfr/empir	Lw/Lp	63	125	250	500	1k	2k	4k	8k
Grundfos TPE 32-460/2 A-F-A-BQQE-KWB	Lower Groundfloor Plantroom	Circulation Pump	-	-	mfr	Lp	23	40	50	62	65	62	59	50
Grundfos TPE 32-460/2 A-F-A-BQQE-KWB	Lower Groundfloor Plantroom	Circulation Pump	-	-	mfr	Lp	23	40	50	62	65	62	59	50
Flamco - Pro PDG 261	Lower Groundfloor Plantroom	Pressurisation Unit	-	-	mfr	Lp	<75							
Flaktwoods / Woods EC Single Fan 150	Community Bin Store	Box Fan	-	-	mfr	Lp	53dBA @1m							
Androit Airflow DV145 (supply duct)	Community Kitchen Utility Room	MVHR	0.15	100	mfr	Induct Lw	69	71	70	68	67	66	63	59
Androit Airflow DV145 (extract duct)	Community Kitchen Utility Room	MVHR	0.15	100	mfr	Induct Lw	58	59	49	56	50	48	36	28
Danfoss Flatstation 5	Community Kitchen Utility Room	Heat Interface Unit	-	-	mfr	Lp	≤35							
Flaktwoods / Woods EC Single Fan 150	Community Hall Store	Box Fan	-	-	mfr	Lp	60	72	73	73	71	71	71	72

The above data represent 'maximum' noise levels which should therefore not be exceeded. It is essential that Hann Tucker Associates are appraised of any alterations or additions to this list.

Plant Noise Schedule
30538/PNS/Resi

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Central Somers Town

Revision: 0	Date: 29/06/2023	Prepared by: Stavros Tagios			Comments:								
			Duty		Data		Sound Level (dB) at Octave Band Centre Frequency (Hz)							
Plant Ref.	Location	Plant Type	m^3/s	Pa	mfr/empir	Lw/Lp	63	125	250	500	1k	2k	4k	8k
Androit Airflow DV145 (supply duct)	Community Hall Kitchen	MVHR	0.15	100	mfr	Induct Lw	69	71	70	68	67	66	63	59
Androit Airflow DV145 (extract duct)	Community Hall Kitchen	MVHR	0.15	100	mfr	Induct Lw	58	59	49	56	50	48	36	28
HRU-B09-B5-01 (supply duct)	Typical 1 Bed 2 Person Flat	MVHR	0.031	70	mfr	Induct Lw	68	66	60	53	55	50	43	32
HRU-B09-B5-01 (extract duct)	Typical 1 Bed 2 Person Flat	MVHR	0.042	70	mfr	Induct Lw	68	58	45	46	42	31	16	-
HRU-B07-B5-01 (supply duct)	Typical 2 Bed 4 Person Flat	MVHR	0.029	70	mfr	Induct Lw	68	66	60	53	55	50	43	32
HRU-B07-B5-01 (extract duct)	Typical 2 Bed 4 Person Flat	MVHR	0.038	70	mfr	Induct Lw	68	58	45	46	42	31	16	-
HRU-B04-B5-01 (supply duct)	Typical 3 Bed 5 Person Flat	MVHR	0.025	70	mfr	Induct Lw	65	63	57	51	53	46	39	26
HRU-B04-B5-01 (extract duct)	Typical 3 Bed 5 Person Flat	MVHR	0.033	70	mfr	Induct Lw	65	56	41	43	39	28	13	-
HIU-B09-B5-01	Typical 1 Bed 2 Person Flat	HIU	-	-	mfr	Lp	≤35dB							
HIU-B07-B5-02	Typical 2 Bed 4 Person Flat	HIU	-	-	mfr	Lp	≤35dB							
HIU-B04-B5-03	Typical 3 Bed 5 Person Flat	HIU	-	-	mfr	Lp	≤35dB							

The above data represent 'maximum' noise levels which should therefore not be exceeded. It is essential that Hann Tucker Associates are appraised of any alterations or additions to this list.

Attenuator Schedule

Attenuator Schedule
30538/AS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Central Somers Town

Revision: 0	Date: 05/07/2023	Prepared by: Stavros Tagios				Comments:								
			Dimensions (mm)			Vol	Max PD	Minimum Insertion Loss (dB) at Octave Band Centre Frequency (Hz)						
Attenuator Ref.	Description	No. Off	W	H	L	m^3/s	Pa	63	125	250	500	1k	2k	4k	8k
ATT-SW-B5-01	Fan SW-B5-01 Outlet	1	-	900	305	0.07	20	1	3	6	11	13	10	7	5
ATT-SW-B5-02	Fan SW-B5-01 Inlet	1	-	900	305	0.07	20	4	6	10	18	25	28	26	21
ATT-SW-B5-02	Fan SW-B5-02 Outlet	1	-	900	305	0.14	20	1	3	6	11	13	10	7	5
ATT-SW-B5-03	HRU-B09-B5-01 Extract	1	-	900	305	0.14	20	1	3	6	11	13	10	7	5
ATT-SW-B5-04	HRU-B09-B5-01 Supply	1	-	900	305	0.14	20	5	8	12	21	29	26	22	19
ATT-SW-B5-05	HRU-B09-B5-01 Intake	1	-	900	305	0.029	20	5	8	12	21	29	26	22	19
ATT-SW-B5-06	HRU-B09-B5-01 Exhaust	1	-	900	305	0.029	20	1	3	6	11	13	10	7	5
ATT-SW-B5-07	Fan SW-B5-02 Inlet	1	-	900	305	0.029	20	4	6	10	18	25	28	26	21
ATT-B04-B5-01	HRU-B09-B5-01 Extract	1	90	500	220	0.029	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B04-B5-02	HRU-B09-B5-01 Supply	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B04-B5-03	HRU-B09-B5-01 Intake	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B04-B5-04	HRU-B09-B5-01 Exhaust	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B07-B5-01	HRU-B09-B7-01 Extract	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B07-B5-02	HRU-B09-B7-01 Supply	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B07-B5-03	HRU-B09-B7-01 Intake	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8

All attenuators must comply with Hann Tucker Associates General Specification for Acoustic and Vibration Isolation Materials and Products (copy available upon request if not supplied)

Attenuator Schedule
30538/AS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Central Somers Town

Revision: 0	Date: 05/07/2023	Prepared by: Stavros Tagios				Comments:									
			Dimensions (mm)			Vol	Max PD	Minimum Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
Attenuator Ref.	Description	No. Off	W	H	L	m^3/s	Pa	63	125	250	500	1k	2k	4k	8k
ATT-B07-B5-04	HRU-B09-B7-01 Exhaust	1	90	500	220	0.038	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B09-B5-01	HRU-B09-B7-01 Extract	1	90	500	220	0.044	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B09-B5-02	HRU-B09-B7-01 Supply	1	90	500	220	0.044	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B09-B5-03	HRU-B09-B7-01 Intake	1	90	500	220	0.044	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8
ATT-B09-B5-04	HRU-B09-B7-01 Exhaust	1	90	500	220	0.044	20	2.9	3	3.5	12.3	15.5	17	18.1	18.8

All attenuators must comply with Hann Tucker Associates General Specification for Acoustic and Vibration Isolation Materials and Products (copy available upon request if not supplied)

Vibration Isolator Schedule

Vibration Isolator Schedule
30538/VIS

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Woking: 01483 770 595
Manchester: 0161 832 7041

Central Somers Town

Revision: 0 (Stage 4)	Date: 26/05/2023	Prepared by: Stavros Tagios		Comments:		
Plant Ref.	**Plant Description**	**Location**	**Power (kW)**	**Base Code**	**Isolator Code**	**Static Deflection (mm)**
HRU-B04-B5-01	Mechanical Ventilation and Heat Recovery Units	Apartment Utility cupboard	0.119	See Note 2	NIS or HNT	6
HRU-B07-B5-01	Mechanical Ventilation and Heat Recovery Units	Apartment Utility cupboard	0.119			7
HRU-B09-B5-03	Mechanical Ventilation and Heat Recovery Units	Apartment Utility cupboard	0.119			8
HRU-LG-B5-01	Mechanical Ventilation and Heat Recovery Units	Apartment Utility cupboard	0.175			9
HIU-B04-B5-01	Heat Interface Units	Apartment Utility Cupboard	35	Base Frame	NIS	6
HIU-B07-B5-01	Heat Interface Units	Apartment Utility Cupboard	35	Base Frame	NIS	6
HIU-B09-B5-01	Heat Interface Units	Apartment Utility Cupboard	35	Base Frame	NIS	6
HIU-LG-B5-01	Heat Interface Units	Apartment Utility Cupboard	35	Base Frame	NIS	6
Pumps	Pump	Block 5 plantroom	<10	CIB	NIS	8
Fans	Fans	-	<10	See Note 2	OSS/R	20

Base Code	Description	HTA Spec. Ref.	Isolator Code	Description	HTA Spec. Ref.	Isolator Code	Description	HTA Spec. Ref.
AVR	AV Rails	4.7.1	NP	Neoprene Pads	-	HSS	Hangers with steel springs	4.5
SFB	Steel frame base	4.7.2	CSS	Caged steel spring	4.2	HNT	Hangers with neoprene turrets	4.6
CIB	Concrete inertia base	4.7.2	OSS	Open steel spring	4.3	_/R	Restraining or positioning device	4.1.1
CSP	Concrete split plinth	4.7.4	NIS	Neoprene-in-shear	4.4			

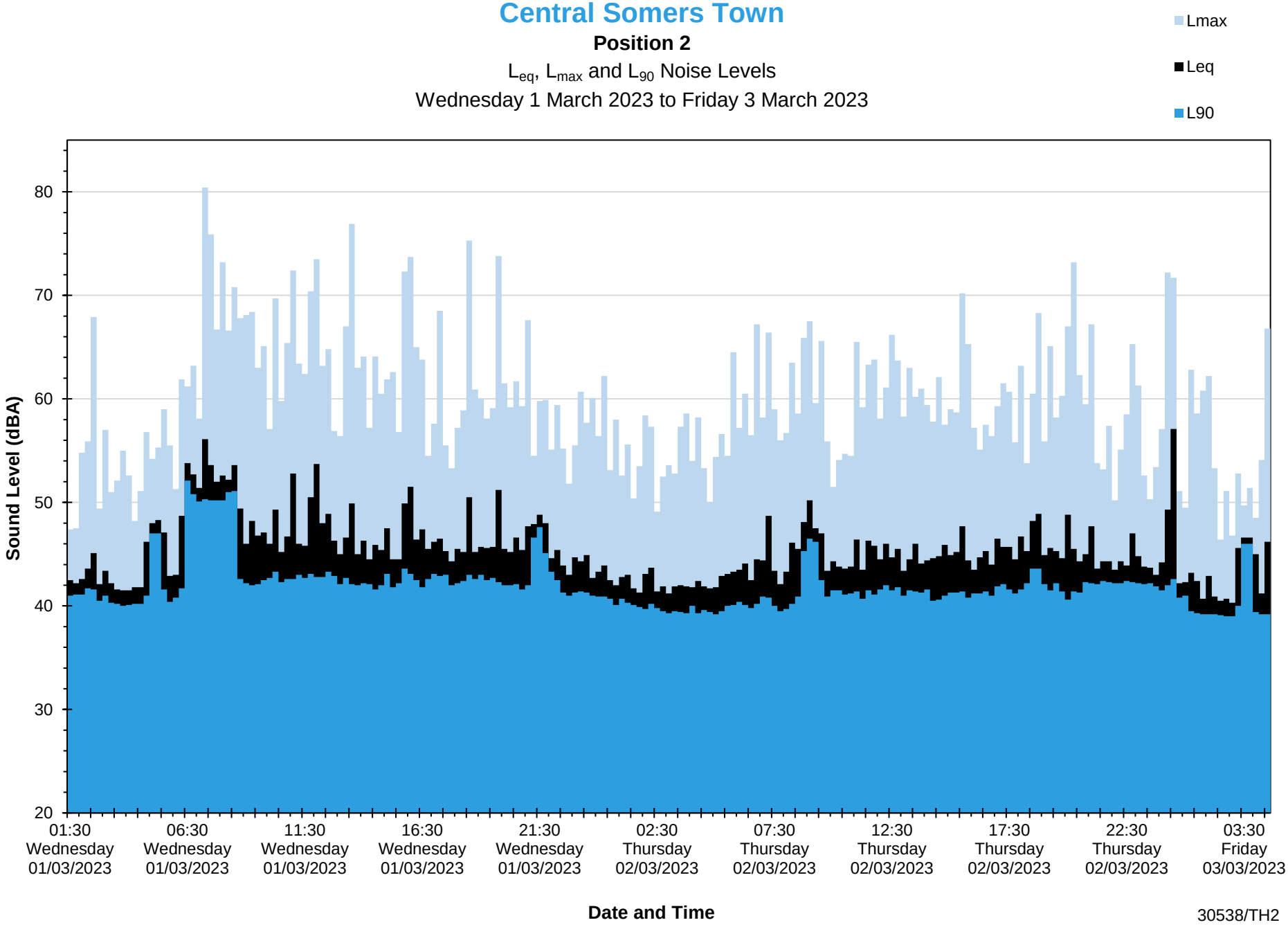
Note 1	To be read in conjunction with HTA's General Specification for Acoustic & Vibration Isolation Materials and Products (available upon request if not supplied)
Note 2	All cased fans shall have the above specified isolators internally beneath fan/motor frame, and be additionally isolated externally with neoprene pads having 2mm (min) deflection
Note 3	All pipework to be isolated between the plant and the first structural penetration using AV hangers/mounts with the above specified static deflection, and thereafter with brackets having neoprene inserts. CW booster pipework to be isolated on AV hangers throughout.

Central Somers Town

Position 2

L_{eq}, L_{max} and L_{90} Noise Levels

Wednesday 1 March 2023 to Friday 3 March 2023



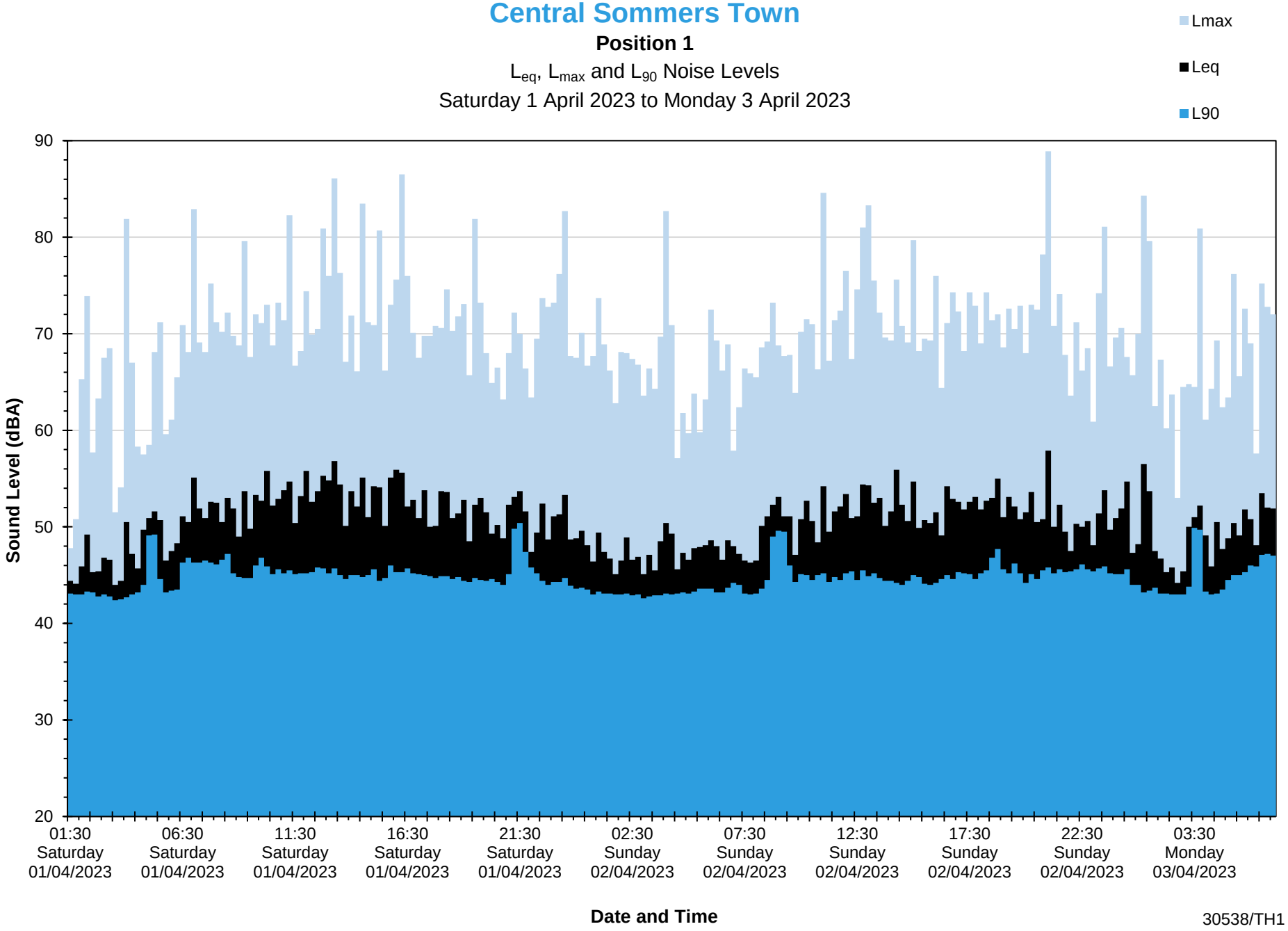
30538/TH2

Central Sommers Town

Position 1

L_{eq}, L_{max} and L_{90} Noise Levels

Saturday 1 April 2023 to Monday 3 April 2023



30538/TH1