

MPF/PR0665/L03

19 May 2024

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Dear Ben

PORT STREET, MANCHESTER

I write in response to Planning Condition 16a of the Planning Approval (132489/FO/2021) for Port Street, Manchester.

PLANNING CONDITIONS

Planning Condition 16a of Planning Approval 132489/FO/2021 states:

- Notwithstanding the recommendations within the Port Street Manchester Environmental Noise Study December 2021 Report Reference: PR0665-REP01A-MPF by Fisher Acoustics, stamped as received on 13-12-21, before the facade is installed details of the following shall be submitted:
 - (a) scheme for acoustically insulating and mechanically ventilating the residential accommodation against local road traffic network, any local commercial/industrial premises including the specification for service risers /lift shafts; details of the MVHR system (plan, intake/extract points, silencers, operational noise levels) and details of the performance of the glazing.

The approved noise insulation scheme shall be completed before any of the dwelling units are occupied.

shall be submitted to and approved in writing by the City Council as local planning authority.

The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events shall not exceed 45 dB LAmax,F by more than 15 times)
Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq

ENVIRONMENTAL NOISE STUDY

An intrusive noise report has been issued by Fisher Acoustics Ltd. The report, 'Port Street, Manchester – Environmental Noise Study', report reference PR0665-rep01A, dated 3 December 2021 (original report issued 2 December 2021), details the results of daytime and night time noise surveys at the site and the subsequent determination of the required acoustic performance of façade elements to allow the achievement of the intrusive noise criteria given in the Noise & Vibration chapter of Volume 1 of the Environmental Impact Assessment.

The Environmental Noise Study is appended to this letter.

WINDOWS TO PODIUM APARTMENTS / VISION PANELS TO TOWER APARTMENTS

The Environmental Noise Study issued by Fisher Acoustics details the recommended sound insulation performance of the windows to the podium apartments and the vision panels within the curtain wall to the tower apartments to achieve the required internal noise criteria.

Table 1 identifies the minimum recommended sound reduction index of the window and vision panel types. The performance values in Table 1 relate to the composite performance of the full window or vision panel assembly including glazing, frames and seals.

It should be noted that 'Type A' only applies to some of the podium windows

Vision panel/purge panel type	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
TYPE A	25	28	35	40	44	46	53
TYPE B	25	28	31	38	41	44	53
TYPE C	22	26	27	35	38	38	45
TYPE D	20	24	24	31	37	37	37

Table 1: Minimum Recommended Sound Reduction Index of vision panels and windows, including frame

The Environmental Noise Study also forms part of the specification requirements for the project, and has been included in the Tender pack for the curtain wall and window packages for the project.

In response to the acoustic performance requirements, the sound insulation performances of the 'vision panels' (windows) to be installed within the Tower apartments by the curtain wall contractor and the windows to be installed in the podium apartments by the window contractor have been forwarded to Fisher Acoustics.

The acoustic performances of the proposed curtain wall vision panels and podium windows are given in documents appended to this letter. In particular, reference should be made to the following documents:

- Document: Z1-FOC-G251-RP-XX-006. This document gives the acoustic test results of the vision panels to be used in the Tower at Port Street.
- Documents: SAS Acoustic Test Information Booklet - Windows & Doors Only, Z2-GFS-G321-TS-XX-CDSC_Ver1, Z2-GFS-G321-TS-XX-AB_Ver1, Z2-GFS-G321-TS-XX-ABSC_Ver1, Z2-GFS-G321-TS-XX-CD_Ver1. These documents give the acoustic test results of the glazing used in the podium at Port Street.

Tower vision panels

The document Z1-FOC-G251-RP-XX-006 referred to above compares the laboratory-measured sound insulation performance of the vision units to the specification requirements. It shows that in all but one frequency band, the proposed vision units meet or exceed the specification requirements. The shortfall in the performance, at 125 Hz, is compensated by the performances in the remaining frequency bands such that compliance with the noise criteria of planning condition 16a is fully expected.

Podium windows

The podium apartments are to be provided with windows manufactured by Senior Architectural Systems. The windows are to be glazed with the following glazing units:

- St Gobain Stadip Silence double glazed unit: 10.8 mm acoustic laminate / 18 mm thermal cavity / 8.8 mm acoustic laminate

Table 2 below identifies the following information

- Measured sound insulation performance of the proposed glass alone
- Measured sound insulation performance of the proposed window system when glazed with a double-glazed unit of 10.8 mm non-acoustic laminate / 20 mm thermal cavity / 12.8 mm non-acoustic laminate
- Calculated performance of the proposed window system when glazed with the proposed double-glazed unit of 10.8 mm acoustic laminate / 18 mm thermal cavity / 8.8 mm acoustic laminate

Unit type, glass build-up	Specified Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Proposed glass alone: 10.8 mm acoustic laminate / 18 mm thermal cavity / 8.8 mm acoustic laminate	25	28	32	41	50	53	60
Seniors Tilt & Turn, 10.8 mm non-acoustic laminate / 20 mm thermal cavity / 12.8 mm non-acoustic laminate (measured)	20	30	35	41	41	44	49
Seniors Tilt & Turn, 10.8 mm acoustic laminate / 18 mm thermal cavity / 8.8 mm acoustic laminate (calculated)	23	28	33	40	43	46	51

Table 2: Various unit types and the proposed glazing build-ups – Port Street

Comparison of the values in Table 1 and the performance values in the final row of Table 2 shows that compliance with all the octave band specification values for the Type C and Type D windows is expected. The expected performance of the proposed window system falls slightly short of the specification values in some octave bands for the Type C and Type D windows. However, the shortfalls are not of sufficient magnitude to cause a failure to achieve the noise criteria of planning condition 16a.

APARTMENT VENTILATION

Each apartment is to be provided with its own mechanical ventilation and heat recovery system (MVHR) to provide continuous supply and extract ventilation to achieve the background ventilation requirements of Approved Document F of the Building Regulations. Therefore, no passive trickle ventilators are required within the façade of the proposed habitable rooms.

The acoustic specification for the development details the internal noise level levels within apartment rooms that must be achieved due to the operation of the MVHRs. The internal noise level limits are given in Table 3. The noise levels must be achieved when the MVHRs are operating in 'part F' boost mode. This is the ventilation rate when additional short-term ventilation is required, such as during periods of higher humidity in a room (e.g due to use of a shower). The in-room noise level due to MVHR operation at the long-term 'normal' ventilation rate can be expected to be around 5dB lower than the noise level due to MVHR operation at the 'part F' boost ventilation rate. Therefore compliance with the specification (which is a contractual requirement), will ensure that long-term noise levels from the ventilation system will be at least 5dB(A) lower than the noise limits stated in planning condition 16a.

Room Type	Spatially averaged noise level (Leq)
Bedrooms (MVHRs in trickle and 'part F' boost mode)	NR 25 (approx. 30 dB(A))
Living Rooms (MVHRs in trickle and 'part F' boost mode)	NR 30 (approx. 35 dB(A))

Table 3: Maximum allowable internal noise levels due to building services plant

Figure 1 to 4 illustrates the apartment MVHR system designs. Each layout shows the proposed location of the supply and extract system attenuator.

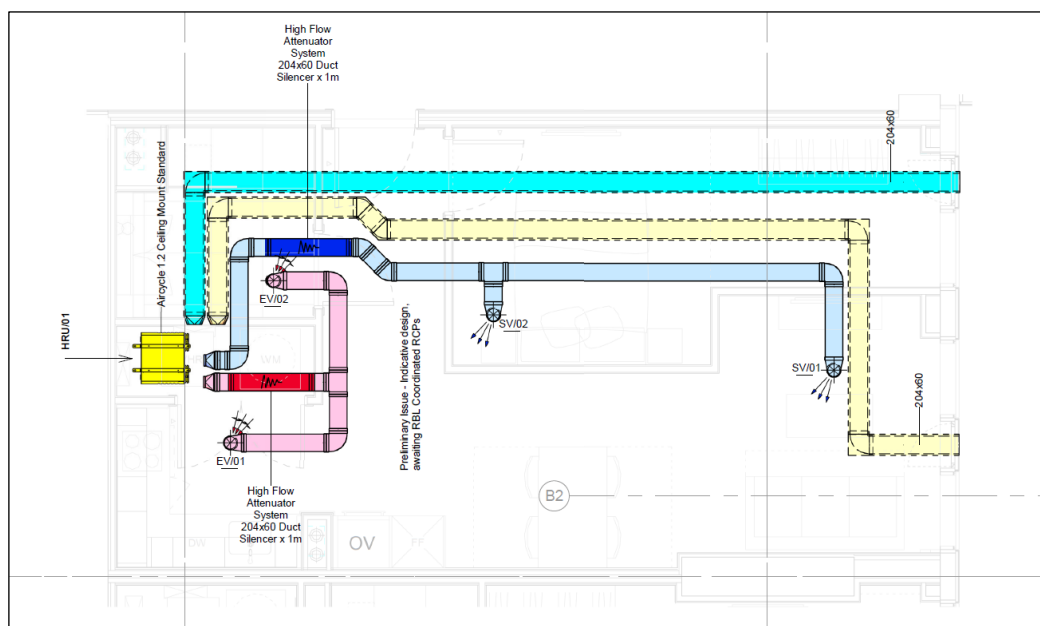


Figure 1: 1-bed apartment MVHR layout - Tower

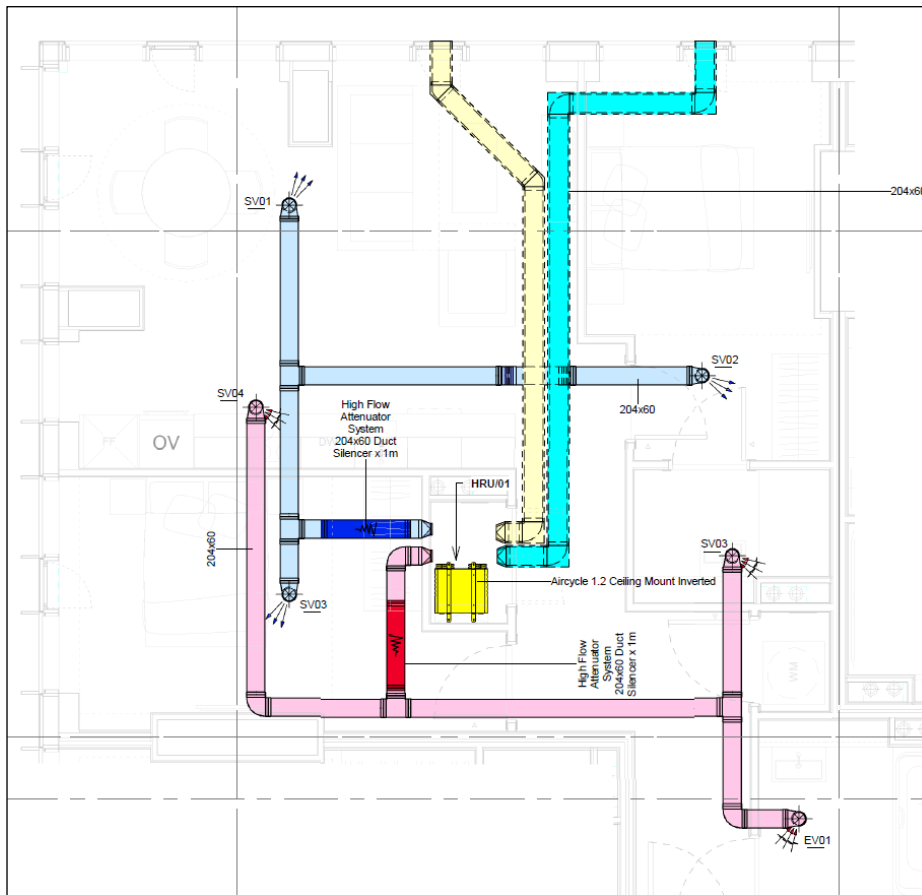


Figure 2: 2-bed apartment MVHR layout - Tower

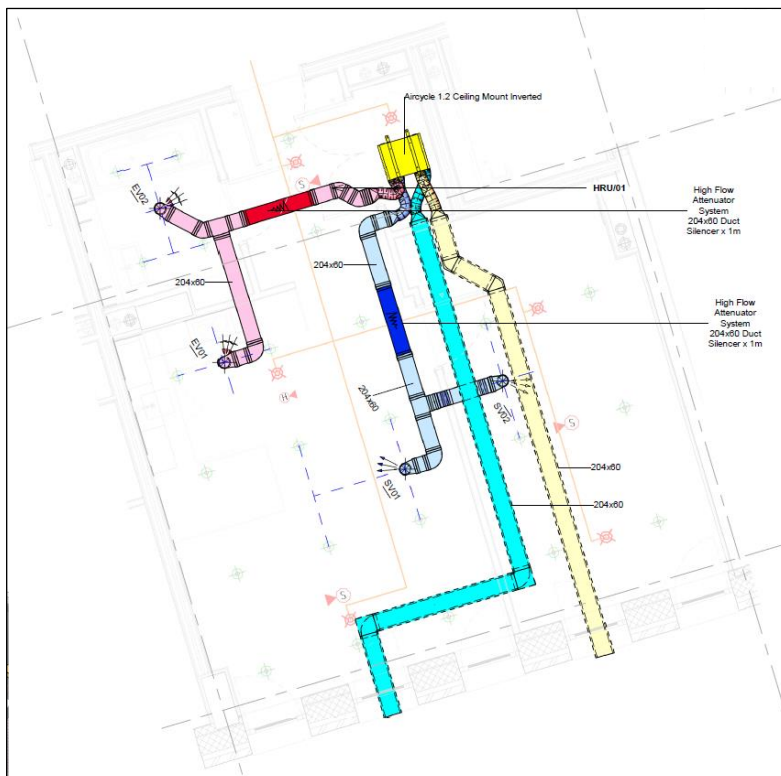


Figure 3: 1-bed apartment MVHR layout – Podium

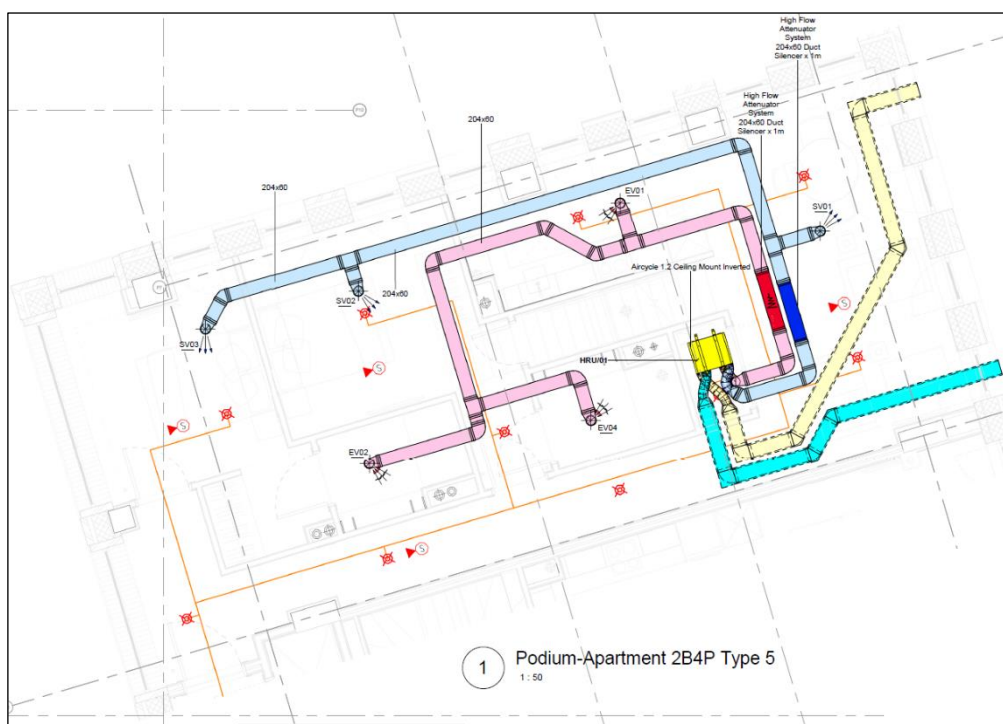


Figure 4: 2-bed apartment MVHR layout - Podium

As the building design progresses, the full specification of the MVHR system attenuation will be checked to ensure that the contractual requirement identified above will be achieved.

SERVICE RISERS

Figures 5 and 6 show the location of mechanical and electrical service risers within the Tower (Figure 5) and podium (Figure 6). The majority of the risers are separated from apartments by a solid concrete wall of thickness 400 mm (Tower) and 250 mm (podium). The sound reduction index of these walls is at least 60dB R_w . There is one smoke shaft riser in the podium that is separated by a fire-rated shaft wall that has been specified to achieve a minimum sound reduction index of 56 dB R_w . The smoke extract fan at the top of the smoke shaft is to be provided with a duct-mounted attenuator to reduce fan noise able to enter the smoke shaft.

The smoke fan will only operate during periodic test runs and during emergencies. During test runs, the smoke fans will operate at 20% of the airflow rate of the emergency operation.

As a consequence, noise due to mechanical and electrical services plant is expected to comply with the guidance values published by the Chartered Institution of Building Services Engineers (CIBSE), identified in Table 3 above.

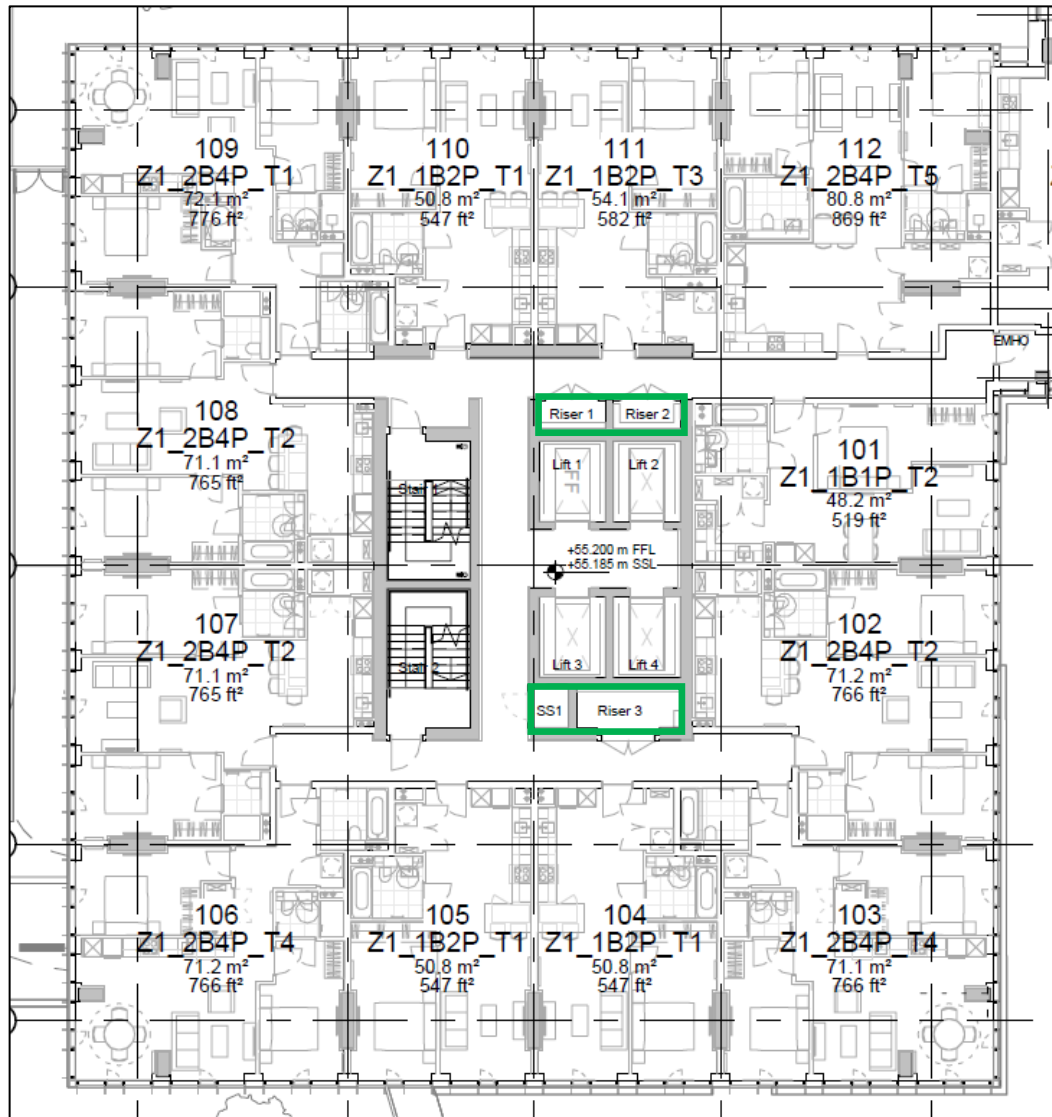


Figure 5: Location of service risers – Tower



Figure 6: Location of service risers – Podium

LIFT SHAFTS

The lift shafts that serve the building are separated from apartments by a solid concrete wall of thickness 400 mm (Tower) and 250 mm (podium). The sound reduction index of these walls is at least 60dB Rw. In addition, to achieve a further reduction in noise radiated by the lift shaft, the concrete walls are to be drylined in apartments with an independent wall lining of 12.5 mm thick dense plasterboard fixed to I-studs, with mineral wool insulation within the 60 mm wall cavity.

Given the above acoustic provisions, the noise level in apartment rooms due to lift movements is expected to comply with the recommendations of BS8233: 2014 'Guidance on sound insulation and noise reduction for buildings', which recommends that noise levels of 25 dB L_{Amax} and 30dB L_{Amax} are not exceeded in bedrooms and living rooms respectively due to lift movements.

If there is any aspect of the above that you would like to discuss then please do not hesitate to contact the undersigned.

Yours sincerely

MATT FISHER CEng, BEng, MIOA
For and on behalf of Fisher Acoustics Limited