

Technical Note

Project:	Union T2, St John's, Manchester
Document Reference:	T01-PR0635-MPF
Date:	14/07/2022
Author:	Matt Fisher
Subject:	Planning Condition 17

INTRODUCTION

This technical note has been prepared by Fisher Acoustics to address the requirements of Condition 17 attached to Planning Permission Reference 126648/FO/2020 for a Co-Living Development at Land at Water Street, St John's, Manchester.

Planning Condition 17 attached to the consent requires that:

"Before the development commences, other than enabling works comprising piling and construction of the sub structure commences, a scheme for acoustically insulating the proposed co-living accommodation against noise from the nearby road network shall be submitted to and approved in writing by the City Council as local planning authority. There may be other actual or potential sources of noise which require consideration on or near the site, including any local commercial/industrial premises. The approved noise insulation scheme shall be completed before any of the co-living dwelling units are occupied. Noise survey data must include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The internal noise criteria are as follows:

- *Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events shall not normally exceed 45 dB L_{Amax,F} by more than 15 times)*
- *Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq*
- *Gardens and terraces (daytime) 55 dB LAeq*

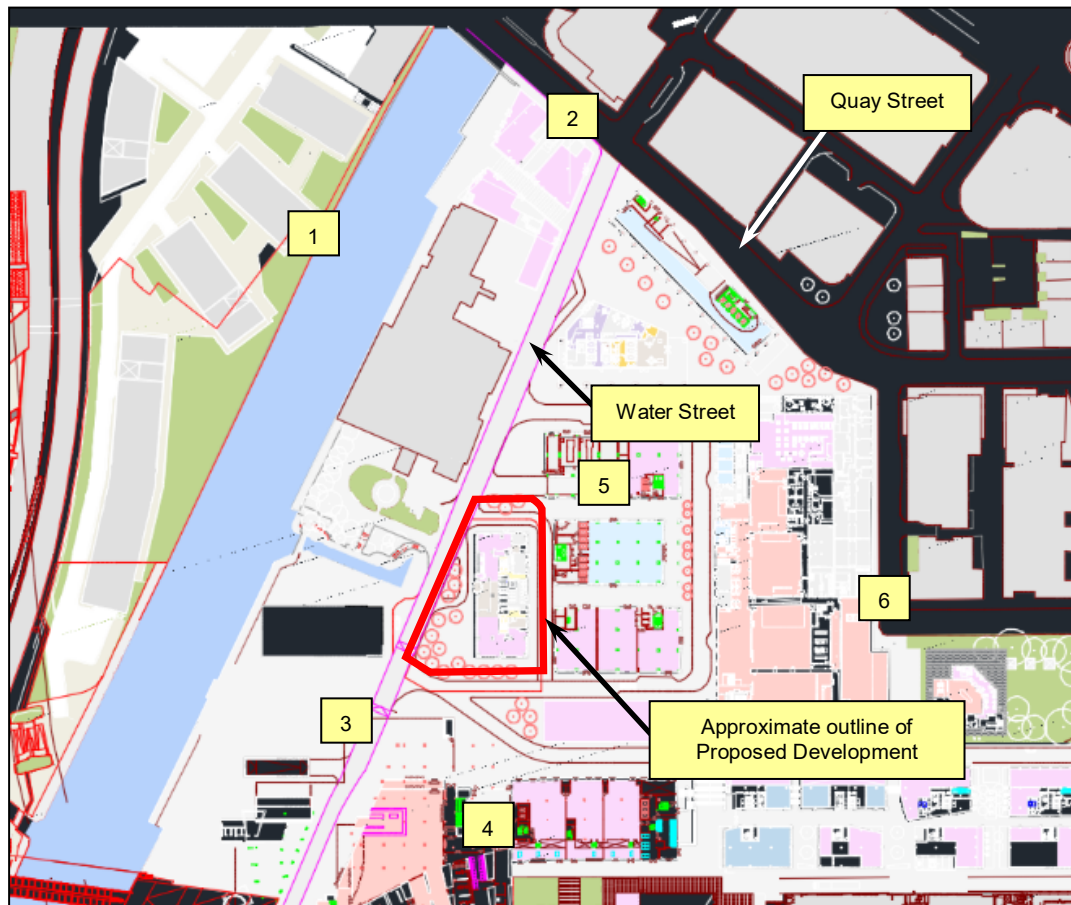
"Due to the proximity of the development to the Ordsall Chord it will be necessary for vibration criteria to apply which can be found in BS 6472: 2008 "Guide to evaluation of human exposure to vibration in buildings". Groundborne noise/re-radiated noise should also be factored into the assessment and design.

"Additionally, where entertainment noise is a factor in the noise climate the sound insulation scheme shall be designed to achieve internal noise levels in the 63Hz and 125Hz octave centre frequency bands so as not to exceed (in habitable rooms) 47dB and 41dB, respectively."

Noise Sources

- 1 Baseline noise levels were defined in the approved Environmental Statement.
- 2 Due to the ongoing extensive construction works across the St Johns Masterplan site, a noise survey at the time of the application or at the present time would yield unrepresentative results. Reference was therefore made to the results of previous noise surveys carried out across the St Johns Masterplan site and an adjacent site prior to the current construction works. This approach was discussed and agreed with Manchester City Council.
- 3 The noise surveys of the pre-existing noise environment at sensitive locations at and around the Site were carried out in support of the following planning applications:
 - State Yard, New Bailey, Salford, planning reference 09/57950;
 - Globe & Simpson, Quay Street, Manchester, planning reference 121721/FO/2018;
 - Manchester Goods Yard, St Johns, Manchester, planning reference 121511/FO/2018;
 - The Factory arts venue, Water Street, Manchester, planning reference 119890/FO/2018;
 - Granada House, Atherton Street, Manchester, planning reference 118040/FO/2017.
- 4 The noise surveys provide appropriate baseline measurements in order to determine the pre-existing noise levels at the locations of the Proposed Development and at existing and planning-approved noise sensitive properties close to the Proposed Development.
- 5 Measurement locations for the noise surveys are shown in Appendix 1 and described below:
 - Location 1: At location of closest façade of the Slate Yard, New Bailey (Planning reference 09/57950) to Water Street
 - Location 2: Representative of Quay Street façade of the Left Bank Apartments, Quay Street
 - Location 3: Representative of Water Street façade of Manchester Marriott Victoria & Albert Hotel, Water Street and of Water Street façade of the Proposed Development
 - Location 4: Representative of proposed Factory arts venue, Water Street
 - Location 5: Representative of proposed Manchester Goods Yard (MGY), St Johns
 - Location 6: Atherton Street

Figure 1: Noise survey measurement locations



- 6 At the time of the noise surveys, the general noise environment at and around the Site was principally determined by road traffic on Water Street and Quay Street, Quay Street is a major route into Manchester city centre and is relatively heavily trafficked. Water Street was a reasonably busy minor road. Typical maximum noise levels along Water Street were generated by passenger vehicles and occasional commercial vehicles.
- 7 The measured noise levels during the day and night at and around the Site are summarised in Table 1.

Table 1: Summary of measured environmental noise levels – existing and proposed receptors

Location	Measured Noise Level					
	Daytime (defined as 0700 to 2300)			Night time (defined as 2300 to 0700)		
	dB, L _{Aeq}	dB, L _{Amax}	dB L _{A90}	dB, L _{Aeq}	dB, L _{Amax}	dB L _{A90}
1 (Slate Yard)	59	64 to 71	55 to 56	52	63 to 68	48 to 51
2 (Left Bank)	74	84 to 99	55 to 62	68	81 to 84	47 to 50
3 (Marriott)	68	81 to 83	56 to 58	-	-	-
4 (The Factory)	58	-	50 to 57	54	-	44 to 57
5 (MGY)	55	-	48 to 52	52	-	48 to 49
6 (Atherton St)	58	-	47 to 50	53	-	44 to 45

- 8 In addition to the pre-existing noise sources that contribute to the noise levels identified in Table 1, the St Johns Masterplan will introduce new potential long-term noise sources in relative proximity to the Proposed Development. These new noise sources include The Factory, commercial units, fixed building services plant and patrons in external areas.
- 9 Entertainment noise egress from The Factory and the proposed commercial units will be controlled in line with the applicable planning conditions, such that entertainment noise is not audible at the Proposed Development.
- 10 Similarly, noise from building services plant serving the various proposed buildings across the St Johns Masterplan site is to be controlled by the applicable planning conditions, such that plant noise is lower than the pre-existing background noise levels at the Proposed Development.
- 11 With regard to potential noise due to the servicing of The Factory, Condition 15 of the planning approval for the Factory (planning reference 119890/FO/2018) states:

“Deliveries, servicing and collections including waste collections from the Water Street loading bays and Factory Servicing Yard servicing access shall not take place outside of 0700 and 1100 Monday to Saturday and 1000 to 1100 Sundays and Bank Holidays, with the exception of:

- *Limited additional deliveries and servicing to the Water Street loading bays and Factory Servicing Yard servicing access that may take place between 1500 and 1800 subject to confirmation of the type and frequency of activity to be agreed via the submission and approval in writing by Manchester City Council of a Servicing Management Plan in accordance with Condition 9; and,*
- *Deliveries and takedowns associated with events and performances utilising the truck lifts, which shall be able to take place at extended times to be agreed via the submission and approval in writing by Manchester City Council of an updated Event Management Strategy in accordance with Condition 17 and Servicing Management Plan in accordance with Condition 9. Any extended servicing hours will be subject to the following operational strategy / limitations:*

- I. Personnel to utilise two-way radios or similar to prevent noise disturbance from raised voices.*

II. *No reversing beepers to be used for vehicles. All vehicles to be safely reversed into location using banksmen.*

III. *All engines to be switched off during loading/ unloading*

IV. *No cab radios to be operated during specified hours."*

- 12 Condition 15 of planning approval 119890/FO/2018 refers to conditions 9 and 17 of the same approval. These references appear to be an error, as the conditions in question do not relate to noise. It is assumed that condition 15 should refer to conditions 8 and 19. Which respectively state:

"8) Before first occupation of the development, a servicing and access management plan, including:

- Details of management and enforcement of the coach parking strategy;*
- Details of how the access to the service road would be designed so that HGVs do not over run the pavement which should include use of a banksmen to aid in manoeuvres;*
- Details of refuse collection from Grape Street accessed from Water Street through the ANPR controlled bollards;*
- A schedule of loading and unloading locations and times which should include for servicing to take place outside of peak hours and during non-event hours to reduce congestion on the adopted highway;and*
- A plan to manage residents and visitors to South Village.*

"must be submitted to and agreed in writing by the City Council as local planning authority. Servicing shall thereafter take place in accordance with the approved plan.

"Reason: In the interests of public and highway safety and the protection of residential amenity, pursuant to policy DM1 of the Core Strategy"

"19) The consent hereby granted shall be operated in accordance with the Event Noise Emission calculation prepared by Level Acoustics and Vibration dated October 2017 found within appendix 9.4 of the EIS

"The approved noise insulation scheme shall be completed before any of the use of the development commences. Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed and that the building will be managed in accordance with these shall be submitted and agreed in writing by the City Council as local planning authority and any non compliance suitably mitigated in accordance with an agreed scheme prior to occupation.

"Reason - To secure a reduction in noise in order to protect future residents from noise nuisance, pursuant to policies SP1, H1 and DM1 of the Core Strategy."

- 13 Whilst an event management strategy can go some way to mitigate patron noise on the surrounding roads, it can be expected that elevated external noise levels may be generated by patrons of The Factory walking either to or from the venue.
- 14 An estimation of the potential noise levels external to the windows of the Proposed Development due to a number of patrons talking in raised and loud voices on the external access routes to The Factory has been carried out.

- 15 Table 2 identifies the estimated noise levels external to the Proposed Development on the assumption that while walking along Water Street at a distance of twenty three metres from the closest residential window, there are five people talking in a loud voice and five people talking in a raised voice and that at an average distance of thirty seven metres, there are a further forty five people talking in a loud voice and ninety five people talking in a raised voice.

Table 2: Estimated external patron noise at end of event at The Factory

Location	Sound Pressure Level (dB Leq)						
	@ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
1m from residential windows of Proposed Development	46	47	56	63	63	55	48

Vibration Sources

- 16 There are no major sources of vibration in reasonably close proximity to the Site. Whilst condition 17 makes reference to the Ordsall Chord, this train line is located approximately 80 metres from the Proposed Development. In addition, the River Irwell lies between the development site and the closest section of the Ordsall Chord. The distance involved and the position of the river is such that there will be considerable attenuation of ground borne vibration from the Ordsall Chord to the Site and thus it is not considered necessary to conduct measurements of train-generated vibration at and around the Site. No adverse comment would be expected in any area of the Proposed Development due to existing levels of vibration due to other sources such as road vehicles.

Scheme for Acoustic Insulation

- 17 The sensitive areas of the Proposed Development that could be affected by the noise levels summarised in Tables 1 and 2 above are the living rooms, bedrooms and studios of the proposed accommodation.
- 18 The principal determinant of the internal noise level within the proposed accommodation will be the sound reduction index of the external façade, which is to include vision panels and non-vision panels of a curtain wall system. By taking into account the levels of noise measured at the Site, the area of façade elements and the likely acoustic characteristics of the noise sensitive receiving space, the sound reduction required to be provided by the façade elements can be determined.
- 19 The principal non-vision panel build-up for the apartments and Studios is as follows:
- Insulated metal panel – Aluminium outer panel fixed to curtain wall frame, approximately 200 mm mineral wool insulation, steel panel
- 20 Table 3 identifies the minimum recommended Sound Reduction Index of the non-vision panels in order to allow compliance with the internal noise criteria identified above.

Table 3: Minimum recommended sound reduction index of non-vision panels

Façade Element	Sound Reduction Index (dB)						
	@ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Non-vision panels – bedrooms at NE and SE corners of building	22	30	38	48	51	53	52
All other non-vision panels	18	25	33	44	47	47	45

- 21 Table 4 identifies the minimum recommended Sound Reduction Index of the vision panels to apartment rooms in order to allow compliance with the internal noise criteria identified above. The recommended performance figures in Table 4 relate to the composite performance of the glazing and the associated framing.

Table 4: Minimum Sound Reduction Index of vision panels – Residential

Vision Panel Specification Reference	Sound Reduction Index (dB)						
	@ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Type A	22	26	28	38	41	41	50
Type B	21	26	27	34	40	37	45
Type C	19	24	24	31	37	37	40

- 22 The above recommendations in relation to the sound insulation performance of the curtain wall elements form part of the project's formal acoustic performance specification that the Contractor is contractually required to comply with.
- 23 The locations of the vision panel specifications described in Table 4 are illustrated in Figures 1 to 4.

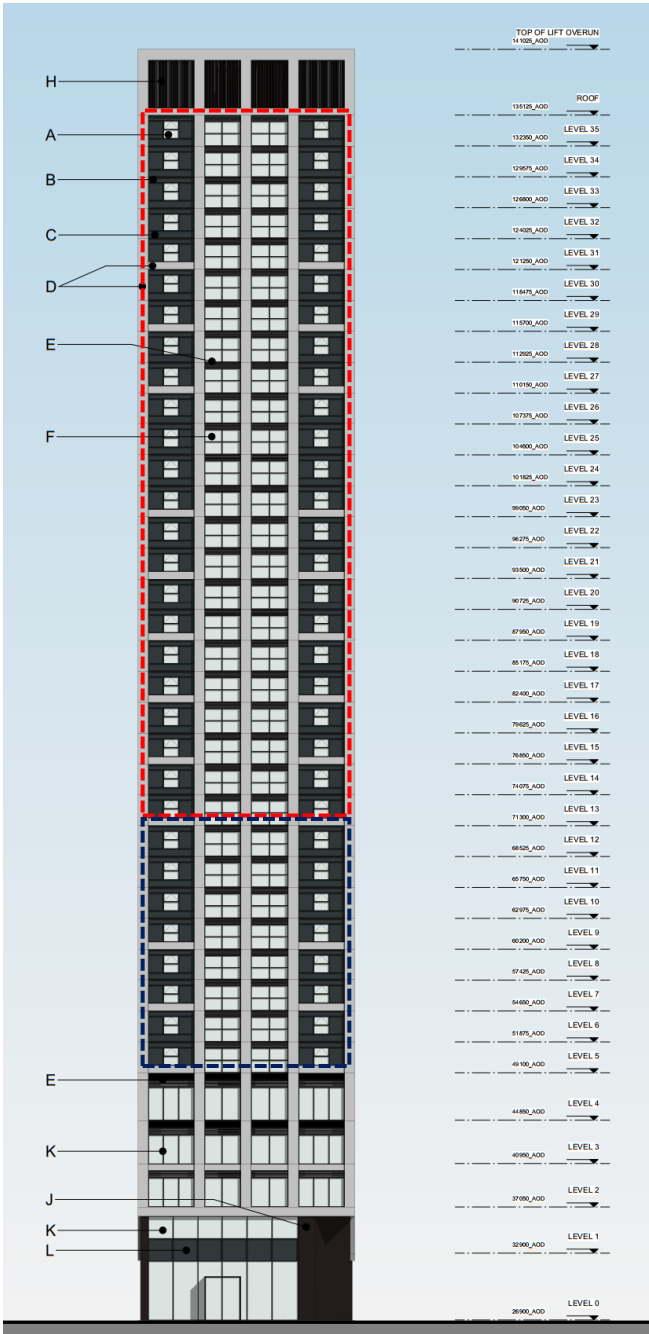


Figure 1: Vision Panels to dwellings - acoustic specification location plan, east elevation

KEY

- Type A

Type B

Type C

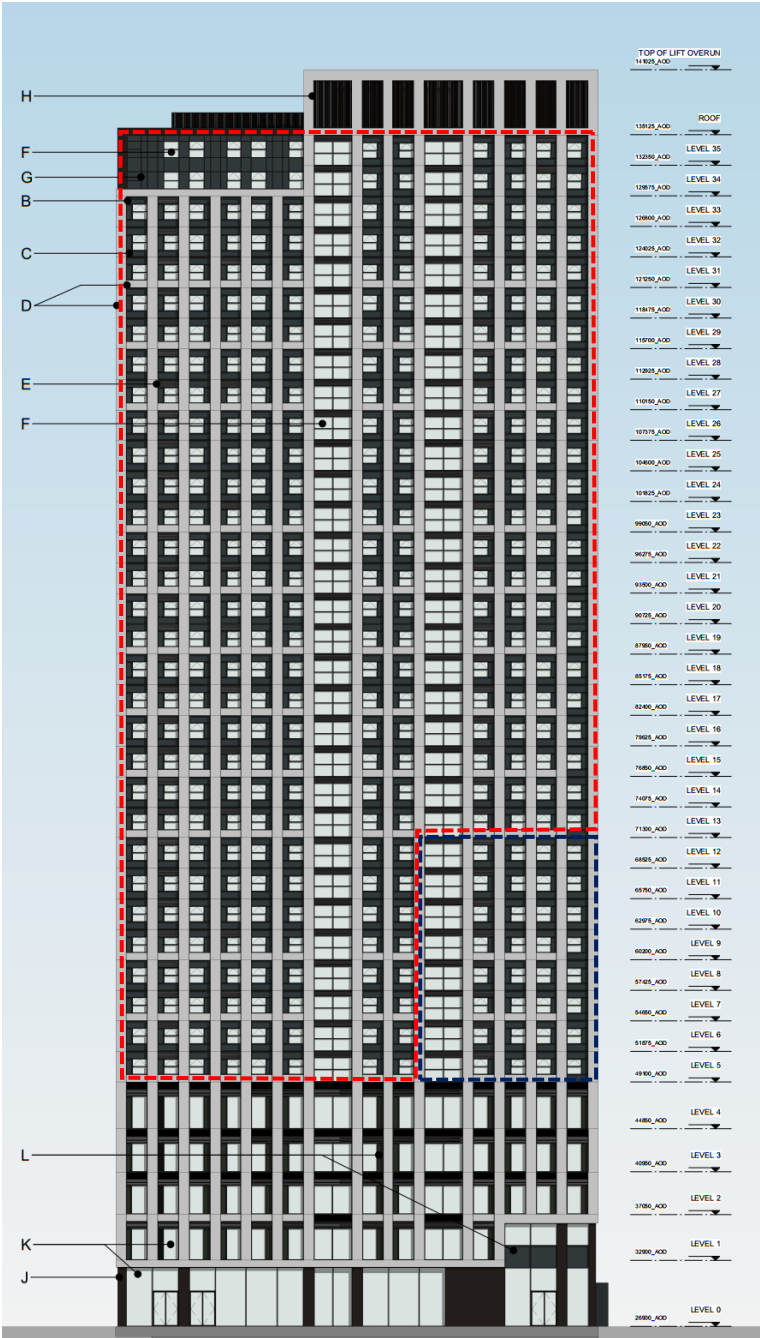


Figure 2: Vision panels to dwellings-acoustic specification location plan, south elevation

KEY

- Type A
- Type B
- Type C

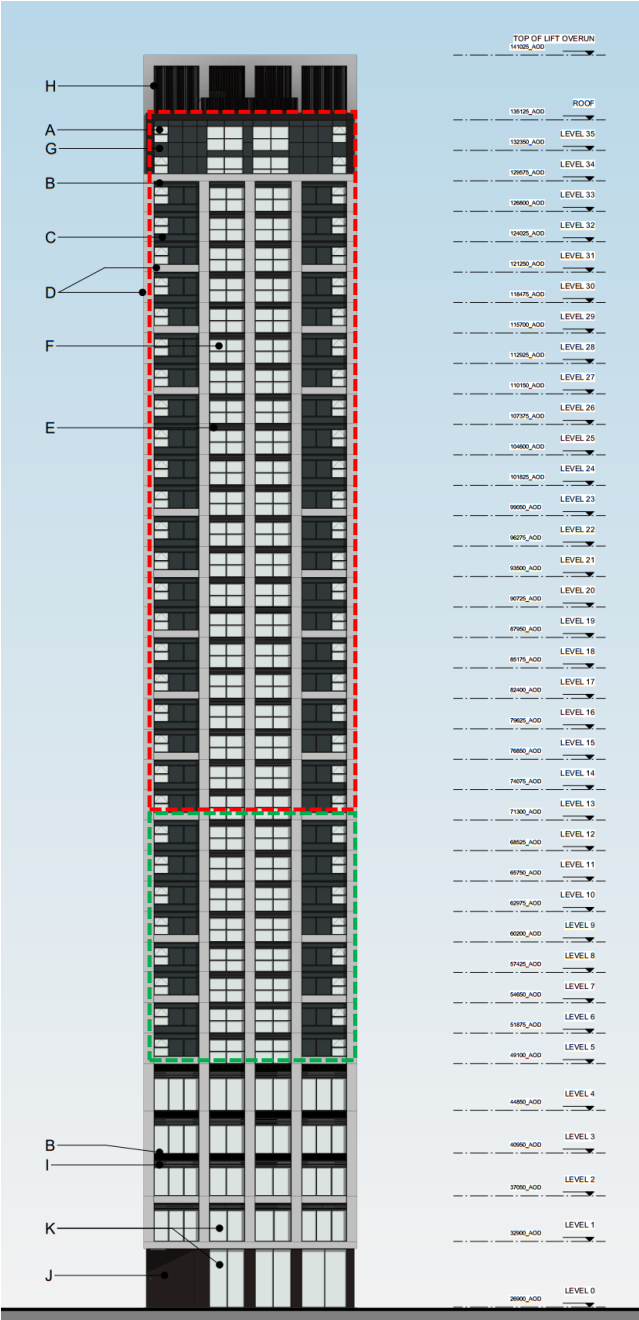


Figure 3: Vision Panels to dwellings - acoustic specification location plan, west elevation

KEY

Type A

Type B

Type C

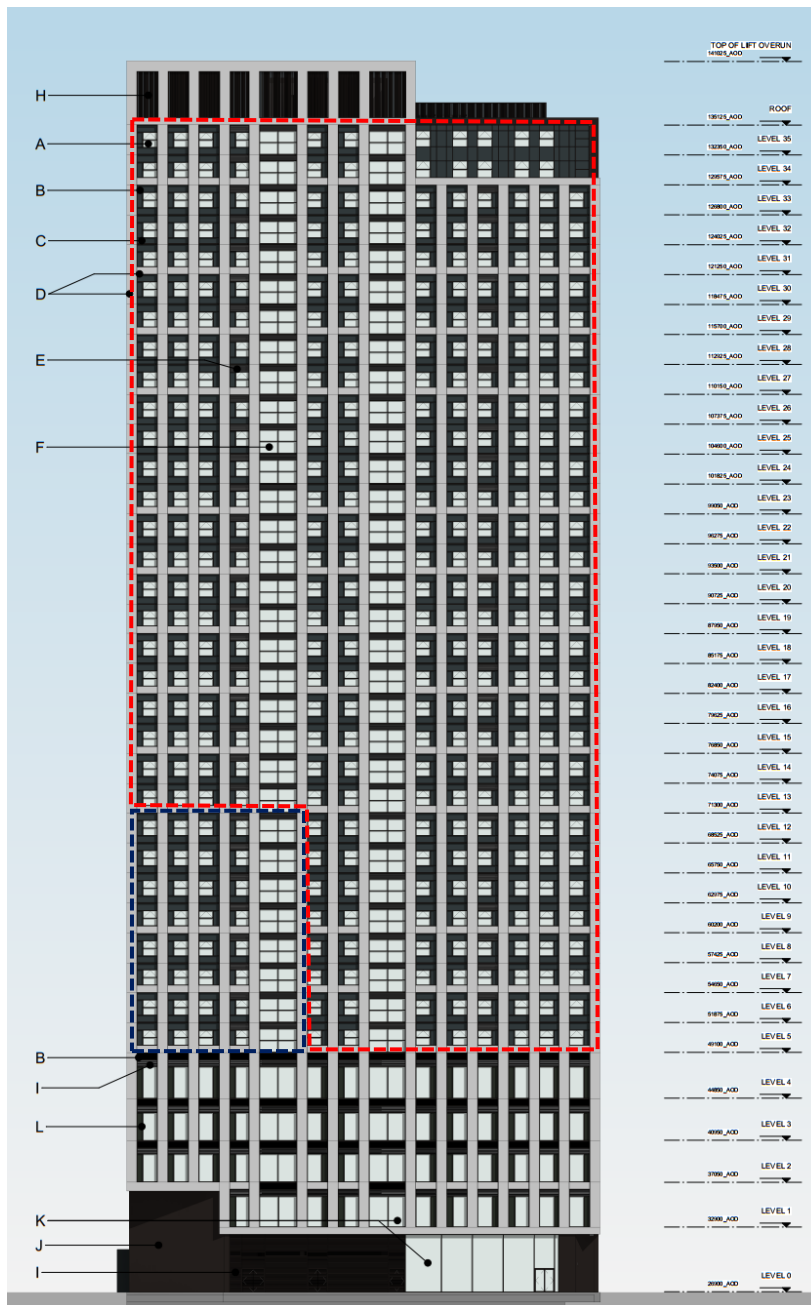


Figure 4: Vision Panels to dwellings - acoustic specification location plan, north elevation

KEY

- Type A
- Type B
- Type C

- 24 In response to the above specification requirements, the curtain wall sub-contractor has specified acoustically laminated double glazed units of the following build-up to the vision panels:
- 10.8 mm acoustic laminate / 18 mm Argon filled cavity / 12.8 mm acoustic laminate
- 25 Reference to acoustic test data for the proposed glazing build-up and proposed curtain wall confirms that the requirements of Table 6 can be achieved by the proposed glazing and vision panels.
- 26 The typical build-up of the proposed non-vision panels is as follows
- 3 mm aluminium outer panel / 195 mm void filled with mineral wool of density 60 kg/m³ / 1.5 mm steel inner panel / internal drylining of 12.5 mm plasterboard forming cavity of approximate depth 120 mm
- 27 Reference to acoustic test data also confirms that the requirements of Table 5 can be achieved by the proposed non- vision panels.

Conclusion

- 28 The above information responds to the requirements of Condition 17 by confirming the potential external noise levels able to impact upon the facades of the development due to existing and potential future noise sources. The acoustic requirements of the façade to appropriately mitigate these external noise levels have been identified and further refined to form the contractual acoustic requirements for the project such that the internal noise criteria of Manchester City Council can be achieved.
- 29 There are no significant sources of vibration at and around the site.
- 30 Given compliance with the applicable planning conditions imposed on the developments around the site, entertainment noise levels at the development facades are expected to be negligible such that residential amenity is maintained.