

20th November 2024

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Dear Madam,

NOISE IMPACT ASSESSMENT

ALTERATIONS TO FASCIA OF THE BUILDING, INSTALLATION OF NEW WINDOWS AND GLAZING AND EXTERNAL FASCIA TO THE COMMERCIAL UNIT

6–12 FOUNTAIN STREET, MANCHESTER, M2 2AA

MANCHESTER CITY COUNCIL PLANNING APPLICATION 140775/FO/2024

1.00 INTRODUCTION

- 1.01 RP Acoustics Limited has been commissioned by the Rexel Group to carry out a noise impact assessment for alterations to fascia of the building, installation of new windows and glazing and external fascia to the commercial unit at 6–12 Fountain Street, Manchester, M2 2AA (hereafter referred to as the application site).
- 1.02 It is understood that the ground and first floor of the application site is to be occupied by a 'fast service' style restaurant (Use Class E) with associated kitchen extraction plant (replacing the existing plant). It is further understood that the upper floors of the application site building have consented residential use.
- 1.03 The objectives of the noise impact assessment were to:
- Determine the ambient and background noise levels at the front and rear of the application site
 - Determine the noise levels associated with the kitchen extraction plant
 - Determine the noise levels associated with the 'fast serve' restaurant
 - Provide recommendations for mitigation measures to protect the amenity of the overlying consented residential use
- 1.04 This report sets out the methodology and findings of the noise impact assessment. It has been prepared on behalf of the applicant for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult the Rexel Group (applicant), Fisher German LLP (applicant's agent) and RP Acoustics Limited as to the extent to which the findings may be appropriate for their use.
- 1.05 A glossary of acoustic terms is contained in Appendix 1 for reference.

2.00 APPLICATION SITE AND PROPOSED USE

- 2.01 The site is located in a mixed residential and commercial use setting in close proximity to Manchester city centre. The application site location plan is reproduced in Appendix 2 for reference. The application site proposed floor plans are reproduced in Appendix 3 for reference.
- 2.02 Fountain Street is a heavily trafficked one-way street leading to Market Street, the locality consists of a mix of commercial use (for reference the Shakespeare Public House is next door whilst Primark is opposite) and residential use (there is consented residential use at the second and third floors of the application site building).
- 2.03 As expected, the ambient climate along Fountain Street is dominated by road traffic and pedestrians.
- 2.04 For reference the proposed use of the application site is as a 'fast serve' restaurant at basement (back of house), ground floor (kitchen, service counter, customer seating) and first floor (customer seating).
- 2.05 It is understood that: the proposed hours of opening are up to 0600 to 0000, alcohol will not be served; and there is no provision for live or amplified music within the proposed 'fast serve' restaurant except for background music i.e. so quiet it will not interfere with customers talking.

3.00 INVALID APPLICATION COMMENTS

- 3.01 The correspondence dated 21st August 2024 from Julie Roscoe Director of Planning, Building Control and Licensing at Manchester city council dated 21st August 2024 stated:

Following your recent planning application submission, I am unable to progress your proposal as the application is invalid or incomplete for the following reason(s):

- 3) *An acoustic study identifying ambient noise levels during daytime, night time and weekends along with details of the noise levels that are currently achieved within the accommodation at various times during operating hours. The study should identify the acoustic treatment and measures necessary to limit the breakout of noise in accordance with a noise study of the premises and a scheme of acoustic treatment. The scheme proposed shall include measures such as acoustic lobbies at access and egress points of the premises, acoustic treatment of the building structure, sound limiters linked to sound amplification equipment, details of the acoustic glazing and acoustically treated ventilation you have installed/propose to use and specified maximum internal noise levels.*

- 3.02 Further comments have been received from Environmental Health following updated plans and information stated:

- *The assessment indicates that the kitchen extract and supply will be located in the courtyard area which has openable residential windows facing it. The fume and odour assessment has stated that the extract will be located at roof level so this needs confirming. We would not be looking to support courtyard extraction at this location with residential properties in such close proximity that include openable windows into the courtyard.*
- *We will need clarification of where the background noise assessment was taken, specifically NMP2. Was this within the courtyard area? If not we will need background noise level within the courtyard itself without kitchen extraction as the LA90 is likely to be much lower in this area as it is shielded from other noise sources and likely to be lower than 49 dBA.*

- Once the above has been confirmed and additional assessment undertaken where required, we will need assessment of noise and vibration from noise traveling through the ductwork close to openable residential windows to ensure the above criteria can be achieved along with details of insulation of the ductwork where required.
- We will need assessment of roof mounted plant and equipment in relation to the other nearby neighbouring receptors to demonstrate compliance with the above criteria. This will need to include the kitchen extraction and supply which will also need to be located at roof level as well as the restaurant plant assessed at roof level.
- Once we have agreed the above, the validation assessment will need to include assessment at the windows of the apartments that face the courtyard to demonstrate compliance with the criteria of 5 dB below the background noise level.
- Courtyard level air intake is acceptable in principle, however, this would have to be supported by an updated acoustic study to illustrate that it can be accommodated sensitively. Any mushroom cowl etc will also have to be noted on the proposed plans.

3.03 Confirmation of the location and noise rating of the plant associated with the proposed development is detailed within a later section of the report. For simplicity however it is summarised as follows:

- The kitchen extraction fan is located within the ground floor kitchen (with an attenuator on the outlet side of the fan) with the extract duct terminating above roof level
- The air supply fan is located with a first floor cupboard (with an attenuator on both the intake and outlet side of the fan) with the intake duct (with a mushroom cowl) terminating above first floor level (in the rear courtyard) area
- There are 4 no. roof mounted condensers

4.00 BASELINE NOISE SURVEY

4.01 A baseline noise survey was carried out on Thursday 22nd August 2024 through to Saturday 24th August 2024. For the purpose of the assessment the following noise monitoring positions were adopted (as shown in Appendix 4 for reference):

- NMP1 was located 1 metre from the Fountain Street façade at first floor level
- NMP2 was located at the rear of the application site above the first floor flat roof in the rear courtyard / lightwell (see picture in Appendix 4)

4.02 Baseline noise measurements were undertaken using NTi Audio XL2 Type 1 integrating sound level meters. A 90 mm windshield was fitted for all measurements. The measurement system calibration was verified immediately before and after measurement sessions and no drift in calibration level was noted (calibration certificates reproduced in Appendix 5 for reference). Weather conditions throughout the survey were appropriate for monitoring.

- 4.03 Baseline noise measurements consisted of A-weighted broadband parameters (1/3 octave) with a logging interval of 1 second. The following table contains a summary of the data rounded to the nearest decibel and includes a – 3 decibel façade enhancement correction in order to establish free field noise levels at NMP1.

Table 4.1 – Baseline Noise Measurement Data

NMP	Date	Time	L _{Aeq} (dB)	L _{A90} (dB)	L _{A10} (dB)	L _{A1} (dB)	Comments
1	Thursday 22 nd August 2024	1300–2300	64	59	67	73	Traffic dominant Pedestrians Shakespeare closed for refurbishment
	Friday 23 rd August 2024	0700–2300	66	60	69	75	
	Saturday 24 th August 2024	0700–1300	65	60	68	74	
	Thursday 22 nd August 2024	2300–0700	61	50	64	70	
	Friday 23 rd August 2024	2300–0700	63	50	66	72	
Daytime Ambient Noise Level 66 dB L_{Aeq} (0700–2300) and Night Time Ambient Noise Level 63 dB L_{Aeq} (2300–0700) Background Noise Level during proposed opening hours 51 dB L_{A90} (0600–0700), 62 dB L_{A90} (0700–2300, 1h) and 59 dB L_{A90} (2300–0000) 11th Highest Night Time maxima 79 dB L_{AFMax} (2300–0700)							
2	Thursday 22 nd August 2024	1300–2300	52	50	51	53	Distant traffic (general city soundscape)
	Friday 23 rd August 2024	0700–2300	52	50	51	53	
	Saturday 24 th August 2024	0700–1300	52	50	51	53	
	Thursday 22 nd August 2024	2300–0700	50	49	51	51	
	Friday 23 rd August 2024	2300–0700	50	49	51	51	
Daytime Ambient Noise Level 52 dB L_{Aeq} (0700–2300) and Night Time Ambient Noise Level 50 dB L_{Aeq} (2300–0700) Background Noise Level during proposed opening hours 49 dB L_{A90} (0600–0700), 50 dB L_{A90} (0700–2300, 1h) and 49 dB L_{A90} (2300–0000) Note: The noise levels measured at NMP2 were made In the absence of the historical extraction system operating The noise impact assessment which accompanied Planning Permission 110757/FO/2015/c1 measured 73 dB L_{Aeq}							

- 4.04 The ambient, background and (night time) maxima noise levels are wholly commensurate with the application site setting.
- 4.05 For reference, the historical ambient noise levels at NMP2 associated with the former kitchen extract plant were measured during the 2016 noise survey undertaken as part of Planning Application for residential use of the second and third floors were measured at 73 dB L_{Aeq} with the system operating.
- 4.06 The replacement kitchen extract plant will, of course, be very, very significantly quieter than the former plant.

5.00 GOVERNMENT POLICY, ACOUSTIC STANDARDS AND GUIDANCE

National Planning Policy Framework

- 5.01 The National Planning Policy Framework (NPPF), which was revised in July 2021, states in Paragraph 174 that '*Planning policies and decisions should contribute to and enhance the natural and local environment by: ... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or **noise pollution** or land instability.*'

National Planning Policy Framework: Planning Practice Guidance on Noise

- 5.02 The National Planning Policy Framework Planning Practice Guidance on Noise (NPPF-PPGN) states that the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include: the source and the absolute level of noise; the content of the noise; and the general character of the noise. The NPPF-PPGN presents a noise exposure hierarchy, which relates the NOAEL, LOAEL and SOAEL to the subjective perception of noise and examples of outcomes (see table below).

Table 5.1 – Summary of Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level (NOAEL)			
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound

- 5.03 The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.
- 5.04 Typically, the greater this difference, the greater the magnitude of the impact. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

- 5.05 It is also important to consider the absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

6.00 PROPOSED USE AND OUTLINE NOISE MITIGATION MEASURES

- 6.01 The noise impact assessment will consider the following:
- Noise associated with the 'fast serve' restaurant inside the overlying consented residential use via the separating floor (the inaudibility assessment)
 - Noise associated with external plant to the 'fast serve' restaurant outside the overlying consented residential use (the BS 4142 assessment)
 - Noise associated with the coming and going of patrons

7.00 NOISE IMPACT ASSESSMENT

Airborne Sound Insulation of Separating Floor Between 2nd Floor Residential Use and 1st Floor 'Fast Serve' Restaurant

- 7.01 Based on previous measurements, the noise levels inside a typical 'fast serve' restaurant (such as McDonalds, KFC etc) are of the order of up to 70 dB $L_{Aeq}(15 \text{ minutes})$ and 78 dB $L_{AFMax}(15 \text{ minutes})$. These noise levels were measured above a large table of patrons.
- 7.02 With respect to sound insulation, Building Regulations ADE 2003 Requirement E1 states *'Dwelling-houses, flats, and rooms for residential purposes shall be design and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings'*.
- 7.03 Building Regulations ADE 2003 sets out the following performance criteria for separating elements (walls and floor) between residential uses as follows:
- Airborne sound insulation of separating walls and floors should be at least 43 dB $D_{nT,w} + C_{tr}$ (the higher the better)
 - Impact sound insulation of separating floors should be at most 64 dB $L'_{nT,w}$ (the lower the better); note: this impact sound is not applicable to the underlying commercial use
- 7.04 In the situation where residential use is adjacent to commercial use, a judgement is to be made whether a higher standard of sound insulation is required due to the level and/or character of noise generated within the commercial use.
- 7.05 The ground floor and first floor unit will remain as Use Class E (a 'fast serve' restaurant)
- 7.06 It is not considered that the noise sources within Use Class E (in this case a 'fast serve' restaurant) are materially different in character to those found within a residential setting i.e. voices. Notwithstanding this, however, due to the size of the restaurant there potential for an intensification of noise compared to residential use.
- 7.07 It is therefore considered that the performance criteria set out in Building Regulations ADE 2003 plus a 10 decibel betterment (i.e. 60 dB $D_{nT,w}$ and 53 dB $D_{nT,w} + C_{tr}$) will provide sufficient protection to noise to the consented second floor residential use directly above the first floor restaurant.

7.08 The separating floor between the consented second floor residential use and the first floor 'fast serve' restaurant is to be as follows (from top down):

- Floorboard (existing)
- 200 mm Timber Joists (existing)
- 100 mm Dense Mineral Wool Insulation Between Joists (new)
- 2 x 12.5 mm Fire Line Plasterboard (new)
- Acoustic Hangers and Metal Frame Ceiling to create 325 mm void (new)
- 100 mm Dense Mineral Wool Insulation above New Ceiling of (new)
- 2 x 12.5 mm Sound Bloc Plasterboard (new)

7.09 This separating floor has been tested on site and achieved airborne sound insulation of 61 dB DnT,w and 54 dB DnT,w + Ctr (see Appendix 6). This degree of airborne sound insulation will render noise from the 'fast serve' **inaudible** in the overlying consented residential use (for reference the 'noise floor' of a city centre urban dwelling is of the order of 25 dB L_{A90}).

7.10 Based on the ambient noise level in a 'fast serve' restaurant of 70 dB L_{Aeq} and the airborne sound insulation of the proposed separating floor, the resultant noise levels within the first overlying consented residential use is calculated in the following table.

Table 7.1 – Noise Transmission to Overlying Consented Residential Use

	Frequency (Hertz)																			A
	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	A
Restaurant L _{Zeq}	55.5	54.6	54.4	54.7	55.3	56.8	57.5	57.1	55.5	58.4	60.8	61.3	61.3	60.8	61.7	59.8	59.3	56.1	54.3	70
DnT	-28.7	-35.7	-37.5	-39.5	-42.4	-44.9	-44.5	-48.2	-55.1	-57.7	-58.9	-62.1	-65.3	-68.2	-71.6	-69.8	-70.1	-72.2	-75.9	
A-Weighting	-30.2	-26.2	-22.5	-19.1	-16.2	-13.2	-10.8	-8.7	-6.6	-4.8	-3.2	-1.9	-0.8	0.0	0.6	1.0	1.2	1.3	1.2	
Resultant	-3.4	-7.3	-5.6	-3.9	-3.3	-1.3	2.2	0.2	-6.2	-4.1	-1.3	-2.7	-4.8	-7.4	-9.3	-9	-9.6	-14.8	-20.4	9

7.11 It is evident that noise transmission from the 'fast serve' restaurant through the proposed separating floor (which will be of a substantial construction) will achieve a circa 61 decibel reduction in noise. As a consequence, the noise associated with patrons in the 'fast serve' restaurant will be **inaudible** in the overlying consented residential use being circa 14 decibels below the internal background noise level (9 dB L_{Aeq} vs 25 dB L_{A90} noise floor within a city centre urban dwelling). Inaudible, of course, represents no adverse impact.

7.12 The glazing to the Fountain Street façade is rated at 39 dB R_w. Transmission through the glazing at 1st floor will thus be 25 dB(A); 70 dB L_{Aeq} reverberant noise level internally – 39 dB glazing – 6 dB correction from reverberant field to free field externally. This is very significantly below the ambient and background noise levels of Fountain Street i.e. no impact.

7.13 ProPG: Planning & Noise: Professional Practice Guidance on Planning & Noise 2017 (ProPG) has been produced to provide practitioners with guidance on the recommended approach to the management of noise within the planning system in England. The Institute of Acoustics, Chartered Institute of Environmental Health and the Association of Noise Consultants have worked together to produce the guidance, which encourages better acoustic design for new residential development and aims protect people from the harmful effects of noise.

7.14 ProPG Appendix A Paragraph A.20 states '*In the context of providing new residential accommodation good acoustic design can normally be used to avoid the potential significant adverse effects of individual noise events on sleep i.e. behavioural awakenings, and to appropriately mitigate and minimise the adverse effects of noise from individual noise events on sleep i.e. physiological impacts. Therefore, it is considered that if, in bedrooms at night, the L_{Amax,F} from individual noise events (from all sources) would not normally exceed 45 dB more than 10 times a night, then this represents a reasonable threshold below which the effects of individual noise events on sleep can be regarded as negligible*'.

- 7.15 It terms of maximum noise levels due to 'fast serve' restaurant, these are calculated at up to 17 dB L_{AFMax} (78–61) in the overlying consented residential use. This is several orders of magnitude below the 45 dB L_{AFMax} criteria. It is therefore considered to be no adverse impact.

Noise Associated With Kitchen Extract Plant and Other Plant

- 7.16 The noise associated with the kitchen extract plant and other equipment (and the associated location of each item of plant and equipment) is as follows:

Plant / Equipment	Noise Level	Location
Kitchen Extract Fan (Systemair MUB 062560D4) Note: terminates at roof level (see Appendix 7)	35 dB(A) at 3m	Ground Floor Kitchen
Kitchen Supply Fan (Systemair AR500E4 Sileo) Note: supply through courtyard (see Appendix 7)	32 dB(A) at 3m	1 st Floor Cupboard
4 no. Air Conditioning Units Note: roof mounted (see Appendix 7)	46 dB(A) at 1m	Roof Mounted

Note: the revised ventilation proposals involve the restaurant extract and supply being ducted from the kitchen extract and supply; hence the roof mounted restaurant extract and supply fans have been removed from the previous ventilation proposals

- 7.17 It should be noted that the roof mounted air conditioning units will be wholly screened from the consented residential use (within the rear courtyard / lightwell) by a combination of a) being roof mounted, and b) the parapet wall. Furthermore, such plant is to be mounted on anti-vibration pads (to avoid any structural noise and vibration transmission into the consented residential use below). It is therefore considered appropriate to assume 10 decibels screening from the consented residential use to the roof mounted air conditioning units.

Consented Residential Use (within the rear courtyard / lightwell)

- 7.18 The noise sources associated with the proposed development potentially impacting upon the consented residential use (within the rear courtyard / lightwell) are as follows:

- Kitchen extract flue termination (high level above the roof; not screened)
- Kitchen supply flue intake (low level on the courtyard roof (1st floor), not screened)
- 4 no. air conditioning units (roof mounted, screened)

- 7.19 The kitchen extraction system is to incorporate a Systemair MUB 062 500 D4 Multibox. Fan located within the ground floor kitchen. This acoustic box fan is encased with a double skin galvanised steel panels with 20 mm insulation; hence low sound levels. The maximum speed of the fan is 1456 rpm. The fan has a maximum sound power at the outlet of 84 dB L_{WA} . The fan, which is broadband in nature and does not warrant an acoustic feature correction, is also to include a rectangular 2D splitter silencer on the exhaust side.

- 7.20 The noise level from the extract flue discharge at the consented residential use (within the rear courtyard / lightwell) is (frequency) dependent upon the outlet sound power level, silencer insertion loss, directivity correction as the exhaust is set above roof level (see Appendix 8 for the directivity corrections) and distance correction. The exhaust flue discharge noise level at the consented residential use (within the rear courtyard / lightwell) with a clear line of sight to the discharge is calculated in the following table.

Table 7.2 – Noise Levels from Extract Discharge

Item	Octave band (Hz)	63	125	250	500	1000	2000	4000	8000	A
A	Outlet SWL(dB)	51	70	74	78	79	76	75	66	84
B	A-Weighting Correction Outlet SWL (dBA)	-26	-16	-9	-3	0	1	1	-1	
C	Distance Attenuation (=20*log(2.5))	-8	-8	-8	-8	-8	-8	-8	-8	
D	Directivity Index (105 degrees i.e. below outlet)	-2	-3	-7	-13	-18	-24	-29	-33	
E	2D Splitter Silencer Attenuation	-3	-8	-20	-23	-23	-17	-12	-9	
F	Correction SWL to SPL	-11	-11	-11	-11	-11	-11	-11	-11	
	Resultant SPL at receptor (A+B+C+D+E+F)	1	24	19	20	19	17	16	4	28

7.21 The kitchen supply system is to incorporate a Systemair AR5000E4 Sileo Axial Fan located within a first floor cupboard within the restaurant. The maximum speed of the fan is 1098 rpm. The fan has a maximum sound power at the outlet of 68 dB L_{WA}. The fan, which is broadband in nature and does not warrant an acoustic feature correction, is also to include a cylindrical 1D silencer on the exhaust (and inlet) side.

7.22 The noise level from the kitchen supply fan intake at the consented residential use (within the rear courtyard / lightwell) is (frequency) dependent upon the outlet sound power level, silencer insertion loss, directivity correction as the intake is set on the first floor courtyard roof i.e. perpendicular on below the windows of the consented residential use (see Appendix 8 for the directivity corrections) and distance correction. The kitchen supply fan intake noise level at the consented residential use (within the rear courtyard / lightwell) with a clear line of sight to the intake is calculated in the following table.

Table 7.3 – Noise Levels from Supply Intake

Item	Octave band (Hz)	63	125	250	500	1000	2000	4000	8000	A
A	Outlet SWL(dB)	24	40	50	58	64	64	59	52	68
B	A-Weighting Correction Outlet SWL (dBA)	-26	-16	-9	-3	0	1	1	-1	
C	Distance Attenuation ($\approx 20 \cdot \log(2.5)$)	-8	-8	-8	-8	-8	-8	-8	-8	
D	Directivity Index (15 degrees i.e. above intake)	-1	0	-1	-1	-2	-5	-6	-6	
E	1D Silencer Attenuation	-3	-5	-8	-16	-17	-17	-17	-10	
F	Correction SWL to SPL	-11	-11	-11	-11	-11	-11	-11	-11	
	Resultant SPL at receptor (A+B+C+D+E+F)	-25	0	13	19	26	24	18	16	29

7.23 For reference, the noise levels calculated in Tables 7.2 and 7.3 above are due the discharge and intake noise of the extract and supply ducts respectively. Noise discharge via through the galvanised steel ducts themselves will, of course, be significantly lower due to the sound reduction (circa 20 dB Rw) of the galvanised steel duct itself. Furthermore, the ducting is to be affixed to the supporting structure by means of anti-vibration mounts thus eliminating the possibility of structure borne noise transmission.

7.24 The 4 no. air conditioning units are to be located on the roof (see Appendix 8). The centre of each unit is to be located circa 2, 3, 4 and 5 metres, respectively, from the nearest window of the consented residential use in the rear courtyard 'lightwell', albeit fully screened by the roof parapet wall. The noise level of each unit is 46 dB(A) at 1 metre. The cumulative noise level is as follows:

- | | | | |
|--------------|--|---|----------|
| • AC1 | 40 dB(A) at 2m less 10 dB(A) screening | = | 30 dB(A) |
| • AC2 | 36 dB(A) at 3m less 10 dB(A) screening | = | 26 dB(A) |
| • AC3 | 34 dB(A) at 4m less 10 dB(A) screening | = | 24 dB(A) |
| • AC4 | 32 dB(A) at 5m less 10 dB(A) screening | = | 22 dB(A) |
| • Cumulative | | = | 33 dB(A) |

7.25 The cumulative noise level (assuming all plant operating at full duty simultaneously) is therefore calculated at 36 dB(A) (28+29+33). This is circa 13 dB(A) below the background noise level at NMP2.

Other Residential Uses in the Locality

- 7.26 The locale consists of primarily commercial and retail uses. The proposed kitchen extract flue and the roof mounted air conditioning units are not overlooked by any residential use (other than the consented residential use in the rear courtyard / lightwell, which is documented in the previous section).
- 7.27 The nearest other residential use is potentially on Sickle Street, circa 40 metres to the west, but without a line of sight. Clearly not an issue (given that there is not an issue for the consented residential use within the rear courtyard / lightwell).

Background Music

- 7.28 There is no provision for live or amplified music within the proposed 'fast serve' restaurant except for background music i.e. so quiet it will not interfere with customers talking. Such background music will be inaudible in the overlying consented residential use. As a consequence, there is no justification for an acoustic entrance lobby or the provision of a sound limiter (note: sound limiters only work when music is the dominant source; this will obviously not be the case for the 'fast serve' restaurant).

Noise Associated with 'Coming and Going' of Patrons

- 7.29 Fountain Street is heavily trafficked day and night. It is also extensively used by pedestrians. As a consequence, the daytime and night time ambient noise levels measured at the (first floor) Fountain Street façade were 66 dB L_{Aeq} (0700–2300) and 63 dB L_{Aeq} (2300–0700), respectively.
- 7.30 It is clearly evident that the 'coming and going' of patrons to and from the (no alcohol) 'fast serve' restaurant onto a street which is heavily trafficked and has pedestrian activity day and night will not alter the acoustic character of the locality. In accordance with the NPPF-PPGN the 'coming and going' of patrons to and from the (no alcohol) 'fast serve' restaurant represents a No Observed Adverse Effect Level (NOAEL).

8.00 CONCLUSIONS

- 8.01 A noise impact assessment has been undertaken for a noise impact assessment for alterations to fascia of the building, installation of new windows and glazing and external fascia to the commercial unit at 6–12 Fountain Street, Manchester, M2 2AA (the application site). The ground and first floor of the application site building is to be occupied by a 'fast service' style restaurant (Use Class E) with associated kitchen extraction plant (replacing the existing plant). It is further understood that the upper floors of the application site building have consented residential use.
- 8.02 The separating floor construction between the 'fast serve' restaurant and the overlying consented residential use is to be of a substantial construction such that the noise of patrons within the restaurant will be inaudible within the residential use above.
- 8.03 The noise associated with the proposed kitchen extract and supply and air conditioning units will be 13 decibels below the current background noise level (no plant operating due to the proposed use). A very substantial improvement on the historical situation.
- 8.04 It is clearly evident that the 'coming and going' of patrons to and from the (no alcohol) 'fast serve' restaurant onto Fountain Street, which is heavily trafficked and has pedestrian activity day and night will not alter the acoustic character of the locality. In accordance with the National Planning Policy Planning Practice Guidance on Noise, the 'coming and going' of patrons to and from the (no alcohol) 'fast serve' restaurant represents a No Observed Adverse Effect Level (NOAEL).

8.05 In conclusion, noise does not represent a constraint to the granting of planning permission. We trust the foregoing is to your satisfaction. Should you have any queries, please do not hesitate to contact us.

Yours sincerely

Jonathan Rigg
Associate Member of the Institute of Acoustics
For and on behalf of RP Acoustics Ltd

APPENDIX 1 GLOSSARY OF ACOUSTIC TERMS

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T . $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T . L_{A90} is typically taken as representative of background noise.

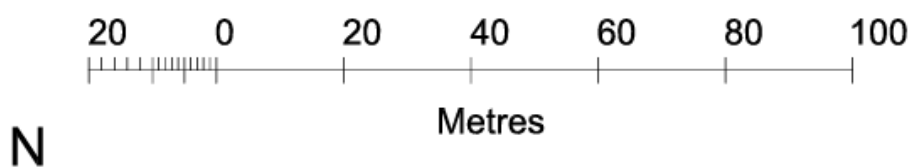
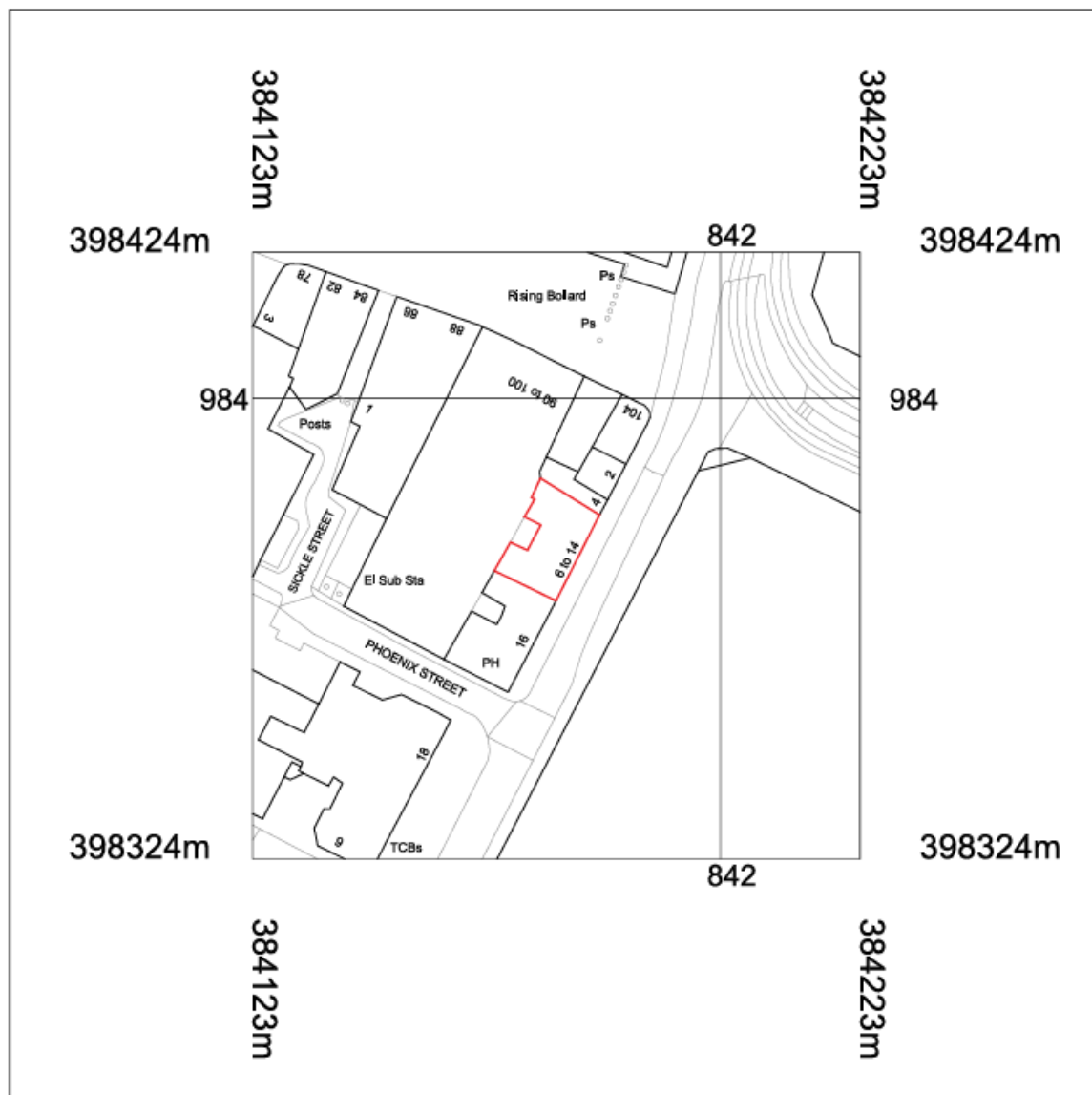
$L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

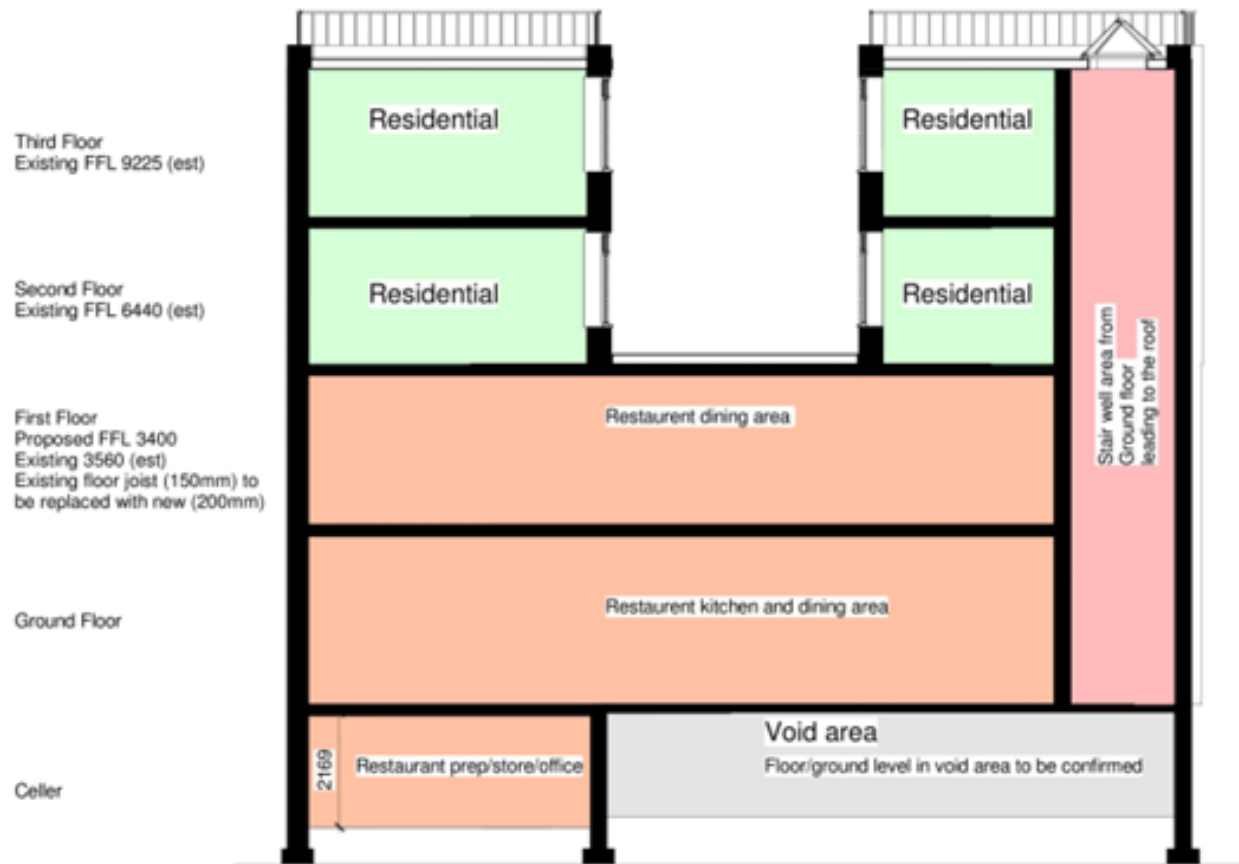
Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events that occur over different lengths of time.

APPENDIX 2
APPLICATION SITE LOCATION PLAN



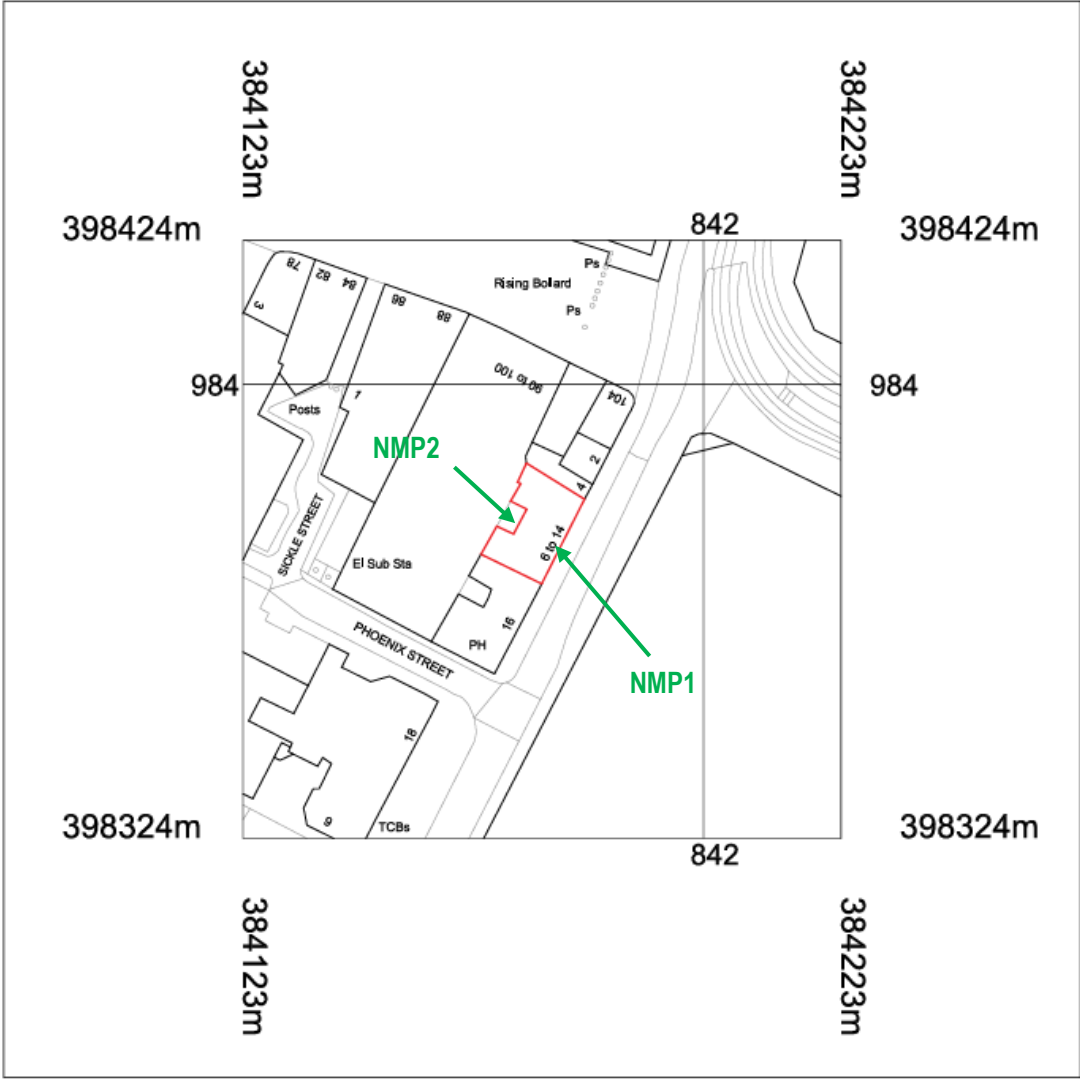
APPENDIX 3 PROPOSED SECTION



Section 1

1 : 100

APPENDIX 4
NOISE MONITORING POSITIONS



APPENDIX 4
NOISE MONITORING POSITION NMP2
WITHIN THE LOWER COURTYARD



APPENDIX 5

CALIBRATION CERTIFICATE FOR SOUND LEVEL METER (CALIBRATION EVERY 2 YEARS)

Laboratory Location

Campbell Associates Ltd

5b Chelmsford Road Industrial Estate

GREAT DUNMOW, Essex, GB-CM8 1HD

Phone 01371 871030



Certificate of Calibration and Conformance

Certificate number: **U46717**

Test Object: Sound Level Meter, BS EN IEC 61672-1:2013 Class 1
Associated Frequency Analyser to BS EN IEC 61260:1996 Class 1

Producer: NTi Audio
Type: XL2-TA
Serial number: A2A-17283-E0
Customer: RP Acoustics Ltd
Address: 1 Dobcroft Close,
Sheffield. S11 9LL.

Contact Person: Richard Pennell
Order No: RPA/24/CAL/01

Introduction:

Calibration has been performed as set out in CA Technical Procedures which are based on the procedures for periodic verification of sound level meters as per the Test Object listed above. Results and conformance statement are overleaf and detailed results, where appropriate, are provided in the attached Measurement Report.

Tested:	Producer	Type	Serial No	Certificate No
Microphone	NTi Audio	MC230A	A23655	46716
Calibrator*	Larson Davis	CAL200	17115	U46700
Preamplifier	NTi Audio	MA220	11174	Included

* The calibrator was complete with any required coupler for the microphone specified.

Additional items that have also been submitted for verification:

Wind shield N/A
Attenuator N/A
Extension cable N/A

These items have been taken into account wherever appropriate.

Instruction Manual: NTi-Audio XL2 Operating Manual v3.11.02 August 2016 Firmware Version: V4.71 The test object is a single channel instrument.

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	97.15 ±0.02	22.30 ±0.4	43.48 ±0.65

Calibration Dates:

Received date: 23/01/2024 Reviewed date: 09/02/2024
Calibration date: 09/02/2024 Issued date: 09/02/2024

Technicians: (Electronic certificate)

Calibrated by: *Palanivel Marappan B.Eng (Hons), M.Sc*

Reviewed by: *Darren Batten*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Doc ref: Slim-Cert-Master-V3-07

APPENDIX 5

CALIBRATION CERTIFICATE FOR SOUND CALIBRATOR (CALIBRATION EVERY YEAR)

Laboratory Location

Campbell Associates Ltd

5b Chelmsford Road Industrial Estate

GREAT DUNMOW, Essex, GB-CM8 1HD

Phone 01371 871030



Certificate of Calibration and Conformance

Certificate number: **U46700**

Test Object: **Sound Calibrator**

Producer: **Larson Davis**

Type: **CAL200**

Serial number: **17115**

Customer: **RP Acoustics Ltd**

Address: **1 Dobcroft Close,
Sheffield. S11 9LL.**

Contact Person: **Richard Pennell**

Order No:

Measurement Results	Level dB	Frequency Hz	Distortion %
Measurement 1	114.11	1000.36	0.37
Measurement 2	114.11	1000.36	0.37
Measurement 3	114.12	1000.37	0.37
Result (Average):	114.11	1000.36	0.37
Expanded Uncertainty:	0.1	1	0.3
Degree of Freedom:	>100	>100	>100
Coverage Factor:	2	2	2

The stated level is relative to 20 μ Pa. The level is traceable to National Standards.

The stated level is valid at measurement conditions

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	98.28 $\pm$ 0.01	21.63 $\pm$ 0.35	45.58 $\pm$ 1.8

Calibration Statement

The reported expanded uncertainty of measurements is based on a standard uncertainty multiplied by the coverage factor of $k=2$, providing a level of confidence of approximately 95%. Where the degrees of freedom are insufficient to maintain this confidence level, the coverage factor is increased to maintain this confidence level. The uncertainty has been determined in accordance with UKAS requirements.

Multi Level Multi Frequency

Refer to page 3 for details of additional levels and frequencies calibrated.

Calibration Dates:

Received date: 23/01/2024

Reviewed date: 09/02/2024

Calibration date: 08/02/2024

Issued date: 09/02/2024

Technicians: (Electronic certificate)

Calibrated by: *Kathryn Brown*

Reviewed by: *Darren Batten*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Doc ref: Calb-V7-Cert-Master-V1.02

APPENDIX 6

AIRBORNE SOUND INSULATION OF PROPOSED SEPARATING FLOOR

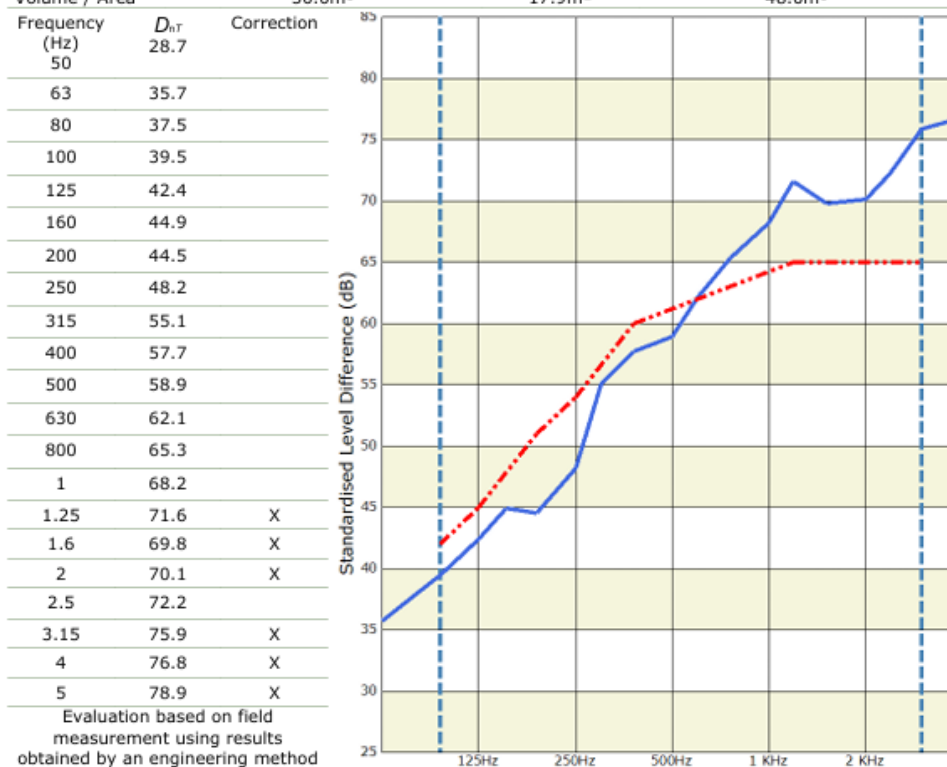
Sound Insulation Test Report No: 32629
1 Bay Hall Common Road, Huddersfield, HD1 5EP



Registered Sound Insulation Test Certificate

Test No:	142988	Test Job Ref:	32629	Test Org Name:	RP Acoustics Ltd
Customer:	SPD Group Ltd			Test Type:	Airborne (Floor)
Address:	276 Halifax Old Road, Birkby, Huddersfield	Job Address:	1 Bay Hall Common Road, , Huddersfield	Test Date:	08/02/2024
				Tester:	Richard Pennell
				Site type:	Material Change of Use
Postcode:	HD2 2SN	Postcode:	HD1 5EP	Site Build:	Dwelling-House/Flat

Source Room:	Partition:	Receiver Room:
Description: Flat 3 Kitchen / Living Room	FT0001**	Flat 1 Kitchen / Living Room
Volume / Area	50.0m ³	17.9m ² 48.0m ³



1/3rd Octave Band Frequency (Hz)

*Outside scope of accreditation

Above graph shows frequency range according to the curve of reference values within BS EN ISO 717-1

$D_{nT,w}$ (C_f C_w) [dB]: 61 (-2, -7) dB
 $D_{nT,w} + C_w$ [dB]: 54 dB
Minimum Pass Level [dB]: 43 dB

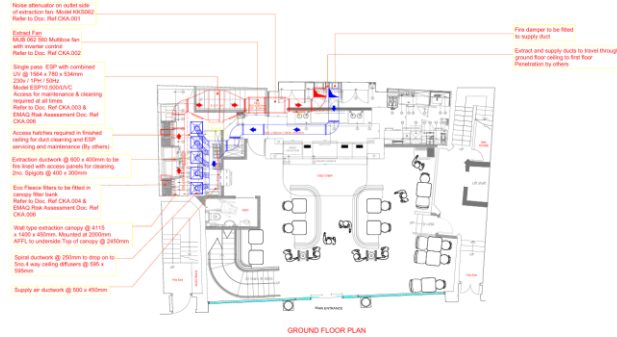
PASS
Adverse Aggregated Deviations [dB]: 26.8

Partition Detail: Existing timber joist floor underdrawn with independent joists, with mineral wool insulation and 2 x 12.5 dense plasterboard ceiling

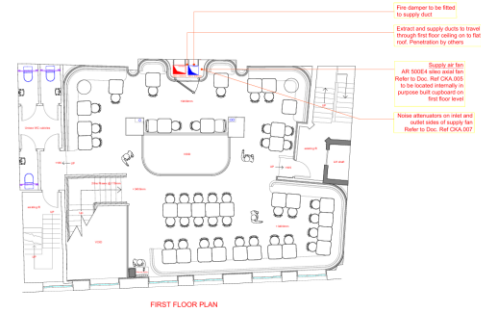
Test Exceptions (if any):

AIRBORNE SOUND INSULATION TEST: Approved Document E (2003) including 2004, 2010, 2013, and 2015 Amendments
BS EN ISO 140 - Part 4:1998: Acoustics - measurement of sound in buildings and of building elements
BS EN ISO 717 - Part 1:1997: Acoustics - rating of sound in buildings and of building elements

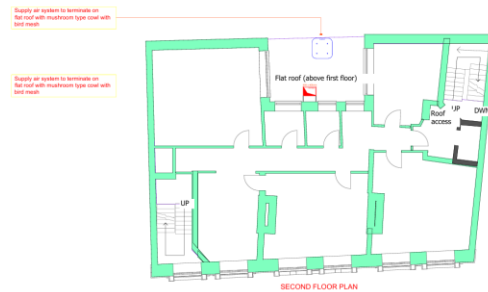
PROPOSED VENTILATION DESIGN (KITCHEN EXTRACT)



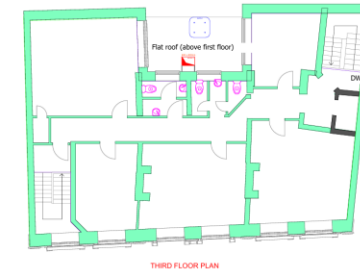
GROUND FLOOR PLAN



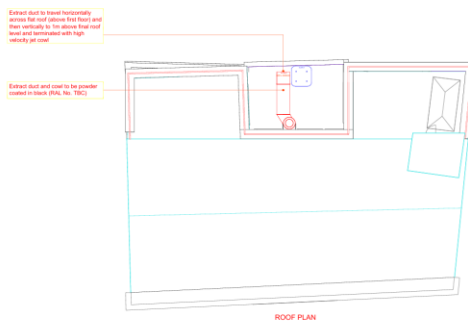
FIRST FLOOR PLAN



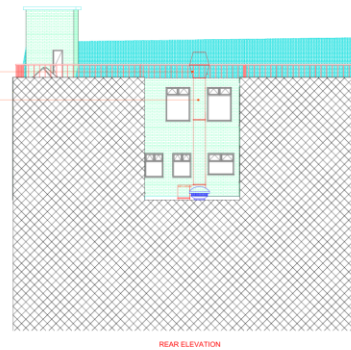
SECOND FLOOR PLAN



THIRD FLOOR PLAN



ROOF PLAN



REAR ELEVATION

EXTRACT FAN - Dec Ref CKA-992	
MANUFACTURER:	SYSTEMAIR
MODEL:	MUB MJL TIBOX 962 5600
PHASE:	3 PHASE / 400V
INPUT POWER:	2.459kW
CURRENT:	4.48A
MAXIMUM FLOW:	3.28m³/s
WEIGHT:	95 Kg

[illegible]

SUPPLY AIR FAN // Doc Ref CKA-365	
MANUFACTURER:	SYSTEMAIR
MODEL:	AR 503E/4 SLEO AXIAL
PHASE:	1 PHASE / 230V
INPUT POWER:	0.72kW
CURRENT:	3.2A
MAXIMUM FLOW:	2.46m³/s
WEIGHT:	18.6kg

[illegible]

GREASE, SMOKE & COLOUR CONTROL (If Doc Ref CKA 002)	
MANUFACTURER:	PLASMACLEAN
MODEL:	ESP10500JVC
PHASE:	1 PHASE / 230V
INPUT POWER:	0.8kW
MAXIMUM FLOW:	2.1m ³ /h
WEIGHT:	115kg

GREASE, SMOKE & ODOUR CONTROL if Doc Ref CKA 00	
MANUFACTURER:	PLASMACLEAN
MODEL:	ECO FLEECE FILTERS (TO BE FITTED IN CANOP FILTER BANK)

EXTRACT & SUPPLY RATES	
TOTAL EXTRACT RATE:	1.75m3/s
SUPPLY AIR RATE (90% OF EXTRACT):	1.60m3/s

DOCUMENT REFERENCE SCHEDULE	
CKA.001	NOISE ATTENUATOR SPEC
CKA.002	EXTRACT FAN
CKA.003	EXTRACTION FAN SPEC
CKA.004	ESP-UV SPEC
CKA.005	ECO FLEECE SPEC
CKA.006	SUPPLY AIR FAN SPEC
CKA.007	EMAQ RISK ASSESSMENT
CKA.008	NOISE ATTENUATOR SPEC
CKA.009	SUPPLY FAN

REVISIONS		
C	10.11.20	SUPPLY AIR FAN RELOCATED INTERNALLY AND TERMINATED WITH BUSHROOM CONCRETE FLOOR. EXTRACT DUCT RELOCATED. TERMINATED WITH JET CORE, AND FURNACE COATED WITH HIGH SPECIES RECOAT
B	20.09.20	EXTRACT BLINDER EXTENDED. DOCUMENT REFERENCE SCHEDULE A DET AND ANNOTATIONS UPDATED
A	10.09.20	REAR ELEVATION ADDED TO DRAWINGS TO INCLUDE SUPPLY AIR FAN AND SUBVENTS. TECHNICAL DATA ADDED TO DRAWING
REVISION	DATE	AMENDMENTS



CLIENT:	Rexel Group Ltd	DRAWING NO:	1305
PROJECT:	Six Twelve Restaurant	REVISION:	C
TITLE:	Proposed ventilation design		
DRAWN BY:	NH	SCALE:	1:100 @ A1
		DATE:	17.07.2024

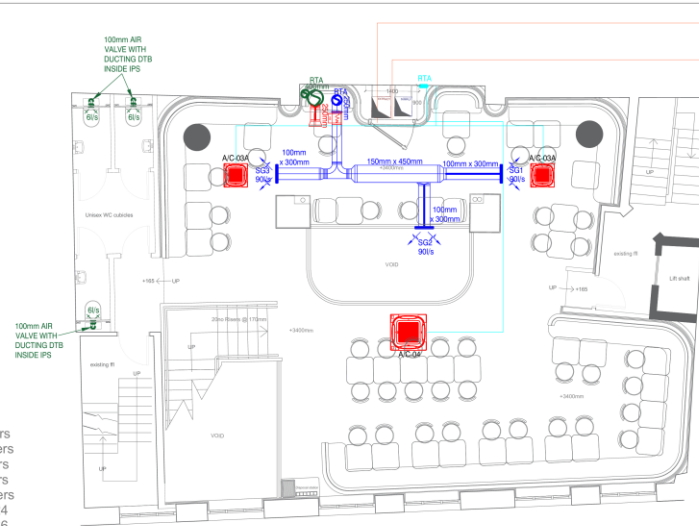
SITE MEASUREMENTS
DO NOT SCALE FROM THIS DRAWING. MEASUREMENTS SHOULD BE CHECKED ON PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. THIS DRAWING IS COPY AND MAY NOT BE COPIED OR REPRODUCED WITHOUT WRITTEN APPROVAL.

APPENDIX 7 PROPOSED VENTILATION DESIGN (COMFORT COOLING)

AIR CONDITIONING SCHEDULE - SIX TWELVE RESTAURANT									
Ref No	Room No	Room Name	Area (sqm)	Volume (m³)	Max. Temp (°C)	Min. Temp (°C)	Max. Humidity (%)	Min. Humidity (%)	Notes
01-01	01	01	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-02	02	02	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-03	03	03	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-04	04	04	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-05	05	05	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-06	06	06	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-07	07	07	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-08	08	08	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-09	09	09	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-10	10	10	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7

EXTRACT FAN SCHEDULE - SIX TWELVE RESTAURANT									
Ref No	Room No	Room Name	Area (sqm)	Volume (m³)	Max. Temp (°C)	Min. Temp (°C)	Max. Humidity (%)	Min. Humidity (%)	Notes
01-11	11	11	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-12	12	12	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-13	13	13	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-14	14	14	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-15	15	15	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-16	16	16	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-17	17	17	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-18	18	18	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-19	19	19	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7
01-20	20	20	115.0	1150.0	25.0	18.0	60.0	30.0	See Appendix 7

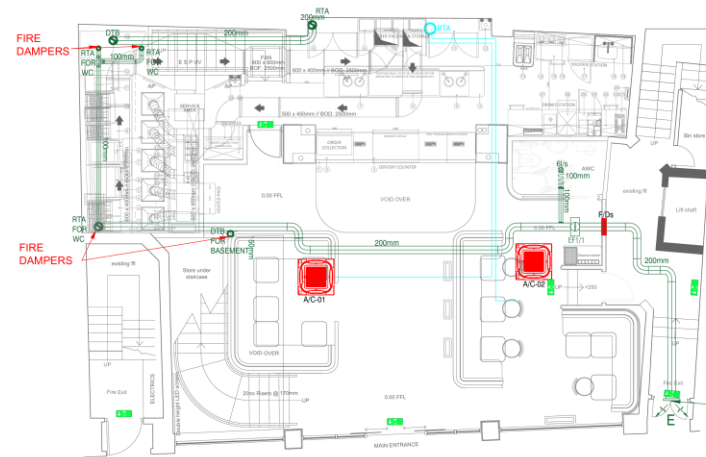
Gross ground floor area 132 Sq Meters
Net ground floor trading area 86.7 Sq Meters
or area 132 Sq Meters
r trading area 115 Sq Meters
SEATING 24
ting 66



FIRST FLOOR PLAN



Basement Plan



GROUND FLOOR PLAN

Fire damper to be fitted to extract duct
Extract and supply ducts to travel through first floor ceiling on to flat roof. Penetration by others

GENERAL NOTES:
GRILLE SCHEDULE :
• SG1 - 200mm x 100mm
• SG2 - 200mm x 100mm
• SG3 - 200mm x 100mm
• VCD Located in Grilles

LEGEND:
• BSH Header Battery
• AC Cassette
• Refrigerant Pipe Work
• Supply Duct
• Return Duct
• Circular Supply Grille
• Linear Supply Grille
• Extract Fan
• Extract Air Valves
• Extract Grilles
• Condenser

1	FOR APPROVAL	CA	SA	10/06/20
2	FOR APPROVAL	CA	SA	10/06/20
3	FOR APPROVAL	CA	SA	10/06/20
4	FOR APPROVAL	CA	SA	10/06/20
5	FOR APPROVAL	CA	SA	10/06/20
6	FOR APPROVAL	CA	SA	10/06/20
7	FOR APPROVAL	CA	SA	10/06/20
8	FOR APPROVAL	CA	SA	10/06/20
9	FOR APPROVAL	CA	SA	10/06/20
10	FOR APPROVAL	CA	SA	10/06/20
11	FOR APPROVAL	CA	SA	10/06/20
12	FOR APPROVAL	CA	SA	10/06/20
13	FOR APPROVAL	CA	SA	10/06/20
14	FOR APPROVAL	CA	SA	10/06/20
15	FOR APPROVAL	CA	SA	10/06/20
16	FOR APPROVAL	CA	SA	10/06/20
17	FOR APPROVAL	CA	SA	10/06/20
18	FOR APPROVAL	CA	SA	10/06/20
19	FOR APPROVAL	CA	SA	10/06/20
20	FOR APPROVAL	CA	SA	10/06/20

SDH
Building Services

SDH Building Services Ltd
Unit 290
Waters Meeting Business Park
Brimley Way
Belford
BL2 2HT
Telephone: 01204 305 053
e-mail: info@sdhbuilding.co.uk

PROJECT
Rexel Group Ltd
Six Twelve Restaurant

TYPE
BASEMENT, GROUND & FIRST FLOOR HVAC LAYOUT

DATE
"FOR APPROVAL"
SCALE
1:50
DRAWN
CA
CHECKED
CA
DATE
10/06/20
BY
F

APPENDIX 7 PROPOSED ROOF MOUNTED AIR CONDITIONING UNITS

ROOF PLAN

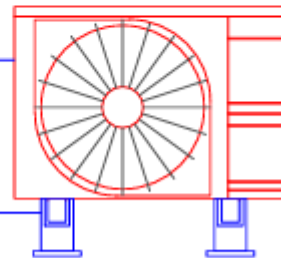


CONDENSER SCHEDULE - SIX TWELVE RESTAURANT

COND Ref.	Make	Dimesions (H x W x D)	Sound Pressure (dBA)	Weight (Kg)	Pipework Length (m)
CON-1/1	DAIKIN / RZASQ100MV1	990 x 940 x 320	46	70	50
CON-1/2	DAIKIN / RZASQ100MV1	990 x 940 x 320	46	70	50
CON-1/3	DAIKIN / RZASQ100MV1	990 x 940 x 320	46	70	50
CON-1/4	DAIKIN / RZASQ100MV1	990 x 940 x 320	46	70	50

OUTDOOR SINGLE
CONDENSER

SUPPORT
BRACKETS



TYPICAL OUTDOOR SINGLE CONDENSER UNIT

APPENDIX 8 DIRECTIVITY INDEX FOR FLUE

