



MR S KHAN

**PROPOSED PARATHA ROYALE EXPRESS CAFE
LAND ADJACENT TO 452 CHEETHAM HILL ROAD,
MANCHESTER, M8 9LE**

NOISE ASSESSMENT

Report Reference	Date of Issue	Author	Signature
NA/1165/23/216 V1.0	26 th July 2023	R. Pennell	



TABLE OF CONTENTS

SECTION 1	INTRODUCTION.....	1
SECTION 2	SITE SETTING AND DEVELOPMENT PROPOSALS	1
2.1	SITE SETTING	1
2.2	DEVELOPMENT PROPOSALS.....	2
SECTION 3	ENVIRONMENTAL NOISE SURVEY.....	2
SECTION 4	ASSESSMENT CRITERIA	3
4.1	NATIONAL PLANNING POLICY FRAMEWORK	3
4.2	NATIONAL PLANNING PRACTICE GUIDANCE: NOISE	5
4.3	BRITISH STANDARD BS 8233:2014	6
4.4	BRITISH STANDARD BS 4142:2014 + A1:2019	7
4.5	GOOD PRACTICE GUIDE ON THE CONTROL OF NOISE FROM PUBS AND CLUBS.....	8
SECTION 5	SOUND ATTENUATION SCHEME PROPOSALS – CUSTOMER NOISE	9
SECTION 6	SOUND ATTENUATION SCHEME PROPOSALS – PLANT NOISE	9
SECTION 7	CONCLUSIONS	10
APPENDIX 1		
▪	Glossary of acoustic terms	
APPENDIX 2		
▪	Annotated aerial site image and proposed layout plans	



SECTION 1 INTRODUCTION

- 1.1 RP Acoustics Ltd (RPA) has been commissioned by Mr S Khan, on behalf of his client, to undertake a noise assessment for the redevelopment of a vacant plot of land adjacent to 452 Cheetham Hill Road, Manchester, M8 9LE (the application site). The development proposals consist of a café/takeaway with an external decking seating area and a small roof terrace seating area.
- 1.2 The objectives of the assessment were to:
- i.* Determine the ambient noise climate at the application site during representative periods of the proposed opening times of the proposed café/takeaway.
 - ii.* Assess the potential noise impact of the proposed café/takeaway (plant and customer noise) on local noise sensitive receptors (NSRs) with reference to pertinent guidelines.
 - iii.* Provide recommendations for a scheme of sound attenuation works, as necessary, such that the proposed café/takeaway does not represent an unacceptable loss of amenity due to noise.
- 1.3 This report has been prepared to accompany a planning application to be submitted for the redevelopment of the site. It details the methodology and results of the assessment, together with recommendations for the control of noise.
- 1.4 This report has been prepared for Mr S Khan and his client for the sole purpose described above, with no extended duty of care to any third party implied or offered.
- 1.5 A glossary of acoustics terms used in the main body of the text is contained in Appendix 1.

SECTION 2 SITE SETTING AND DEVELOPMENT PROPOSALS

2.1 SITE SETTING

- 2.1.1 The application site is located in a mixed commercial and residential area to the north of the centre of Manchester. An annotated aerial image of the site and its environs is contained in Appendix 2.1. The application site is bound by:
- i.* Cheetham Hill Road to the south west.
 - ii.* Woodlands Road to the north west.
 - iii.* Car park of the Jamia Mosque to the north east.
 - iv.* A row of commercial uses at ground floor to the south east (restaurant, accountants, takeaway) with what is understood to be some residential use at 1st floor level.
- 2.1.2 The nearest identified noise sensitive receptor (NSR1) is understood to be a flat overlying the restaurant at the adjacent property (No. 452). Note: there is no glazing on the gable end of No. 452 fronting on to the application site.



2.2 DEVELOPMENT PROPOSALS

- 2.2.1 The development proposals consist of the construction of a café/takeaway utilising shipping type containers with timber cladding.
- 2.2.2 A proposed ground floor layout plan is superimposed on the annotated aerial image contained in Appendix 2.1. Proposed layout plans and elevations are contained in Appendix 2.2.
- 2.2.3 With reference to the layout plans, it can be seen that the ground floor contains a kitchen, covered order area, freezer, chilled and ambient stores and a timber decking seating area on the Cheetham Hill Road frontage (catering for circa. 20 covers). The 1st floor consists of an office, dry goods store room and a small terrace seating area (circa. 12 covers) adjacent to the gable end of No. 452.
- 2.2.4 It is understood that the café/takeaway will serve traditional British Asian snacks together with hot and cold drinks. Further, it is understood that, (i) the hours of operation will be 10:00 to 23:00 daily, (ii) food will be cooked on site and there will be a kitchen fume extraction canopy and associated fan/ductwork which will be located on the car park elevation of the structure, (iii) external condenser units serving the cold store and freezer will be located at ground floor level adjacent to the gable end of No. 452 and, (iv) trade is anticipated to be 70% takeaway and 30% on site dining.

SECTION 3 ENVIRONMENTAL NOISE SURVEY

- 3.1 In order to assess the residual noise climate in the vicinity of the application site, a baseline noise survey was undertaken between 21:30 and 23:00 hours on Monday 17th July 2023. For the purpose of the assessment, the following monitoring position (MP) was used:
- i.* MP1 was located at 3.7 metres above ground level (mAGL), in a free field environment, in the car park immediately adjacent to the rear of No. 452.
- 3.2 The approximate location of the monitoring position is identified on the annotated aerial image contained in Appendix 2.1.
- 3.3 Noise measurements were undertaken using a NtAudio XL2 Type 1 integrating sound level meter. A 90 mm windshield was fitted for all measurements. The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end. No drift in calibration level was noted. Weather conditions throughout the survey were appropriate for monitoring, with 3/8 cloud cover and no wind.
- 3.4 Measurements consisted of A-weighted broadband parameters, together with linear third octave band Leq levels, with a logging interval of 1 second. Measurement data was post-processed using NtAudio Data Explorer software.
- 3.5 The following table contains a summary of the noise measurement data, rounded to the nearest decibel.



Table 3.1: Summary of Noise Measurement Data

MP	Date	Time	L _{Aeq,T} (dB)	L _{AFmax} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	Comments
MP1	17/7/23	21:30-21:45	59	77	62	51	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	21:45-22:00	59	72	62	51	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	22:00-22:15	59	77	62	50	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	22:15-22:30	58	69	62	48	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	22:30-22:45	58	69	62	48	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	22:45-23:00	59	75	63	49	Main noise source is Cheetham Hill Road traffic.
MP1	17/7/23	22:00-23:00	59	77	62	49	One hour measurement. Main noise source is Cheetham Hill Road traffic.

- 3.6 During the course of the noise survey, road traffic on Cheetham Hill Road was the main noise source. A number of existing kitchen extraction flues were noted in close proximity to the site, serving local restaurants and takeaways, but none of these were operational during the course of the survey. Based on the noise survey results, the residual noise climate background level in the vicinity of NSR1 is 49 dB L_{A90,1hour} up to the closing time of the proposed café/takeaway.

SECTION 4 ASSESSMENT CRITERIA

4.1 NATIONAL PLANNING POLICY FRAMEWORK

- 4.1.1 The National Planning Policy Framework (NPPF) is a material consideration in planning decisions. At the heart of the NPPF is a presumption in favour of sustainable development, and the policies in Paragraphs 18 to 219 of the NPPF, taken as a whole, constitute the Government's view on what sustainable development in England means in practice for the planning system.
- 4.1.2 The NPPF states that there are three dimensions to sustainable development, which include an economic role (contributing to building a strong, responsive and competitive economy), a social role (providing the supply of housing required to meet the needs of present and future generations) and an environmental role (which includes minimising waste and pollution).
- 4.1.3 The main policy statement in relation to noise is Paragraph 123 of the NPPF, which states:

Planning policies and decisions should aim to:

- *Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*



- *Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

4.1.4 In relation to 'adverse impacts', the NPPF refers to the Explanatory Note to the Noise Policy Statement for England (NPSE) for guidance.

4.1.5 The Noise Policy Statement for England (NPSE) and associated Explanatory Note were published by DEFRA in 2010 and set out the Government's noise management strategy to enable noise management decisions to be made within the wider context (i.e. guiding principles of sustainable development), in a cost-effective manner and in a timely fashion.

4.1.6 Fundamental to this approach is *'there is a need to integrate consideration of the economic and social benefit of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation, i.e. not focussing solely on the noise impact without taking into account other related factors'*.

4.1.7 The noise policy aims of NPSE are to (i) avoid significant adverse impact on health and quality of life, (ii) mitigate and minimise adverse impacts on health and quality of life, and (iii) where possible, contribute to the improvement of health and quality of life. The policy aims are always to be considered within the context of the Government's policy on sustainable development.

4.1.8 In relation to the mitigation and minimisation of adverse impacts, NPSE considers that *'in reality, although not always stated, the aim has tended to be to minimise noise 'as far as is reasonably practical'*. This is reinforced in Paragraph 2.24 of the Explanatory Note, which requires that *'all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur'*.

4.1.9 In relation to explaining the 'significant adverse' and 'adverse' effects quoted in the NPPF, NPSE uses the two established concepts from toxicology that are currently being applied to noise impacts, for example by the World Health Organisation (WHO), these are:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

4.1.10 The NPSE then extends these concepts to lead to a SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.



4.1.11 No specific criteria are presented in the NPSE, to provide the necessary policy flexibility until further evidence and suitable guidance is available. In lieu of specific criteria, for this assessment, RPA makes reference to existing guideline documents, which are summarised in the following paragraph(s).

4.2 NATIONAL PLANNING PRACTICE GUIDANCE: NOISE

4.2.1 Guidance provided in the National Planning Practice Guidance (NPPG) for noise, presents a table of noise exposure hierarchy, which relates the NOEL, LOAEL and SOAEL levels to the subjective perception of noise and examples of outcomes (reproduced in Table 4.1 below).

Table 4.1: Summary of Noise Exposure Hierarchy (from NPPG, Noise)

Perception	Examples of Outcomes	Increasing Effect Level	Action
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	
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	
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

4.2.2 When considering the factors that influence whether noise could be a concern, the NPPG considers that *'the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected'*. This includes factors such as the source and absolute level of the noise, the time of day it occurs, the number of noise events and the frequency and pattern of occurrence.



4.3 BRITISH STANDARD BS 8233:2014

- 4.3.1 BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (BS 8233) sets guideline indoor ambient noise levels for dwellings, for steady external noise sources, which it is desirable are not exceeded. These levels are reproduced in Table 4.2 and are based on guidelines issued by the World Health Organisation (WHO). The Standard also states that where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.
- 4.3.2 The Standard considers that for regular individual noise events, a guideline value may be set in terms of SEL or L_{AFmax} depending on the character and number of events per night. The WHO Guidelines on Community Noise, 1999 (WHO Guidelines) considers that if negative effects on sleep are to be avoided, noise events exceeding 45 dB L_{Amax} should be limited. ProPG: Planning & Noise (Note 4 to Figure 2) considers '*Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night.*
- 4.3.3 Note 5 to Figure 2 of ProPG: Planning & Noise states '*...Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however, any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded,....*

Table 4.2: Indoor Ambient Noise Levels in Dwellings (as recommended in BS 8233:2014)

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

- 4.3.4 On the basis of the WHO approximation of 15 dB noise reduction internally for a partially open window, an internal target criterion of 35 dB $L_{Aeq,16hour}$ during the daytime equates to an external level of 50 dB $L_{Aeq,16hour}$.
- 4.3.5 With reference to the above guidelines, by definition, 'reasonable internal conditions' cannot represent a significant adverse impact (the prevention of which is the 1st aim of NPSE). With cognisance to the 2nd aim of NPSE (to minimise noise impact), the internal ambient noise levels detailed in Table 4.2 are considered appropriate.



4.4 BRITISH STANDARD BS 4142:2014 + A1:2019

- 4.4.1 British Standard BS 4142:2014+A1:2019 '*Methods for Rating and Assessing Industrial and Commercial Sound*' (BS 4142) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in BS 4142 use outdoor sound levels to assess the likely effects of sound on people for the purposes of (i) investigating complaints, (ii) assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature, and (iii) assessing sound at proposed new dwellings or premises used for residential purposes.
- 4.4.2 BS 4142 considers that 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. It goes on to suggest that:
- 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; and
 - 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.
- 4.4.3 Where the initial estimate of the impact needs to be modified due to the context, factors to be taken into account include the absolute level of sound and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.
- 4.4.4 The rating level is described as the specific sound level (L_S - the equivalent continuous A weighted sound pressure level at the assessment position produced by the specific sound source over the given reference time interval) plus any adjustment for the characteristic features of the sound. The character correction relates to whether and to what degree the specific sound is assessed to have an element of tonality, impulsivity and/or characteristics that are readily distinctive against the residual acoustic environment.
- 4.4.5 The background sound level is the A-weighted sound pressure level of the residual sound at the assessment position that is exceeded for 90 percent of a given time interval, T, measured using time weighting 'F' and quoted to the nearest whole number of decibels. The residual sound is described as the ambient sound remaining in a given position in a given situation when the specific sound source is suppressed to a degree such that it does not contribute to the ambient sound.
- 4.4.6 With reference to the NPPF/NPSE and BS 4142, a rating level of $< +10$ dB accords with the 1st aim of NPSE (to avoid significant adverse impacts), whilst a rating level approaching the representative background level accords with the 2nd aim of NPSE (to mitigate and minimise adverse impacts).



4.5 GOOD PRACTICE GUIDE ON THE CONTROL OF NOISE FROM PUBS AND CLUBS

- 4.5.1 Guidance on the assessment criteria and control of entertainment noise is contained in the '*Good Practice Guide on the Control of Noise from Pubs and Clubs*' (GPG Pubs & Clubs) published by the Institute of Acoustics in March 2003. This document is generally accepted as the standard for assessment of entertainment noise sources. Entertainment noise sources are taken as music, singing and speech originating from inside or outside the building.
- 4.5.2 Further, a Working Draft Annex was produced which contains suggested entertainment noise criteria. For principal entertainment noise, different criteria are proposed depending on the frequency and timing of the events, with criteria for frequent occurrence and late opening (after 23:00 hours) being more stringent.
- 4.5.3 Annex A2.3 criteria are relevant for venues where entertainment takes place more than once per week or continues beyond 23:00 hours and are as follows:
- The L_{Aeq} of the entertainment noise should not exceed the representative background noise level L_{A90} (without entertainment noise), and
 - The L_{10} of the entertainment noise should not exceed the representative background noise level L_{90} (without entertainment noise) in any third octave band between 40 Hz and 160 Hz.
- 4.5.4 If the above criteria are met, entertainment noise will be virtually inaudible inside noise sensitive property. The criteria are relevant to both internal and external levels at the noise sensitive properties.
- 4.5.5 Whilst the GPG Pubs & Clubs was developed for a range of entertainment noise sources, in relation to the application site specifically, the potential issue relates to customers talking as no music is proposed. The Annex 2.3 criterion based on a comparison of L_{10} and L_{90} levels between 40 and 160 Hz has been developed to address issues associated with entertainment noise such as a strong bass component associated with live and amplified music at nightclubs. As this is not relevant to the application site, the broadband criterion is considered the most relevant to the site.
- 4.5.6 On this basis, the proposed assessment criterion for the café/takeaway is that the $L_{Aeq,T}$ of customer noise should not exceed the residual background $L_{A90,T}$ level at the NSR. In terms of the reference period for assessment, given that the café/takeaway proposed operating hours are up to 23:00, the BS 4142 daytime assessment period of one hour is considered appropriate.



SECTION 5 SOUND ATTENUATION SCHEME PROPOSALS – CUSTOMER NOISE

- 5.1 The main seating area (approx. 20 covers) is circa 10 metres from the front and rear glazed elevations of NSR1 and fully screened by the orientation of the elevations relative to the seating area. Likewise, the small roof terrace area (approx. 12 covers) is adjacent to the blank gable end of No. 452 and fully screened from the front and rear glazed elevations.
- 5.2 BS 5228:2009 Part 1 considers that *'In the absence of spectral data, as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation'*. On this basis, at least 10 dB of screening is considered applicable.
- 5.3 In order to assess the potential noise impact of the use of the outdoor seating at NSR1, the likely noise levels to be expected due to the use of the outdoor seating are based on the RPA database of noise sources. This includes noise monitoring at an outdoor dining function with the measurement position circa 17 metres from the closest tables in the seating area. At this distance, generally, conversation was audible but not intelligible and was not considered intrusive. The ambient noise level was measured at 47 dB $L_{Aeq,T}$ with 20 – 30 guests present.
- 5.4 Using the source data detailed in Para. 5.3 and accounting for the difference in distance (+5 dB correction) and screening (-10 dB correction), the calculated incident noise level at NSR1 is 42 dB $L_{Aeq,T}$.
- 5.5 The calculated incident noise level at NSR1 is 7 dB below the residual noise climate background level of 49 dB $L_{A90,1hour}$ up to the closing time of the proposed café/takeaway and, as such, complies with the requirements of the GPG Pubs & Clubs (Section 4.5). Furthermore, the calculated incident noise level at NSR1 complies with the absolute criterion of 50 dB $L_{Aeq,16hour}$ (Section 4.3).
- 5.6 On this basis, customer noise is considered to represent a No Observed Adverse Effect Level (NOAEL), example of outcomes for which is *'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'*.

SECTION 6 SOUND ATTENUATION SCHEME PROPOSALS – PLANT NOISE

- 6.1 Details of the kitchen extraction system and external condenser/chiller units serving the freezer and cold store are not currently available. As such, and based on the requirements of BS 4142 (see Section 4.4), it is considered appropriate that the design/specification of the external plant is based on the premise that the cumulative rating level ($L_{Ar,T}$) of the plant does not exceed the representative residual background noise level ($L_{A90,T}$) when measured as a free field level at the nearest noise sensitive receptor (NSR1). The representative residual background noise level during the operating times of the cafe/takeaway is identified in Table 6.1.
- 6.2 Given that the kitchen extraction flue is to be located in the vicinity of the car park and that condenser units are to be located adjacent to the blank gable end of the adjacent premises (i.e. fully screened



from NSR1), it is considered that the required noise emission levels can be achieved through judicious plant selection and appropriate attenuator design.

- 6.3 Compliance with the above is considered to represent a No Observed Adverse Effect Level (NOAEL) for plant noise, example of outcomes for which is *'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'*.

Table 6.1: Representative Residual Background Noise Level During Operating Times of Café/Takeaway

Period	Time	Background noise level, $L_{A90,T}$ (dB)
Daytime	22:00-23:00	49

SECTION 7 CONCLUSIONS

- 7.1 An assessment has been undertaken to consider the potential impact of noise associated with the redevelopment of a vacant plot of land adjacent to 452 Cheetham Hill Road, Manchester, M8 9LE. The development proposals consist of a café/takeaway with an external decking seating area and a small roof terrace seating area.
- 7.2 On the basis of the assessment and sound attenuation scheme proposals detailed in this report, noise is not considered to represent a constrain to the development of the site, with potential impacts considered to represent a No Observed Adverse Effect Level (NOAEL).



APPENDIX 1 ▪ Glossary of acoustic terms

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 μ Pa 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 μ Pa).

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 which occur over different lengths of time.

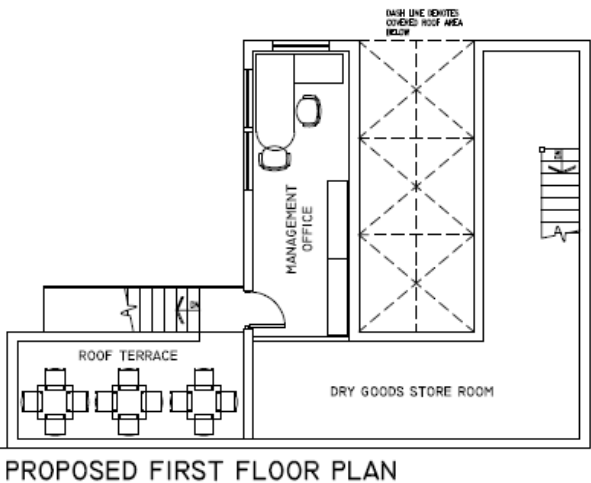
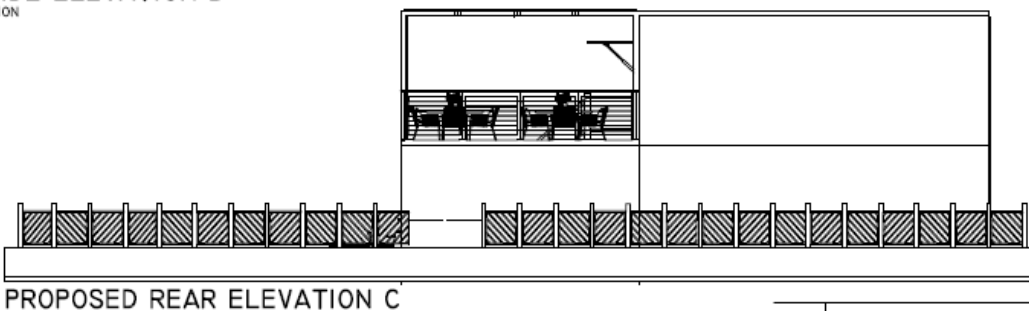
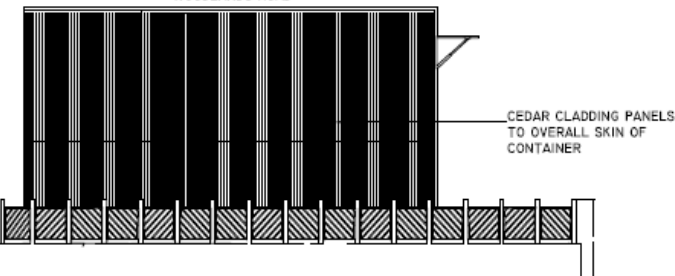
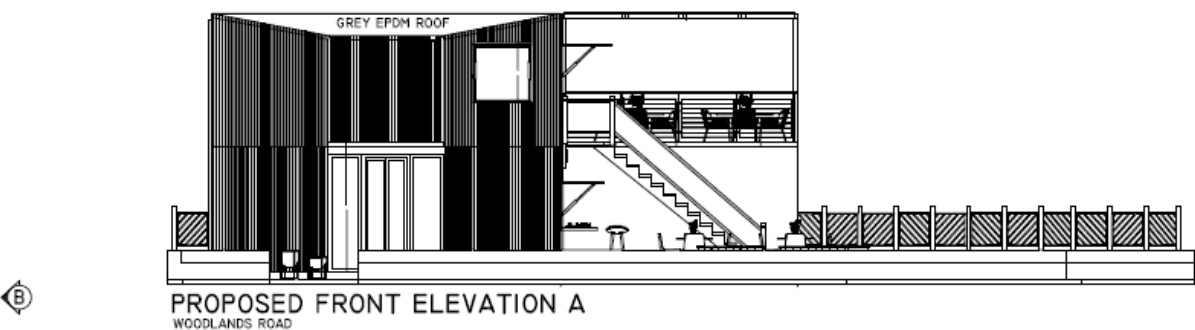
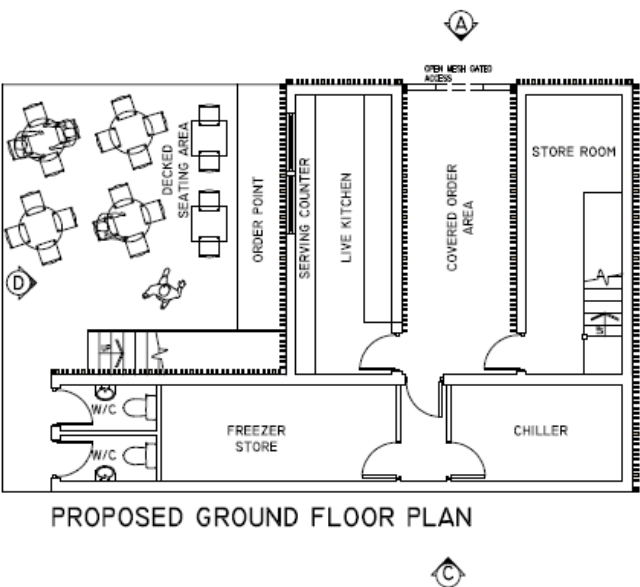


APPENDIX 2 ■ Annotated aerial site image and proposed layout plans

Appendix 2.1: Annotated Aerial Site Image



Appendix 2.2: Proposed Layout Plans



GENERAL NOTES

PLANNING		
Date	Revision	Ref
ESKHAZ DESIGN Planning & Design Project Management 81 Pinewood St, Bradford West Yorkshire, BD7 2AG T: 01957 979977		
Project PROPOSED PARATHA ROYALE UNIT FOR CLASS E EXPRESS CAFE AT 456-458 CHEETHAM HILL ROAD, MANCHESTER M8 9LE		
Title PROPOSED PLANS AND ELEVATIONS		
Scale 1:100 @ A3	Drawn	Checked
Date JUNE 23	Status PLANNING	
Dwg. No. 23-029-02		Rev.