

Man Pets Living Ltd

Lollipaws Club

Acoustic Assessment



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Report Limitations

1. Introduction

Peninsular Acoustics Ltd has been commissioned by Man Pets Ltd (hereafter referred to as 'the Client') to undertake a noise impact assessment for a proposed overnight cat boarding facility with ancillary café, pet grooming and retail uses in Manchester, Unit 6 Botanic Avenue, Manchester M15 6AE (hereafter referred to as 'the Site').

1.1. Scope of Works

The scope of works has been determined based on the proposals likely noise impacting activities. The report will focus on the assessment of;

- Plant noise in accordance with BS 4142 from the MVHR external unit.
- Cat Boarding, Dog & Cat Grooming activities, and retail.
- External Balcony use.

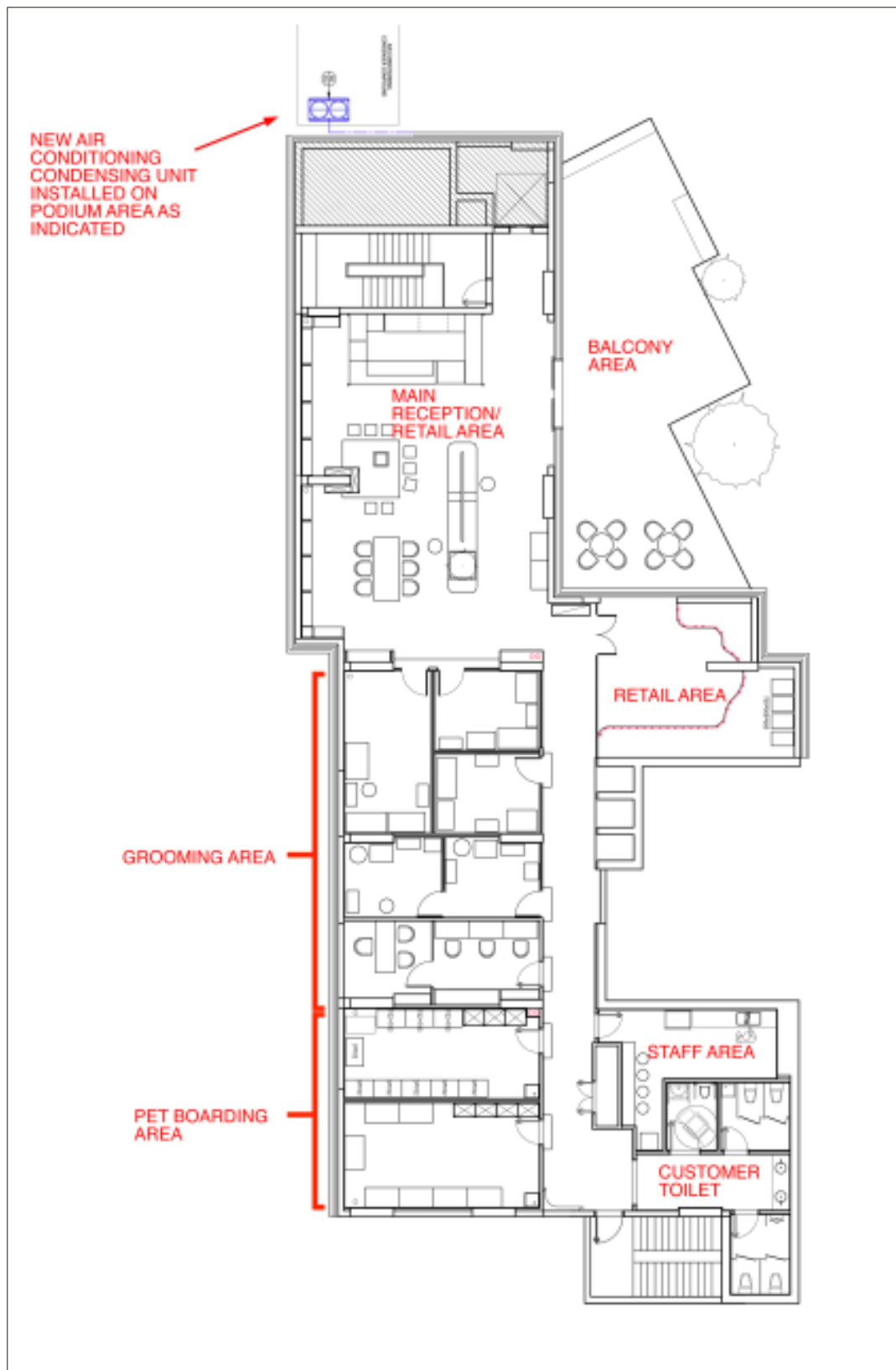
As part of the assessment process:

- Nearby Noise Sensitive Receptors (NSRs) have been identified using satellite images, client information and site observations.
- Background sound levels have been established through an unattended environmental sound survey to support assessments.

This report is necessarily technical in nature and therefore, to assist the reader, an acoustics glossary is provided in Appendix A.

1.2. Site Plan

Figure 1.1: Proposed Layout



1.3. Assessment Criteria

1.3.1. External Mechanical Plant

To assess the impact of external mechanical plant, a BS4142 Assessment should be carried out with a target of -5dB below background to ensure low impact. Please see BS4142 summary in appendix B.

1.3.2. Internal Noise Transfer from Cat Boarding / Cat & Dog Grooming / retail uses.

To assess internal noise transfer between the grooming area /main reception area and the residential rooms above, we propose a target of achieving a Dntw of approximately 65dB for the separating floor.

An unattended survey of the existing background sound levels was undertaken between 16:00 on 28th March and 08:30 on 1st April 2025, in a shielded position on the terrace area. The measurement position, shown in Figure 2.1 and Figure 2.2, was:

- 1.5m above local ground height;
- Just out of direct line of sight to the surrounding road networks; and
- In a representative location of Noise Sensitive Receptor 1 (NSR1)

PA1323 Unit 6 Botanic Avenue Square Gardens, Manchester M15 6AE

Approximate site boundary, measurement and receptor locations

Legend

- Noise Sensitive Receptor
- Site Boundary
- Survey Location

Google Earth

50m

Sound levels were measured using a Class 1 Sound Level Meter (SLM). The SLM was field calibrated before and after the survey using a Class 1 calibrator, with no significant drift in calibration levels recorded ($> \pm 0.5\text{dB}$). The equipment was set up to capture ambient (L_{Aeq}) and background (L_{A90}) levels as a minimum.

2.2. Meteorological Conditions

During the survey, weather conditions were monitored which showed steady state wind speeds of less than 5 m/s. There was no rainfall for the duration of the survey.

2.3. Site Survey Notes

The noise environment at CM1 was dominated by road traffic from the Mancunian Way flyover (A57). The chosen measurement position was placed just out direct line of sight from the A57 to represent a worst-case scenario; where residential dwellings above the proposed site are completely shielded from the road network.

There were some construction works from the neighbouring building which were audible at the measurement position during weekdays however the dominant noise source was road traffic from a busy, continuous source therefore the background data collected is considered representative of conditions without construction noise present.

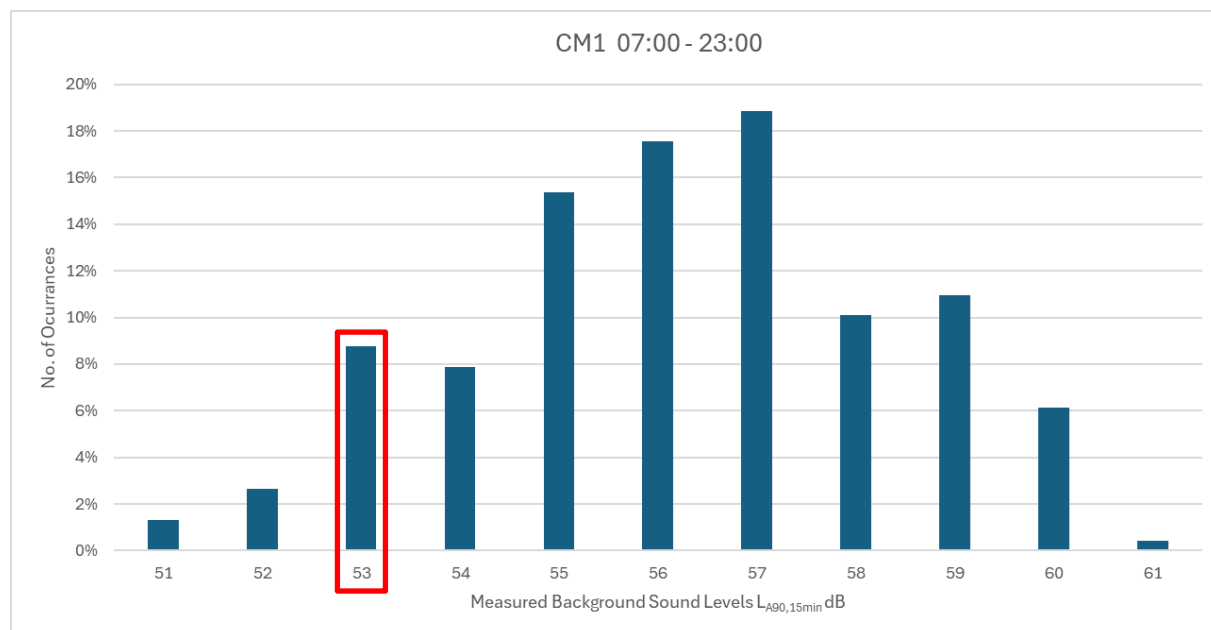
The Site is located on the 2nd floor of the building with residential units above.

2.4. Results

A statistical analysis of measured background sound levels at CM1 are presented below for daytime and night-time periods. A full time-history of measured noise survey results is presented in C.

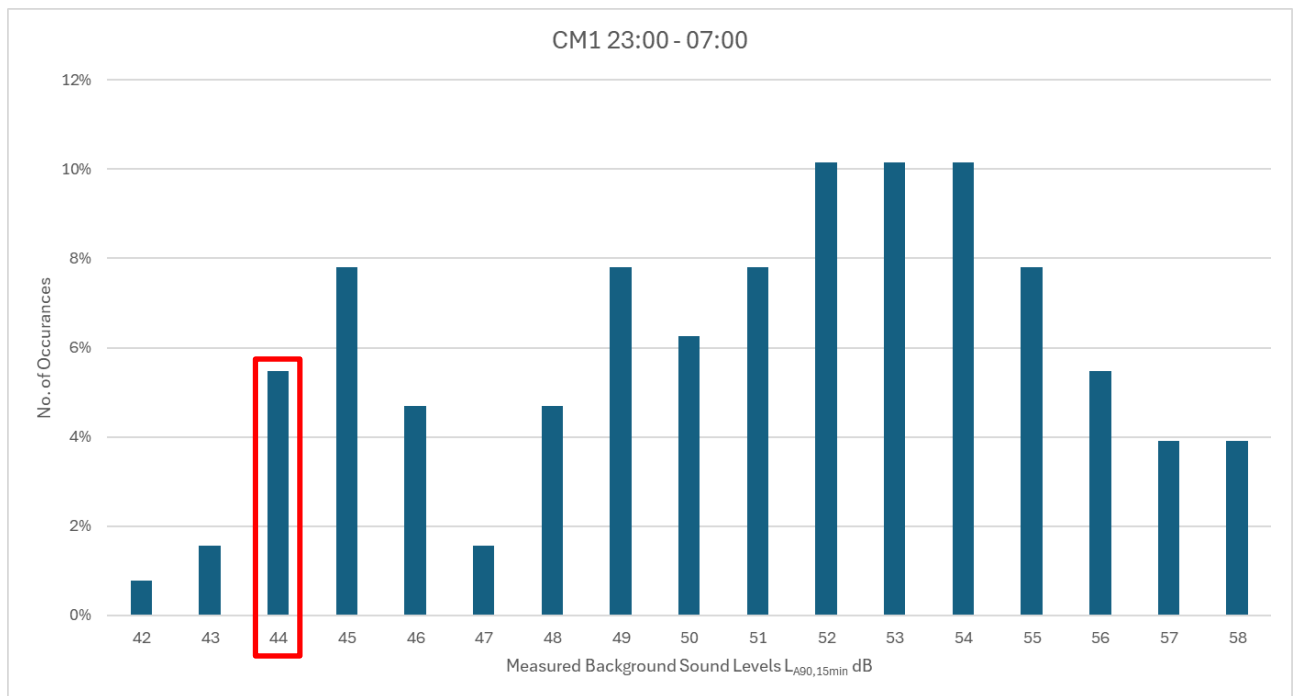
The lowest, frequently occurring daytime background sound level considered for assessment is 53 dB $L_{A90,15\text{min}}$.

Figure 2.3: Daytime Background Sound Levels – L_{A90}



The lowest, frequently occurring night-time background sound level considered is 44 dB $L_{A90,15min}$.

Figure 2.4: Night-time Background Sound Levels – L_{A90}



3. Plant Noise Assessment

3.1. PROPOSED PLANT AND EQUIPMENT

We are informed of the following plant which will be serving the premises.

Mitsubishi FDC560KXZE2 outdoor unit seen in Figure 3.1

Figure 3.1: Mitsubishi FDC560KXZE2.



The unit is to be located as shown in figure 3.2 below, within the area highlighted in yellow, with further images of the location in figure 3.3, which already has a number of plant items installed for other premises.

Figure 3.2: Plant location circled in yellow.

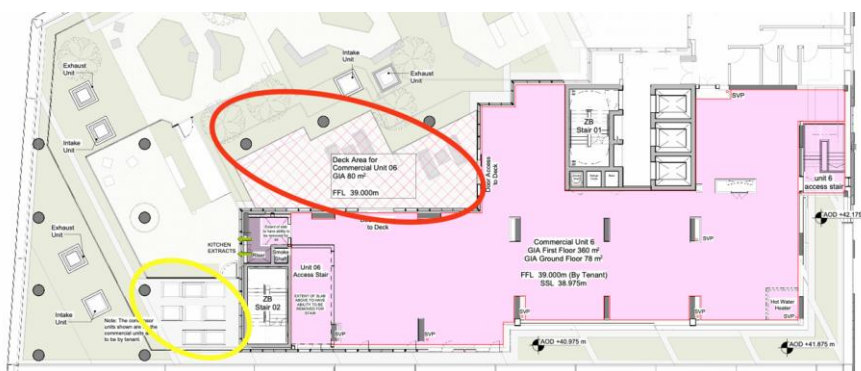


Figure 3.3: Photograph of location with plant installed for other premises.





3.1.1. PROPOSED PLANT TECHNICAL DATA TO BE INSTALLED



Producer: **Mitsubishi Heavy Industries** > Line: **FDC KXZE2** >
Product code: FDC560KXZE2

Refrigerant: **R410A**
Cooling capacity [kW] ⓘ : **56.00**
Heating capacity [kW] ⓘ : **63.00**
Absorbed power (cooling mode) [kW]: **17.50**
Absorbed power (heating mode) [kW]: **16.15**

ASK

ADD TO COMPARE

PRODUCT DATASHEET

DATA DIMENSIONS DOWNLOADS

Data

Capacity

Cooling capacity ⓘ	[kW]	56.00
Heating capacity ⓘ	[kW]	63.00
Nominal power	[HP]	20
EER		3.20
COP		3.90
SEER *		6.73
SCOP *		4.30

Acoustic data

Acoustic power (cooling mode)	[dB(A)]	82.0
Acoustic power (heating mode)	[dB(A)]	83.0
Acoustic pressure (cooling mode) *	[dB(A)]	63.0
Acoustic pressure (heating mode) *	[dB(A)]	64.0

Dimensions

Electrical data and ranges

Absorbed power (cooling mode)	[kW]	17.50
Absorbed power (heating mode)	[kW]	16.15
Maximum operating current ⓘ	[A]	40.2
Maximum starting current	[A]	8
Power supply		400V/3Ph/50Hz
Outdoor operating temperature range (cooling mode)	[°C]	-15 ~ +52
Outdoor operating temperature range (heating mode)	[°C]	-25 ~ +15.5

Refrigerant

Refrigerant		R410A
Refrigerant charge	[kg]	11.50
GWP		2,088
CO ₂ equivalent ⓘ	[t CO ₂]	24.012

Other

The sound power of the unit is seen as 83dBA when in heating mode and 82dBA when in cooling mode.

3.1.2. ACOUSTIC ENCLOSURE

We would suggest the use of an acoustic enclosure to provide a minimum 10dBA reduction in noise level from the plant and equipment. An example enclose manufacturer to provide a solution would be [Environ](#). A 10dBA reduction of the specific sound has been included within the calculations to account for a suitable enclosure.

3.2. NEAREST RECEPTORS

The nearest receptors to the plant location are the building opposite NSR1 shown in figure 3.4, approximately 20m away, and residential on the floor above NSR2 approximately 10m away, out on the direct line of sight, shown in figure 3.5.

Figure 3.4 NSR1



Figure 3.4 NSR2



3.3. INITIAL IMPACT ASSESSMENT

The results of the Initial Numerical Impact Assessment are provided in Table 3.1 whereby daytime and nighttime levels are predicted at facades to the nearest apartments. The results are presented for the most exposed residential dwellings.

The cumulative noise levels at the nearest noise sensitive receivers, based on the plant being installed as per client information, has been calculated using the noise data in figure 3.1.1.

The new noise source is yet to be installed.

No acoustic correction has been applied during the daytime, as the specific level is more than 10dBA below the residual sound levels at the receptors at times. An acoustic correction +3dB has been applied at night on the basis that the specific sound level is potentially readily distinguishable, as on some occasions it is within 10dB of the residual $L_{Aeq,T}$.

The tables below show the predicted sound pressure levels at the receiver in accordance with BS 4142:2014+A1:2019. Note 10dBA noise reduction has been included due to an enclosure, along with an assumption $Q = 4$, as the source close to ground with wall behind it.

Table 3.1: BS 4142 Assessment

Assessment Step	NSR1		NSR2	
	Day	Night	Day	Night
Specific Sound Level	42 dB $L_{Aeq, T}$	42 dB $L_{Aeq, T}$	43 dB $L_{Aeq, T}$	43 dB $L_{Aeq, T}$
Acoustic Correction	+0 dB	+3 dB	+0 dB	+3 dB
Rating Level	42 dB $L_{Ar, Tr}$	45 dB $L_{Ar, Tr}$	43 dB $L_{Ar, Tr}$	46 dB $L_{Ar, Tr}$
Background Sound Level	53 dB $L_{A90, 15mins}$	44 dB $L_{A90, 15mins}$	53 dB $L_{A90, 15mins}$	44 dB $L_{A90, 15mins}$
Excess	-11 dB	+1 dB	-10 dB	+2 dB
Initial Estimate of Impact	Low	Low to adverse subject to context	Low	Low to adverse subject to context

3.4. CONTEXT

The initial estimate of the sound does not account for all the contextual facts that will be in place once the plant is installed. This section will review the context in relation to the estimate of impact at night.

As BS 4142 suggests, the impact may be less in practice by accounting for the context where the following factors should be considered:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

3.4.1. ABSOLUTE LEVEL OF SOUND

BS 4142: 2014 states:

“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”.

BS 4142 does not define ‘low’ in the context of background sound levels nor rating levels. The note to the Scope of the 1997 version of BS 4142 defined very low background sound levels as being less than about 30 dB LA90, and low rating levels as being less than about 35 dB LAr,Tr.

The background sound and rating levels are not low. The low to adverse impact at night is not viewed to change.

Initial Impact Assessment	Low to adverse subject to context
Modification due to absolute level of sound	Low to adverse subject to context

3.4.2. CHARACTER AND LEVEL OF THE RESIDUAL SOUND

BS 4142: 2014 states:

“Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound.”

The current ambient noise at the receptors is high during the day and night, mainly consisting of traffic noise highlighted in the survey data. Information has been provided showing plant and equipment which has been installed for other units of the development, which implies plant noise within the vicinity of the receptors is commonplace and the introduction of the new unit with enclosure will not raise the plant noise present at receptors already. The impact due to character and level of residual sound can be modified to low impact.

Initial Impact Assessment	Low to adverse subject to context
Modification due to character and level of the residual sound	Low Impact

3.4.3. SENSITIVITY OF THE RECEPTOR AND DESIGN MEASURES THAT SECURE GOOD CONDITIONS

BS 4142 says to consider:

The sensitivity of the receptor and whether dwellings or other premises used for residential purpose will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

- *Façade insulation treatment;*
- *Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and*
- *Acoustic screening.*

An example of this consideration is provided in Example 8 of BS 4142 where reference is made to consideration of other guidance, such as BS 8233. In the contextual assessment of the BS 4142 example, there is reference to the consideration of the cumulative sound level within the bedroom on account of the receptor being indoors and the plant sound experienced indoors.

The receptors are part of recently constructed residential tower blocks, with facades designed to mitigate against the already high external noise environment. It is reasonable to assume that the external façade, should have been designed to mitigate the noise levels to achieve internal noise levels in BS8233:2014. With this in mind, and with the inclusion of the previously detailed acoustic enclosure the impact due to design measures can be modified to low impact.

Initial Impact Assessment	Low to adverse subject to context
Modification due to receptor sensitivity and design measures	Low impact

3.5. SUMMARY

Having reviewed the context for the estimate of impact at night-time, the impact has been modified to Low impact.

3.6. UNCERTAINTY

Uncertainty is an unavoidable feature of measurements in the field, which can be subject to many factors; the weather typically being the most significant of which with respect to the measurement of sound. Uncertainty is also unavoidable in the prediction of sound levels, where naturally, before the scenario being considered becomes a reality, a number of assumptions need to be relied upon. There is also the uncertainty of people's reactions, which can be influenced by a number of factors, not just the magnitude or character of the sound in question.

In keeping with the scale of each project, Peninsular Acoustics aims to minimise uncertainty at each stage as far as reasonably practicable. With this in mind, the control measures listed in Appendix C have been followed, which themselves, have been derived from the guidance within BS 4142.

Crucially, measurements have been undertaken by suitably qualified staff, using state of the art, in calibration equipment, over suitable periods and avoiding adverse weather conditions.

The predictions have also been undertaken by suitably qualified staff, and by using a broad spread of source data obtained through archived specific sound level measurements.

Notwithstanding this, naturally some uncertainty remains. Given the sheer number of factors involved, however, it is not feasible to place a numerical value on the level of uncertainty, without resulting in an unhelpful range of possible outcomes.

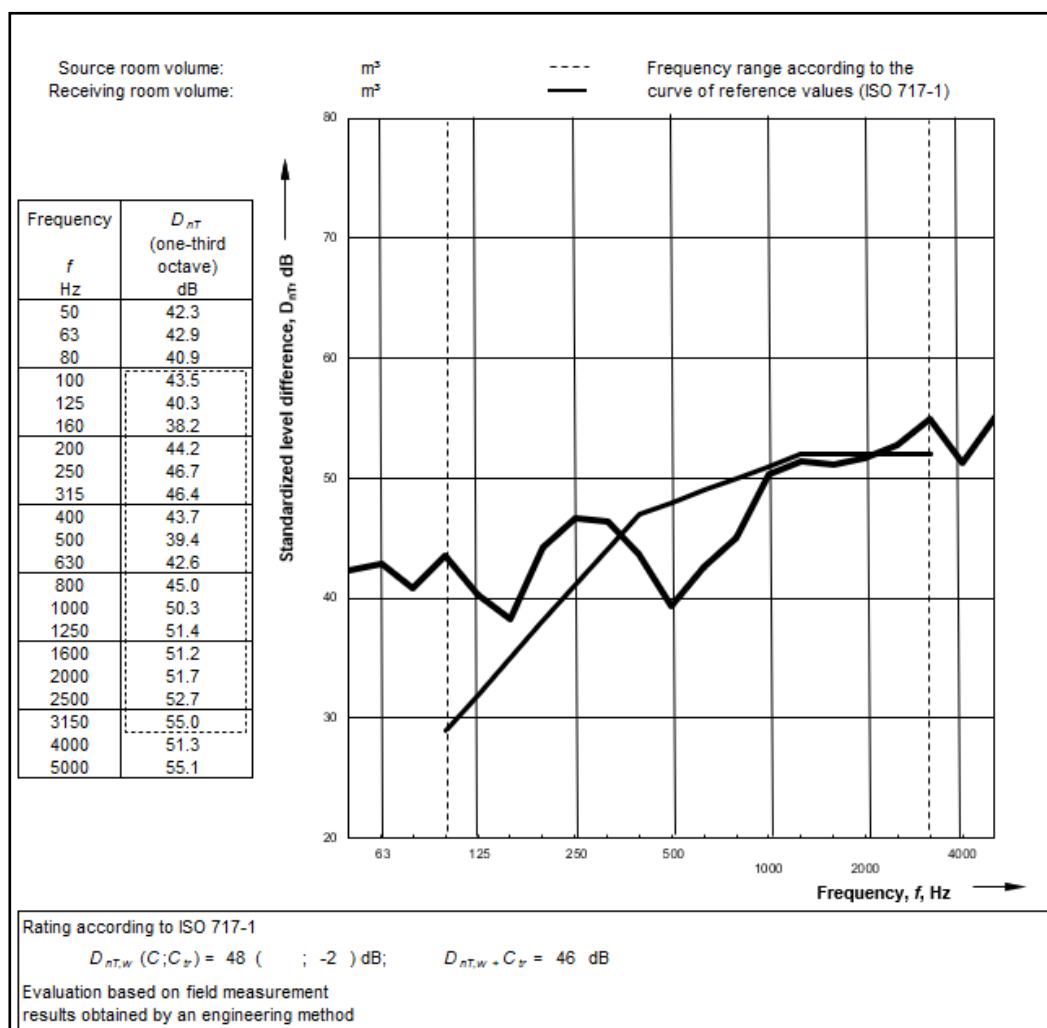
It is the professional position of Peninsular Acoustics that uncertainty has been kept to a realistic minimum and that the outcome of this assessment is sufficiently representative and robust.

4. Internal Noise Impact

4.1. Internal Noise Transfer Assessment

An internal noise transfer assessment has been undertaken based on the existing floor construction, to understand the acoustic performance of the current separating floor which is understood to comprise minimum 275mm reinforced concrete slab.

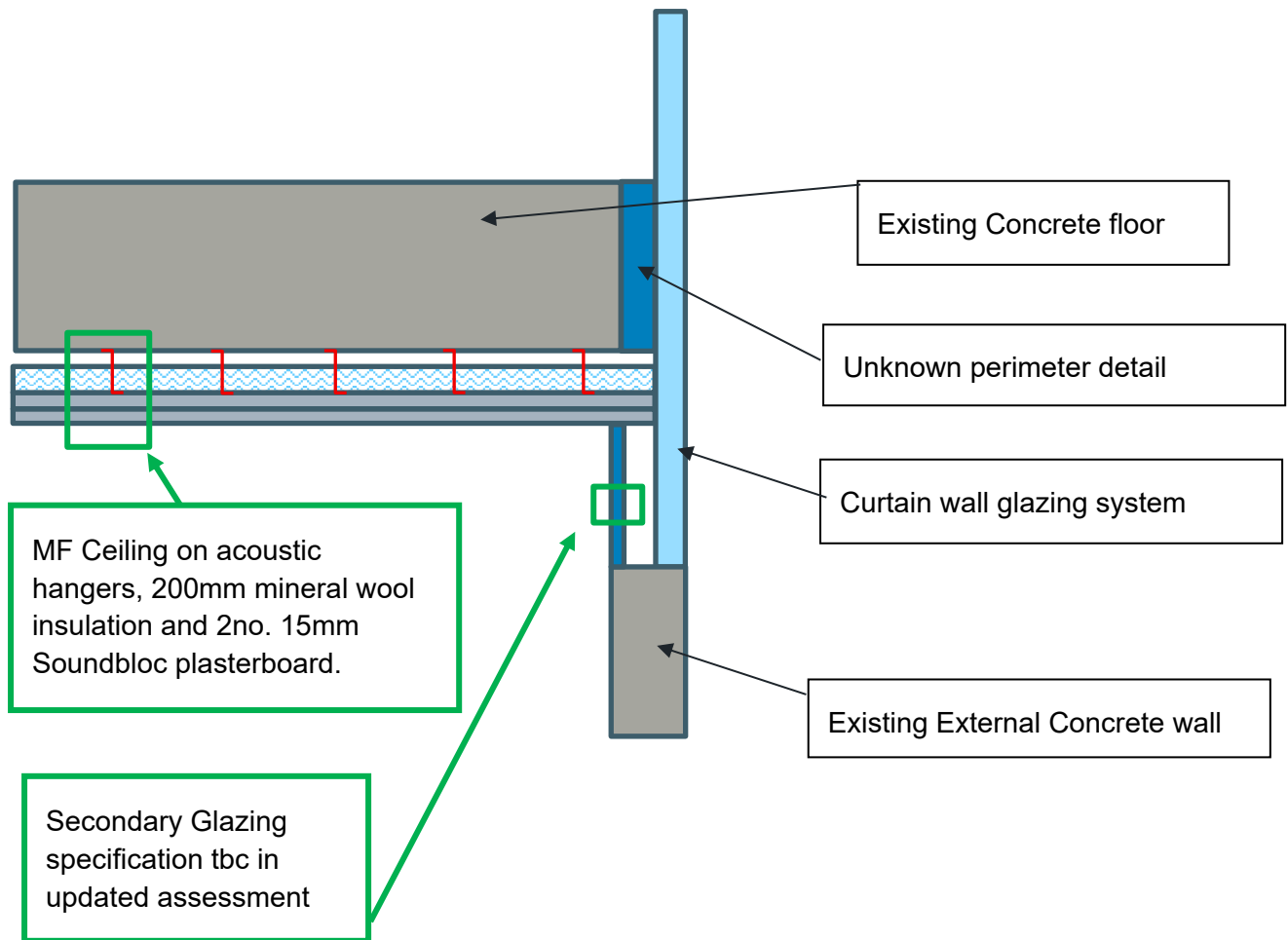
A sound insulation test was conducted on the 5th August 2025 to understand the current performance of the separating floor. This is the first part of the process in understanding the true starting point of the performance of the acoustic separation.



The separating floor construction is currently achieving a 48dB DnTw, and 46dB DnTw + Ctr. This test has been carried out at an early stage and shows that there is a good base construction with the mass of the concrete floor, however, the performance is being limited by a flanking weakness in relation to the curtain walling system, and the perimeter junction of the slab with the external curtain walling. The previous outline specification detailed a metal frame ceiling to be installed on acoustic hangers, will remain as a requirement throughout the commercial unit, with 200mm mineral wool

insulation and 2 x 15mm Soundbloc plasterboard attached as a suitable ceiling enhancement. However, even with the new ceiling detail installed within, the performance would be limited by flanking sound at the perimeter junction with the curtain walling and the curtain walling itself.

To counter this weakness, a suitable junction will have to be developed, which includes the use of a secondary glazing system within the commercial unit. Further understanding of the exact current section is required, particularly the unknown perimeter detail, however in principle the outline specification will be approximately as follows.

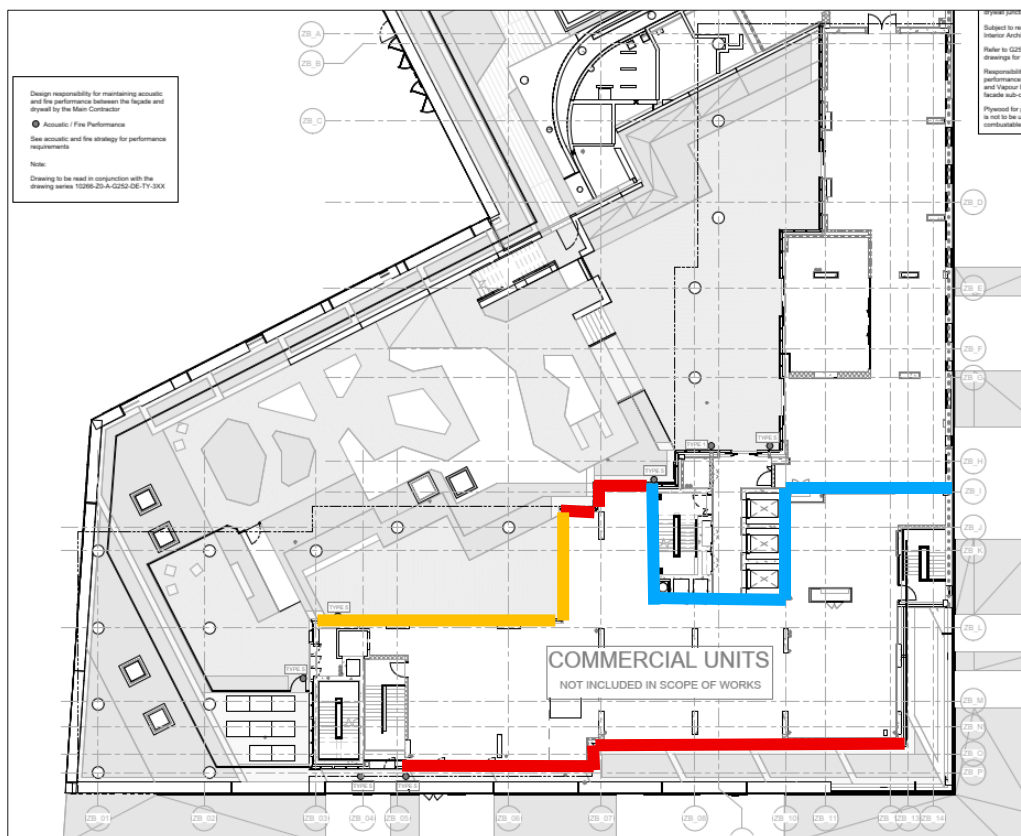


Existing base construction visible in Unit 6, before enhancements installed

The detailed ceiling should be installed, prior to the secondary glazing system, and a further sound insulation test be carried out. This further test will allow the specification of the secondary glazing system in terms of the performance it will be required to achieve.

Please see the following image highlighting secondary glazing requirement (in red). Independent wall lining to sections (in blue) consisting of independent metal or timber stud walls not in contact with the existing wall 75mm Mineral wool insulation and 2 x 15mm Soundbloc plasterboard attached, maybe required to enhance separating wall performance. This should be checked after the installation of the new ceiling detail proposed, to protect adjacent communal areas.

No wall linings or secondary glazing (in orange) while this will create a flanking path to the communal corridor above, doors to the balcony restrict any form of lining. The reception area will only have pets in temporarily, and they should be appropriately managed.



4.1.1. Expected Sound Insulation Performance

We would be looking to ensure a Dntw of approximately 65dB is achieved between the commercial and residential flats above.

This will protect residents above from occasional dog barks during the daytime operational hours. As only cats will be present out of daytime operational hours, and considering their expected low noise levels associated with cat vocalisations, the same separating floor performance will ensure minimal impact on residents overnight.

In conjunction with good acoustic performance it is recommended the business has a management plan in place to minimise dog barking during the day, with methods in place to act quickly if required.

4.2. EXTERNAL BALCONY AREAS

The client has confirmed that the external balcony areas will not be used for pets as they will only be within the designated rooms within unit 6. External measurements taken on the balcony area during the initial noise survey demonstrate during the proposed opening hours of the premises (10:00 to 20:00), the external environment has a high background noise level typically 53 to 60dB LA90,15min, with ambient levels typically 55-65dBA and max levels between 80 and 90 dBA at times. Please see the time history chart in Appendix C.

From a contextual perspective, due to the high level of background noise present due to the dominant road traffic in the area, this implies the external significance of a small number of people on the balcony would be minimal within the operating hours of 10:00 to 20:00.

More importantly, the client should have an operational management plan which includes the control of noise, and restrictions of animals to external balcony areas.

5. Conclusions

Peninsular Acoustics Ltd has been commissioned by Man Pets Living Ltd to undertake an acoustic assessment for a proposed overnight cat boarding facility with ancillary café and pet grooming within a residential apartment building located at Unit 6 Botanic Avenue, Manchester M15 6AE.

A background sound survey was undertaken to determine the existing noise environment at a representative location of nearby receptors considered as 53 dB L_{A90} and 44 dB L_{A90} for daytime and night-time periods respectively.

A BS4142 Assessment has been carried out in relation to the proposed plant, concluding low impact at receptors after considering context, provided the recommended enclosure is installed for noise mitigation.

For internal noise transfer, subsequent sound testing has demonstrated the flanking weakness of the separating floor. Recommendations for ceiling construction have been made and a further test required once the ceiling is in place to determine the required performance of the secondary glazing specification to be installed.

A noise management plan is to be put in place.

If these principles are followed and implemented, the proposed cat hotel with daytime pet grooming should be suitable and not cause any adverse impact on nearby residents.

Appendix A

Technical Terminology

Noise	Typically defined as unwanted, unpleasant or disturbing sound
Frequency (Hz)	The number of oscillations in acoustic pressure per second. It represents the 'tone' of the sound. Often determined in octave bands
Maximum sound pressure level (L_{Fmax})	The maximum or highest sound pressure level measured with a 'fast' time weighting
Equivalent continuous sound pressure level ($L_{eq,T}$)	The average of the total sound energy over a specified time period (T). L_{eq} represents the equivalent sound level that a fluctuating source would have compared to a steady source with the same total sound energy over a specific time period. Commonly used as a descriptor of human perception of sound over time.
'A' weighting	Frequency-dependent weighting based on the response of the human auditory system which has been found to correlate well with the subjective response to sound. Denoted by the use of the letter 'A'. For example, dBA denotes an 'A' weighted sound level in decibels, or L_{Amax} denotes an 'A' weighted maximum sound pressure level.
Internal Ambient Noise Level (IANL)	The noise level within a room or enclosed space. Usually determined as an equivalent continuous sound pressure level over a specific time period ($L_{Aeq,T}$, dB)
Noise Rating (NR) curve	A single figure term used to reflect the spectral frequency content of noise. Although originally proposed to assess environmental noise, NR curves are now typically used to describe noise from mechanical ventilation systems in buildings.
$L_{night,outside}$	The incident external A-weighted long-term average sound level as defined in ISO 1996-2: 1987, determined over all the night periods of a year, in which the night is eight hours between 23:00 and 07:00.
AVO	Acoustics, Ventilation, Overheating (e.g. AVO Guide, AVO Group).
Ventilative cooling	Cooling by means of introducing external ambient temperature air at a high ventilation rate. Can be either passive (no fans) or mechanical (with fans).
Purge ventilation	Ventilation to aid removal of high concentrations of pollutants and water vapour released from occasional activities such as painting and decorating or accidental releases such as smoke from burnt food or spillage of water.
Mechanical cooling	Cooling by means of a refrigerant cycle. This would include 'air conditioning' systems and the use of fan coil units (FCUs).
MEV	Mechanical extract ventilation.
Effective area, A_{eff}	Defined as the product of the free area and discharge coefficient, this is the preferred parameter for comparing the air-flow performance of elements. Refer to reference 6 for further information.

Equivalent area, A_{eq}	The area of a sharp-edged, circular orifice that gives the same flow rate as the actual opening at a given pressure-difference. In other words, the free-area of a notional circular hole made in an infinitely thin, infinite extent baffle that gives the same air-flow performance as the real opening. Used to describe the area of trickle vents in Approved Document F. Not to be confused with Effective area. Refer to reference 6 for further information.
Coefficient of Discharge, C_d	The ratio of the mass flow rate at the discharge end of the nozzle to that of an ideal nozzle which expands an identical working fluid from the same initial conditions to the same exit pressures.
$D_{n,e} / D_{n,e,w}$	The laboratory tested sound insulation of small building elements, normalised to an equivalent absorption area of 10m².
Façade level	The sound pressure level measured close to a building façade that includes contribution from both the incident sound and the sound reflected from the façade. Normally taken to be 3dB higher than the equivalent free-field level, when located at 1 metre from a façade.
Free-field level	A measured sound pressure level that is independent of any contributions due to reflections from nearby surfaces and is therefore representative of the direct path only.
R / R_w	The laboratory tested airborne sound insulation of a building element
Sound insulation	The capacity of a structure to prevent sound from reaching a receiving location. Sound energy is not necessarily absorbed; impedance mismatch, or reflection back toward the source, is often the principal mechanism

Appendix B

BS4142: 2014+A1: 2019

BS 4142 describes methods for rating and assessing industrial and/or commercial sound and includes, but is not limited to, the assessment of:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical equipment;
- Sound from the (un)loading of goods and materials at industrial/commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes such as that from forklift trucks on or around an industrial and/or commercial site.

The methods described in BS 4142 use outdoor sound levels to assess the likely effects of sound on people who are typically outside residential premises. Although indoor effects can be indicated where the façade composition is known. A summary of the approach set out in BS 4142 is set out below:

Establish or predict the specific sound level of the source(s) by considering both the ambient (includes the source to be assessed) and residual (excludes the source to be assessed but includes all remaining sources) sound level;

- Measure the representative background sound levels, typically by measuring close to the receptor location;
- Rate the specific sound level to account for any distinguishing characteristics (see below);
- Estimate the impact by subtracting the background sound level from the rating level; and
- Consider the initial estimate of impact, as determined above, in the context of the noise and its environment.

The specific sound level is rated to account for distinguishing characteristics by using penalties for tonality, impulsivity, intermittency, and other sound characteristics. The dominant acoustic characteristic should be applied to avoid large penalties which is in accordance with the Institute of Acoustics response to BS 4142.

The character corrections are flexible according to whether the acoustic character is just perceptible at the noise receptor, or is clearly perceptible or highly perceptible, and range from 0 to 6 dB for tonal noise, 3 to 9 dB for impulsive noise, and 3 dB for other non-tonal/impulsive acoustic characteristics.

An initial estimate of impact of the specific sound is obtained by subtracting the background sound level from the rating level. Typically, the greater the difference, the greater the magnitude of 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 or more is likely to be an indication of an adverse impact, depending on the context;
- The lower the rating level is relative to the background sound level, the less likely it is that the specific sound will have an adverse impact or significant adverse impact; and
- Where the rating level does not exceed the background sound level, this is an indication that the specific sound will have a low impact.



Appendix C

Uncertainty

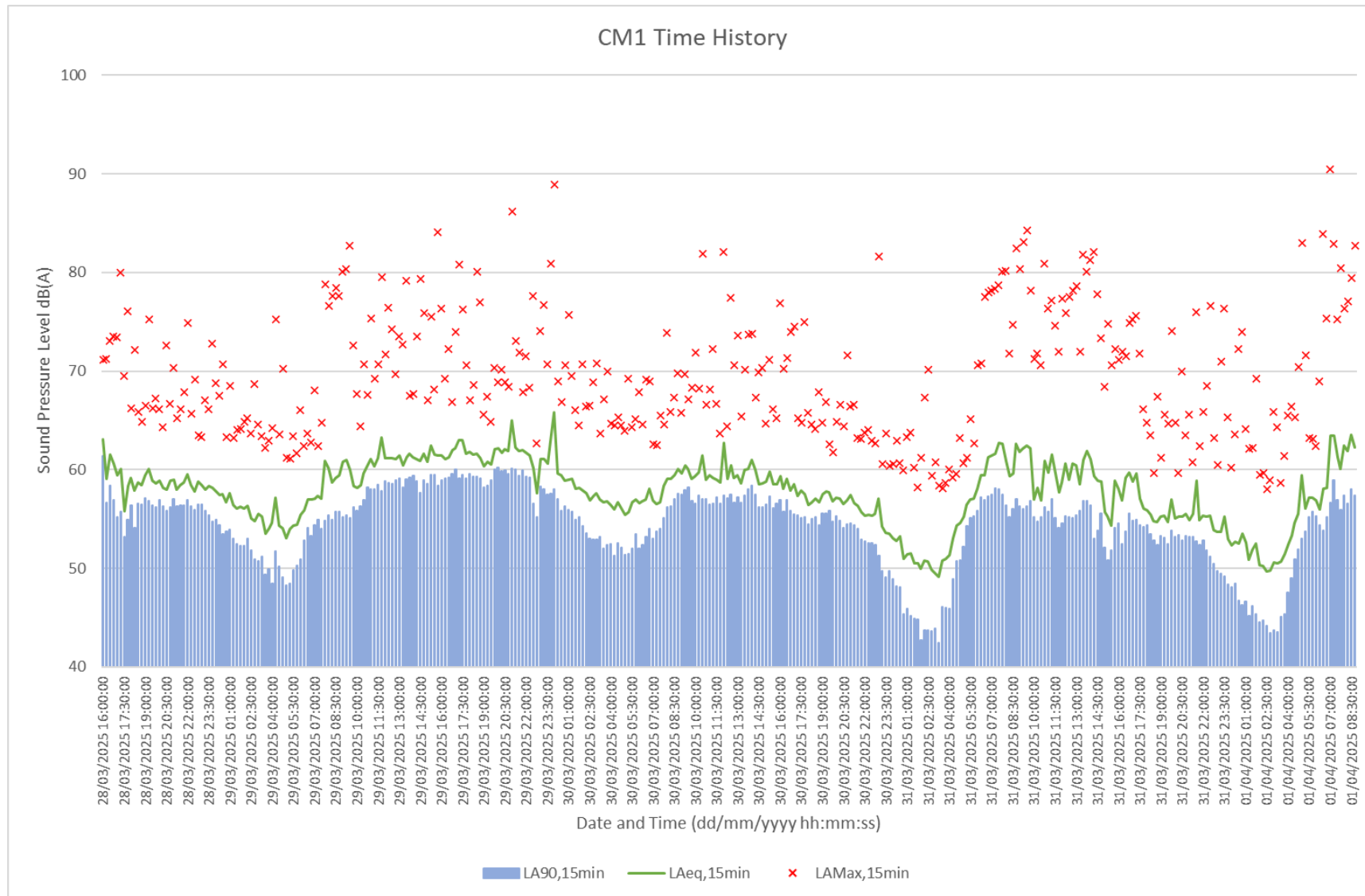
Uncertainty Control Measures	Applicable?	Adopted?/Comments
Measurement		
Only use in calibration Type/Class 1 equipment and check (and record) calibration level before and after measurements	✓	Yes
Measurements taken using the time and frequency weighting specified by the relevant standard?	✓	Yes
Detailed notes made, including details of the equipment, weather, survey positions (including approximate distances), contributing noise sources, presence of screening etc.?	✓	Yes
Photographs taken and recorded survey locations using GPS?	✓	Yes
Avoided standing waves/interference – listen for effects, taken spatial average from several locations or conducted a sweep	x	N/A
Taken measurements of source at different distances to establish propagation.	x	N/A used manufacturers data to inform assessment
Taken measurements at different heights where relevant	x	Not relevant
Avoided just measuring in the “noisiest” parts of the site, and established how “quiet” it is, too, where relevant to the assessment.	✓	Representative background measurement position selected.
Measured under different source operating conditions relevant to the assessment / adopt worst case if known	x	N/A used manufacturers data to inform assessment
Measured more than one cycle/event	x	N/A used manufacturers data to inform assessment
Determined the state of repair of any associated source, where relevant	✓	N/A plant under assessment not yet installed.
Used a windshield and avoided windy conditions (i.e. gusts regularly exceeding 5 m/s)	✓	Yes
Avoided wet conditions (particularly in terms of rain on the windshield/microphone and on neighbouring surfaces)	✓	Yes
Avoided electrical and electromagnetic interference (such as from power cables and radio transmitters)	✓	Yes
Avoided extreme temperatures?	✓	Yes
Traffic conditions can be different in freezing conditions, whilst meters can overheat and fail in a case when in direct sunlight during the summer.		
Made measurements during different weather conditions?	✓	Not considered necessary for this assessment
Particularly relevant in terms of wind direction for sites affected by aircraft movements, but also for sites affected by other distant, but significant, sources of noise, in different directions		
Where one source is dominant (such as a main road), have measurements been taken during conditions favourable to propagation (i.e. when wind direction is within +/-45° of the line between the source and receiver or during temperature inversion, such as on clear calm nights)	✓	Not considered necessary for this assessment

Uncertainty Control Measures	Applicable?	Adopted?/Comments
Avoided tree/leaf (movement) sound where possible? Ideally take measurements the same distance from sources of such sound as any receptors of interest	✓	Yes – survey position not installed near any plant life.
Avoided dawn chorus sound? Ideally take measurements the same distance from trees and bushes as any receptors of interest	✓	Yes – not near any large trees/bushes.
Measured outside the receptor in question where possible? It is worst case typically to measure under free-field conditions and apply +3 dB correction if necessary to convert to “façade” where applicable – for most planning (new residential development) assessments, free-field is preferable	✓	Yes, no façade correction necessary.
Avoided atypical traffic conditions (such as during school holidays and road works – road traffic incidents can significantly affect flows, but which can't be predicted and their occurrence can't always be established after the survey – check the data for anomalies)?	✓	Yes
Avoided the presence of the engineer and/or the microphone resulting in atypical conditions (e.g. people stopping to talk, workers on site adjusting their way of working, etc.)?	✓	Yes
Data handling		
Was the data downloaded immediately after survey and process promptly whilst details are fresh?	✓	Yes
Were digital transfer methods used and was the data written down too?	✓	Yes
Was the time-history examined (in as fine a resolution as possible) for any unexpected events – preferably with active spectral data	✓	No unexpected data events.
If removing any data (due to an atypical event, for example), was the data saved as a new file, with notes to the data provided within the corresponding Excel file?	✓	Yes, raw data separate from processed data
Prediction		
Was measurement data used at different distances to verify propagation?	✓	N/A
Were measurements at different heights used to verify screening effects, where relevant?	✓	N/A
Were propagation calculation procedures relevant to the source and distance used?	✓	Yes, based on ISO 9613-2
Were detailed traffic flow data applicable to the assessment methodology used?	×	N/A
Were detailed sound source data (including octave-bands levels) used, accounting for size, height and directivity, where known?	✓	Manufacturer source data used .
Were detailed topographical data and base mapping used?	×	No topographical screening accounted for due to flat site



Appendix D

Time-History of Measured Survey Results





Appendix E

Report Limitations

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of Peninsular Acoustics Limited. Peninsular Acoustics Limited accept no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/ or Peninsular Acoustics Limited and agree to indemnify Peninsular Acoustics Limited for any and all loss or damage resulting therefrom. Peninsular Acoustics Limited accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and design drawings/specifications and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations Peninsular Acoustics Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.



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