AĿN
acoustic design

Mercure Hotel Car Park, Heathrow

Noise & Vibration Impact Assessment

Report Reference: J720_R01A

8th April 2026

ALN Acoustic Design Ltd

4th Floor
133A Rye Lane
London
SE15 4BQ

info@alnacoustics.co.uk
www.alnacoustics.co.uk

Revision	Date	Description	Author
-	01/04/2026	Draft Issue	Arthur Lewis-Nunes
A	08/04/2026	Description of development added	Arthur Lewis-Nunes

CONTENTS

1 EXECUTIVE SUMMARY

ALN Acoustic Design Ltd has undertaken a noise impact assessment in support of a proposed apart hotel development at the Mercure Hotel car park site, Heathrow, within the London Borough of Hillingdon.

Environmental noise at the site is dominated by road traffic from the M4 motorway, with a lesser contribution from aircraft operations at Heathrow Airport. Baseline noise surveys and noise modelling have been used to establish representative noise levels across the site and to predict façade noise exposure for the proposed development.

Predicted external noise levels are relatively high on façades facing the M4, resulting in a medium to high risk of adverse effects in the absence of mitigation. However, the proposed scheme incorporates good acoustic design principles, including the orientation of the majority of habitable rooms towards quieter façades.

With the incorporation of appropriate mitigation measures, including:

- enhanced façade sound insulation (via suitable glazing specifications), and
- provision of an appropriate ventilation and overheating strategy where necessary,

it is demonstrated that internal noise levels within dwellings can achieve the guideline values set out in BS 8233:2014 and WHO guidance.

The site has been assessed in accordance with ProPG: Planning and Noise and is considered suitable for residential development subject to the implementation of good acoustic design and the mitigation measures outlined in this report.

In respect of building services plant, it is anticipated that noise emissions will be below the prevailing background noise level at nearby residential receptors, in accordance with BS 4142:2014, and therefore adverse impacts are not expected.

Overall, it is concluded that the proposed development is acceptable in acoustic terms and accords with national and local planning policy, subject to the recommended mitigation measures.

2 INTRODUCTION

ALN Acoustic Design Ltd has been appointed by Nooa Hotels Limited to carry out a noise assessment to support a planning application for a proposed apart hotel development at the site of the existing car park of the Mercure Hotel, Heathrow, in the administrative area of the London Borough of Hillingdon.

A summary of relevant planning policy and assessment criteria is provided in Section 3. Surveys of environmental noise levels at the site are reported in Section 4 and the results of noise mapping are presented in Section 5. An assessment of environmental noise exposure of the site is set out in Section 6. An assessment of external plant equipment noise is provided in Section 7.

This report has been prepared by Arthur Lewis-Nunes MSc who is a corporate member of the Institute of Acoustics.

A glossary of acoustic terminology used in this report is provided in Appendix A.

2.1 Existing Site and Surrounding Area

The site is currently occupied by a covered car park which lies to the west of the Mercure Hotel building.

The Hayes fire station is located immediately to the south of the site beyond which is the M4 motorway at a distance of approximately 65m. There is an area of housing to the north of the site and parkland to the west.

The northern runway of Heathrow Airport is approximately 1.9km to the south of the site.

A plan of the existing site and surrounding area is provided in Figure 1.

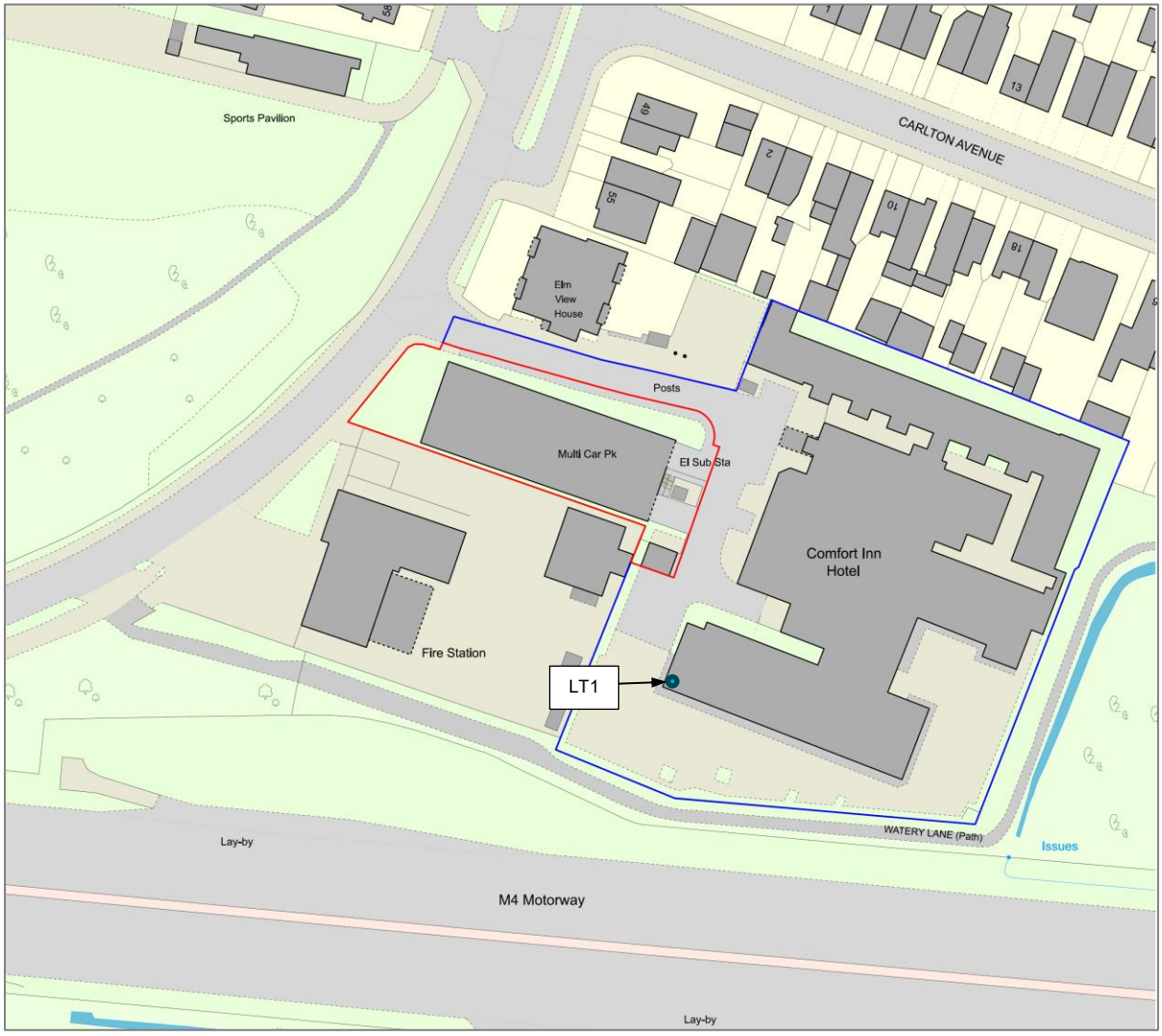


Figure 1: Existing site and surrounding area

2.2 Site Development Proposals

The proposed development description is as follows:

Demolition of existing car park and erection of 5 storey hotel building (with retention of the lower car park level) providing apart-hotel suites, landscaping alterations and associated development

The proposed ground floor plan and 3rd floor plan are provided in Appendix B.

3 PLANNING POLICY & ASSESSMENT CRITERIA

3.1 National Planning Policy Framework

At a national level, government policy in relation to noise sensitive development is set out in the National Planning Policy Framework (NPPF). This document provides a number of broad guiding principles for noise policies which are reproduced below:

187. 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;

…

200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

NPPF does not itself prescribe any particular assessment methodology or criteria to assess noise impact, but refers to the Noise Policy Statement for England.

3.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) sets out the overarching policy on noise management in England. NPSE sets out three main aims in the context of environmental, neighbour and neighbourhood noise:

- *Avoid significant adverse impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life.*

Reference is made in the NPSE to the concepts from the field of toxicology of the "*No Observed Effect Level*" (NOEL) and "*Lowest Observed Adverse Effect Level*" (LOAEL) which can be applied to the assessment of noise impact.

NPSE also introduces the "*Significant Observed Adverse Effect Level"* (SOAEL), which is described as being "*the level above which significant adverse effects on health and quality of life occur*". NPSE does not provide a quantitative definition of SOAEL and recognises that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question.

3.3 Planning Practice Guidance

The Planning Practice Guidance for noise expands on the NPPF and NPSE. It states:

Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.*

It provides examples of behavioural outcomes associated with particular effect levels, including the onset of the SOAEL.

3.4 London borough of Hillingdon Local Plan

Policy EM6 *Land, Water, Air and Noise* of the Hillingdon Local Plan 2012 states the following:

"*The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.*

The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies.

The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated."

3.5 BS8233:2014 & World Health Organisation Guidelines

British Standard BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings sets out desirable limits for internal ambient noise levels within dwellings from steady external noise sources (see Table 1 below).

Location	Day (07:00-23:00)	Night (23:00-07:00)
Living room	35 dB $L_{Aeq,16hr}$	-
Dining room / area	40 dB $L_{Aeq,16hr}$	-
Bedrooms	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$

Table 1: BS8233 Indoor ambient noise levels

WHO *Guidelines for Community Noise* (1999) provides guidance on suitable internal noise levels within dwellings which are the basis for the BS8233 recommendations. The WHO Guidelines also recommend that internal noise levels for individual events should not normally exceed 45dB L_{AFmax} more than 10-15 times per night in order to avoid sleep disturbance.

3.6 ProPG: Planning and Noise

The Professional Practice Guidance on Planning and Noise (ProPG) was developed in 2017, jointly by representatives from the Association of Noise Consultants, the Institute of Acoustics and the Chartered Institute of Environmental Health. It is intended to provide guidance to encourage better acoustic design in new residential developments and to protect people from the harmful effects of noise.

ProPG sets out a methodology for an initial assessment of the suitability of sites for residential development and relating levels of risk of adverse effects to the sites' noise exposure level using a scale which is reproduced in Figure 4.

The document then describes a 'good acoustic design process', which considers the external noise environment, desirable limits for internal noise levels within the dwellings, the feasibility of reducing noise levels through the building layout, orientation and screening, and reducing noise transmission through the building envelope.

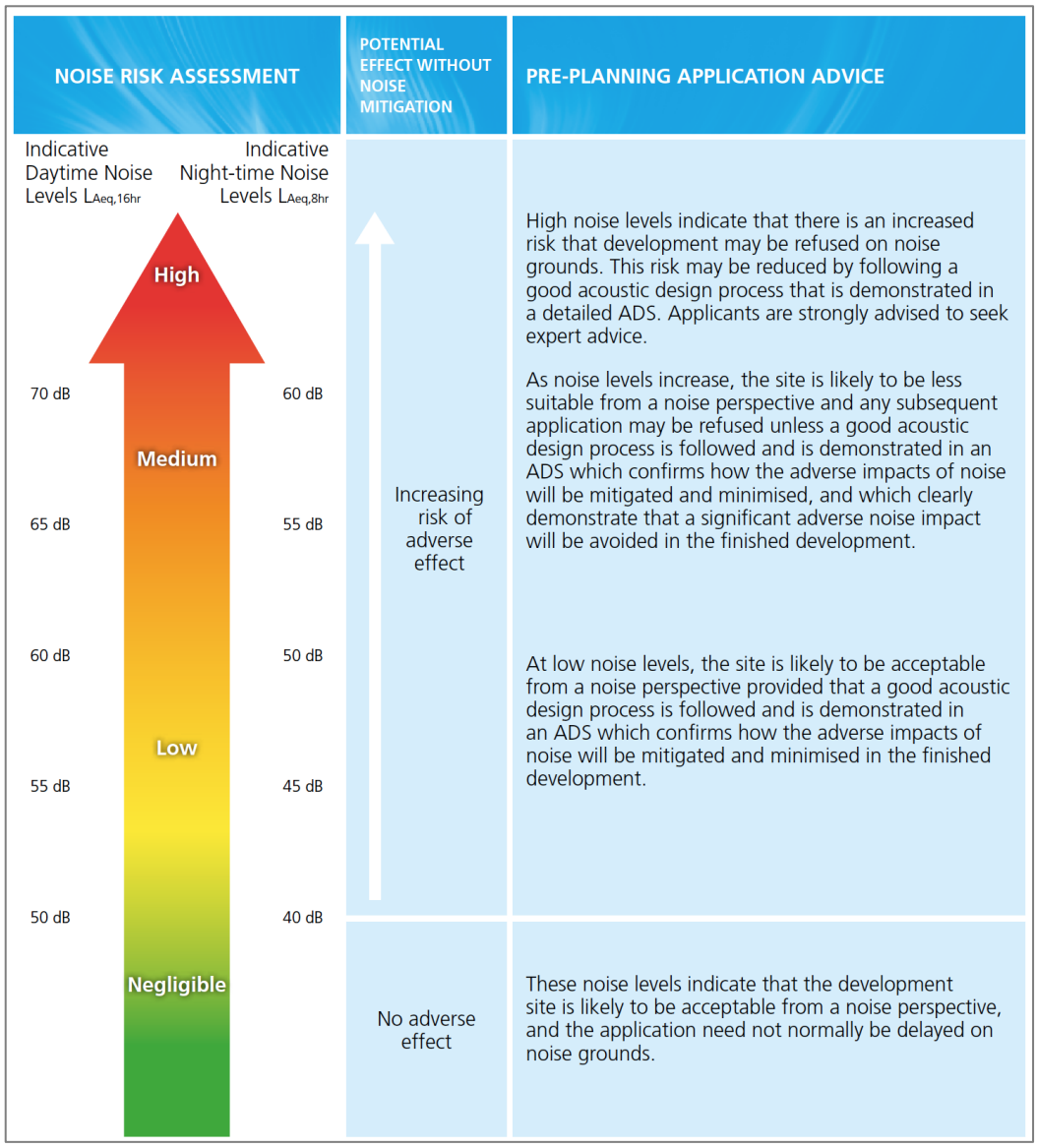


Figure 2: ProPG Initial site noise risk assessment

3.7 BS4142:2014

BS4142:2014 '*Methods for rating and assessing industrial and commercial sound*' is the current British Standard which provides a well-established methodology for the assessment of the impact of noise from fixed mechanical and electrical plant and equipment.

The degree of adverse impact for a particular noise source is dependent upon factors including the extent by which it exceeds the background noise level, the character of the noise and its time of occurrence.

A ‘Rating Level’ for the specific source is established, which has been corrected to account for the characteristics of the sound, including having noticeable tonality, being intermittent / impulsive, or having any other distinct characteristics which would make it more noticeable.

Levels of impact are defined in terms of the Rating Level relative to the background noise level, as set out in Table 2 below.

Rating Level relative to background level	Assessment
0dB or less than background	‘An indication of the specific sound source having a low impact, depending on context’
5dB or more than background	‘Likely to be an indication of an adverse impact, depending on context’
10dB or more than background	‘Likely to be an indication of a significant adverse impact, depending on context’

Table 2: BS4142 defined levels of impact

3.8 Approved Document Part O

Building Regulations Approved Document Part O (2021) sets out the requirements for new residential buildings to mitigate overheating and provides guidance on compliance. The Approved Document states that windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits:

- 40dB $L_{Aeq,T}$ averaged over 8 hours (between 11pm and 7am)
- 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

4 NOISE SURVEYS

4.1 Methodology

An unattended noise level survey was carried out from Tuesday 4th to Monday 9th March 2026 in which noise levels were measured at position LT1 which is at the southwest corner of the roof of the existing hotel building, as indicated in Figure 1. The microphone of the sound level meter was mounted on a tripod at a height of approximately 1.7m above the roof level.

Whilst position LT1 is closer to the M4 than the proposed development, its elevation provides a clearer view which is not obstructed by the existing acoustic fence along the edge of the motorway (unlike positions at ground level in the vicinity of the car park). It therefore provides a good representation of motorway noise level. The effects of attenuation with increased distance from the motorway are addressed though noise mapping of the site (see Section 5). Noise mapping also accounts for the noise screening effects of the existing walls and barriers at lower levels.

Octave-band and A-weighted noise levels were logged continuously and recorded at consecutive 5-minute intervals throughout the survey periods.

There were light winds and intermittent periods of rain during the survey period, according to local weather station data.

The calibration of the sound level meter was checked at the beginning and end of each survey. No significant calibration deviation occurred. Details of the instrumentation used are provided in Appendix C.

4.2 Noise Survey Results

A summary of the relevant noise survey measurement data is presented in Table 3 which sets out the results of the unattended survey in terms of the $L_{Aeq,T}$, L_{AFmax}, and $L_{AF90,5min}$ noise indicators. The octave-band $L_{eq,T}$ data is provided in Table 4.

A log of the unattended noise survey data is provided graphically in Appendix D.

Start Date	Time Period	$L_{Aeq,T}$	L_{AFmax} *	$L_{AF90,5min}$ **
04/03/2026	Daytime 07:00-23:00	71	-	69
	Night-time 23:00-07:00	69	76	61
05/03/2026	Daytime 07:00-23:00	71	-	69
	Night-time 23:00-07:00	68	75	60
06/03/2026	Daytime 07:00-23:00	71	-	69
	Night-time 23:00-07:00	69	75	62
07/03/2026	Daytime 07:00-23:00	72	-	71
	Night-time 23:00-07:00	69	75	62
08/03/2026	Daytime 07:00-23:00	72	-	70

Table 3: Unattended noise survey data summary (LT1)

* Level not exceeded more than 10-15 times during night-time period

** Typical minimum level

Start Date	Time Period	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
04/03/2026	Daytime 07:00-23:00	66	65	64	66	69	64	50
	Night-time 23:00-07:00	63	63	62	63	67	62	48
05/03/2026	Daytime 07:00-23:00	66	65	64	65	69	63	49
	Night-time 23:00-07:00	62	62	60	63	66	60	47
06/03/2026	Daytime 07:00-23:00	64	63	63	64	69	65	57
	Night-time 23:00-07:00	61	61	59	61	66	63	52
07/03/2026	Daytime 07:00-23:00	64	64	62	65	70	65	52
	Night-time 23:00-07:00	61	61	59	61	67	61	48
08/03/2026	Daytime 07:00-23:00	64	64	62	65	70	65	51

Table 4: Unattended octave-band $L_{eq,T}$ data (LT1), free field

4.3 Analysis

The site lies outside of the most recently published Heathrow Airport 54dB $L_{Aeq,16hr}$ and 48dB $L_{Aeq,8hr}$ noise contours. The measured noise levels are significantly higher than this, therefore it is assumed that the M4 motorway is the dominant noise source and that aircraft noise is not a governing constraint. This is also consistent with site observations.

No significant fire station activity was observed during two visits to site. Whilst there may be some intermittent noise associated with activities in the external yard, it is reasonable to assume that this would be negligible relative to the near-constant noise generated by the M4 motorway.

The assessment is based on the following assumed worst-case noise levels at position LT1:

- **72dB $L_{Aeq,07:00-23:00}$ daytime**
- **69dB $L_{Aeq,23:00-07:00}$ night-time**
- **76dB L_{AFmax} night-time**

5 NOISE MAPPING

An acoustic model of the site has been developed in the SoundPLAN software package which incorporates the existing and proposed buildings, local topography, existing road noise sources and the existing acoustic fencing that lines the M4.

Each carriageway of the M4 is modelled as an area source with an octave band sound power established by comparing the level calculated in the model output to the noise survey $L_{eq,T}$ measurement data.

The model incorporates the proposed development in order to predict the environmental noise levels at the building facades. The predicted noise levels are higher at the upper floors where they do not experience any significant attenuating effect due to the existing acoustic fencing. The predicted incident noise levels at the 4th floor windows areas indicated in Figure 3.

The resultant daytime and night-time $L_{Aeq,T}$ noise contour maps are presented Appendix E.

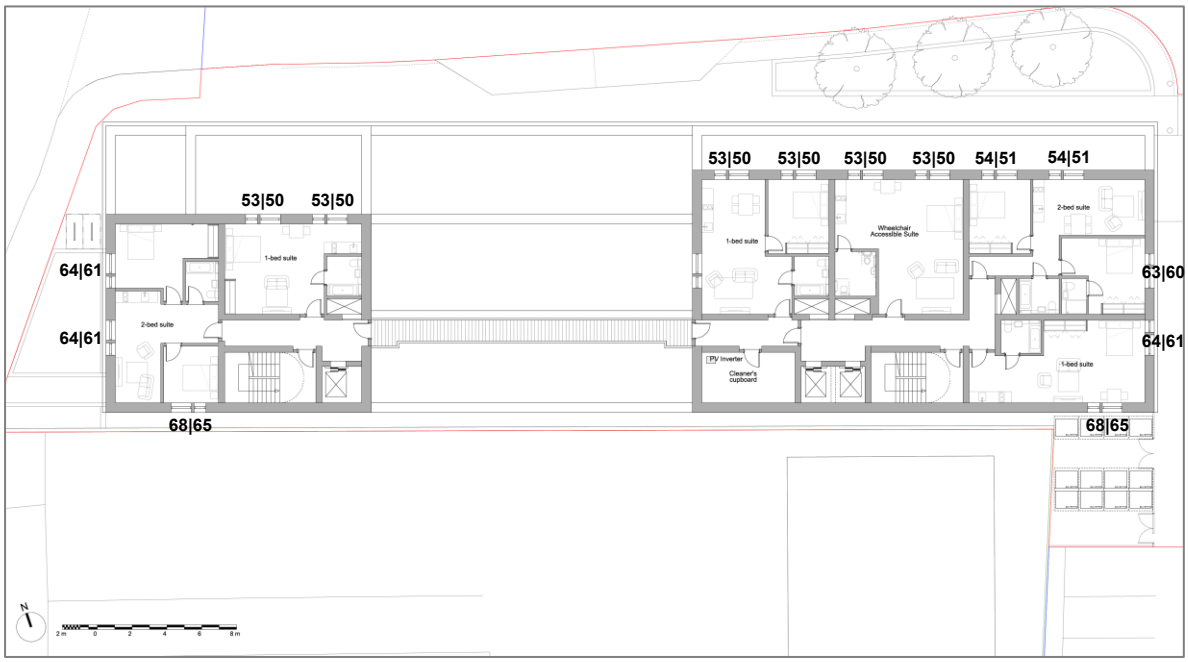


Figure 3: Predicted noise levels at 4th floor windows ($L_{Aeq,16hr}$|$L_{Aeq,8hr}$)

6 ENVIRONMENTAL NOISE ASSESSMENT

6.1 Noise Exposure

The highest noise exposure at windows on each building elevation is as set out below in Table 5. Also provided in Table 5 is the corresponding risk of adverse effect (where no effective mitigation is provided) according to the ProPG assessment scale.

Elevation	Daytime	Night-time		ProPG Noise Risk
South	68dB $L_{Aeq,07:00-23:00}$	65dB $L_{Aeq,23:00-07:00}$	71dB L_{AFmax} (typical)	High
East	64dB $L_{Aeq,07:00-23:00}$	61dB $L_{Aeq,23:00-07:00}$	71dB L_{AFmax} (typical)	Medium - High
North	53dB $L_{Aeq,07:00-23:00}$	50dB $L_{Aeq,23:00-07:00}$	59dB L_{AFmax} (typical)	Low
West	64dB $L_{Aeq,07:00-23:00}$	61dB $L_{Aeq,23:00-07:00}$	69dB L_{AFmax} (typical)	Medium - High

Table 5: Incident noise levels at each elevation (free-field)

It can be seen that the highest noise levels occur on the southern elevation which faces towards the motorway. The development proposals have responded by locating the large majority of the habitable room windows on the east, west and north elevations. Just two habitable rooms on each floor have windows on the south elevation. There are also relatively high noise levels on the east and west facades, both of which have just two habitable room windows per floor. The majority of habitable rooms are on the long north façade which is well protected and is predicted to experience comparatively low noise levels.

It is therefore considered that the proposed scheme responds well to the environmental noise environment, reducing the risks associated with high noise exposure at most units via orientation and the internal arrangement.

However, for those units which have windows on the south, east and west elevations, it will be necessary for the building facade to provide adequate sound insulation (see 6.2) to achieve suitable internal noise conditions and for an appropriate ventilation / overheating mitigation strategy to be adopted (see 6.3).

6.2 Building Façade Sound Insulation

Based on the predicted façade noise exposure levels, calculations have been carried out to derive a sound insulation performance specification for window units to achieve internal noise levels in accordance with BS8233:2014 and WHO guidance. See Table 6, which also includes examples of glazing configurations which have been found in laboratory testing to be capable of providing the required level of sound insulation.

The calculations are based on the worst-case noise exposure levels on each elevation, room dimensions and window sizes as per the planning issue architectural drawings. The calculations assume typical room furnishings, resulting in a reverberation time of 0.5s in living rooms and 0.4s in bedrooms.

Elevation	Sound Reduction Index	Typical Glazing Configuration
South	36(-5)dB R_w (+C_{tr})	A) 6 mm Optifloat, 16 mm argon, 6.8 mm Pilkington Optiphon B) 8mm Optifloat, 12mm argon, 6mm Optifloat, 12mm argon, 6mm Pilkington Optifloat
East & West	31(-4)dB R_w (+C_{tr})	A) 6 mm Optifloat, 12 mm argon, 6mm Optifloat B) 4mm Optifloat, 12mm argon, 4mm Optifloat, 12mm argon, 4mm Optifloat
North	29(-4)dB R_w (+C_{tr})	A) 4 mm Optifloat, 12 mm argon, 4mm Optifloat B) 4mm Optifloat, 12mm argon, 4mm Optifloat, 12mm argon, 4mm Optifloat

Table 6: Proposed sound insulation performance specifications for windows

Independent laboratory test data should be provided by the manufacturers of the proposed window units to confirm that they achieve the stated sound insulation requirements, both in terms of R_w and R_w+C_{tr}. The acoustic performance specification applies to window units as a whole, including the glazing, seals and frames.

The external wall constructions are subject to detailed design but would typically provide a sound insulation performance much higher than the glazing and consequently have minimal impact on the overall level of noise ingress. A modest sound reduction index of 50dB R_w has been assumed for the purposes of this assessment.

This assessment indicates that it will be feasible to achieve internal noise levels in line with BS8233:2014 and WHO guidelines while windows are closed, provided windows are specified appropriately. Window manufacturer data indicates that there are various double and triple glazing configurations and frame combinations which are capable of achieving the acoustic performance requirements.

6.3 Ventilation and Overheating

Building Regulations Approved Document Part O (2021) states that bedroom windows are likely to be closed during sleeping hours if internal noise levels exceed the following limits:

- 40dB $L_{Aeq,T}$ averaged over 8 hours (between 11pm and 7am)
- 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

These limits relate to the internal noise level within bedrooms at night. Part O doesn't include any particular noise criteria for daytime noise levels or for living rooms / kitchens at any time.

An assessment indicates that the external noise levels would cause the Part O criteria to be exceeded in bedrooms with windows on the south, east and west elevations if windows were

left open. The overheating assessment should therefore assume that bedroom windows on the south, east and west elevations will generally be kept closed at night. Alternative means of ventilation and avoiding overheating may be required.

Due to the relatively low noise exposure at the northern elevation, it does not need to be assumed that north-facing bedroom windows will be kept closed at night, therefore a natural ventilation strategy is not excluded due to noise exposure for these rooms.

7 PLANT NOISE ASSESSMENT

It is currently proposed that VRF condenser units providing heating and cooling will be located at roof level. In addition, an air handling unit (AHU) will be located within a third-floor plant room. At the time of writing, the exact equipment specifications, sound power levels and number of units have not been confirmed, as the M&E design will be developed at a later stage.

The nearest noise-sensitive receptor is Elm View House, located at the corner of Shepiston Lane and Arlington Court, approximately 20m from the main roof of the proposed development. The roof of the proposed building is approximately 10m higher than the rooflight windows at Elm View House. As such, the line of sight between the proposed rooftop plant and these receptors is expected to be screened by the roof parapet (assuming a typical VRF unit height of approximately 1.9m). This arrangement would typically provide screening attenuation on the order of 10 dB or more, depending on the final plant layout and positions.

The assessment of plant noise impact will be undertaken in accordance with BS 4142:2014+A1:2019, whereby the rating level of plant noise at nearby noise-sensitive receptors is compared to the prevailing background sound level.

Based on the noise survey data and calibrated noise modelling, a representative background noise level at Elm View House has been estimated to be approximately 45dB L_{AF90} during the daytime and 42dB L_{AF90} during the night-time period. These levels reflect the reduced influence of the M4 motorway at this location due to distance and screening from existing and proposed structures.

By way of preliminary assessment, four notional VRF units have been considered, each with a typical free-field sound pressure level of approximately 65dB(A) at 1m. Allowing for attenuation over distance and a conservative allowance for screening by the roof structure, the resultant cumulative plant noise level at Elm View House is estimated to be approximately 35 dB(A).

No acoustic character corrections (e.g. tonality or intermittency) have been applied at this stage. On this basis, the resultant rating level would be at least 7 dB below the representative night-time background sound level. In accordance with BS 4142, this would be indicative of a low impact, depending on context.

Noise emissions from the AHU serving the development will be controlled through the selection of appropriate plant and atmospheric-side attenuation, such that external noise levels meet the adopted BS 4142 design criterion at nearby receptors.

A detailed plant noise assessment will be undertaken once the final plant selections and layouts are confirmed. However, this preliminary assessment demonstrates that it is feasible to design the building services such that noise from fixed plant does not exceed the prevailing background sound level at nearby residential receptors, thereby avoiding significant adverse impacts on residential amenity in accordance with national and local planning policy.

This requirement may be secured by an appropriately worded planning condition.

APPENDIX A - GLOSSARY OF ACOUSTIC TERMINOLOGY

SOUND PRESSURE LEVEL, SPL or L_P

A measure of the pressure caused by a sound wave at a point in space, given by:

$SPL(dB)=20.\log_{10}(\text{Sound Pressure (Pa)}/P_0)$

P_0 is the reference sound pressure of 20μPa, which corresponds to the approximate threshold of hearing at 1kHz.

SOUND POWER LEVEL, SWL or L_W

A measure of the total sound energy radiated by a source in all directions, given by

$SWL(dB)=10.\log(\text{Sound Power(W)}/W_0)$

W_0 is the reference sound power of 1pW.

EQUIVALENT CONTINUOUS A-WEIGHTED, $L_{Aeq,T}$

The level of a notional continuous sound that contains the same sound energy as the actual fluctuating sound over the time period, T. Weighted over frequencies to approximate the sensitivity curve of human hearing (A-weighted).

BACKGROUND NOISE LEVEL, $L_{AF90,T}$

The A-weighted sound pressure level of a fluctuating sound that is exceed for 90% of the time interval, T.

A-WEIGHTED MAXIMUM NOISE LEVEL, L_{AFmax}

The maximum A-weighted sound pressure level in a given period, measured using the “fast” time constant.

SOUND REDUCTION INDEX, R

The quantity which describes the level by which a material or building element reduces noise transmission at a given frequency, derived from laboratory measurement.

WEIGHTED SOUND REDUCTION INDEX, R_W

Single Integer number found by comparing the measured Sound Reduction Index spectrum with the 'standard' curves for airborne sound insulation, according to a weighting method described in BS EN ISO 717-1.

ELEMENT NORMALIZED LEVEL DIFFERENCE, $D_{n'e'w}$

A measure of the sound reduction of a particular element, with the equivalent area of acoustic absorption in the receiver room normalized to the reference absorption area ($10m^2$).

SPECTRUM ADAPTATION TERMS, C and C_{tr} (dB)

These are the values to be added to D_w, R_w or $D_{n'e'w}$ values to take account of the characteristics of a particular sound spectra. C corresponds to pink noise spectra and C_{tr} corresponds to typical urban traffic noise spectra.

APPENDIX B - PROPOSED PLANS

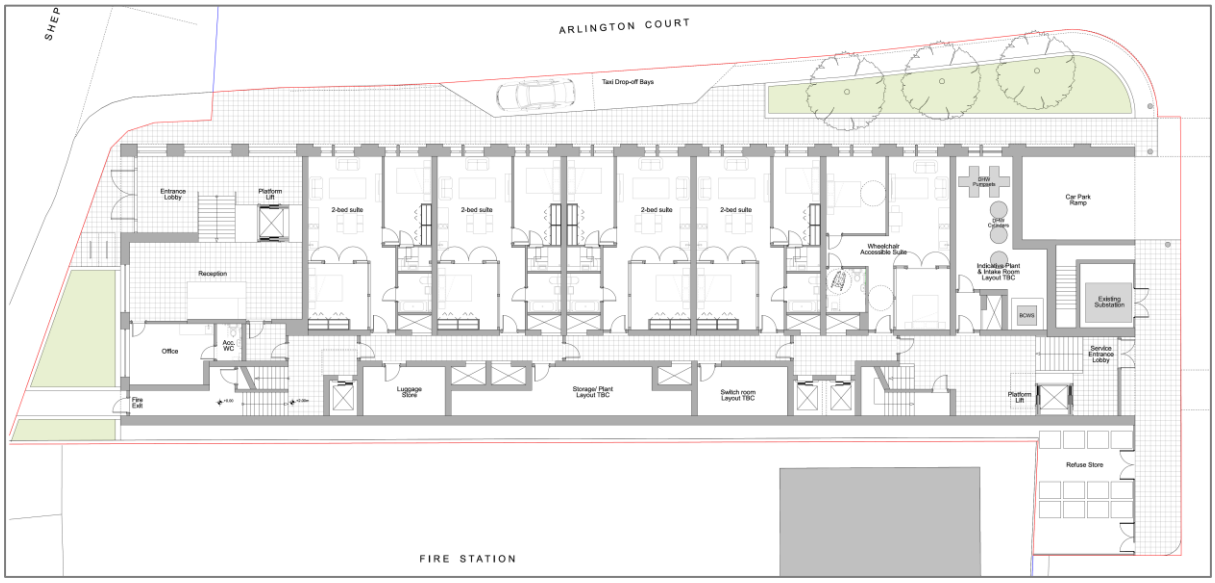


Figure 4: Proposed ground floor plan

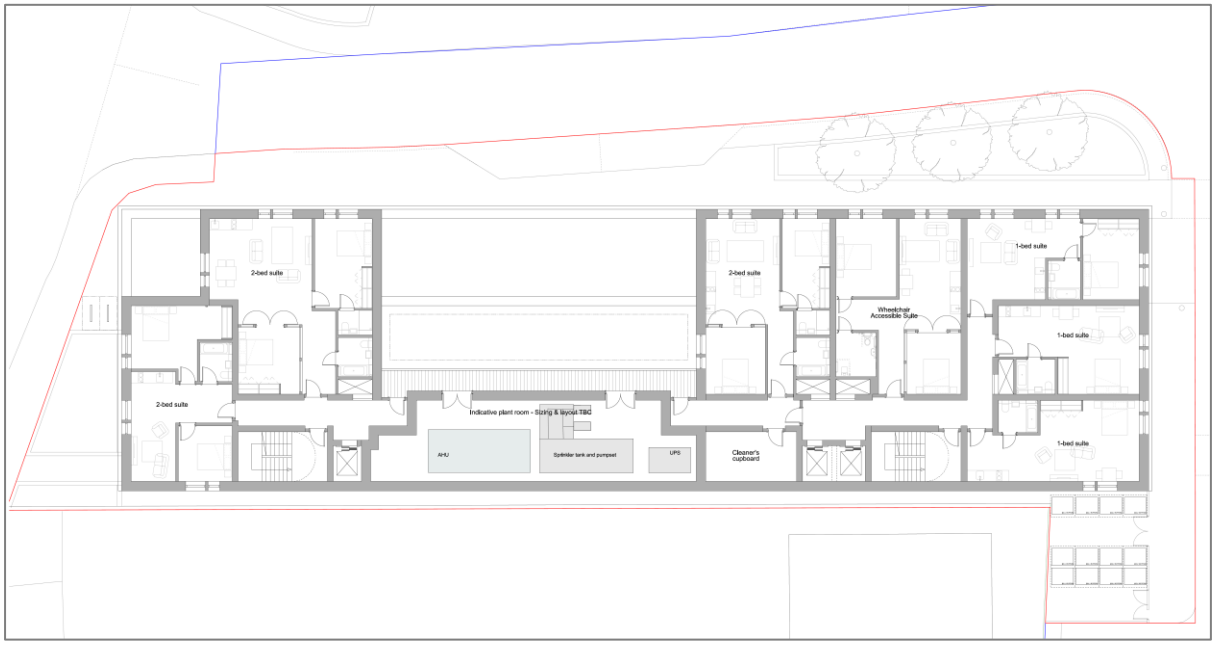


Figure 5: Proposed 3rd floor plan

APPENDIX C - NOISE MONITORING EQUIPMENT DETAILS

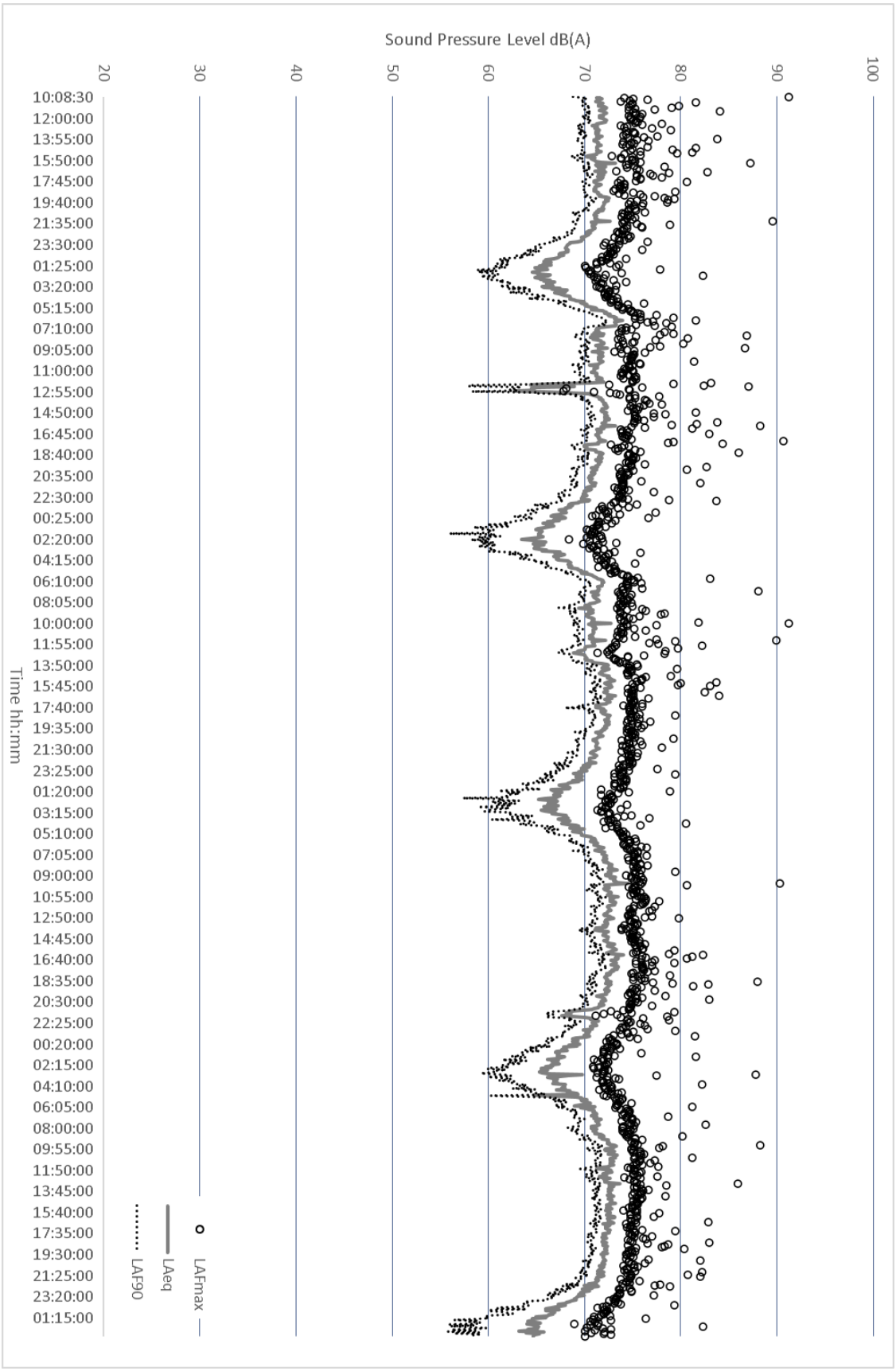
The measurements were made with an NTi XL2 acoustic analyser, using a GRAS weather protection kit. This equipment complies with BS EN IEC 61672 class 1. The meter used a NTi MC230 free-field response microphone and NTi MA220 microphone pre-amplifier.

The calibration of the sound level meter was checked at the beginning and end of measurements with a Norsonic Nor 1251 sound calibrator, complying with BS EN IEC 60942 class 1. No significant calibration deviation occurred.

The table below lists the serial numbers and last calibration dates of the equipment used.

Description	**Serial No.**	**Calibration Date**
NTi XL2 Sound Level Meter	A2A-16249-E0	19/12/2024
NTi MC230A Condenser Microphone	A17342	19/12/2024
NTi MA220 Pre-Amplifier	8450	19/12/2024
Norsonic Nor 1251 Sound Calibrator	17266	09/01/2026

APPENDIX D - NOISE SURVEY DATA



APPENDIX E - NOISE MAPS

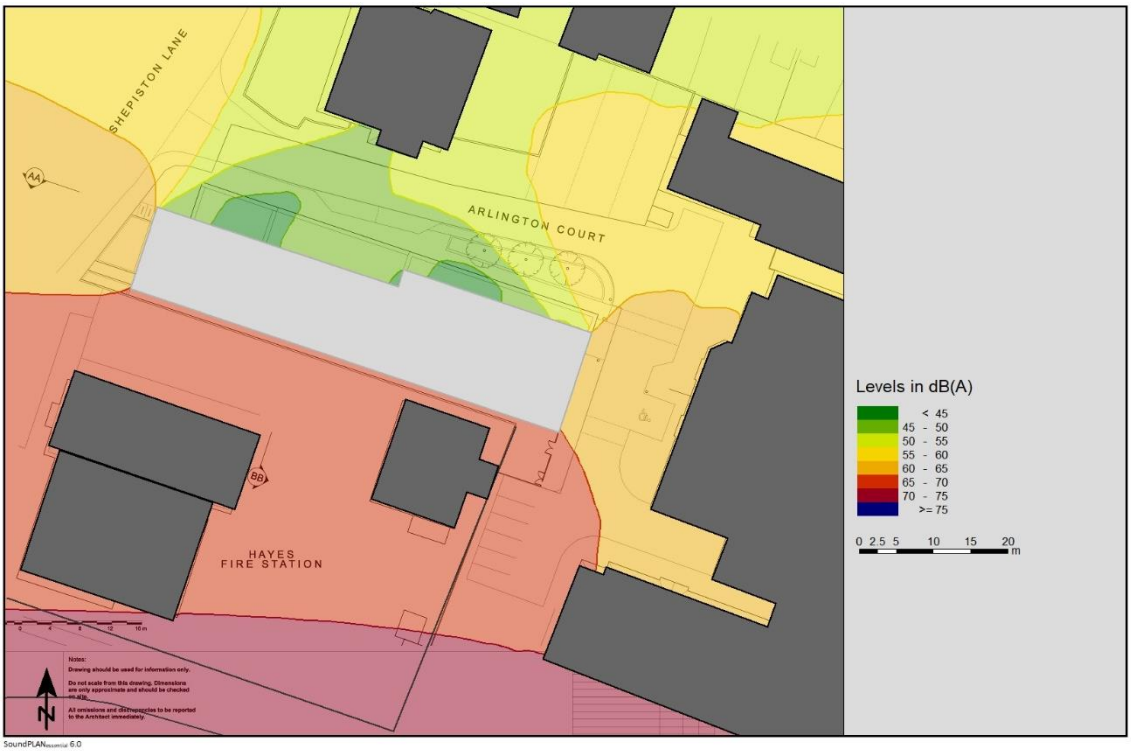


Figure 6: $L_{Aeq,T}$ daytime noise at 10m height

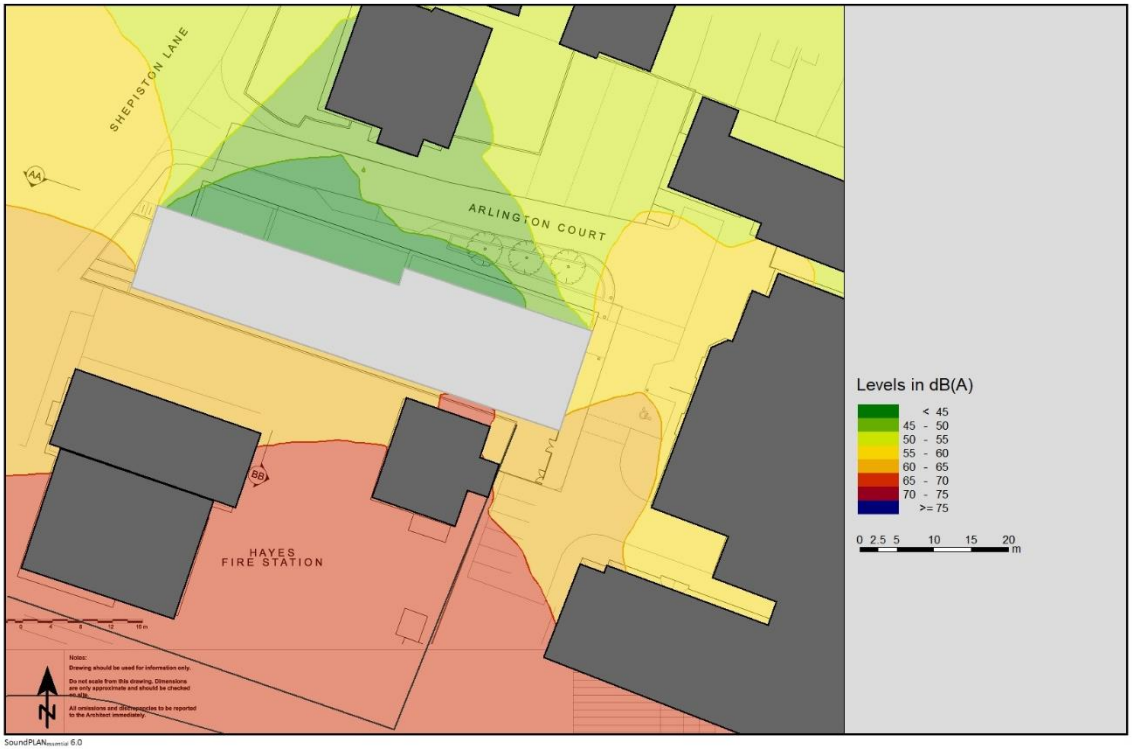


Figure 7: $L_{Aeq,T}$ night-time noise at 10m height