



**HEALEY DEVELOPMENT SOLUTIONS
(HAYES) LIMITED**

**9 NESTLE AVENUE, HAYES
LONDON UB3 4SA**

NOISE AND VIBRATION ASSESSMENT

AUGUST 2020



the journey is the reward

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AUGUST 2020

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**Proposed Mixed Use Development
9 Nestles Avenue, Hayes, London UB3 4SA
Noise and Vibration Assessment**

List of Contents

Sections

1	Introduction	1
2	Site Location	4
3	Proposed Development.....	6
4	Planning Policy Context	10
5	Baseline Noise Conditions	28
6	Stage 1 Initial Noise Risk Assessment	41
7	ProPG Stage 2 Detailed Assessment.....	45
8	Development of the Area.....	66
9	Vibration.....	83
10	Plant Noise Emissions.....	86
11	Operational Traffic	90
12	Construction Noise and Vibration.....	91
13	Conclusions	96

Figures

Figure 2.1: Site in Relation to the Local Highway Network.....	4
Figure 2.2. Site Location	5
Figure 3.1: Proposed Ground Floor Plan	6
Figure 3.2: Proposed First Floor Plan	6
Figure 3.3: Proposed Second/Third Floor Plan.....	7
Figure 3.4: Proposed Fourth Floor Plan	7
Figure 3.5: Proposed Fifth Floor Plan	7
.....	8
Figure 3.6: Proposed Sixth Floor Plan	8
Figure 3.7: Proposed Seventh/Eighth Floor Plan	8
Figure 3.8: Proposed Ninth Floor Plan	8
.....	9

Figure 3.9: Proposed Tenth Floor Plan	9
Figure 4.1. Site Location	19
Figure 4.2: ProPG Stage 1 Initial Noise Risk Assessment	26
Figure 5.1: Automated Noise Monitoring Location	28
Figure 5.2: Manned Noise Survey Locations	31
Figure 5.3: Automated Noise Survey Location – 2019 Survey	35
Figure 5.4: Positioning of Noise Monitoring Equipment.....	36
Figure 5.5: Time History Profile – Monitoring Position A1	36
Figure 5.6: Catering Trailer and Associated Generator	37
Figure 5.7: Time History Profile – Monday 5 August 2019	38
Figure 5.8: Time History Profile – Sunday 4 August 2019.....	39
Figure 6.1: Daytime Noise Model ($L_{Aeq, 16hour}$).....	41
Figure 6.2 Night-time Noise Model at 4m ($L_{Aeq, 8hour}$).....	42
Figure 6.3 Daytime Initial Site Noise Risk Assessment – 1.5m Grid Height	43
Figure 6.4: Night-time Initial Site Noise Risk Assessment – 4m Grid Height	44
Figure 7.1: Calculation of Barrier Path Difference.....	46
Figure 7.2: Illustrative Development Noise Model: Daytime 2 nd Floor Level	48
Figure 7.3: Illustrative Development Noise Model: Daytime 6 th Floor Level.....	49
Figure 7.4: Illustrative Development Noise Model: Daytime 9 th Floor Level.....	49
Figure 7.5: Illustrative Development Noise Model: Night-time 2 nd Floor Level	50
Figure 7.6: Illustrative Development Noise Model: Night-time 6 th Floor Level.....	50
Figure 7.7: Illustrative Development Noise Model: Night-time 9 th Floor Level.....	51
Figure 7.8: Building Evaluation Highest Daytime Predicted $L_{Aeq, 16hour}$ Noise Levels..	52
Figure 7.9: Building Evaluation Highest Daytime Predicted $L_{Aeq, 8hour}$ Noise Levels...	52
Figure 7.10: ANC AVOG Guidance – Level 1 Assessment.....	56
Figure 7.11: ANC AVOG Qualitative guidance on combined effect of internal ambient noise level and duration for the overheating situation.....	57
Figure 7.12: Initial AVOG Risk Assessment for Open Windows: Daytime 2 nd Floor..	58
Figure 7.13: Initial AVOG Risk Assessment for Open Windows: Daytime 6 th Floor...	58
Figure 7.14: Initial AVOG Risk Assessment for Open Windows: Daytime 9 th Floor...	59
Figure 7.16: Initial AVOG Risk Assessment for Open Windows: Night-time 6 th Floor	60
Figure 7.17: Initial AVOG Risk Assessment for Open Windows: Night-time 9 th Floor	60
Figure 8.1: Site Allocation SA5 – Land to the South of the Railway, including Nestle Site	66
Figure 8.2: Masterplan Proposals for Former Nestles Factory Site.....	67
Figure 8.3: Current Construction Progress of “Site A”	68

Figure 8.4: Squirrels Trading Estate.....	69
Figure 8.5: Noise Levels Measured at Position M2 (12.00 to 13.45).....	69
Figure 8.6: Noise Levels Measured at Position M2 (12.00 to 13.45).....	70
Figure 8.7: Proposed Internal Arrangement of Block D: 4 th Floor.....	73
Figure 8.8: View from Squirrels Trading Estate to New Residential.....	74
Figure 8.9: Permitted D1 Use of 7 Nestles Avenue	76
Figure 8.10: General Arrangement of Northern End of 7 Nestles Avenue	78
Figure 8.11: Comparison of Previous and Current Design Proposals – West of Building.....	81
Figure 8.12: Acoustic Screen to Balcony	82
Figure 9.1: Vibration Survey Location	83
Figure 10.1: Proposed Arrangement of External Plant and Acoustic Screen.....	86
Figure 10.2: Manufacturer’s Noise Data.....	87

Tables

Table 4.1: NPSE Guidance.....	12
Table 4.2: BS 8233 Indoor Ambient Noise Level Design Guidance	20
Table 4.3: BS4142 Character Correction for Rating Level	21
Table 5.1: Automated Noise Survey Locations	29
Table 5.2: Instrumentation Details.....	29
Table 5.3: Weather Conditions during the Survey Period.....	30
Table 5.4: Automated Noise Survey Locations	30
Table 5.5: Instrumentation Details.....	31
Table 5.6: Noise Measurement Results for Manned Survey Locations	32
Table 5.7: Summary of Measured Train Pass-By Noise Levels at M4	32
Table 5.8: Summary of Measured Train Pass-By Noise Levels at A1.....	33
Table 5.9: Summary of Measured Train Pass-By Noise levels at M2	33
Table 5.10: Number of Passing trains per hour Hayes & Harlington Station.	34
Table 6.1: ProPG Initial Site Risk Assessment Categorisation.....	42
Table 8.1: Planning Register Records for 7 Nestles Avenue.....	76
Table 9.1: Instrumentation used on the vibration survey	84
Table 9.2: Typical hour VDV values at V1 location.....	84
Table 9.3: VDV day and night calculated values.....	84
Table 10.1: Minimum Insertion Loss for Acoustic Louvred Enclosure Plant Noise Data	
Table 10.2: Recommend Rating Level ($L_{A,T}$) for Process/Fixed Plant	88

Table 10.3: Predicted Noise Levels Based on Preliminary Noise Data.....	89
Table 11.1: Net Change in Trip Generation.	90
Table 12.1: Definitions of Magnitude of Effect – Construction Noise	93
Table 12.2 Vibration Thresholds for Cosmetic Damage to Buildings	94
Table 12.3 Definitions of Magnitude of Effect – Construction Vibration: Human Comfort.....	94

Appendices

APPENDIX A: Glossary of Acoustic Terminology

APPENDIX B: Noise Monitoring Results - 2018 Survey

APPENDIX C: Noise Monitoring Results - 2019 Survey

APPENDIX D: Environmental Health Consultation Response for 51175/APP/2018/4260

APPENDIX E: LPA Statement of Case for 51175/APP/2018/4260

1 Introduction

- 1.1 Mayer Brown Ltd has been commissioned by Healey Development Solutions (Hayes) Limited to prepare this Noise and Vibration Assessment which accompanies a planning application for a new residential development at 9 Nestles Avenue, Hayes, London UB3 4SA.
- 1.2 The development proposals seek the demolition of the existing building occupying the site and redevelopment to provide an 11 storey building delivering 103 residential units with associated landscaping, access, car parking and cycle parking.
- 1.3 A previous planning application (LPA case reference 51175/APP/2018/4260) for a mixed-use development at 9 Nestles Avenue was appealed for non-determination on 7 June 2019 and subsequently refused by Members of the LBH's Major Application Planning Committee on 19 June 2019, citing eleven reasons for refusal.
- 1.4 The fifth reason for refusal related to perceived noise impact of the scheme and stated that:

"The development provides a high proportion of single aspect dwellings and dwellings with their sole aspect facing towards Strategic Industrial Land. The development fails to provide sufficient separation from the western boundary of the site to mitigate against a potential noise generating use on the neighbouring site and as such, the proposal fails to take responsibility for mitigating impacts from existing noise-generating activities or uses on the proposed new noise-sensitive residential development and thereby fails to provide a suitably high quality of residential amenity for future occupiers contrary to Policy BE1 of the Local Plan: Part One (November 2012); Policy OE1 of the Local Plan: Part Two (November 2012) and Policy 7.15 of the London Plan (2016) and Paragraph 182 of the NPPF (2019)."

- 1.5 Following the submission of additional evidence in response to LBH's Statement of Case and detailed technical discussions with an external acoustic consultant (Anderson Acoustics) commissioned by LBH to represent them at the appeal, noise was not pursued as a reason for refusal.
- 1.6 Notwithstanding the above, the appeal was dismissed following a Public Inquiry held between 18th and 21st February 2020. This report accompanies a revised application which seeks to address the reasons for the dismissal of the Appeal. Changes implemented in the revised proposals include:

Noise and Vibration Assessment

- A reduction in the ground floor footprint of the building (by around 35%);
- The removal of ground floor commercial accommodation;
- The introduction of new duplex flats at ground and first floor level to the eastern and southern boundaries;
- The introduction of some car parking at ground floor level (for disabled occupants and the larger three bed units);
- The incorporation of a part basement to accommodate plant; and
- A marginal increase in height (less than an additional full storey of accommodation).

1.7 This revised Noise and Vibration Assessment therefore seeks to amplify on those matters addressed in the aforementioned rebuttal reports, within the context of the revised development proposals.

1.8 The scope of this report is structured as follows:

- **Section 2** describes the location of the site in relation to the existing transport infrastructure and neighbouring land uses.
- **Section 3** outlines the development proposals.
- **Section 4** discusses national and local planning policy and ‘industry standard’ design guidance relevant to noise.
- **Section 5** presents the results of environmental noise monitoring at the site to determine existing noise levels;
- **Section 6** discusses the assessment methodology and the approach adopted to assessing noise impact;
- **Section 7** presents an initial risk assessment of noise conditions at the site in line with “Stage 1” of ProPG guidance;
- **Section 8** constitutes an “Acoustic Design Statement” encompassing ProPG “Stage 2” assessment requirements;
- **Section 9** discusses the development of the area in the wider context of strategic development;
- **Section 10** assesses the potential noise impact from existing industrial activity having specific regard to the “agent of change” principle introduced by paragraph 182 of the NPPF;
- **Section 11** presents the results of vibration monitoring and an initial screening assessment of potential vibration impacts;

Noise and Vibration Assessment

- **Section 12** sets out plant noise emission limits for the development and assesses noise emissions from proposed plant installations;
- **Section 13** assesses the operational (traffic) noise impacts of the scheme;
- **Section 14** provides guidance on the control of noise and vibration during the construction phase of the scheme;
- Conclusions are presented in **Section 15**.

A glossary of the acoustic terminology and nomenclature used in this report is attached at **Appendix A**.

2 Site Location

- 2.1 The site is located at 9 Nestle Avenue, Hayes, UB3 4SA.
- 2.2 The location of the proposed development in relation to the local highway network is shown in **Figure 2.1** below:

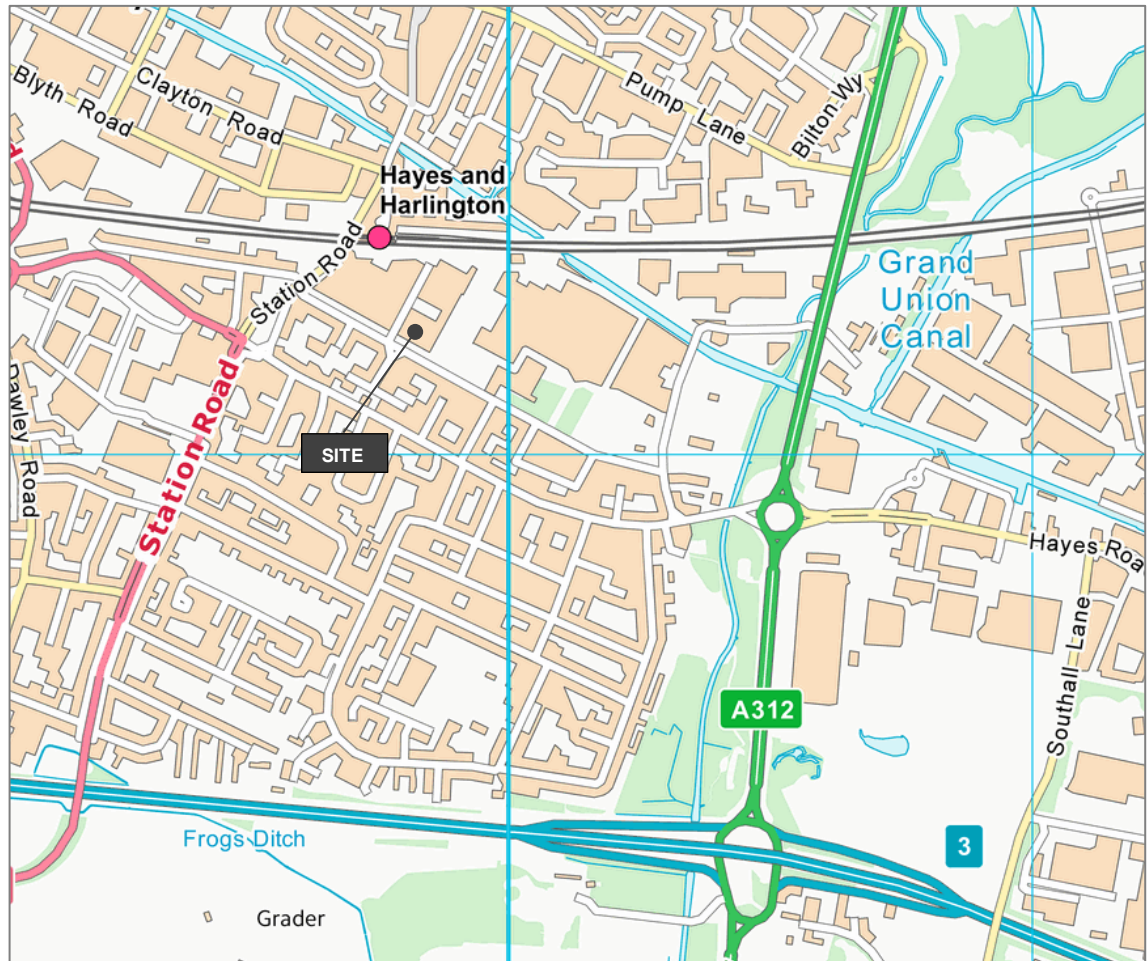


Figure 2.1: Site in Relation to the Local Highway Network

- 2.3 The site is located approximately 500 metres to the south-east of Hayes Town Centre, within a former industrial area bounded by Nestle Avenue to the south.
- 2.4 Hayes and Harlington railway station is located to the north, with the A312 (North Hyde Road) 150m to the south of the site and the M4 motorway approximately 900m to the south.
- 2.5 The site is accessed from Nestles Avenue, which is predominantly residential in character.

Noise and Vibration Assessment

- 2.6 To the west the site adjoins 7 Nestles Avenue. To the north, the site adjoins the Squirrels Trading Estate which has a variety of commercial/industrial uses. To the east, the site adjoins the former Nestles factory site, which has extant planning permission for mixed use redevelopment including the provision of up to 1,386 dwellings, office, retail, community and leisure uses and commercial floorspace (London Borough of Hillingdon planning ref. 1311/APP/2017/1883).
- 2.7 The site (shaded pink in **Figure 2.2** below) forms part of a wider site allocation promoted for residential led, mixed use development as set out in Policy SA5 of the London Borough Of Hillingdon's adopted "*Local Plan Part 2: Site Allocations and Designations*".

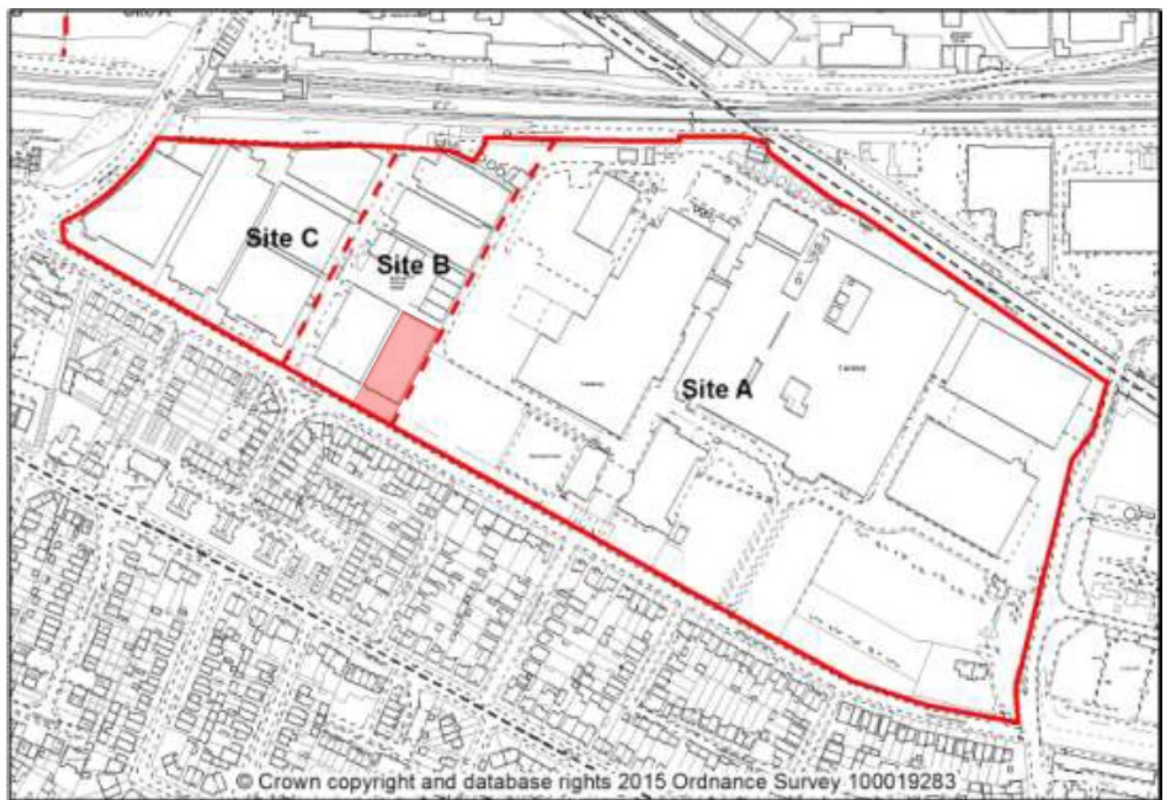


Figure 2.2. Site Location

Noise and Vibration Assessment

3 Proposed Development

- 3.1 The current development proposals seek to provide car parking at ground floor level and 103 new residential units with associated amenity areas on the upper floors.
- 3.2 The proposed general arrangement of the building is shown in **Figure 3.1** to **3.10** below:

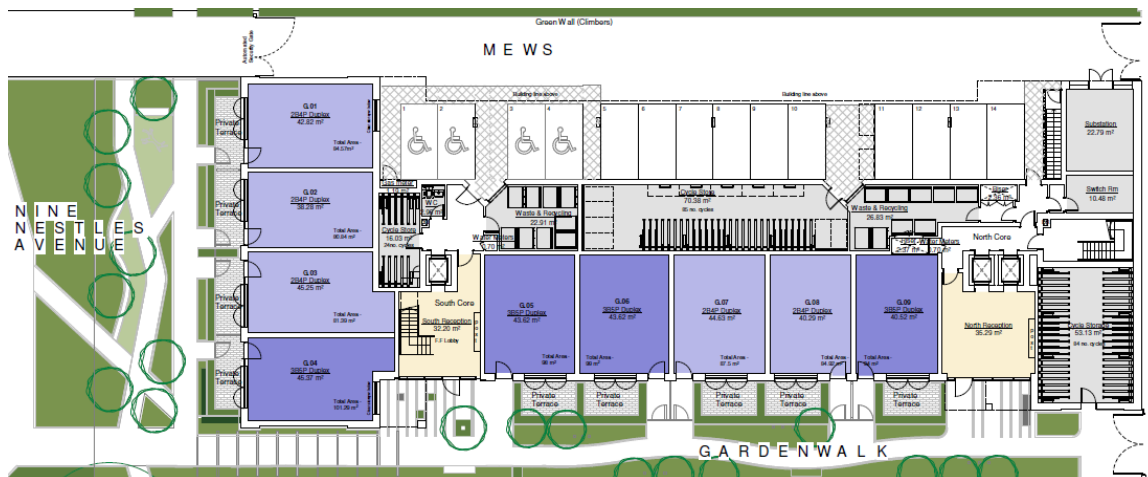


Figure 3.1: Proposed Ground Floor Plan



Figure 3.2: Proposed First Floor Plan

Noise and Vibration Assessment

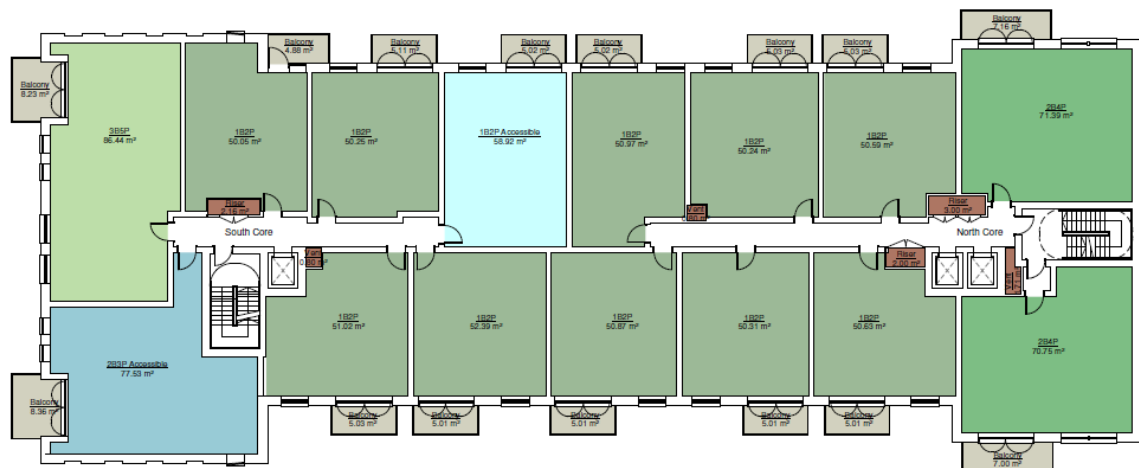


Figure 3.3: Proposed Second/Third Floor Plan

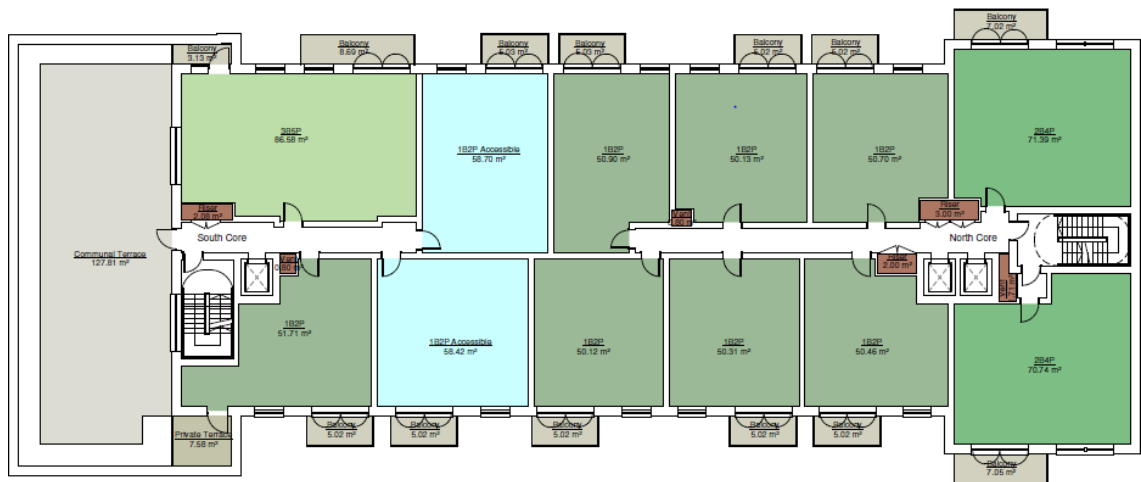


Figure 3.4: Proposed Fourth Floor Plan

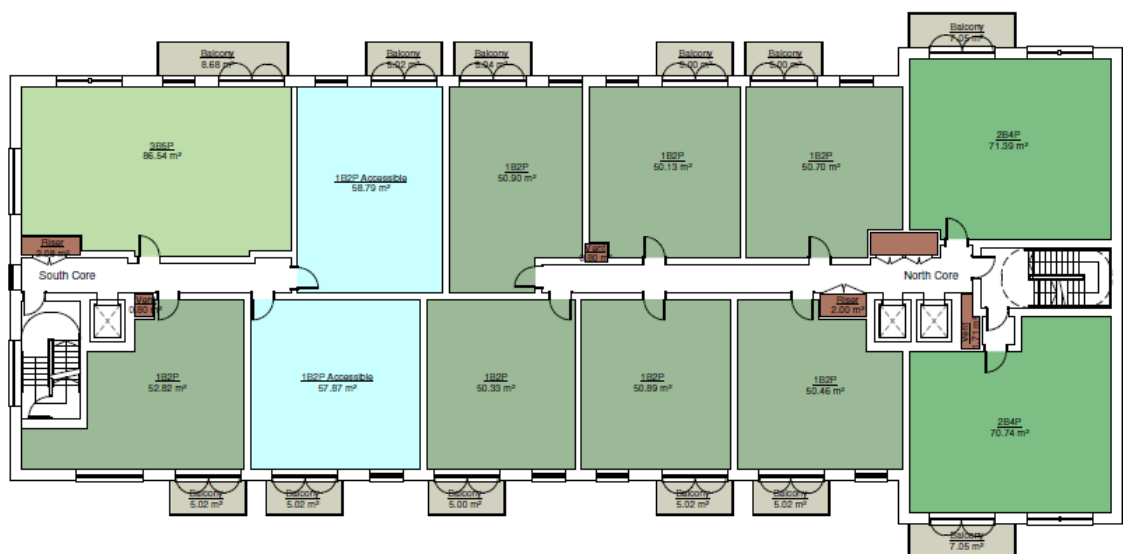


Figure 3.5: Proposed Fifth Floor Plan

Noise and Vibration Assessment



Figure 3.6: Proposed Sixth Floor Plan

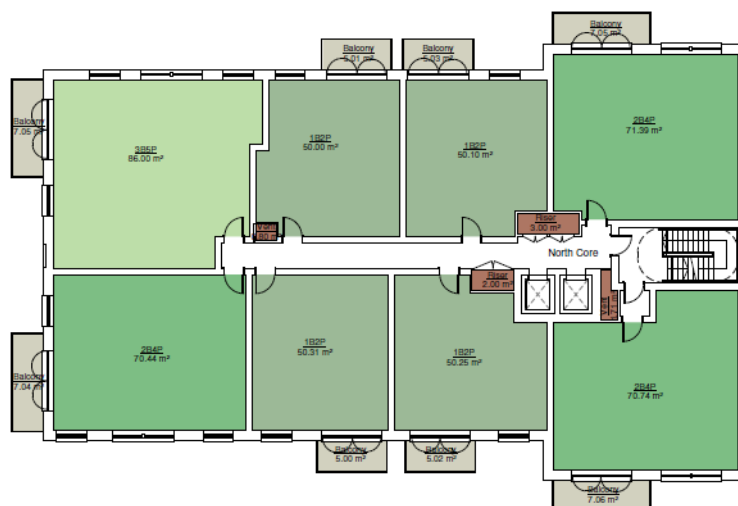


Figure 3.7: Proposed Seventh/Eighth Floor Plan

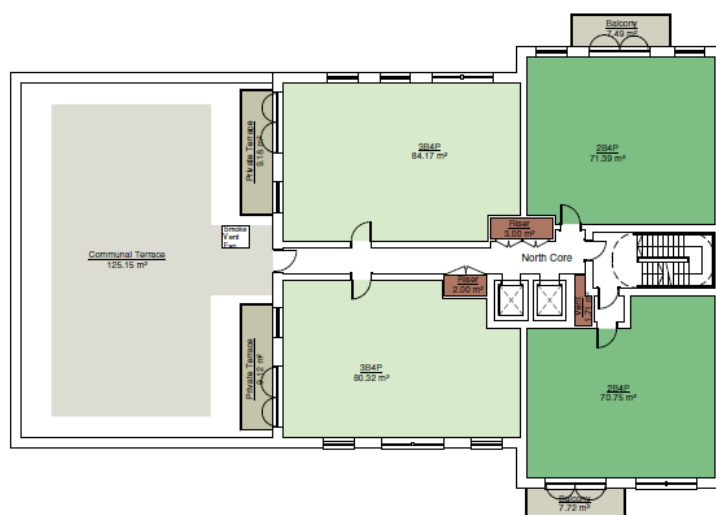


Figure 3.8: Proposed Ninth Floor Plan

Noise and Vibration Assessment

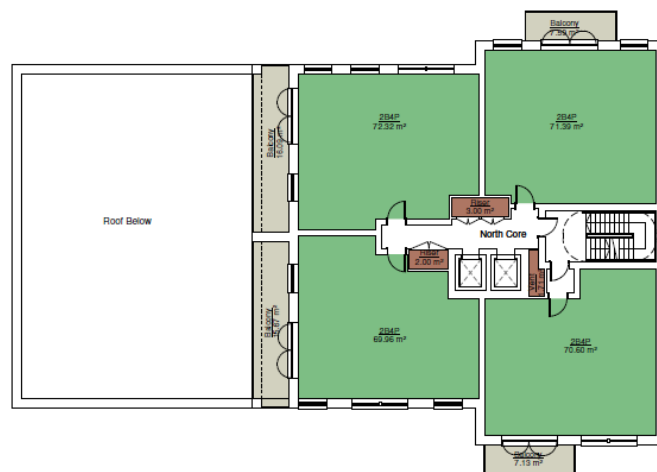


Figure 3.9: Proposed Tenth Floor Plan

4 Planning Policy Context

National Planning Policy

National Planning Policy Framework, (NPPF, 2019)

4.1 Current governmental guidance for the determination of planning applications is given in the revised “National Planning Policy Framework” (NPPF), published in February 2019.

4.2 Paragraph 170 of the NPPF advises:

“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.”

4.3 With specific regard to noise, paragraph 180 of the NPPF states:

““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; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”

4.4 Paragraph 182 of the NPPF draw specific attention to the need to ensure that new development is compatible with existing businesses and community facilities and introduces and “agent of change” principle:

“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

Noise and Vibration Assessment

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."

- 4.5 With regard to 'adverse' impacts and 'significant adverse' impacts, the NPPF directs the reader to the advice contained in DEFRA's "Noise Policy Statement for England" (NPSE). This Policy Statement introduces the concept of a "Significant Observed Adverse Effect Level" (SOAEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "No Observed Adverse Effect Level" (NOAEL). These are concepts aligned with toxicology outcomes derived from guidance given by the World Health Organisation.

Noise Policy Statement for England

- 4.6 Whilst the intent of the NPSE in relation to the NPPF is clear, the NPSE does not, at this time, provide any quantitative threshold values for each identified level of "effect". Indeed, the NPSE carefully highlights that:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

National Planning Practice Guidance

- 4.7 The application of national planning is amplified in the government's "Planning Practice Guidance" (PPG) (July 2019). This seeks to help clarify understanding the perception of noise effects, outcomes and actions that should be taken to align decision making with the NPPF. In line with the NPPF concept of basing decision making on the identification of "adverse" or "significant adverse" impacts on health and quality of life, the NPPG aligns its guidance with the NPSE.
- 4.8 The table below summarises this guidance:

Noise and Vibration Assessment

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
Present not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; closing 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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 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
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress or physiological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Table 4.1: Noise Exposure Hierarchy Table

Noise and Vibration Assessment

- 4.9 Paragraphs 009 (Ref. ID 30-009-20190722) and 010 (Ref. ID 30-010-20190722) of PPG provides the following guidance in relation to the interpretation of paragraph 182 of the NPPF:

“How can the risk of conflict between new development and existing businesses or facilities be addressed?”

Development proposed in the vicinity of existing businesses, community facilities or other activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme.

In these circumstances the applicant (or ‘agent of change’) will need to clearly identify the effects of existing businesses that may cause a nuisance (including noise, but also dust, odours, vibration and other sources of pollution) and the likelihood that they could have a significant adverse effect on new residents/users. In doing so, the agent of change will need to take into account not only the current activities that may cause a nuisance, but also those activities that businesses or other facilities are permitted to carry out, even if they are not occurring at the time of the application being made.

The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects, but can help to achieve a satisfactory living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring).

It can be helpful for developers to provide information to prospective purchasers or occupants about mitigation measures that have been put in place, to raise awareness and reduce the risk of post-purchase/occupancy complaints.

How can planning address the adverse effects of noise sources, including where the ‘agent of change’ needs to put mitigation in place?

This will depend on the type of development being considered the type of noise involved and the nature of the proposed location. In general, for developments that are likely to generate noise, there are 4 broad types of mitigation:

Noise and Vibration Assessment

- *engineering: reducing the noise generated at source and/or containing the noise generated;*
- *layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose built barriers, or other buildings;*
- *using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night, and;*
- *mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building.*

For noise sensitive developments, mitigation measures can include avoiding noisy locations in the first place; designing the development to reduce the impact of noise from adjoining activities or the local environment; incorporating noise barriers; and optimising the sound insulation provided by the building envelope. It may also be possible to work with the owners/operators of existing businesses or other activities in the vicinity, to explore whether potential adverse effects could be mitigated at source. Where this is the case, it may be necessary to ensure that these source-control measures are in place prior to the occupation / operation of the new development. Where multiple development sites would benefit from such source control measures, developers are encouraged to work collaboratively to spread this cost. Examples of source control measures could include increased sound proofing on a building (e.g. a music venue) or enclosing an outdoor activity (e.g. waste sorting) within a building to contain emissions.

Care should be taken when considering mitigation to ensure the envisaged measures do not make for an unsatisfactory development.

- 4.10 It is important to note that the above guidance makes clear that national planning policy does not seek to “prevent” residential development in areas that may experience a significant noise impact from existing commercial/industrial uses. Rather, any significant impacts must be acknowledged and suitable mitigation implemented within the scheme design proposals to avoid residual levels of noise that could cause “nuisance” to future occupants which may be actionable under other enforcement regimes.

Noise and Vibration Assessment

- 4.11 Whilst the NPPF and associated planning practice guidance sets out stringent imperatives to ensure the satisfactory development of land in relation to possible noise impacts, this policy and guidance does not provide any specific technical guidance defining what may be considered to constitute an “adverse” or “significant adverse” impact. The guidance does, however, make reference to a number of ‘industry standard’ guidance documents. Where available, technical noise standards supporting local planning policies can also be used to inform the assessment of potential noise effects.

Regional Planning Policy

- 4.12 The following regional planning policy applies to the site:

[The London Plan¹](#)

- 4.13 The London Plan is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years.

- 4.14 In Chapter 3 – London’s People, paragraph 3.11 states the following:

“Housing has a major impact on the health of residents, and the policies in this Plan are intended to enable Londoners to live in well designed, high quality homes, appropriately sized and energy efficient, warm and dry, safe, providing good access to high quality social infrastructure, green spaces, and limiting disturbance from noise...”

- 4.15 Policy 5.3, Sustainable design and construction states:

“Major development proposals should meet the minimum standards outlined in the Mayor’s supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

... minimising pollution (including noise, air and urban run-off)”

- 4.16 Chapter 7 – London’s Living Spaces and Places, paragraph 7.18, states the following:

“The effects of traffic can have a significant impact on the quality of the public realm in terms of air quality, noise and amenity of a space. The negative effects of traffic should be minimised to ensure people’s enjoyment of public realm is maximised.”

¹ The Greater London Authority (GLA) (2015) The London Plan. Spatial development strategy for London. Consolidated with alterations since 2011. GLA, London.

Noise and Vibration Assessment

- 4.17 Policy 7.15 – Reducing and managing noise, improving and enhancing the acoustic environment and promoting appropriate soundscapes states that:

“Strategic

A). The transport, spatial and design policies of this plan will be implemented in order to reduce noise and support the objectives of the Mayor’s Ambient Noise Strategy.

Planning decisions

B. Development proposals should seek to reduce noise by:

a) avoiding significant adverse noise impacts on health and quality of life as a result of new development;

b) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens on existing businesses;

c) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity);

d) separating new noise sensitive development from major noise sources (such as road, rail, air transport and some types of industrial development) through the use of distance, screening or internal layout – in preference to sole reliance on sound insulation;

e) where it is not possible to achieve separation of noise sensitive development and noise sources, without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through the application of good acoustic design principles;

f) having particular regard to the impact of aviation noise on noise sensitive development;

g) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

LDF preparation

C. Boroughs and others with relevant responsibilities should have policies to:

a) manage the impact of noise through the spatial distribution of noise making and noise sensitive uses;

Noise and Vibration Assessment

b) identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations"

4.18 The Mayor of London has published a draft replacement London Plan, with the Examination in Public held between January to May 2019. Further to recommendations made by a Panel of Inspectors, on the 8th December 2019 the Mayor issued his "*Intend to Publish London Plan*"². Draft policy D13 of the replacement plan introduces an "Agent of Change" principle which places the responsibility for mitigating impacts from existing noise generating activities or uses on proposed new sensitive development. In that regard, the Mayor's emerging city wide policy echoes obligations imposed by Paragraph 182 of the NPPF.

[Greater London Authority Ambient Noise Strategy](#)³

4.19 The Greater London Authority Ambient Noise Strategy considers a wide range of issues relating to noise which may affect this particular development. These include noise from transportation sources, known as ambient noise, and construction activities, which are described as neighbourhood noise.

4.20 The general objectives are identified as minimising the adverse impacts of road traffic noise and improving noise environments in London's neighbourhoods, especially for housing, schools, hospitals and other noise sensitive uses.

4.21 The strategy states the following policies for urban noise sensitive development:

"Policy 69

The London Plan, 2004 (Policy 4A.14) states that the Mayor will and boroughs should reduce noise by:

- *Minimising the existing and potential adverse impacts of noise on, from, within, or in the vicinity of, development proposals;*
- *Separating new noise sensitive development from major noise sources wherever practicable;*
- *Supporting new technologies and improved practices to reduce noise at source, especially in road, rail and air transport;*

² Greater London Authority (GLA). (2019). Mayor of London: The London Plan – Intend to Publish Version (Tracked). Spatial Development for Greater London

³ Greater London Authority (GLA). (2004). The Mayor's Ambient Noise Strategy. GLA, London.

Noise and Vibration Assessment

- *Reducing the impact of traffic noise through highway management and transport policies;*
- *Containing noise from late night entertainment and other 24-hour activities, and where appropriate promoting well-managed designated locations.”*

“Policy 70

The Mayor will, in strategic referrals which include residential development on sites with noise levels higher than Noise Exposure Category A of Planning Policy Guidance Note 24, or the equivalent level in any revision of guidance, seek specific evidence on the action to be taken to address noise.”

Local Planning Policy

4.22 In addition to national and city-wide policy, the London Borough of Hillingdon's Development Plan includes:

- The Hillingdon Local Plan: Part 1 - Strategic Policies (adopted 8 November 2012);
- The Hillingdon Local Plan: Part 2 – Development Management Policies (adopted 16 January 2020); and
- The Hillingdon Local Plan: Part 2 – Site Allocations and Designations (adopted 16 January 2020).

4.23 Policies relevant to noise in the above documents include:

Policy EM8: Land, Water, Air and Noise

(...) Noise

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.(...)”

Strategic Objective SO10:

Improve and protect air and water quality, reduce adverse impacts from noise

Noise and Vibration Assessment

including the safeguarding of quiet areas and reduce the impacts of contaminated land.

Policy DME 1: Employment Uses on Designated Employment Sites

....

E) Development adjacent to SILs, LSIS and LSELs must be located and/or designed so as to not to compromise the integrity or operation of these employment areas

- 4.24 As noted earlier, the site forms part of a wider site allocation promoted for residential led, mixed use development, as set out in Policy SA5 of the London Borough Of Hillingdon's adopted "*Local Plan Part 2: Site Allocations and Designations*". The land allocated under policy SA5 ("Land to the South of the Railway, including Nestle Site) is shown in Figure 4.? below. The proposals form part of "*Site B*", which is allocated to provide 300 residential units and the provision of appropriate community infrastructure to support the overall quantum of development, including education as necessary.



Figure 4.1. Site Location

- 4.25 With regard to the expected key principles for development, Policy SA5 identifies that the site allocation must "*Comprise a proportion of employment generating uses to be agreed with the Council. Suitable uses will include B1 and elements of B2 and B8 that are compatible with the residential elements of the scheme.*"

Noise and Vibration Assessment

Other Design Guidance

BS 8233: 2014; “Sound Insulation and Noise Reduction for Buildings

- 4.26 BS 8233: 2014 “Sound Insulation and Noise Reduction for Buildings” offers the following design guidance for indoor ambient noise levels within dwellings:

Activity	Location	07.00 to 23.00 hours	23.00 to 07.00 hours
Resting	Living Room	35dB $L_{Aeq,16hour}$	--
Dining	Dining Room/Area	40dB $L_{Aeq,16hour}$	--
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 4.2: BS 8233 Indoor Ambient Noise Level Design Guidance

- 4.27 A note accompanying the above Table states:
- “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.”*
- 4.28 Despite identifying that maximum values ‘may’ be set, guidance values for differing types of noise/frequency of events is not given. It can, however, be noted that the recommendations of BS8233 are aligned with guidance set out in the World Health Organisation’s “Guidelines for Community Noise”. On that basis, it would seem appropriate to seek to limit night-time noise intrusion such that maximum noise levels do not normally exceed a maximum internal value of 45dB $L_{Amax,fast}$. Section 3.4 of the WHO guidelines implies that ‘not normally’ would be an occurrence of more than 10-15 times per night.
- 4.29 A further note to the above Table indicates that where “development is considered necessary or desirable”, the above guideline values can be relaxed by 5dB and “reasonable” internal conditions still be achieved.
- 4.30 With regard to external amenity spaces, Section 7.7.3.2 of BS 8233: 2014 states:
- “For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not*

Noise and Vibration Assessment

achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

BS 4142: 2014+A1:2019: "Methods for Rating and Assessing Industrial and Commercial Sound"

- 4.31 BS 4142 provides a rating and assessment methodology for assessing the potential adverse impact of industrial and commercial noise sources on neighbouring dwellings.
- 4.32 The assessment procedure initially compares the '**Rating Level**' of the source with the '**Background Noise Level**' when the source is not present.
- 4.33 The '**Rating Level**' (L_{Ar}) referred to is the specific noise level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics. **Table 4.3** below summarises the corrections to be applied based on a subjective assessment of noise source characteristics.

Character Correction				
Feature / Perception	Tonality	Impulsivity	Intermittency	Other acoustic characteristics
Just Perceptible	+2dB	+3dB	When the specific sound has identifiable On/Off conditions that are readily distinctive. +3dB	+3dB
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

Table 4.3: BS4142 Character Correction for Rating Level

- 4.34 The '**Background Noise Level**' (L_{A90}) represents the noise level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background noise level needs to be determined without the noise source under investigation operating.
- 4.35 The time of operation needs to be taken into account. During the day (normally taken to be 07.00 to 23.00 hours) a one hour measurement period is considered appropriate. During the night (normally taken to be 23.00 – 07.00 hours) a 15 minute time period is normally used.
- 4.36 The following guidance is then offered based on the outcome of this initial assessment:

Noise and Vibration Assessment

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

4.37 A note accompanying the above guidance states:

“Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”

4.38 The initial estimate of the impact should then be modified to account for its context. Such considerations include:

- The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.
- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.
- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

Noise and Vibration Assessment

“Guidelines for Community Noise” (World Health Organisation, 1999)

4.39 The criteria outlined in this document provide a summary of research regarding the effects of noise on the community. Section 2 of the Guidelines presents a general discussion regarding the types of noise affecting communities and their measurement. The guidelines promote the use of the $L_{Aeq,T}$ noise index. However, where there are distinct events to the noise, such as with aircraft or railway noise, the guidelines recommend that measures of the individual events should be obtained (using, for example, L_{Amax} or L_{AE}), in addition to $L_{Aeq,T}$ measurements.

4.40 The guidelines identify three critical effects of noise on residential dwellings – speech interference, annoyance and sleep disturbance.

4.41 With regard to ‘**speech intelligibility**’, section 4.2 of the Guidelines identifies that:

“Speech in relaxed conversation is 100% intelligible in background noise levels of about 35dB(A) and can be understood fairly well in background levels of 45dB(A).

Speech with more vocal effort can be understood when the background sound pressure level is about 65dB(A).”

4.42 With regard to ‘**annoyance**’, section 3.8 of the Guidelines states:

“Annoyance in populations exposed to environmental noise varies not only with the acoustical characteristics of the noise (source, exposure), but also with many non-acoustical factors of social, psychological, or economic nature. These factors include fear associated with the noise source, conviction that the noise could be reduced by third parties, individual noise sensitivity, the degree to which an individual feels able to control the noise (coping strategies) and whether the noise originates from important economic activity.”

4.43 Section 4.2.7 of the Guidelines further states that:

“The annoyance response to noise is affected by several factors, including the equivalent sound pressure level and the highest sound pressure level of the noise, the number of such events, and the time of day. Methods for combining these effects have been extensively studied. The results are not inconsistent with the simple, physically based energy equivalent energy theory, which is represented by the L_{Aeq} noise index.

.....

Noise and Vibration Assessment

During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55dB; or moderately annoyed with L_{Aeq} levels below 50dB”.

- 4.44 With regard to ‘**sleep disturbance**’, Section 3.4 of the guidelines states:

“If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30dB(A) indoors for continuous noise. If the noise is not continuous, sleep disturbance correlates best with L_{Amax} and effects have been observed at 45dB or less. This is particularly true if the background noise level is low. Noise events exceeding 45dB(A) should therefore be limited if possible. For sensitive people an even lower limit would be preferred. It should be noted that it should be possible to sleep with a bedroom window slightly open (a reduction of outside to inside of 15dB). To prevent sleep disturbance, one should thus consider the equivalent sound pressure level and the number and level of sound events. Mitigation targeted to the first part of the night is believed to be effective for the ability to fall asleep”.

- 4.45 In section 4.3.1, the above guidelines are presented in terms of external noise levels incident on buildings:

“At night, sound pressure levels at the outside facades of the living spaces should not exceed 45dB L_{Aeq} and 60dB L_{Amax} , so that people may sleep with windows open”.

[“Night Noise Guidelines for Europe” \(World Health Organisation, 2009\)](#)

- 4.46 This guidance presents the findings of further research regarding the potential significance of night-time noise impacts. The guidance provides the following advice relating to potential night-time noise impacts:

“Below the level of 30 dB $L_{night,outside}$, no effects on sleep are observed except for a slight increase in the frequency of body movements during sleep due to night noise. There is no sufficient evidence that the biological effects observed at the level below 40 dB $L_{night,outside}$ are harmful to health. However, adverse health effects are observed at the level above 40 dB $L_{night,outside}$, such as self-reported sleep disturbance, environmental insomnia, and increased use of somnifacient drugs and sedatives.

Therefore, 40 dB $L_{night,outside}$ is equivalent to the lowest observed adverse effect level (LOAEL) for night noise. Above 55 dB the cardiovascular effects become the major

Noise and Vibration Assessment

public health concern, which are likely to be less dependent on the nature of the noise.....”

ProPG: Professional Practice Guidance on Planning and Noise

- 4.47 ProPG: Planning & Noise was published in May 2017.
- 4.48 The ProPG guidance document was authored by representatives from the Chartered Institute of Environmental Health (CIEH), Institute of Acoustics (IOA) and Association of Noise Consultants (ANC).
- 4.49 ProPG seeks to consolidate and standardise existing industry best practice in order to expedite the planning process with regard to the consideration of noise.
- 4.50 The ProPG document suggests a two stage methodology for the acoustic assessment of a proposed residential development.
- 4.51 Stage 1 involves an “Initial Site Risk Assessment”, to identify the likely risk of adverse effects from noise, were no subsequent mitigation to be included as part of the development proposal. This assessment is to be based on measurement or prediction (or a combination), as appropriate. Figure 1 of ProPG is reproduced overleaf:

Noise and Vibration Assessment

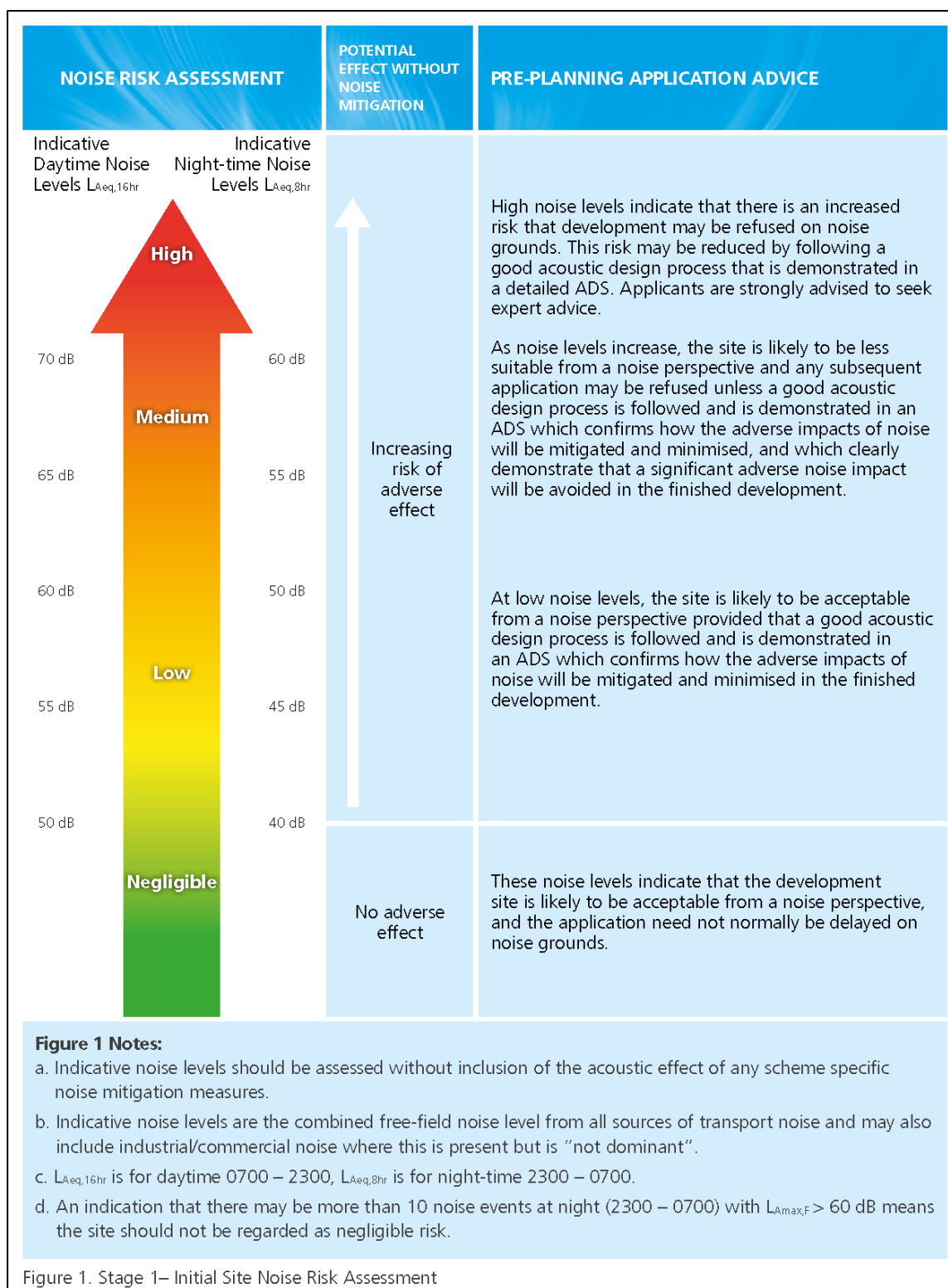


Figure 4.2: ProPG Stage 1 Initial Noise Risk Assessment

4.52 Where the Stage 1 assessment indicates that there is a potential for adverse effect, a Stage 2 “Full Assessment” should then be undertaken. This requires four elements to be considered:

Noise and Vibration Assessment

- **Element 1: Good Acoustic Design** – demonstrating that design implements appropriate design features which seek to mitigate noise impacts on future residents;
- **Element 2: Internal Noise Level Guidelines** – demonstrating that noise intrusion into internal areas of a development can be controlled in accordance with recommended noise levels;
- **Element 3: External Amenity Area Noise Assessment** – demonstrating how noise levels in external amenity areas will be controlled and minimised.
- **Element 4: Assessment of Other Relevant Issues** – considering how the scheme complies with relevant national and local planning policy; the magnitude and extent of compliance with ProPG; whether the future occupants of the development are likely to have an increased sensitivity to noise; whether noise mitigation may lead to any unintended adverse consequences and any implication that the acoustic design may bring to the wider planning objectives for the locality.

5 Baseline Noise Conditions

- 5.1 Existing baseline noise conditions at the site have been established using a combination of automated and manned noise surveys.

Automated Noise Monitoring (2018)

- 5.2 To assist with the earlier application, automated noise monitoring was undertaken over a five day period between 13.00 hours on Friday 13th July 2018 to 13.00 hours on Wednesday 18th July 2018.
- 5.3 Noise levels were monitored at roof level of the existing building, overlooking Nestles Avenue, as shown in **Figure 5.1** and described more fully in **Table 5.1** below.

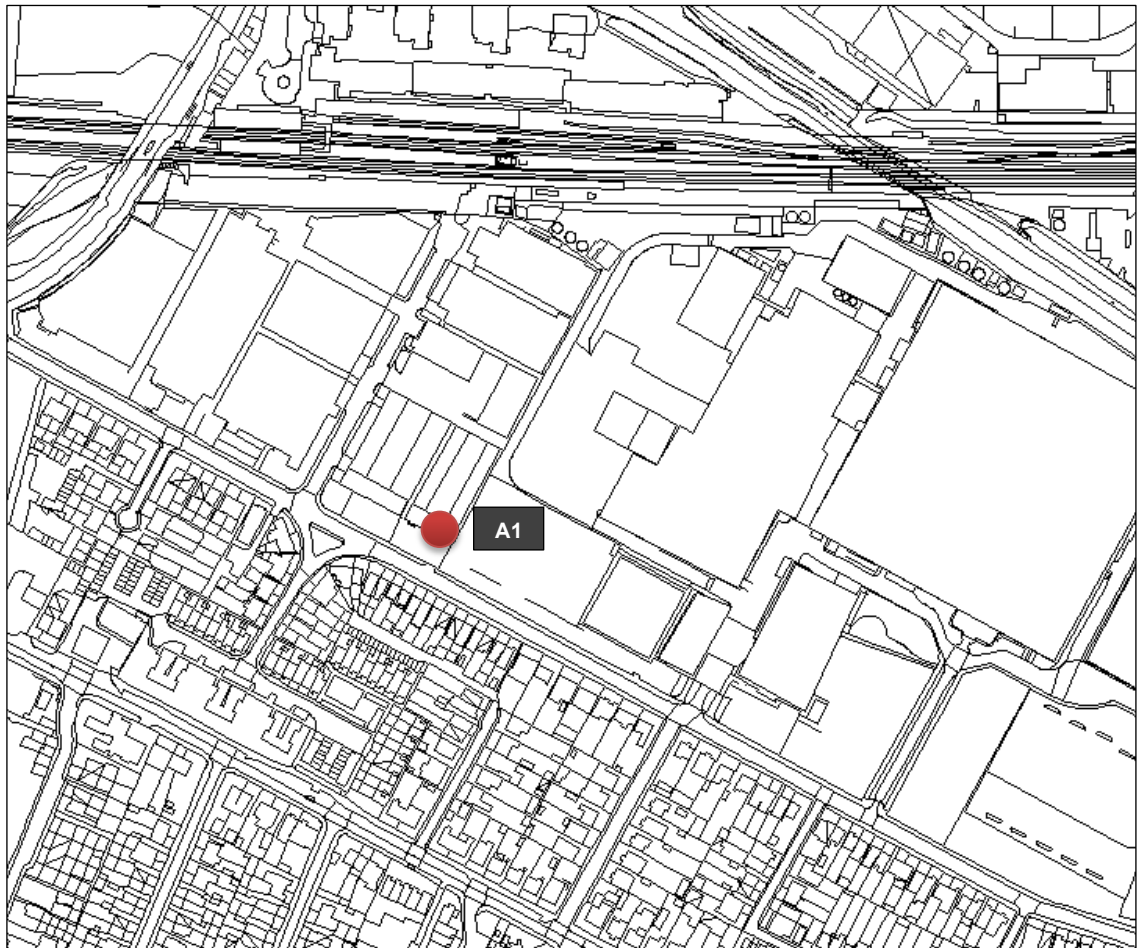


Figure 5.1: Automated Noise Monitoring Location

Noise and Vibration Assessment

Monitoring Location	Description
A1	Located at the south-eastern corner of the site building at approximately 20m from the Nestle Avenue. The microphone was at approximately 2 m above the roof level in a free field position away from reflecting surfaces. The microphone was located on a tripod and fitted with the manufacturer's windshield.

Table 5.1: Automated Noise Survey Locations

Survey Procedure

- 5.4 The sound level analyser was configured to record the L_{A90} , L_{Aeq} , and $L_{Amax,fast}$ sound levels over consecutive 1 second periods to provide a detailed time history profile showing fluctuations in noise levels. The analysers were also configured to make real-time contemporaneous audio recordings to assist in identifying the source of specific higher magnitude noise “events” observed in the time history profiling.
- 5.5 The measurement data was post-analysed using Svantek “SvanPC++” data analysis software to determine appropriate period measurements.

Instrumentation

- 5.6 The following instrumentation was used for the survey:

Position	Description	Make	Model	Serial No.	Calibration Date
A1	Sound Level Analyser	Svantek	SVAN971	72535	23/04/2018
	Microphone	ACO Pacific	7052E	68261	
	Preamplifier	Svantek	SV18	72235	
	Outdoor Microphone Kit	Svantek	SA271U	--	--
Calibrator		Norsonic	Nor 1251	34058	01/03/2018

Table 5.2: Instrumentation Details

Noise Monitoring Results

- 5.7 Measured noise levels (over consecutive 15-minute periods) are presented in full on **Time History Graph A1** attached at **Appendix B**.

Weather

Due to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period. However, observations at

Noise and Vibration Assessment

the time of site attendances and publically available historic online data, suggest that weather conditions were typically characterised as set out in **Table 5.3** below:

2018	Temp. (°C)	Humidity (%)	Wind Speed (km/h)	Wind Direction	Pressure (hPa)	Rainfall (mm)
July	avg	avg	avg		avg	Total
13	21	64	1	NW	1021	0
14	23	58	2	SSW	1019	0
15	23	46	2	W	1015	0
16	2	45	3	WSW	1013	0
17	19	57	5	SW	1016	0
18	21	56	1	SSW	1018	0

Table 5.3: Weather Conditions during the Survey Period

- 5.8 The weather records indicate no periods of rainfall or gusty winds which could adversely affect measurement results.

Manned Noise Measurements

- 5.9 Additional attended noise measurements were undertaken at four locations around the site, to provide additional information regarding noise levels generated by train movements on the railway to the north of the site, and road traffic noise from roads to the south and with existing operations associated with neighbouring industrial uses. Monitoring locations are described in **Table 5.4** and shown in **Figure 5.2** below.

Monitoring Location	Description
M1	On the south side of the site, overlooking Nestle Avenue. The measurement microphone was positioned approximately 6m from the kerb of the road, in broadly free-field conditions at a height of approximately 1.2m above ground level. The microphone was fitted with the manufacturer's windshield.
M2	On the north west corner of the site, online with end of the existing fence, 1 meter from the corner. The measurement microphone was positioned at 3 meters over the existing ground level, by means of a boom pole extended attached to the fence. The microphone was fitted with the manufacturer's windshield.
M3	Approximately 200m south east from the site, overlooking North Hyde Road. The measurement microphone was positioned approximately 6m from the kerb of the road, in broadly free-field conditions at a height of approximately 1.2m above ground level. The microphone was fitted with the manufacturer's windshield.
M4	Close to Hayes & Harlington Satiation, on the car parking area 5 metres west from the entrance and twenty meters from the closest platform. The measurement microphone was positioned on a tripod in free field conditions at a height of approximately 1.5m above ground level, overlooking the railway tracks. The microphone was fitted with the manufacturer's windshield.

Table 5.4: Automated Noise Survey Locations

Noise and Vibration Assessment

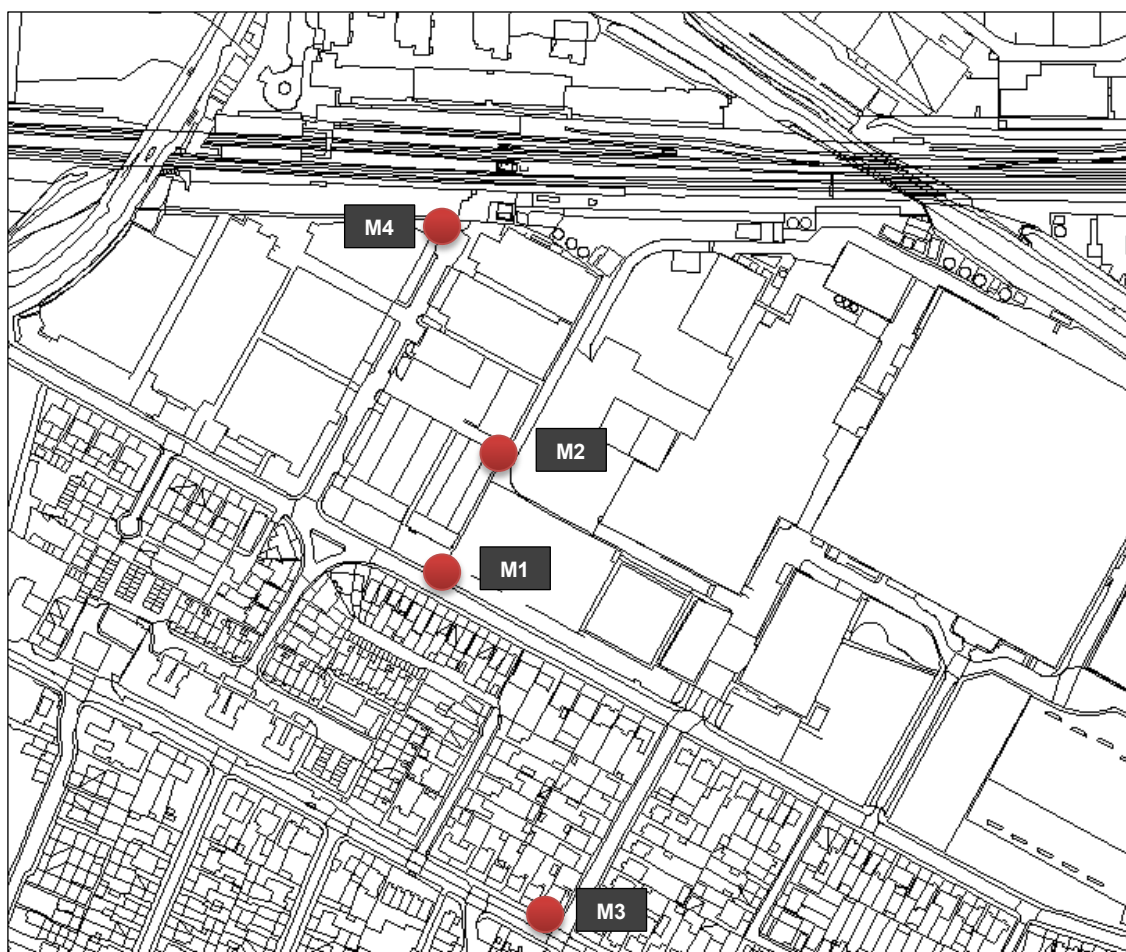


Figure 5.2: Manned Noise Survey Locations

5.10 The following instrumentation was used for the survey:

Position	Description	Make	Model	Serial No.	Calibration Date
M1 M3 M4	Sound Level Analyser	NTi	XL2-TA	A2A-13108-E0	21/06/2017
	Microphone	NTi	M2230A	A14228	
	Preamplifier	NTi	MC230A	6832	
	Outdoor Microphone Kit	NTi		--	n/a
M2	Sound Level Analyser	Svantek	SVAN971	55550	04/06/2018
	Microphone	ACO Pacific	7052E	63684	
	Preamplifier	Svantek	SV18	57249	
	Outdoor Microphone Kit	Svantek	SA271U	--	n/a
All	Calibrator	Norsonic	Nor 1251	34058	01/03/2018

Table 5.5: Instrumentation Details

Noise and Vibration Assessment

- 5.11 The sound level analysers were calibrated prior to the surveys and the calibration was checked upon completion. No drift in calibration was observed.
- 5.12 The sound level analysers were configured to record the L_{A90} , L_{Aeq} , and $L_{Amax,fast}$ sound levels over consecutive 1 second periods to provide a detailed time history profile showing fluctuations in noise levels.
- 5.13 Measurements at M1 and M3 were made over a three hour period in accordance with the shortened measurement procedure of the HMSO publication, “*Calculation of Road Traffic Noise*” (CRTN). The data has been processed to give the typical L_{A90} , L_{A10} , L_{Aeq} and $L_{Amax,fast}$ noise indices over a 15 minute time period, and are assumed to be typical of the measurement hour. The results are summarised in **Table 5.4** below:

Measurement Location	Time	Measured Sound Level, dBA re 20µPa			
		$L_{A90,15mins}$	$L_{Aeq,15mins}$	$L_{A10,15mins}$	$L_{Amax,fast}$
M1	11.00 – 12.00	45	59	62	80
	12.00 – 13.00	43	56	60	75
	13.00 – 14.00	46	57	61	76
M3	11.00 – 12.00	55	67	70	86
	12.00 – 13.00	57	68	71	84
	13.00 – 14.00	58	71	71	95

Table 5.6: Noise Measurement Results for Manned Survey Locations

- 5.14 The noise measurements at Positions A1, M2 and M4 have been used to determine typical noise levels associated with train movements on the Great Western Mainline railway to the north of the site. For each location, a sample selection of train movements have been analysed to yield typical pass-by noise levels, in terms of the event sound exposure level (L_{AE}) and typical maximum ($L_{Amax,fast}$) sound level.
- 5.15 The results of this analysis are shown in **Table 5.7** to **5.8** below.

Train Type	Typical L_{AE} (dB)	Typical $L_{Amax,fast}$
Freight	85	76
HTS125	89	86
Heathrow Express	84	80
Other passing train (EMU and DMU)	81	76

Table 5.7: Summary of Measured Train Pass-By Noise Levels at M4

Noise and Vibration Assessment

Train Type	Typical L _{AE} (dB)	Typical L _{Amax,fast}
Freight	75	64
HTS125	71	65
Heathrow Express	68	61
Other passing train (EMU and DMU)	66	60

Table 5.8: Summary of Measured Train Pass-By Noise Levels at A1

Train Type	Typical L _{AE} (dB)	Typical L _{Amax,fast}
Freight	69	63
HTS125	72	67
Heathrow Express	70	60
Other passing train (EMU and DMU)	66	57

Table 5.9: Summary of Measured Train Pass-By Noise levels at M2

- 5.16 Weather conditions during the survey were not measured, but were hot, dry and calm and were suitable for conducting environmental noise measurements.

Observations and Discussion

- 5.17 Noise levels across the development site are generally dominated by local and distant road traffic noise, with additional transient noise associated with train movement on the Great Western Mainline railway.
- 5.18 Intermittent noise from the industrial unit adjoining the western / north-western boundary of the site was also intermittently audible but only close to the boundary, but such noise was not considered to be dominant in the context of general ambient noise levels.
- 5.19 Road traffic was dominant to the south of the site, including distant traffic noise from the M4.
- 5.20 The noise monitoring data for Position A1 shows periods of increased activity characterised by relatively high maximum noise levels during the night-time period. Scrutiny of the measurement data indicates that such noise levels are due to birdsong.

Analysis of Data

- 5.21 In order to understand the relative contribution of rail traffic at the site, train timetable information for the Great Western Mainline has been obtained. **Table 5.10** below

Noise and Vibration Assessment

summarised the estimated number of passing trains on a typical working day. (Stopping trains are not generally audible at the site and have not been included).

Time	Freight	Heathrow Express	HST125	Others	Total
00:00	1	1	3	1	6
01:00	2	0	0	1	3
02:00	0	0	0	0	0
03:00	0	0	0	0	0
04:00	3	0	1	1	5
05:00	0	7	3	0	10
06:00	0	8	5	6	19
07:00	2	8	14	10	34
08:00	0	8	18	11	37
09:00	0	8	15	7	30
10:00	0	8	14	3	25
11:00	4	8	14	3	29
12:00	2	8	16	1	27
13:00	4	8	12	1	25
14:00	4	8	13	3	28
15:00	3	8	15	3	29
16:00	2	8	12	9	31
17:00	1	8	15	9	33
18:00	1	8	17	6	32
19:00	5	8	15	8	36
20:00	3	8	10	3	24
21:00	2	8	8	6	24
22:00	1	8	7	3	19
23:00	5	7	4	3	19

Table 5.10: Number of Passing trains per hour Hayes & Harlington Station.

- 5.22 The above data has been used in conjunction with the event sound level data presented in **Tables 5.7 to 5.9** to determine typical daytime ($L_{Aeq,16\text{hour}}$) and night-time ($L_{Aeq,8\text{hour}}$) noise levels associated with train movements, in general accordance with the methodology of the HMSO publication “*Calculation of Railway Noise*” (CRN).

Additional 2019 Survey

- 5.23 Additional noise monitoring at the northern side of the site (overlooking Squirrels Industrial Estate and existing industrial uses to the west of the site) was undertaken over a notional five day survey period between Friday 2 August to Tuesday 6 August 2019.

Noise and Vibration Assessment

- 5.24 Noise levels were monitored at a location at the north west corner of the Stanford House, directly overlooking the Squirrels Trading Estate as shown in **Figure 5.3** below;

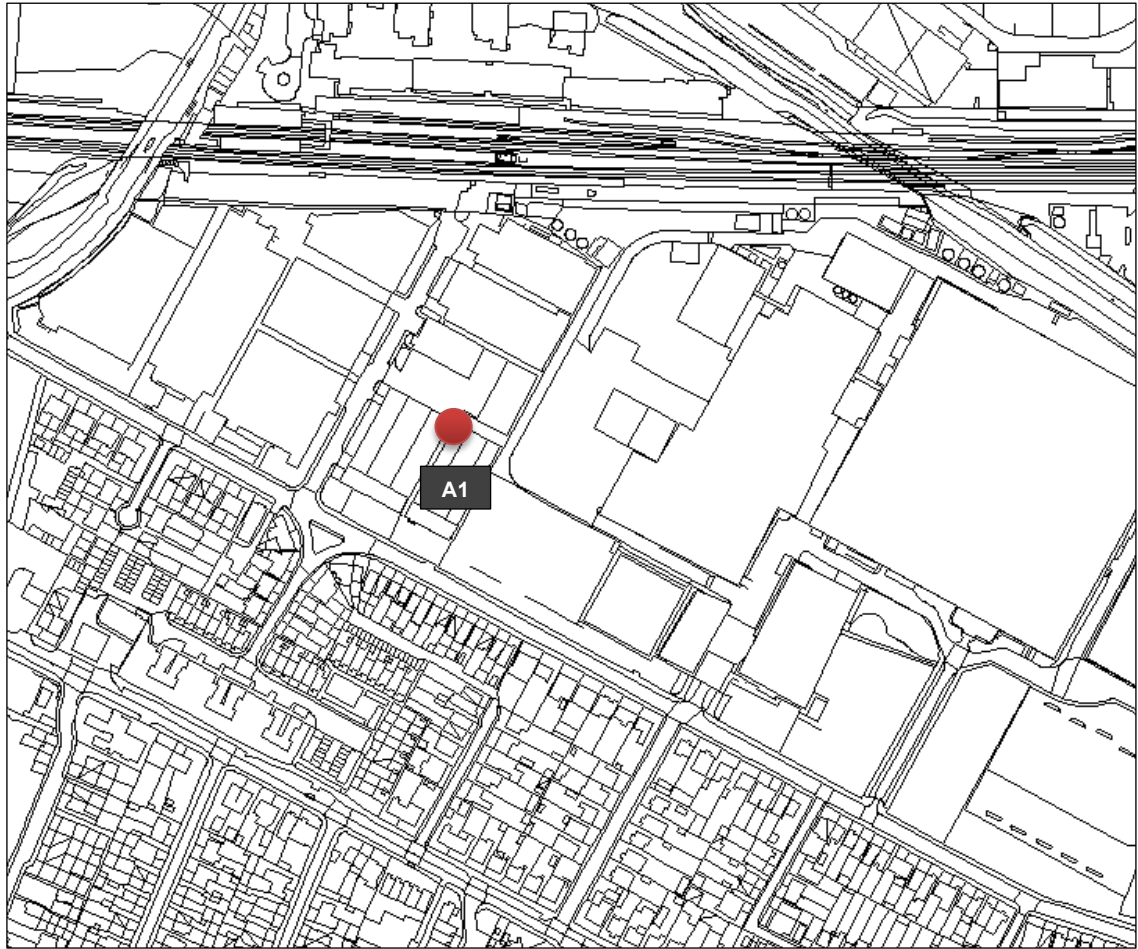


Figure 5.3: Automated Noise Survey Location – 2019 Survey

- 5.25 The measurement microphone was positioned approximately 5m above ground level as shown in **Figure 5.4** below:

Noise and Vibration Assessment



Figure 5.4: Positioning of Noise Monitoring Equipment

Observations and Discussion

- 5.26 The results of this additional noise survey work are shown in **Figure 5.5** below and are attached in greater resolution at **Appendix C**.

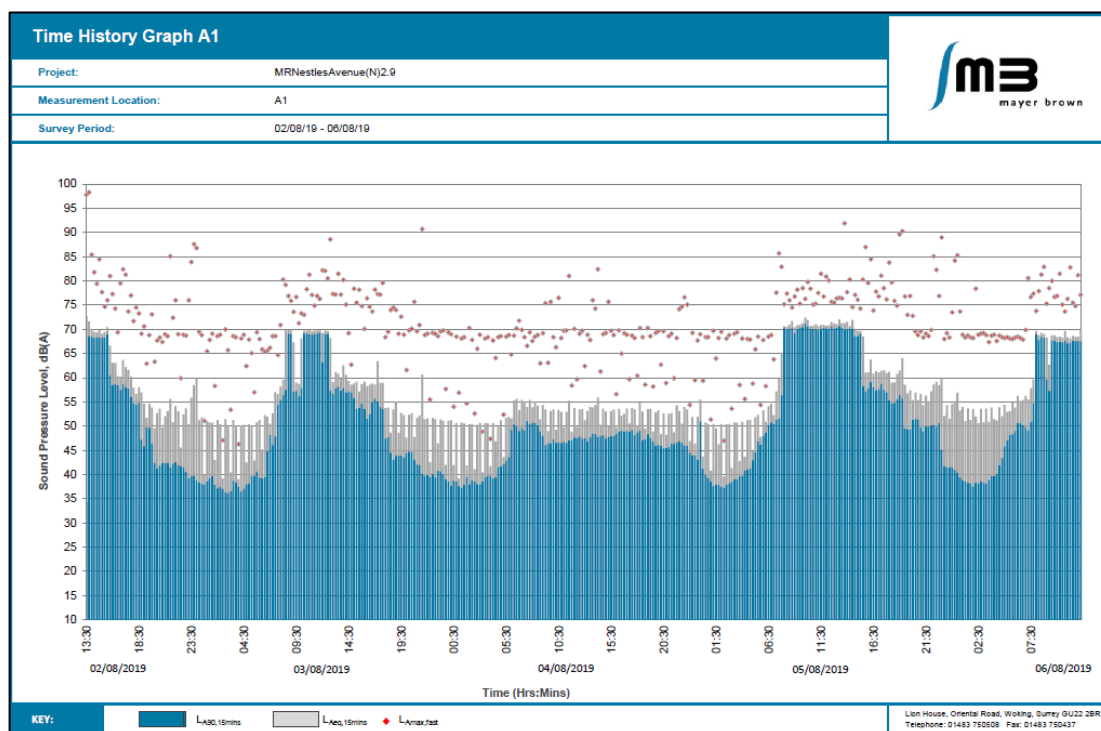


Figure 5.5: Time History Profile – Monitoring Position A1

Noise and Vibration Assessment

Observations and Discussion

- 5.27 The measurement data shows obvious periods of increased noise level. This is not due to industrial activity but is caused by the operation of a petrol generator used by the food trailer shown in the above image, as shown in more detail in the photograph in **Figure 5.6** below.



Figure 5.6: Catering Trailer and Associated Generator

- 5.28 **Figure 5.4** also shows the proximity of construction work on the former Nestle factory site. Noise associated with construction activities was also audible and dominant in the context of the otherwise prevailing noise environment.
- 5.29 In light of the above, the noise levels measured during the additional noise survey work are elevated by factors un-associated with the industrial activities carried out within the Squirrels Trading Estate and, in practice, specific noise levels associated with such uses will be significantly lower, as confirmed by the “short term” monitoring set out in Mayer Brown Limited’s Noise and Vibration Assessment which accompanied the application (and was not affected by the dominant generator or construction noise sources characterising the more recent survey work).
- 5.30 **Figure 5.6** below, helps demonstrate the more modest noise levels that characteristic the site when the current significant sources of noise (generator and construction activity) are

Noise and Vibration Assessment

not present. As concluded in the Noise and Vibration Assessment and confirmed by more recent site attendances, whilst noise associated with the existing industrial activities is audible (e.g. operation of mechanical plant, noise “break-out” from units, etc.) such noise is not considered to be dominant in the context of the otherwise prevailing noise climate.

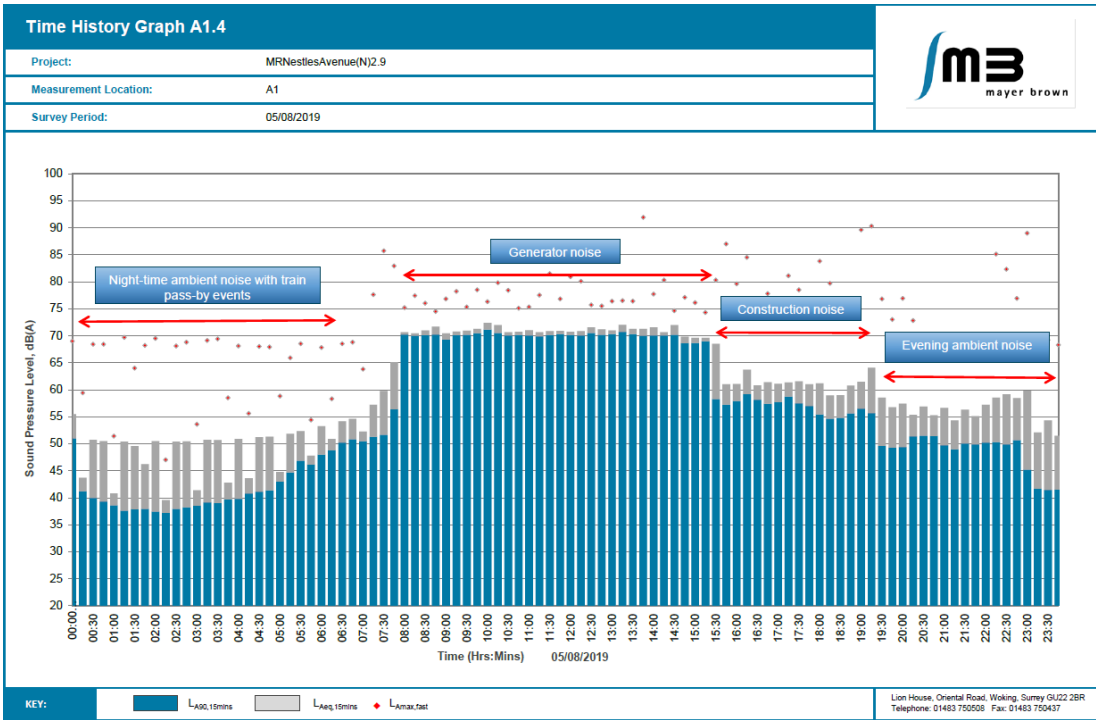


Figure 5.7: Time History Profile – Monday 5 August 2019

5.31 **Figure 5.8** below, also helps demonstrate the modest noise environment which characterises the locality during the evening, overnight and on Sundays, e.g. times when the amenity value of terraces, balconies, etc, will be most highly prized.

Noise and Vibration Assessment

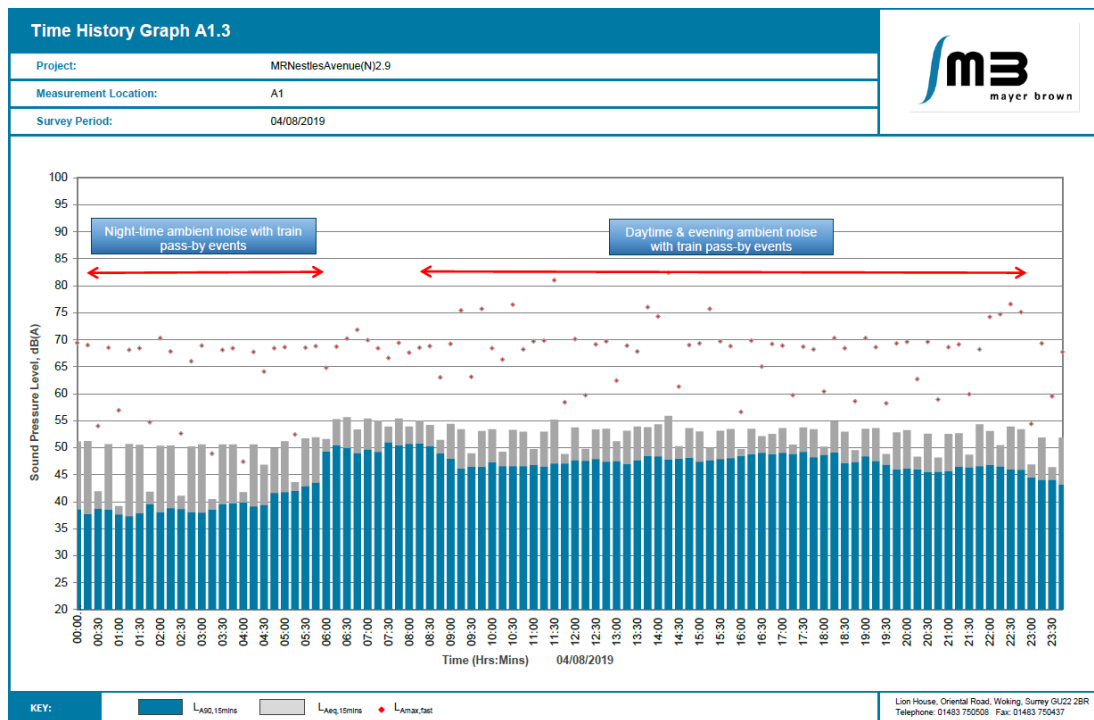


Figure 5.8: Time History Profile – Sunday 4 August 2019

Conclusion

- 5.32 It can be concluded based on the survey work reported above that the noise conditions on the proposed development site are comprised of ‘mixed sources’ from transportation (i.e road and rail traffic) noise and industrial noise.
- 5.33 Where this is the case and there is no “dominant” source of industrial noise, it is appropriate and consistent with ProPG guidance to consider the “total” ambient noise environment of the site without any particular characterisation of the industrial/commercial noise component.
- 5.34 With respect to the characterisation of commercial/industrial noise paragraphs 2.40 and 2.41 of ProPG guidance state:

“2.40 To be clear, where industrial and/or commercial noise is present on the site and is considered to be “dominant” (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS4142:2014.

2.41 In the special case where industrial and/or commercial noise is present on the site but is “not dominant” (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of

Noise and Vibration Assessment

risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated"

5.35 The above approach is also consistent with the guidance of BS 4142: 2014 + A1: 2019. As noted earlier, section 8.5 of this standard specifically deals with the introduction of noise receptors in the locality of extant industrial/commercial noise. Stating:

"Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it should be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation".

5.36 The continued "*mixed use*" character of the area is also clearly countenanced in Policy SA5 of the Local Plan Part 2, which promotes the site for mixed residential and employment uses.

5.37 The following sections consider the potential noise impacts of both transportation and industrial related noise impacts in greater detail.

6 Stage 1 Initial Noise Risk Assessment

- 6.1 As noted earlier, ProPG guidance is intended to assist with determining the suitability of sites for residential development to protect them against general transport related noise sources. An initial noise risk assessment of the site has therefore been undertaken in accordance with this ProPG guidance.

Baseline Noise Modelling

- 6.2 The results of the noise monitoring have been used to validate a baseline noise model for the site, constructed using Datakustic CadnaA® noise modelling software. The model is based on OS mapping data for the site and its general environs, LIDAR digital terrain data and site observations.
- 6.3 Calculated daytime ($L_{Aeq,16hour}$) and night-time ($L_{Aeq,8hour}$) noise levels are shown in **Figure 6.1** and **6.2** below.

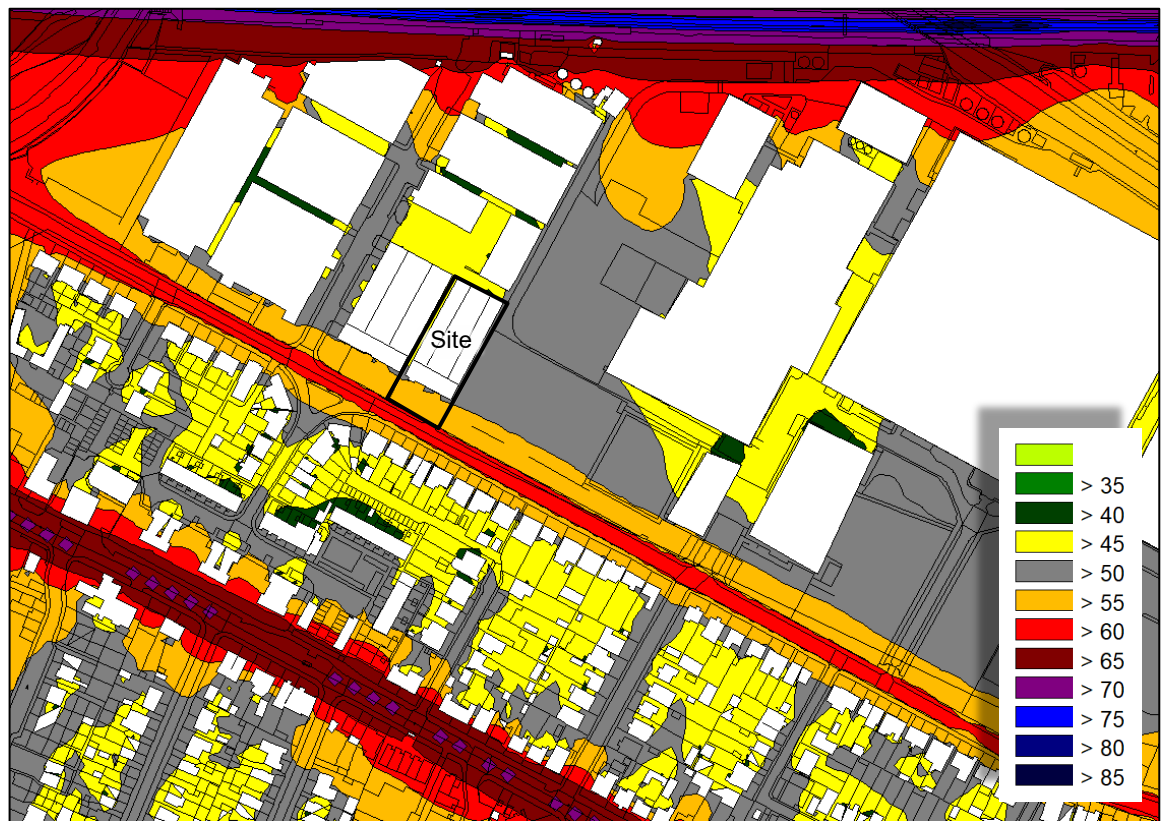


Figure 6.1: Daytime Noise Model ($L_{Aeq,16hour}$)

Noise and Vibration Assessment



Figure 6.2 Night-time Noise Model at 4m ($L_{Aeq,8hour}$)

- 6.4 The results of the modelling show that noise levels at the southern boundary of the site are in the order of 60dB $L_{Aeq,16hour}$ daytime and 52dB $L_{Aeq,8hour}$ night-time.
- 6.5 The northern area of the site is screened from the railway and roads and noise levels here reduce to around 52 dB $L_{Aeq,16hour}$ daytime and 47 dB $L_{Aeq,8hour}$ night-time.

ProPG Stage 1 Assessment

- 6.6 Based on the output of the noise model, an initial noise risk assessment of the site has been undertaken in accordance with ProPG guidance. For presentation purposes, the site has been classified into four “noise risk” bands – “Negligible”, “Low”, “Medium” and “High” – in line with the following semantic boundaries.

Time Period	Negligible	Low	Medium	High
Daytime 07.00 – 23.00	≤ 50 dB	51-62 dB	63-68 dB	> 69 dB
Night-time 23.00 – 07.00	< 40 dB	40-54 dB	55-59 dB	> 60 dB

Table 6.1: ProPG Initial Site Risk Assessment Categorisation

Noise and Vibration Assessment

- 6.7 It is, however, important to stress that ProPG guidance is not intended to provide “absolute” boundaries of noise impact. The guidance is intended to be applied flexibly and is a concept supported by governmental Planning Practice Guidance, e.g. Paragraph: 015 Reference ID: 30-015-20190722 cautions that “Care should be taken, however, to avoid these [noise standards] being implemented as fixed thresholds as specific circumstances may justify some variation being allowed”. Paragraph 007 Reference ID: 30-007-20190722 states “*These values [including ProPG guidance] are not to be regarded as fixed thresholds and as outcomes that have to be achieved in every circumstance*”.
- 6.8 Notwithstanding this, the use of semantic boundaries is considered to provide a useful means of providing an initial, broad visual characterisation of the noise risk at the site.
- 6.9 Initial risk assessments of daytime and night-time noise (without the existing building which occupies the site) are shown in **Figure 7.3** below and **Figure 7.4** overleaf.

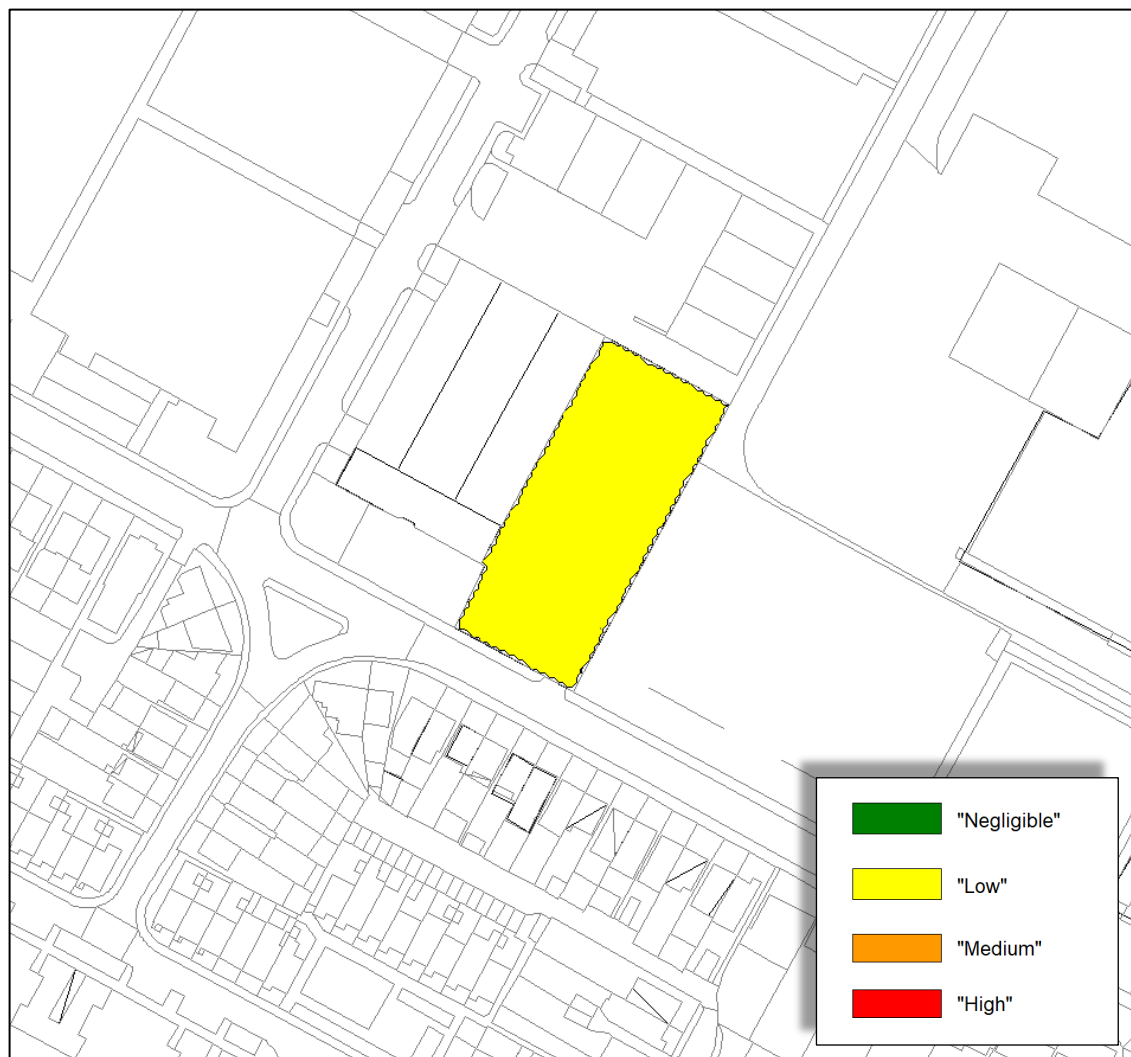


Figure 6.3 Daytime Initial Site Noise Risk Assessment – 1.5m Grid Height

Noise and Vibration Assessment

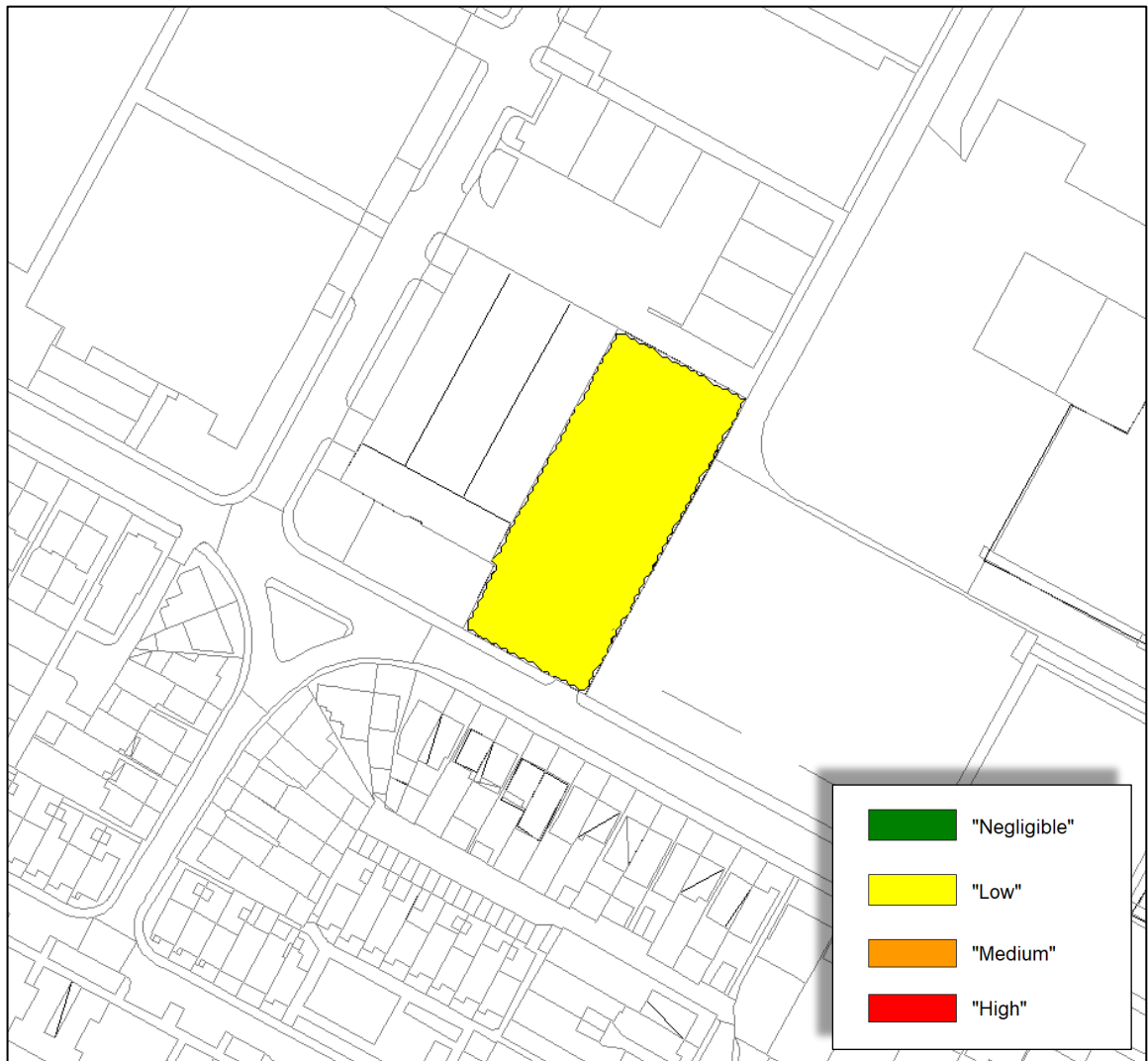


Figure 6.4: Night-time Initial Site Noise Risk Assessment – 4m Grid Height

6.10 The above figures show that the unmitigated noise risk at the site would be categorised as having a “low” noise risk, for both the daytime and night-time period.

6.11 For low risk sites, ProPG states:

“At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.”

6.12 In light of the above, it is concluded that subject to adherence to a good acoustic design process, the proposed development is suitable for residential development. The detailed acoustic design of the development is considered in the following section, and constitutes an “Acoustic Design Statement” (ADS) in accordance with ProPG Stage 2 guidance.

7 ProPG Stage 2 Detailed Assessment

7.1 A ProPG Stage 2 “Full Assessment” requires consideration of four key elements:

- **Element 1** – Good Acoustic Design Process
- **Element 2** – Internal Noise Level Guidelines
- **Element 3** – External Amenity Area Noise Assessment
- **Element 4** – Assessment of Other Relevant Issues

7.2 Each of these elements is considered below.

Element 1 – “Good Acoustic Design”

7.3 A preferred hierarchy of strategies constituting a “*good acoustic design process*” for mitigating noise impacts is set out below:

- Reducing noise “*at source*”;
- Providing “*buffer*” zones to limit noise exposure;
- Reducing noise propagation across site (e.g. through the use of barriers);
- Developing the layout of the site to optimise acoustic protection (e.g. through the use of “*barrier*” blocks to help further limit noise propagation and the use of courtyard style development to protect external amenity areas);
- The orientation/general internal arrangement of buildings (e.g. by locating non-habitable rooms on ‘noisier’ facades and more sensitive uses on acoustically screened facades); and
- Providing buildings with appropriate sound insulation through the specification of appropriate external fabric constructions (in particular windows) and providing appropriate alternative means of ventilation if acceptable internal noise levels cannot be achieved if windows are open.

The ability to implement each of the above strategies is discussed below:

Reducing Noise “At Source”

7.4 As noted earlier in this report, noise levels at the site are dominated by noise from the adjoining road and railway traffic. Clearly, such noise cannot be ‘*removed*’ and it is not therefore considered feasible to provide any “*at source*” mitigation.

Noise and Vibration Assessment

Buffer Zones

- 7.5 Sound energy naturally decreases with increasing distance from a source. Effective noise mitigation can therefore potentially be implemented through the introduction of 'buffer zones' to avoid development in areas most significantly exposed to noise.
- 7.6 Given that the relatively modest proportions of the site, it is not feasible to sacrifice land on this site to provide buffer zones. Furthermore, given the relative distance of the site from relevant noise sources, it is unlikely that providing a buffer zone would provide any significant benefit for this particular site.

Acoustic Screening

- 7.7 Acoustic screens (e.g. noise barriers, bunds, etc.) can usefully reduce noise propagation across a site. In order for a barrier to be effective, it must obviate the direct line of sight between a noise source and receptor location. The amount of acoustic screening provided is dependent on the geometric relationship between the "direct" path noise would travel (without the barrier in place), and the "indirect" path sound would need to travel "up and over" the barrier bund. The greater this path difference, the greater the attenuation provided, as shown in **Figure 8.1** below:

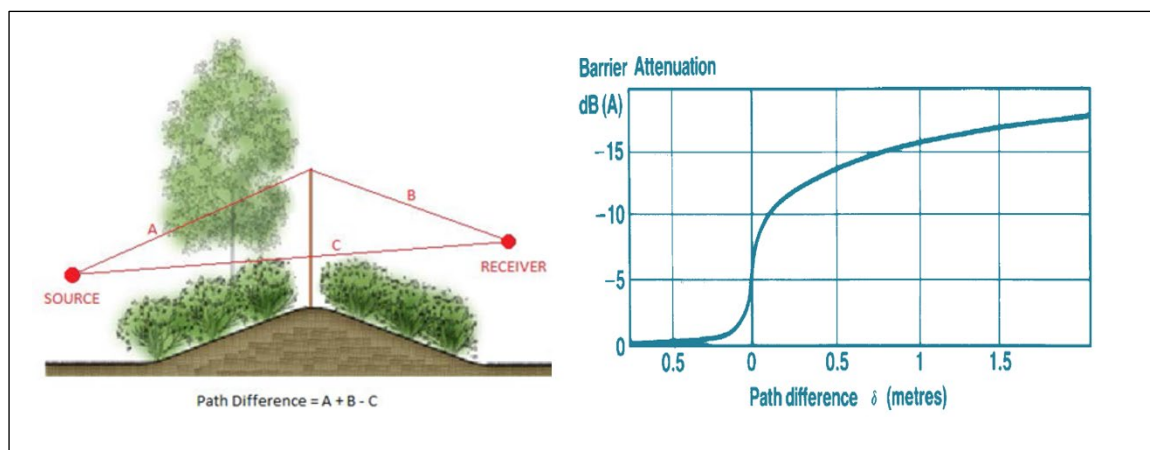


Figure 7.1: Calculation of Barrier Path Difference

- 7.8 As noted earlier, the dominant noise sources at the site is local road and rail traffic. Given that the proposed building is to rise to 11 storeys, it is not considered to be practicable to use barriers to provide effective screening.

Barrier Blocks

- 7.9 It is also possible to limit noise propagation across a site through the judicious spacing and massing of buildings along boundaries to adjacent noise sources to help act as "barrier blocks", (i.e. using buildings themselves to provide some degree of acoustic

Noise and Vibration Assessment

screening). In this case, the proposed building follows a dominant north – south alignment, with a stepped arrangement of floor level rising to 11th floor level at the northern side of the site.

- 7.10 The proposed arrangement will help deliver acoustic screening to adjoining railway which will help reduce noise levels incident on the upper levels of the building to protect the lower floors of the building to train movements, including noise levels in external communal amenity spaces (which are orientated with a southerly aspect).
- 7.11 The proposed building arrangement also avoids any residential windows on its northern elevation which will again helpfully reduce the rail noise component experienced by future residents.

Sound Insulation

- 7.12 In light of the above, the most appropriate form of noise mitigation within the specific constraints of this site is for noise intrusion to be controlled through the appropriate specification of glazing and alternative (acoustically attenuated) means of ventilation.
- 7.13 In addition, consideration can also be given to the internal general arrangement of dwellings, such that non-habitable rooms are located on more noise exposed building elevations and with more noise-sensitive habitable rooms located on quieter (acoustically screened) elevations. As noted earlier, the development scheme has a general north-south orientation which avoids residential windows on the northern elevation (looking towards the railway).

Conclusion

- 7.14 In light of the above consideration, it is concluded that the scheme design proposals follow a good acoustic design process and can provide mitigation which helps minimise noise impacts, in line with the spirit of ProPG, the NPPF, NPSE and NPPG.

Element 2 – Internal Noise Levels

- 7.15 In order to ensure a good standard of residential amenity within dwellings, BS 8233: 2014 and ProPG guidance recommends that daytime noise levels should be below 35dB $L_{Aeq,16hour}$ and night-time values in bedrooms should be below 30dB $L_{Aeq,8hour}$. These values are considered to represent a LOAEL, in line with national planning policy guidance.
- 7.16 At night, WHO/ProPG guidance indicates that an LOAEL would be indicated when an event sound level of 45dB $L_{Amax,fast}$ is not exceeded more than 10-15 times per night.

Noise and Vibration Assessment

Operational Noise Model

- 7.17 A preliminary operational noise model of the site has been developed based on the proposed general arrangement for the development and approach to mitigation outlined above. This helps provide a preliminary indication of how the presence of the future buildings may modify sound propagation across the site and whether an enhanced specification of glazing/ventilation may be necessary to control the resultant levels of noise intrusion into the proposed dwellings.
- 7.18 It is also clear that the proposed development is to be substantially taller than the existing building occupying the site, and thus the upper floors of the development may be exposed to increased levels of noise, due to a more direct line of sight to neighbouring noise sources, in particular the railway to the north of the site.
- 7.19 **Figure 8.2 to 8.7** below show the expected variation of daytime and night-time noise levels across the site at 2nd, 6th and 9th floor levels, based on the current illustrative development proposals.



Figure 7.2: Illustrative Development Noise Model: Daytime 2nd Floor Level

Noise and Vibration Assessment

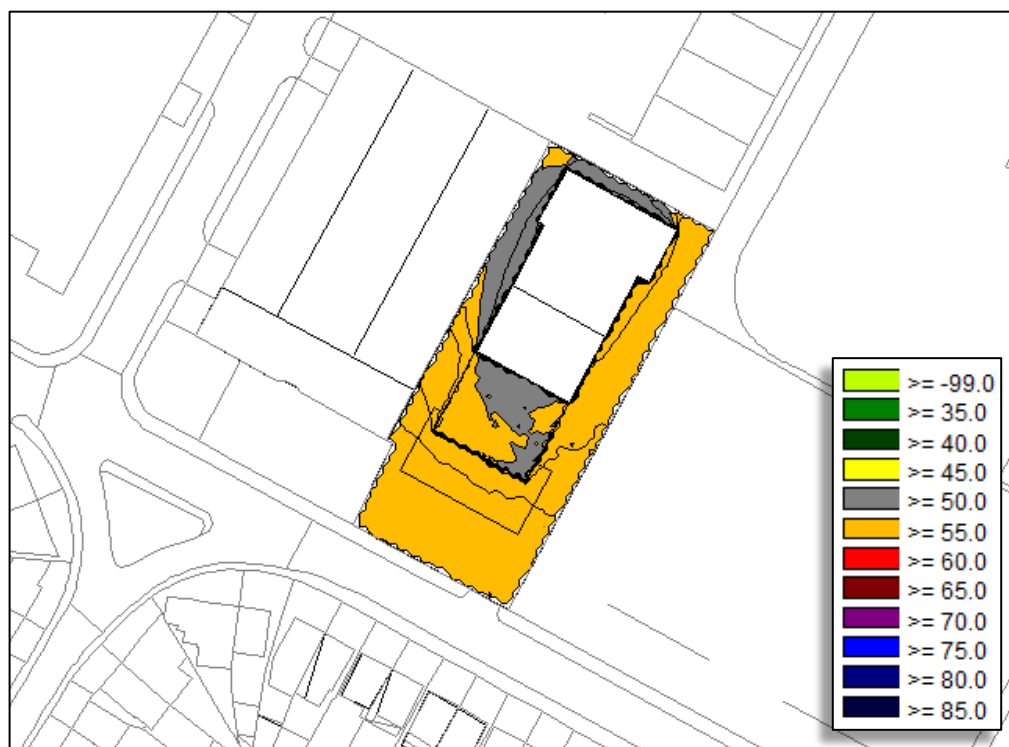


Figure 7.3: Illustrative Development Noise Model: Daytime 6th Floor Level



Figure 7.4: Illustrative Development Noise Model: Daytime 9th Floor Level

Noise and Vibration Assessment



Figure 7.5: Illustrative Development Noise Model: Night-time 2nd Floor Level



Figure 7.6: Illustrative Development Noise Model: Night-time 6th Floor Level

Noise and Vibration Assessment

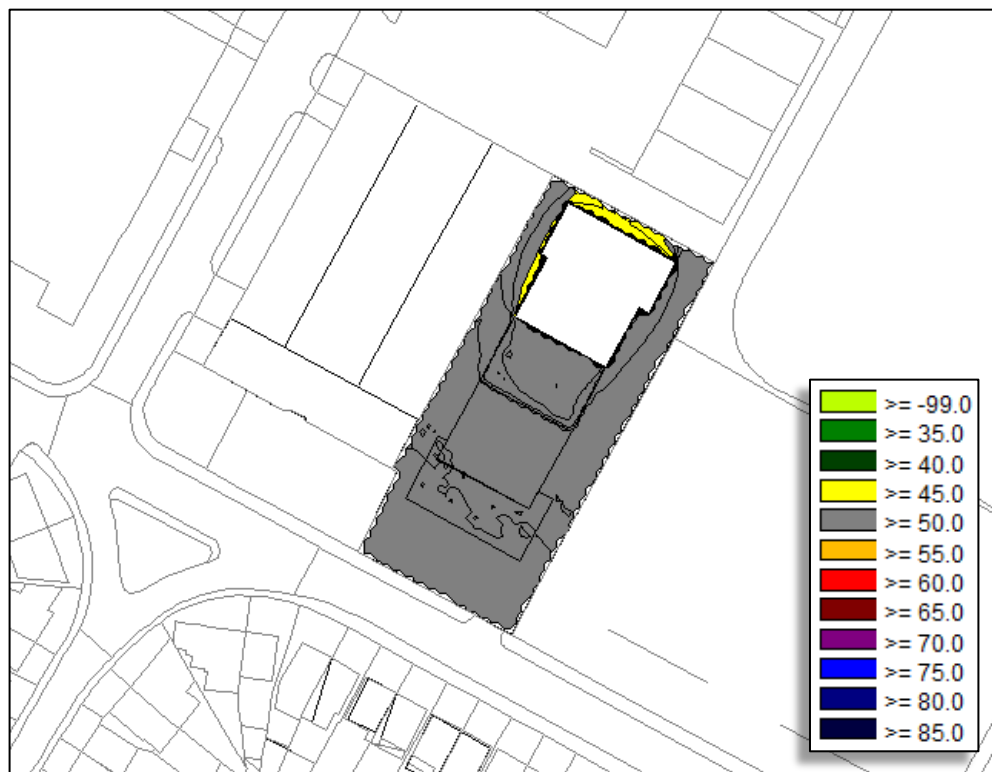


Figure 7.7: Illustrative Development Noise Model: Night-time 9th Floor Level

Sound Insulation - Windows

- 7.20 Whilst the government's historic planning guidance document PPG 24 has been formally withdrawn and superseded by the NPPF, the former guidance contains a substantial amount of technical advice that provides useful context when considering the feasibility of mitigating noise from external sources. In particular, Annex 6 of PPG 24 provides technical advice with regard to the typical "outside-to-inside" noise reduction that can be expected for various types of noise. For road traffic noise, this guidance indicates that standard thermal double glazing (which would be required as a matter of course to comply with Building Regulations construction requirements) would typically offer a sound reduction of 33dB(A).
- 7.21 In order to achieve internal levels of 35dB $L_{Aeq,16hour}$ and 30dB $L_{Aeq,8hour}$, this implies that external levels should not exceed outside noise levels of 65dB $L_{Aeq,16hour}$ and 60dB $L_{Aeq,8hour}$ respectively⁴.
- 7.22 Predicted façade noise levels have been determined by utilising the Building Evaluation function of CadnaA® noise modelling software. **Figures 8.8 and 8.9** below presents the

⁴ These values include an allowance of 3dB(A) to account for façade reflection effects.

Noise and Vibration Assessment

output in terms of the highest maximum $L_{Aeq, 16\text{hour}}$ and $L_{Aeq, 8\text{hour}}$ values incident on the proposed building;

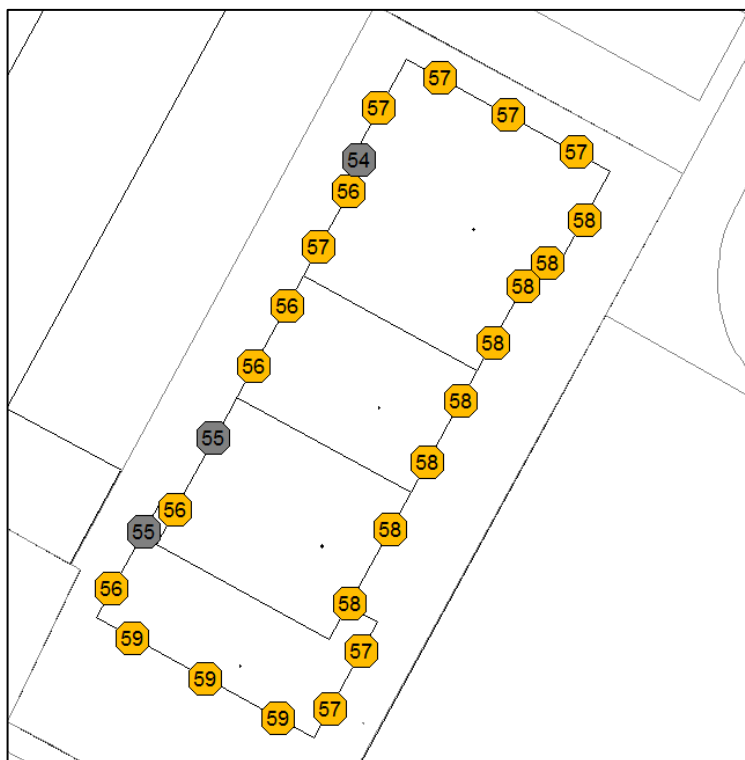


Figure 7.8: Building Evaluation Highest Daytime Predicted $L_{Aeq, 16\text{hour}}$ Noise Levels

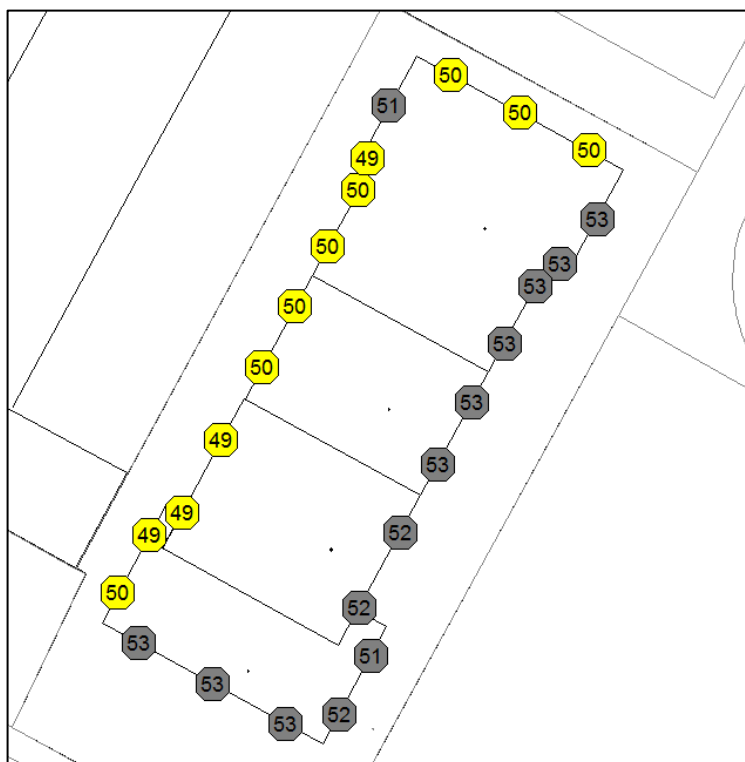


Figure 7.9: Building Evaluation Highest Daytime Predicted $L_{Aeq, 8\text{hour}}$ Noise Levels

Noise and Vibration Assessment

- 7.23 The modelling indicates that noise levels incident on the most exposed flats on the upper storeys of the building would increase to around 59dB $L_{Aeq,16hour}$ daytime and 53dB $L_{Aeq,8hour}$ night-time as a result rail traffic.
- 7.24 It can therefore be seen that whilst noise levels incident on the upper floors of the building will be higher than those on the lower levels, the use of standard thermal double glazing should still comfortably control external noise intrusion into the flats.
- 7.25 Such glazing should also comfortably control $L_{Amax,fast}$ sound levels from night-time train movements in line with the WHO guidance value of 45dB $L_{Amax,fast}$.
- 7.26 If considered necessary, the finalised specification of glazing can be directly controlled through the use of an appropriate planning condition (e.g. the submission and approval of the proposed sound insulation scheme), in line with the aims of the NPPF, NPPG, NPSE.

Ventilation

- 7.27 Approved Document F (ADF) of the Building Regulations 2010 requires that all habitable rooms in dwellings are provided with “whole house” (background) ventilation and air extraction from humid areas.
- 7.28 It is understood that all flats will; be mechanically ventilated with proprietary ‘MVHR’ units, incline with a “System 4” design approved prescribed in Approved Document F of the Building Regulations 2010 (as amended). Such systems provide an intrinsically high level of acoustic protection against noise ingress from external sources and will also allow ADF compliant ventilation rates to be provided without the need for residents to open windows.
- 7.29 The above provisions would also provide effective control in relation to night-time $L_{Amax,fast}$ levels.
- 7.30 More detailed information relating to the outline design of the MVHR systems is included within other reports submitted with the application, prepared by Mecserve.

Purge Ventilation

- 7.31 Approved Document F also requires that adequate provision is made for purge ventilation. Purge ventilation is the process of removing 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). Since the need for purge ventilation is by its definition “occasional”, this is normally achieved by giving residents the ability to open their windows. Whilst noise intrusion will increase as a result of windows being open, the occasional and temporary occurrence of such a situation can be readily

Noise and Vibration Assessment

accepted, particularly since occupants are “*in control*” of both the timing and duration of purge ventilation being required.

- 7.32 It is therefore proposed that purge ventilation for all dwellings will be achieved by means of openable windows. This approach is consistent with the guidance given in section 8.4.5.4 of BS 8233; 2014 which states:

8.4.5.4 Ventilation

*The Building Regulations’ supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. **However, windows may remain openable for rapid or purge ventilation, or at the occupant’s choice.***

- 7.33 The acceptability of using openable windows for providing purge ventilation is also in accordance with paragraph 2.35 of ProPG guidance which states:

It should also be noted that the internal noise level guidelines are generally not applicable under “purge ventilation” conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).

Thermal Comfort

- 7.34 Whilst not a statutory requirement, ADF highlights that windows may also need to be used to provide “rapid” ventilation to facilitate cooling of the premises, if there is a significant risk of properties “over-heating”.
- 7.35 It is generally accepted that an open window will provide an outside to inside sound reduction of around 15dB(A). It can therefore be seen that, in order to maintain ProPG internal target levels, external noise levels would need to be no greater than 50dB $L_{Aeq,16hour}$ daytime or a night-time value of 45dB $L_{Aeq,8hour}$ for “normal” design purposes. As noted earlier, these noise levels would be generally be considered to represent a “*Lowest Observed Adverse Effect Level*” (LOAEL).
- 7.36 For most urban development opportunities adjacent to transport infrastructure, noise level will exceed the above inferred LOAEL values. To add some context to this, it should be noted that “*UK National Noise Incidence Study 2000/2001*” (produced by the Building Research Establishment on behalf of DEFRA), indicated that up to 55% of the population

Noise and Vibration Assessment

live in dwellings exposed to noise levels above WHO guideline values during the daytime, whilst up to 68% live in accommodation exposed to values above WHO guidelines at night.

7.37 However, the above observations should not be taken to imply that development of land characterised by noise levels above WHO guideline values should be precluded. Indeed, national planning policy clearly directs that noise impacts need to be “*mitigated and reduced to a minimum*”, whilst avoiding “significant” impacts (i.e. impacts above a “*Significant Observed Adverse Effect Level*” (SOAEL)). The material consideration here is that exceedance of the WHO guidelines or other industry standard guidance should not be taken to imply that a “significant” adverse effect will be experienced. Indeed, there are current research findings which indicate that “*Significant Observed Adverse Effect Levels*” (SOAEL) are unlikely to occur unless there is a significant exceedance of the LOAEL values, particularly if occupants are not routinely exposed to such noise levels.

7.38 The above is recognised within the ProPG guidance, which offers the following commentary:

“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5dB and reasonable conditions still be achieved. The more often internal noise level start to exceed the internal L_{Aeq} target levels by more than 5dB, the more that most people are likely to regard them as “unreasonable”. Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target by more than 10dB, they are highly likely to be regarded as “unacceptable” by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing “unacceptable” noise levels at all and where such level are likely to occur frequently, the development should be prevented in its proposed form”.

7.39 The above guidance therefore supports a view that an exceedance of the ProPG internal guideline values should not automatically be taken to infer that acoustic conditions are “unreasonable”. On the contrary, the advice presented clearly indicates that “reasonable” acoustic conditions can be maintained where internal L_{Aeq} noise level design guidance is exceeded by 5dB(A), and that noise levels might only be considered “unacceptable” where levels are more than 10dB(A) higher than the stated $L_{eq,T}$ values.

7.40 However, it can also be seen that ProPG indicates that the potential “acceptability” of noise intrusion does not solely relate to noise magnitude - consideration also needs to be given

Noise and Vibration Assessment

to the potential duration of any increased noise exposure. The implication here is that whilst a significantly increased noise exposure could be tolerated for occasional periods, this is likely to become increasingly unacceptable as the period of exposure increases.

7.41 This is clearly a material consideration when considering the potentially conflicting requirements of acoustic and thermal comfort - since such conflict might only exist for a limited period of time.

7.42 The above considerations have prompted the Association of Noise Consultants to publish additional design guidance: *“Acoustics Ventilation and Overheating: Residential Design Guide”* (January 2020). This document seeks to assist in identifying when external noise levels might indicate a “significant” risk of adverse health and quality of life effects, if reliance is placed on the use of openable windows to minimise the risk of excess heat within dwellings.

7.43 The guidance identifies the following initial risk categories:

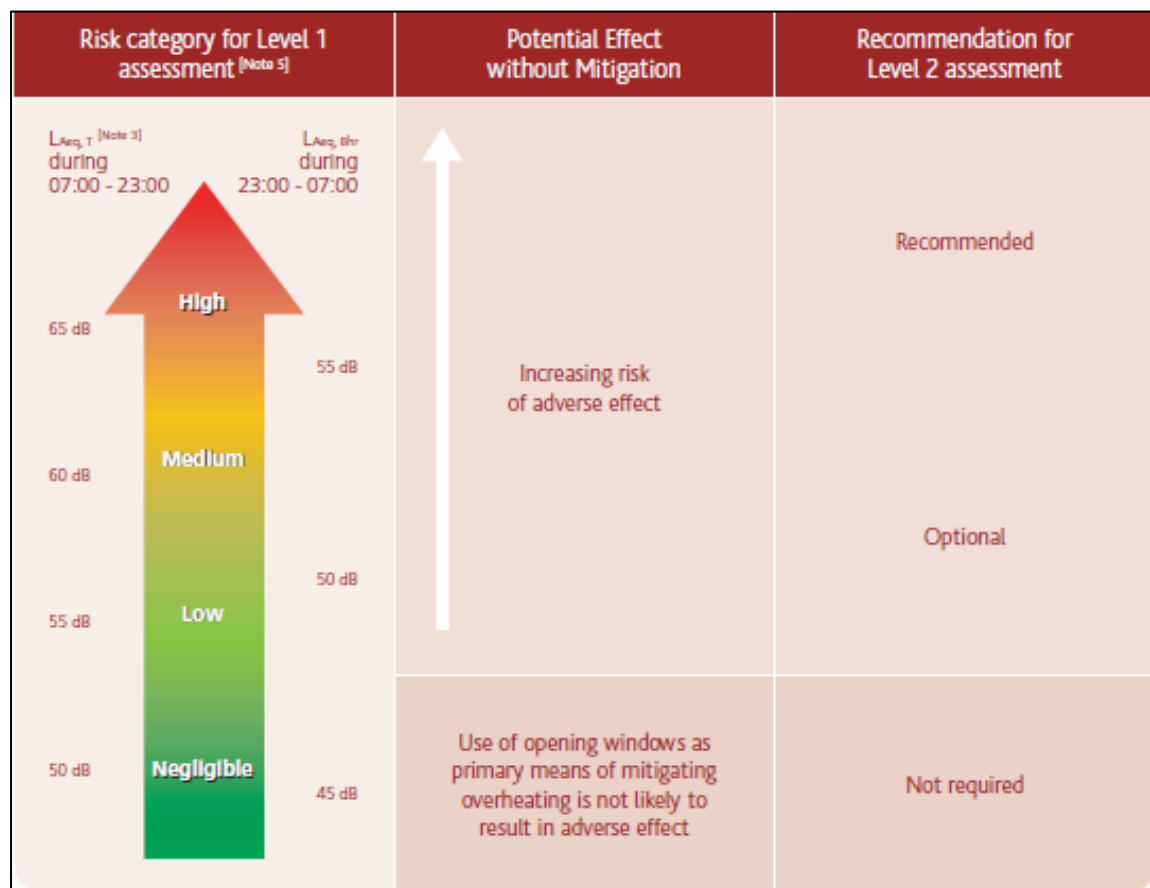


Figure 7.10: ANC AVOG Guidance – Level 1 Assessment

Noise and Vibration Assessment

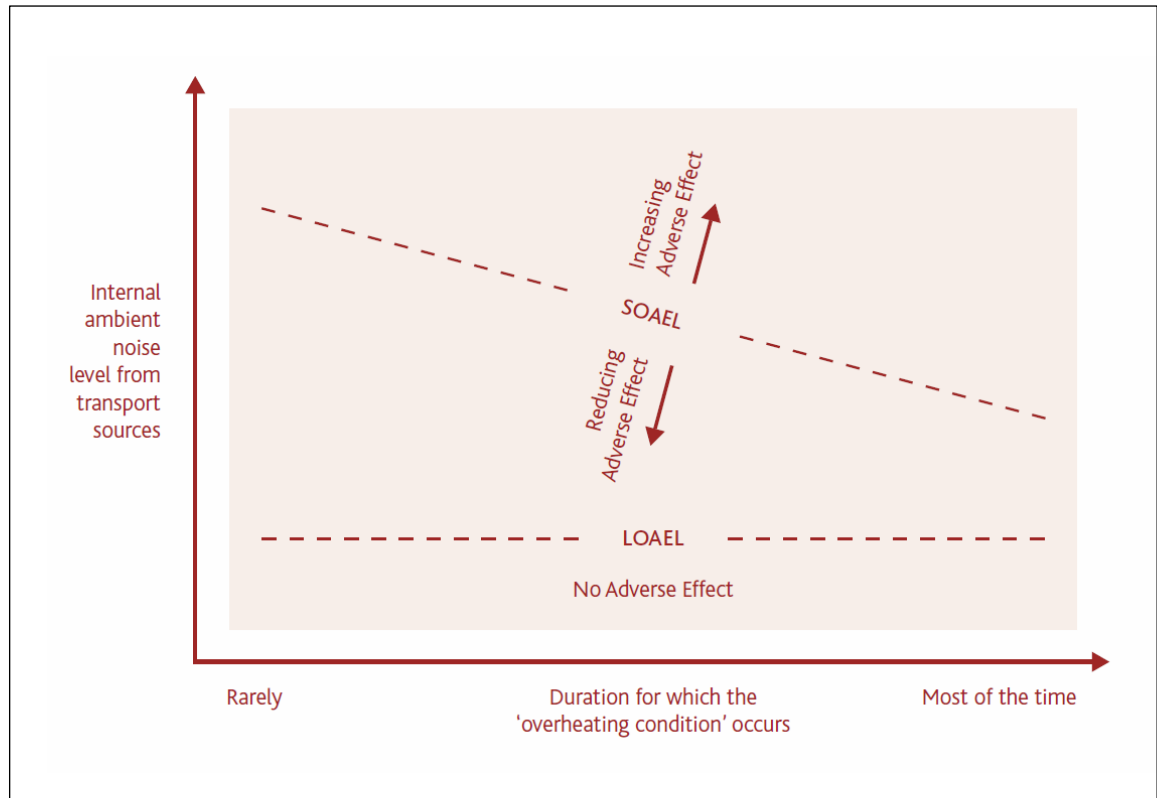


Figure 7.11: ANC AVOG Qualitative guidance on combined effect of internal ambient noise level and duration for the overheating situation

- 7.44 Notwithstanding this, the use of the semantic boundaries implied by the ANC guidance is considered to provide a useful means of providing an initial risk assessment of potential adverse impacts.
- 7.45 The operational noise model of the site has therefore been categorised in line with the above guidance and is presented in **Figures 8.12** to **Figures 8.17**, which presents the AVOG risk assessment for an open window output from acoustic modelling at 2nd, 6th and 9th Floors;

Noise and Vibration Assessment



Figure 7.12: Initial AVOG Risk Assessment for Open Windows: Daytime 2nd Floor



Figure 7.13: Initial AVOG Risk Assessment for Open Windows: Daytime 6th Floor

Noise and Vibration Assessment

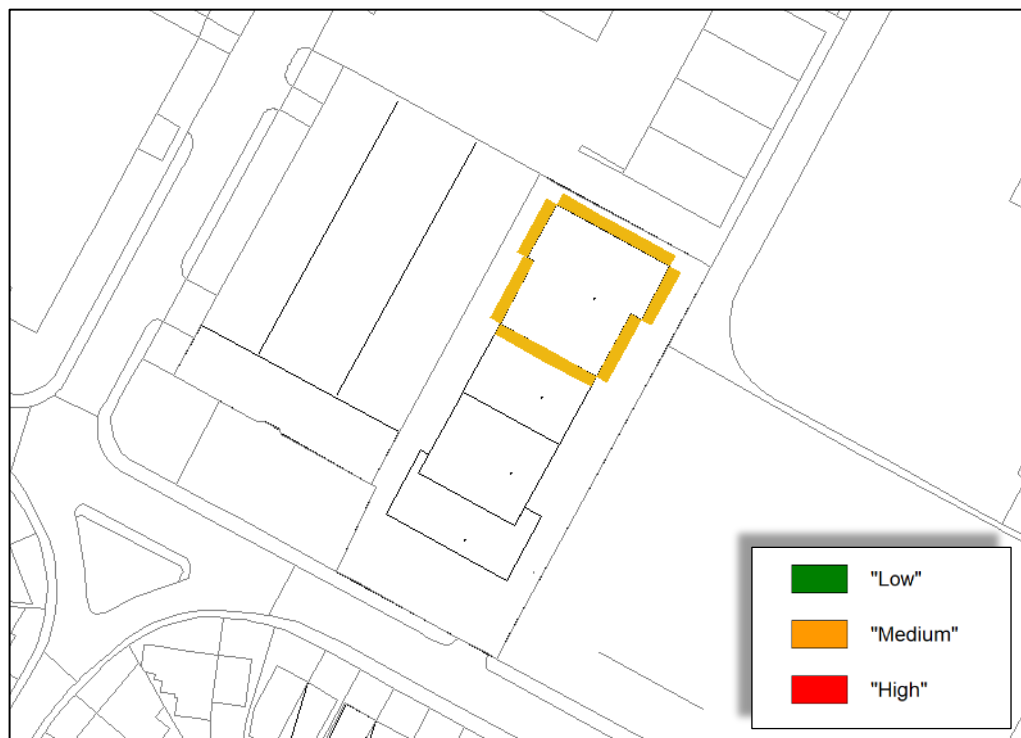


Figure 7.14: Initial AVOG Risk Assessment for Open Windows: Daytime 9th Floor



Figure 7.15: Initial AVOG Risk Assessment for Open Windows: Night-time 2nd Floor

Noise and Vibration Assessment



Figure 7.16: Initial AVOG Risk Assessment for Open Windows: Night-time 6th Floor



Figure 7.17: Initial AVOG Risk Assessment for Open Windows: Night-time 9th Floor

Noise and Vibration Assessment

- 7.46 The above figures demonstrate that the risk of overheating for the proposed development is generally classified as a “low” to “medium”. Based on the above guidance, it is can be seen that the site (including consideration of future noise levels likely to be experienced on the upper floors of the building) would not be considered to have a significant adverse effect (i.e. a high risk) and it is considered reasonable for dwellings to rely on natural ventilation to assist with the thermal control of their properties.

Element 3 – External Amenity Area Noise Assessment

- 7.47 Guidance in the World Health Organisation’s “Guidelines for Community Noise” recommends that, to avoid serious annoyance during the daytime and evening, noise levels in external amenity areas should not exceed 55dB $L_{Aeq,16hour}$.
- 7.48 Section 7.7.3.2 of BS 8233: 2014 states

“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noisy areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”

- 7.49 Given the constrained dimensions of the site and height of the proposed building, it may be challenging to deliver achieve a value of 55dB $L_{Aeq,16hour}$. The development does however seek to minimise noise levels in amenity spaces as far as practicable, for example by using the massing of the building to help screen communal amenity spaces on the roof areas of the building and avoiding any private balconies on the northern elevation of the building.

Element 4 - Assessment of other Relevant Issues

- 7.50 ProPG guidance indicates that this element of the assessment should include information regarding:
- compliance with relevant national and local policy;
 - magnitude and extent of compliance with ProPG;

Noise and Vibration Assessment

- likely occupants of the development
- acoustic design v unintended adverse consequences
- acoustic design v wider planning objectives

7.51 Each of these elements is considered below:

Compliance with Relevant National and Local Policy

7.52 The assessments presented in preceding sections conclude that the proposed scheme complies with relevant national and local planning policy.

Magnitude and Extent of Compliance with ProPG:

7.53 The magnitude and extent of compliance with ProPG guidance is considered to be fully addressed in preceding sections, i.e. the development implements “good acoustic design”; internal noise levels are adequately controlled (including analysis of all modes of ventilation of the properties) and noise levels in external amenity spaces have been reduced as far as practicable.

Likely Occupants of the Development

7.54 The proposed development will deliver up to 103 residential units. The proposed occupants of the development are considered to have a “normal” sensitivity to noise, which would not alter the preceding conclusions regarding policy compliance.

Acoustic Design v Unintended Adverse Consequences

7.55 The proposed delivery of the acoustic design intent of the development should not result in any unintended adverse consequences.

Acoustic Design v Wider Planning Objectives

7.56 Paragraph 002 (Reference ID: 30-002-20190722) of governmental Planning Practice Guidance states:

“Can noise override other planning concerns?”

It can, where justified, although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings as these can have an important effect on whether noise is likely to pose a concern”.

7.57 The preceding sections of this report conclude that the proposed development will avoid any “significant” noise impacts and will mitigate and reduce to a minimum other adverse impacts on health and quality of life. As such, the proposed development is considered to comply with national and local planning policy. These conclusions may therefore add

Noise and Vibration Assessment

weight to the wider planning objectives of the scheme and future delivery of the LBH's future aspirations for the regeneration of the area, embodied in Policy SA5 of the Local Plan Part 2.

Conclusions

7.58 The assessments set out above consider all four elements of the recommended ProPG "Stage 2" assessment. The assessments conclude:

- The scheme proposals follow a good acoustic design process;
- Internal noise levels can be adequately controlled through the use of appropriate specified glazing and alternative means of ventilation;
- Noise levels in external amenity spaces have been reduced to the lowest practicable levels; and
- The scheme is considered to comply fully with national and local policy relevant to noise and provides an appropriate development site for the delivery of up to 103 new residential units.

7.59 It is therefore concluded that the residential element of the proposed development accords with noise related national and local planning policy and industry standard good practice guidance.

7.60 In addition to the above, it should be noted that the suitability of the site for residential development was previously accepted by LBH when determining the earlier mixed use application for the site (LBH ref. 51175/APP/2018/4260). This is clearly recorded in the formal consultation response of the Council's ASB and Environment Team (email from Monica Mulowoza to Zenab Haji-Ismail dated 30 April 2019, attached at **Appendix C**) which concluded:

"I have read through the acoustic report and the applicant has demonstrated sufficiently how the internal noise levels and external surrounding amenity will achieve standards contained within BS 8233 2014. Kindly consider adding the following noise conditions....",

7.61 The conditions referenced in the email related to (a) noise and vibration from plant and equipment, (b) sound insulation between differing use classes within the building and (c) a requirement to submit details of a final scheme of sound insulation for the external fabric of the building. The current scheme differs from the appeal scheme in that it proposed residential use only and thus the condition implied at (b) above is not relevant. The matters

Noise and Vibration Assessment

covered by point (a) and (b) above would, however, continue to be used to provide control over the relevant design matters.

7.62 The suitability of the site was also considered by Anderson Acoustic commissioned by LBH to represent them in relation to the appeal of the previous scheme for the site (51175/APP/2018/4260). A copy of the LPA's "Statement of Case – Noise" submitted to the appeal is attached at **Appendix D**. Attention is respectfully drawn to:

- Section 4.4 (first paragraph on page 12) which states:

"The Stage 2 assessment of the NVA considers that "standard" thermal double glazing and acoustically rated ventilation will allow the development to be effectively integrated with the existing land uses to the north of the site. With standard thermal double glazing and acoustically rated ventilation it is agreed that internal noise levels are likely to be within the BS8233:2014 criteria."

- Section 4.6 which states:

"It is agreed mitigation is required to be considered to reduce the effect of noise. It is agreed that good acoustic design measures have been discussed for the design of the building such as the blank north façade facing the Squirrels Trading Estate and acoustic ventilation....."

- The first bullet point of Section 7.1 which states:

"Good acoustic design has been followed for the design of the buildings with mitigation measures such as blank north elevation and acoustic ventilation"

7.63 The above clearly shows that the principle of residential development in this locality was previously tested and found to be acceptable. The "good acoustic design" principles found to be acceptable in relation to the previous application are again proposed in relation to the current application. The need for consistency in planning decision making is clearly set out in established case law⁵. Given that the current scheme design proposals continue to embed the principles of acoustic mitigation found to be acceptable in relation to the earlier scheme, there is no reason for the LPA to form a contrary opinion in relation to the suitability of the site for residential development and the revised scheme proposals now submitted.

⁵ *North Wiltshire v Secretary of State for the Environment and Clover* [1993] 65 P. & C.R. 137. At paragraph 145, LJ states "...like cases should be decided in a like manner so that there is consistency in the appellate process. Consistency is self-evidently important to both developers and development control authorities. But it is also important for the purpose of securing public confidence in the operation of the development control system".

Noise and Vibration Assessment

- 7.64 It is also clearly material to note that the site is allocated under Policy SA5 of the LPA's adopted Local Plan – Part 2 which promotes the site for mixed use development, including residential development.

8 Development of the Area

Site Context

- 8.1 As noted earlier, the site forms part of wider site allocation promoted in Policy SA5 of the adopted Local Plan Part 2 for future mixed use residential-led redevelopment of the area. The site forms part of allocated “Site B”, shown in **Figure 8.1** below with Policy SA5 indicating the suitability of the site for the creation of up to 300 residential units.

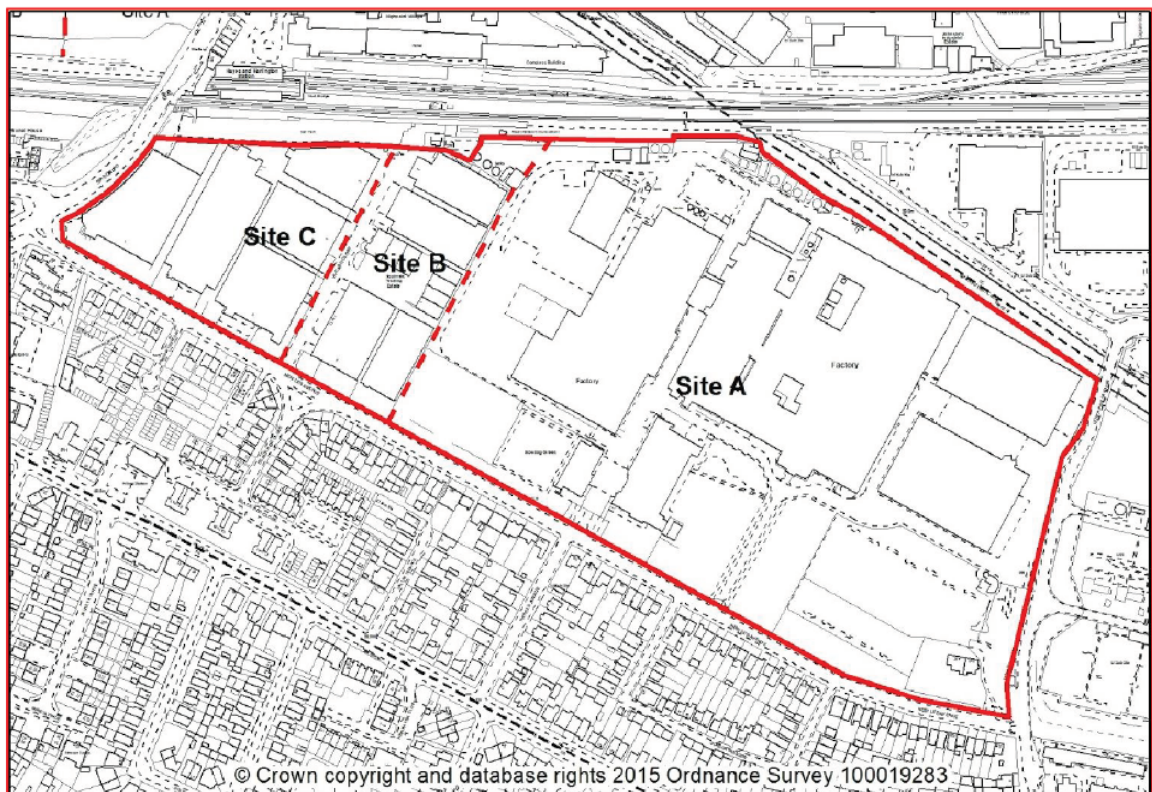


Figure 8.1: Site Allocation SA5 – Land to the South of the Railway, including Nestle Site

- 8.2 Given the common goals enshrined within the strategy for the wider site allocation, each development site will need to be brought forward will clearly require mutual respect for the amenity of its own residents and those of its neighbours. In that regard, the future master planning of the site is not considered to raise any fundamental concerns regarding future adjoining land uses, and the LPA will retain future planning control over these to ensure an appropriate co-location of differing use classes.
- 8.3 Notwithstanding this, paragraph 182 of the NPPF and draft Policy D12 of the Mayor’s replacement London Plan, introduce an “*Agent of Change*” principle which requires that new development must be integrated effectively with existing business and community

Noise and Vibration Assessment

facilities. It is therefore necessary to consider how the proposed development will integrate with existing land uses (pending delivery of the wider area regeneration proposals) and ensure that, if existing land uses are determined to have a significant adverse effect, the proposed development provides suitable mitigation.

- 8.4 When considering the obligations imposed by paragraph 182 of the NPPF, the government's Planning Practice Guidance is helpful, as reproduced at paragraph 4.9 above. It is important to note that this guidance clearly sets out that paragraph 182 of the NPPF does not seek to “*prevent*” residential development in areas that may experience a significant noise impact from existing commercial/industrial uses. Rather, any significant impacts must be acknowledged and suitable mitigation implemented within the scheme design proposals to avoid residual levels of noise that could cause “*nuisance*” and be actionable under other enforcement regimes.
- 8.5 The following sections therefore review potential implications for the proposed development in relation to the site's existing neighbours.

Land to the East

- 8.6 As clearly shown in **Figure 8.1** above, the eastern boundary of the site is formed with “*Site A*” of the SA5 site allocation. As noted earlier, this site already has extant planning permission for a mixed use development scheme (London Borough of Hillingdon planning ref. 1331/APP/2017/1883), which has been implemented and is currently under construction. The illustrative masterplan for the development is reproduced in **Figure 8.2** below and shows that the area adjoining 9 Nestles Avenue to the east is committed for residential development.

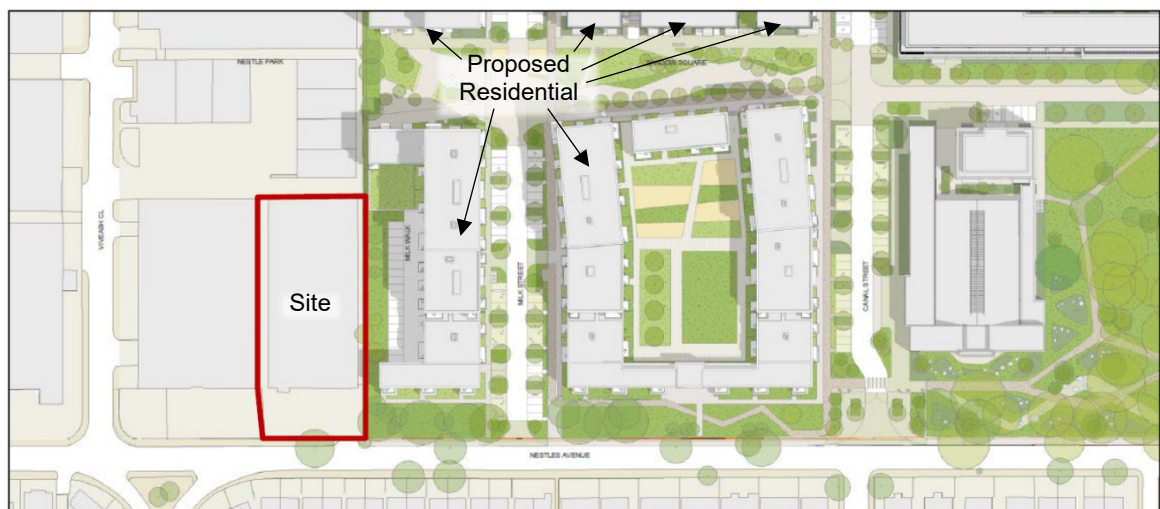


Figure 8.2: Masterplan Proposals for Former Nestles Factory Site

Noise and Vibration Assessment

- 8.7 A recent (July 2020) photograph showing the current construction of the residential block is shown in **Figure 8.3** below:

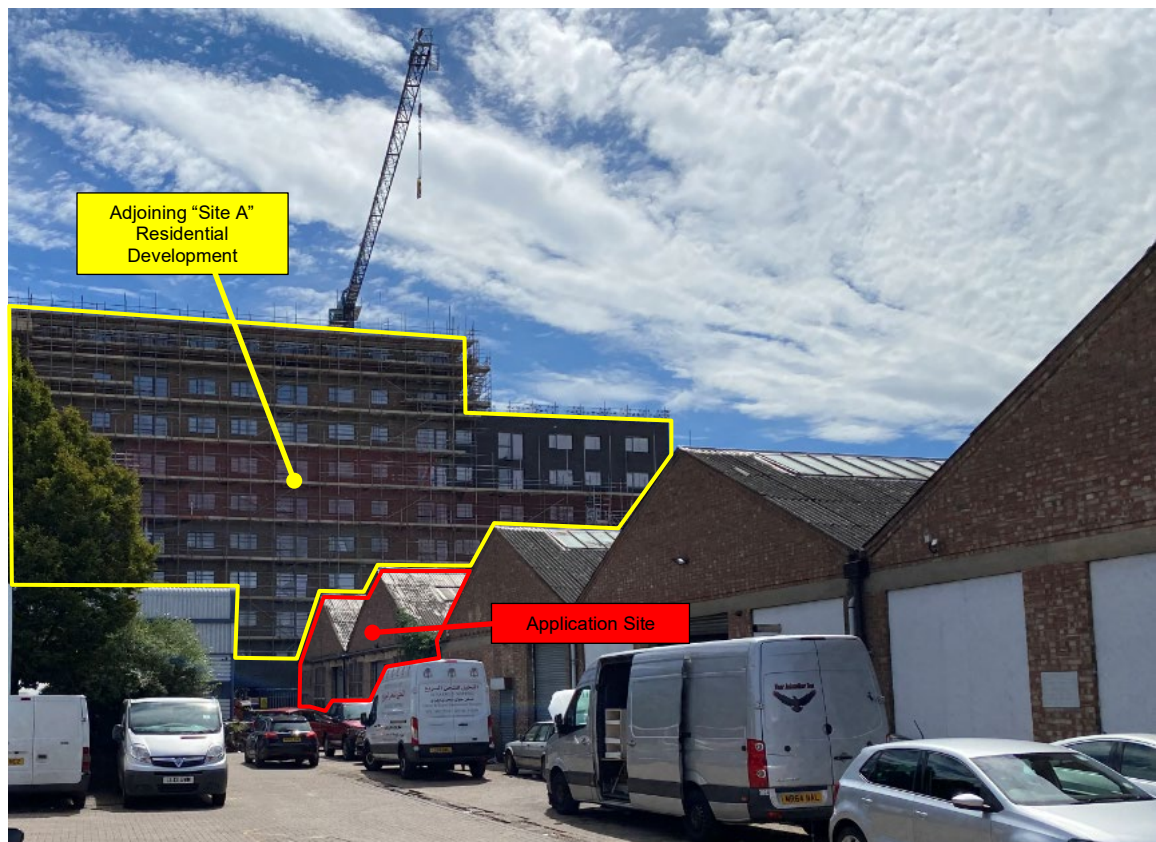


Figure 8.3: Current Construction Progress of "Site A"

- 8.8 Given that the scheme seeks to locate residential development alongside other residential development (as clearly shown above), the proposed development does not create any "*agent of change*" conflict in relation to neighbouring land uses to the east of the site.

Land to the South

- 8.9 The southern site boundary is formed with Nestles Avenue. The opposing side of Nestles Avenue has established residential use and the proposed development (additional residential) would not therefore create any "*agent of change*" conflict in relation to neighbouring land uses to the south of the site.

Land to the North

- 8.10 To the north, the site adjoins the Squirrels Trading Estate. The site comprises 7 commercial units arranged in two buildings creating a broad 'L' shaped arrangement with a parking court to the front, as shown in **Figure 8.4** overleaf:

Noise and Vibration Assessment



Figure 8.4: Squirrels Trading Estate

- 8.11 Existing uses appear to include two units manufacturing kitchen/bedroom furniture; a catering distribution company; courier; motor repair workshop and automotive body shop.
- 8.12 As noted earlier, noise levels were monitored at the rear of 9 Nestles Avenue directly overlooking the parking forecourt to the Trading Estate (Position M2 on **Figure 5.2** presented earlier in this report). **Figures 11.5** and **11.6** below show detailed (1 second) time history profiles showing ambient noise levels characterising this location.

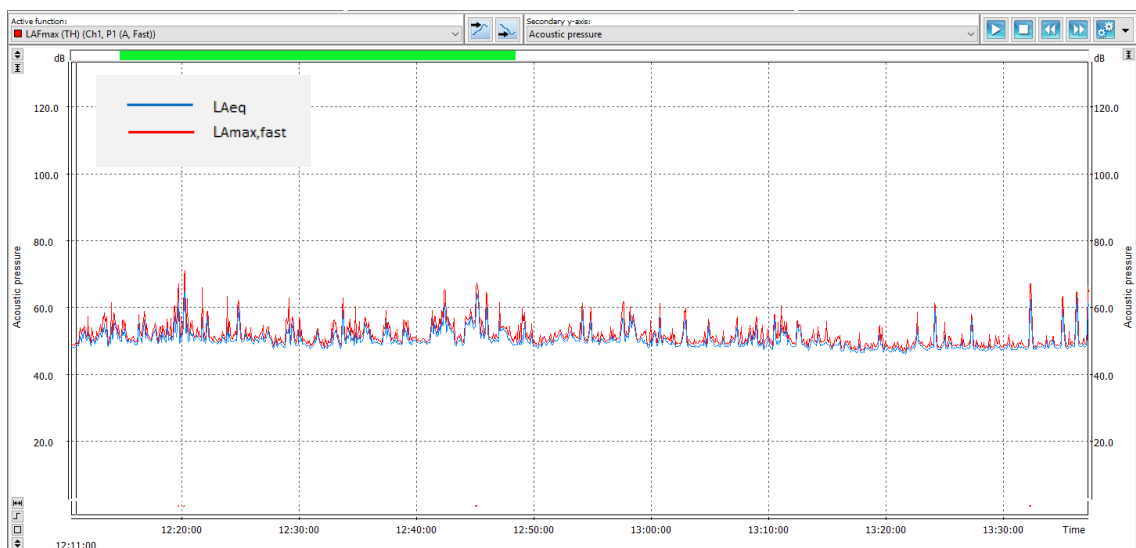


Figure 8.5: Noise Levels Measured at Position M2 (12.00 to 13.45)

Noise and Vibration Assessment

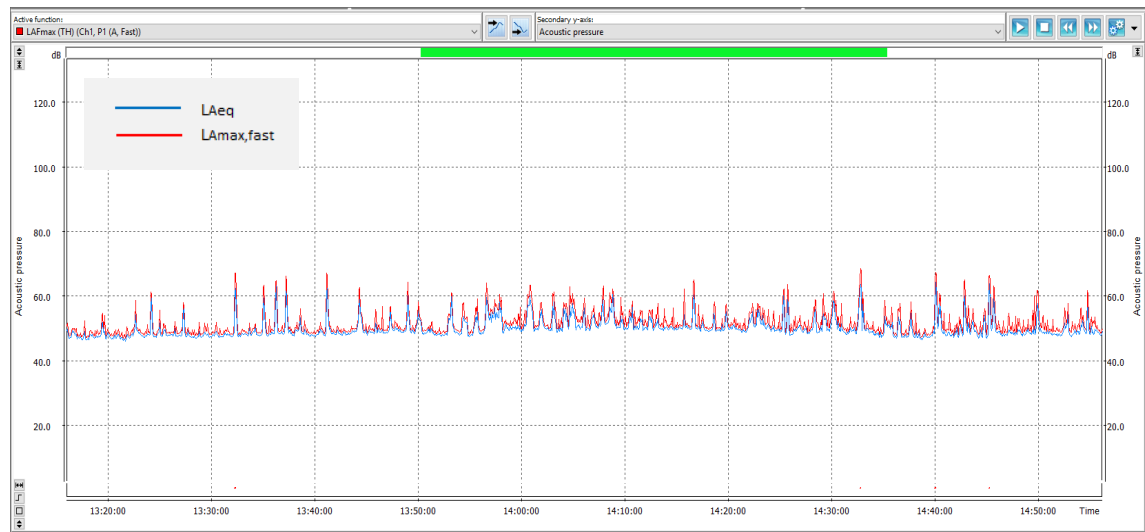


Figure 8.6: Noise Levels Measured at Position M2 (12.00 to 13.45)

- 8.13 The above graphs show that $L_{Aeq,1hour}$ noise levels ranged from 49-52dB, with typical maximum noise levels up to around 67dB $L_{Amax,fast}$. As noted earlier, noise levels at this location were characterised by an underlying level of distant traffic noise with transient noise from train pass-bys. As also noted earlier, whilst occasional noise associated with the adjoining commercial units was audible, this arose from a number of different units and was not considered to be dominant in the context of the ambient noise environment.
- 8.14 As discussed in paragraphs 5.23 to 5.36 earlier, additional automated survey was undertaken at a location directly overlooking the Squirrels Trading Estate (monitoring position identified as **A1** in **Figure 5.3**) over an extended time period between 2nd to 6th August 2019. An analysis of these additional data again demonstrates that, whilst audible, noise associated with existing businesses in the Squirrels Industrial Estate is not dominant.
- 8.15 The additional noise monitoring undertaken also demonstrates the modest noise environment which characterises the locality, most particularly during the evening, overnight and on Sundays, e.g. times when the amenity value of terraces, balconies, etc, will be most highly prized.
- 8.16 In light of the above, it is concluded that the existing employment uses within the Squirrels Trading Estate should not result in a “*significant adverse effect*” on future residents. For clarity, it should be noted that this conclusion is not intended to infer that noise associated with such uses is inaudible – observations during site attendances confirm that noise from existing industrial uses is audible. However, when viewed in context, the noise

Noise and Vibration Assessment

intermittently emanates from a number of differing source but the combined extent, character and sources of noise is not considered to fall into the realm of “*nuisance*” noise.

- 8.17 To amplify on the above, it should be noted that the ‘test’ for determining when noise constitutes a “*nuisance*” must be judged by the standard of the “*reasonable man*”, taking into account the character of the area; whether the noise is an unreasonable interference with the use and enjoyment by occupants of their land and whether (taking account of any purpose provided mitigation to control noise) and whether it materially and unreasonably detracts from their enjoyment of their property.

Noise Magnitude

- 8.18 In order to determine the existence of a nuisance, it is not necessary for the noise to exceed any particular noise level. What needs to be demonstrated is that the level of noise is ‘*unreasonable*’ and will materially interfere with the use of property.
- 8.19 As noted earlier, the noise monitoring at the site clearly show that existing noise levels are modest in the context of community noise guidance (such as the WHO’s “*Guidelines for Community Noise*”).⁶ It is therefore difficult to contend that the “*reasonable*” man would find such a level of noise to be an unreasonable magnitude.
- 8.20 To help further explain this, the “*Noise Exposure Hierarchy Table*” accompanying Paragraph: 005 (Reference ID: 30-005-20190722) of National Planning Practice Guidance describes the outcome of a “*Significant Observed Adverse Effect*” as:

“The noise causes a material change in behaviour and/or attitude or other physiological response, 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.”

- 8.21 The noise monitoring undertaken at the site shows that the magnitude of noise associated with the existing use and operation of the Squirrels Trading Estate is not consistent with such effects. With regard to internal noise levels that future residents could experience, it is clear that noise intrusion can be readily controlled with the use of standard thermal double glazing and alternative means of ventilation already embedded within the scheme

⁶ The introduction to the WHO guidelines states “*Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources, except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood.*” During the daytime, the guidelines suggest that an external daytime sound level of 55dB _{L_{Aeq,16hour}}.

Noise and Vibration Assessment

design proposals to control noise intrusion from road and rail traffic. With regard to noise in external areas, it is clear that the magnitude of noise is modest based on industry standard community noise guidance.

- 8.22 Furthermore, given that existing industrial activities do not occur overnight, the existing use of the industrial estate does not create a risk of potential sleep disturbance effects for future residents.

Character of Noise

- 8.23 In order for a noise to be considered a nuisance, it will normally be necessary to demonstrate that it is obtrusive, annoying and ‘*out of character*’ with the area. In this case, the proposed development seeks to introduce **new** residential development adjacent to an existing industrial area.

- 8.24 Paragraph 8.5 of BS 4142: 2014 the following guidance for the situation of ‘*new noise sensitive receptors being introduced to an area*’:

“Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation.”

- 8.25 It is therefore clear that noise associated with existing industrial uses can reasonably be considered to constitute part of the aural character of the area. Furthermore, given that residents would be “*new*” to the area, they cannot observe any “*change*” in the acoustic character of the area. Such a scenario is therefore also considered to be a positive indicator that there cannot be a “*significant adverse effect*” based on the expected outcomes of governmental Planning Practice Guidance.

Character of Area

- 8.26 It is established case law that it is no defence to assert that a complainant “*came to the nuisance*”. It is, however, entirely material that the presence of existing commercial/industrial uses forms part of the character of the area and should therefore reasonably inform any noise nuisance allegation. This is rightfully acknowledged in Paragraph 017 (Ref ID 30-017-20190722) of the government’s planning practice guidance which is reproduced below:

Noise and Vibration Assessment

“When assessing whether a statutory nuisance exists, local authorities will consider a number of relevant factors, including the noise level, its duration, how often it occurs, the time of day or night that it occurs and the ‘character of the locality’. The factors influencing the ‘character of the locality’ may include long-established sources of noise in the vicinity – for example, church bells, industrial premises, music venues, public houses or airfields, and whether they are constant or intermittent.”

- 8.27 It is clear from the above that, when considering the likelihood of “new” development being subjected to nuisance from existing industrial uses, appropriate weight must be given to the “character of the locality”. It is also important to consider the presence of other adjoining land uses that may have a similar sensitivity to noise as the proposed new development.
- 8.28 In that regard (and as noted in paragraphs 8.6 to 8.8 above), it is material to note that the LPA has granted planning permission for the mixed use development of the former Nestle factory site, which directly adjoins Stanford House and indeed the Squirrels Trading Estate to the east.
- 8.29 It is particularly noteworthy that Block D of the adjoining permitted development introduces new residential flats immediately adjacent to the Squirrels Trading Estate. The typical internal arrangement of flats within Block D is shown in **Figure 8.7** below.

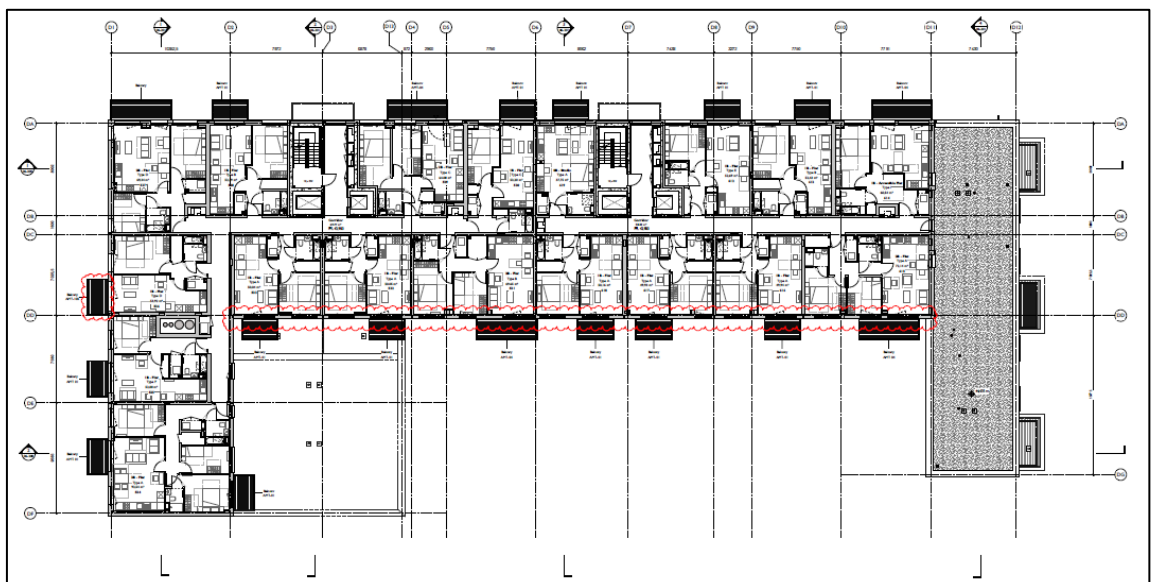


Figure 8.7: Proposed Internal Arrangement of Block D: 4th Floor

Noise and Vibration Assessment

8.30 It can be seen that the permitted residential development includes the provision of single aspect dwellings and private balconies which have a direct line of sight to the Trading Estate.

8.31 **Figure 8.8** below shows the view from the Trading Estate towards Block D (during an earlier phase of construction) and which readily shows the proximity of the building facades and proposed balconies to the existing industrial uses.



Figure 8.8: View from Squirrels Trading Estate to New Residential

8.32 Given the introduction of these new dwellings adjacent to the existing Trading Estate, it can be reasonably concluded that the future dwellings to be created by the redevelopment of Stanford House would not create a risk of “*unreasonable restrictions*” being placed on the use of the adjoining industrial area, i.e. it is improbable that noise nuisance would be caused to the future dwellings to be created at Stanford House, when there are existing dwellings in similar (if not closer) proximity to the existing industrial operations. In such circumstances, it would clearly be inconsistent of the LPA to refuse planning permission for development at Stanford House, when permission for residential development in that locality has already been consented.

Noise and Vibration Assessment

Embedded Mitigation

- 8.33 Notwithstanding the above conclusions, it should be noted that the proposed development actually includes embedded mitigation that will intrinsically reduce the impact of noise from the adjoining Squirrels trading Estate (despite assessment suggesting that future dwellings would not, be subjected to significant adverse effects. In that regard, it should be noted that:
- (a) The proposed development proposes a “blank” north elevation. As such, no flats “directly” overlook over the trading estate; and
 - (b) All flats will, as a matter of course, be provided with thermal double glazed windows and MVHR ventilation. This will allow windows to remain closed at the occupants choice (whilst fulfilling the statutory ventilation requirements of Approved Document F of the Building Regulations).
- 8.34 In light of the above, it is concluded that the proposed development does not create any intrinsic conflict with the existing employment uses of the adjoining Squirrel’s Trading Estate which would prompt the need for additional mitigation to discharge the Developer’s “Agent of Change” obligations in relation to paragraph 182 of the NPPF.

Land to the West

- 8.35 The western boundary of the site is formed 7 Nestles Avenue. **Table 8.1** overleaf provides a summary of the planning history of this site⁷.

⁷ Accessed for verification on 30 July 20120

Noise and Vibration Assessment

Reference	Location	Proposal	Received	Status
49059/APP/2017/1086	7 NESTLES AVENUE HAYES	Variation of condition 5 (no other use including within Class D1) of planning permission Ref: 49059/APP/2011/2790 dated 29-05-2012 (use as higher education college) to allow for use of building for primary education	27-03-17	Refusal (P)
49059/APP/2011/2790	7 NESTLES AVENUE HAYES	Part retrospective change of use from Class B8 (Storage and Distribution) to use as a higher educational college.	16-11-11	Appealed
49059/APP/2011/945	7 NESTLES AVENUE HAYES	Part change of use from Class B8 (Storage and Distribution) to Class D1 (Non-Residential Institutions) for use as an educational college (Part Retrospective)	15-04-11	Refusal (P)
49059/APP/2007/428	7 NESTLES AVENUE HAYES	CHANGE OF USE OF PART OF 7 NESTLES AVENUE FROM CLASS B8 TO MOTOR VEHICLE REPAIR AND MOT TESTING (B2) WITH INSTALLATION OF ROLLER SHUTTER DOOR.	19-02-07	Approval
49059/APP/2006/1996	7 NESTLES AVENUE HAYES	CHANGE OF USE FROM WAREHOUSE (CLASS B8) TO MOTOR VEHICLE REPAIR AND MOT TESTING (CLASS B2 - GENERAL INDUSTRIAL) AND INSTALLATION OF ROLLER SHUTTER AND INTERNAL ALTERATIONS.	10-07-06	Withdrawn (P)
49059/APP/2006/1040	7 NESTLES AVENUE HAYES	CHANGE OF USE FROM WAREHOUSE (CLASS B8) TO CONFERENCE AND BANQUETING CENTRE (CLASS D1)	04-04-06	Refusal (P)
49059/B/96/1515	7 NESTLES AVENUE HAYES	Internal alterations to provide enlarged office area and new display area, external alterations to provide new doors and windows, and two new external fire escape staircases and formation of two vehicular crossovers, together with additional car parking provision	30-09-96	Approval

Table 8.1: Planning Register Records for 7 Nestles Avenue

- 8.36 The Officer Report for the most recent of these records (49059/APP/2017/1086) confirms that the existing lawful use of the premises is primarily as a higher education college (Use Class D1), i.e. the use permitted on appeal of 49059/APP/2011/2790 (PINS Ref. APP/R5510/A/12/2176941).
- 8.37 The permitted arrangement of the building is shown in **Figure 8.9** below:

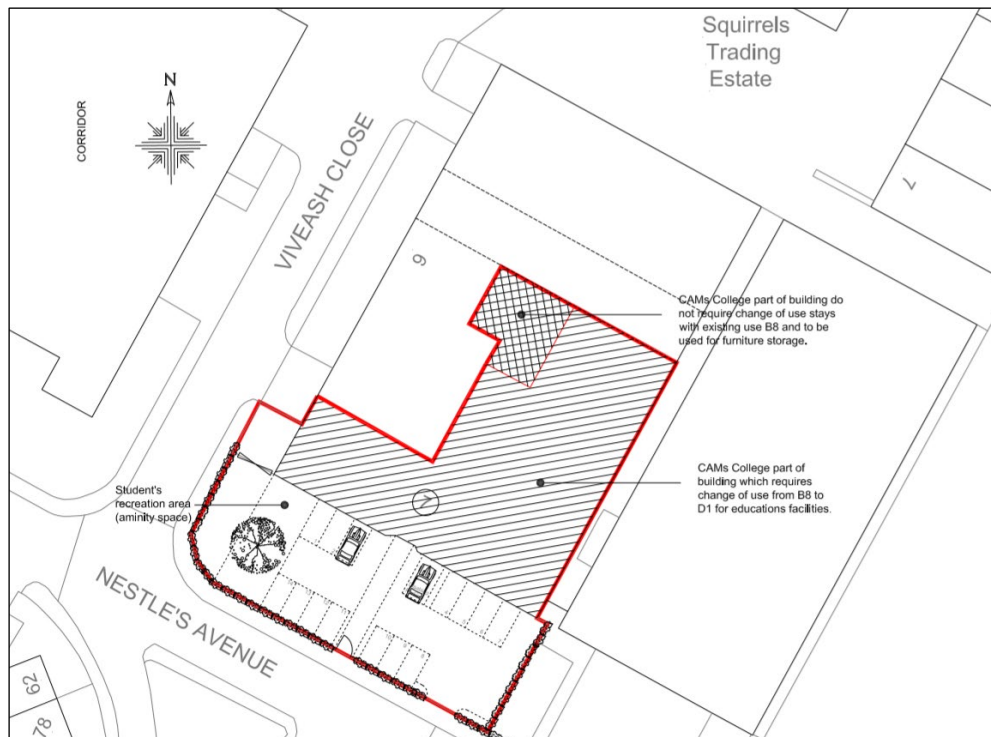


Figure 8.9: Permitted D1 Use of 7 Nestles Avenue

Noise and Vibration Assessment

8.38 The existing, lawful D1 use of 7 Nestles Avenue does not therefore raise any concerns in relation to the proposed residential development at Stanford House. That conclusion is also reinforced by planning conditions attached to the appeal decision which:

- Restrict deliveries to between 08.00 to 19.00 hours Monday to Friday; 10.00 to 16.00 hours on Saturdays, with no deliveries permitted at any time on Sundays, Bank or Public Holidays (Condition 7); and
- Restrict the use of the premises to between 08.00 to 19.00 hours Monday to Friday; 10.00 to 16.00 hours on Saturdays, with no use on Sundays, Bank or Public Holidays (Condition 8).

8.39 With regard to the assessment of potential future noise emitting activity (as required by “Agent of Change” obligations imposed by paragraph 182 of the NPPF) it is material to note that Condition 5 of the Decision Notice for 49059/APP/2011/2790 restricts the use of the site to use as a higher education college only:

“The premises shall be used for a higher educational college and for no other purpose, including any other purpose in Class D1 of the Schedule of the Town and Country Planning (Use Classes) Order 1987 (or any order revoking, re-enacting or modifying that Order).”

8.40 In light of the above restriction, it is clear that any future potential use of the area of 7 Nestles Avenue shown in **Figure 8.9** above would be restricted to that of a higher education college and it can therefore be reasonably assumed that such use would not result in a significant adverse noise impact on the proposed development which would require additional mitigation to discharge the “Agent of Change” obligation imposed by paragraph 182 of the NPPF.

8.41 Whilst the Above D1 use comprises the majority use of 7 Nestles Avenue, the northern extent of the building remains in separate occupation and has lawful B2 use as a motor repair and MOT testing centre. This use was approved by LBH planning permission ref 49059/APP/2007/428. Drawings showing the approved layout authorised by this permission are shown in **Figure 8.10** overleaf.

Noise and Vibration Assessment

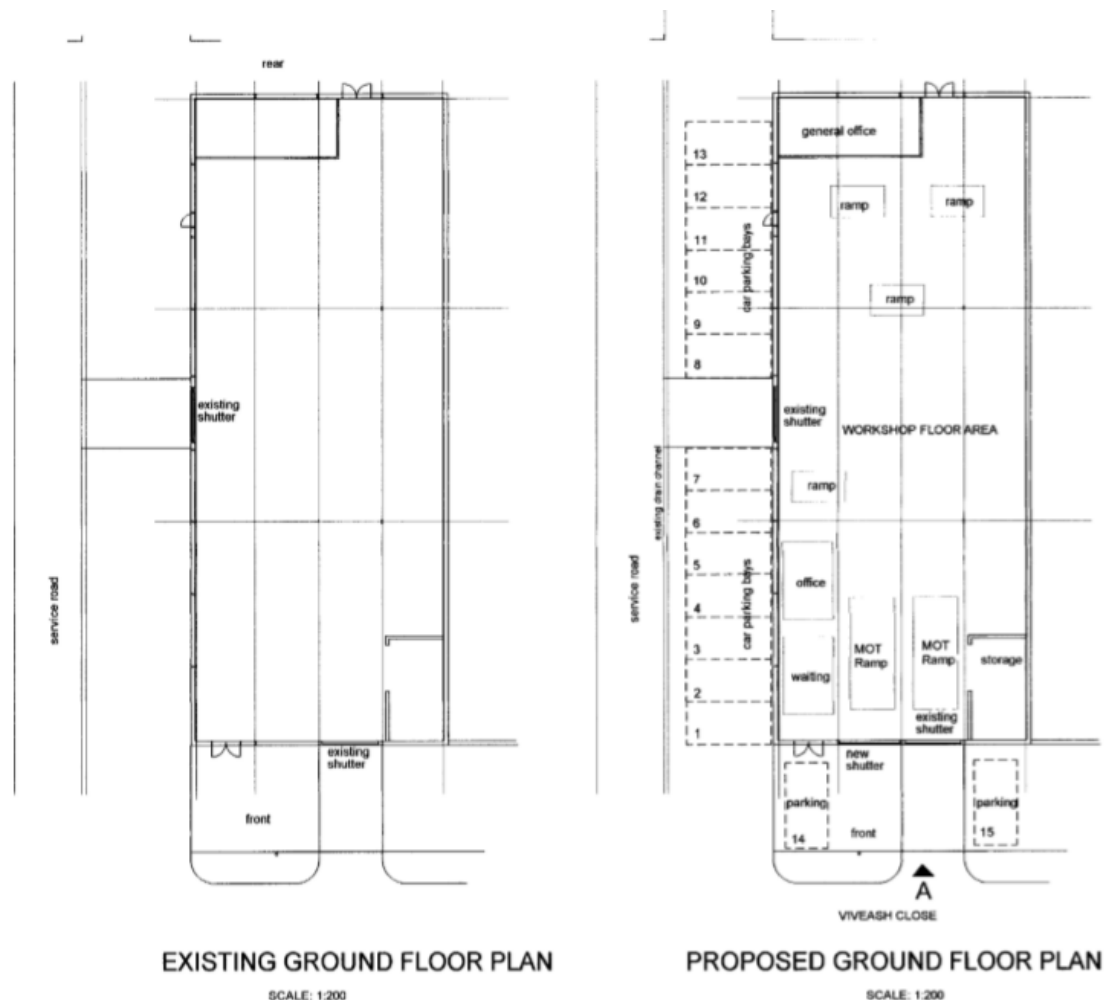


Figure 8.10: General Arrangement of Northern End of 7 Nestles Avenue

8.42 The planning permission granted also includes a number of conditions restricting the permitted use of the premises, including:

- **Condition 3** – An operative condition requiring that all works and or storage or materials are to take place within the buildings.
- **Condition 6** – Restricting the use of the premises for vehicle repair and MOT testing only.
- **Condition 7** – Restricting the hours of operation to 08.30 and 18.00 on weekdays and Saturdays and at no time at all on Sundays or Bank Holidays.

8.43 As previously reported, noise monitoring over a four day period was undertaken over a four day period immediately adjacent to 7 Nestles Avenue. Based on these measurements and observations during site attendances, noise associated with the use of the garage could not be specifically determined within the general prevailing ambient noise levels

Noise and Vibration Assessment

characterising the site (reinforcing the view expressed previously that the noise climate at the site can be reasonably and appropriately be assessed as a “mixed source” site).

- 8.44 The complexity of the noise environment also means that it is extremely difficult to “separate” out noise associated with the use of B2 unit from other noise sources. In light of this, an assessment of the potential noise impact of the lawful use of 7 Nestles Avenue (as a vehicle repair and MOT testing workshop) has been undertaken, based on “worst case” noise data for a busy vehicle repair workshop (taken from ‘real life’ measurements Mayer Brown had conducted). Such data suggests that a busy vehicle repair workshop would generate a “worst case” sound level of around 74dB $L_{Aeq,1hour}$.
- 8.45 The roof of 7 Nestles Avenue appears to be a mix of profiled asbestos sheeting and glazed rooflights which it is estimated would provide a conservative sound reduction of around 20dB(A).
- 8.46 Therefore, making allowances for distance and directivity losses for the roof, a preliminary screening calculation of noise “break-out” from the existing automotive workshop indicates a “worst case” specific noise level of around 42 dB $L_{Aeq,1hour}$ at the closest external amenity space proposed by the development (first floor residential balcony).
- 8.47 Automotive workshops are normally characterised by some degree of “impulsivity” (e.g. due to the use of hand tools, wheel nut wrenches, etc.). However, such activities are intermittent (rather than continuous) and, as such, the overall perception of noise over a one hour period is likely to be more reasonably judged as having “just perceptible” impulsivity. A penalty correction of +3 dB would therefore be required. A further correction of 3dB would then also be appropriate to account for the intermittency of the activities.
- 8.48 If the above corrections are applied to the predicted specific sound level of 42dB $L_{Aeq,1hour}$, this would yield a rating level of 48dB $L_{A,r,T}$.
- 8.49 The existing daytime background noise level characterising the site is around 47dB $L_{A90,15mins}$.
- 8.50 Based on the above, it was concluded that subject to context, the existing use of 7 Nestles Avenue would yield a rating level of +1dB, which would be assessed to be just marginally (1dB) above a level that (without consideration of context) would be considered to have “low” impact, in accordance with the assessment methodology of BS 4142. If the outcome of such assessment is aligned with the government’s Planning Practice Guidance, such a conclusion would indicate that noise levels at the site would be below a “Significant Observed Adverse Effect Level” (SOAEL). The assessment level would, in fact, be only

Noise and Vibration Assessment

marginally (1dB) above BS 4142's guidance defining a "*Lowest Observed Adverse Effect Level*" (LOAEL).

- 8.51 In addition to the above, it is also considered material to note that Section 4.2.7 of the WHO's "*Guidelines for Community Noise*" states that:

"During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55dB; or moderately annoyed with L_{Aeq} levels below 50dB".

- 8.52 As noted earlier, the WHO's definition of '*community noise*' includes industrial noise. It can thus be seen that the likely magnitude of noise break-out from the existing automotive workshop would not be consistent with a level of noise that would reasonably be considered to have a significant adverse effect.

- 8.53 To add further support to that judgement, it should be noted that noise monitoring at the site indicates that the ambient daytime sound level characterising the western boundary of the site is around 52dB $L_{Aeq,16hour}$ (at ground/first floor level), but is likely to increase to around 59dB $L_{Aeq,16hour}$ on the upper levels of the proposed building. The predicted noise levels associated with the use of 7 Nestles Avenue is at least an order of magnitude ***lower*** than the existing ambient noise levels characterising the site and thus clearly reinforces earlier comments that such noise from existing uses would not have a significant adverse effect on the proposed dwellings to be created by the development.

- 8.54 Given that no significant adverse effect is predicted, the "*Agent of Change*" obligation imposed by paragraph 182 of the NPPF (i.e. a need for the developer to implement "*suitable mitigation*") does not apply.

- 8.55 Similarly, given that noise levels characterising the permitted residential are not assessed to have a "*significant adverse effect*", the development proposals are (without additional mitigation) entirely consistent with the national planning policy objective set out in paragraph 180 of the NPPF, i.e. "*....avoid noise giving rise to significant adverse impacts on health and the quality of life*".

- 8.56 Notwithstanding the above, paragraph 180 of the NPPF imposes a requirement "*....to mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development*".

- 8.57 The proposed scheme intrinsically embeds suitable mitigation including:
- The provision of thermal double glazing to all dwellings; and
 - The provision of an acoustically suitable alternative means of ventilation.

Noise and Vibration Assessment

8.58 In addition to the above, it is relevant to note that the revised scheme proposals create additional separation to the boundary to 7 Nestles Avenue through the creation of a Service Mews. A comparison of the previous and current applications is shown in **Figure 8.11** below.



Figure 8.11: Comparison of Previous and Current Design Proposals – West of Building

8.59 This increased separation distance between the proposed development and 7 Nestles Avenue will help reduce incident noise levels at the façade of the proposed building. The increased separation also directly addresses LBH's reasoning for refusal of the earlier application that *".....The development fails to provide sufficient separation from the western boundary of the site to mitigate against a potential noise generating use on the neighbouring site...."* (albeit that such grounds were conceded and not formally contested at appeal.

8.60 In addition to the above, the potential impact of industrial noise in external amenity areas will also be minimised through the use of "solid" balustrades to balconies on the western elevation of the development (overlooking 7 Nestles Avenue) and acoustically absorptive soffits to minimise potential noise reflections from the underside of projecting balconies.

8.61 In order to maintain an "industrial" aesthetic to the proposed development, balconies are to comprise metal railing. To minimise industrial noise from the west of the site, it is proposed that these balconies are supplemented with a glazed screen, as shown indicatively in **Figure 8.12** overleaf:

Noise and Vibration Assessment

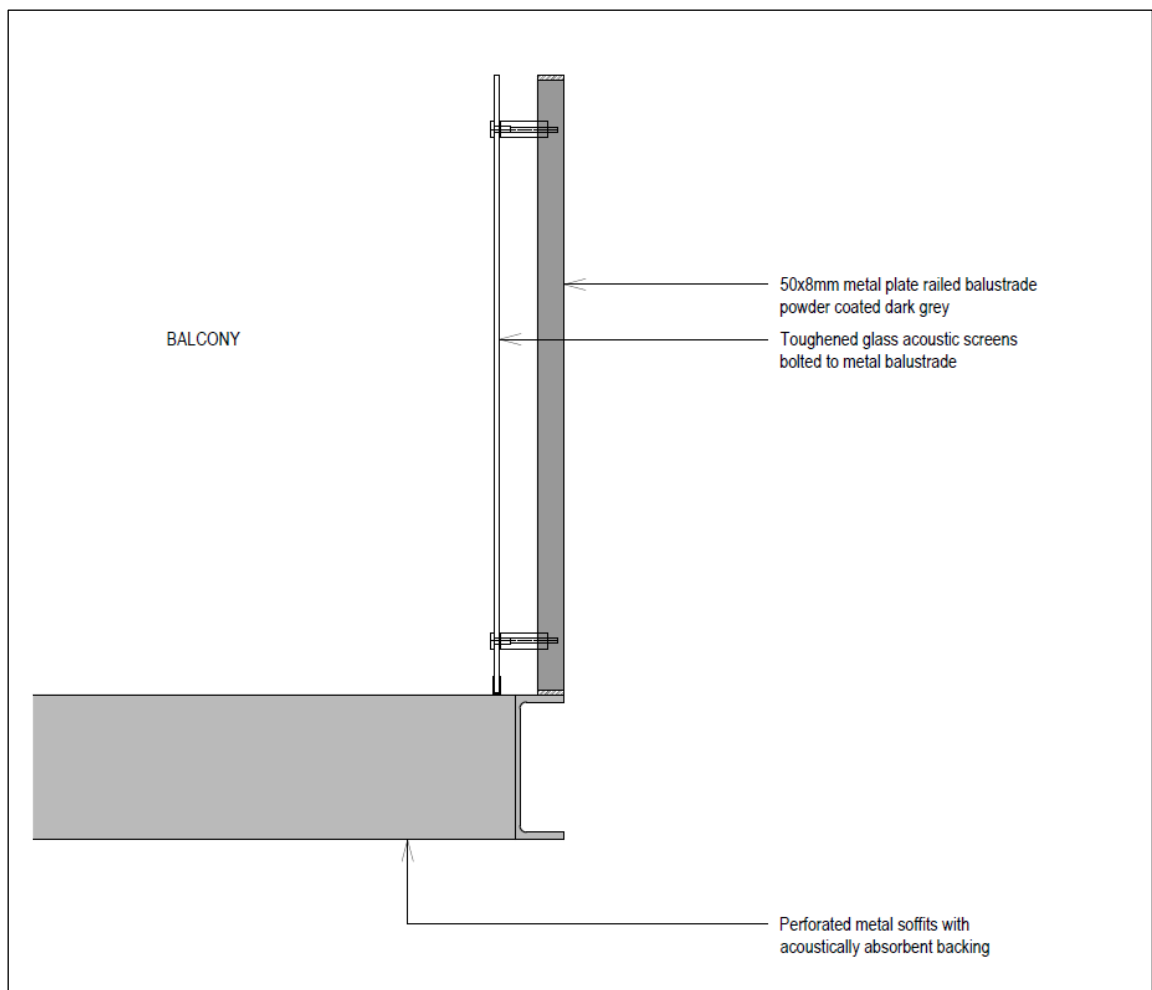


Figure 8.12: Acoustic Screen to Balcony

- 8.62 The above mitigation was previously offered and accepted by the LPA and was instrumental to them withdrawing the noise reason for refusal given in relation to the previous application for residential development at the site. It should, however, be noted that as illustrated in **Figure 8.11** above, the revised scheme design proposals introduce additional mitigation (an additional spatial set-back from the western boundary of the site). The current design proposals therefore embed additional mitigation to that previously considered and found to be acceptable to the LPA.
- 8.63 In light of the above, it is concluded that the proposed development does not create any intrinsic conflict with the existing employment uses to the west of the site.

9 Vibration

- 9.1 As noted earlier, the site is located to the south of the Great Western Mainline railway. A vibration survey has therefore been undertaken to determine if train movements are likely to have any adverse impact on the development.
- 9.2 Attended vibration measurements were undertaken during a site attendance on 03 August 2018 between 11:45 and 14:45. Vibration measurements were made at the northern end of the existing building (i.e. closest to the railway), as shown in **Figure 11.1** below



Figure 9.1: Vibration Survey Location

Vibration Survey Procedure

- 9.3 The following instrumentation was used during the survey:

Noise and Vibration Assessment

Position	Description	Make	Model	S/No.	Calibration
V1	Vibration Meter & Analyser	Svantek	SV106	59144	24/02/17
	Tri-axial Accelerometer	Svantek	SV84	E4400	09/02/17

Table 9.1: Instrumentation used on the vibration survey

9.4 The vibration meter was calibrated in line with the TEDS performance data embedded within the measurement transducer. Vibration data comprising tri-axial weighted VDV, Peak and RMS vales were recorded simultaneously, with one second logging enabled to provide a detailed time history of the survey.

9.5 The transducer was oriented with the axes configured as follows:

- x-axis: normal to adjoining railway tracks;
- y-axis: parallel to adjoining railway tracks; and
- z-axis: vertical

9.6 The measurements used weighting curve “W_b” for the z-axis (head to foot) vibration component, and weighting curve “W_d” for the x- and y-axes (back-to-chest and side-to-side respectively

9.7 The measurement data was analysed to determine typical VDV values in the x, y and z axis for typical one hour. These data are presented in **Table 9.2** below:

VDV _x (m.s ^{-1.75})	VDV _y (m.s ^{-1.75})	VDV _z (m.s ^{-1.75})
0.002	0.002	0.004

Table 9.2: Typical hour VDV values at V1 location.

9.8 Based on the above data, the total typical daytime and night-time VDV from all train movements in each axis has been estimated, as follows, considering the typical hour would happen at any time of the day.

Measurement Axis	VDV _{day} (m.s ^{-1.75})	VDV _{night} (m.s ^{-1.75})
x-axis	0.004	0.003
y-axis	0.004	0.003
z-axis	0.008	0.007

Table 9.3: VDV day and night calculated values

Noise and Vibration Assessment

- 9.9 If the measured values reported in **Table 9.3** above are compared with the guidance of BS 6472, it can be seen that the predicted VDV's are an order of magnitude lower than the '*low probability of adverse comment*' range. On that basis, it can be concluded that the measured baseline vibration levels should not be of a magnitude that is likely to result in adverse comments.
- 9.10 However, the VDV measurement results presented above essentially define the level of ground-borne vibration likely to be imparted to the foundations of the proposed building. Some allowance therefore needs to be made for the way in which the vibration in the foundations will be transmitted through the building superstructure to the floor structures supporting the occupants
- 9.11 This "transfer function" is dependent on several factors, including the design of the foundations, superstructure design, height of the building, etc. These will dictate how readily vibration will be transmitted into the building and how readily this vibration will be transmitted (and amplified) through the building structure. In simple terms, however, the larger, stiffer and more massive the building, the less vibrational energy is likely to be transmitted into the structure and the lower the level of amplification. For example, a concrete framed multi-storey block of flats is likely to be less susceptible to vibration than two storey conventionally built residences with suspended timber floors
- 9.12 As noted above, existing baseline vibration levels characterising the site are an order of magnitude below levels likely to attract adverse comments, thus levels of vibration within any future development are unlikely to give rise to adverse comment, even allowing for any significant amplification. It follows that no additional mitigation to address existing vibration levels characterising the site should be required.

Conclusions

- 9.13 Environmental vibration measurements at the site indicate that the site is not exposed to significant levels of groundborne vibration and estimated daytime and night-time vibration dose values indicate that adverse comments would not be expected, even allowing for significant amplification of measured groundborne levels.

Noise and Vibration Assessment

10 Plant Noise Emissions

- 10.1 The proposed development is to include the installation of 15 heat pumps units within a dedicated plant enclosure at roof level, as shown in **Figure 12.1** below.

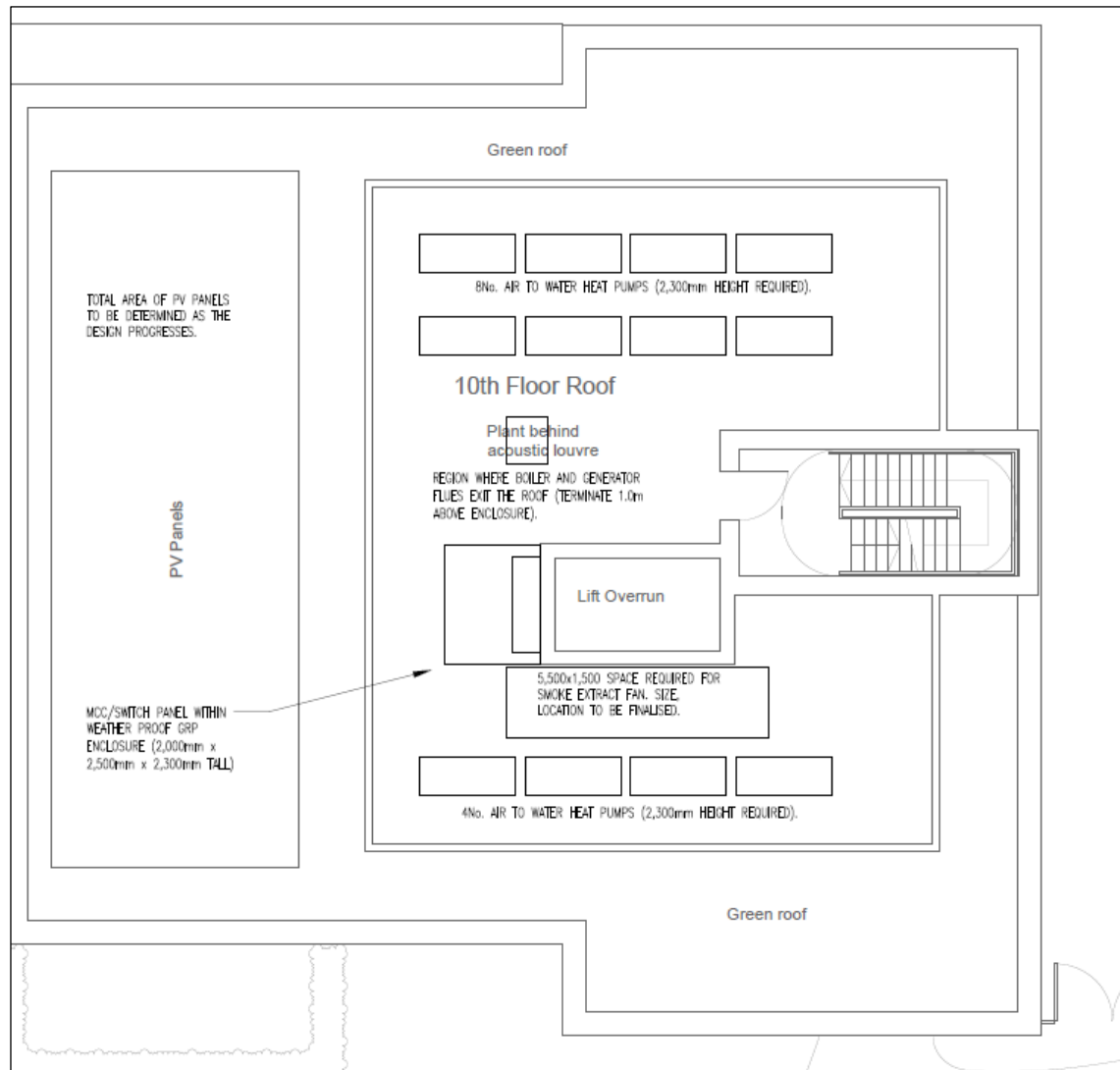


Figure 10.1: Proposed General Arrangement of External Plant and Acoustic Screen

- 10.2 The plant is to be located within a 1.8m high acoustic louvred enclosure. The louvres are to be selected to provide the following minimum insertion loss performance:

Noise and Vibration Assessment

Minimum Octave Band Insertion Loss, dB							
63	125	250	500	1k	2k	4k	8k
4	4	5	8	12	16	15	13

Table 10.1: Minimum Insertion Loss for Acoustic Louvred Enclosure Plant Noise Data

10.3 Finalised plant selections have not yet been made. In order to demonstrate the feasibility of controlling noise emissions from the proposed roof plant, preliminary calculations have been undertaken based on typical manufacturer's noise data for the proposed heat pump units (assumed to be Mitsubishi CAHV-P500YA-HPB), as shown in **Figure 10.2** below:

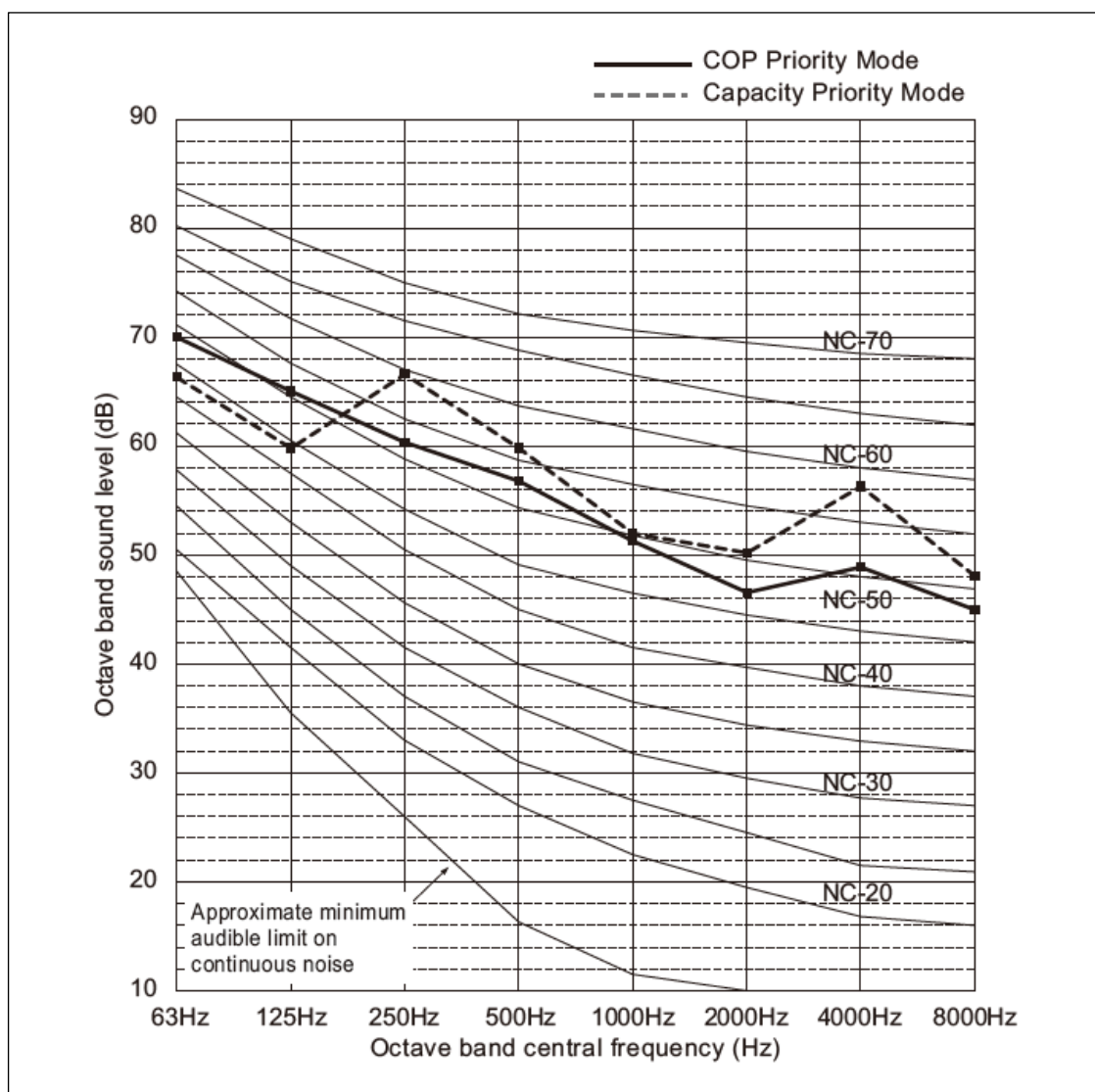


Figure 10.2: Manufacturer's Noise Data

Noise and Vibration Assessment

- 10.4 It is understood that the units are to be operated in “Capacity Priority Mode” which equates to a sound pressure level of 63dB(A) at a distance of 1m (for each unit).
- 10.5 The data suggests that plant noise emissions will have tonal characteristics. When determining the rating level of plant noise emissions, it is therefore recommended that a character correction of 2dB (for ‘perceptible’ tonality) is applied.

Environmental Acoustic Design Targets

- 10.6 Guidance in BS 4142: 2014 recommends that the effect of commercial/industrial noise is considered by comparing the rating level (L_{Ar}) of the noise with the typical background noise ($L_{A90,T}$) when the noise source is not operating. The Standard indicates the following conclusions based on this comparison:
- A difference of around +10 dB or more is likely to be an indication of a significant adverse effect, depending on the context.
 - A difference of around +5 dB is likely to be an indication of an adverse effect, depending on the context.
- 10.7 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 effect or a significant adverse effect. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low effect, depending on the context.
- 10.8 In most situations, conventional noise control engineering (e.g. use of attenuators, acoustic enclosures, etc.) can be used to reduce noise from process and fixed plant installations. In light of this, it is considered desirable and practicable to seek operate and maintain any new plant installations so that the rating level L_{Ar} of the fixed installations in normal operation at the worst affected residential receptor, minus the background level ($L_{A90,T}$), is not more than 5 dB, determined in accordance with BS4142:2014.
- 10.9 Based on the typical background noise levels determined from the results of the noise monitoring undertaken at the site, the following noise emission design targets design targets are recommended:

Rating Level, $L_{Ar,T}$ dB	
Daytime (07.00 – 23.00)	Night (23.00 – 07.00)
42	38

Table 10.2: Recommend Rating Level ($L_{Ar,T}$) for Process/Fixed Plant

Noise and Vibration Assessment

- 10.10 The above noise limits should be achieved with all plant operating normally, as measured at 1m from the façade of any neighbouring building.
- 10.11 In addition to ensuring noise emissions are adequately controlled to existing dwellings on the western side of Nestles Avenue, it is also important that noise emissions are controlled to committed new residential development that will be created through the implementation of the extant planning permission for the adjoining former Nestle factory site.

Plant Noise Assessment

- 10.12 Based on the above, the following noise levels are calculated at the closest existing and proposed residential receptors:

Location	Calculated Sound Level, $L_{A,T}$ dB
94 – 1-2 Nestles Avenue	30
9 th Floor, Block D, Former Nestle Factory Site	35

Table 10.3: Predicted Noise Levels Based on Preliminary Noise Data

- 10.13 The predicted noise levels comply with both the daytime and night-time proposed noise emission limits.
- 10.14 It is therefore concluded that noise emissions from the proposed condenser units should not have any adverse noise impact on existing or proposed dwellings in the vicinity of the site and that the installation of such plant is therefore compliant with national, city-wide and local planning policy objectives.

11 Operational Traffic

General

- 11.1 The Transport Assessment undertaken for the same application by i-Transport LLP compares the traffic attraction of the existing land use with the proposed in order to establish the net traffic attraction expected as a result of the proposed development. The net change in trip generation is demonstrated in **Table 13.1** below;

	Morning Peak			Evening Peak			AADT		
	In	Out	Total	In	Out	Total	In	Out	Total
Existing	8	5	13	4	7	11	86	95	181
Proposed	3	6	8	11	12	24	115	118	234
Net Impact	-5	+1	-4	+7	+5	+13	+29	+23	+53

Table 11.1: Net Change in Trip Generation.

- 11.2 **Table 13.1** demonstrates that compared with the existing use vehicle trips associated with the proposed development are estimated to result in a slight increase in vehicular movements throughout the day, however the increase is modest and is considered acoustically negligible.
- 11.3 In light of the above, the proposed development should not result in any material change in existing traffic noise levels for local or strategic highway network.

12 Construction Noise and Vibration

- 12.1 Construction activities have the potential to cause noise and vibration disturbance to both residential and commercial uses in the vicinity of a site.
- 12.2 Potential noise and vibration impacts during the construction phase of the development include:
- Direct noise impacts due to noise from construction plant, machinery and processes;
 - Direct vibration impacts due to vibration from construction plant, machinery and processes; and
 - Indirect noise and vibration impacts due to construction traffic on neighbouring roads.

Construction Noise

- 12.3 At this stage, detailed information relating to the construction programme, plant, etc. is not available. As such, a detailed, quantitative assessment of construction noise and vibration has not been undertaken.
- 12.4 Notwithstanding this, it is clear that there are existing residential receptors to the north, west and east of the site, all of which will have a 'high' sensitivity to noise. Given the proximity of the dwellings, construction noise therefore has the potential to have a significant, adverse impact.
- 12.5 It is therefore recommended that noise and vibration effects during the construction phase of the works are mitigated through the use of appropriate operative and management controls, implemented through the use of a Construction Environmental Management Plan (CEMP). In principal, such measures will include:
- A general need for any contractor to implement the "best practicable means" for undertaking the works in line with the general guidance of BS5228:2009+A1:2014 (Parts 1 and 2);
 - The use of prefabricated materials wherever possible;
 - Optimising the Site layout to locate noise generating activities as far as possible away from sensitive receptors;
 - Good housekeeping and management;
 - Review of plant and activities to ensure noise minimisation measures are in place and operating;
 - Controlling of Site traffic and setting up of access routes away from sensitive receptors;
 - Provision of noise monitoring during activities likely to affect sensitive receptors; and

Noise and Vibration Assessment

- The use of 'silenced' plant and equipment to be used;
- The provision of screening around those parts of the Site at which activities are likely to generate noise;
- Noise generating plant would be located at a low level and as distant as possible from sensitive receptor;
- Plant would operate at low speeds, where possible, and incorporate automatic low speed idling;
- All plant would be properly maintained (greased, blown silencers replaced, saws kept sharpened, teeth set and blades flat, worn bearings replaced, etc.);
- Consideration to be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant should be certified to meet any relevant standards;
- Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints;
- Controlling the opening hours of the Site;
- Implementing an appropriate regime of pro-active noise monitoring to ensure mitigation is effective.

12.6 With regard to noise monitoring, it is suggested that the potential effects of construction noise are most appropriately assessed by *reference to fixed noise limits, as promoted in Annex E.2 of BS 5228-1:2009 +A1:2014: "Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise"*. This states:

"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. [...] Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*
- *75 decibels (dBA) in urban areas near main roads in heavy industrial areas."*

12.7 Given the location of the site, a value of 70 dB $L_{Aeq,12hours}$ is considered to represent an appropriate SOAEL for construction noise.

12.8 The LOAEL is taken to be 55dB $L_{Aeq,12hours}$, this being aligned with the upper guideline value for daytime noise level determined WHO guidance for external daytime environmental noise levels of 55 dB $L_{Aeq,16hr}$.

Noise and Vibration Assessment

- 12.9 Construction noise will be temporary and this is reflected in the noise impact levels indicated above. Notwithstanding this, if work activity cause a prolonged exposure to noise, the potential effect on receptors may be greater than indicated above and give rise to an unacceptable effect. Based on advice given in Annex E of BS 5228-1, it is therefore considered that additional significance should be given to an effect exceeding the SOAEL of 70dB, where such a noise impact is predicted to occur on 10 or more days of working in any 15 consecutive days, or for a total of 40 days in any six month period.
- 12.10 Combining the above magnitude and temporal criteria, gives the following refined noise effect matrix for construction noise:

Combined Noise Magnitude and Temporal Criteria	Magnitude of Impact
Daytime noise level less than 55dB $L_{Aeq,T}$	Negligible
Daytime noise level between 55 and 70 dB $L_{Aeq,T}$	Low
Daytime noise level greater than 70 dB $L_{Aeq,T}$ (For a period less than 10 days of working in any 15 consecutive days, or for a total of less than 40 days in any six month period)	Medium
Daytime noise level greater than 70 dB $L_{Aeq,T}$ (For a period more than 10 days of working in any 15 consecutive days, or for a total of more than 40 days in any six month period)	High

Table 12.1: Definitions of Magnitude of Effect – Construction Noise

Construction Vibration

- 12.11 Two potential effects of construction vibration need to be considered – (a) the potential effect of vibration on the structure of neighbouring buildings and (b) the potential effect of vibration on occupants within those buildings.
- 12.12 With regard to buildings, vibration can potentially cause cosmetic damage and in the extreme, structural damage. Criteria for a significant vibration effect have therefore been aligned with guidance for cosmetic damage set out in BS 5228-2. Such criteria should safeguard building from structural damage, whilst vibration below the threshold can be considered to be negligible since there would not be no effect. Recommended values are presented in **Table 12.2** below:

Noise and Vibration Assessment

Type of Building	Peak Particle Velocity (PPV) in Frequency Range of 4 Hz to 15 Hz	Peak Particle Velocity (PPV) in Frequency Range of 15 Hz and Above
Reinforced or framed structures	50 mm/s at 4 Hz and above	
Industrial and heavy commercial buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz.	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above.

Table 12.2 Vibration Thresholds for Cosmetic Damage to Buildings

- 12.13 The potential effect of vibration on occupants within buildings has been assessed based on the guidance of Annex B of BS 5228-2, as set out in Table 7.13 below:

Peak Particle Velocity (PPV)	Impact	Magnitude of Effect
0.14mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Negligible
0.3 mm/s	Vibration might be just perceptible in residential environments	Minor
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.	Medium
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Major

Table 12.3 Definitions of Magnitude of Effect – Construction Vibration: Human Comfort

- 12.14 Guidance in BS 5228-1:2009+A1:2014 suggests that vibration effects will not normally be significant beyond a distance of around 20m from the construction works. The nearest noise sensitive receptors to the site are generally beyond this initial scoping distance and, as such, it is considered unlikely that vibration associated with construction works will have any significant adverse impact on neighbouring noise sensitive receptors. It is, however, possible that proposed development plots closer to existing dwellings may give an increase potential risk.
- 12.15 It is therefore recommended that construction vibration is also mitigated through the use of appropriate operative and management controls, implemented through the use of a

Noise and Vibration Assessment

Construction Environmental Management Plan (CEMP). In principal, such measures will include:

- A general need for any contractor to implement the “best practicable means” for undertaking the works in line with the general guidance of BS5228:2009+A1:2014 (Parts 1 and 2);
- Optimising the Site layout to locate vibration generating activities as far as possible away from sensitive receptors;
- Good housekeeping and management;
- Review of plant and activities to ensure noise minimisation measures are in place and operating;
- Where reasonably practicable, plant and/or methods or working causing significant levels of vibration (e.g. use of percussive breakers) should be replaced by other less intrusive plant and/or working methods;
- Consideration should be given to rotary bored piling methods (e.g. continuous flight auger injected piling) rather than driven piling techniques (should piling be required);
- Prior to piling, any known or suspected obstructions which could impede piling operations (and represent a risk of increased vibration) should be removed;
- The possible use of cut-off trenches (which can help control vibration in a similar to manner to the control of airborne noise with a screen or barrier);
- Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints;
- Controlling the opening hours of the Site; and
- Implementing an appropriate regime of pro-active vibration monitoring to ensure mitigation is effective.

Construction Traffic

- 12.16 It is assumed that construction traffic will be routed to the site along existing main roads.
- 12.17 It is considered highly unlikely that construction traffic would have any significant adverse noise impact on existing residential receptors along proposed site access routes. Planning control over the routing of traffic could be retained through the use of an appropriate planning condition, e.g. requiring the submission and approval of a Construction Traffic Management Plan (CMTP) prior to works commencing.

13 Conclusions

Existing Noise Environment

- 13.1 Detailed noise monitoring has been undertaken to determine the existing environmental noise climate at the site. The site is characterised by local and distant road traffic noise and noise from the railway to the north of the site. Noise from existing industrial uses does not form a dominant feature of the existing noise climate.

Planning Policy Context and Design Guidance

- 13.2 The requirements of national, regional and local planning policy relevant to the proposed scheme are discussed. Reference has also been made to industry standard design guidance, in particular ProPG: Planning and Noise, recently published by the Institute of Acoustic, Association of Noise Consultants and Chartered Institute of Environmental Health.

Site Suitability – ProPG Stage 1 Initial Noise Risk Assessment

- 13.3 The potential risk of the site for residential development has been assessed in line with Stage 1 of ProPG guidance. This concludes that the site would be classified as having a “low” to “medium” noise risk.
- 13.4 As such, the site is considered suitable for residential development subject to adherence to a good acoustic design process.

Mitigation

- 13.5 The proposed massing of the scheme (i.e. north south orientation, with increased height to the northern side of the site) will help minimise incident noise levels associated with train movements on the railway to the north, including the minimisation of noise levels in proposed external amenity spaces.
- 13.6 Internal noise levels can be adequately controlled in accordance with industry standard good practice through the appropriate specification of glazing and alternative means of ventilation.

Vibration

- 13.7 Environmental vibration measurements at the site indicate that the site is not exposed to significant levels of groundborne vibration and estimated daytime and night-time vibration

Noise and Vibration Assessment

dose values indicate that adverse comments would not be expected, even allowing for significant amplification of measured groundborne levels.

Plant Noise Emissions

- 13.8 An assessment of noise emission from proposed heat pump units to be installed in a dedicated roof top plant compound has been undertake. It is concluded that noise emissions from the proposed plant should not have any adverse noise impact on existing or proposed dwellings in the vicinity of the site and that the installation of such plant is therefore compliant with national, city-wide and local planning policy objectives.

Development of Neighbouring Land

- 13.9 The site forms part of a former industrial area which is allocated for residential led, mixed use regeneration in the LPA's Local Plan. A review of existing and future adjoining land uses has been undertaken. This concludes that the proposed development can be effectively integrated with existing businesses, and discharges "agent of change" obligations imposed by Paragraph 182 of the NPPF.

Conclusion

- 13.10 Based on the assessments outlined above, there are not considered to be any site specific or technological constraints that would prevent the sustainable developments of the site for residential use and enable its satisfactory co-location with proposed commercial/industrial uses on the ground floor of the development and with future neighbouring land uses.

APPENDIX A: Glossary of Acoustic Terminology

General

A vibrating surface or turbulent fluid flow will cause pressure fluctuations in the surrounding air. These pressure fluctuations are perceived by the human ear as “sound”.

Measurement Units

The human ear can detect sound pressures as low as about 20 μPa , and can tolerate (for short periods) sound pressures as high as 200 Pa, an amplitude range of 10 million times. To take account of this huge amplitude range, sound pressure levels (often written in “acoustic shorthand” as SPL or Lp) are quantified using a logarithmic scale, the decibel (dB) scale. This is based on a reference pressure of 20 μPa , thus a sound pressure of 20 μPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency (Pitch) Characteristics

The sound received at any particular location is not solely influenced by the sound pressure level, the frequency characteristics (pitch) of the noise is also an important factor. Noise audible to a human (with “normal” hearing), typically covers the frequency range 20 Hertz to 20,000 Hertz. Hertz (Hz) are defined as the number of times the sound pressure fluctuates in one second. “Low” pitched sounds fluctuate less times per second than “high” pitched sounds. Whilst humans are capable of detecting a wide range of frequencies, the ear is not equally sensitive to all frequencies – the ear is most sensitive at frequencies towards the middle of the audible range and less sensitive to the lower and higher frequencies.

To take account of this frequency response, sound pressure fluctuations are normally quantified by applying a frequency-weighting network or filter which simulates the frequency response of the ear. In essence, this means that more significance is given to the frequencies at which the ear is most sensitive and less significance to those at which the ear is less sensitive. Noise measurements relating to human reaction are generally made using an “A-weighting” network. These measurements are reported as A-weighted decibels or dB(A). The A-weighted sound pressure level is written in “acoustic shorthand” as L_A .

Variation of Sound with Time

It will be appreciated that the sound pressure level of most noise sources will fluctuate with time. In order to take account of the way in which the human ear perceives noise, it is normal for the sound pressure level to be quantified using a time weighting network, to mimic the speed of response of the human ear. The standardised setting for most types of noise is a “Fast” time weighting.

The manner in which sound fluctuates with time can also influence the subjective manner in which noise is perceived. Noise can be continuous (showing no significant variation with time as in the case of a fan), intermittent (i.e. the noise is transient in its nature, such as a train pass-by) or impulsive (i.e. there is a sudden build up of noise - this can range from “clanking” types sounds as might be experienced next to railway goods yard or a high energy discharge such as an explosion)

Measurement of Sound

Sound pressure levels are measured using equipment comprising a pressure-sensitive microphone, associated amplifier, frequency weighting network, time weighted network and output indicator. In its simplest form this is a small hand-held instrument called a sound level meter. More sophisticated instrumentation (a sound level analyser) is also available which allows the real-time output of the frequency characteristics of the sound to be quantified.

Comparison of Sound Levels

To put the significance of noise measurement into context, the following Table presents the A-weighted sound pressure level of some typical sources:

Sound Pressure Level, dB(A)	Typical Noise Source . Activity
160	Saturn Rocket Taking Off
140	Military Jet Taking Off at 30m
100	Nightclub
90	Heavy goods vehicle driving past at 7m
80	Busy urban road
70	Domestic vacuum cleaner at 3m
60	Busy office environment
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 1999)
20	Remote country location
0	Threshold of hearing – a very eery silence

Addition of Sound Levels

It is important to note that the use of a logarithmic scale to describe noise does not allow normal arithmetic addition. This means that two noise sources each generating a level of, say, 60dB(A) will not generate a combined sound level of 120dB(A). The values must be added logarithmically, which would actually yield a combined sound level of 63dB(A) in this example.

Subjective Perception of Sound Levels Changes

With regard to the human perception of sound level changes, the human ear:

- Cannot generally perceive a sound level difference of less than 3dB(A)
- Will perceive a sound level difference of 4-5dB(A) as “noticeable”
- Will perceive a sound level difference of 10dB(A) as a doubling (or halving) of loudness.

Acoustic Terminology

As stated previously, most sources of noise will fluctuate with time. In order to characterize such noise, it is therefore normal to represent the noise climate using a variety of noise parameters and statistical indices. The most commonly adopted noise parameters are described below:

$L_{Aeq,T}$	This is the equivalent continuous A-weighted sound level measured over a specified time period "T". This is the notional continuous sound level which, over the time T, contains the same amount of energy as the actual fluctuating sound being measured. This parameter is widely accepted as being the most appropriate noise descriptor for most environmental noise and the effects of noise on humans.
$L_{Amax,fast}$	This is maximum A-weighted sound pressure measured with a fast frequency response recorded during the stated measurement period. It is typically used to characterise the highest sound level caused during a noise event.
$L_{A90,T}$	This is the A-weighted sound pressure level exceeded for 90% of the specified time period "T". It is normally used to describe the underlying background noise level of an environment since it inherently excludes the effects of transient noise sources.

Noise Rating (NR) Level

When describing noise from building services installations, it is common to express noise levels in terms of a Noise Rating (NR) Level. The NR level is determined by plotting the measured frequency spectrum of a noise against a series of reference curves, which roughly approximate to equal loudness values. This method permits higher sound levels at low frequencies corresponding to the sensitivity of the human ear. The NR level is defined as the value of the highest curve "touched" by the plotted frequency spectrum. For typical sources of building services noise, the overall A-weighted sound level is numerically around 5-6dB higher than the NR level of the noise.

Airborne Sound Insulation Measurement Parameters

The ability of a building element to reduce airborne noise can be described by a number of different parameters relevant to both laboratory and on-site performance evaluation. In general, the higher these values, the better the resistance of the construction to the transmission of airborne sound. The most commonly used parameters include:

R_w	The " Weighted Sound Reduction Index " (R_w) is a single value measure of the intrinsic sound reduction capabilities of a construction, as measured in an acoustic laboratory. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013.
R'_w	The " Weighted Apparent Sound Reduction Index " (R'_w) is a single value measure of the apparent sound reduction capabilities of a construction, when installed on-site (which will normally be some way lower than the laboratory value due to less favourable installation conditions, the quality of workmanship, etc.). Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013. In practice, the R'_w of a construction can only be reliably determined if "direct" sound transfer through the partition can confidently be taken as the dominant noise transfer path (i.e. there is no "flanking" sound transmission).
D_w	The " Weighted Sound Level Difference " (D_w) is a single value measure of the on-site sound reduction between two rooms. This value inherently includes "direct" sound transmission through any separating construction and "flanking" transmission through other building elements.

Measurement values are determined in accordance with BS EN ISO 140-4: 1998 (for Building Regulations compliance purposes) or BS EN ISO 16283-1: 2014 and weighted in accordance with BS EN ISO 717-1: 2013.

$D_{n,fw}$	The " Weighted Normalised Flanking Level Difference " ($D_{n,fw}$) is a single figure measure of the sound reduction between two rooms solely due to sound transmission through a specified flanking path. This parameter is frequently used to provide an indication of the sound reduction capabilities of suspended ceiling and raised access floor constructions where there is common void between adjacent rooms or as a measure of sound that may be transmitted between rooms through external curtain walling. Measurements are undertaken in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-1: 2013.
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Impact Sound Insulation Measurement Parameters

Some building elements also have the potential to generate "impact" noise, for example due to human "footfall" on floor structures, or the impact of rainfall on lightweight roofing components. A variety of parameters are again available to define the amount of noise likely to be generated. In general, the lower these values, the less sound the construction will generate as a result of impacts. Typical measurements parameters include:

$L_{nT,w}$	The " Standardised Impact Sound Pressure Level " is a "single number" rating describing the intrinsic impact sound insulation capabilities of a construction (such as a floor system) as measured in an acoustics laboratory. Values are determined in a vertical sound transmission suite by locating a "tapping machine" in the upper room of the suite and measuring the amount of sound radiated by the floor in the room below. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-2: 2013.
$L_{n,fw}$	The " Normalised Flanking Impact Sound Pressure Level " is a "single number" rating describing the amount of flanking sound that would be transmitted to an adjoining space (separated by a partition) due to impacts on the test sample. It is, for example, used to indicate the amount of noise that may be generated due to footfall noise on a raised access floor system. Values are determined in a horizontal sound transmission suite by locating a "tapping machine" one side of a separating partition built off the test sample and measuring the amount of noise radiated by the floor in the adjoining space on the other side of the partition. Measurement values are determined in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-2: 2013.

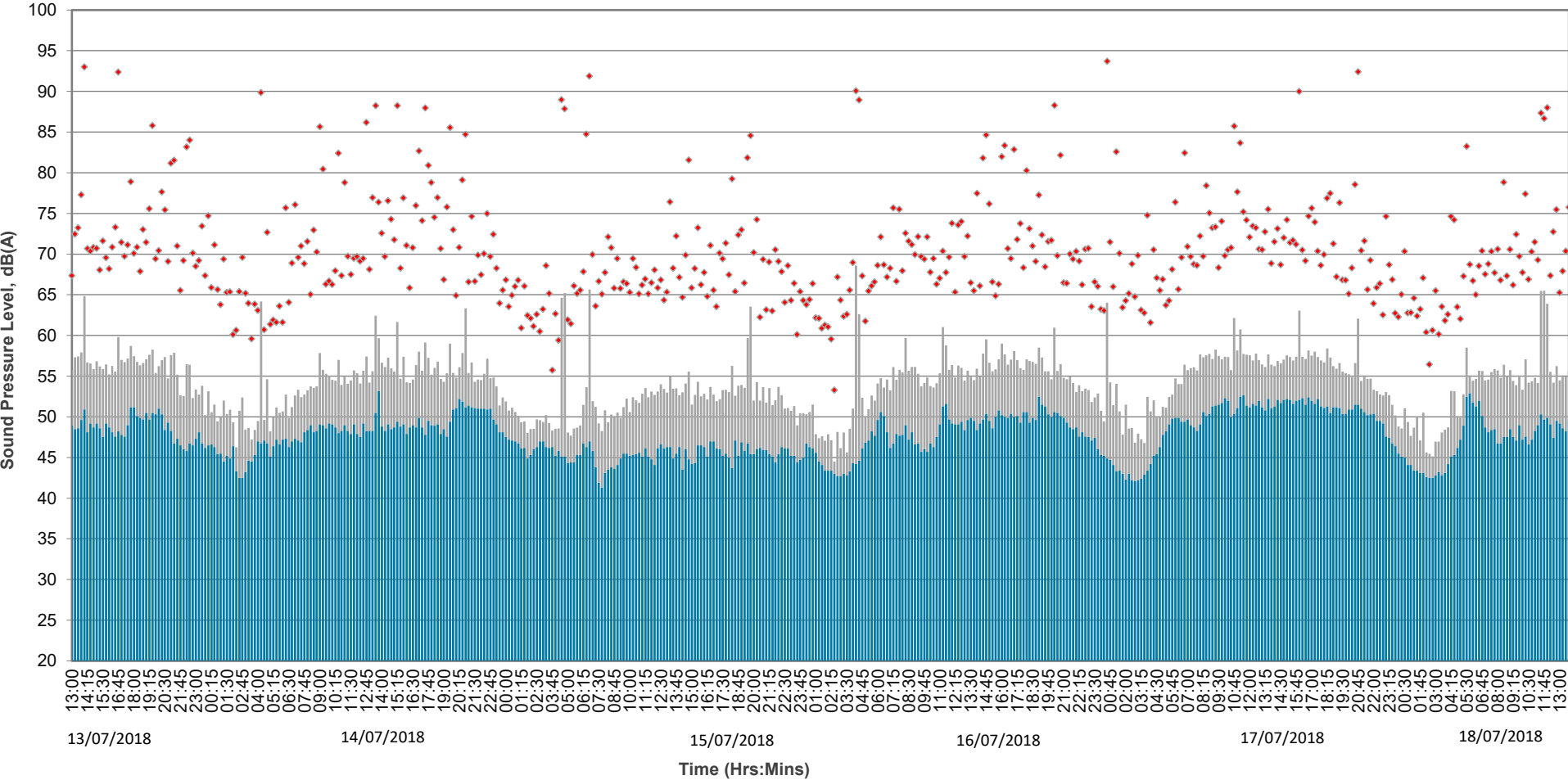
Room Acoustic Measurements

T	The " Reverberation Time " (T) of a room is defined as the time taken for the sound energy produced by a source Time (RT) to decay by 60 dB after the source has been switched off. The reverberation time of a space can be calculated by considering the volume of the room and the areas and sound absorption qualities of room surface finishes. Small, "soft" rooms tend to give low reverberation times, whilst large, "hard" rooms tend to give long reverberation times.
α_p	The " Practical Acoustic Absorption Coefficient " (α_p) is a measure of how much sound energy is absorbed by a building element at a particular frequency, as measured in accordance with BS EN ISO 354: 2003.
α_w	The " Weighted Absorption Coefficient " (α_w) is a single figure measure of the overall sound absorption capabilities of a building element determined in accordance with BS EN ISO 11654: 1997.

APPENDIX B: Noise Monitoring Time History Plots

Time History Graph A1

Project:	9 Nestles Avenue, Hayes
Measurement Location:	A1
Survey Period:	13/07/2018-18/07/2018



KEY: LA90,15mins LAeq,15mins LAmax,fast

Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

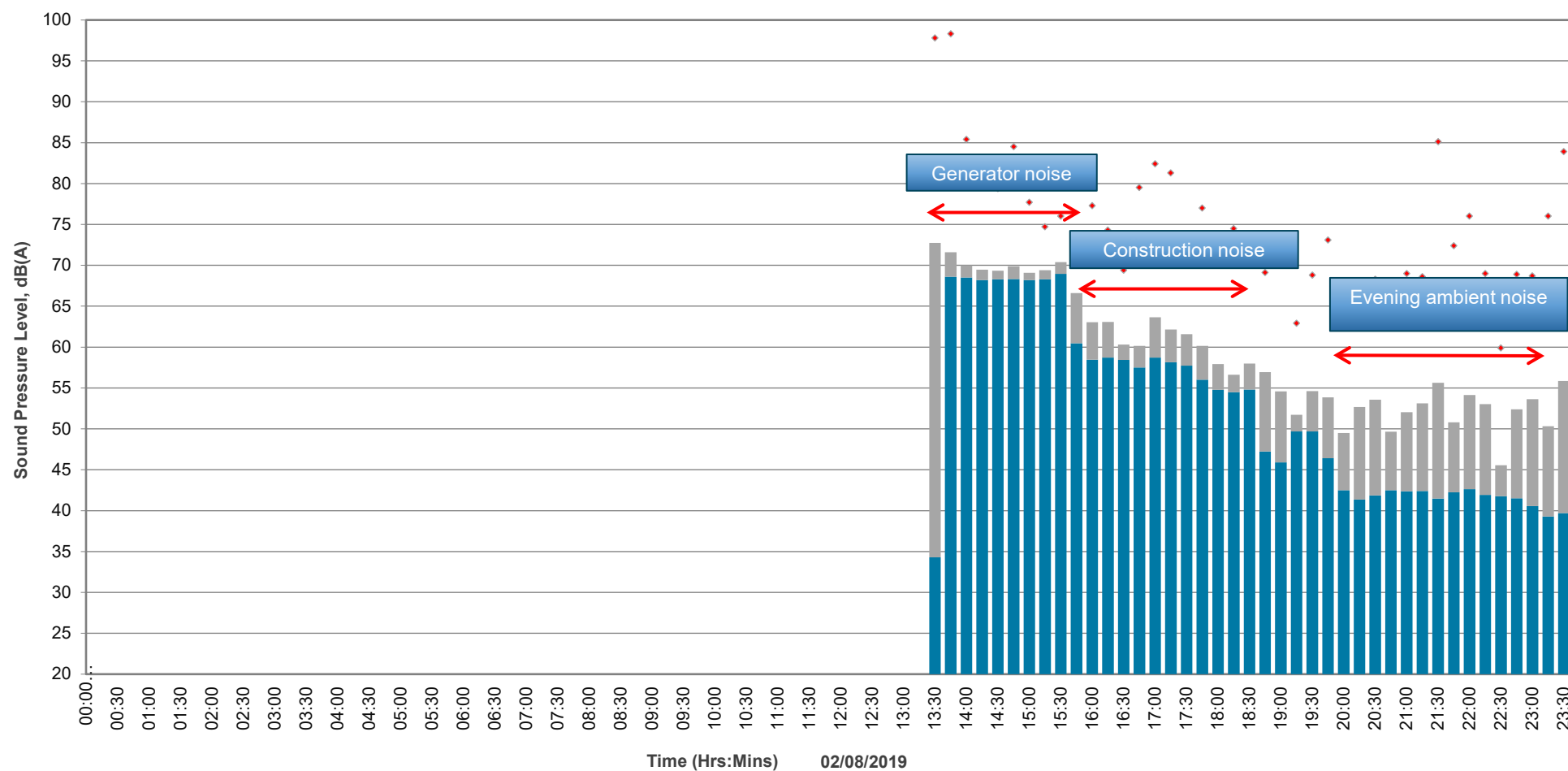
APPENDIX C: Noise Monitoring Time History Plots (2019)

Time History Graph A1.1

Project: MRNestlesAvenue(N)2.9

Measurement Location: A1

Survey Period: 02/08/2019



KEY:

$L_{A90,15mins}$
 $L_{Aeq,15mins}$
 $L_{Amax,fast}$

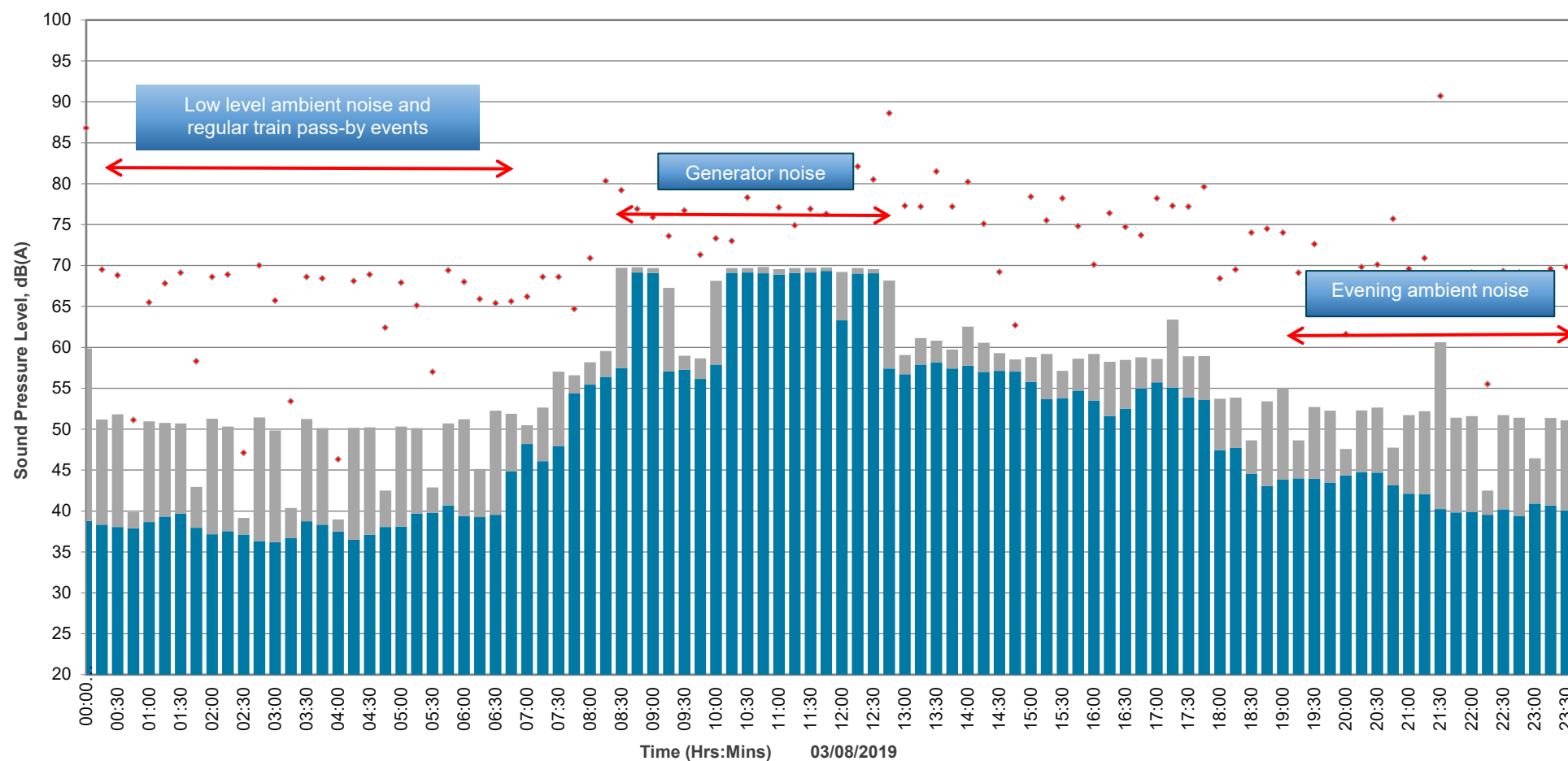
Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

Time History Graph A1.2

Project: MRNestlesAvenue(N)2.9

Measurement Location: A1

Survey Period: 03/08/2019



KEY:

$L_{A90,15mins}$
 $L_{Aeq,15mins}$
 $L_{Amax,fast}$

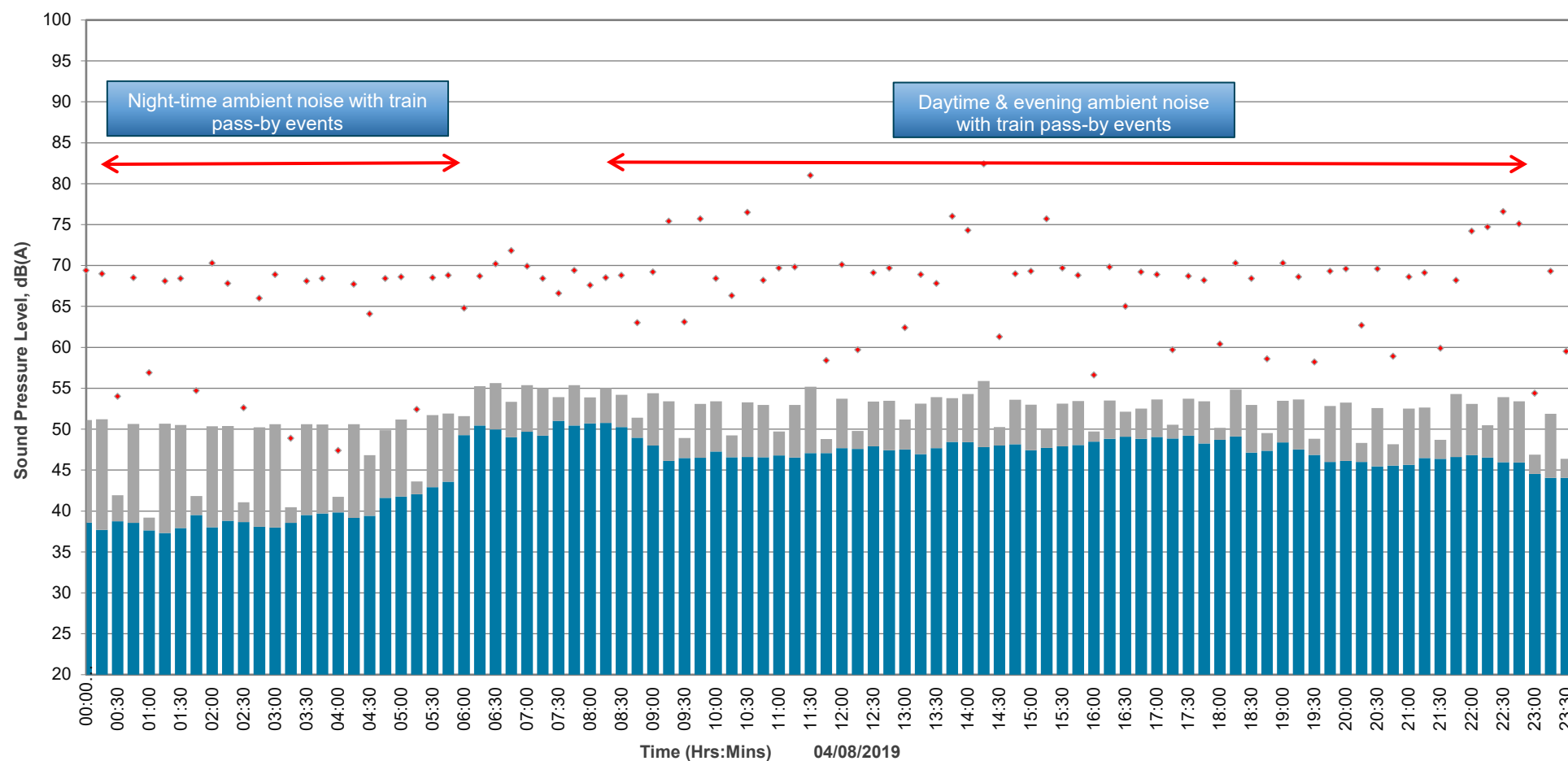
Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

Time History Graph A1.3

Project: MRNestlesAvenue(N)2.9

Measurement Location: A1

Survey Period: 04/08/2019



KEY:

$L_{A90,15mins}$
 $L_{Aeq,15mins}$
 $L_{Amax,fast}$

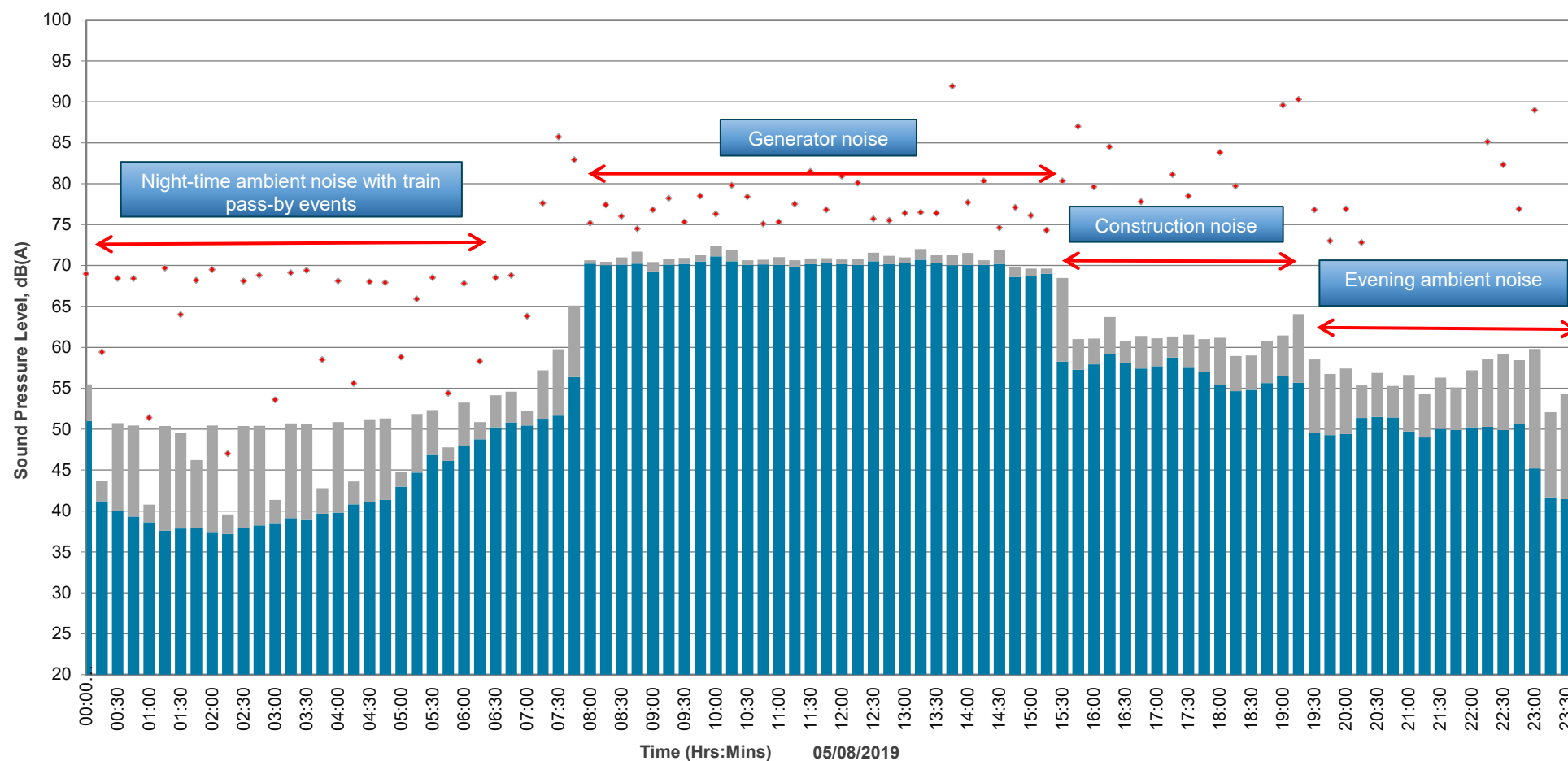
Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

Time History Graph A1.4

Project: MRNestlesAvenue(N)2.9

Measurement Location: A1

Survey Period: 05/08/2019



KEY:



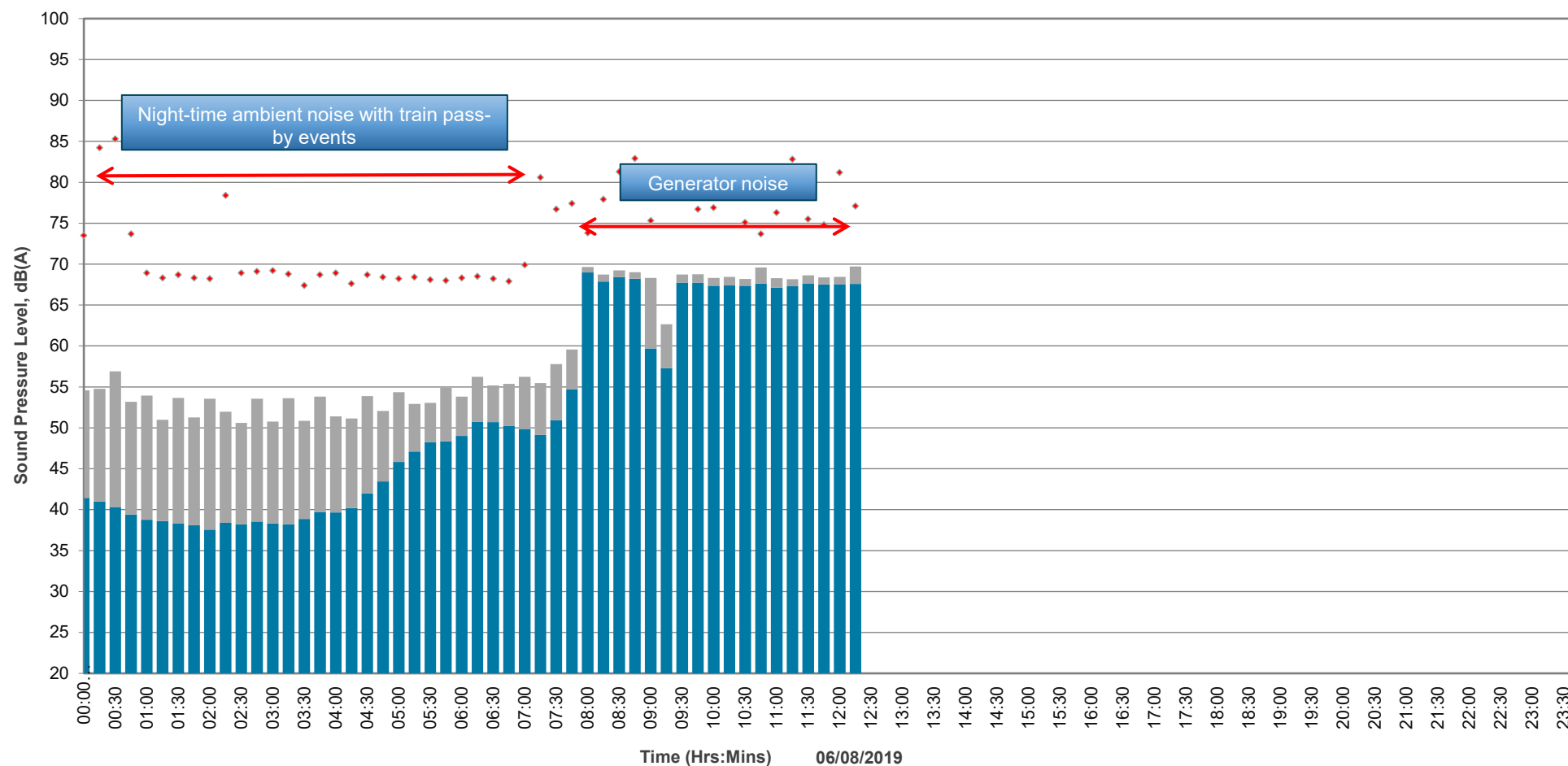
Lion House, Oriental Road, Woking, Surrey GU22 2BR
 Telephone: 01483 750508 Fax: 01483 750437

Time History Graph A1.5

Project: MRNestlesAvenue(N)2.9

Measurement Location: A1

Survey Period: 06/08/2019



KEY:



Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

APPENDIX D: EH Consultation Response for Previous Application

9 Nestle Avenue Ref K51175/APP/2018/4260

Mulowoza Monica <mmonica@hillington.gov.uk>
To: Zenab Haji-Ismail - SR130227 <zhaji-ismail@hillington.gov.uk>

30 April 2019 at 14:13

Demolition of existing building and redevelopment to provide a building up to 10 storeys, with 868 sq.m of commercial or community space (Use Class B1 or D1) at ground floor level and 81 (44 x 1-bed, 28 x 2-bed and 9 x 3-bed) residential units to the upper floors, with associated landscaping, access, car parking and cycle parking.

I have read through the acoustic report and the applicant has demonstrated sufficiently how the internal noise levels and external surrounding amenity will achieve standards contained within BS 8233 2014 .Kindly consider adding the following noise conditions.

External noise from machinery,plant, equipment extract/ventilation ducting, mechanical gates,etc.

Condition: The external noise level emitted from plant/ machinery/ equipment will be lower than the lowest existing background noise level by at least 5dBA, by 10 dBA where the source is tonal, as assessed according to BS4142:2014 at the nearest and/or most affected noise sensitive premises, with all machinery operating together at maximum capacity.

Reason: To safeguard the amenity of the surrounding area in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

Condition: Prior to use, machinery, plant or equipment,the extract/ ventilation system and ducting at the development shall be mounted with proprietary anti-vibration isolators and fan motors shall be vibration isolated from the casing and adequately silenced and maintained as such.

Reason: To safeguard the amenity of the surrounding area in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

2.Separation of commercial areas/ plant room /car park etc. noise from noise sensitive dwelling

Condition: The sound insulation of the floor/ ceiling/ walls separating the groundfloor plant room,basement car park, from noise sensitive dwellings.

The sound insulation value DnT,w and L'nT,w shall be enhanced by at least 10dB above the Building Regulations value and, where necessary, additional mitigation measures implemented to contain commercial noise within the commercial premises and to achieve the internal noise levels criteria of BS8233:2014 within the dwellings/ noise sensitive premises. The approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

Reason: To safeguard the amenity of the surrounding area in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

3. Internal sound insulation within the envelope of the residential dwelling.

Condition: The noise level in rooms at the development hereby approved shall meet the internal noise levels specified in BS8233:2014 for internal rooms and external amenity areas.

Reason: To safeguard the amenity of the occupants of surrounding properties in accordance with policy OE1 of the Hillingdon Unitary Development Plan.

Also consideration shall be given to the following areas.

Neighbouring commercial use exists with restrictions for deliveries between 08.00 to 19:00 hours Monday to Friday and 10:00 to 16:00 on Saturdays ,and nothing on Sundays and/or Public Bank Holidays.

Operational use of the premise as a business is restricted to 08:00 to 19:00 Mondays to Fridays and 10:00 to 16:00 on Saturday. The character of the neighbourhood is for mixed use and the commercial use at ground floor level, whilst in operation not have a adverse impact on any residential dwelling within close proximity in regards to dust , noise fumes and smells.

regards

Monica Mulowoza
ASBET and Planning Officer.
--

Monica Mulowoza
ASB & Environment Officer (Planning)
ASB & Environment Team
Hillingdon Council
tel: internal: 8206
tel: external: 01895 558206
www.hillingdon.gov.uk

APPENDIX E: LPA Statement of Case (Noise) for Previous Application



STANFORD HOUSE, HAYES – NOISE STATEMENT OF CASE

LONDON BOROUGH OF HILLINGDON

SEPTEMBER 2019

STANFORD HOUSE, HAYES – NOISE STATEMENT OF CASE

Our Ref: 4275_001R_2-0_AG

Client: London Borough of Hillingdon
3N, The Civic Centre
High Street
Uxbridge
UB8 1UW

Report by: Anderson Acoustics Limited
3 Trafalgar Mews
15-16 Trafalgar Street
Brighton
East Sussex BN1 4EZ

www.andersonacoustics.co.uk
T: 01273 696887

Date: 17 September 2019

Project No: 4275

Status: Final

Author: Adam Glass
Principal Consultant
MIOA



17 September 2019

Reviewed Jamie Easton
Acoustic Consultant
AMIOA



17 September 2019

Approved Adam Glass
Principal Consultant
MIOA



17 September 2019

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REVISION HISTORY

Version	Comments	Changes made by	Approved by
1.0	Draft for Comment		AG
2.0	Final Following Client Comment	AG	AG

CONTENTS

1	INTRODUCTION	5
2	SITE DESCRIPTION	5
3	MAYER BROWN ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT REPORT	7
4	ASSESSMENT OF MB NVA	10
5	REASON FOR REFUSAL	14
6	RESPONSE TO LPA COMMENTS	15
7	CONCLUSIONS	16

1 INTRODUCTION

Anderson Acoustics Ltd was commissioned by London Borough of Hillingdon (LBH) in August 2019 to produce an acoustic statement of case for the appeal application for the refusal of planning application ref. 51175/APP/2018/4260. The proposed development at the Stanford House site, 9 Nestle Avenue, Hayes, UB3 4SA is for the *“Demolition of existing building and redevelopment to provide a building up to 10 storeys, with 868 sq.m of commercial or community space (Use Class B1 or D1) at ground floor level and 81 (44 x 1-bed, 28 x 2-bed and 9 x 3-bed) residential units to the upper floors, with associated landscaping, access, car parking and cycle parking”*. The noise assessment that accompanied the planning application was produced by Mayer Brown¹(MB).

This Statement of Case has been prepared by Adam Glass MIOA, principal consultant at Anderson Acoustics on behalf of London Borough of Hillingdon (LBH).

Section 2 presents a description of the site; Section 3 presents the Meyer Brown Ltd (MB) survey, assessment and findings; Section 4 presents review of the MB Noise and Vibration Assessment (MVA) and additional information provided in the MB Response to LPA Comments² (RLCN) ; Section 5 presents the reason for refusal Section 6 presents the response to statements made in the RLCN and Section 7 presents the conclusions.

2 SITE DESCRIPTION

The proposed development site is located off Nestle Avenue, which is residential in character, and lies to the south of the site. To the west of the site is 7 Nestle Avenue which has a D1 land use and is currently being used as a higher education college. Part of the building has a consented B2 use as a vehicle repair workshop and MOT testing facility. Northwest and north of the site is the Squirrels Trading Estate which is commercial/industrial uses. To the east of the site is the former Nestle Factory Site which has planning permission for a mixed used redevelopment of up to 1,386 dwellings, office, retail, community and leisure uses and commercial floorspace. The land uses are shown in Figure 2.1.

¹ Mayer Brown. Report. 9 Nestle Avenue Hayes London UB3 4SA. Noise and Vibration Assessment. April 2019.

² Mayer Brown. Planning Appeal by Healey Development Solutions (Hayes) Ltd. Response to LPA Comments on Noise. Stanford House, 9 Nestle Avenue, UB3 4SA. September 2019.

Figure 2.1 – Location of site and adjoining land uses



3 MAYER BROWN ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT REPORT

3.1 Introduction

The purpose of this section is to present information from the NVA and RLCN produced by MB that is relevant to the issue of industrial/commercial noise, from neighbouring land uses.

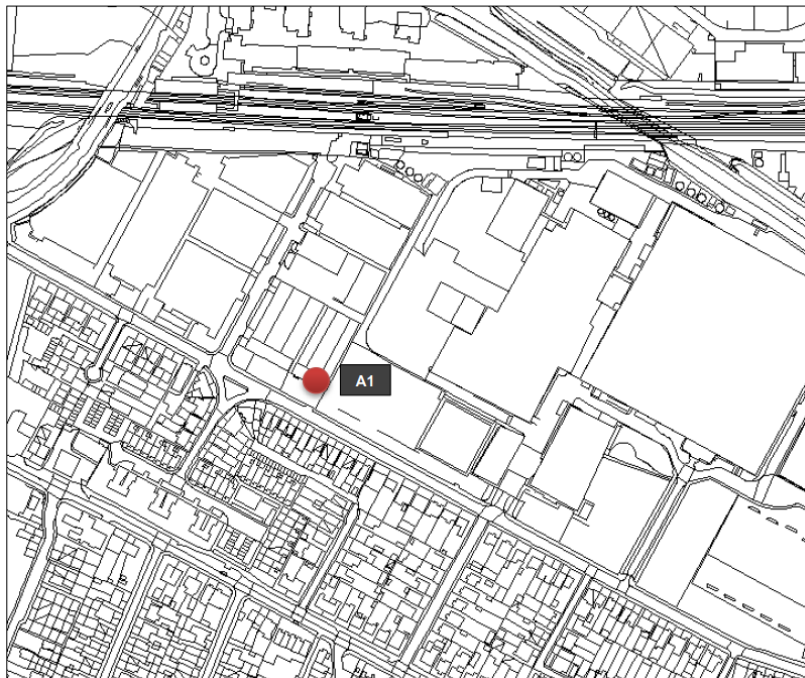
3.2 Mayer Brown Survey

This section discusses the survey report in the MB NVA as reported by them. The Anderson Acoustics (AA) consideration of the survey findings is presented in section 4.2 of this report.

The MB NVA does not provide information on the personnel (or their competency for the measurement of environmental noise. The report does state that the equipment was field verification checked before and after use. The calibration status of the equipment used in the survey is given in the report and the equipment is within the calibration period. The report states that weather conditions were not considered to have adversely affected the measured sound levels.

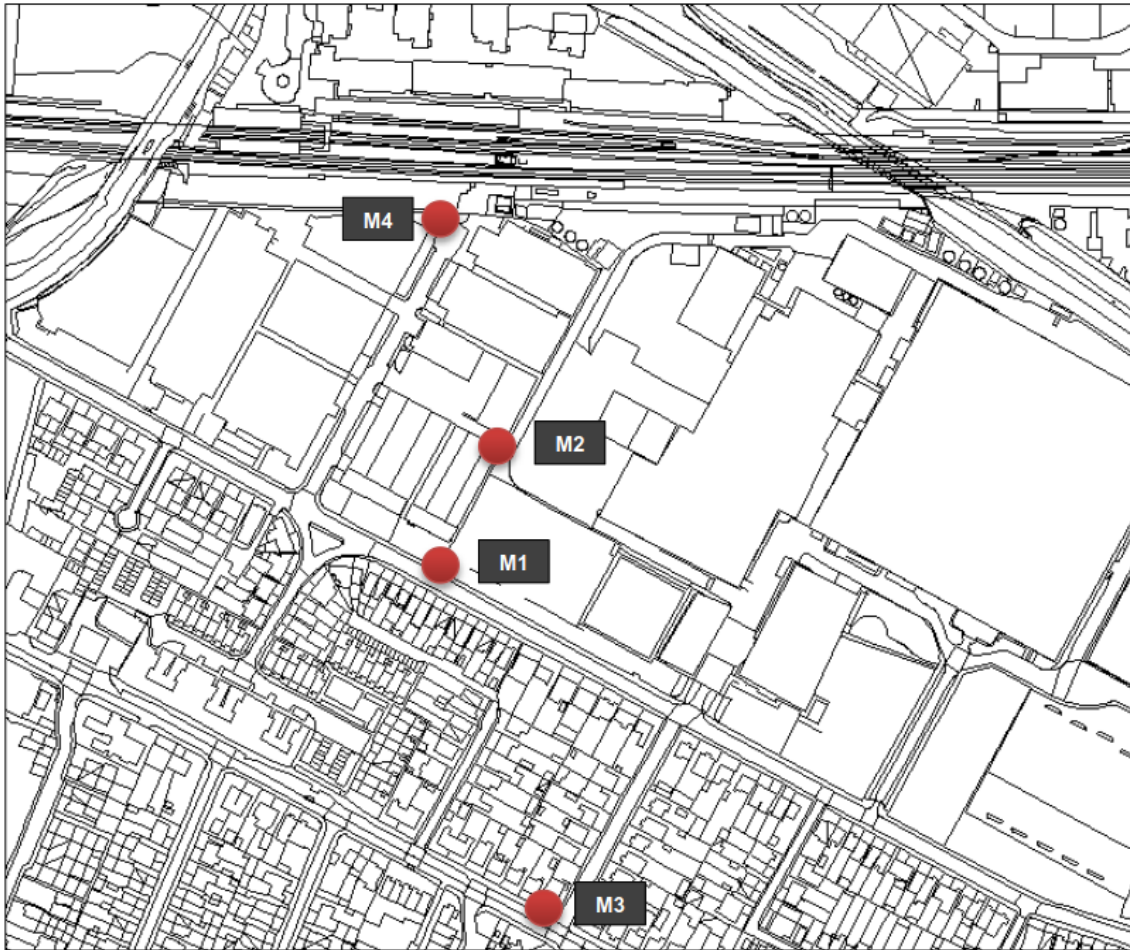
Baseline sound levels were measured between the 13th and 18th of July 2018 at location A1 (as shown in Figure 3.1) and have been used as the baseline for the assessment to be carried out. The baseline sound environment is stated as being dominated by local and distant road traffic and transient noise from train movement on the Great Western Mainline railway.

Figure 3.1 Baseline Unattended Sound Monitoring Location



Attended noise monitoring was also carried out to gain information on the noise levels from rail, commercial and industrial noise sources. The attended monitoring locations are shown in Figure 3.2.

Figure 4.2 Baseline Attended Sound Monitoring Locations



Location M2 is at the boundary of the site with the Squirrels Trading Estate. No explicit description of the acoustic character of the industrial/commercial noise, at this location, is given in the assessment though the following statement is made *“Intermittent noise from the industrial unit adjoining the western / north-western boundary of the site was also intermittently audible but only close to the boundary, but such noise was not considered to be dominant in the context of general ambient noise levels”*.

The NVA describes the existing uses for the Squirrels Trading Estate *“..appear to include two units manufacturing kitchen/bedroom furniture; a catering distribution company; courier; motor repair workshop and automotive body shop”*.

Noise levels were monitored at the rear of 9 Nestles Avenue directly overlooking the parking forecourt to the Trading Estate (Position M2).

The time-history $L_{Aeq,1min}$ and $L_{AFMax,1min}$ are presented for the M2 location but the $L_{A90,T}$ is not presented so the background sound level is not indicated. Noise events in the time history are neither identified as being industrial/commercial noise or characterised.

The acoustic features of the industrial/commercial noise in terms of intermittency, impulsivity, tonality and other sound characteristics is not given.

Figure 4.3 Time History of L_{Aeq} and L_{AFMax} at the M2 Monitoring Location

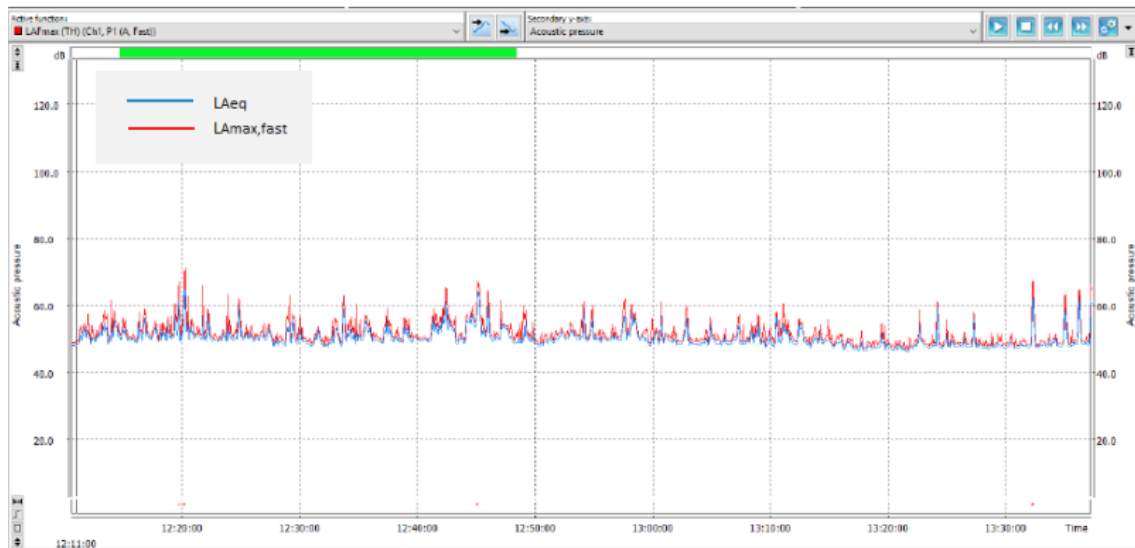


Figure 11.5: Noise Levels Measured at Position M2 (12.00 to 13.45)

No monitoring was conducted at the boundary with the B2 use for vehicle repair and MOT testing at 7 Nestle Avenue.

3.3 MB Modelling

The baseline noise surveys have been combined road and rail noise model has been produced using the CadnaA noise modelling software. The model does not include industrial/commercial noise sources.

3.4 MB Assessment

This section discusses the findings of the assessment in the MB report, as reported by them, in relation to noise in relation to noise from the neighbouring land uses. The AA assessment of the findings is given in section 4.3 of this statement. The NVA mentions the audibility of industrial/commercial noise, stating it is not dominant but does not describe the character of the specific sound, apply character corrections or conduct a BS4142³ assessment. Noise in external amenity areas is considered against WHO “Guidelines for Community Noise”⁴ and aims to achieve a value of 55dB $L_{Aeq,16hour}$ but recognises this may be challenging as the $L_{Aeq,16hr}$ is above this for areas of the site, in particular the southern area where “*The results of the modelling show that noise levels at the southern boundary of the site are in the order of 60dB $L_{Aeq,16hour}$ daytime and 52dB $L_{Aeq,8hour}$ night-time*”. Mitigation from the building mass and potential mitigation in the form of solid glazed balconies and acoustically treated soffits to minimise reflection of noise from the balcony above is proposed though it is not clear if the external amenity guideline values are met or not with the mitigation in place.

Assessment of the industrial/commercial noise to take into account the specific features and character of industrial/commercial noise has not been made.

³ BSI. BS4142:2014. Methods for rating and assessing industrial and commercial sound. 2014.

⁴ World Health Organisation. Guidelines for community noise. 1999.

4 ASSESSMENT OF MB NVA AND RLCN

4.1 Introduction

This section comments on the findings of the MB NVA in the context of policy, assessment methodology and findings in relation to industrial/commercial noise.

4.2 MB Survey

The measurements and findings of the MB survey have been considered. The noise levels from industrial/commercial sources are not defined, the duration and frequency of such events are not defined, character features of the commercial/industrial noise are not defined, and the background sound level is not summarised.

The RLCN discusses the potential noise emission from the lawful B2 use as a vehicle repair workshop and MOT test centre at the northern end of 7 Nestles Avenue and additional technical evidence to support the judgement, through calculation of a “worst case” specific noise level of around 44dB $L_{Aeq,1hour}$ at receptor locations. No measurements of the noise from the vehicle repair workshop appear to have been made at this location and the character of the noise has not been discussed.

4.3 MB Methodology

The MB methodology for assessment of the noise from neighbouring land uses is based on the industrial/commercial noise not being “dominant in the context of the ambient noise environment” and has not been assessed to BS4142:2014 methodology.

MB state “*This situation is directly addressed in ProPG⁵, paragraphs 2.40 and 2.41 of which state: “In the case of sites exposed to industrial and/or commercial noise: 2.40 To be clear, where industrial and/or commercial noise is present on the site and is considered to be “dominant” (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS4142:2014.*

2.41 In the special case where industrial and/or commercial noise is present on the site but is not dominant” (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated).”

Neither the survey, the Stage 1 or Stage 2 assessment in the NVA discuss the commercial/industrial noise features. It is therefore not known (from the NVA and RLCN) if the industrial/commercial noise is “dominant” or not.

The guidance is given fuller context in paragraphs 2.42, 2.43 and 2.44 of the ProPG:

“2.42 However, great care should be taken when considering using the noise level guidelines in Figure 2 in circumstances where industrial and/or commercial noise is present but “not dominant”. Issues that may arise include:

- *Are there particular acoustic features (tones, impulses etc.) in the industrial and/or commercial noise that may increase its effect compared to sounds without such features?*
- *Are there any non-acoustic features that may also have an effect?*
- *Will the time averaging over the 16 hour day or 8 hour night intervals used in Figure 2 lead to underestimation of the impacts of industrial and/or commercial noise that may occur for shorter but still substantial periods at a higher level?*

⁵ Grimwood et al. 2017. ProPG: Planning & Noise. Professional Practice Guidance on Planning & Noise. New Residential Development.

“2.43 Professional judgement will have to be exercised in addressing these sorts of issues. One possible approach may be to apply BS4142:2014 character corrections to the noise level guideline values in order to derive suitable effect thresholds and/or mitigation design targets and to use the same reference time periods recommended in the standard”.

“2.44 It should also be noted that the presence of industrial and/or commercial noise on the site, even if it is “not dominant”, may also raise wider issues that should be addressed under the other elements of Stage 2”.

Given the location of the site overlooking commercial/industrial uses, from the west façade, and the MB NVA assessment for “low” to “medium” risk it is surprising that at least a characterisation of the industrial/commercial noise has not been made to inform the statement that the commercial/industrial noise is not “dominant”.

BS4142:2014 is applicable to the determination of the following levels at outdoor locations:

- a) rating levels for sources of sound of an industrial and/or commercial nature; and
- b) ambient, background and residual sound levels, for the purposes of:
 - 1) investigating complaints;
 - 2) assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
 - 3) assessing sound at proposed new dwellings or premises used for residential purposes.

Assessment of the sound from the neighbouring land uses has not been made to BS4142:2014 methodology to characterise the noise and as such the impact of noise from neighbouring land uses is not known.

The WHO guideline for community noise state: *“..the guidelines do not explicitly consider industrial noise as an environmental noise source, affecting people living in the vicinities of industrial sites. This is mainly due to the large heterogeneity and specific features of industrial noise, and the fact that exposure to industrial noise has a very localized character in the urban population”.*

The external area noise assessment does not appear to have considered the industrial/commercial character of the noise in the outdoor amenity area assessment.

The methodology to establish the effect of noise from industrial and commercial sources may be inadequate.

4.4 Assessment

The figures in the MVA showing the measured noise levels at M2 (representative of the boundary with the Squirrels Trading Estate) do not show the $L_{A90,T}$ background sound level. A tabular summary of the noise metrics such as $L_{A90,T}$ is not given for measurement location M2, yet is presented for M1 and M3. The background sound level assumed for the area is not given though the plant noise assessment contains the statement: *“In light of this, it is considered desirable and practicable to seek operate and maintain any new plant installations so that the rating level L_A of the fixed installations in normal operation at the worst affected residential receptor, minus the background level ($L_{A90,T}$), is not more than 5 dB, determined in accordance with BS4142:2014”.* From this and the values presented Table 4.1 it can be assumed the background sound level is 37 dB $L_{A90,T}$ but this is not clear and the $L_{A90,T}$ may be higher.

Rating Level, $L_{Ar,T}$ dB	
Daytime (07.00 – 23.00)	Night (23.00 – 07.00)
42	38

Table 10.2: Recommend Rating Level ($L_{Ar,T}$) for Process/Fixed Plant

The Stage 2 assessment of the NVA considers that “standard” thermal double glazing and acoustically rated ventilation will allow the development to be effectively integrated with the existing land uses to the north of the site. With standard thermal double glazing and acoustically rated ventilation it is agreed that internal noise levels are likely to be within the BS8233:2014 criteria.

The RLCN does not present a BS4142:2014 assessment of the existing commercial/industrial noise and the character of the noise is not described or character corrections given so the effect of the noise in external amenity areas is not known.

The character of the noise from the B2 Use of 7 Nestle Avenue is not described and character corrections are not given. The RCLN states “...it is expected that noise break-out during a “worst case” 1 hour period would give a specific noise level of around 44 dB $L_{Aeq,1hour}$ ”. The specific sound level of 44dB $L_{Aeq,1hour}$ is above the rating level recommended for the design of plant in the NVA assessment and 7dB above the assumed background sound level, from the fixed plant noise assessment. This is also prior to the consideration of character corrections for the specific sound. As such an adverse effect may be indicated to be present though the significance of the effect is not certain. With character corrections applied there may be a significant adverse effect in external amenity areas.

As such the significance of the effect of the noise from neighbouring land uses has not been established and a significant adverse effect may or may not be present as assessment of the character corrected noise has not been made to inform the statement of the significance of the effect.

4.5 Agent of Change

The RLCN provides discusses the neighbouring land use industrial commercial noise and concludes that it is not apparent there is a significant adverse effect and even if there was a significant adverse effect suitable mitigation could be applied.

Without the character considered for the industrial/commercial noise or a BS4142:2014 assessment of the existing industrial/commercial noise it is uncertain if there is a significant adverse effect of not. It is therefore uncertain if there is an unacceptable co-location of uses, which would result in a significant adverse noise impact on the proposed development requiring additional mitigation to discharge ‘Agent of Change’ obligations imposed by paragraph 182 of the NPPF.

4.6 Mitigation

It is agreed mitigation is required to be considered to reduce the effect of noise. It is agreed that good acoustic design measures have been discussed for the design of the building such as the blank north facade facing the Squirrels Trading Estate and acoustic ventilation. The RLCN discusses potential mitigation measures for the external amenity areas such as glazed screens or enclosed winter gardens.

With suitable mitigation (if required) in place significant adverse effects can be avoided. Without the character correct industrial/commercial noise assessment or BS4142:2014 assessment the need for, or extent of, the mitigation is not known.

5 REASON FOR REFUSAL

5.1 Reason

The refusal reason 5 is as below

“The development provides a high proportion of single aspect dwellings and dwellings with their sole aspect facing towards Strategic Industrial Land. The development fails to provide sufficient separation from the western boundary of the site to mitigate against a potential noise generating use on the neighbouring site and as such, the proposal fails to take responsibility for mitigating impacts from existing noise-generating activities or uses on the proposed new noise-sensitive residential development and thereby fails to provide a suitably high quality of residential amenity for future occupiers contrary to Policy BE1 of the Local Plan: Part One (November 2012); Policy OE1 of the Local Plan: Part Two (November 2012) and Policy 7.15 of the London Plan (2016) and Paragraph 182 of the NPPF (2019).”

5.2 Reasoning

The western boundary of the site is adjacent to a B2 use as a vehicle repair workshop. The western boundary also overlooks the Squirrels Trading Estate, which contains vehicle body shops, kitchen manufacturers, couriers and a catering wholesaler. No measurement of noise has been made at the western boundary or the industrial/commercial noise sources measured and the noise features have not been characterised. The Stage 1 and Stage 2 Detailed Assessment in the NVA do not consider the industrial/commercial noise and so the effect of industrial/commercial noise sources to the west is unknown and mitigation of this noise was not discussed or applied in the application or supporting information.

6 RESPONSE TO LPA COMMENTS

6.1 Introduction

The response in section 2 of the RLCN contains the following statements by MB:

“(a) No technical evidence is presented by the LPA which indicates what noise levels external amenity spaces are alleged to be exposed to”; Response: It is the role of the applicant to measure and assess the commercial/industrial noise levels to appropriate guidance, to inform the determination of the planning application.

“(b) Whilst asserting that noise levels will be “above guidance values”, the LPA has not set out what “guidance values” have been adopted in reaching that conclusion; Response: The guidance values are those presented in section 4.37 and 7.42 of the NVA. There is not an assertion that the rating levels are above the criteria for a significant adverse impact but there is indication of a potential exceedance of the section 4.37 criteria presented in the RLCN for noise from the lawful B2 use as a vehicle repair and MOT testing facility and uncertainty compliance with the 4.37 criteria from noise from the Squirrels Trading Estate. Section 7.44 of the NVA also discusses compliance with the WHO guidelines values for external amenity areas and states that achieving them may be difficult and as such MVA have presented technical evidence that guidance values have been exceeded.

“(c) The LPA has not considered the ‘significance’ of the alleged exceedance (i.e. whether such noise is above a “Significant Observed Adverse Effect Level” (SOAEL))”; Response: Without assessment of the character corrected noise, to the guidance in ProPG, it is uncertain to the effect from the noise from the existing uses and the significance of the effect is not known.

“(d) The LPA’s conclusion relating to potential harm to neighbouring uses does not appear to take account of the context of the site”; Response: The meaning of this statement is not clear. The context of the development is introducing noise sensitive residential receptors into proximity to existing noise sources, including industrial/commercial noise from adjacent land uses.

“(e) It can therefore be seen that comments made by the Council’s Noise Specialist in relation to Squirrels Trading Estate actually relate to a matter that is not included within the reason for refusal (which specifically deals with alleged harm to the existing use of land to the west of the site)”. Response: The matter of noise from the Squirrels Trading Estate was raised in addition to the LPAs existing concerns, following review of the NVA and concerns over the noise from the estate and the cumulative effect of the noise. It is further noted that with the blank northern façade of the proposed development the issues relating to industrial/commercial noise pertain to west of the site which is the cumulative effect of the industrial/commercial noise from the B2 vehicle workshop at 7 Nestle Avenue and MOT testing station and the uses on the Squirrels Trading Estate. Both of which are overlooked by the west façade of the proposed development.

7 CONCLUSIONS

7.1 Conclusions

The following conclusions are made:

- Good acoustic design has been followed for the design of the buildings with mitigation measures such as blank north façade and acoustic ventilation;
- The presence or an adverse or significant adverse effect from existing industrial/commercial noise on external amenity areas is not certain as a BS4142:2014 assessment of the noise has not been conducted and no character correction for the noise sources is discussed or applied as is indicated to be required by ProPG;
- The MB reasoning for not conducting the BS4142 assessment is that the industrial/commercial noise is not “dominant”. In the context of the ProPG planning guidance “dominant” means “*where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out, its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated)*”. The NVA and RLCN do not present suitable information and analysis to indicate if the industrial/commercial noise would be considered adverse, if a BS4142 assessment were to be conducted and as such the effect of the existing commercial/industrial noise is not known;
- The Stage 1 and Stage 2 assessment do not discuss the industrial/commercial noise other than to say it is “not dominant”;
- Noise from the existing lawful B2 use of 7 Nestles Avenue may, or may not, cause a significant effect but is indicated to potentially cause an adverse or significant adverse impact, from information presented in the RLCN;
- Noise from the Squirrels Trading Estate may, or may not, cause an significant adverse effect in external amenity areas;
- The cumulative effect of the industrial/commercial noise sources has not been assessed;
- With an apparent indication of an adverse effect from the existing lawful B2 use of 7 Nestles Avenue and uncertainty of the significance of the effect from industrial/commercial noise is uncertain. If there is an unacceptable co-location of uses, which would result in a significant adverse noise impact on the proposed development requiring additional mitigation to discharge ‘Agent of Change’ obligations imposed by paragraph 182 of the NPPF.
- Suitable mitigation is discussed in the RLCN in the form of screens or enclosed winter gardens. Suitable mitigation could be secured by planning condition. The extent and design of mitigation required would need to be informed by a BS4142:2014 assessment of the industrial/commercial noise sources.

