TURNER JOMAS & ASSOCIATES

Environmental & Civil Engineers & Transport Planners

Noise Impact Assessment

For the site of:
138-140 Highgate Road, Highgate, London, NW5 1PB

For: Design Ventures Highgate Limited

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Revision	-
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Contents

1 Executive Summary

An assessment has been carried out of the present noise climate at **138-140 Highgate Road, London**. The proposed scheme involves the construction of 6No. 4-bed terraced houses at the site of a former garage.

The proposed development is set over three floors and makes use of the topography of the site. The main entrance is on the top floor of the property, level with College Lane at the rear of the site. The middle floor is at the same level as Highgate Road and the lowest floor is set under the existing ground level, with the main amenity areas for each house also being located at the lowest level. The houses will be located in the rear half of the site, next to College Lane rather than Highgate Road and the remainder of the site will be grassland.

The assessment is based on the results of two noise measurement surveys that have been carried out at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

The results of the noise measurement surveys have been compared against the requirements of the Local Authority (Camden Council), who have set criteria on the basis of a *Lowest Observed Adverse Effect Level* (LOAEL) and a *Significant Observed Adverse Effect Level* (SOAEL).

It has been identified that the noise levels at the proposed façade are within the LOAEL to SOAEL category.

In respect of internal noise levels, it has been identified that noise levels in the LOAEL category can be achieved through careful consideration of the building envelope. The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an R_w of approximately 55 dB.**
- **A typical double-glazing system in a 4/12/6 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 32 dB R_w.**
- **Appropriately specified acoustic trickle vents or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**

It has also been shown that the noise levels within external amenity areas would be within the LOAEL to SOAEL category, at worst, and potentially within the SOAEL category of below 50 dB $L_{Aeq,16hr}$.

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, in line with the aims of the Local Authority, the NPPF, NPSE and PPG-Noise.

2 Introduction

This report has been prepared to support the planning application for the proposed development at **138-140 Highgate Road, London**. The proposed scheme involves the construction of 6No. 4-bed terraced houses at the site of a former garage.

The report assesses, through on-site noise measurements, the impact of the existing noise climate on the proposed development.

The proposed development site is located in a mixed commercial and residential area and is bound by Highgate Road to the west and College Lane to the east. The Gospel Oak to Barking railway line is located approximately 40m to the south of the proposed development site. The railway is raised approximately 3m to 4m above the road level and crosses Highgate Road on a bridge. The location of the proposed development site is provided in **Figure 2.1**.

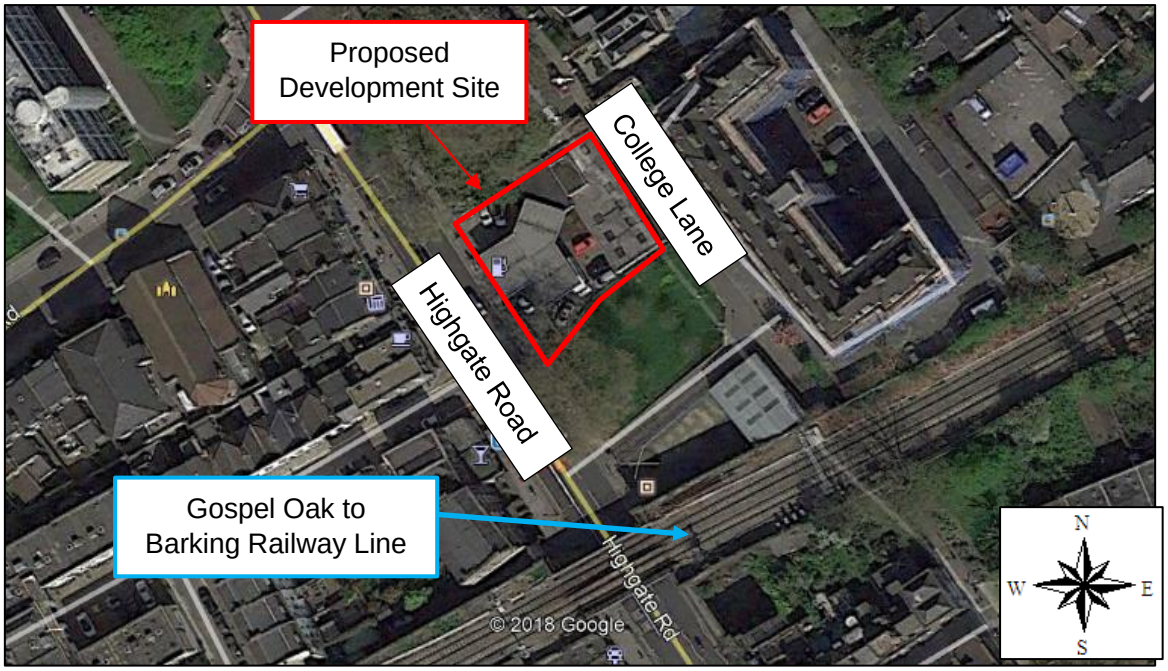

Figure 2.1: Site Location

The proposed development is set over three floors and makes use of the topography of the site. The main entrance is on the top floor of the property, level with College Lane. The middle floor is at the same level as Highgate Road and the lowest floor is set under the existing ground level, with the main amenity areas for each house also being located at the lowest level. The houses will be located in the rear half of the site, next to College Lane rather than Highgate Road and the remainder of the site will be grassland. The upper ground floor site layout plan is provided in **Figure 2.2** as an example of the proposed layout.

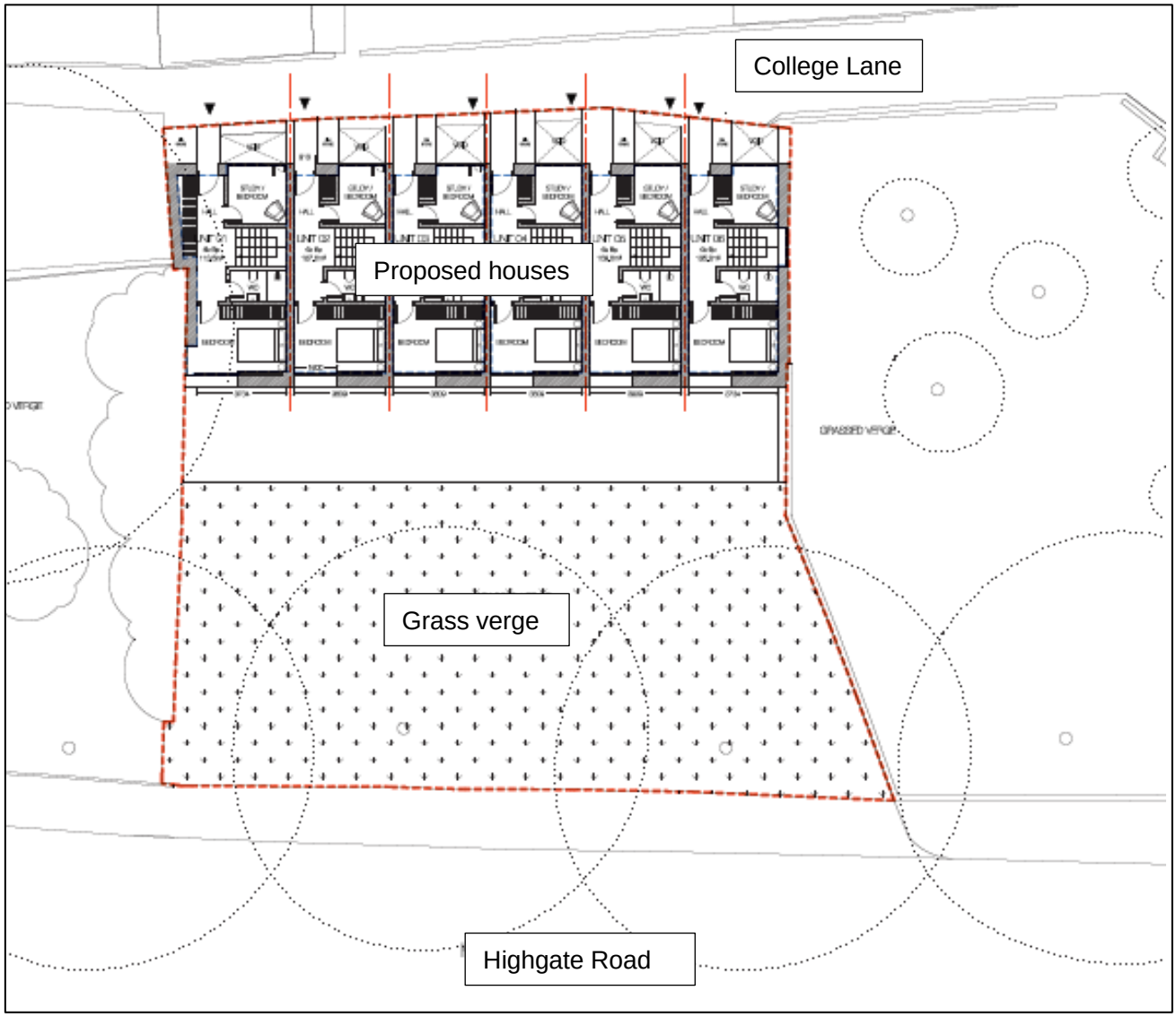

Figure 2.2: Proposed Upper Ground Floor Layout

3 Planning Policy and Guidance

3.1 National Planning Policy and Guidance

National Planning Policy Framework

The National Planning Policy Framework (NPPF) was released in March 2012 and has replaced the Planning Policy Guidance which previously covered planning and pollution control and new development in England. The purpose of the planning system is to contribute to the achievement of sustainable development and to encourage good design. There are three dimensions to sustainable development: economic, social and environmental.

Central to the NPPF, paragraph 14 states: *'At the heart of the National Planning Policy Framework is a* ***presumption in favour of*** **[permitting]** ***sustainable development*** *which should be seen as a golden thread running through both plan-making and decision-taking…'*

'…For ***decision-taking*** *this means:*

- *approving development proposals that accord with the development plan without delay; and*
- *where the development plan is absent, silent or relevant policies are out-of-date, granting permission unless:*
    - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or*
    - *specific policies in this Framework indicate development should be restricted.'*

Paragraph 17 sets out core planning principles and the most relevant elements to noise are: '*… be a creative exercise in finding ways to enhance and improve the places in which people live…'*, '*… always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings'* and '*… contribute to conserving and enhancing the natural environment and reducing pollution.'*

Paragraph 109 states '*The planning system should contribute to and enhance the natural and local environment by… preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of… noise pollution…*' and Paragraph 123 states: '*Planning policies and decisions should aim to:*

- *Avoid noise from giving rise to significant adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life as a result of new development;*
- *Mitigate and reduce to a minimum other adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life arising from noise from new development, including through the use of conditions;*
- *Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land use since they were established (Subject to the provisions of the Environmental Protection Act 1990 and other relevant law); and*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.'*

Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) aims to '*through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life'.*

Planning Practice Guidance for Noise

The Planning Practice Guidance for Noise (PPG-Noise) was published in March 2014 and updated in December 2014. The PPG-Noise provides advice on how to determine the noise impact on development:

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

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

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'

The document goes on to provide a definition for the levels of noise exposure at which an effect may occur:

*'**Significant observed adverse effect level:** this is the level of noise exposure above which significant adverse effects on health and quality of life occur.*

***Lowest observed adverse effect level:** this is the level of noise exposure above which adverse effects on health and quality of life can be detected.*

***No observed effect level:** this is the level of noise exposure below which no effect at all on health and quality of life can be detected.*'

It is important to understand that as the PPG-Noise does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

3.2 Local Planning Policy

The site is located within the administrative boundary of Camden Council (CC).

Syntegra have liaised with Edward Davis, Environmental Health Officer at CC, by telephone on the 21st February 2018. As there is no secure measurement location available at the site to carry out a 24 hour survey, it was agreed with Mr. Davis that the results of a noise measurement survey carried out at the site in 2013

for a previous planning application would be utilised, supplemented with noise measurement data from a 3 hour manned survey carried out in accordance with the *Shortened Measurement Methodology* set out within the Technical Memorandum *Calculation of Road Traffic Noise* (described in detail in **Section 3.3**).

The Camden Local Plan (adopted June 2017) contains Appendix 3, which sets out their required noise criteria in terms of the adopted *Lowest Observed Adverse Effect Level (*LOAEL) and *Significant Observed Adverse Effect Level* (SOAEL), in line with the PPG-Noise guidance. In respect of the proposed development, the most appropriate noise criteria are set out in Table B of the Appendix and reproduced in this report as **Table 3.1**.

Dominant Noise Source	Assessment Location	Design Period	LOAEL	LOAEL to SOAEL	SOAEL
Anonymous noise such as general environmental noise, road traffic and rail traffic	Noise at 1 metre from noise sensitive façade	Day	<50 dB $L_{Aeq,16hr}$	50 dB to 72 dB $L_{Aeq,16hr}$	>72 dB $L_{Aeq,16hr}$
		Night	<45 dB $L_{Aeq,8hr}$	45 dB to 62 dB $L_{Aeq,8hr}$	>62 dB $L_{Aeq,8hr}$
	Inside a bedroom	Day	<35 dB $L_{Aeq,16hr}$	35 dB to 45 dB $L_{Aeq,16hr}$	>45 dB $L_{Aeq,16hr}$
		Night	<30 dB $L_{Aeq,8hr}$ 42 dB $L_{Amax,fast}$	30 dB to 40 dB $L_{Aeq,8hr}$ 40 dB to 73 dB $L_{Amax,fast}$	>40 dB $L_{Aeq,8hr}$ >73 dB $L_{Amax,fast}$
	Outdoor living space (free field)	Day	<50 dB $L_{Aeq,16hr}$	50 dB to 55 dB $L_{Aeq,16hr}$	>55 dB $L_{Aeq,16hr}$

Table 3.1: Noise Levels Applicable to Noise Sensitive Residential Development Proposed in Areas of Existing Noise

3.3 The Calculation of Road Traffic Noise

The Technical Memorandum *Calculation of Road Traffic Noise* (CRTN) produced by the Department of Transport in 1988, sets out standard procedures for calculating noise levels from road traffic. The calculation method uses a number of input variables, including traffic flow volume, average vehicle speed, percentage of heavy goods vehicles and type of road surface to predict the L_{A10} noise level for any receptor point at a given distance from the road. Additionally, the document describes a '*shortened measurement procedure*' which allows for measurement of the L_{A10} over three hours, between 1000 hrs and 1700 hrs. The measured $L_{A10,3hr}$ can then be converted to $L_{A10,18hr}$ by use of the simple formula:

$$L_{A10,18hr} = L_{A10,3hr} - 1\ dB$$

The relationship between $L_{A10,18hr}$ and both the $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ has been defined by TRL and Casella Stanger on behalf of Defra in their report 'Method for converting the UK road traffic noise index $L_{A10,18h}$ to the EU noise indices for road noise mapping' dated 24th January 2006 and are utilised to calculate the period noise levels.

4 Baseline Noise Levels

4.1 Previous Noise Measurements (August 2013)

A previous noise measurement survey was carried out at the proposed development site by Sound Advice Acoustics Ltd on the 20th – 21st August 2013. The measurements were undertaken as part of a previously refused planning application at the site (planning application reference 2014/1692/P) and reported in Sound Advice Acoustics Ltd report *"External Noise Assessment Revision 2 – Layout Change"* (report reference SA – 2801 RV.02 dated 23rd February 2014).

The noise level measurements utilised a Norsonic 118 Type 1 Precision Sound Level Meter with a current certificate of calibration. The measurement location was located on the site boundary with the garage forecourt. The approximate measurement position is shown in **Figure 4.1** and it has been identified that the measurement location was approximately 3-4m back from Highgate Road.

Figure 4.1: Sound Advice Acoustics Noise Monitoring Location

The report presents the lowest measured, highest measured and average noise levels during the daytime (0700 hrs – 2300 hrs) and the night-time (2300 hrs – 0700 hrs). The reported average noise levels are reproduced in **Table 4.1**.

Measurement Position	Period (hours)	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)	L_{A10} (dB)	L_{A90} (dB)
MP1	Daytime (0700 – 2300)	**68.8**	86.6	69.6	56.1
	Night-time (2300 – 0700)	**65.5**	84.8	64.6	44.6

Table 4.1: Summary of Averaged Measured Noise *Levels (August 2013)*

4.2 Noise Measurement Survey

In order to determine whether the noise measurements presented in **Table 4.1** are suitable for use in this assessment, a further, short-term noise measurement survey has been carried out at the site. Measurements have been carried out over a 3-hour period, in line with the CRTN shortened measurement procedure. The noise levels on site were dominated by road traffic noise on Highgate Road. Whilst on site, occasional pedestrian noise was audible as well as occasional aircraft and trains. Three freight trains passed by during the noise measurement survey and these were clearly audible at the measurement position, but not dominant above the road traffic noise. Passenger trains were more frequent but only just audible at the measurement position.

The noise measurements utilised a Norsonic 140 Type 1 Precision Sound Level Meter with a current certificate of calibration, the full list of equipment is detailed in **Appendix 2**. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (+/- 0.5 dB).

Measurements were carried out between 1300 hrs and 1600 hrs on Thursday 22nd February 2018. During the noise measurement survey the weather was dry with a light easterly wind (<0.5 m/s) with gusts up to approximately 2 m/s. The temperature ranged between 5°C and 8°C and the cloud cover was approximately 80%.

Noise measurements were carried out at Measurement Position 1 (MP1) in a free-field location at a height of 1.5m above the ground at a distance of approximately 8m from Highgate Road. The measurement position was chosen in order to be away from the existing operations at the rear of the site, as well as the street, and to provide a direct comparison to previous noise measurements at the site (as reported in **Section 4.1**). The noise monitoring position is shown in **Figure 4.2**.

Figure 4.2: Noise Monitoring Location

The measured noise levels at MP1 have been utilised to calculate the $L_{A10,18hr}$, $L_{Aeq,12hr}$, $L_{Aeq,4hr}$, $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$, as detailed in **Section 3.3**, and the derived noise levels are presented in **Table 4.2** below. Detailed measurement results are presented in **Appendix 3**.

Calculation Type	$L_{A10,3hr}$	$L_{A10,18hr}$	L_{day}	$L_{evening}$	Daytime $L_{Aeq,16hr}$	Night-time $L_{Aeq,8hr}$
Non-motorway Road	68.0	67.0	65.1	62.1	**64.5**	**56.5**
Motorway Road	68.0	67.0	65.8	64.7	**65.5**	**62.5**

Table 4.2: Summary of Derived Road Traffic Noise Levels at MP1

It can be identified, by comparison of the predicted daytime and night-time noise levels presented in **Table 4.2** with the measured daytime and night-time $L_{Aeq,T}$ presented in **Table 4.1**, that the noise levels from road traffic on Highgate Road do not follow the typical diurnal patterns that would be expected from a non-motorway road. This is due to the measured night-time noise levels being higher than the derived night-time noise levels.

The comparison suggests that the road traffic on Highgate Road in fact follows a diurnal pattern more typically expected from a motorway road.

An alternative explanation would be that another noise source is present that would increase the noise levels at night. The noise measurements presented in **Table 4.1**, however, show that the L_{Aeq} at night is close to the L_{A10}, which typically implies that road traffic is the dominant noise source. The L_{Aeq} is slightly higher than the L_{A10}, and it is likely that train pass-bys are the cause of this as, if there were a significant number of pedestrians passing directly by the site late at night, the L_{Amax} levels would be likely to be higher. Additionally, the background noise level, L_{A90}, drops significantly at night which identifies that there are no significant sources of constant noise (such as fixed plant) operational at night.

It should be noted that, if a correction for distance from Highgate Road is applied between the two measurement locations (-3 dB for a doubling of distance from 4m to 8m), the results of the two sets of noise measurements are approximately equal (assuming the motorway style diurnal pattern).

Accordingly, as a worst-case, the assessment will assume that the road traffic on Highgate Road has a diurnal pattern similar to a motorway road and it can therefore be concluded that the results of the 2013 measurement survey remain valid.

5 Noise Impact Assessment

5.1 Development Noise Levels

The measured noise levels have been corrected to the façade position using standard distance attenuation formulae. The measurement position was located at approximately 4m from Highgate Road and the proposed development will be located at a distance of approximately 18m from Highgate Road. This equates to a correction of -7 dB for the L_{Aeq} noise levels (assuming line source attenuation) and -13 dB for the L_{Amax} noise levels (assuming point source attenuation).

The corrected noise development noise levels are presented in **Table 5.1**.

Assessment Location	Period (hours)	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)
Highgate Road Façade	Daytime (0700 – 2300)	62	-
	Night-time (2300 – 0700)	59	72

Table 5.1: Derived Noise Levels at the Proposed Façade

5.2 Façade Noise Levels

The future façade noise levels have been compared against the Camden Local Plan criteria presented in **Table 3.1**, and this comparison is presented in **Table 5.2**.

Assessment Location	Period (hours)	$L_{Aeq,T}$ (dB)	Camden Assessment Criteria
Highgate Road Façade	Daytime (0700 – 2300)	62	LOAEL to SOAEL
	Night-time (2300 – 0700)	59	LOAEL to SOAEL

Table 5.2: Façade Noise Level Assessment

5.3 Internal Noise Level Assessment

It is common practice that internal noise levels should ideally be achieved in as many properties as possible with windows open. Due to the relatively high noise levels present at site, those habitable rooms facing Highgate Road will not be able to achieve the requirements with windows open, and therefore the sound insulation of the building façade will be required to mitigate noise levels. The aim will be to achieve internal noise levels below Camden Council's LOAEL criteria (as set out in **Table 3.1**). In carrying out our assessment, Syntegra have therefore made the following assumptions:

- The façade build-up will be a standard brick and block construction, or equivalent, to achieve an R_w of approximately 55 dB.
- A typical double-glazing system in a 4/12/6 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 32 dB R_w.
- Appropriately specified acoustic trickle vents or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.

Table 5.3 identifies the likely L_{Aeq} and L_{Amax} internal noise levels, assuming windows closed, utilising the *Simple Calculation Method* described in BS 8233:2014 for the worst affected façade. As it can be seen that habitable rooms at the worst affected façade will achieve the requirements, it can be safely assumed that all other habitable rooms will also achieve the requirements.

Assessment Location	Period (hrs)	External Noise Levels (dB) (ref. Table 5.1)	Sound Insulation of Glazing (dBA)	Internal Noise Levels (dB)	Compliance with LOAEL Criteria
Ambient Noise Level L_{Aeq} (dB)					
Highgate Road Façade	Daytime (0700 – 2300)	62	32	30	✓
Highgate Road Façade	Night-time (2300 – 0700)	59	32	27	✓
Maximum Noise Level L_{AFmax} (dB)					
Highgate Road Façade	Night-time (2300 – 0700)	72	32	40	✓

Table 5.3: Internal Noise Levels

5.4 External Noise Level Assessment

The external amenity spaces for the development are located at the lowest level of the development, which is below the level of Highgate Road, as shown in the site section plans in **Figure 5.1**.

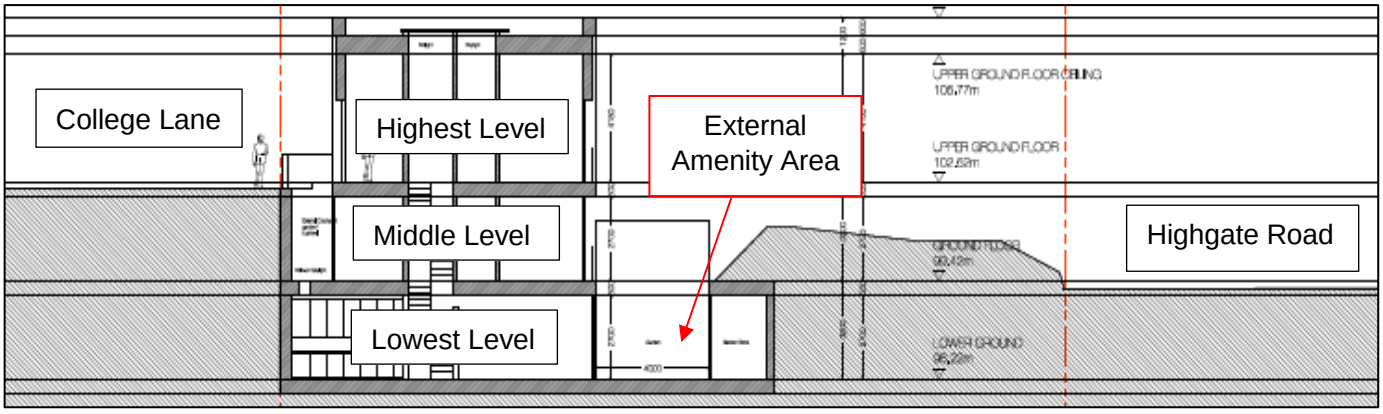

Figure 5.1: External Amenity Area Location

As there is no line of site between the external amenity area and Highgate Road, noise levels are likely to be at least 10 dB – 15 dB lower than at the façade location (62 dB $L_{Aeq,16hr}$). Accordingly, daytime noise levels within the external amenity area are likely to be between 47 dB $L_{Aeq,16hr}$ and 52 dB $L_{Aeq,16hr}$ (or lower).

By comparison against the noise level criteria provided by Camden Council (as presented in **Table 3.1**), the noise levels would be within the LOAEL to SOAEL category, at worst, and potentially within the SOAEL category of below 50 dB $L_{Aeq,16hr}$. It can therefore be concluded that external noise levels within the proposed amenity areas are likely to be acceptable and significant adverse impacts would be avoided.

6 Conclusion

An assessment has been carried out of the present noise climate at **138-140 Highgate Road, London** and the impact of that noise on the proposed development.

The assessment is based on the results of two noise measurement surveys that have been carried out at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

The results of the noise measurement surveys have been compared against the requirements of the Local Authority (Camden Council), who have set criteria on the basis of a *Lowest Observed Adverse Effect Level* (LOAEL) and a *Significant Observed Adverse Effect Level* (SOAEL).

It has been identified that the noise levels at the proposed façade are within the LOAEL to SOAEL category.

In respect of internal noise levels, it has been identified that noise levels in the LOAEL category can be achieved through careful consideration of the building envelope. The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an R_w of approximately 55 dB.**
- **A typical double-glazing system in a 4/12/6 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 32 dB R_w.**
- **Appropriately specified acoustic trickle vents or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**

It has also been shown that the noise levels within external amenity areas would be within the LOAEL to SOAEL category, at worst, and potentially within the SOAEL category of below 50 dB $L_{Aeq,16hr}$.

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, in line with the aims of the Local Authority, the NPPF, NPSE and PPG-Noise.

7 Appendix 1: Glossary of Acoustic Terminology

Term	Description
'A'-Weighting	*This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.*
Decibel (dB)	*This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.*
$L_{Aeq,T}$	*The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.*
L_{A10}	*The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the L_{A10T}. The L_{A10} is used to describe the levels of road traffic noise at a particular location.*
L_{A90}	*The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the L_{A90T}. The L_{A90} is used to describe the background noise levels at a particular location.*
L_{Amax}	*The 'A'-weighted maximum sound pressure level measured over a measurement period.*

8 Appendix 2: List of Equipment

Equipment Type	Manufacturer	Serial Number	Calibration Certification Number	Date of Last Calibration Check
Nor-140 Type 1 Sound Level Meter	Norsonic	1406389	27193	December 2017
Nor-1225 Microphone	Norsonic	225519	27192	December 2017
Nor-1209 Preamplifier	Norsonic	20598	27193	December 2017
Nor-1251 Sound Calibrator	Norsonic	35115	022-2017-8679	December 2017

9 Appendix 3: Detailed Noise Measurement Results

Measured Noise levels – MP1

Time (hrs)	$L_{Aeq,T}$ (dB)	$L_{AF(max)}$ (dB)	L_{A10} (dB)	L_{A90} (dB)
1300 – 1315	67.8	89.2	67.2	57.4
1315 – 1330	64.9	78.6	68.5	57.2
1330 – 1345	64.4	83.1	67.1	54.9
1345 – 1400	68.9	95.6	67.5	56.8
1400 – 1415	72.8	94.7	72.3	57.2
1415 – 1430	63.9	82.5	67.3	56.6
1430 – 1445	68.8	92.5	69.1	58.2
1445 – 1500	64.2	82.4	67.6	55.3
1500 – 1515	64.2	80.2	67.6	55.9
1515 – 1530	64.6	85.5	67.6	55.9
1530 – 1545	64.1	83.2	67.1	56.1
1545 – 1600	63.4	84.6	66.6	56.0
1300 – 1600	**67.0**	**95.6**	**67.8**	**56.5**