Hawthorne Court, Ryefield Crescent, Northwood HA6 1LJ

Noise Assessment

784-B042618

Noise Assessment for Proposed Residential Development

Prepared on behalf of Hamways Ltd

January 2023

tetratecheurope.com

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1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This report presents the findings of a noise assessment in support of a planning application for a proposed residential development at Hawthorne Court, Ryefield Crescent, Northwood, HA6 1LJ in accordance with Class MA of the Town and Country Planning (General Permitted Development) (England) (England) Order 2015 (as amended). An assortment of units are included in this application, including units 2-6, 8-12, 15-20, 22 and 30.

The permitted development right is subject to the conditions in paragraph MA.2; this requires prior approval of the local planning authority in relation to transport and highways impacts of the development, contamination risks of the site, flood risk and '*impacts of noise from commercial premises on the intended occupiers of the development*.' Paragraph W sets out the procedure for applying the prior approval.

A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to predict the effects of noise.

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and a set of location plans, noise contour plots relevant to the assessment are presented throughout the document.

1.2 LEGISLATIVE CONTEXT

This report is intended to provide information relevant to the local planning authority and their consultees in support of a planning application for the above proposed development. Policy guidance with respect to noise is found in National Planning Policy Framework (NPPF), published in 2021. With regard to noise and planning, NPPF contains the following statement at paragraph 174:

"*174 Planning policies and decisions should contribute to and enhance the natural and local environment by:*

> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…"*

A further 2 short statements are presented at paragraph 185, which state:

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

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…"

Furthermore, paragraphs 187 and 188 state:

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

188. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

Planning Practice Guidance (PPG): Noise provides further guidance with regard to the assessment of noise within the context of Planning Policy. The overall aim of this guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England, is to, *'identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.'*

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG and repeated as follows:

Table 1.1 NPPG Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No Specific Measures Required
Present and 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 change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required

Perception	Examples of Outcomes	Increasing Effect Level	Action
Lowest Observed Adverse Effect Level			
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; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
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 the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
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, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The NPPF, NPSE and NPPG do not, however, present absolute noise level criteria which define SOAEL, LOAEL and NOEL which is applicable to all sources of noise in all situations. Therefore, within the context of the Proposed Development, national planning policy and appropriate guidance documents, Section 2.0 presents the noise level criteria used as a basis of this assessment.

The NPPG also states that *neither the NPSE nor the NPPF (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the proposed development.*

1.3 REGIONAL POLICIES

Greater London Authority (GLA), The London Plan 2021

The London Plan also addresses noise pollution. The policies highlighted below are considered relevant to this assessment:

Policy D13 Agent of Change

"A. The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance-generating uses in a sensitive manner when new development is proposed nearby.

B Development should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions

being placed on them.

C *New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.*

D *Development proposals should manage noise and other potential nuisances by: 1) ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area 2) exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations 3) separating new noise-sensitive development where possible from existing noise-generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.*

E *Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed."*

Policy D14 Noise

"*A.* In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

1) avoiding significant adverse noise impacts on health and quality of life

2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change

3) 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 existing noise-generating uses

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

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

6) 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 applying good acoustic design principles

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

Further regional policies relevant to noise include the Mayor's Ambient Noise Strategy (2004), Sustainable Design and Construction SPG (2014) and the London Environment Strategy (2018). The details within these regarding noise are generally covered by the national and local policies within this assessment and the General London Assembly plan.

1.4 ACOUSTIC CONSULTANTS' QUALIFICATIONS, PROFESSIONAL MEMBERSHIPS

The lead acoustic consultant for this assessment is Kat Lail; the report has been checked by Gus Egan and verified by Nigel Mann. Relevant qualifications, membership and experience are summarised below.

Table 1.2 Acoustic Consultants' Qualifications & Experience

Name	Education	Institute of Acoustics Post Graduate Diploma in Acoustic and Noise Control (Pass Date)	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Kat Lail	BA (2019) LLM (2020)	-	Apr (2021)	-	-
Graham Davis	BA (2008) PGd (2013)	Nov (2013)	Sep (2011)	Jan (2014)	-
Gus Egan	BSc (2011) MSc (2016)	Dec (2019)	Jun (2017)	Feb (2021)	-
Nigel Mann	BSc (1997) Msc (1999)	Nov (2001)	Nov (1998)	Nov (2001)	Jul (2005)

2.0 ASSESSMENT CRITERIA

2.1 NOISE ASSESSMENT CRITERIA

In order to enable the assessment of the proposed development in terms of LOAEL and SOAEL, Table 2.1 presents equivalent noise levels and associated actions with the target noise level criteria identified. The noise level criteria detailed below have been derived from the following standards and design guidance:

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

World Health Organisation (1999): *Guidelines on Community Noise*

Table 2.1 Noise Level Criteria and Actions

Effect Level	Assessment	Noise Level Criteria	Action / Justification
No Observed Adverse Effect Level	Noise Intrusion within Proposed Dwellings	Noise levels below: Bedrooms – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms – 35 dB $L_{Aeq,16hours}$	No Action Required Within BS8233 Criteria
Lowest Observed Adverse Effect Level	Noise Intrusion within Proposed Dwellings	Noise levels exceed: Bedrooms – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms – 35 dB $L_{Aeq,16hours}$	Mitigate to achieve: *Bedrooms – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax}* *Living Rooms – 35 dB $L_{Aeq,16hours}$*
Significant Observed Adverse Effect	Noise Intrusion within Proposed Dwellings	Noise levels exceed: Bedrooms – 35 dB $L_{Aeq,8hours}$ Living Rooms – 40 dB $L_{Aeq,16hours}$	Mitigate to achieve: *Bedrooms – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms – 35 dB $L_{Aeq,16hours}$*
Unacceptable Observed Adverse Effect	Noise Intrusion within Proposed Dwellings	Noise levels with mitigation exceed: Bedrooms – 35 dB $L_{Aeq,8hours}$ Living Rooms – 40 dB $L_{Aeq,16hours}$	Prevent

3.0 NOISE SURVEYS

3.1 NOISE MONITORING METHODOLOGY (UNIT 28)

The previous noise survey undertaken in March 2022 has been used in combination with a newly undertaken survey for the purpose of this assessment. The previous data is presented below:

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels. Equipment used during the survey included:

Rion NL-52	Environmental Noise Analyser	s/n	710312
Rion NL-52	Environmental Noise Analyser	s/n	810560
Rion NC-75	Sound Calibrator	s/n	34580543

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice, a maximum drift of +0.2 dB was observed. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

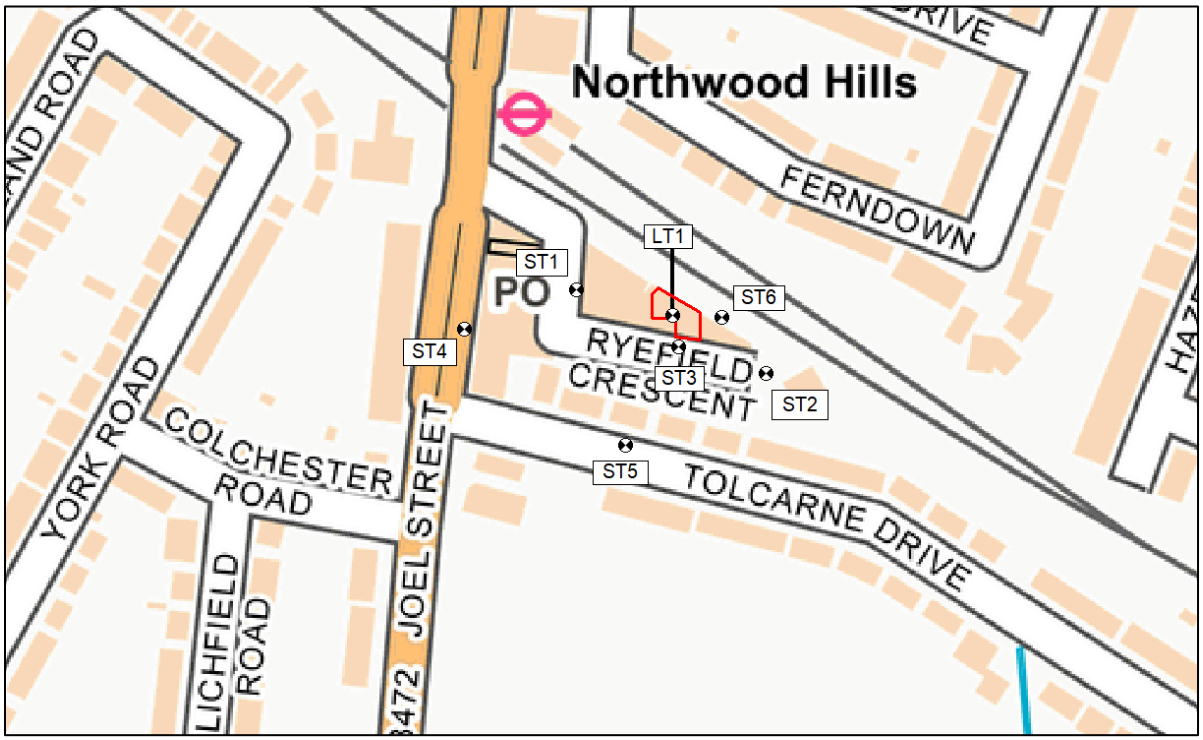
A baseline monitoring survey was undertaken at seven locations (as specified in the following table and shown in Figure 3.1 below) from Tuesday 8th March 2022 to Tuesday 15th March 2022. Attended short term measurements were undertaken at six locations during day, evening and night-time periods with one additional location being measured unattended over a 165-hour period within Unit 28. The raw data collected from the long-term monitoring are available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 *The Description and Measurement of Environmental Noise: Guide to quantities and procedures*. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms^{-1} at all times during the survey, with a variable wind direction during the survey.

Table 3.1 Noise Monitoring Locations – March 2022

Ref	Description
LT1	North-eastern boundary of the site
ST1	Western boundary of the site
ST2	Eastern boundary of the site
ST3	Southern boundary of the site
ST4	West of the site, Joel Street
ST5	South of the site, Tolcarne Drive
ST6	North-eastern boundary of the site

Figure 3.1 Baseline Noise Monitoring Location Plan and Study Area – March 2022



3.2 NOISE SURVEY RESULTS (UNIT 28)

The ambient noise climate in the vicinity of Unit 28 was characterised by regular train passes (including underground and overground trains) to the north, with lower contributions from road traffic noise from Joel Street and Tolcarne Drive audible during the survey. No localised contributions from other commercial sources were observed adjacent to Unit 28.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period). For the long-term (LT) location, the presented $L_{Aeq,T}$ and $L_{A10,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 5 minute measurement over the stated survey period.

Table 3.2 Meteorological Conditions during the Survey – March 2022

Survey Location	Date & Time	Temperature (ºC)	Wind Speed (m/s)	Wind Direction	Cloud Cover (Oktas)	Dominant Noise Source
Day ST1	15/03/2022 09:53	9	2 – 3	ESE	3	Car wash operations, trains
Day ST2	15/03/2022 10:25	11	2 – 3	ESE	2	Trains, road traffic noise
Day ST3	15/03/2022 10:09	9	2 – 3	ESE	4	Road traffic noise Joel Street, trains
Day ST4	15/03/2022 11:03	11	2 – 3	ESE	2	Road traffic noise Joel Street, trains

Survey Location	Date & Time	Temperature (ºC)	Wind Speed (m/s)	Wind Direction	Cloud Cover (Oktas)	Dominant Noise Source
Day ST5	15/03/2022 10:46	11	2 – 3	ESE	2	Road traffic noise Tolcarne Drive, trains
Day ST6	15/03/2022 09:35	9	2 – 3	ESE	3	Birdsong, construction noise, trains
Evening ST1	14/03/2022 21:37	13	0 - 1	SSW	3	Trains, road traffic noise Joel Street
Evening ST2	14/03/2022 22:11	8	1 – 2	S	4	Trains, road traffic noise
Evening ST3	14/03/2022 21:55	10	1 – 2	SSW	4	Road traffic noise Joel Street, trains
Evening ST4	14/03/2022 20:57	12	1 - 2	SSW	5	Road traffic noise Joel Street, trains
Evening ST5	14/03/2022 20:39	12	1 - 2	SSW	5	Road traffic noise Tolcarne Drive, trains
Evening ST6	14/03/2022 21:17	12	0 - 1	SSW	4	Road traffic noise Joel Street, trains
Night ST1	14/03/2022 23:17	5	1 – 2	S	4	Road traffic noise Joel Street, trains
Night ST2	14/03/2022 23:50	7	1 – 2	S	2	Road traffic noise
Night ST3	14/03/2022 23:33	8	1 – 2	S	3	Road traffic noise Joel Street, trains
Night ST4	15/03/2022 00:28	6	1 – 2	S	7	Road traffic noise
Night ST5	15/03/2022 00:11	7	1 – 2	S	5	Trains, road traffic noise
Night ST6	14/03/2022 23:00	8	1 – 2	S	4	Road traffic noise Joel Street, trains

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2 x 10^{-5} Pa).

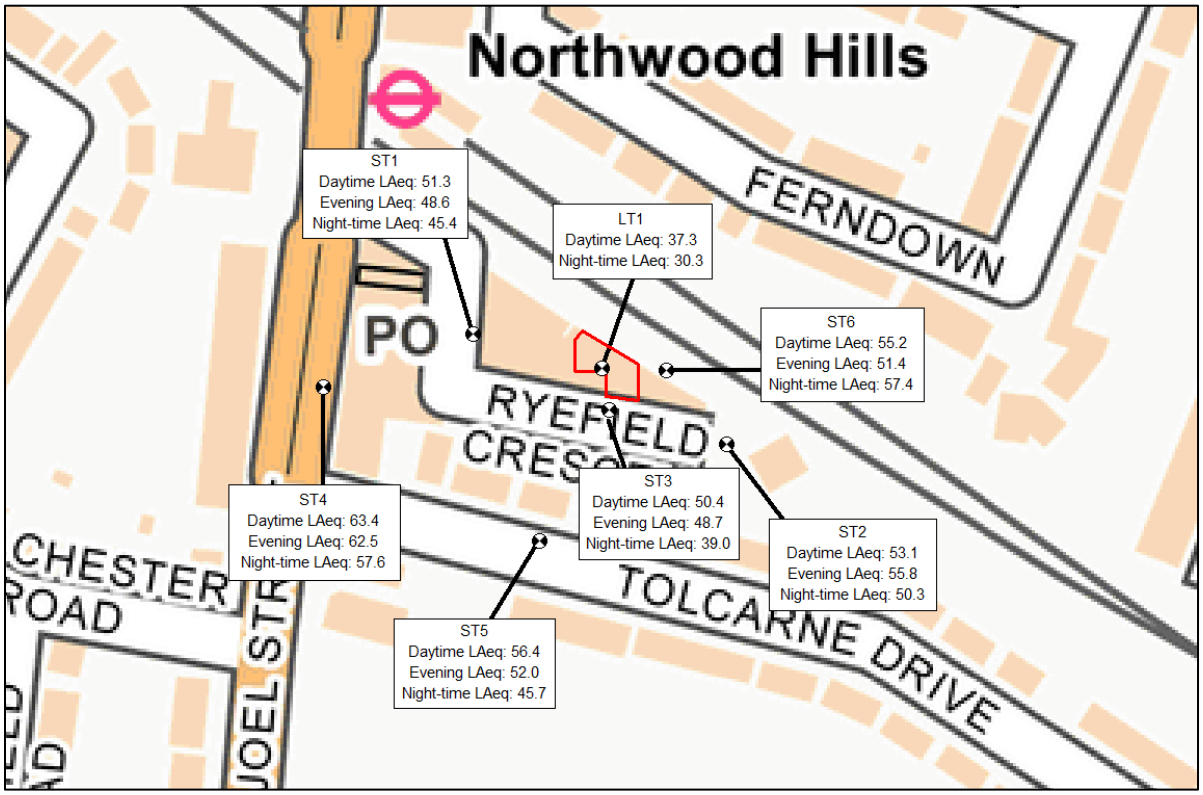
Table 3.3 Results of Baseline Noise Monitoring Survey (Average Levels)

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Weekday Daytime 07:00 - 23:00	76 Hours	08/03/2022 – 15/03/2022 14:33 – 11:38	LT1	37.3	77.6	16.2	31.0	20.0
Weekday Night-time 23:00 – 07:00	40 hours	08/03/2022 – 15/03/2022 23:00 - 07:00		30.3	63.2	15.7	22.4	16.0
Weekend Daytime 07:00 - 23:00	32 Hours	12/03/2022 – 13/03/2022 07:00 - 23:00		36.1	65.8	16.1	28.8	19.0
Weekend Night-time 23:00 – 07:00	16 hours	12/03/2022 – 13/03/2022 23:00 - 07:00		27.9	63.2	15.9	22.0	17.0
Daytime 07:00 - 19:00	15 Mins	15/03/2022 09:53	ST1	51.3	69.7	41.7	54.3	44.9
	15 Mins	15/03/2022 10:25	ST2	53.1	74.5	36.7	52.8	40.1
	15 Mins	15/03/2022 10:09	ST3	50.4	74.9	37.1	51.4	40.3
	15 Mins	15/03/2022 11:03	ST4	63.4	79.9	52.0	66.2	57.2
	15 Mins	15/03/2022 10:46	ST5	56.4	80.3	39.3	58.1	45.0
	15 Mins	15/03/2022 09:35	ST6	62.3	87.0	37.3	55.7	41.3

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Evening 19:00 - 23:00	15 Mins	14/03/2022 21:37	ST1	48.6	72.7	38.0	50.2	41.3
	15 Mins	14/03/2022 22:11	ST2	55.8	78.5	33.7	45.9	36.1
	15 Mins	14/03/2022 21:55	ST3	48.7	76.1	32.3	46.0	35.0
	15 Mins	14/03/2022 20:57	ST4	62.5	74.6	49.9	66.1	53.9
	15 Mins	14/03/2022 20:39	ST5	52.0	77.6	38.2	52.7	42.7
	15 Mins	14/03/2022 21:17	ST6	52.1	72.0	35.6	54.5	39.7
Night-time 23:00 - 07:00	15 Mins	14/03/2022 23:17	ST1	45.4	61.3	32.2	47.9	37.9
	15 Mins	14/03/2022 23:50	ST2	50.3	76.8	28.5	48.4	31.2
	15 Mins	14/03/2022 23:33	ST3	39.0	62.6	26.7	43.0	30.6
	15 Mins	15/03/2022 00:28	ST4	57.6	76.5	44.4	61.9	45.4
	15 Mins	15/03/2022 00:11	ST5	45.7	71.6	27.8	45.1	30.8
	15 Mins	14/03/2022 23:00	ST6	62.6	86.5	28.4	54.7	35.4

All values are sound pressure levels in dB re: 2x 10-5 Pa

Figure 3.2 Noise Survey Results Summary (Highest Monitoring Value Shown) – March 2022



3.3 ADDITIONAL NOISE MONITORING METHODOLOGY (NOV/DEC 2022 UPDATE)

An additional, updated monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels. Equipment used during the additional survey included:

Rion NL52	Environmental Noise Analyser	s/n	219904
Rion NL52	Environmental Noise Analyser	s/n	810559
Rion NL52	Environmental Noise Analyser	s/n	732146
Rion NC75	Sound Calibrator	s/n	35046823

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice, a drift of +0.1 dB was observed on meter s/n 219904 and 810559 and a drift of -0.1 dB on meter s/n 732146. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

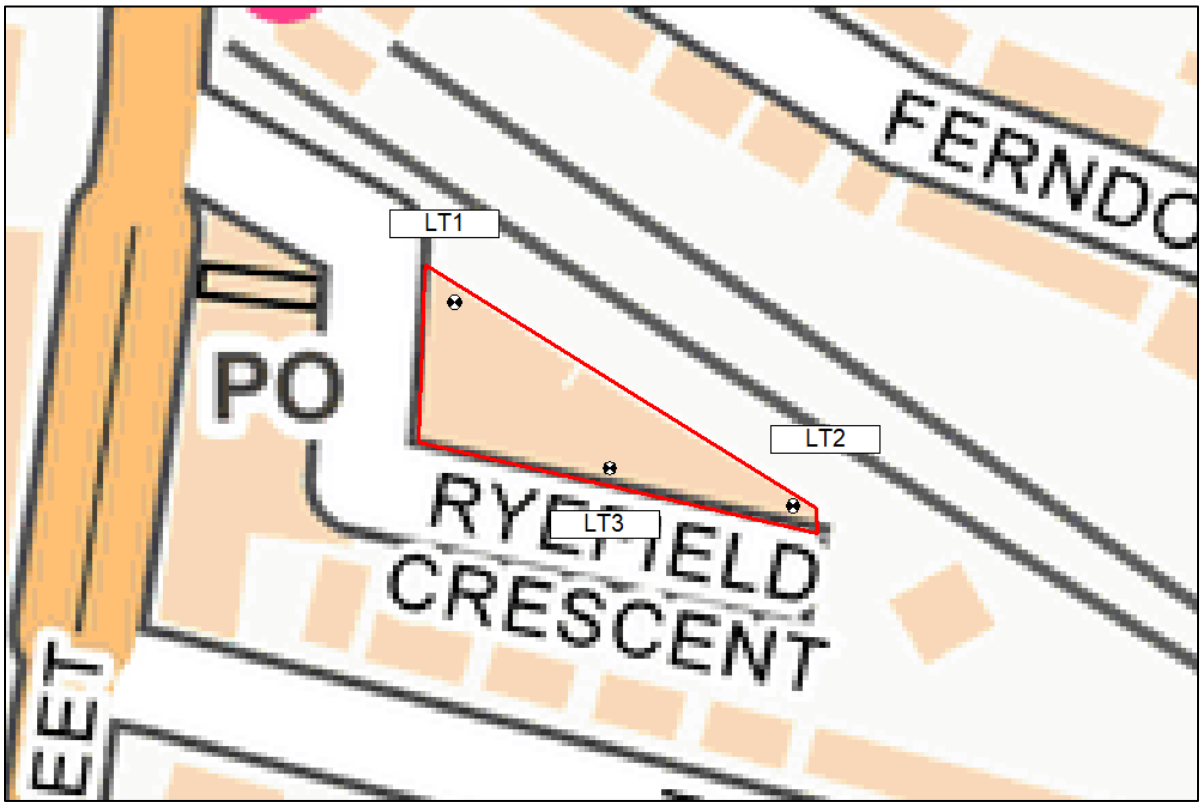
An additional baseline monitoring survey was undertaken at three locations (as specified in Table 3.4 and shown in Figure 3.3 below) over the dates from Friday 25th November 2022 to Wednesday 7th December 2022. 3 long-term (LT) locations were measured unattended over a 118-hour period. The raw data collected from the long-term monitoring is available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the additional survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms^{-1} at all times during the survey, with a predominant north-eastern wind direction during the survey.

Table 3.4 Additional Noise Monitoring Locations – Nov/Dec 2022

Ref	Description
LT1	In unit 2-6 Hawthorne Court
LT2	In unit 30 Hawthorne Court
LT3	In unit 20 Hawthorne Court

Figure 3.3 Additional Baseline Noise Monitoring Location Plan – Nov/Dec 2022



3.4 ADDITIONAL NOISE SURVEY RESULTS

The dominant noise sources found in the area include frequent trains, noise from businesses and road traffic noise from Joel Street. Other contributions to the ambient noise environment consist of birdsong/animal noise (foxes) and trees rustling in the wind.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period). For the long-term (LT) locations, the presented $L_{Aeq,T}$ and $L_{A10,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 5 minute measurement over the stated survey period.

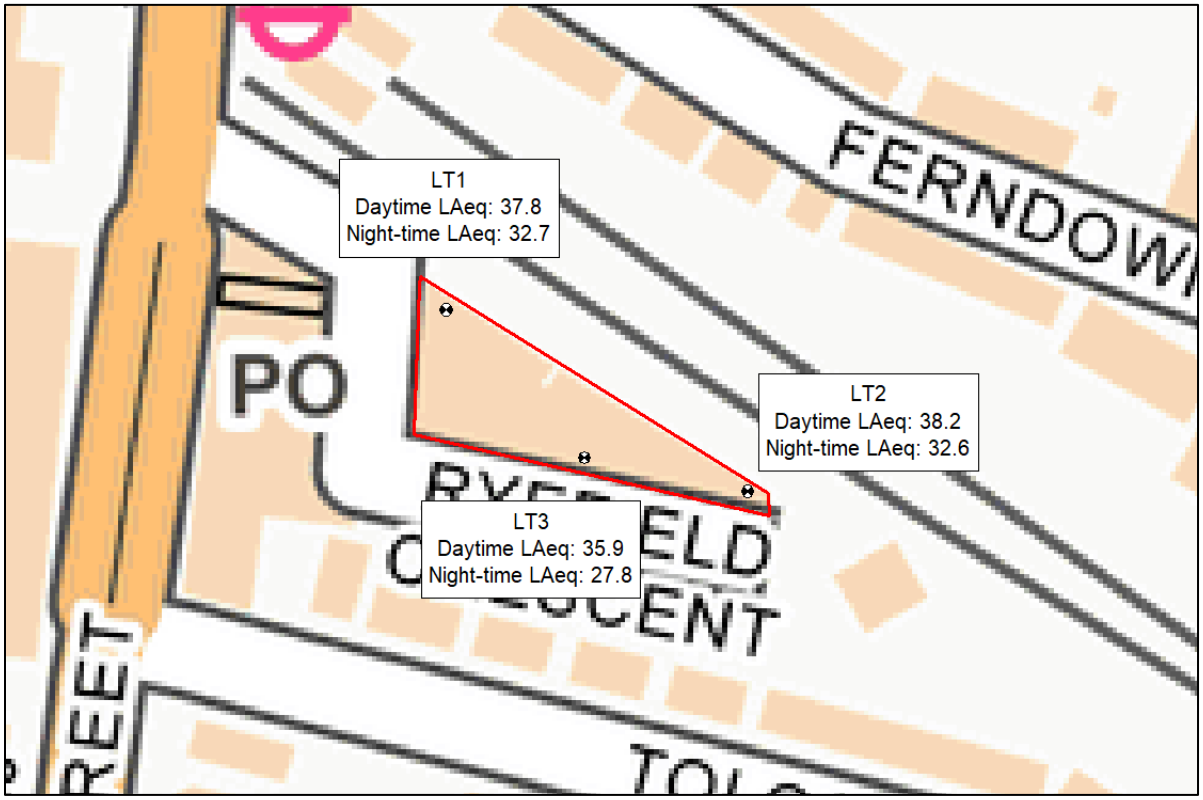
The results of the statistical measurements and frequency measurements conducted during the additional survey are summarised in the following table. All values are sound pressure levels in dB (re: 2×10^{-5} Pa).

Table 3.5 Results of Additional Noise Monitoring Survey (Average Levels) – Nov/Dec 2022

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Weekday Daytime 07:00 - 23:00	78 Hours	30/11/2022 – 07/12/2022	LT1	37.8	70.0	21.1	31.3	24.0
Weekday Night-time 23:00 – 07:00	40 Hours	30/11/2022 – 07/12/2022		32.7	69.7	20.6	25.0	22.0
Weekend Daytime 07:00 - 23:00	32 Hours	03/12/2022 – 04/12/2022		35.1	65.2	21.0	29.5	23.0
Weekend Night-time 23:00 – 07:00	16 Hours	03/12/2022 – 04/12/2022		30.4	64.1	20.6	25.0	22.0
Weekday Daytime 07:00 - 23:00	46 Hours	25/11/22 – 30/11/22	LT2	45.4	97.9	16.2	36.1	22.0
Weekday Night-time 23:00 – 07:00	24 Hours	25/11/22 – 30/11/22		32.6	66.3	14.5	25.5	16.0
Weekend Daytime 07:00 - 23:00	32 Hours	26/11/22 – 27/11/22		35.5	66.3	15.6	34.5	25.0
Weekend Night-time 23:00 – 07:00	16 Hours	26/11/22 – 27/11/22		32.6	64.1	14.8	28.8	18.0
Weekday Daytime 07:00 - 23:00	8 Hours	25/11/22	LT3	35.9	76.6	19.6	30.8	24.0
Weekday Night-time 23:00 – 07:00	8 Hours	25/11/22		27.8	58.3	18.1	27.3	20.0
Weekend Daytime 07:00 - 23:00	30 Hours	26/11/22 – 27/11/22		29.8	69.1	16.9	29.7	26.0
Weekend Night-time 23:00 – 07:00	8 Hours	26/11/22		24.5	57.9	15.6	24.2	17.0

All values are sound pressure levels in dB re: 2x 10-5 Pa

Figure 3.4 Additional Noise Survey Results Summary (Highest Monitoring Value Shown) – Nov/Dec 2022



4.0 ASSESSMENT OF KEY EFFECTS

4.1 Existing Ambient Noise Climate

For the purposes of this worst-case assessment, noise intrusion from contributions from the wider environment have been assessed (for the purposes of the prior approval process, noise from railways is also considered to be a commercial source). Observations during the baseline survey identified that contributions from the adjacent railway line was the dominant noise source affecting the development site, therefore additional analysis of the measured noise levels has been undertaken in order to establish representative daytime and night-time noise levels.

Table 4.1 below presents the measured noise level contributions from passing trains measured at location ST6 (including stopping underground services and passing express services) and calculated daytime $L_{Aeq,16\ hour}$ and night-time $L_{Aeq\ 8\ hour}$ noise levels.

Table 4.1 Railway Noise Level Contributions

Description	Measured Noise Level From train movements		SEL	Approx. Number of Movements per Day	Approx. Number of Movements per Night	Total L_{Aeq} Contribution dB(A)		Overall Noise Level dB(A)		
	Noise Level	No. of Movements				$L_{Aeq,\ 16hours}$	$L_{Aeq,\ 8hours}$	$L_{Aeq,\ 16hours}$	$L_{Aeq,\ 8hours}$	L_{Amax}
Stopping Underground Trains	56.6 dB $L_{Aeq,\ 650\ secs}$	10	74.7	268	60	51.4	47.9	**60.2**	**55.1**	69
Passing Express Trains	74.3 dB, $L_{Aeq,\ 111\ secs}$	4	88.7	71	10	59.6	54.1			87

The results presented above have been used together with the measured noise levels at monitoring location ST3 to determine noise intrusion levels within the units.

4.2 Noise Intrusion Assessment

Internal noise levels within all sensitive spaces (bedrooms/living rooms) of the proposed development have been assessed both with windows open, where a reduction from a partially open window of 15 dB has been used, and with windows closed.

External noise levels facing the railways lines are dominated by stopping underground trains and passing express trains during both the daytime and night-time with the calculated ambient noise levels ranging from 55 – 61 dB L_{Aeq}.

External noise levels facing Ryefield Crescent are characterised by contributions from road traffic noise and the railway located adjacent to the development site with some contributions attributable to fixed plant from the businesses located along Joel Street during the daytime and night-time; ambient noise levels ranged from 39 – 51 dB L_{Aeq}.

The results of the monitoring and calculations identify that noise levels within bedroom and living spaces of the development would have the potential to exceed the target noise intrusion criteria if relying on open windows for ventilation. Therefore, an alternative means of ventilation will be provided in order to meet both ventilation and internal ambient noise criteria from typical ambient noise sources. Alternative ventilation can be provided in several ways from acoustic trickle vents (which need to have a minimum sound reduction equal to or greater than the glazing), to other passive ventilation systems or mechanical ventilation and air conditioning systems.

Analysis of the additional survey measurements at locations LT1, LT2 and LT3 within the units has also been undertaken to determine indicative levels of noise intrusion within the premises; although existing windows of the premises were boarded up for security purposes, analysis of the calculated ambient noise levels and measured noise levels within the unit indicate that the existing glazing and façade are providing around 23 dB of attenuation. Furthermore, analysis of sound recordings during the baseline survey identified that noise from passing rail traffic was the principal noise source and no significant contributions from nearby commercial premises were identified.

Therefore, the glazing strategy has been designed to achieve WHO/BS 8233 internal L_{Aeq} daytime living space noise level criterion of 35 dB, an internal L_{Aeq} night-time bedroom noise level criterion of 30 dB with windows closed within residential spaces. The glazing specifications would also meet the L_{Amax} criteria within bedrooms of 45 dB with windows closed for express trains passing no more than 10 times per night.

The glazing strategy highlights which areas which would require enhanced glazing in order to meet internal ambient noise criteria.

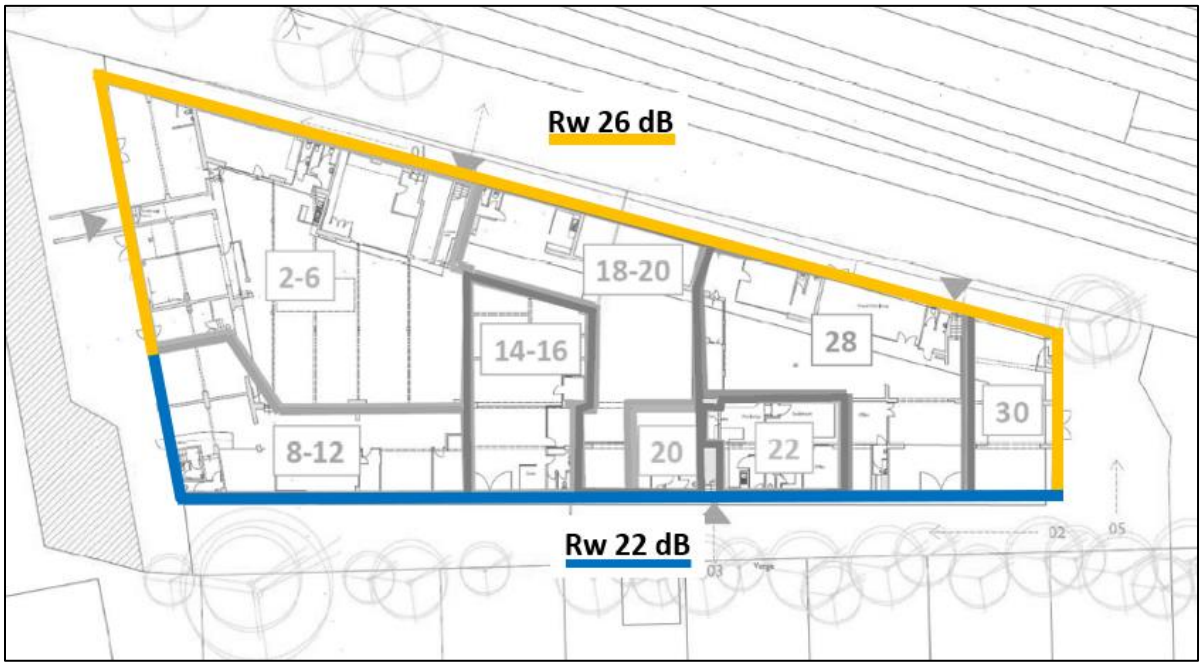
4.3 Glazing and Ventilation Strategy

Bedroom spaces within the development site will feature glazing and ventilation products with a minimum sound reduction of R_w 26 dB which is considered to be readily achievable with standard glazing and ventilation products (example specification 4mm/12mm/4mm double glazing) to meet the target internal noise criteria of 30 dB L_{Aeq} and 45 dB L_{Amax} with windows closed.

Living room spaces of the development will feature double glazing and ventilation products with a minimum sound reduction ranging between R_w 22 dB and R_w 26 dB to achieve the target internal noise criterion of 35 dB L_{Aeq} with windows closed.

The sound insulation requirements for different living rooms of the development site are shown illustratively on Figure 4.1 below.

Figure 4.1 Glazing and Ventilation Requirements for Living Rooms and Bedrooms



The glazing and ventilation specifications outlined above are expected to reduce any noticeable or intrusive sounds to within the BS 8233/WHO guideline values within the units and would be below the LOAEL. As such, there are not expected to be any significant adverse impacts with respect to noise from existing commercial and transportation noise as a result of the proposals.

Furthermore, with respect to the consideration of the agent of change principle, the development site is located directly adjacent to existing residential units that form part of the wider Hawthorne Court Complex. As such, no existing businesses are expected to be restricted by the proposed change of use of the units.

5.0 CONCLUSIONS

This report presents the findings of a noise assessment in support of a planning application for a proposed residential development at Hawthorne Court, Ryefield Crescent, Northwood, HA6 1LJ in accordance with Class MA of the Town and Country Planning (General Permitted Development) (England) (England) Order 2015 (as amended). An assortment of units are included in this application, including units 2-6, 8-12, 15-20, 22 and 30.

In considering paragraphs 174 and 185 of the NPPF, the Proposed Development is not expected to generate significant volumes of traffic and is not expected to have an 'adverse impact' on health or quality of life. Similarly, it is considered that all 'adverse impacts' on health and quality of life' (relating to noise) are mitigated by the use of the following mitigation:

A glazing strategy has been provided which achieves both ventilation and internal ambient noise level requirements of $L_{Aeq\ daytime}$ 35 dB, $L_{Aeq\ night\text{-}time}$ of 30 dB and $L_{Amax\ night\text{-}time}$ of 45 dB in all residential bedroom/spaces of the Proposed Development.

Bedroom spaces across the development site will feature glazing and ventilation products with a minimum sound reduction of R_w 26 dB (which is considered to be readily achievable with standard glazing and ventilation products) to meet the target internal noise criteria of 30 dB L_{Aeq} and 45 dB L_{Amax} with windows closed.

Living room spaces on all floors of the development will feature glazing and ventilation products with a minimum sound reduction ranging between R_w 22 dB and R_w 26 dB to achieve the target internal noise criterion of 35 dB L_{Aeq} with windows closed.

The development site is located directly adjacent to residential units that form part of the wider Hawthorne Court Complex. As such, no existing businesses are expected to be restricted by the proposed change of use of the units.

APPENDICES

APPENDIX A – ACOUSTIC TERMINOLOGY AND ABBREVIATIONS

Acoustic Terminology

dB — Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) — Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} — Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq,\ 07:00\ –\ 23:00}$ for example, describes the equivalent continuous noise level over the 16 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower that the $L_{Aeq,\ 07:00\ –\ 23:00}$.

L_{Amin} — The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} — The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n — Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say. 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10,\ 1\ hr}$ = x dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w — The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Abbreviations

DMRB – Design Manual for Roads and Bridges

HGV – Heavy Goods Vehicle

PPG – Planning Practice Guidance

UDP – Unitary Development Plan

UKAS – United Kingdom Accreditation Service

APPENDIX B – REPORT CONDITIONS

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The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

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