

Shurgard UK Limited

74 Oldfield Road, Hampton

Noise Assessment

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Distribution

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1. Introduction

- 1.1. Ardent Consulting Engineers has been appointed by Shurgard UK Limited to undertake a Noise Assessment to support the development of a new self-storage facility at 74 Oldfield Road, Hampton (hereafter referred to as the site).
- 1.2. Prior to undertaking the development, it is necessary to ensure that the site will be able to operate efficiently, without disturbing the closest noise sensitive receptors.
- 1.3. The assessment is in accordance with BS 4142 and provides details of the site surveys and subsequent qualitative and quantitative analysis.

2. Development Proposals

2.1. The proposed development is as follows:

Demolition and redevelopment of the site to provide self-storage unit and business centre (use Class E) with associated car and cycle parking, and landscaping.

2.2. An extract of the development proposals is shown in Figure 2-1.

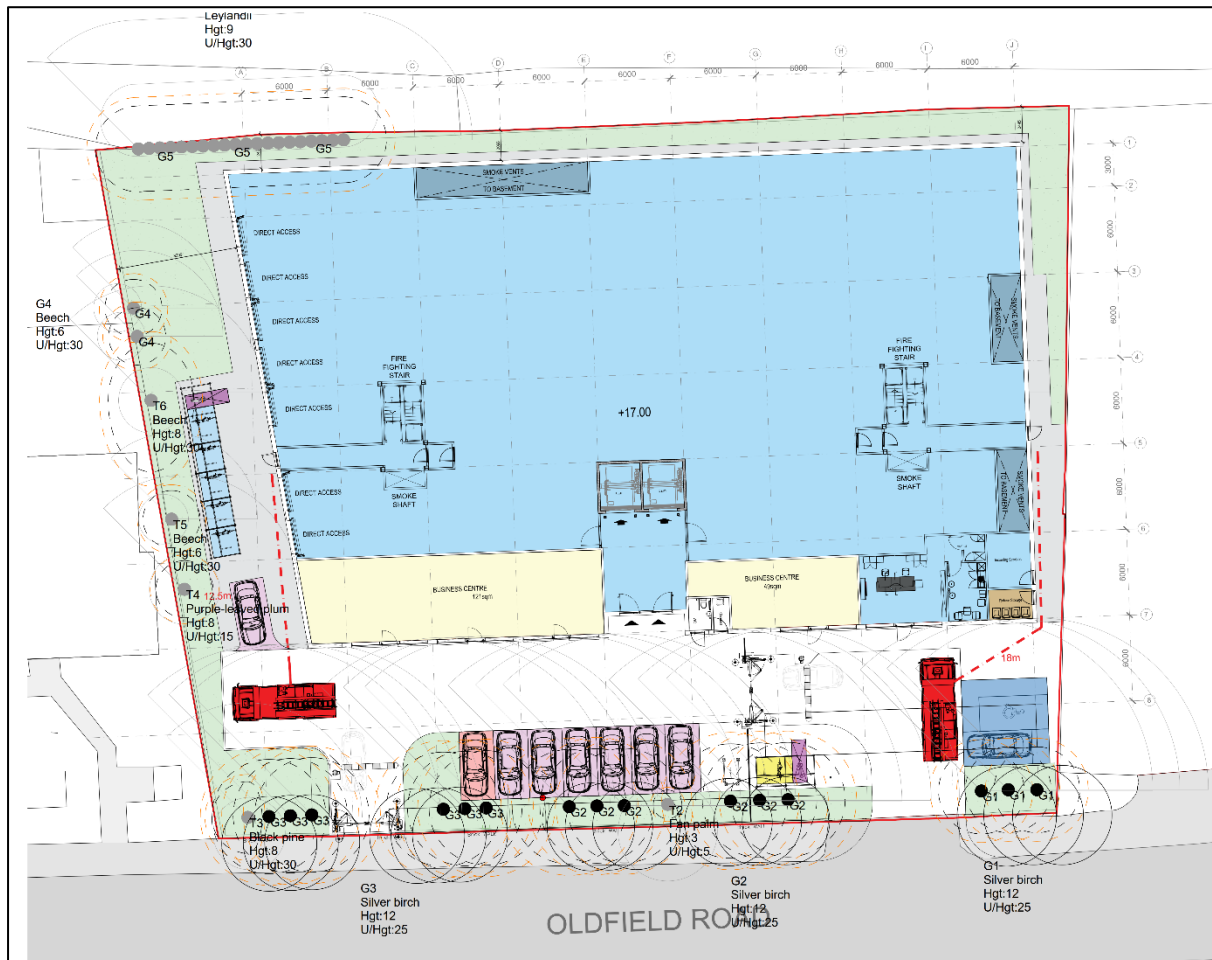


Figure 2-1: Development proposals

2.3. The site is located in a predominantly residential area adjacent to Oldfield Road. A Waitrose Supermarket is located directly to the east of the site, with residential dwellings on Oldfield Road to the south and west. A railway line is located directly to the north of the site.

2.4. Figure 2-2 shows the location site and the surrounding area.



Figure 2-2: Site location in context of the surrounding area

3. Local Authority Liaison

3.1. Contact¹ was made with officers at London Borough of Richmond upon Thames (LRBT), the following was discussed:

- The survey methodology;
- The assessment of fixed mechanical plant noise would be conducted in accordance with BS4142, with an aim to achieve a criterion of 5dB below the representative background sound level, as required by LBRT;
- The assessment will consider the criteria set out in the LBRT Development Control for Noise Generating and Noise Sensitive Development SPD;
- The impact of noise from vehicle movements would be considered.

3.2. A summary of relevant policy and guidance is shown in Appendix B.

¹ Email contact on 25/04/2023, response on 11/05/2023

4. Environmental Noise Measurements

4.1. A noise survey was conducted between the 13th and 15th March 2024. The measurement positions were chosen to be representative of the acoustic environment in the vicinity of the closest noise sensitive receptors. The measurement positions are shown in Figure 4-1.



Figure 4-1 Measurement positions

4.2. A description of the measurements positions is as follows:

- **Measurement Position 1 (long term)** - The microphone was mounted at approximately 2m above ground height. The monitoring position is representative of the noise environment at dwellings across Oldfield Road to the south.
- **Measurement Position 2 (short term)** - The microphone was mounted at approximately 2m above ground height. The monitoring position is representative of the noise environment at dwellings on Oldfield Road to the west of the site.

4.3. The equipment used was as follows:

- Norsonic 140 Sound Level Meter x 2 (serial number: 1405866, 1405869);
- Bruel & Kjaer 4231 Calibrator (serial number: 2463721).

4.4. All equipment used has been professionally calibrated. Field calibration of the sound level meters (and complete measurement signal chain) was undertaken before and after measurement to ensure no drift of the calibration signal. Calibration certificates are available upon request.

4.5. Weather conditions were generally suitable for the duration of the surveys with a variable light breeze and sporadic light rain noted.

4.6. A summary of the measurements taken at the site are summarised in Table 4-1. Time histories of measured noise levels are shown in Appendix A.

Monitoring Position	Ambient Sound Level dB L _{Aeq, T} Range (Average)		Background Sound Level, dB L _{A90} Range (Representative)		Night-time dB L _{AFmax} Range (Representative)
	Daytime	Night-time	Daytime	Night-time	
P1	46-70 (56)	36-57 (48)	40-51 (48)	34-48 (39)	51-77 (70)
P2	43-66 (53)	34-54 (48)	39-48 (45)	39-44 (38)	46-77 (73)

Table 4-1: Summary of measured noise levels

4.7. The representative L_{Amax} level is the value which has been exceeded fewer than 10 times in the 8-hour night-time period, i.e. one which can be considered to be 'not normally exceeded' as per the World Health Organisation (WHO) guidelines.

4.8. Based on observations taken during the survey, the noise environment at both measurement positions was dominated by road traffic noise from the Oldfield Road, noise from vehicles and noise from the railway also contributing to the noise environment.

4.9. The representative background sound levels which have been used for assessment have been derived from the more sensitive periods of the day and night when noise levels are lowest, i.e., 20:00-23:00 and 01:00-04:00. Histograms of the background sound levels during day and night from these periods are shown in Figures 4-2 and 4-3.

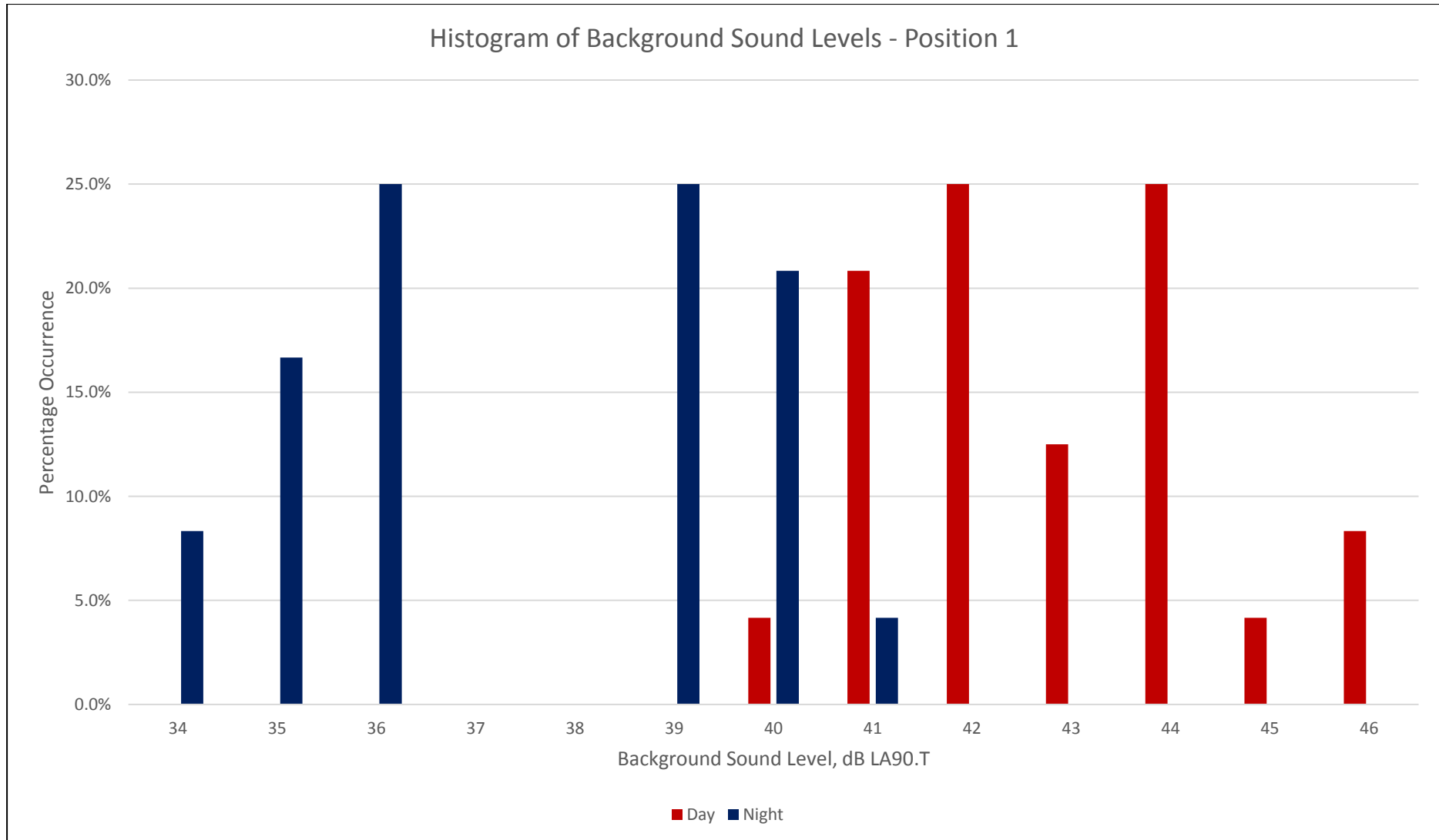


Figure 4-2: Histogram of background sound levels at Position 1

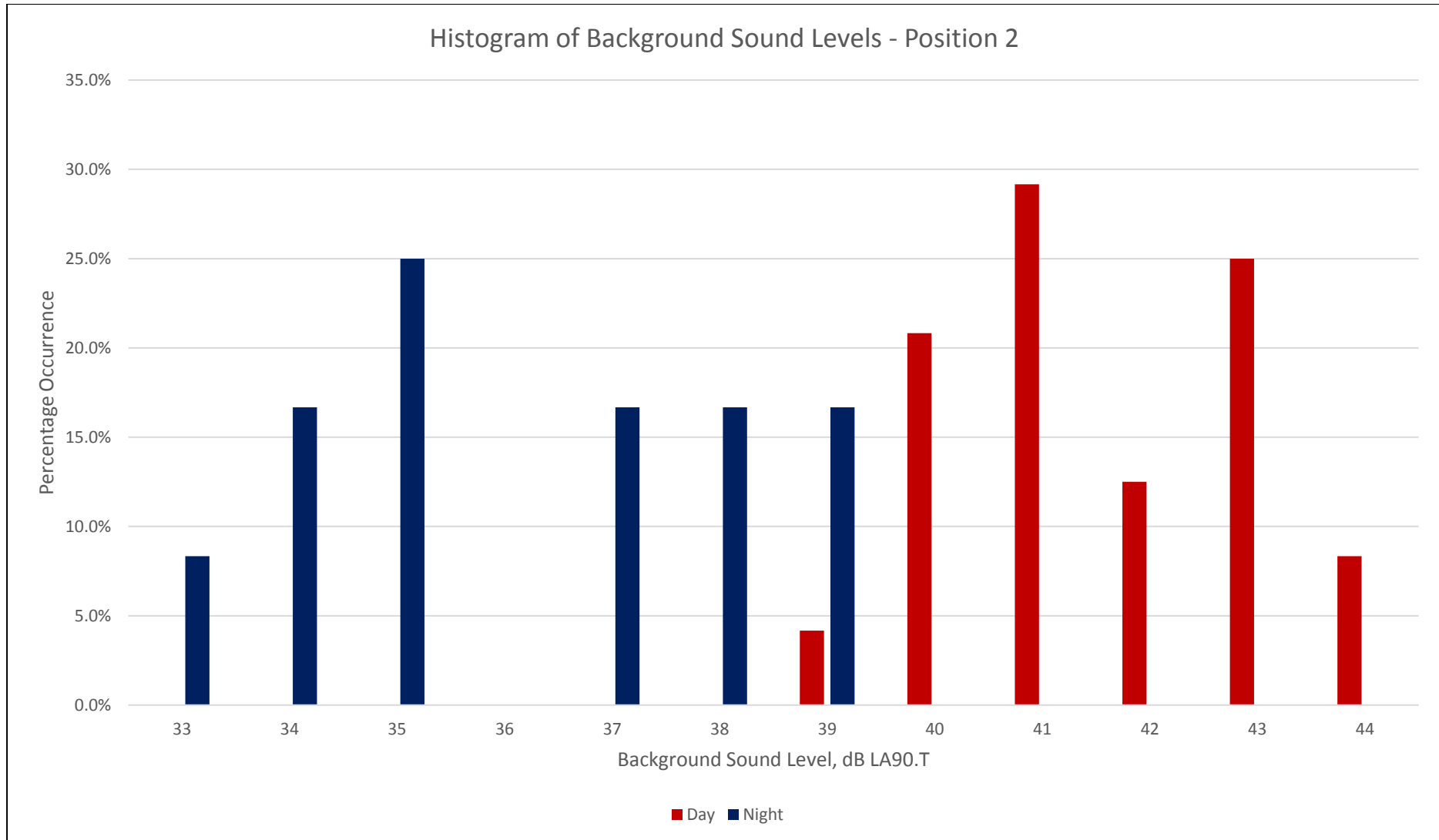


Figure 4-3: Histogram of background sound levels at Position 2

4.10. Based on the analysis, the representative background sound levels are 42dB $L_{A90,T}$ and 36dB $L_{A90,T}$ during the day and night at Position 1, and 41dB $L_{A90,T}$ and 35dB $L_{A90,T}$ during the day and night at Position 2. It is considered that these background sound levels provide a robust basis for the assessment.

5. Demolition & Construction Phase

- 5.1. The demolition and construction phases of the proposed development will include various noise generating processes and plant. The most significant processes in terms of noise generation would be site clearance/excavation operations, piling and concreting operations.
- 5.2. To assess reasonable noise limits for construction noise experienced at the nearest residential properties, Example Method 1 (the ABC Method) of BS 5228, within section E.3.2 is used. Table E.1 from the standard is reproduced at Table 4.1.

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00–07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00–19.00) and Saturdays (07.00–13.00)	65	70	75

NOTE 1 A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3 dB due to construction activity.

NOTE 3 Applied to residential receptors only.

^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

^{B)} Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

^{C)} Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

^{D)} 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

Table 5-1: Table E.1 – BS5228 Part 1

- 5.3. Ambient noise levels place the site within Category A of Table E.1. Therefore, the following noise levels set out in Table 4-2 from demolition and construction activities are considered to be a reasonable noise limit to avoid significant adverse impact at the nearest receptors.

Time Period	Construction Target Noise Level dB L_{Aeq}
Monday to Friday (07:00 – 19:00) & Saturday (07:00 – 13:00)	65

Table 5-2: Demolition & Construction Target Noise Level

- 5.4. Construction and mobile plant operations are likely to generate high noise levels that have the potential to adversely affect neighbouring noise sensitive properties.
- 5.5. During construction, the contractor will employ best practicable means to control noise from construction operations.
- 5.6. Operations will be reasonably transient, and it is expected that noisy operations will take place for relatively short periods throughout construction.
- 5.7. Temporary screening in the form of solid timber hoarding can be used where operations are adjacent to sensitive receptors. Consideration will be given to neighbouring residential properties when locating the temporary compounds and material stockpiles.
- 5.8. Stationary equipment and plant such as generators will be placed as far as practicable from noise sensitive properties, and preferably in areas benefiting from existing or purpose-built attenuation such as bunding or behind non-sensitive buildings.
- 5.9. Delivery of materials and removal of waste from the Development will be planned to minimise disturbance to neighbouring properties. Idling of plant, machinery and delivery vehicles should be prohibited when not in use.
- 5.10. If required noise levels can be monitored regularly in accordance with BS 5228 to ensure the above set limits are not exceeded. In addition to the above all other guidance within BS 5228-1 will be followed at all times.
- 5.11. Piling operations have the potential to generate ground borne vibration in the immediate surroundings. Mitigation methods and techniques will be employed during these and other vibration generating activities to minimise any potential impacts from the operations. This can include (but is not limited to) use of drilled (CFA) piles rather than impact driven piles.
- 5.12. When undertaking vibration monitoring during construction works, a limit of around 1mm/s PPV can be set as an action level. The effects at nearby residential receptors due to vibration would be controlled accordingly. This limit is derived from Table D.1 of BS5228 2009-02 (vibration); boring to a depth of 12m on made ground/gravel – (Continuous Flight Auger (CFA) piling method). This identifies that at a plan distance of 3.7m, predicted vibration levels (PPV) would be 1.1mm/s.

6. Operational Noise Assessment

6.1. The assessment includes the following elements which are considered to be the most significant sources:

- Changes to road traffic levels as a result of the development;
- Operational noise at the self-storage facility;
- Fixed mechanical plant;

6.2. The assessment also includes considerations of internal noise levels within nearby dwellings, in accordance with the relevant LBRT SPD (Development Control for Noise Generating and Noise Sensitive Development).

6.3. The nearest receptors to the site are dwellings to the south and west of the site on Oldfield Road, as shown in Figure 6-1.

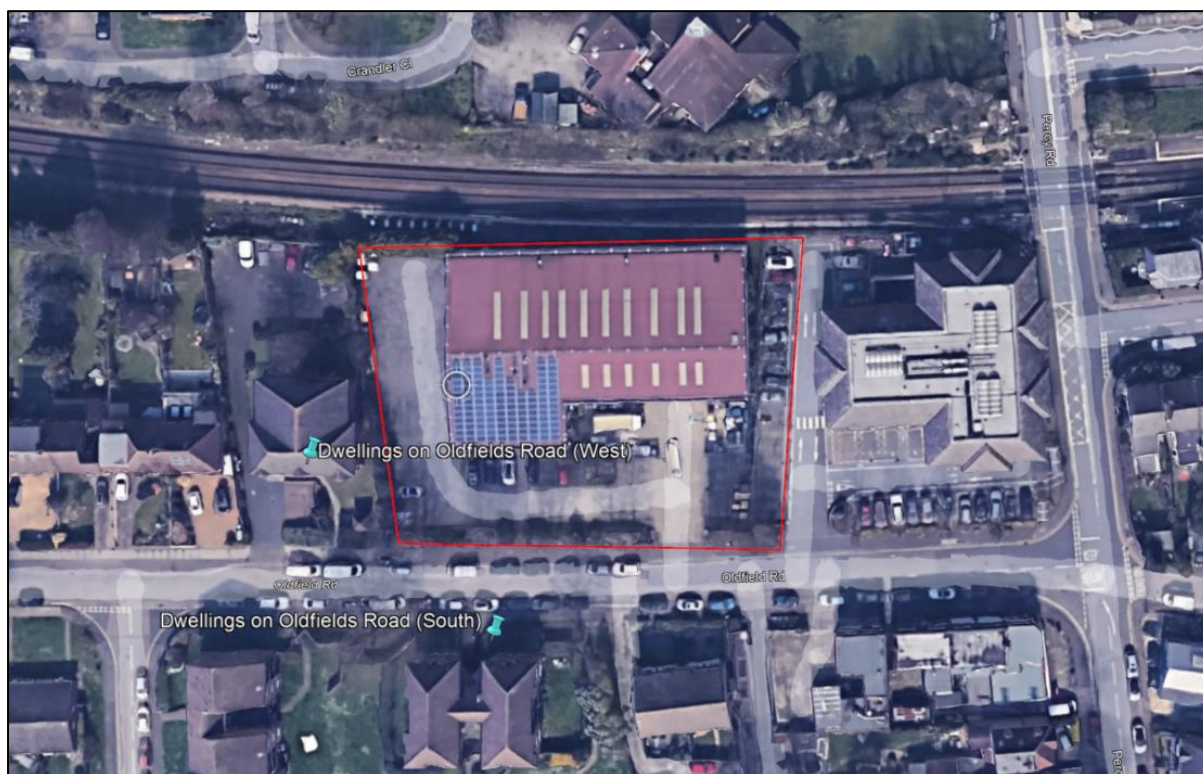


Figure 6-1: Nearest Sensitive Receptors

Changes to Road Traffic

6.4. Transport Consultants at Ardent have provided traffic flows for the proposed use. It is understood that there are a total of 83 vehicles, with 4 of those being HGVs associated with the development. The existing use of the site generates a total of 88 vehicles, with 16 of those being HGVs.

- 6.5. The traffic flows demonstrates that the development will lead to a small reduction in the vehicles at the site when compared to the existing use, therefore the noise levels will be slightly reduced when compared to the existing baseline traffic. The site traffic is proposed to be accessed from Oldfield Road only.
- 6.6. Given the noise environment in the area around the site, the limited number of vehicle movements will be indistinguishable from road traffic on Oldfields Road which is the dominant noise source in the area, this will not change from the existing use of the site as the traffic flows are slightly reduced. Therefore, considered that vehicles movements associated with site will have no adverse effect.

Self-Storage Facility

- 6.7. It is understood that the site will operate between 06:00 – 23:00, i.e., activities would only occur for a short period during the night and the entirety of the day. It would be expected that the majority of customers would not be accessing the site between 06:00 and 07:00, with the majority of noise occurring during the day, with the exception of employees arriving on site.
- 6.8. There would be no FLTs or mobile plant on site, only the use of trolleys to load good from/into car and vans into/from the customer lobby and lifts. The use of these trolleys and loading/unloading of vehicles is proposed to occur in the car park, which is screened from the dwellings to the west of the site and set back from dwellings to the south, which are separated from the site by Oldfield Road, the dominant noise sources in the area.
- 6.9. The use of trolleys and loading/unloading should be restricted to the car park area. Bump rails should be put in place in storage areas to reduce any potential noise impact. The loading/unloading area should be a smooth concrete surface to reduce noise from trolley movements, paving stones or similar should be avoided.
- 6.10. Given the noise environment in the area it is not expected that there would be noise levels high enough to significantly contribute to the existing noise environment to cause any adverse effect at the nearest sensitive receptors.
- 6.11. Mitigation measures for the nearest receptors to the development will have been designed to control noise from Oldfield Road and the railway line. Given the measured noise levels at the site it is expected that the mitigation measures to control noise from the surrounding road network at existing dwellings, which is and

will continue to be the dominant noise source in the area will also be suitable to control noise from activities at the self-storage facility.

6.12. It is therefore considered that noise from the from the self-storage facility will not have an adverse impact on the nearest sensitive receptors.

Fixed Mechanical Plant

6.13. Fixed mechanical plant should be designed to achieve the criterion set by LBRT, i.e., a cumulative rating level no greater than 5dB below the representative background sound level, when assessed in accordance with BS4142.

6.14. A criteria of 5dB below the representative background sound level is generally considered onerous and is not in accordance with BS4142,2014. However, for the purpose of the assessment, the criterion has been adopted.

6.15. As discussed in Section 4, the representative background sound levels are 42dB $L_{A90,T}$ and 36dB $L_{A90,T}$ during the day and night at Position 1, and 41dB $L_{A90,T}$ and 35dB $L_{A90,T}$ during the day and night at Position 2.

6.16. Therefore, to achieve the criteria of LBRT, the cumulative noise from fixed mechanical plant should achieve a rating level of 37dB $L_{Ar,Tr}$ and 31dB $L_{Ar,Tr}$ during the day and night at the nearest receptors to Position 1, and 36dB $L_{Ar,Tr}$ and 30dB $L_{Ar,Tr}$ during the day and night at the nearest receptors to Position 2.

6.17. Based on the cumulative rating levels set out above, Table 6-1 presents indicative target sound power levels which the cumulative noise levels from plant should achieve, depending on location. Calculations are shown in Appendix B.

Location	Target Sound Power Level, dB L_{wA}	
	Day (07:00 – 23:00)	Night (07:00 – 23:00)
Oldfield Road (South of Site)	73	67
Oldfield Road (West of Site)	64	58

Table 6-1: Indicative Target Plant Noise Sound Power Levels

6.18. Plant should be designed and selected so that it does not produce distinguishable acoustic characteristics, such as tonal and impulsive characteristics. The above criteria need to be considered on the basis of the configuration of plant and the operational conditions. The assessment of fixed mechanical plant will be considered further as part of the detailed design of the site.

Internal Noise Levels in Existing Dwellings

6.19. In accordance with the LBRT SPD (Development Control for Noise Generating and Noise Sensitive Development), an assessment of the noise levels within dwellings with partially open windows has been considered in terms of noise generated by the proposed development. For the purpose of this assessment a partially open window has been considered to reduce noise levels by approximate 15dB, in accordance with BS8233.

6.20. Given the nature of activities associated with the development, i.e., the use as a self-storage facility and business centre, activities are not expected to generate significant noise levels. Best practice recommendations have been set out to further reduce noise from activities.

6.21. Whilst there is traffic associated with the development, this would be in keeping with the existing noise environment, which is dominated by road traffic noise. The proposals for the development will slightly reduce road traffic flows and there will be significantly less HGV vehicles at the site. Therefore, the traffic associated with the site will be indistinguishable from the existing acoustic environment and will have no adverse effect.

6.22. Noise limits have been set for fixed mechanical plant associated with the development to achieve the criteria of LBRT. By achieving these noise limits, internal noise levels within dwellings from the development will be lower than the criteria of BS8233.

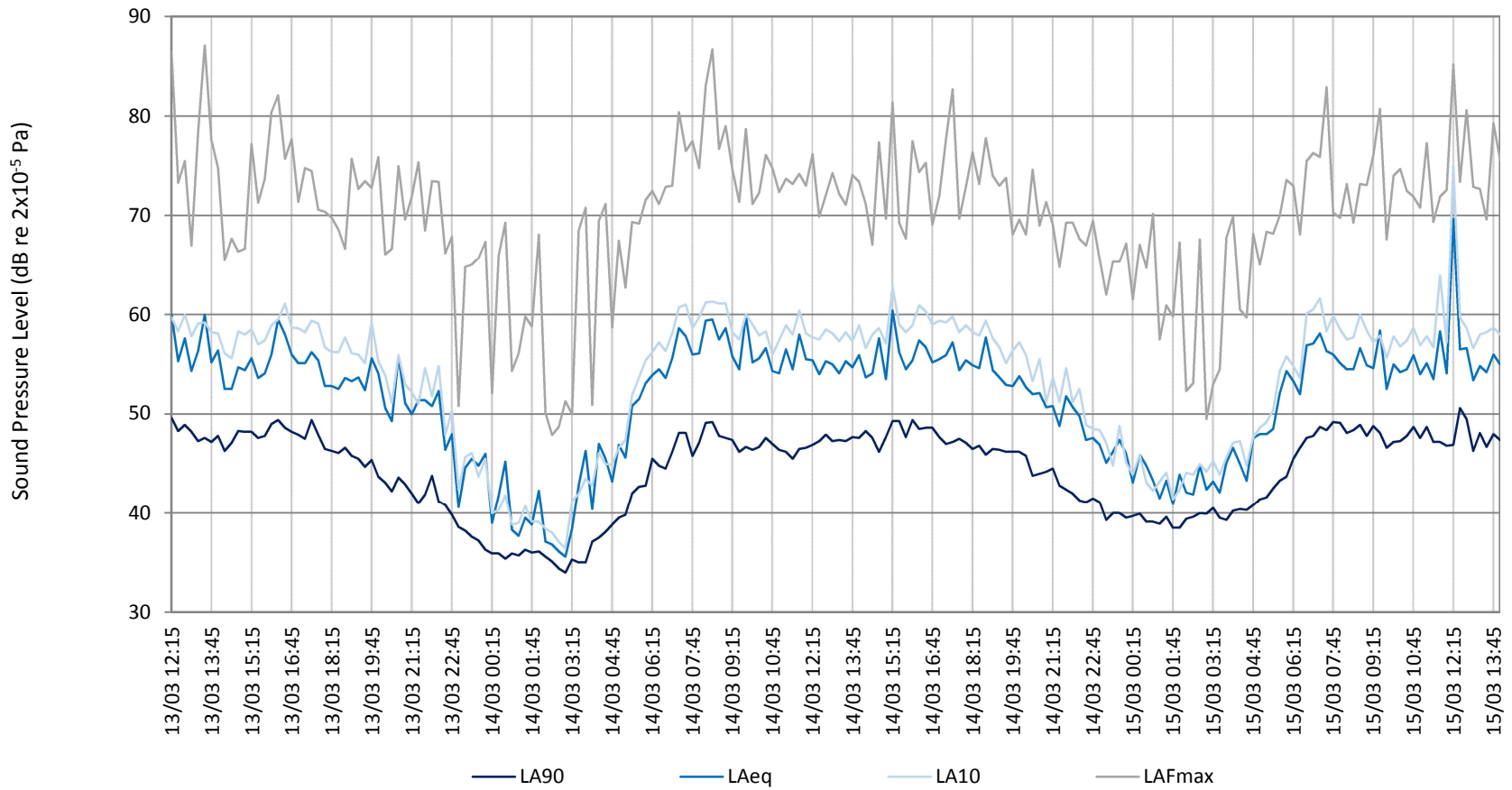
6.23. When considering the noise limits and the reduction offered by a partially open window, noise levels would be 22dB and 16dB during the day and night at the nearest dwellings to Position 1, and 21dB and 15dB during the day and night at the nearest dwellings to Position 2.

7. Conclusions

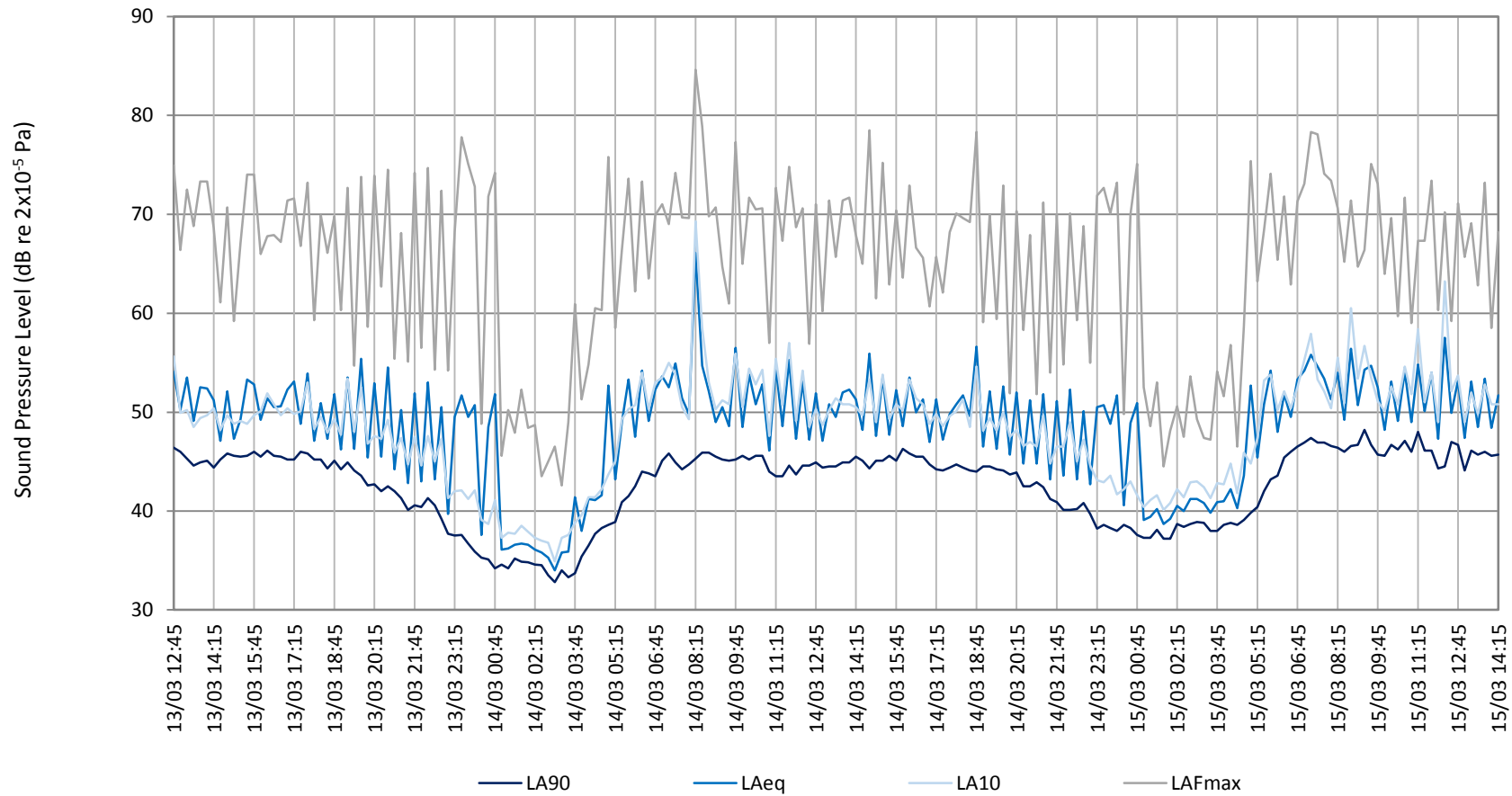
- 7.1. Ardent Consulting Engineers has been appointed by Shurgard UK Ltd. to undertake a Noise Assessment to support the development at Oldfield Road, Hampton.
- 7.2. Target noise and vibration limits have been set for construction noise to achieve in accordance with BS5228. Best practice recommendations have been provided to reduce noise and vibration by as much as practicably possible.
- 7.3. Given the nature of activities associated with the self-storage facility and the existing noise environment for which the mitigation measures at nearest receptors have been designed, operations will have no adverse impact at the nearest sensitive receptors. Best practice means have been recommended to reduce noise from activities by as much as practicably possible.
- 7.4. Vehicle movements will be indistinguishable from the existing noise environment. The change in traffic numbers as a result of the development are slightly reduced from the current usage of the site and will have no adverse effect.
- 7.5. Fixed plant and equipment should be selected to achieve a cumulative rating level no greater than 37dB $L_{Ar,Tr}$ and 31dB $L_{Ar,Tr}$ during the day and night at the nearest receptors to Position 1, and 36dB $L_{Ar,Tr}$ and 30dB $L_{Ar,Tr}$ during the day and night at the nearest receptors to Position 2.
- 7.6. Indicative target sound power levels have been provided based on the cumulative rating levels. The assessment of fixed mechanical plant should be considered further as part of the detailed design of the site.
- 7.7. An assessment of the internal noise levels due to development generated noise within the nearest dwellings has been conducted in accordance with the requirements of the relevant LBRT SPD. Based on the assessment there will be no adverse effect on residential amenity due to the development.
- 7.8. This assessment demonstrates that the site is suitable for development subject to the recommendations included in this report.

APPENDIX A

Position 1
Environmental Noise Time History
13th to 15th March 2024



Position 2
Environmental Noise Time History
13th to 15th March 2024



APPENDIX B

Daytime Cumulative Design Specific Level

Design Criterion			37 dBA
Corrections	Distance Attenuation	25m	+36 dB
	Screening Attenuation	None	+0 dB
	Source Reverberant Factor	Flat surface	+0 dB
	Receptor Directivity	None	+0 dB
Cumulative Design Sound Power Level / Lw			73 dBA
Indicative Sound Pressure Level at 10m / Lp			43 dBA

Night-Time Cumulative Design Specific Level

Design Criterion			31 dBA
Corrections	Distance Attenuation	25m	+36 dB
	Screening Attenuation	None	+0 dB
	Source Reverberant Factor	Flat surface	+0 dB
	Receptor Directivity	None	+0 dB
Cumulative Design Sound Power Level / Lw			67 dBA
Indicative Sound Pressure Level at 10m / Lp			37 dBA

Daytime Cumulative Design Specific Level

Design Criterion			36 dBA
Corrections	Distance Attenuation	10m	+28 dB
	Screening Attenuation	None	+0 dB
	Source Reverberant Factor	Flat surface	+0 dB
	Receptor Directivity	None	+0 dB
Cumulative Design Sound Power Level / Lw			64 dBA
Indicative Sound Pressure Level at 10m / Lp			34 dBA

Night-Time Cumulative Design Specific Level

Design Criterion			30 dBA
Corrections	Distance Attenuation	10m	+28 dB
	Screening Attenuation	None	+0 dB
	Source Reverberant Factor	Flat surface	+0 dB
	Receptor Directivity	None	+0 dB
Cumulative Design Sound Power Level / Lw			58 dBA
Indicative Sound Pressure Level at 10m / Lp			28 dBA

APPENDIX C

RELEVANT POLICY & GUIDANCE

National Planning Policy Framework (NPPF) – December 2023

Under the NPPF: paragraph 191 of Section 15, with regard to environmental noise; planning policies and decisions should aim to:

- 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;
- 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 (NPSE)

To avoid and mitigate adverse noise effects on health arising from and impacting on new development, the NPPF makes reference to NPSE. The NPSE was published in March 2010 and covers all forms of noise, other than occupational noise. For the purposes of this report, "Neighbourhood Noise" is most relevant as NPSE defined at paragraph 2.5:

"neighbourhood noise which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street. "

NPSE introduces three concepts to the assessment of noise in the UK:

- NOEL – No Observed Effect Level – This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.
- LOAEL – Lowest Observable Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur.

NPSE does not numerically define levels for the NOEL, LOAEL or SOAEL rather it makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time of day/day of the week, etc.

National Planning Practice Guidance (2019)

The purpose of the guidance is to complement the NPPF and provide advice on how to deliver its policies.

The guidance includes a table (as shown in Table 1) that summarises “the noise exposure hierarchy, based on the likely average response” and which offers “examples of outcomes” relevant to NOEL, LOAEL, and SOAEL effect levels described in the NPSE.

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
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 no such that there is a change in the quality of life.	No Observed Adverse Effect Level	No specific measures required
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 Level	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 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 Level	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

Table 1: Noise Exposure Hierarchy, Based on the Likely Average Response.

Design Manual for Road and Bridges, Volume 11 (LA111 – Noise and Vibration

Changes in noise level as a result of additional vehicles on the public highway can be assessed using methodologies presented in Design Manual for Road and Bridges (DMRB LA111),

This guidance document sets out the requirements for noise and vibration assessments from road projects. The construction, operation and maintenance of highway projects can lead to changes in noise and vibration levels in the surrounding environment.

The magnitude of change (in sound level) is defined in Table 3.54a of the guidance for short term and Table 3.54b for long term, as presented in Table 2:

Short term magnitude	Short term noise change (dB L_{A10,18hr} or L_{night})
Major	Greater than or equal to 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	less than 1.0

Long term magnitude	Long term noise change (dB L_{A10,18hr} or L_{night})
Major	Greater than or equal to 10.0
Moderate	5.0 to 9.9
Minor	3.0 to 4.9
Negligible	less than 3.0

Table 2 (Table 3.54a and b DMRB, LA 111 - Magnitude of Change)

Control of Pollution Act 1974

The local authority has powers under the Control of Pollution Act 1974 to control noise from construction sites. Section 60 of the Act allows a local authority to serve a notice of its requirements for the control of site noise. This notice may include specification of plant that is or is not to be used, hours during which the construction works can be carried out and levels of noise emission. Section 61 of the Act allows a contractor or developer to take the initiative and agree with the local authority the methods of construction, steps to minimise noise and hours of work.

The Environmental Protection Act 1990

Local authorities have a duty to deal with statutory nuisances under the Environmental Protection Act 1990. For noise to amount to a statutory nuisance, it must be "prejudicial to health or a nuisance" as outlined in Section 79 of the Act. Any proposed development should not result in a statutory nuisance being declared.

Should the Local Authority declare a development to cause a statutory nuisance, an abatement notice can be served to the developer who has up to 21 days to appeal to Magistrates' Court, as detailed in Section 80 of the Act.

The Building Regulations 2010

Building Regulations approvals are required for most new buildings and for most types of works on existing buildings. Part 10 of The Building Regulations 2010 contains provisions, including power for local authorities to test building work, take samples, and provision to ensure compliance. Part E of the Regulation 'Resistance to the passage of sound' is expanded in Approved Document E, which provides robust details to control and mitigate noise within buildings. This Document is separated over four parts which include:

- E1: Protection against sound from other parts of the building and adjoining buildings;
- E2: Protection against sound within dwelling-house etc.;
- E3: Reverberation in the common internal parts of buildings containing flats or rooms for residential purposes;
- E4: Acoustic conditions in schools.

BS6472-1:2008 – Guide to Evaluation of Human Exposure to Vibration in Buildings - Part 1: Vibration sources other than blasting

This document offers guidance on how people inside buildings respond to vibration: the judgement criteria are more stringent at higher frequencies than in the superseded standard due to changes in the vertical frequency weighting.

Assessment of building vibration with respect to human response: When the appropriately-weighted vibration measurements or predictions have been used to derive the VDV (Vibration Dose Value) for either 16hr (daytime) or 8h (night-time)

at the relevant places of interest, their significance in terms of human response can be derived from Table 6, shown below:

Vibration dose value ranges which might result in various probabilities of adverse comment within residential buildings			
Place and time	Low probability of adverse comment $m \cdot s^{-1.75}$ 1)	Adverse comment possible $m \cdot s^{-1.75}$	Adverse comment probable $m \cdot s^{-1.75}$ 2)
Residential buildings 16 h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

NOTE For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16 h day.

Table 6: Vibration Dose Values from BS6472-1:2008

BS4142:2014 Methods for rating industrial and commercial sound

BS4142:2014 uses a comparison between the rating and background sound levels to establish an initial estimate of the likely significance of impact. The standard notes:

- a) *Typically, the greater this difference, the greater the magnitude of the impact.*
- b) *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- d) *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.*

The context of the assessment must then be considered, which can significantly alter the outcome of the assessment. Factors that might alter the outcome of the assessment include the absolute level of sound compared to the residual sound level, the character of the sound compared to the residual, the sensitivity of the receptor etc.

The London Plan 2021

The latest version of the London Plan, as published in March 2021, provides an 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. The 'Publication London Plan' brings together the geographic and locational aspects of the Mayor's other strategies, including a range of environmental issues such as climate change (adaptation and mitigation), air quality, noise and waste.

The most relevant guidance in terms of the impact and assessment of noise is found within Policy D14: Noise, which states:

"...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.*

B Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra’s Noise Action Plan for Agglomerations...”

Policy D14: Noise refers to Policy D13: Agent of Change, which states:

“...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 Developments 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 business 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...”

London Borough of Richmond Upon Thames Development Control for Noise Generating and Noise Sensitive Development SPD

This LBRT SPD forms part of the local plan and is designed to assist developers, decision makers, agents, residents and others to identify issues to be addressed in any application for development in which noise and vibration is an important consideration when assessing that application.

In particular relevance to the development is Section 6: New noise Generating Industrial and Commercial Development, which sets out the standards and guidance to be considered. The SPD specifies that a rating level which is 5dB lower than the background noise levels (when assessed in accordance with BS4142) is considered to be minimal risk and the proposed development is likely to be acceptable from a noise perspective.

The SPD also sets out that internal noise levels from development generated noise within nearby dwellings needs to be considered in accordance with BS8233. The assessment should consider partially open windows.

APPENDIX D

ACOUSTIC TERMINOLOGY

The effects of noise on human beings may be expressed in terms of physiological damage and annoyance. It is, however, only the annoyance impacts that need to be considered in detail when addressing environmental noise impacts. Annoyance also includes the immediate effects of activity interference, for example sleep disturbance and speech interference.

The practice has become to measure sound levels in decibels (dB). The decibel scale is logarithmic rather than linear and it is useful to bear in mind that a noise level change of 3dB would be equivalent to doubling the energy level (for example doubling the volume of traffic) and that an increase of 10 dB is perceived, subjectively, as a doubling of loudness. The human ear responds differently to sounds of different frequency. The ear perceives high frequency sound of a given sound pressure level more loudly than a low frequency sound at the same level. The A-weighted sound level, dB(A), takes this response into consideration and is commonly used for measurement of environmental noise in UK. It thus indicates the subjective human response to sound.

Environmental noise levels vary continuously from second to second, it is clearly impractical to specify the sound level continuously and thus time averaging is required. In practice human response has been related to various units which include allowance for the fluctuating nature of sound with time. For the purpose of this report these include:

LAeq,T : the equivalent A-weighted continuous sound level.

This unit relates to the equivalent level of continuous sound for a specific time period T, for example 16 hours for daytime noise. It contains all the sound energy of the varying sound levels over the same time period and expresses it as a continuous sound level over that period. The unit is used for assessing traffic and industrial noise for planning purposes and in particular for PPG24.

LA10,T : the A-weighted level of sound exceeded for 10% of the time period T.

This unit is used for traffic noise measurement and is the preferred unit for prediction of traffic noise in the publication, 'Calculation of Road Traffic Noise'.

LA90,T : the A-weighted level of sound exceeded for 90% of the time period T.

This unit is commonly used to represent the background noise and is used in assessing the effects of industrial noise in UK.

LAm_{ax} : the maximum A-weighted level of sound over a period of measurement.

LAr,T : the rating level.

The specific Noise plus any adjustments for the characteristic features of the noise. Used for comparison between background levels with the noise source off.

SEL : the Sound Exposure Level.

Sound exposure level abbreviated as SEL and LAE, is the total noise energy produced from a single noise event condensed into a 1 second time period.

R_w : weighted sound reduction index.

A laboratory-measured value as defined in ISO717 Part 1.

D_{nT}w :

The equivalent of R_w, but measured onsite as oppose to in a laboratory