Noise Assessment for a Proposed Change of use – Nicholsons House, Maidenhead

For Threadneedle Property Unit Trust

Quality Management			
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Assessment/Calculations Quality Management		
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Revision History		
Rev	**Date of Issue**	**Comment**
00	27/06/2024	First issue

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1 Introduction

1.1 The Acoustics, Noise and Vibration Team at Savills has been appointed by Threadneedle Property Unit Trust to undertake a noise assessment to accompany a Prior Approval Application for a development under 'Class MA' for the proposed change of use of an existing office building at Nicholson's House, Maidenhead, to residential use. The site is located within the administrative area of the Royal Borough of Windsor and Maidenhead (RBWM).

1.2 The Site is located on Nicholsons Walk, in the Maidenhead town centre. Frascati Way is located to the west of the site, with the main Maidenhead railway station located approximately 350 m to the south. The offices that are proposed to be converted are situated above the existing Nicholsons Shopping Centre.

1.3 The content of this report is based upon the requirements for change of use of offices to dwellinghouses 'Class MA', under the 'Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2021', which states the following :

"Development under Class MA is permitted subject to the following conditions.

(2) Before beginning development under Class MA, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to—

…

(d)impacts of noise from commercial premises on the intended occupiers of the development;

…"

1.4 The assessment has been undertaken based upon appropriate information on the proposed development provided by the project team. The assessment has been undertaken with integrity, objectivity and honesty in accordance with the Code of Conduct of the Institute of Acoustics (IoA).

1.5 The technical content of this assessment has been provided by Savills personnel, many of whom are corporate (MIOA or FIOA) or associate (AMIOA) members of the IOA (the UK's professional body for those working in acoustics, noise and vibration). This report has been peer reviewed within the Savills team to ensure that it is technically robust and meets the requirements of our Integrated Management System.

1.6 The Team is also a member of the Association of Noise Consultants (ANC) which seeks to raise the standards of acoustics consultants and improve recognition of the vital role which good acoustics, and the management and mitigation of noise and vibration play, in achieving good design and effective planning in the built and natural environment. Membership of the ANC indicates that the Team is sufficiently competent to pass the high standards for entry to the Association.

2 Policy, Standards and Guidance

National Planning Policy

2.1 The Noise Policy Statement for England (NPSE) [1], the National Planning Policy Framework (NPPF) [2] and the National Planning Practice Guidance on Noise (PPG-N) [3] do not contain guidance in terms of numerical noise levels. Guidance is provided descriptively, which may be transposed to numerical noise levels for site-specific situations, using the methods contained within British Standard (BSs).

2.2 Relevant experience and professional judgment are fundamental to all stages of the assessment that leads to the determination of the significance of a noise effect. The non-numeric guidance contained within the PPGN, based upon the initial advice in the NPSE, is summarised in Table 2.1 below.

2.3 The PPG-N states that there are many factors which should be considered when determining if a noise is of concern; one factor is the number of noise events and the frequency and pattern of occurrence of the noise.

2.4 The PPG-N provides further information on the adverse effects of noise and how it can be mitigated. For noise sensitive development, mitigation measures can include avoiding noisy locations; designing the development to reduce the impact of noise from the local environment, including noise barriers; and optimising the sound insulation provided by the building envelope including through noise insulation.

Table 2.1 Summary of Guidance from NPSE and PPGN

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 or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, 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 and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

2.5 BS 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' provides guideline values for internal ambient noise levels in spaces when they are unoccupied. A summary of the levels recommended in paragraph 7.7.1 of subclause 7.7 and Table 4 of BS 8233:2014 for rooms used for resting, dining and sleeping is provided in Table 2.2 below. The guideline values in Table 2.2 are annual average values and do not have to be achieved in all circumstances.

2.6 The guidance in paragraph 7.7.1 of Section 7.7 of BS 8233:2014 applies to external noise as it affects the internal acoustic environment from sources without a specific character. The paragraph states, including the accompanying note:

"… Occupants are usually more tolerant of noise without a specific character than, for example, that from neighbours which can trigger complex emotional reactions…"

"NOTE Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate."

Table 2.2 BS 8233:2014 Indoor Ambient Noise Levels for Dwellings

Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,16hr}$
			45 dB $L_{Amax,F}$ (Note 4)

"NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events.

2.7 Note 7 of the following text states the following:

"NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

2.8 At paragraph 6.5.2, BS 8233:2014 states that "Where industrial noise affects residential or mixed residential areas, the methods for rating noise in BS 4142 should be applied". However, the assessment contained within BS 4142:2014 requires consideration of the absolute levels of sound emissions at noise sensitive receptors (NSR's). This is required for the consideration of the context of the specific sound in the BS 4142:2014 assessment and comparison with the 'examples of outcomes' described in the PPG-N (e.g. whether certain activities are likely to be avoided within dwellings during periods of intrusion).

2.9 Sound of an industrial nature may include features such as a distinguishable, discrete and continuous tone, be irregular enough to attract attention, or have a strong low-frequency content. If this is the case, and with reference to the accompanying note to paragraph 7.7.1, lower noise limits than those in subclause 7.7. of the Standard might be appropriate. BS 4142:2014 provides guidance on methods for assessing the audibility of tones in sound or the prominence of impulsive sounds.

British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

2.10 BS 4142 primarily provides a numerical method by which to determine the significance of sound of a commercial and/or industrial nature, i.e. the 'specific sound', at 'noise sensitive receptor' (NSR) locations.

2.11 The specific sound level may then be corrected for the character of the sound, if appropriate, and is then termed the 'Rating Level'.

2.12 The commentary to paragraph 9.2 of BS 4142 suggests the following subjective methods for the determination of the rating penalty for tonal, impulsive and/or intermittent specific sounds:

"Tonality

For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a rating penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

Impulsivity

A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.

Intermittency

When the specific sound has identifiable on/off conditions, the specific sound level should be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. … If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

Other sound characteristics

Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."

2.13 The Rating Level is then compared to the background sound level, which should be representative of the period being assessed.

2.14 An initial estimate of the impact of the specific sound is obtained by subtracting the representative background sound level from the Rating Level.

2.15 Typically, the greater this difference, the greater is the magnitude of the impact:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

2.16 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.

2.17 Whilst there is a relationship between the significance of impacts determined by the method contained within BS 4142 and the significance of effects described in the PPGN, there is not a direct link. It is not appropriate to ascribe numerical rating / background level differences to LOAEL and SOAEL because this fails to consider the context of the sound, which is a key requirement of the Standard.

2.18 The significance of the effect of the noise in question (i.e. whether above or below the SOAEL and LOAEL) should be determined on the basis of the significance of the initial estimate of impact from the BS 4142 assessment with reference to the examples of outcomes described within the PPGN and after having considered the context of the sound at the receptor/s affected.

Local Planning Policy

2.19 The RBWM 'Borough Local Plan 2013-2033' [5] contains saved policies that planning applications within the RBWM area are assessed against. Policy EP4 is considered pertinent to this development, stating:

> *"Development proposals should consider the noise and quality of life impact on recipients in existing nearby properties and also the intended new occupiers ensuring they will not be subject to unacceptable harm."*

3 Baseline Characterisation & Assessment

Site Description

3.1 Nicholsons House is located on Nicholsons Walk, above the existing Nicholsons Shopping Centre. The area is urban in nature with various high street stores surrounding the proposed site. Frascati Way is located to the west of the site, with the main Maidenhead railway station located approximately 350 m to the south.

3.2 The nearest commercial premises to Nicholsons House are the properties within the shopping centre.

3.3 Whilst undertaking the sound level surveys and observations (as detailed below), sound from commercial premises was only occasionally noted as being audible and not during the night, with occasional road traffic noise from the supermarket car park noted as being audible. There was also noise from AHU (air handling unit) plant, though this was noted as being relatively quiet and not very audible from the interior of Nicholsons House.

Establishing Baseline Acoustic Conditions

3.4 In order to establish baseline acoustic conditions at the site, and to establish whether noise from commercial or industrial premises was audible and/or of magnitude/character considered likely to affect future residential amenity, two unattended sound level surveys were deployed on the northeast and southwestern boundaries of the site, using two sound level meters (SLMs) LT1 and LT2 from Tuesday 25th to Wednesday 26th June 2024. The site and survey location are indicated on Figure 1 at the end of this report.

3.5 The SLMs were mounted on a freestanding pole 1.5 m above ground level. Sound level measurements were made using a 'Class 1' Convergence NSRT_mk3', in accordance with BS 7445-2:1991 'Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use' [4].

3.6 The sound level meter was calibrated before and after the survey. No significant drift in calibration was observed. Meteorological conditions during the survey period were dry[1].

3.7 The SLM was set up to log the A-weighted broadband sound pressure level (SPL) in 125 ms periods. Raw data were post processed into 3- and 15-minute periods.

3.8 Tables 3.1 and 3.2 below summarise the results of the baseline surveys undertaken.

[1] https://www.wunderground.com/dashboard/pws/IMAIDENH26?cm_ven=localwx_pwsdash

Table 3.1 LT1 Baseline Sound Levels

Period (hours)	Background Sound Level (dB $L_{A90,15min}$)					Residual Sound Levels (dB $L_{Aeq,15min}$)				
	Min	25%[1]	50%	75%	Max	Min	25%	50%	75%	Max
Daytime[2] 07:00 to 23:00	31	31	32	32	32	32	33	34	36	38
Night-time[3] 23:00 to 07:00	31	31	32	32	34	31	32	33	34	35

Notes:
1. Percentile value, for example 25% is the value below which 25% of the data are found.
2. Daytime ambient sound level 35 dB $L_{Aeq,16h}$.
3. Night-time ambient sound level 33 dB $L_{Aeq,8h}$.

Table 3.2 LT2 Baseline Sound Levels

Period (hours)	Background Sound Level (dB $L_{A90,15min}$)					Residual Sound Levels (dB $L_{Aeq,15min}$)				
	Min	25%[1]	50%	75%	Max	Min	25%	50%	75%	Max
Daytime[2] 07:00 to 23:00	30	30	30	31	32	31	34	35	37	40
Night-time[3] 23:00 to 07:00	30	30	30	31	31	30	31	33	34	37

Notes:
1. Percentile value, for example 25% is the value below which 25% of the data are found.
2. Daytime ambient sound level 36 dB $L_{Aeq,16h}$.
3. Night-time ambient sound level 33 dB $L_{Aeq,8h}$.

Observations

3.9 Two periods of attended observations were also made during the survey: one upon initial deployment of the survey equipment inside the building at 16:00 hours on Tuesday 25th June 2024; and one outside the building between 23:30 and 23:45 hours on the night of the Tuesday 25th June 2024.

3.10 During the daytime period inside the building, sound from external commercial plant and activity was noted as being audible although it was not considered to be loud/discernible or readily distinctive. There was also some demolition activity which was more audible, albeit this would be temporary and not affect the acoustic environment on an ongoing basis. Some low level traffic noise from the nearby car park was also somewhat audible.

3.11 During the night-time period, there was some plant noise noted as being audible externally in the vicinity of the building, but considered to be not as loud as during the daytime period.

3.12 No specific area or item of plant was noted as being a dominant noise source; rather there was a cumulative effect of a number of items contributing to the overall level and character of a constant low hum.

Impact from Commercial Premises & Residential Amenity

3.13 With reference to paragraphs 3.3 and 3.12, sound of a commercial nature was audible inside the building during the daytime period, albeit not loud/discernible or readily distinctive. Whilst not observed, it is likely that sound of a commercial nature would similarly be audible during the night-time period (albeit potentially to a lesser degree).

3.14 With reference to Tables 3.1 and 3.2, daytime and night-time ambient/residual sound levels inside the building are 36 and 33 dB $L_{Aeq,T}$, respectively which, with reference to BS 8233:2014, would provide *"reasonable internal conditions"* with regard to residential amenity, being 1 and 3 dB above the desirable level for the day and night-time periods, respectively.

3.15 On the basis of the above, and the subjective observations that the commercial sound was not considered to be loud/discernible or readily distinctive and associated with constantly operating plant items, rather than impulsive or intermittent sources, it is considered that sound from commercial and/or industrial land uses are below the LOAEL with significant effects on residential amenity avoided.

3.16 Whilst it is the case that commercial plant noise is just audible, it is not of a magnitude or character that would cause any change in behaviour or attitude or result in unreasonable internal conditions.

3.17 As such, the proposed development accords with the requirements of The Town and Country Planning (General Permitted Development etc.) (England) Order and national (NPSE, NPPF and PPG-N) planning guidance with regard to impact from commercial and industrial noise.

4 Summary & Conclusions

4.1 The Acoustics, Noise and Vibration Team at Savills has been appointed by Threadneedle Property Unit Trust to undertake a noise assessment to accompany a Prior Approval Application for a development under 'Class MA' for the proposed change of use of an existing office building at Nicholsons House, Maidenhead, to residential use. The site is located within the administrative area of the Royal Borough of Windsor and Maidenhead (RBWM).

4.2 Environmental sound levels were determined from two overnight surveys.

4.3 During the daytime period, some sound from nearby commercial plant was noted as being audible, namely rooftop ACUs. During the night-time period, there was also some plant noise audible externally, albeit this was not considered to be as significant or as loud as the daytime period. While it is the case that commercial plant noise was audible, it was not considered to be of a magnitude or character that would result in any change of behaviour or cause unreasonable internal conditions.

4.4 As such, and with reference to BS 4242:2014+A1:2019, this indicates that sound of a commercial and/or industrial nature will have a low adverse impact, and with reference to the NPSE and PPGN, that sound from commercial and/or industrial land uses are below the LOAEL and would not affect future residential amenity.

4.5 Consequently, the proposed change of use accords with The Town and Country Planning (General Permitted Development etc.) (England) Order and national (Noise Policy Statement for England, National Planning Policy Framework, Planning Practice Guidance on Noise) planning policy and guidance with regard to impact from commercial and industrial noise.

4.6 On the basis of the above, the proposed change of use should be acceptable with regards to noise impacts from the nearby commercial uses.

Figures

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Notes
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Figure 1: Site & Survey Locations

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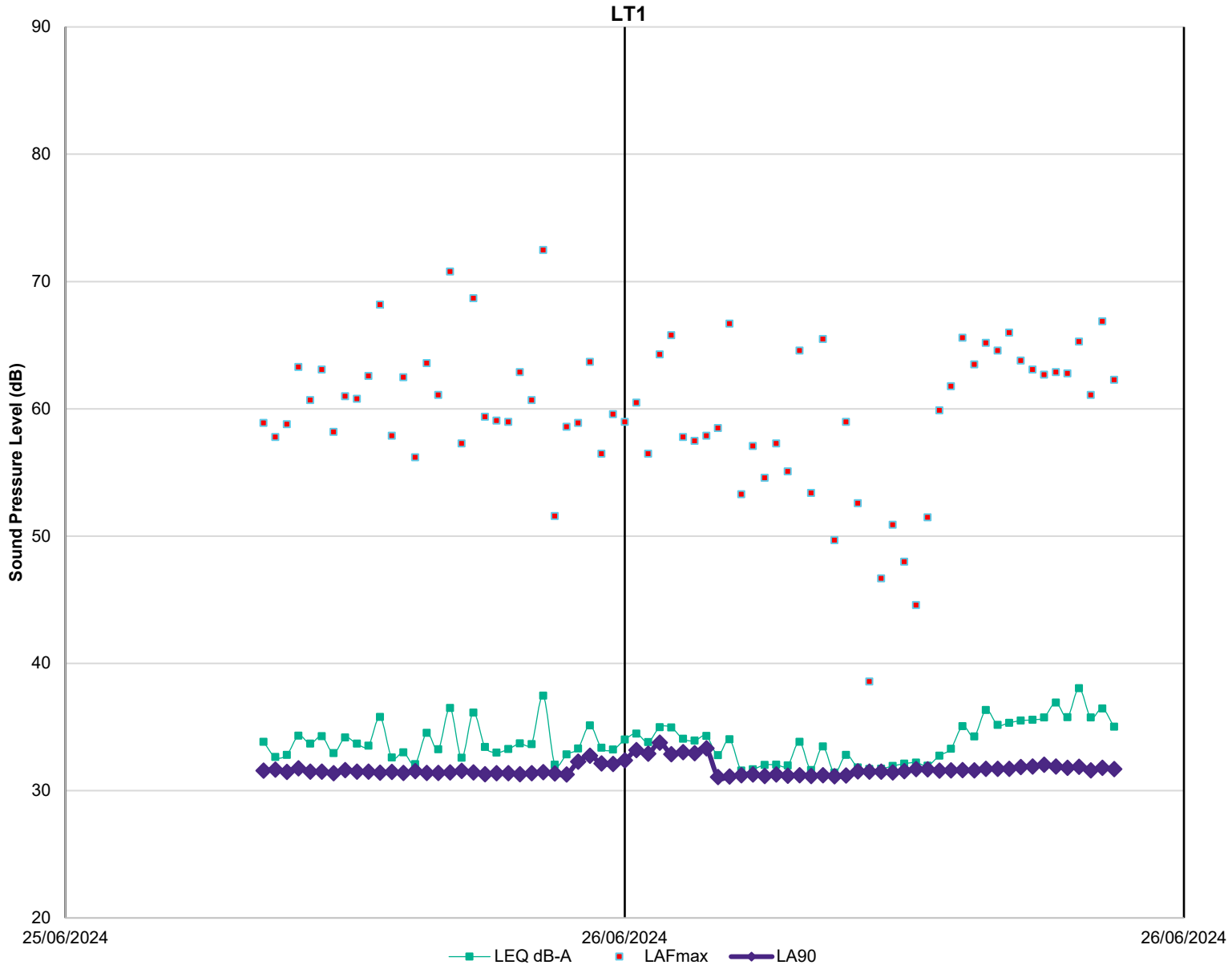
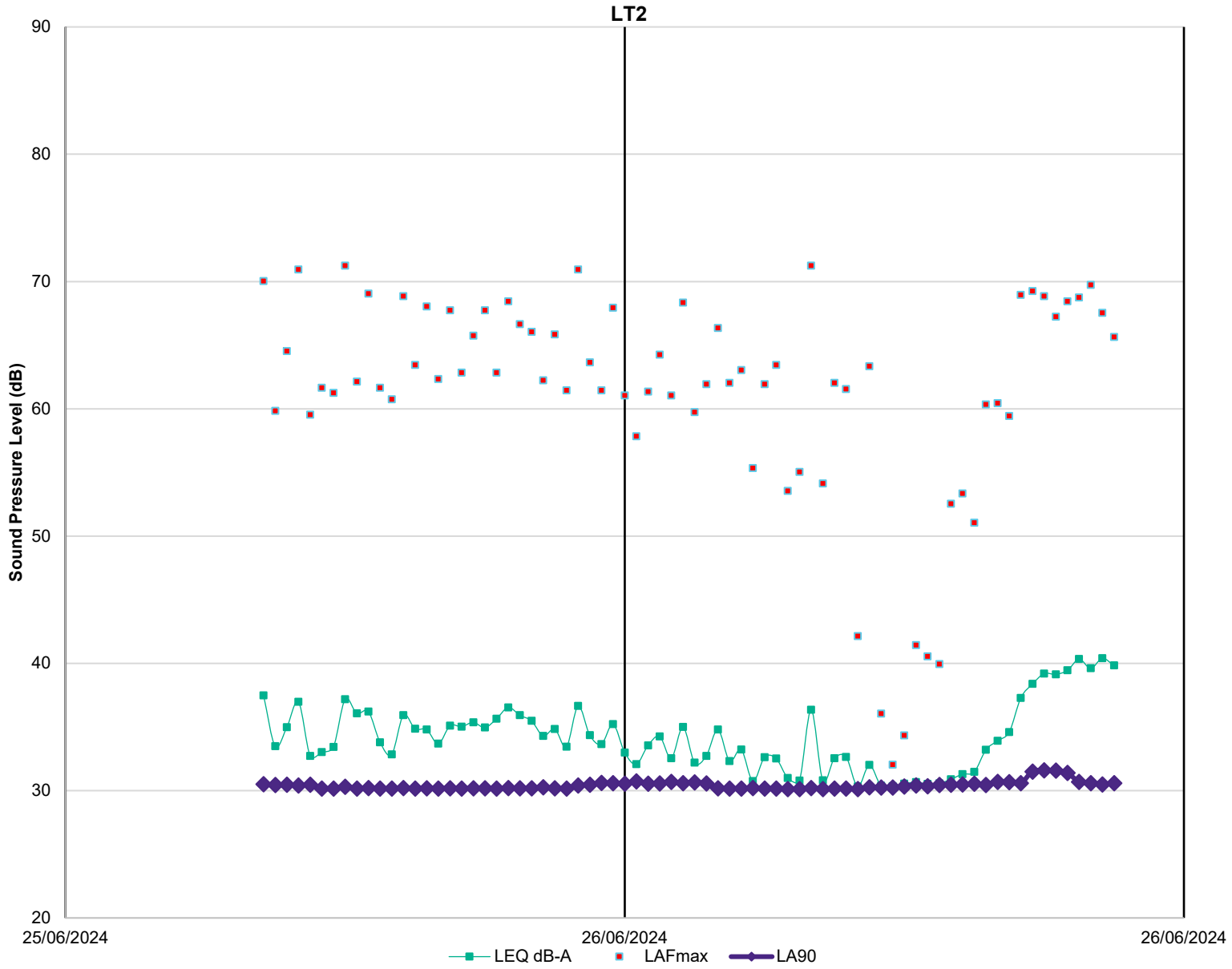
Appendices

Appendix A: Baseline Survey Data


LT1
Sound Pressure Level (dB)
90
80
70
60
50
40
30
20
25/06/2024
26/06/2024
26/06/2024
LEQ dB-A
LAFmax
LA90


LT2
90
80
70
60
50
40
30
20
Sound Pressure Level (dB)
25/06/2024
26/06/2024
26/06/2024
LEQ dB-A
LAFmax
LA90

References

1 Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. Defra. 2010.

2 Ministry of Housing, Communities and Local Government. National Planning Policy Framework: HMSO. December 2023.

3 Department for Communities and Local Government. National Planning Practice Guidance

4 British Standards Institution. British Standard 7445-2:1991 ‘Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use.