

Noise Assessment

Twineham Court Farm

September 2026

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Document Control:

Project No.	Project
12765.S	Twineham Court Farm - Noise Assessment

Report No.	Ver/rev	Written By:	Checked By:	Authorised By:	Date:
12765C	V0 Draft	R. Peirce	P. Beckett	P. Beckett	01/09/2026
	V1		J. Ferguson-Moore	J. Ferguson-Moore	25/09/2026

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1. Introduction

Client & Project

- 1.1 Phlorum Limited have been commissioned by Telbridge Properties Limited to undertake a noise assessment for the development of Twineham Court Farm for prior approval for the proposed change of use of Barn 1, Barn 2 and Barn 5 to light industrial (Class E) and storage & distribution (Class B8) use, using permitted development rights.
- 1.2 At present there are disused agricultural buildings at Twineham Court Farm with a Grade II Listed farmhouse and ancillary buildings.
- 1.3 A previous noise report for Twineham Court Farm as an events venue was issued in July 2024 and revised in May 2025 and the baseline noise data used to prepare this report has been used in the noise assessment. It is considered that there will be no change in the baseline noise climate between July 2024 to the present as any minor changes in traffic flows will provide a negligible noise effect.
- 1.4 The noise climate at the site has been established by direct measurement and the suitability of the site for the proposed development considered against national and local planning policy, and guidelines on noise. Where necessary, mitigation measures have been recommended so that a noise climate suitable for the proposed development can be achieved.
- 1.5 Whilst reasonable efforts have been made to produce a report that is easy to understand, it is technical in nature. To assist the reader, an introduction to noise, and an explanation of the terminology used in this report are contained in Appendix A.

2. Site Description

Existing Site Conditions

- 2.1 There are disused agricultural buildings at Twineham Court Farm with a Grade II Listed farmhouse and ancillary buildings. The property is set back from Bob Lane, with a small row of terraced properties on the far side of the road from the entrance to Twineham Court Farm. There are also isolated residential properties located further along Bob Lane.
- 2.2 The Rampion electricity sub-station is located to the north and the Bolney sub-station to the north-west of Twineham Court Farm. Otherwise, the site is surrounded by farmland.
- 2.3 The dominant noise source in the area was observed to be from local and distant road traffic, occasional farm related noise and aircraft noise. A Site Plan that also shows the noise measurement locations is included as Figure 1.

Development Proposals

- 2.4 It is proposed that Barn 1, Barn 2 and Barn 5 of Twineham Court Farm will be used for light industrial and storage & distribution use. The location of these buildings is shown on Figure 2.
- 2.5 Barn 1, Barn 2 and Barn 5 are anticipated to create 6 individual units once split/redesigned. It is considered that these will be individually occupied, allowing for a delivery each per day and a further visit from clients and associates it is estimated that for 6 units, with 3 visits each there will be a total of 18 traffic movements (18 in and 18 out) of which 6 will be HGV's/vans. There will be no night-time traffic movements or activities related to the development site.
- 2.6 There will be strict hours for site access, between 0700 to 1900 hours with prior arrangement. There are no external yard areas included in this application and so the noise will be from internal activities within the units, mechanical plant noise and vehicle movements.
- 2.7 The proposed ground and roof plans show the following constructions for 2 and 5:
 -  Building 1 – Existing roof will be removed and replaced with Aluminium insulated sheets with skylights. The walls will consist of windows with infill blockwork and a steel roller shutter security door on the south facing elevation.
 -  Building 2 – Existing roof will be removed and replaced with Aluminium insulated sheets with skylights. The walls will consist of windows with infill

blockwork and a steel roller shutter security door on the south and north facing elevations.

- 👁 Building 5 – Existing roof will be removed and replaced with Aluminium insulated sheets with skylights. The walls will consist of windows with infill blockwork and steel roller shutter security doors will be installed on the south and west facing elevations on the main building and a further steel roller shutter security door will be installed on the north elevation of the attached side building.

2.8 The ancillary accommodation, as shown on Figure 2 is not proposed to be a separate dwelling, but would be used for purposes ancillary to the main farmhouse directly to the west.

3. Guidance

National Planning Policy Framework (NPPF)

3.1 Paragraph P1 of the NPPF states:

"To support efforts to avoid and mitigate risks from natural and man-made hazards, minimise levels of pollution and create clean, liveable and safe places for people to live, work and visit, development plans should:

b. Consider any wider opportunities to reduce air, water, soil, noise or other forms of pollution, and contribute to compliance with national and local environmental targets and objectives, through the spatial strategy and policies for specific parts of the plan area (such as by identifying opportunities for strategic nature-based solutions);"

3.2 Paragraph P3(2) states that within the context of development proposals should:

a. Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

b. Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting);

d. Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason);

3.3 Paragraph P4: Impact of development on existing activities of NPPF states that:

Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were

established. This means that development proposals should be capable of being integrated effectively with existing business, community and public service activities and infrastructure in their vicinity (including industrial sites).

Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should:

Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the 'agent of change') and those existing uses which could be affected by the proposal to inform the scope for mitigation; and

Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures.

This policy applies to new development involving changes of use of land and property, as well as to new construction, and includes situations where new development may interfere with the operation of electronic communication networks. Both lawful current and permitted levels of operation of existing activities should be taken into account when applying this policy.

Planning Noise Advice Document: Sussex

- 3.4 Planning Noise Advice Document: Sussex, November 2023, which provides the noise policy for Mid Sussex District Council refers to the scope of BS4142:2014+A1:2019 and states in Section 3 that:

3.1 Scope

3.1.1 This section covers sound sources of an industrial and commercial nature. It refers to sound sources within the scope of the British Standard BS 4142:2014 + A1: 2019 "Methods for Rating and Assessing Industrial and Commercial Sound" and other industrial and commercial sources, as detailed.

3.1.2 Appropriate sound sources for assessment under BS 4142 are detailed in section 1.1 of the scope of the Standard and include:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations, which comprise mechanical and electrical plant;
- Sound from loading and unloading goods;
- Sound from mobile plant and vehicles that are an intrinsic part of the overall sound emanating from the premises or process e.g. fork-lift truck movements etc.

3.1.3 This standard would also be appropriate for some aspects of waste and minerals developments (see Annex 1, of this document, for standards applicable to waste and minerals sites).

Noise Policy Statement for England

- 3.5 The Department for Environment, Food and Rural Affairs published the *Noise Policy Statement for England* (NPSE) in March 2010. The explanatory note of the NPSE defines the terms used in the NPPF:

"2.20 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

- 3.6 The NPSE does not define the SOAEL numerically, stating at paragraph 2.22:

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

- 3.7 There is no local or national guidance on how the three terms should be defined numerically.
- 3.8 There are three aims in the NPSE, two of which expand upon the first bullet point in paragraph 180 of the NPPF:

“The first aim of the Noise Policy Statement for England

Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

The second aim of the Noise Policy Statement for England

Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

The third aim of the Noise Policy Statement for England

Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.25 This aim seeks, where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”

Planning Practice Guidance

3.9 In March 2014, the Government released Planning Practice Guidance (PPG) on noise, entitled ‘Noise’. This document sets out a number of principles in the form of questions and answers, and reinforces the guidance set out in the NPPF and the NPSE. The noise PPG was last updated in December 2014.

3.10 The noise PPG notes that:

"Noise needs to be considered when new development may create additional noise and when new developments would be sensitive to the prevailing acoustic environment."

3.11 It goes on to note that:

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

• whether or not a significant adverse effect is occurring or likely to occur;

• whether or not an adverse effect is occurring or likely to occur; and

• whether or not a good standard of amenity can be achieved."

3.12 The noise PPG broadly repeats the NPSE definitions of the NOEL, LOAEL and SOAEL and it provides a summary table to explain how the terms relate to each other and to typical human reactions to sound. The table is replicated below in Table 3.1.

Table 3.1 Planning Practice Guidance Summary of Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No effect	No observed effect	No specific measures required
Noticeable 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	
Noticeable 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	
Noticeable and disruptive	The noise causes a material change in behaviour and/or	Significant observed adverse effect	Avoid

Perception	Examples of Outcomes	Increasing Effect Level	Action
	attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep the windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting back to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.		
Noticeable 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

3.13 It is noted that the text in paragraph 005 of the PPG for noise reiterates the point illustrated in Table 3.1, that there are degrees of adverse effect above the SOAEL. Table 3.1 defines two degrees of significant adverse effect: a significant observed adverse effect, which is deemed noticeable and disruptive, and an unacceptable adverse effect, which is deemed noticeable and very disruptive.

3.14 The distinction between these two degrees of significant adverse effect is expanded upon in the text in paragraph 005 of the PPG for noise:

"005 Increasing noise exposure will at some point cause the significant observed adverse effect level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.

At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring."

- 3.15 The PPG, which is the most recent manifestation of Government advice on how noise should be treated within the planning system, as opposed to a policy position as stated in the more recent NPPF, is clear that a significant adverse effect, which lies above the SOAEL but below an unacceptable adverse effect, can be addressed (or 'avoided' in the terms of the PPG) through the provision of mitigation, including noise insulation; it is not until an unacceptable adverse effect is reached that the cause of the effect should be prevented.
- 3.16 The noise PPG provides advice on how to mitigate the effects of noise, noting that there are options to reduce noise at source, to optimise site layouts, to use planning conditions, and provide insulation within affected properties.
- 3.17 The noise PPG also notes that:

"The noise impact may be partially offset if the residents of those dwellings have access to:

- a relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or*
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or*
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings, and/or*
- a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)."*

British Standard 8233

- 3.18 The scope of British Standard (BS) 8233: 2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use rather than to assess the effect of changes in the external noise climate.
- 3.19 BS8233: 2014 suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 3.2.

Table 3.2: BS8233 Recommended Internal Noise Levels, dB

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35dB LAeq,16hour	-
Dining	Dining room/area	40dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35dB LAeq,16hour	30dB LAeq,8hour

- 3.20 BS8233 contains the following relevant guidance in footnotes to the above information:

"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 LAmax,F, depending on the character and number of events per night. Sporadic noise events could require separate values.

Note 5: If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level. [...]

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."

- 3.21 Although Note 4 above refers to setting a guideline value for maximum noise levels, BS8233: 2014 does not provide any guidance on a suitable criterion.
- 3.22 Placing the BS8233: 2014 guidance into the context required by the NPPF and the NPSE, it is considered that where the internal noise levels meet the guideline values set out in Table 3.2, there is considered to be no observed effect.
- 3.23 Since BS8233: 2014 allows for a 5dB relaxation in the guideline values in Table 3.2 (Note 7 above), it is considered that internal noise levels up to 5dB above the guideline values in Table 3.2 may still be acceptable.
- 3.24 Section 7.7.3.2 of BS8233, titled Design criteria for external noise states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dB LAeq,T, with an upper guideline value of 55dB LAeq,T which would be acceptable in noisier environments."

- 3.25 BS8233: 2014 goes on to note that the upper guideline value may be exceeded in certain circumstances:

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

- 3.26 Achieving the lowest practicable noise levels in gardens is deemed acceptable in BS8233: 2014 in circumstances where development is needed in areas where the upper 55dB limit cannot be achieved.
- 3.27 As BS8233: 2014 states that it is desirable that garden noise levels do not exceed 50dB $L_{Aeq,T}$, this implies some adverse effect above this level. Therefore, an external daytime noise level of 50dB $L_{Aeq,16hrs}$ can be defined as the LOAEL.
- 3.28 However, it would not be appropriate to equate the 55dB criterion with the SOAEL, since it is clear from BS8233: 2014 that 55dB is not a threshold that should never be exceeded. Equating the 55dB criterion to the SOAEL would mean that, in national policy terms, exceeding this threshold should be avoided, which is not what the standard requires.

World Health Organisation

- 3.29 The World Health Organisation (WHO) *Guidelines for Community Noise* (1999) also sets out guidance on suitable internal and external noise levels in and around residential properties. The guidance on internal and external noise levels is the same as set out in BS8233: 2014 in terms of L_{Aeq} values, but the WHO guidelines also provide guidance on night-time maximum noise levels, stating:

“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAF_{max} more than 10-15 times per night.”

- 3.30 The WHO guidelines suggest the possibility of sleep disturbance if continuous noise in bedrooms exceeds 30dB $L_{Aeq,8hrs}$ during the night-time, and therefore internal noise levels above this value can be considered to be above the LOAEL. This internal value can be translated to an external value by the addition of 10dB, to account for the typical reduction through an open window. Therefore, external night-time noise levels of 40dB $L_{Aeq,8hrs}$ can be defined as the LOAEL.

- 3.31 The WHO published their *Night Noise Guidelines for Europe* in 2009. This document sets an external 'night noise guideline' (NNG) of 40dB. This is consistent with the LOAEL value determined above. The NNG also sets an interim target of 55dB in situation where the 40dB value cannot be met. Above 55dB the NNG notes that the situation is considered increasingly dangerous for public health. On the basis of the above, a free-field external value of 55dB $L_{Aeq,8hrs}$ is considered to be the night-time SOAEL.

BS4142:2014+A1:2019

- 3.32 BS4142:2014+A1:2019 provides a methodology that determines the significance of adverse impact at dwellings potentially affected by noise of an industrial nature. BS 4142 refers specifically to sound from fixed installations which comprise mechanical and electrical plant and equipment; sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.
- 3.33 The basis of the standard requires a comparison to be made between the 'background noise level' of the assessment area and the 'specific noise level' of the noise source under consideration. There are five key definitions relating to this relationship;
-  Background Noise Level - $L_{A90,T}$ - this is defined in the Standard as 'the 'A' weighted sound pressure level of the residual noise at the assessment position which is exceeded for 90 % of the given time interval, T, measured using time weighting F and quoted to the nearest number of whole decibels.
 -  Specific Noise Level - $L_{Aeq,T}$ - this is the equivalent continuous 'A' weighted sound pressure level over a given time interval.
 -  Residual Noise - this is defined as the ambient noise remaining in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.
 -  Ambient Noise - totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far.
 -  Rating Level - $L_{Aeq,T}$ - the specific noise level plus any adjustment made for the characteristic features of the noise.
- 3.34 The background level, wherever possible should be determined at the location where the assessment is to be made. Situations will arise where, due to circumstances which influence this level unduly, for example the specific noise level is operating continuously and thus the residual noise cannot be measured at this point, the background level may be determined in other ways. This may be, for example, by measuring at a different location or a different time which are nevertheless representative of the assessment position.

- 3.35 A further acoustic correction to the specific noise level is made if the sound has tonal or impulsive characteristics.
- 3.36 Once all necessary adjustments have been made, the background and the specific noise levels are compared. The standard states that the greater this difference is, 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.
 -  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.
- 3.37 The assessment should consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, reasonable practicable steps should be taken to reduce the level of uncertainty.

Road Traffic Noise

- 3.38 The impact of any changes in road traffic noise levels has been considered against the principles and guidance presented within the Design Manual for Roads and Bridges (DMRB) Part 7 HD213/11 Noise and Vibration, 2011. DMRB presents an impact significance matrix for assessing the magnitude of changes in noise level for the short and long term and can be used as criteria for assessing the impact of any changes in road traffic noise levels, as shown below.

Table 3.3: Semantic Descriptors for Traffic Noise in the Short Term

Change in Noise Level L _{A10,18 hr} dB	Magnitude of Impact
0	No Change
0.1 to 0.9	Negligible
1 to 2.9	Minor
3 to 4.9	Moderate
5+	Major

Table 3.4: Semantic Descriptors for Traffic Noise in the Long Term

Change in Noise Level L _{A10,18 hr} dB	Magnitude of Impact
0	No Change

Change in Noise Level L _{A10,18 hr} dB	Magnitude of Impact
0.1 to 2.9	Negligible
3 to 4.9	Minor
5 to 9.9	Moderate
10+	Major

- 3.39 Table 3.3 is concerned with the short-term difference, which would be considered during the six months following the completion of the construction, thereafter, Table 3.4 applies. The criteria in Table 3.3 above reflect key benchmarks of human response to changes in noise level. For example, a 3 dB change is generally taken to be the smallest change perceptible in the human ear and a 10 dB changes is heard as a doubling or halving of the loudness of a source. The 5 dB category has been included as it provides greater definition of the assessment of changes in noise level.
- 3.40 The prediction methodology for traffic noise is the Calculation of Road Traffic Noise (CRTN), 1988. This is an established prediction methodology and enables the change in noise levels to be considered whilst taking the number of Heavy Commercial Vehicles into account.

4. Environmental Surveys

Noise

- 4.1 A noise survey was undertaken to establish typical sound levels at the nearest residential properties to the site. The measurements were taken over a 2 to 3 day period starting at 13:30 hours on Friday 19th January 2024 to provide the day and night-time noise levels at the site over both a weekday and weekend period. It is considered that the noise measurements taken in January 2024 will be representative of the existing baseline noise climate as any minor changes in traffic flows, which is the dominant noise source, will provide a negligible noise effect.
- 4.2 The survey methods and results are set out below.

Sound Survey Method

- 4.3 The equipment used during the survey is summarised in Appendix B. The sound level meters were field calibrated immediately before and after the measurements using the listed acoustic calibrator. No significant calibration drifts were found to have occurred.
- 4.4 The sound level meters had been laboratory-calibrated to a traceable standard within the two years preceding the survey. The acoustic calibrator had been laboratory-calibrated to a traceable standard within the year preceding the survey.
- 4.5 Noise measurements were carried out at two long-term locations. The measurement locations are described as follows:
-  Receptor 1 - The microphone was located in a free-field location approx. 20m from the nearside kerb of Bob Lane. The mic was 2m above the road with a clear line of sight to the nearest residential properties on Bob Lane and Twineham Court Farm.
 -  Receptor 2 - The microphone was located in a free-field location approx. 6m from Bob Lane. The mic was 1.5m above the road and located at a similar distance to Bob Lane as the adjacent residential property.

Sound Survey Results

- 4.6 The weather during the early part of the survey (Friday 19th and Saturday 20th January) was suitable for noise measurements, it being dry with wind speeds of less than 5m/s. The noise measurements on Sunday 21st January 2024 were affected by wind speeds above 5m/s and have not been used in the noise assessment.

- 4.7 The dominant sound source was from local and distant road traffic. Other significant noise sources included aircraft, distant farm machinery noise and local birdsong.
- 4.8 The sound survey results are summarised in Table 4.1, aggregated across the daytime and night-time periods. The noise results on Sunday 21st January 2024 have not been included due to the high wind speeds. Full survey results are set out graphically in Appendix C.

Table 4.1 Summary of Daytime Measured Sound Levels, free-field dB

Measurement Location	Date	Period	Duration, T	L _{Aeq,T}	L _{AFmax}	L _{A10,T}	L _{A90,T}
1	Friday 19 Jan 24	13:30-23:00	9 hours, 30 mins	42.7	59.3	41.6	31.3
	Saturday 20 Jan 24	07:00-23:00	16 hours	46.2	62.9	46.0	37.0
2	Friday 19 Jan 24	13:45-23:00	9 hours, 15 mins	44.1	61.4	40.4	31.9
	Saturday 20 Jan 24	07:00-23:00	16 hours	45.9	65.2	44.6	35.7
	Monday 22 Jan 24	07:00-12:45	5 hours, 45 mins	48.4	67.2	49.1	38.7
Note: ⁽¹⁾ – The L _{A90,T} , L _{Amax} and L _{A10,T} and values are the arithmetic means of the L _{A90,T} , L _{Amax} and L _{A10,T} measurements for each period.							

- 4.9 It is understood that there will be no night-time operations at the proposed development. However, the night-time baseline noise levels have been shown to provide a more complete picture of the noise climate at the nearest residential properties. The noise levels measured on Friday night, 19/20 January 2024 are considered to represent the noise levels during acceptable weather conditions (no rain and wind speed below 5 m/s) and are shown in Table 4.2.

Table 4.2 Summary of Night-time Measured Sound Levels, free-field dB

Measurement Location	Date	Period	Duration, T	L _{Aeq,T}	L _{AFmax}	L _{A10,T}	L _{A90,T}
1	19/20 Jan 24	23:00-07:00	8 hours	32.4	40.6	33.7	30.0
2	19/20 Jan 24	23:00-07:00	8 hours	32.7	40.9	32.5	28.9
Note: ⁽¹⁾ – The L _{A90,T} , L _{Amax} and L _{A10,T} and values are the arithmetic means of the L _{A90,T} , L _{Amax} and L _{A10,T} measurements for each period.							

5. Assessment

- 5.1 The proposal is for Barn 1, Barn 2 and Barn 5 of Twineham Court Farm to be used for light industrial and storage & distribution use. There are no external yard areas included in this application and so the noise has only been considered from internal activities within the units, mechanical plant noise and vehicle movements.

Internal Noise Within Units

- 5.2 Barn 1, Barn 2 and Barn 5 will create 6 individual units once split/redesigned. Based on the location of the shutter doors it is assumed that Barn 1 will contain 1 unit, Barn 2 will have 2 units and Barn 5 will have 3 units.
- 5.3 At this stage of the application the occupiers of the units and the noise from internal activities from within the individual units is not known. To provide an indication of the noise impact of internal activities the noise has been predicted based on a noise level in the centre of each unit of $L_{Aeq,T}$ 75 dB at a distance of 1m from the centre of each unit. This is considered to represent a reasonable estimate based on our professional experience as it is very unlikely that all 6 units will be operating simultaneously with this internal noise level.
- 5.4 The noise predictions have assumed that the acoustically weakest element of the structures for Barn 1, Barn 2 and Barn 5 will be the skylights and roller shutter doors (the windows will be infilled with blockwork). The noise predictions have assumed a conservative R_w 25 dB for the skylights and R_w 15 dB for closed roller shutter doors. The roller shutter doors will open for loading, so it is recommended that there is a condition that doors are kept closed except for access.
- 5.5 The noise predictions have assumed that the background noise levels measured at R1 are also representative of the noise levels at R3 and R4 where access for noise measurements was not available.
- 5.6 At this stage, the noise predictions aim to provide an indication of the likely noise effects of internal activities within the units at the nearest residential properties. When further details of the internal activities are known then detailed sound breakout calculations can be undertaken to verify these predicted noise levels.
- 5.7 The distance and screening between the units and the nearest residential properties has been taken into account and the predicted internal activity noise levels at the nearest residential receptors R1 to R4, as shown on Figure 1 are as follows:

Table 5.1 Predicted Noise Level with Doors and Windows Closed

Receptor	Predicted Noise from Internal Activities, $L_{Aeq,T}$ dB
R1	23
R2	18

Receptor	Predicted Noise from Internal Activities, $L_{Aeq,T}$ dB
R3	14
R4	20

Traffic Noise

- 5.8 A summary of the existing baseline 24-hour traffic count on Bob Lane is shown in Appendix D. Based on the assumption that there will be 18 movements in and 18 movements out of the proposed development in the daytime period, the increase in noise level due to the commercial/storage units is predicted to be 0.9 dB when compared against the existing average daily traffic flow. The 24-hour traffic flow data that has been provided would be very similar to the 18-hour data required for a DMRB noise assessment and when considered against the semantic descriptors for the magnitude of change of traffic noise, DMRB indicates a negligible increase for properties located on Bob Lane when considered in both the short term and in the long term.
- 5.9 It should be noted that the traffic flows on Bob Lane are considered to be very low and well below the level that can be reliably calculated by the Calculation of Road Traffic Noise (CRTN), 1988.

Plant Noise

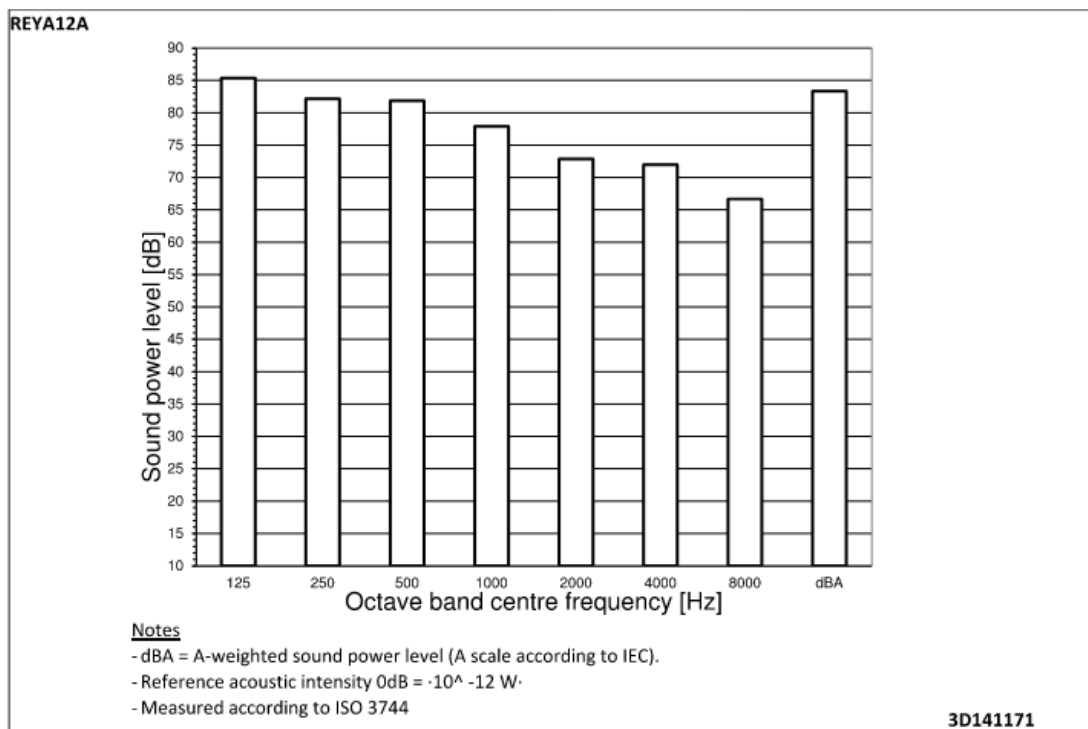
- 5.10 The assessment has assumed that there will be one air conditioning unit at each of the 6 proposed units. Plant details are indicative at this stage and not part of the Class R application and it is recommended that there will be a plant noise limit, based on the guidance in BS4142:2014+A1:2019, secured by condition. To enable noise predictions from AC units, predictions are based on a Daikin REYA12A AC unit and noise data for this unit is shown in Table 5.2, below:

Table 5.2 Mechanical Services Plant Noise Levels

Plant	Source Noise Level, L_{WA} dB	Manufacturer	Type
AC Units	Cooling 82.5	Daikin	REYA12A
	Heating 83.3		

L_{WA} – sound power level

The octave band sound power levels for the Daikin AC Units in heating mode are shown in Figure 3.

Figure 3: AC Unit Sound Power Noise Levels

- 5.11 The noise predictions assume that, in a worst case hourly period during the day, all six AC Units will be in operation simultaneously. The AC plant noise level has been predicted at the nearest residential properties and these noise prediction locations (Receptors 1 and 2) are shown in Figure 1.
- 5.12 To enable the noise predictions it has been assumed that the AC units will be located on walls that shield the AC units from the nearest properties (on the west or north facing elevations on Barn 1, Barn 2 and Barn 5). The predicted AC plant noise level at Receptors 1 and 2, based on the above assumptions are shown in Table 5.3.

Table 5.3: Predicted Noise Levels with all Six AC Units in Operation

Location	Predicted Plant Noise Level
	$L_{Aeq,T}$ dB
Receptor 1	22
Receptor 2	18

BS4142 Assessment

- 5.13 The daytime background noise levels at Receptors 1 and 2, taken between 1345 to 1900 hours on 19 Jan 2024, which is considered to provide representative daytime noise measurements, have been analysed and the results are shown in Table 5.4, below.

Table 5.4: Summary of Daytime Background Noise Levels

Location	Mode $L_{A90,T}$ dB	Average $L_{A90,T}$ dB	Lowest $L_{A90,15 \text{ min}}$ dB
Receptor 1	32	32	30
Receptor 2	32	33	31

5.14 In relation to the 'background sound level', BS4142 states that:

'it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest background sound level, but rather to quantify what is typical during particular time periods'.

- 5.15 It is considered that the 'Mode' background sound levels provide typical levels for the BS4142 assessment.
- 5.16 BS4142 indicates that an acoustic correction should be applied if the noise is tonal, impulsive or intermittent. The assessment has included an 'intermittent' correction due to the 'on/off' nature of the AC use. The standard states that a 'intermittent' correction up to +3 dB can be applied 'if the intermittency is readily distinctive against the residual environment'.
- 5.17 Based on the manufacturers octave band data for the fan, as shown in Figure 3, it is considered that no tonal correction is required for the fan noise.
- 5.18 The predicted noise levels for the AC units and the internal noise have been combined to provide a worst case specific noise level for the daytime BS4142 assessment, when considered at the nearest residential Receptors, R1 and R2, as shown in Table 5.5 below.

Table 5.5 – BS4142 Daytime Noise Assessment

Receptor	BS4142 Assessment	Daytime
R1	Specific Noise Level Internal 23 dB and AC 22 dB = $L_{Aeq,1hr}$ 26 dB	$L_{Aeq,1hr}$ 26 dB
	Background Sound Level, Mode	$L_{A90,T}$ 32 dB
	Acoustic Correction	+3 dB
	Rating Level	(26+3) = 29 dB
	Excess of rating over background level	(29-32) = -3 dB
R2	Specific Noise Level Internal 18 dB and AC 18 dB = $L_{Aeq,1hr}$ 21 dB	$L_{Aeq,1hr}$ 21 dB
	Background Sound Level, Mode	$L_{A90,T}$ 32 dB
	Acoustic Correction	+3 dB
	Rating Level	(21+3) = 24 dB
	Excess of rating over background level	(24-32) = -8 dB

- 5.19 The BS4142 noise assessment provides an excess of rating over background level of -3 dB in the daytime at Receptor 1 and -8 dB at Receptor 2 at the nearest residential properties for the worst case scenario with all six AC units in operation simultaneously and all six units operating with internal noise.
- 5.20 BS4142 states that a difference of around +5 dB is likely to be an indication of an adverse impact and 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.
- 5.21 The context for the noise assessment in the daytime is that the predicted noise levels are well below the desirable external noise level for gardens of 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments as provided by BS8233:2014. Furthermore, the measured ambient daytime noise levels are between $L_{Aeq,T}$ 44 to 48 dB and the predicted combined AC/internal noise level of $L_{Aeq,T}$ 26 dB is at least 18 dB below the existing ambient noise level.
- 5.22 BS4142 requires that the uncertainty of the assessment is considered and this is provided in Appendix E.

6. Mitigation

- 6.1 The noise from traffic relating to the proposed development at Twineham Court Farm, is predicted to be negligible in the long term and no further noise mitigation measures are required.
- 6.2 The noise assessment has assumed that the skylights and doors to the units will be closed and that each unit will have an external AC unit, which will be located on walls that shield the AC units from the nearest properties, on the west or north facing elevations on Barn 1, Barn 2 and Barn 5. The roller shutter doors will open for loading, so it is recommended that there is a condition that doors are kept closed except for access.
- 6.3 Based on generic information regarding estimated internal noise levels with the six individual units and mechanical services plant noise the BS4142 noise assessment provides an indication of the specific sound source having a low impact, depending on the context. It is recommended that when details of mechanical services plant or ventilation systems are available a further noise assessment is undertaken. As plant details are indicative at this stage and not part of the Class R application it is recommended that there will be a plant noise limit, based on the guidance in BS4142:2014+A1:2019, secured by condition.

7. Conclusion

- 7.1 Phlorum Limited have been commissioned by Telbridge Properties Limited to undertake a noise assessment for the development of Twineham Court Farm for prior approval for the proposed change of use of Barn 1, Barn 2 and Barn 5 to light industrial (Class E) and storage & distribution (Class B8) use, using permitted development rights. At present there are disused agricultural buildings at Twineham Court Farm with a Grade II Listed farmhouse and ancillary buildings.
- 7.2 The noise assessment indicates that the noise from light industrial/storage use will be within acceptable levels at the nearest residential properties with doors and skylights closed and it is recommended that there is a condition that doors are kept closed except for access.
- 7.3 It is recommended that when details of mechanical services plant or ventilation systems are available a further noise assessment is undertaken. As plant details are indicative at this stage and not part of the Class R application it is recommended that there should be a plant noise limit, based on the guidance in BS4142:2014+A1:2019, secured by condition.
- 7.4 The noise from traffic relating to light industrial/storage use at Twineham Court Farm is predicted to be negligible in the long term at the nearest residential properties.
- 7.5 On the basis of this noise assessment, it is considered that noise does not pose a constraint to the proposed development.

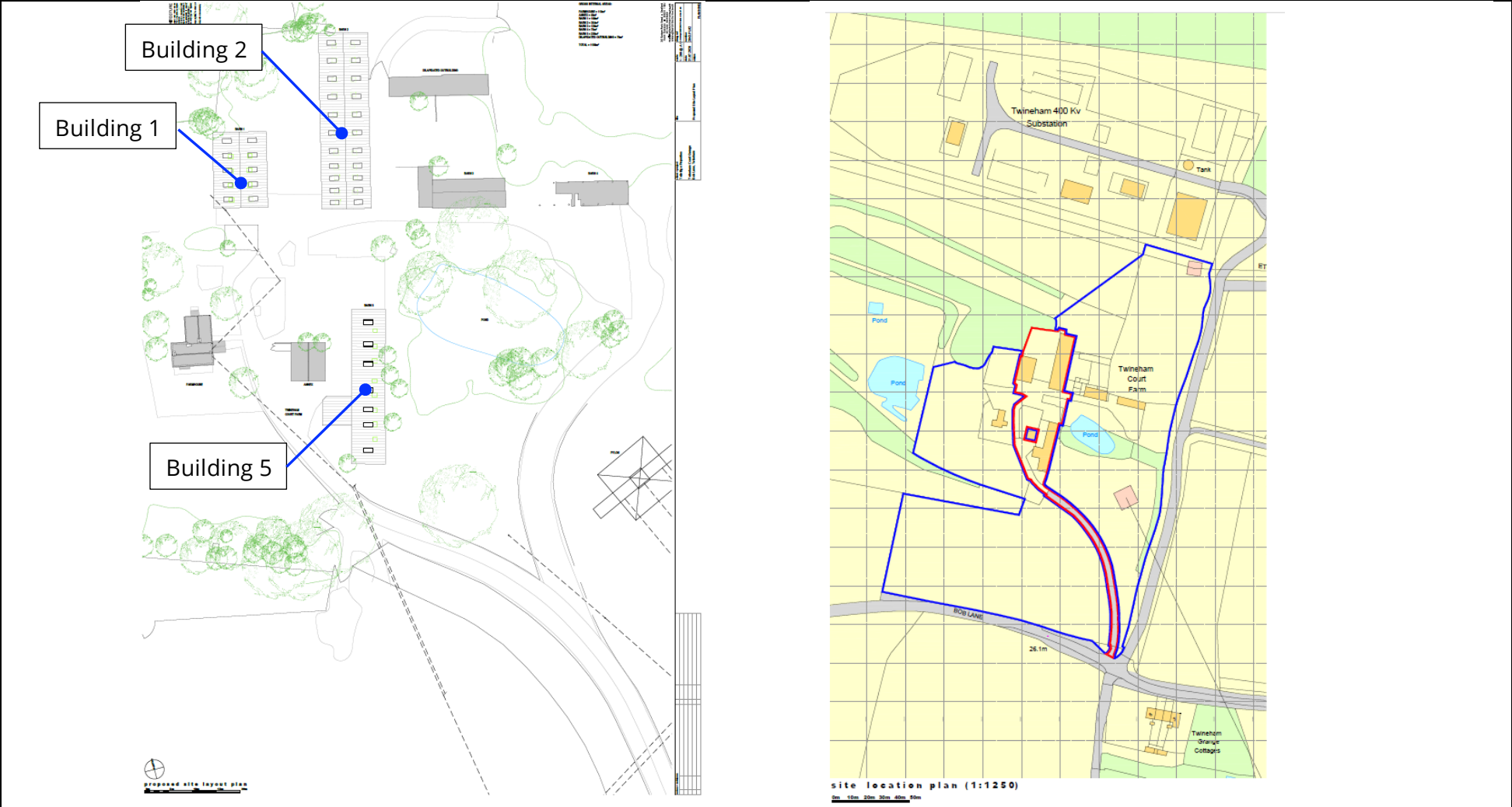
Figures



Site Plan showing Noise Measurement and Prediction Locations

Job No. 12765C

Figure No. 1



Site layout and Location Plans

Job No. 12765C

Figure No. 2

Appendix A

Introduction to Noise & Glossary of Terminology

Noise is defined as unwanted sound. The human ear is able to respond to sound in the frequency range 18Hz (deep bass) to 18,000Hz (high treble) and over the audible range of 0dB (the threshold of perception) to 140dB (the onset of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting (filtering) mechanism is used. This reduces the importance of lower and higher frequencies, approximating the response of the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. Noise can be perceived to be louder or more noticeable if the source of the noise is observed; e.g. roads, trains, factories, building sites etc. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. Various noise indices have been derived to describe the fluctuation of noise levels that vary over time. Usually, these noise indices relate to specific types of noise, and as such different noise indices are used to describe road traffic noise, background noise, construction noise, etc.

The weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement and the levels are denoted as dB(A) or L_{Aeq} , L_{A10} , etc, according to the parameter being measured.

Noise is measured on the decibel scale, which is logarithmic rather than linear. As a result of this, a 3dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3dB(A) is generally regarded as the minimum difference needed to perceive a change. Table A.1 sets out examples of noise levels typically experienced during everyday activities. Table A.2 sets out an explanation of the terminology used in this report.

Table A1: Typical Sound Levels Found in the Environment.

Sound Level	Location
0 to 10dB(A)	Threshold of hearing
10 to 20dB(A)	Broadcasting studio
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside a factory or noisy pub
100 to 110dB(A)	Burglar Alarm at 1m
110 to 130dB(A)	Pneumatic drill at 1m away

Sound Level	Location
140dB(A)	Threshold of Pain

Table A2: Terminology Relating to Noise

Term	Description
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of $20\mu\text{Pa}$ (20×10^{-6} Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$ or Background Noise Level	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 metres
Façade	At a distance of 1 metre in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS EN 61672.

Appendix B

Monitoring Equipment



Table B1: Noise Monitoring Equipment

Position	Equipment	Serial Number	Calibration Date
1	LD824 Sound Analyser	A1420	20/10/2023
	Mic	37023	
	Preamp	1812	
2	LD820 Sound Meter	A1350	20/10/2023
	Mic	37024	
	Preamp	1568	
All positions	LD CAL200 Calibrator	3054	13/10/2024

Appendix C

Full Noise Survey Results

Figure C1: Measured noise levels at Position 1, free-field dB

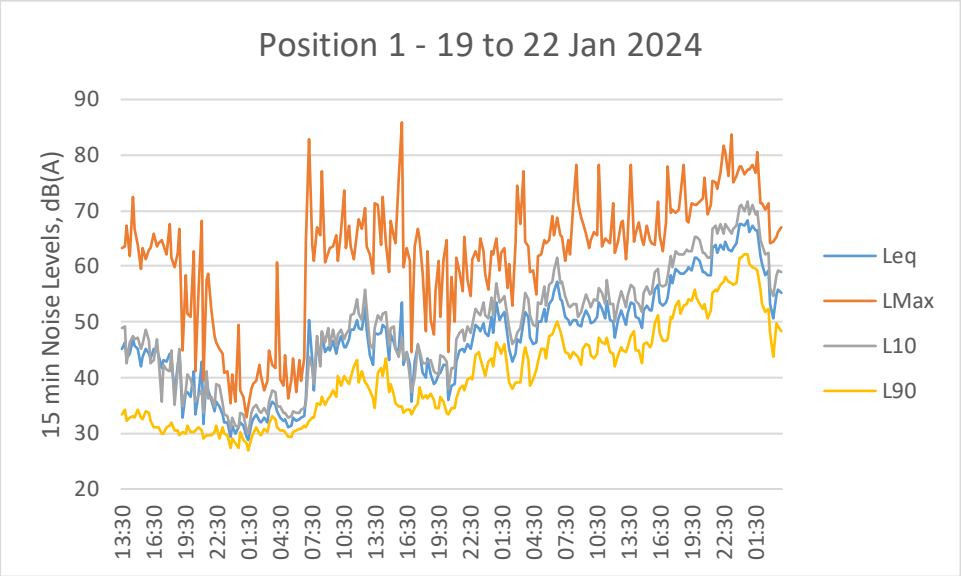
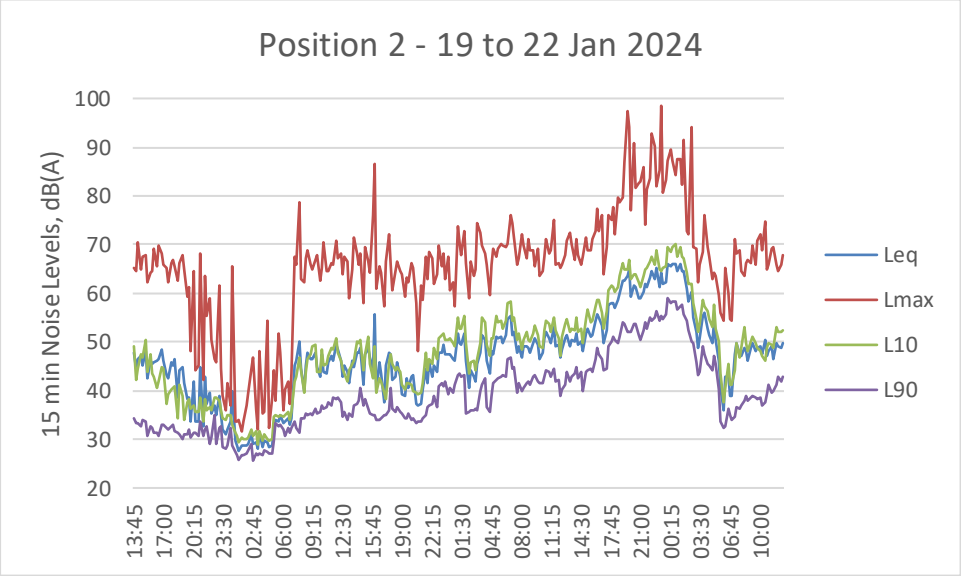


Figure C2: Measured noise levels at Position 2, free-field dB



Appendix D

Bob Lane Traffic Count Summary

Table D1: Traffic Flows on Bob Lane, 24 hour

			Direction 1			Direction 2		
		Summary	East Bound			West Bound		
			Total Vehicles	Mean Average	85%ile Speed	Total Vehicles	Mean Average	85%ile Speed
Day 1	Friday	26/01/2024	90	20	24	90	18	21
Day 2	Saturday	27/01/2024	54	22	25	65	20	23
Day 3	Sunday	28/01/2024	63	21	23	91	17	22
Day 4	Monday	29/01/2024	67	21	23	74	20	22
Day 5	Tuesday	30/01/2024	86	22	25	86	20	23
Day 6	Wednesday	31/01/2024	67	22	24	84	22	25
Day 7	Thursday	01/02/2024	88	22	25	84	21	24
		Week Total	515	22	24	574	20	23

Appendix E

BS4124 Uncertainty Assessment

Uncertainty Assessment for BS4142

BS4142 requires that the level of uncertainty in the measured data and associated calculations is considered in the assessment. The Standard recommends that steps should be taken to reduce the level of uncertainty. BS 4142 states that measurement uncertainty depends on a number of factors, including the following, which may be applicable to the Proposed Development and, therefore, need to be considered:

1. the complexity and level of variability of the residual acoustic environment;
2. the location(s) selected for taking the measurements;
3. the measurement time intervals;
4. the range of times when the measurements have been taken;
5. the range of suitable weather conditions during which measurements have been taken;
6. the level of rounding of each measurement recorded; and
7. the instrumentation used

Each of the measurement uncertainty factors outlined above have been considered and are discussed in Table E.1.

Table E.1: Measurement Uncertainty Factors

Measurement Uncertainty Factor Reference	Level of Uncertainty	Discussion
1	0 dB	Residual acoustic environment is relatively constant and dominated by existing traffic noise, hence no correction for a complex residual acoustic environment.
2	0 dB	Measuring at locations representative of the closest affected receptors to the site has enabled the determination of robust background sound levels.
3	0 dB	Measurement time intervals were set in accordance with BS 4142, hence no further correction needs to be made.
4	0 dB	Measurements were undertaken over a continuous diurnal time period.
5	0 dB	No periods of significant wind or precipitation were included in the noise assessment.
6	0 dB	Measured values were rounded to 0.1 dB, therefore rounding would not have had a significant impact on the overall typical background sound levels.
7	0 dB	The acoustic measurement equipment accorded with Type 1 specification of British Standard 61672 and were deployed with appropriate wind shields.

In summary, a correction of 0 dB has been included in the assessment, to account for measurement uncertainty.



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