



Noise Impact Assessment

Shinfield Park, Reading

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Wrenbridge (FRELD Reading) Limited

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Noise Impact Assessment

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Noise Impact Assessment

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1 Introduction

1.1 Background

- 1.1.1 Stantec UK Ltd. has been commissioned by Wrenbridge (FRELD Reading) Limited to undertake a noise impact assessment to support a planning application for the redevelopment of the site for flexible employment use (Use Class E(g)(ii)-(iii)/B2/B8) together with associated servicing areas, parking, landscaping and other associated works (the 'Proposed Development') at Shinfield Park, Reading.
- 1.1.2 An environmental sound survey has been undertaken to support the assessment. The assessment considers:
- Potential noise impacts of operational activities on the site (e.g. vehicular movements and loading activities).
 - Potential noise impacts associated with vehicular movements to and from the development on the surrounding road network.
 - Plant noise emission criteria have been proposed for fixed items of buildings services plant.
- 1.1.3 This report presents the results of the environmental sound survey and details the results of the noise impact assessment of the Proposed Development, based on national and local planning policy, and industry standards and guidance.
- 1.1.4 An explanation of the terminology used in this report is contained in Appendix A .

1.2 Scope of Assessment

- 1.2.1 The scope of the noise impact assessment report is to present:
- The results of the environmental sound survey undertaken by Stantec (UK) Ltd at locations considered representative of nearby noise sensitive receptors.
 - Noise impact assessment criteria based on the requirements of national and local policy, and industry standards and guidance.
 - The results of an assessment of the noise impact associated with the operation of the Proposed Development.

1.3 Site Location and Description of Development

- 1.3.1 The site (known as 'Shinfield Park') is located on the edge of Reading and is currently occupied by an office building and associated car parking. It is located approximately 1 mile from Junction 11 of the M4 Motorway and less than 1 mile from both Thames Valley Science Park and Shinfield Studios.
- 1.3.2 The site falls under the jurisdiction of Wokingham Borough Council. Residential noise sensitive receptors are located adjacent to the site to the north, on Cirrus Drive, Pascal Crescent and Greenwich Road. Residential receptors are also located to the west of the site on Woodside Way, Railton Close and Shirley Avenue, and to the southwest on Babbington Road, Pattinson Road and Coningham Road.
- 1.3.3 A site plan showing the location of the Proposed Development is shown in Figure 1.



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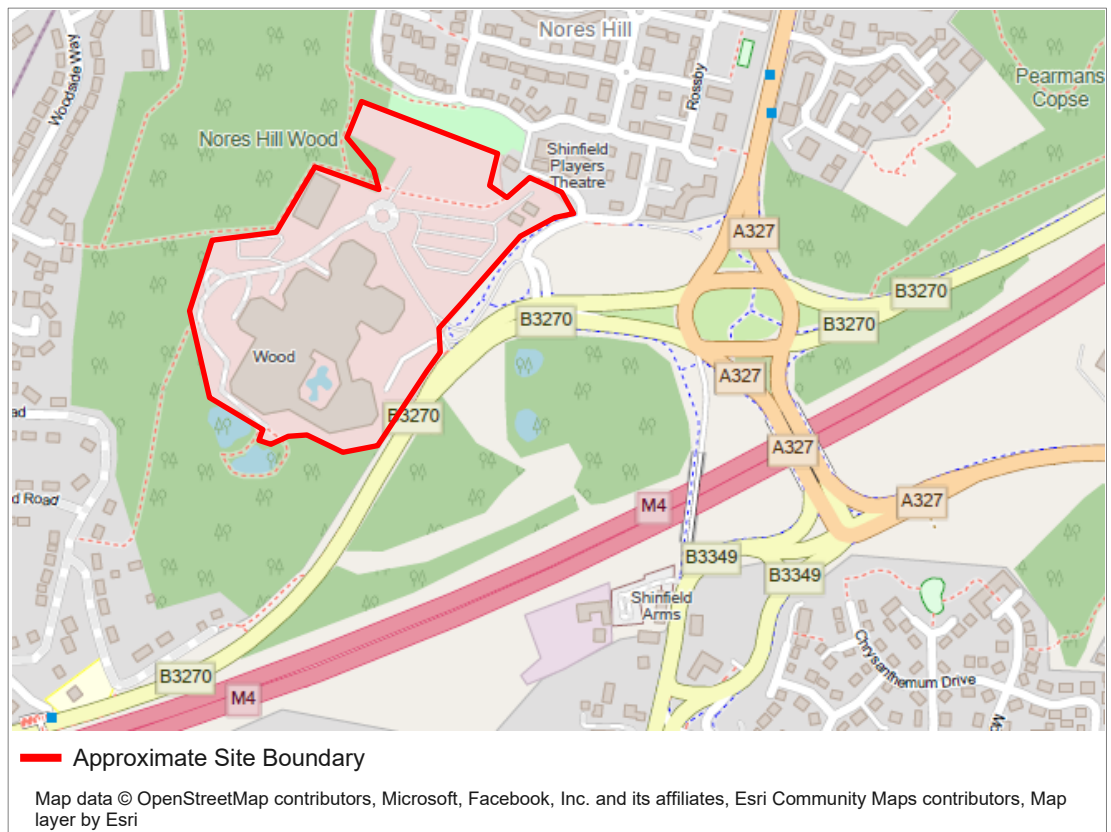


Figure 1: Site Location Plan

2 Policy Standards and Criteria

2.1 National Policy

The National Planning Policy Framework (NPPF)

- 2.1.1 The revised National Planning Policy Framework (NPPF) (MHCLG, 2024)¹ was published in December 2024. In respect of noise, paragraph 187 states that in relation to conserving and enhancing the natural environment:

“Planning policies and decisions should contribute to and enhance the natural and local environment by...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ... noise pollution...”

- 2.1.2 In relation to ground conditions and pollution, paragraph 198 states that:

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

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

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

- 2.1.3 The NPPF indicates that the Noise Policy Statement for England (NPSE) (Defra, 2010)² should be used to define the “significant adverse impacts”.

- 2.1.4 In relation to the integration of new development with existing premises and community facilities, paragraph 200 states that:

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

Planning Practice Guidance: Noise

- 2.1.5 The Planning Practice Guide (PPG)³ was launched in 2014 (with the latest update being in 2019) (DLUHC, 2019) and provides additional guidance and interpretation to the

¹ Ministry of Housing, Communities & Local Government (MHCLG) (2024) National Planning Policy Framework

² Department for Environment and Food and Rural Affairs (Defra) (2010) Noise Policy Statement for England

³ Department for Levelling Up, Housing and Communities (DLUHC) (2019) Planning Practice Guidance: Noise



Government's strategic policies outlined within the NPPF in a regularly updated, web-based resource.

- 2.1.6 The PPG provides guidance on the effects of noise exposure, relating these to people's perception of noise, and linking them to the no observed effect level (NOEL) and, as exposure increases, the lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL).
- 2.1.7 As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.
- 2.1.8 Exposure to noise above the LOAEL is described in PPG (Paragraph: 005 Reference ID: 30-005-20190722) as:

"...noise starts to cause small changes in behaviour and/or attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise)."

- 2.1.9 Exposure to noise above SOAEL is described as:

"...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 predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused."

Noise Policy Statement for England

- 2.1.10 The Noise Policy Statement for England (NPSE) (Defra, 2010)⁴ was published in March 2010 and clarifies the underlying principles and aims of existing policy documents that relate to noise. It also sets out the long-term vision of Government noise policy which is: "to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".
- 2.1.11 The NPSE states that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimise noise and its effects as far as is reasonably practicable having regard to the underlying principles of sustainable development.
- 2.1.12 Paragraphs 2.20 and 2.21 define 'significant adverse' and 'adverse' impacts as applied to noise as follows:

"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

⁴ Department for Environment and Food and Rural Affairs (Defra) (2010) Noise Policy Statement for England

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

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.”

2.1.13 Paragraph 2.22 clarifies that:

“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.”

2.1.14 The three aims of the NPSE are defined as follows:

“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.”

“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.” (Note: Applies when the impact lies somewhere between the LOAEL and SOAEL and does not mean that adverse effects cannot occur).”

“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.”

2.1.15 It is necessary to define the LOAEL and SOAEL for the potential source of noise so that the potential impact can be related to the aims and requirements of the NPSE.

2.2 Local Policy

Wokingham Borough Local Development Framework - Adopted Core Strategy Development Plan Document - January 2010

Policy CP1 – Sustainable Development states the following with respect to noise:

“8) Avoid areas where pollution (including noise) may impact upon the amenity of future occupiers;”

This policy is supported by and expanded upon in Policy CC06 of the Adopted Managing Development Delivery Local Plan – February 2014.



Wokingham Borough Development Plan – Adopted Managing Development Delivery Local Plan – February 2014

- 2.2.1 Policy CC06 of the Managing Development Delivery (MDD) Local Plan states the following with respect to noise:

1. Proposals must demonstrate how they have addressed noise impacts to protect noise sensitive receptors (both existing and proposed) from noise impacts in line with Appendix 1 of the MDD.

2. Noise impact of the development must be assessed. Where there is no adverse impact (No Observed Effect Level) then noise will not be a material consideration.

3. Where there is an adverse effect (Lowest Observed Adverse Effect Level to Significant Observed Adverse Effect Level), then

a) The development layout must be reviewed. Where this results in there no longer being an adverse impact then design and mitigation measures should be incorporated accordingly.

b) Where there is still an adverse impact then internal layout must be reviewed. Where this results in there no longer being an adverse impact then design and measures should be incorporated accordingly.

c) Where there is still an adverse impact then physical mitigation measures such as barriers/mechanical ventilation must be reviewed. Where this results in there no longer being an adverse impact then design and mitigation measures should be incorporated accordingly.

d) Where there is still an adverse impact and the development falls within the significant observed adverse effect level then planning permission will normally be refused.

- 2.2.2 Policy TB20 states the following with respect to service arrangements and deliveries for employment and retail uses:

“Planning permission will only be granted for commercial development proposals throughout the Borough that demonstrate:

a. There is no harmful impact on the amenity of adjoining land uses in terms of noise, fumes and disturbance

...”

- 2.2.3 Appendix 1: Noise & Vibration (Annex 1 and 2) of the MDD also includes the following guidance which is considered relevant to the proposed development. Non-relevant aspects of the guidance have been removed for brevity.

“Annex 1: Establishing Effect Levels

1. When assessing the acceptability of a proposed noise sensitive development, the Council will determine the effect of noise from any adjacent and nearby sources will have on the noise sensitive receptors (NSRs) taking into account both daytime and night-time noise levels.

2. When assessing the acceptability of a proposed development that emits noise, the Council will determine the effect the noise will have on nearby NSRs taking into account both daytime and night-time noise levels.



3. The Noise Policy Statement for England 2010 (NPSE) adopts two concepts from toxicology that are currently being applied to noise impacts by, for example, the World Health Organisation (WHO); these are “Significant adverse” and “adverse”.

These concepts have been applied to noise emission impacts on human receptors, as described below.

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.

SOAEL – Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur.

4. The NPSE states “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. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available”.

5. In order to assist the determination of applications in an appropriate manner and having regard to knowledge of existing noise levels within the Wokingham Borough Council area, the Council believes it is appropriate to provide some objective levels. The levels set out below are not absolute and applicants with open sites at outline application stages will need to demonstrate how the design criteria will reduce levels to below SOAEL, should noise levels defined as such occur on the site.

External Amenity Space for Dwellings

Annex 1, Table 1: Impact Levels - Amenity Spaces for Dwellings $L_{Aeq,T}$ dB

Noise Source	NOEL	LOAEL	SOAEL
Environmental noise	$L_{Aeq,T}$	$L_{Aeq,T}$	$L_{Aeq,T}$
07.00 – 23.00	<55	56 – 69	>70
23.00 – 07.00	<45	46 – 64	>65

Note: Values in the table above are noise levels measured on an open site at the position of the proposed amenity space.

6. The above levels are only applicable where consideration is being given to introducing residential development into an area with an existing noise source, rather than the reverse situation where new noise sources are to be introduced into an existing residential area.

...

New Noise Sources near Noise Sensitive Receptors (NSRs)

11. Where a new industrial or commercial development is proposed near a residential area, the effect of the new noise source on the surrounding area shall be assessed in accordance with currently available and appropriate standards. External noise levels at the nearest NSRs should meet the NOEL levels as set out above. Where possible, noise should be mitigated at source and through appropriate site layout.

...



Noise from industrial and commercial developments

12. The likelihood of complaints about noise from proposed development can be assessed using guidance in BS 4142. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard currently states that: "A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance." Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. This can be appropriate if the existing ambient background levels are already above the NOEL outlined above.

...

14. If the predicted impact of the development is 5 dB above background it would be considered to be the LOAEL and 10 dB above would be SOAEL and could be refused."

Wokingham Borough Emerging Local Plan Update

- 2.2.4 Policy CC06 from the Local Plan is proposed to be carried forward (with adjustments) into the new Local Plan under draft Policy HC8: Noise Pollution which states:

"1. Development proposals must demonstrate how noise impacts have been addressed, to protect sensitive receptors, including existing and proposed dwellings.

2. The noise impact of the proposed development must be assessed. Where there is no adverse impact (no observed effect level), noise pollution will not be a material consideration.

3. Where there is an adverse effect (ranging from the lowest observed adverse effect level to a significant observed adverse effect level), then the following approaches must be taken in the order listed:

a) The development layout must be reviewed. Where this results in there no longer being an adverse impact then design and mitigation measures should be incorporated accordingly;

b) Where there is still an adverse impact, the internal layout must be reviewed. Where this results in there no longer being an adverse impact, then design and mitigation measures should be incorporated accordingly;

c) Where there is still an adverse impact, physical mitigation measures such as barriers/mechanical ventilation must be considered. Where this results in there no longer being an adverse impact, these measures should be incorporated accordingly;

d) Where there is still an adverse impact and the development falls within the significant observed adverse effect level, then planning permission will normally be refused.

4. Adverse impacts on sensitive environmental receptors, such as wildlife corridors, should be avoided or comprehensively mitigated where avoidance is not possible."



Sustainable Design and Construction SPD

- 2.2.5 Section 16 of the Wokingham Borough Local Development Framework Sustainable Design and Construction Supplementary Planning Document (Adopted 28 May 2010) includes the following guidance with respect to noise:

“Noise can have a significant effect on the environment and on the quality of life of local residents. There are numerous sources of noise including road and rail traffic, construction activity, machinery and noise from neighbours.

The impact of noise particularly on residential development should be considered carefully at the design stage. Developers should consider existing sources of noise and ambient noise levels from both the current exposure and that which may be reasonably expected in the foreseeable future. In addition to external noise sources, the transmission of noise between adjoining users or buildings, such as flats or terraced houses should be minimised using appropriate construction techniques and design layout.

In seeking to minimise the impact of noise developers should consider the following measures from the earliest stages of project design:

- *The use of high performance acoustic double glazing and acoustic ventilation;*
- *Separate noise generating uses such as pubs and clubs as much as possible from noise sensitive developments;*
- *Identify potential noise sources such as pumps, air conditioning units, delivery activity, vehicle movements etc and seek to minimise their impact by careful design, layout and the incorporation of noise reduction measures;*
- *Ensure that less noise sensitive buildings or rooms are located in such a way that they act as screens between noise sources and quiet areas;*
- *Avoid potentially conflicting uses such as locating bedrooms directly below the living room of another flat;*
- *Use of buildings as barriers to protect amenity areas and gardens from noise sources such as busy roads;*
- *Use acoustic noise bunds, where appropriate.”*

Consultation with Environmental Health Department

- 2.2.6 We have consulted with the Environmental Health Department at Wokingham Borough Council⁵ who have requested the following with respect to this development:

- Fixed items of plant: Sound from fixed plant should achieve a rating level 5 dB below background at 1 m from the nearest noise sensitive receptors (excluding receptor façade reflection) when assessed in accordance with BS 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound.
- Vehicle sound and loading/unloading operations: Sound from these operations should ideally achieve a rating level 5 dB below background at 1 m from the nearest noise sensitive receptors (excluding receptor façade reflection) when assessed in accordance with BS 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound but higher sound levels may be considered acceptable.

⁵ See Appendix B



2.3 Standards and Guidance

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

- 2.3.1 BS 8233:2014 (The British Standards Institution, 2014)⁶ sets out guideline values in habitable rooms, such as living rooms and bedrooms which should not be exceeded.
- 2.3.2 The guideline values relate to steady external noise without a specific character, previously termed ‘anonymous noise’. According to the standard, 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. Examples of noise with a character may include tonal/intermittent plant noise emissions, music playback, and workshop noise. Examples of external steady noise sources may include environmental noise sources such as busy road traffic.
- 2.3.3 The guideline internal ambient noise levels for dwellings are presented in Table 1

Table 1: BS 8233 Guideline Internal Ambient Noise Levels for Dwellings

Activity	Location	Internal Ambient Noise Level	
		07:00 to 23:00 hours	23:00 to 07:00 hours
Resting	Living Room	35 dB $L_{Aeq,16h}$	-
Dining	Dining Room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

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.

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

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 5dB and reasonable internal conditions still achieved.

- 2.3.4 With respect to industrial noise, paragraph 6.5.2 states:

“Where industrial noise affects residential or mixed residential areas, the methods for rating the noise in BS 4142 should be applied. BS 4142 describes methods for determining, at the outside of a building:

a) noise levels from factories, industrial premises or fixed installations, or sources of an industrial nature in commercial premises; and

b) background noise level.”

⁶ The British Standards Institution (BSI) (2014) British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

British Standard 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- 2.3.5 BS 4142:2014+A1:2019 (The British Standards Institution, 2019)⁷ describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 2.3.6 The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of noise amounting to a nuisance is beyond the scope of the standard.
- 2.3.7 The standard should not be used to assess sound from the passage of vehicles on public roads and railway systems; recreational activities; music and other entertainment; shooting grounds; construction and demolition; domestic animals; people; public address systems for speech and other sources falling within the scopes of other standards or guidance. The standard cannot be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.
- 2.3.8 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur. It is noted that a BS 4142 assessment is reliant on measuring relevant background sound levels.
- 2.3.9 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:
- 2.3.10 Typically, the greater this difference, the greater 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; 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.
- 2.3.11 To consider the context, BS 4142 advises that the following factors should be considered:
- The absolute level of sound;
 - The character and level of the residual sound compared to the character and level of the specific sound; and
 - The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:

⁷ The British Standards Institution (BSI) (2019) British Standard 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- Façade insulation treatment;
- Ventilation and/or cooling that will reduce the need to have windows open to provide rapid or purge ventilation; and
- Acoustic screening.

Design Manual for Roads and Bridges, LA111 Traffic Noise and Vibration, 2020

- 2.3.12 The Design Manual for Roads and Bridges (DMRB) (Highways England, 2020)⁸ is considered to be the regulatory standard for the design of a new road or improvements to an existing road. In particular, LA 111 provides guidance on the assessment and the reporting of noise and vibration impacts relating to roads (including the change in traffic flows and construction).
- 2.3.13 The assessment method considers both the change in noise levels at noise sensitive receptors due to changes in the volume of road traffic and the absolute sound levels at the receptor.
- 2.3.14 DMRB provides two magnitude scales of impact for the change in noise levels in the 'short-term' (opening year) and in the 'long-term' (future year). The choice of impact scale depends on whether the assessment is comparing the opening year with and without the development, or the opening year without development and the future year with development.
- 2.3.15 The change in noise levels resulting from changes in traffic flows as a result of the Proposed Development is considered to be the most appropriate method of assessing the impact of the development at noise sensitive receptors located adjacent to the existing road network.
- 2.3.16 The short-term magnitude scale identified in Table 2 has been used to inform the assessment.

Table 2: DMRB Assessment Criteria – Noise from Road Traffic

Impact in Noise Terms	Change in Noise Levels ($L_{A10,18h}$ dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	< 1.0

- 2.3.17 In addition to the change in noise levels, DMRB also defines absolute sound levels with respect to noise from road traffic as shown in Table 3.

Table 3: DMR SOAEL and LOAEL Values for Road Noise

Time Period	LOAEL	SOAEL
Day (06:00-24:00)	55dB $L_{A10,18h}$ (façade)	68dB $L_{A10,18h}$ (façade)
Night (23:00-07:00)	40dB $L_{night,outside}$ (free-field)	55dB $L_{night,outside}$ (free-field)

⁸ Highways England (2020) The Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and vibration

IEMA Guidelines for Environmental Noise Impact Assessment

- 2.3.18 The Institute of Environmental Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (IEMA, 2014)⁹ details an assessment process applicable to a wide range of potential environmental noise sources where a specific assessment method either does not exist or is not considered to be appropriate.
- 2.3.19 The guidelines suggest that by defining the sensitivity of receptors, the change in noise environment as a result of the source under consideration, and considering the type of noise, an assessment of the potential noise impact can be undertaken.
- 2.3.20 Receptors are those aspects of the environment sensitive to changes in baseline conditions. The sensitivity of a particular receptor depends upon the extent to which it is susceptible to such changes. Residential receptors are typically considered to have high sensitivity with commercial and industrial receptors considered to have low or negligible sensitivity.
- 2.3.21 In this instance, the approach suggested by IEMA aligns with the approach taken by DMRB with respect to the assessment of road traffic noise (i.e. it considers the change in noise level due to the changes in traffic flows). It is proposed to apply this approach to the assessment of noise associated with the operation of the on-site car parks.

2.4 Proposed Assessment Criteria

- 2.4.1 In accordance with the requirements of the Local Planning Authority (LPA), informed by national and local planning policy and relevant standards and guidance, Table 4 details the proposed assessment methodology and criteria.

Table 4: Proposed Assessment Methodology and Criteria

Sound Source	Proposed Assessment Methodology and Criteria	
Traffic Generation: Vehicular movements due to the development on the surrounding road network.	Development traffic should not increase traffic noise levels on the surrounding road network by more than 2.9 dB $L_{A10,18hr}$.	Assessed with reference to DMRB LA111 based on traffic flows provided by the transport consultant.
Development Plant: Fixed items of building services plant and machinery.	Achieve a rating level ($L_{A,T,r}$) at 1 m from the façade of the noise sensitive residential receptor (excluding façade reflections) which is at least 5 dB below the background sound level ($L_{A90,15minutes}$) at the same receptor.	Assessed with reference to BS 4142:2014+A1:2019. Typically addressed via planning condition.
Car Parking: Vehicles parking (typically employees).	Noise associated with the use of the car parks should not increase the ambient noise level at the nearest receptor by more than 2.9 dB $L_{Aeq,1hr}$ during the daytime and $L_{Aeq,15minutes}$ during the night-time.	Assessed with reference to DMRB LA111 and IEMA guidance based on traffic flows provided by the transport consultant.
Development Servicing: Vehicles servicing the development, including loading and unloading activities in service yards.	Achieve a rating level ($L_{A,T,r}$) at 1 m from the façade of the noise sensitive residential receptor (excluding façade reflections) which is equal to or below the background sound level ($L_{A90,15minutes}$) at the same receptor.	Assessed with reference to BS 4142:2014+A1:2019 and BS 8233:2014.

⁹ The Institute of Environmental Assessment (IEMA) (2014) Guidelines for Environmental Noise Impact Assessment Version 1.2

3 Environmental Sound Survey and Model

- 3.1.1 An unattended environmental sound survey was undertaken at two positions as detailed in Figure 2 and described in Table 5. The measurement positions were selected as they were considered representative of the nearest noise sensitive receptors.
- 3.1.2 Measurements were undertaken over 15-minute intervals of the L_{Aeq} , L_{A90} and L_{AFMax} sound levels at position 1 between 14:30 hours on Tuesday 22 October 2024 and 14:15 hours on Thursday 31 October 2024, and at position 2 between 13:30 hours on Friday 18 October 2024 and 13:15 hours on Tuesday 22 October 2024.
- 3.1.3 The sound level meters were located in environmental cases. The microphones were connected to the meters via an extension cable and fitted with the manufacturer's windshield. The instrumentation used in the survey (including calibration information) is listed in Appendix C. Field calibrations were performed before and after the measurements with no significant fluctuations recorded (< 0.5 dB). Calibration certificates are available upon request.

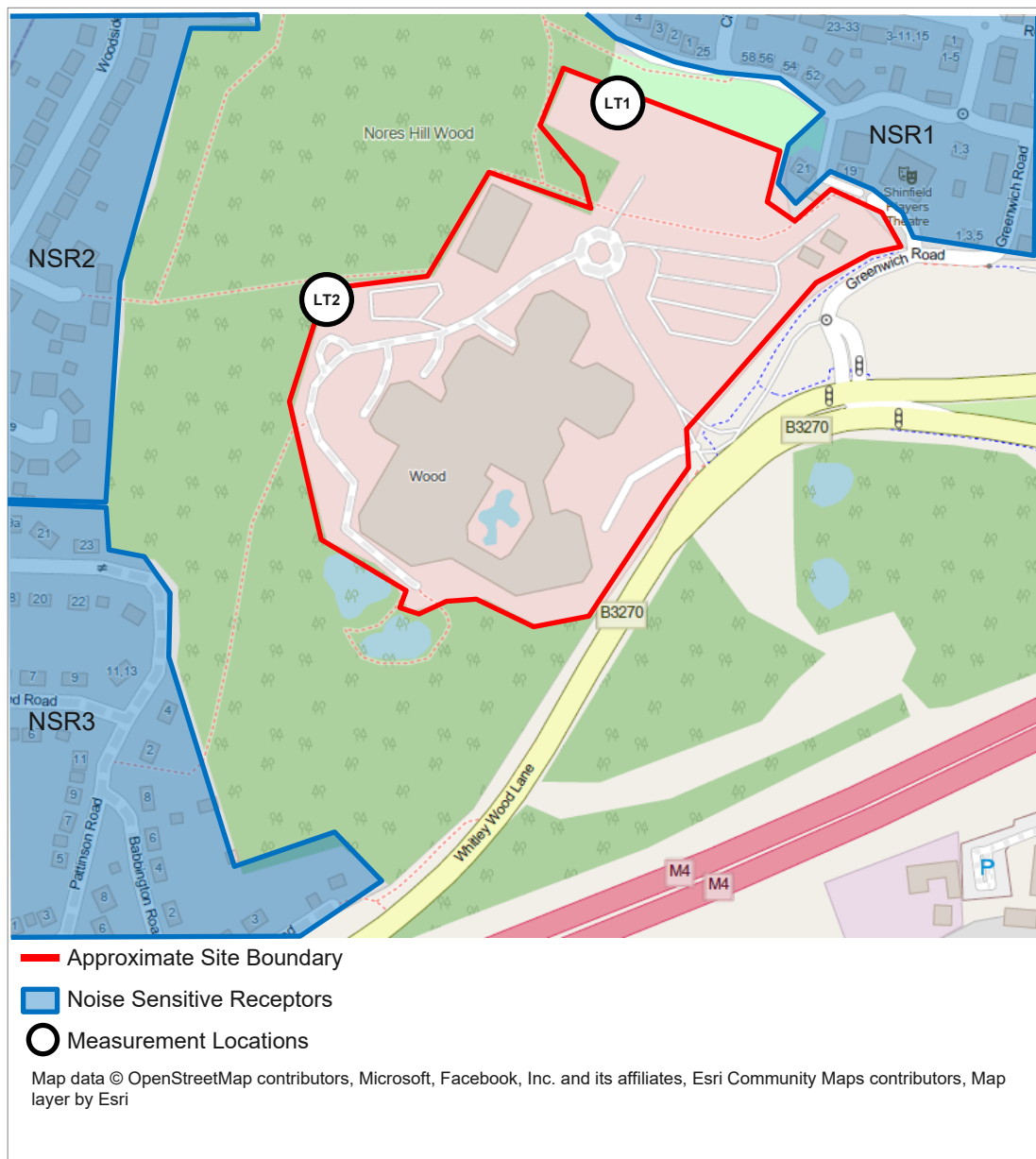


Figure 2: Environmental Sound Measurement Locations

Table 5: Description of Measurement Locations

Position	Description
LT1	The microphone was located in a free field position on the northern boundary of the Proposed Development site. The microphone was located approximately 1.4 m above local ground level. The measurement position was considered representative of noise sensitive receptors located on Greenwich Road, Cirrus Drive and Pascal Crescent (NSR1).
LT2	The microphone was located in a free field position on the western boundary of the Proposed Development site. The microphone was located approximately 1.4 m above local ground level. The measurement position was considered representative of noise sensitive receptors located on Woodside Way, Shirley Avenue and Railton Close (NSR2), and on Babbington Road, Pattinson Road and Coningham Road (NSR3).

3.2 Meteorological Conditions

- 3.2.1 Due to the nature of the survey (i.e. unattended), it is not possible to accurately comment on the meteorological conditions throughout the entire survey period. However, based on a review of publicly available weather forecasts and observations at the beginning and end of the survey period, the weather conditions are detailed in Table 6.

Table 6: Meteorological Conditions

Date	Temperature (°C)	Precipitation	Wind Speed (m/s)	Wind Direction
18/10/2024	12	Light Rain	2.8	SW
19/10/2024	14	Light Rain	4.1	SW
20/10/2024	14	Light Rain	6.1	SW
21/10/2024	13	-	4.1	SSW
22/10/2024	12	-	3.1	S
23/10/2024	13	-	3.0	SSE
24/10/2024	13	-	3.7	SSE
25/10/2024	14	-	2.7	E
26/10/2024	12	-	1.7	VAR
27/10/2024	11	-	2.5	SW
28/10/2024	14	-	4.3	SW
29/10/2024	14	-	2.1	W
30/10/2024	13	-	1.4	NW
31/10/2024	12	-	1.4	VAR

- 3.2.2 Based on an analysis of the measured data, periods of light rain and wind speeds above 5 m/s are not considered to have significantly affected sound levels. These conditions are considered suitable for obtaining representative sound level measurements.



3.3 Assumptions/Limitations

- 3.3.1 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey. This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary. No warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

3.4 Environmental Sound Climate

- 3.4.1 Due to the nature of the survey (i.e. unattended), it is not possible to accurately comment on the dominant noise sources or specific noise events during the entire survey period. However, at the beginning and end of the survey period, it was noted that on-site sound levels were dominated by vehicular movements on the surrounding road network, specifically the M4.

3.5 Environmental Sound Survey Results

- 3.5.1 A summary of the unattended sound survey results is presented in Table 7 Time history graphs detailing the full results are contained in Appendix D .

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Table 7: Summary of Measured Environmental Sound Survey Results

Pos.	Date	Period, T	Measured Sound Level (dB)			
			$L_{Aeq,T}$	$L_{A90,15mins}$		
				Range	Mean	Median
1	22/10/2024	Daytime (14:30 – 23:00 hours)	50	41-51	47	47
		Night-time (23:00 – 07:00 hours)	41	34-46	37	36
	23/10/2024	Daytime (07:00 – 23:00 hours)	51	44-54	49	48
		Night-time (23:00 – 07:00 hours)	48	37-52	44	43
	24/10/2024	Daytime (07:00 – 23:00 hours)	54	43-55	51	51
		Night-time (23:00 – 07:00 hours)	45	37-47	41	41
	25/10/2024	Daytime (07:00 – 23:00 hours)	50	44-51	48	48
		Night-time (23:00 – 07:00 hours)	43	37-46	40	39
	26/10/2024	Daytime (07:00 – 23:00 hours)	48	40-48	44	44
		Night-time (23:00 – 07:00 hours)	42	34-43	39	38
	27/10/2024	Daytime (07:00 – 23:00 hours)	49	38-51	45	45
		Night-time (23:00 – 07:00 hours)	43	36-46	40	40
	28/10/2024	Daytime (07:00 – 23:00 hours)	53	43-52	49	50
		Night-time (23:00 – 07:00 hours)	41	33-44	37	36
	29/10/2024	Daytime (07:00 – 23:00 hours)	47	36-47	43	43
		Night-time (23:00 – 07:00 hours)	35	28-36	31	31
	30/10/2024	Daytime (07:00 – 23:00 hours)	47	36-45	42	42
		Night-time (23:00 – 07:00 hours)	42	35-45	38	37
	31/10/2024	Daytime (07:00 – 14:15 hours)	49	41-48	46	46
2	18/10/2024	Daytime (13:30 – 23:00 hours)	53	48-54	51	51
		Night-time (23:00 – 07:00 hours)	50	40-54	46	46
	19/10/2024	Daytime (07:00 – 23:00 hours)	53	47-61	50	50
		Night-time (23:00 – 07:00 hours)	45	35-49	41	41
	20/10/2024	Daytime (07:00 – 23:00 hours)	54	45-55	52	52
		Night-time (23:00 – 07:00 hours)	49	41-53	45	44
	21/10/2024	Daytime (07:00 – 23:00 hours)	52	47-55	50	50
		Night-time (23:00 – 07:00 hours)	50	42-54	46	46
	22/10/2024	Daytime (07:00 – 13:15 hours)	54	50-56	52	52



3.6 Residual and Background Sound Levels

- 3.6.1 Residual and background sound levels have been identified for each NSR based on an average of the typical sound levels and the statistical procedure outlined in BS 4142 respectively. The identified background sound levels are detailed in Table 8.

Table 8: Residual and Background Sound Levels

Receptor	Parameter	Sound Level (dB) at Receptor	
		Daytime Period (T, 07:00 – 23:00 hours)	Night-time Period (T, 23:00 – 07:00 hours)
NSR1	Residual ($L_{Aeq,T}$)	50	44
	Background ($L_{A90,15mins}$)	43	35
NSR2	Residual ($L_{Aeq,T}$)	53	49
	Background ($L_{A90,15mins}$)	49	42
NSR3	Residual ($L_{Aeq,T}$)	53	49
	Background ($L_{A90,15mins}$)	49	42

3.7 Acoustic Model

- 3.7.1 Based on the results of the environmental sound survey, an acoustic model of the site and the surrounding area has been prepared using computer software SoundPLAN version 9.1. The acoustic model has been used to evaluate the likely noise climate across the site following development and has informed the assessment of noise from the car parks and operational activities.
- 3.7.2 The acoustic model calculates the propagation of sound from the Proposed Development in accordance with 'ISO9613-2:2023 Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation'. The model has been used to produce noise contour plots illustrating the calculated sound levels at the nearest noise sensitive receptors.

4 Plant Noise Emission Limits

4.1 Local Authority Requirements

- 4.1.1 The environmental health officer at Wokingham Borough Council (WBC) has requested that noise from fixed items of plant are controlled so as to achieve a rating level ($L_{Ar,Tr}$) at 1 m from the façade of the noise sensitive residential receptor (excluding façade reflections) which is at least 5 dB below the background sound level ($L_{A90,15minutes}$) at the same receptor.

4.2 Proposed Plant Noise Emission Limits

- 4.2.1 Based on the results of the environmental sound surveys and the typical requirements of the local authority the plant noise emission limits are proposed in Table 9. The proposed plant noise emission limits should be achieved at 1 m from the nearest noise sensitive receptor (excluding façade reflections) and are subject to confirmation by the local authority.

Table 9: Plant Noise Emission Limits

Receptor	Receptor Type	Time Periods	Proposed Plant Noise Emission Limit ($L_{Ar,Tr}$ dB)
NSR1	Residential	Daytime (07:00 – 23:00 hours)	38
		Night-time (23:00 – 07:00 hours)	30
NSR2, NSR3	Residential	Daytime (07:00 – 23:00 hours)	44
		Night-time (23:00 – 07:00 hours)	37

- 4.2.2 The above plant noise emission limits apply to the development as a whole. Future plant installations/applications may need to achieve different criteria based on updated sound survey data due to the potential variability in the future sound climate, and potential contributions from sound sources installed prior to any application being made.

5 Noise Impact Assessment

5.1 Vehicular Movements on the Surrounding Road Network

5.1.1 Traffic data associated with vehicular movements on the surrounding road network has been provided by the traffic consultant for the following baseline and development scenarios.

- 2023 Baseline
- 2032 Reference – No Development / B2 Development / B8 Development
- 2032 Option 1 – No Development / B2 Development / B8 Development
- 2040 Reference – No Development / B2 Development / B8 Development
- 2040 Option 1 – No Development / B2 Development / B8 Development

5.1.2 To present a robust assessment, basic noise level calculations have been undertaken in accordance with CRTN to determine the potential change in noise levels associated with the following assessment scenarios.

- 2032 Reference – No Development vs B2 Development & No Development vs B8 Development
- 2032 Option 1 – No Development vs B2 Development & No Development vs B8 Development
- 2040 Reference – No Development vs B2 Development & No Development vs B8 Development
- 2040 Option 1 – No Development vs B2 Development & No Development vs B8 Development

5.1.3 The results of the assessment indicate that development traffic is:

- Unlikely to result in a change in noise level greater than 0.7 dB on the majority of road links. This is considered to be a negligible change in noise level based on the impact assessment criteria in Table 2.
- Likely to result in a change in noise level of 1.1 dB to 1.6 dB on Whitley Wood Lane (south of mini-roundabout) under the 2032 Reference B2, 2032 Option 1 B2 and B8, 2040 Reference B2, and 2040 Option 1 B2 scenarios. This is considered to be a minor change in noise level based on the impact assessment criteria in Table 2.
- Likely to result in a change in noise level of 1.2 dB on the B3270 (east of site access) under the 2032 Option 1 B2 scenario. This is considered to be a minor change in noise level based on the impact assessment criteria in Table 2.

5.1.4 The baseline (no development scenario) provided by the traffic consultant does not include vehicular movements associated with the existing use of the site. The impacts noted above are therefore likely to be lower than indicated by this assessment.

5.2 Car Park Use

5.2.1 The potential noise impact associated with the use of the proposed car parks relates to changes in ambient noise levels due to vehicle movements and activities. There is already existing car parking on the site, and it is assumed that the principle of car parking on the Proposed Development is considered acceptable.



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- 5.2.2 The assessment therefore considers the change in ambient noise levels due to the sound levels generated by the car parks, assuming that the proposed use of the car parks represents an intensification in use.
- 5.2.3 Measurements of car movements associated with the car parks have previously been undertaken. Activities measured included:
- Car driving in, manoeuvring and stopping including occupant exiting the car and door close; and
 - The occupant entering the car, closing door, manoeuvring car and driving away.
- 5.2.4 The car surveyed was a Volvo V40 hatchback, considered to be representative of a typical car.
- 5.2.5 The likely noise impact of the operation of the car park has been assessed based on car arrival (including door close) and car departure (including door close). Sound levels used in the assessment are provided in Table 10.

Table 10: Typical Sound Level Associated with Car Park Activity

Source Activity	SEL at 3 m (dB)
Car Driving In, Manoeuvring and Stopping Including Occupant Exiting the Car and Door Slam	74
Occupant Getting in Car, Slamming Door, Manoeuvring and Driving Away	77

- 5.2.6 Based on the anticipated car park usage and source sound levels detailed in Table 10, the sound power per square metre of car parking has been calculated for the separate car parks across the Proposed Development.
- 5.2.7 The calculated sound power levels have been assigned to the car parks within the acoustic model and used to calculate the resultant sound level at each of the identified receptors.
- 5.2.8 The results of the assessment are presented in Table 11 and illustrated in Appendix E

Table 11: Car Park Use Assessment Results

Receptor	Parameter	Residual Sound Level (dB, $L_{Aeq,T}$)	Calculated Car Park Sound Level (dB, $L_{Aeq,T}$)	Change in Sound Level (dB) and Magnitude of Impact
NSR1	Daytime (T, 1hr)	50	30	< 0.5 (Negligible)
	Night-time (T, 15min)	44	30	< 0.5 (Negligible)
NSR2	Daytime (T, 1hr)	53	< 25	< 0.5 (Negligible)
	Night-time (T, 15min)	49	< 25	< 0.5 (Negligible)
NSR3	Daytime (T, 1hr)	53	< 25	< 0.5 (Negligible)
	Night-time (T, 15min)	40	< 25	< 0.5 (Negligible)

- 5.2.9 The results of the calculations indicate that the change in ambient noise levels due to use of the car parks would be negligible all existing noise-sensitive receptors.



5.3 Development Servicing inc. Loading and Unloading Activities

- 5.3.1 An assessment has been undertaken in general accordance with BS 4142:2014+A1:2019 to determine the likely noise impact of development servicing (including loading and unloading activities) associated with the operation of the Proposed Development.

Assessment Parameters

- 5.3.2 The assessment assumes that the Proposed Development is operational 24-hours a day, 7 days a week.
- 5.3.3 The main sound sources on site are likely to include:
- the movement of vehicles arriving/leaving the units.
 - the parking of vehicles on site and at loading bays.
 - the use of reversing alarms.
- 5.3.4 Vehicles will enter the wider site through the site access road with the B3270. Vehicles would then proceed to the relevant unit using the secondary access roads. Vehicles would also leave the site using the same route.
- 5.3.5 Vehicles would proceed to the service area of the proposed units and then reverse into the unloading dock area. Goods would be moved into the warehousing area. Vehicles would then depart the site using the proposed access road.
- 5.3.6 Based on information provided to us by the project's transport consultants, Table 12 details the assumed number of vehicle movements arriving and departing the proposed units combined during a one-hour period during the daytime and night-time period. To provide a worst-case assessment, it is assumed that all vehicle movements likely to occur within an hour period during the night-time will occur within a 15-minute period. It is also assumed that all movements to the units occur during the same assessment period.

Table 12: Number of On-Site Vehicle Movements in Worst-Case Assessment Period

Unit	Number of HDV Movements	
	Daytime Period (1 hour)	Night-time Period (15 mins)
1	5	1
2	2	1
3A	1	1
3B	1	1
4	2	1
5	2	1

Calculation Procedure

- 5.3.7 Calculations have been undertaken to determine the rating level associated with the operation of the Proposed Development.
- 5.3.8 Calculations have been undertaken of noise events associated with vehicles arriving, parking, unloading and departing the Proposed Development for a one-hour period during the daytime



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period (07:00 – 23:00 hours) and a 15-minute period during the night-time period (23:00 – 07:00 hours).

- 5.3.9 Table 13 details the sound generating activities associated with vehicles arriving, parking, unloading and departing the site, the associated sound level and the type of source considered for each activity. The source sound levels have been taken from Stantec's in-house database. The number of events during the assessment period apply to the Proposed Development as a whole.

Table 13: Sound Levels Associated with Vehicle Movements

Measurement Description	Single Event Level SEL (dB)	Source Level Measurement Distance (metres)	Number of Events During Assessment Period	
			Daytime Period (1 hour)	Night-time Period (15 mins)
Lorry Arriving	90	1	13	6
Reversing Alarm	94	1	13	6
Air Brake	88	1	13	6
Lorry Door Slam	83	1	13	6
Opening/Closing Lorry Shutter	76	1	26	12
Starting Lorry Engine	89	3	13	6
Lorry Driving Away	90	3	13	6
Lorry Pass-By	62 dB L _w m/m ²			



- 5.3.10 The specific sound level has been calculated by considering each noise generating activity as an individual sound events, which is then combined to obtain the associated specific sound level for the assessment period (one-hour during the daytime and 15-minutes during the night-time).

Acoustic Feature Corrections

- 5.3.11 Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound levels and the background sound level. The calculated specific sound level should therefore be modified in accordance with the following guidance as outlined in BS 4142:2014+A1 2019. Due to the type of assessment, the subjective method has been used to determine the type and level of acoustic feature corrections applied to each source.
- 5.3.12 BS 4142 provides guidance on the subjective assessment of acoustic feature corrections as detailed in Table 14.

Table 14: Acoustic Feature Corrections

Tonality
For sound ranging from not tonal to predominantly tonal the Joint Nordic Method gives a correction of between 0 dB and + 6 dB for tonality. Subjectively, this can be converted to a 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 ought to 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."

- 5.3.13 To determine the likely perceptibility of each sound source identified in Table 13, the specific sound level has been calculated at the identified receptors over the source measurement duration.
- 5.3.14 Corrections have been applied and included within the acoustic model as follows:
- The reversing alarm for potential tonality (+3dB).
 - Air brake for potential impulsivity (+3dB).
 - Lorry door slams for potential impulsivity (+3dB).
 - Opening/Closing lorry shutters for potential impulsivity (+3dB).

Preliminary Assessment Results

- 5.3.15 The calculated rating level at each receptor is identified in Table 15 and illustrated in Appendix E .

Table 15: Preliminary Assessment Results – Development Servicing

	Daytime ($Tr = 1\text{hr}$)			Night-time ($Tr = 15\text{mins}$)		
	NSR1	NSR2	NSR3	NSR1	NSR2	NSR3
Combined Rating Level at Receptor (dB $L_{A,T,r}$)	32	< 28	< 28	34	< 28	< 28
Typical Measured Background Sound Level (dB $L_{A90,15\text{minutes}}$)	43	49	49	35	42	42
Excess of Rating over Background Sound Level (dB)	-11	< -21	< -21	-1	< -14	< -14
Assessment of Impact	Indication of a low impact, depending on the context					

Context

- 5.3.16 The above assessment details the results of the initial numerical assessment of sound levels at the nearest noise sensitive receptors. It is important to recognise context in the assessment of the likely noise impact at the nearest noise sensitive receptors arising from the operation of the Proposed Development.
- 5.3.17 The following factors should be taken into consideration:
- The absolute sound levels.
 - The character and level of the residual and specific sound levels; and
 - The sensitivity of the receptor and use of mitigation measures.

Absolute Sound Levels

- 5.3.18 The calculated specific sound levels at the nearest noise-sensitive receptors are likely to be below the measured ambient (L_{Aeq}) sound levels during the daytime and night-time periods. Therefore, the calculated specific sound level is not likely to significantly increase the existing ambient sound level at the receptors.

Receptor Sensitivity

- 5.3.19 The assessment of noise impact during the night-time period for both scenarios is considered to be worst case, where the likely number of vehicle movements during a worst case 1-hour period are considered to occur during the 15-minute assessment period. Therefore, it is likely that significantly less vehicle movements will occur during the assessment period. This would likely reduce the potential noise impact associated with delivery activities at the receptor.

Uncertainty

- 5.3.20 Care has been taken to reduce uncertainty as far as reasonably possible. However, it should be recognised that in any environmental sound survey and assessment process uncertainty exists.



Measured Environmental Sound Levels

- 5.3.21 Uncertainty in the measured background and ambient sound levels can occur due to variation in temporary/non-representative meteorological conditions. Steps were taken to minimise the risk of meteorological conditions affecting the survey results however, it should be recognised that there is a degree of uncertainty inherent in the baseline environmental sound data.
- 5.3.22 Uncertainty in the measured background and ambient sound levels may occur with respect to the chosen measurement position in relation to the nearest noise-sensitive receptors. However, it is considered that the measurement positions are representative of the existing background sound climate at the nearest noise-sensitive receptors as far as is reasonably possible.

Calculation and Assessment Procedure

- 5.3.23 Uncertainty in measured source data for delivery activities can occur due to variation in temporary/non-representative meteorological conditions. In this instance, steps were taken to minimise the risk of meteorological conditions affecting the measurements. Given the location of the measurements, (i.e. 1-3 m from the source) the effect of meteorological conditions is considered insignificant, however, it should be recognised that there is a degree of uncertainty inherent in the measured source level data.
- 5.3.24 The on-site vehicle movements considered in this assessment are based on typical information. Uncertainty exists with respect to the exact on-site movements (e.g. if a vehicle other than those assumed is used). Nevertheless, it is considered that the assessment herein is a reasonable assessment of the worst-case scenario.

Assessment Summary

- 5.3.25 The initial impact of assessment indicates that the level of impact associated with the operation of the Proposed Development is likely to be of a level that is 'an indication of a low or less than adverse impact, depending on the context'.
- 5.3.26 Therefore, when considering the context of the assessment and the results of the typical worst-case assessment, the impact of noise associated with the operation of the Proposed Development is likely to be low or a less than adverse impact at all receptors during daytime and night-time periods. Mitigation is therefore not considered to be required.
- 5.3.27 The assessment also indicates that the rating level associated with the operation of the Proposed Development is likely to fall 6 dB below the LOAEL as defined by the LPA at the worst-case noise sensitive receptor.

6 Conclusions

- 6.1.1 Stantec UK Ltd. has been commissioned by Wrenbridge (FRELD Reading) Limited to undertake a noise impact assessment to support a planning application for the redevelopment of the site for flexible employment use (Use Class E(g)(ii)-(iii)/B2/B8) together with associated servicing areas, parking, landscaping and other associated works at Shinfield Park, Reading.
- 6.1.2 An environmental sound survey has been undertaken to support the assessment. The assessment considers:
- Potential noise impacts of operational activities on the site (e.g. vehicular movements and loading activities).
 - Potential noise impacts associated with the use of the on-site car parking facilities.
- 6.1.3 Plant noise emission criteria have been proposed for fixed items of buildings services plant.
- 6.1.4 The assessment indicates negligible impact from on-site operational activities and use of the car parks.
- 6.1.5 Traffic data associated with vehicular movements on the surrounding road network has been provided. Based on the results of the assessment, a negligible impact is likely on the majority of road links. A minor impact is predicted on two road links under certain development scenarios, however this is not considered to be significant, particularly when accounting for the absence of existing vehicular development movements in the 'no development' scenarios, which, if included, would reduce the predicted change in noise level.
- 6.1.6 With reference to the requirements of the NPPF the operational sound associated with the Proposed Development is unlikely to have an observable adverse effect on the identified receptors (i.e. below the LOAEL), indicating that the development is compliant with national and local planning policy with respect to noise.

Appendix A Acoustic Terminology

Parameter	Description
Ambient Sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. Comprises of the residual sound and the specific sound when present.
Ambient Noise	Totally encompassing noise in a given situation at a given time.
Ambient Sound Level ($L_a = L_{Aeq,T}$)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Ambient Noise Level ($L_a = L_{Aeq,T}$)	Equivalent continuous A-weighted sound pressure level of the totally encompassing noise in a given situation at a given time, at the assessment location over a given time interval, T.
A-Weighted Decibel (dBA)	A decibel level that has been corrected for the A-Weighting curve.
A-Weighting	Octave band and 1/3 octave band filters that correlate to the response of the human hearing system to sound pressure levels at different frequencies.
Background Sound	The level of sound measured in the absence of extraneous noise sources.
Background Sound Level ($L_{A90,T}$)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using a fast time-weighting and quoted to the nearest whole number of decibels.
Decibel (dB)	A logarithmic unit used to describe the ratio between the measured level and a reference level of 0 dB. The ratio can be sound pressure, intensity or power. The reference value for sound pressure is 20 μ Pa and for sound power is 1 pW.
Equivalent Continuous A-Weighted Sound Pressure Level ($L_{Aeq,T}$)	Value of the time-averaged A-weighted sound pressure level, in decibels (dB), of a continuous steady sound for the duration of the specified time interval, T.
Façade Level	The sound pressure level at a distance of 1 metre from the façade
Fast Time Weighted	The speed at which the instrument responds to changes in amplitude of the measured signal. The response time of a fast time-weighted instrument is 0.125 seconds.
Free-Field Level	The sound pressure level measured away from any reflective surfaces.
Frequency (f)	The number of cycles of pressure fluctuations within a given period of time. Measured in Hertz.
Hertz (Hz)	The unit of frequency or pitch of a sound. One hertz is equal to one cycle per second.
$L_{10,T}$	The noise level exceeded for 10 % for a given time interval, T. Generally used to describe traffic noise.
L_{Amax}	The maximum A-weighted level measured during a given time period.
Octave Band	Band of frequencies where the upper limit of the band is twice the frequency of the lower limit. E.g., the 1000 Hz band contains noise energy at all frequencies from 707 to 1414 Hz.
Percentile Level ($L_{AN,T}$)	The A-Weighted Sound Pressure Level which is exceeded for N% of the specified time interval. E.g., the $L_{A90,1hour}$ is the A-weighted sound level exceeded for 90% of 1 hour/
Sound Pressure	The difference between the pressure caused by a sound wave and the ambient pressure of the medium the sound wave is passing through. Measured in Pascals.
Sound Pressure Level (L_p)	The logarithm of the ratio of a given sound pressure (p) to the reference sound pressure (p_0). The reference value for sound pressure is 20 μ Pa. Defined as: $L_p = 20 \log \left(\frac{p}{p_0} \right)$



Appendix B Consultation with Environmental Health Department

From: [Chris Christofis](#)
To: [Barlow, Matthew](#)
Cc: [Christopher Howard](#); [Stephen, Susie](#)
Subject: RE: Shinfield Park - Reading - Noise Impact Assessment
Date: 15 October 2024 15:37:15

Hi Matt

Thank you for your enquiry, I deal with hundreds of planning apps a month as an environmental consultee, those that require a noise impact assessment are usually fairly evident, I am, often surprised at the variation in approach to a BS4142 assessment by acoustic consultants, I remember a seminar by John Tofts of the Environment Agency where he said that 25% of the assessments they receive had not calculated background noise correctly according to the BS4142, (I believe one of the primary issues was background with the noise source instead of without) I was at the recent Noise Management Conference run by the CIEH and the IOA and there was mention of some movement towards reviewing standards for noise, in light of WHO guidelines 2018 and movement towards Soundscapes following the release of the Noise and Soundscapes Plan for Wales 2023-24 (airqualitypolicy@gov.wales), certainly clearer guidelines for planning would be beneficial to all.

At this time, we are guided by BS8233 for residential property. For plant noise our standard condition asks for it to achieve 5dB below background 1m external to the nearest noise sensitive receptors, I am aware that BS4142 does allow for an in line with background level, I didn't write the condition, a lot of local authorities use it, it used to have 10dB below background if there is a tonal element. My view is the target of 5dB below has benefits (we have moved away from the 10dB below as it was so hard to achieve in many settings), where background is measured, it may vary over time and atmospheric conditions (wind, weather) may make a difference, so the target of 5dB below background allows for uncertainty. I have found this to be achievable in almost all situations.

A condition such as plant shall not emit noise above 45dB etc has benefits if we take into account the character of the noise tonality, impulsiveness or intermittency. dB levels often differ for different phases of the operation cycle of plant and as the plant ages. The onus is then on the property owner to ensure that the desired dB level is not exceeded, this does worry me as it needs a new assessment if any change to the plant happens

Number of measurement points, without looking over the application, a rule of thumb is, 1) is there a specific noise source (road rail etc) and you are building residential, measure there 2) is the development commercial and are there noise sensitive receptors nearby, measure there, particularly if plant is to be installed at that location. If this means 2, 3 or more measuring points, fine. We have requested more information and additional background measurements in the past.

LOAEL, yes technically you are correct allows up to 5dB above background, if you have factored in the expected penalties for intermittency, tonality, impulsivity and character as prescribed in guidance and that is all that is achievable, this then comes down to local policy and Wokingham is quite strictly in line with BS8233. It should be possible to achieve the 5dB below or at worst in line with level in almost all circumstances. I find it rare that 5dB above background would be recommended by a consultant unless stringent mitigation measures had already been recommended (such as a town centre location). Ref.

[Method implementation document \(MID\) for BS 4142 - GOV.UK \(www.gov.uk\)](#)

[ANC BS 4142 Technical Note v1.0 \(association-of-noise-consultants.co.uk\)](#)

With vehicle movements I would not expect a huge, detailed report as so much is unknown at the development stage, some basic prediction, how many vehicle movements are likely, roughly how many at present in the immediate area, in essence what is the likely hood of significant change to the 'soundscape' (I prefer acoustic environment) as a result of the Proposed Development, this is the same measure we use for air quality. And similarly, it is very rare a development will make a significant change, but we are required to consider this for new large developments.

I hope this helps Matt.

Regards

Chris Christofis BSc Hons MSc MIOL MIOA MCIEH Senior Environmental Protection Officer Wokingham Borough Council



Noise Impact Assessment

From: Barlow, Matthew
Sent: 15 October 2024 11:44
To: Chris Christofis
Cc: Christopher Howard ; Stephen, Susie
Subject: Shinfield Park - Reading - Noise Impact Assessment

Hi Chris,

We have been instructed to undertake a noise impact assessment of a Proposed Development at Shinfield Park, Reading. The draft application is for the *redevelopment of site for employment use (Use Class E(g)(ii)-(iii)/B2/B8) together with associated parking, landscaping and other associated works (following demolition of existing building)*.

As part of the assessment of the site we are proposing to undertake an environmental sound survey to support the assessment. The survey would be undertaken at two positions at secure and accessible locations considered representative of the noise sensitive receptors to the north and west. The survey would be undertaken over a minimum 72-hour period to include a weekend.

In terms of the assessment, we are proposing to assess the following aspects of the development:

- HGV movements to and from the site using the surrounding road network. Discussions with the transport consultant are ongoing but it is expected that detailed existing traffic flow data will not be available. We're therefore proposing to undertake a high-level assessment of this element with reference to the likely change in %HGVs using the B3270.
- Plant data is unlikely to be available. Plant noise emission criteria will however be proposed.
- Please can you confirm your standard approach to fixed items of building services plant. Typically, we'd advise equal to background when assessed in accordance with BS4142. Car park assessment. Flows to and from the car park are expected to be less than those currently permitted. We're therefore proposing to scope out this element.
- HGV/Servicing assessment. Exact details of future occupiers are not available. We're therefore proposing to undertake an assessment of these elements in accordance with BS4142 based on library data and anticipated HGV movements to and from the development. Typically for sources of this nature we consider the LOAEL to be +5dB above background during the daytime and night-time. This is subject to consideration of the usual contextual factors from BS4142.

I'd be grateful if you could confirm that the above approach is acceptable and advise of any concerns or other requirements.

Thanks

Matt Barlow MSc MIOA
Technical Director – Acoustics



Appendix C Instrumentation

Table 16: Sound Survey Instrumentation

Position	Description	Manufacturer	Type	Serial Number	Laboratory Calibration Date
LT1	Sound Level Meter	RION	NL-52	1010734	19/06/2023
	½" Pre-polarised microphone		UC-59	23232	19/06/2023
	Pre-amplifier		NH-25	11381	19/06/2023
LT2	Sound Level Meter	RION	NL-52	1043457	10/01/2023
	½" Pre-polarised microphone		UC-59	07232	10/01/2023
	Pre-amplifier		NH-25	43486	10/01/2023
-	Sound Calibrator	Brüel & Kjær	4231	2619373	07/01/2024



Appendix D Time History Graphs

Figure 3: Measured Sound Levels – Position LT1

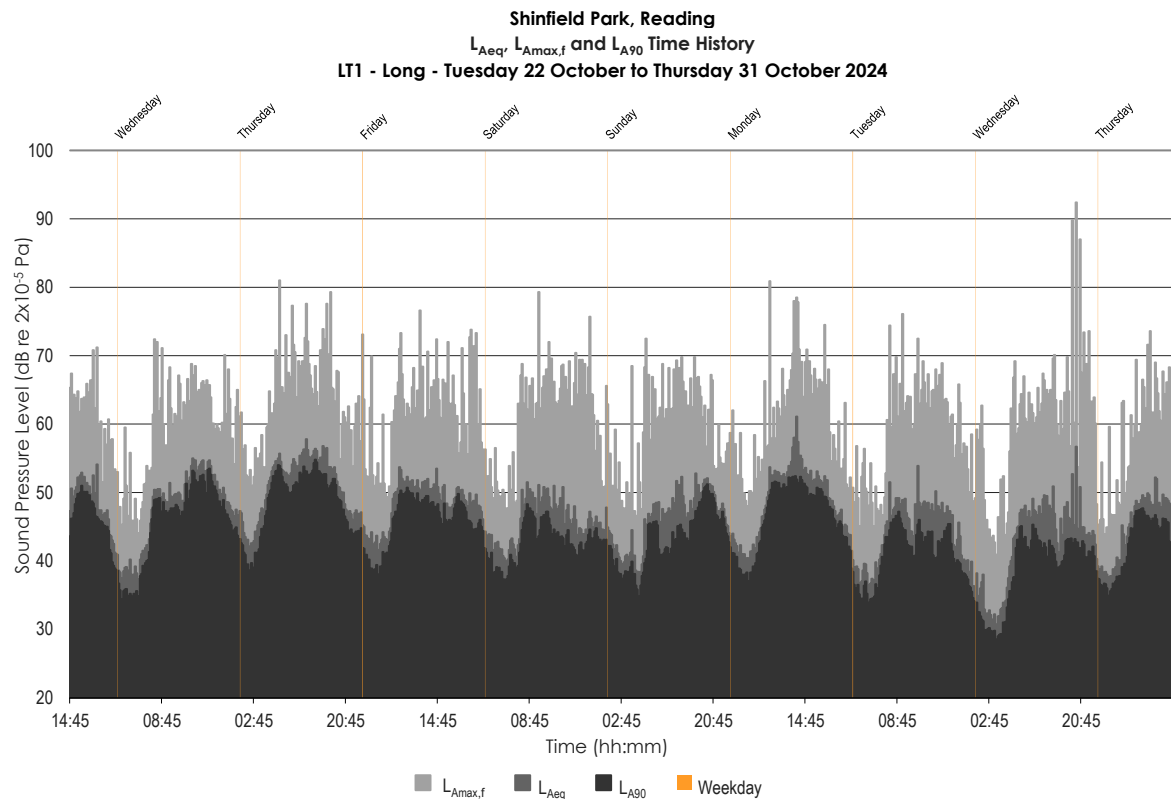
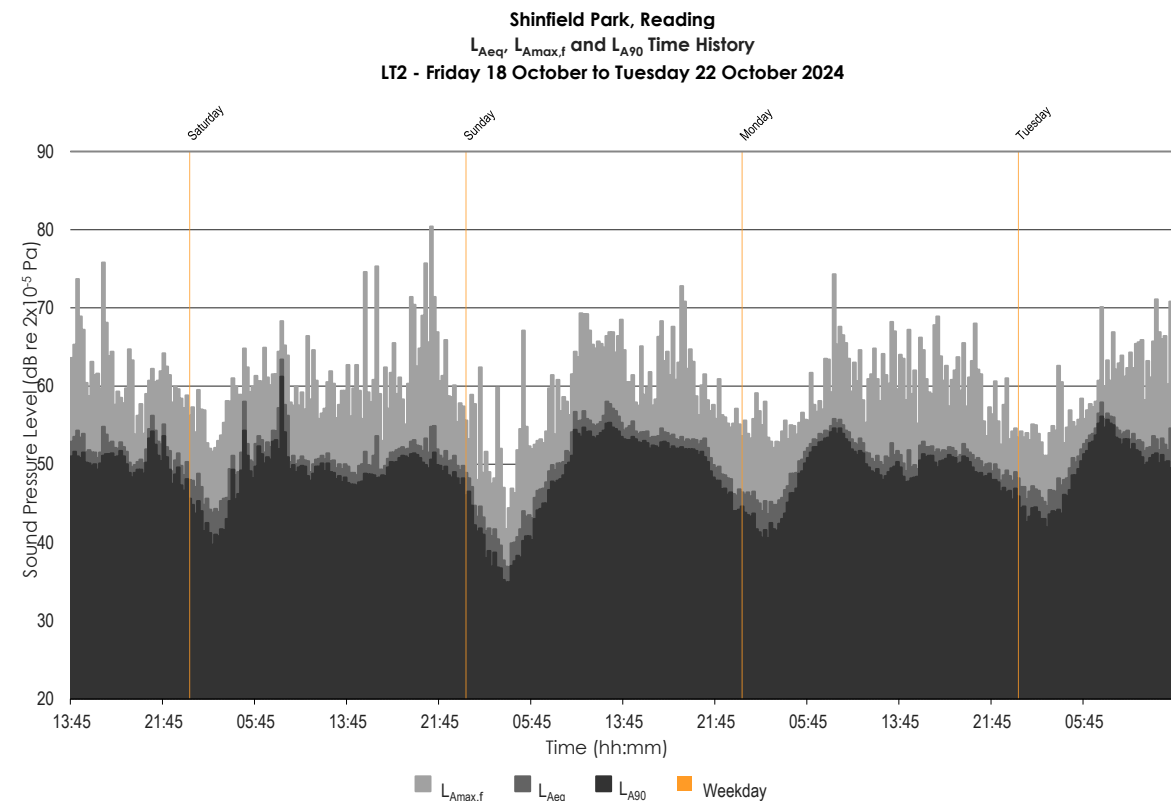
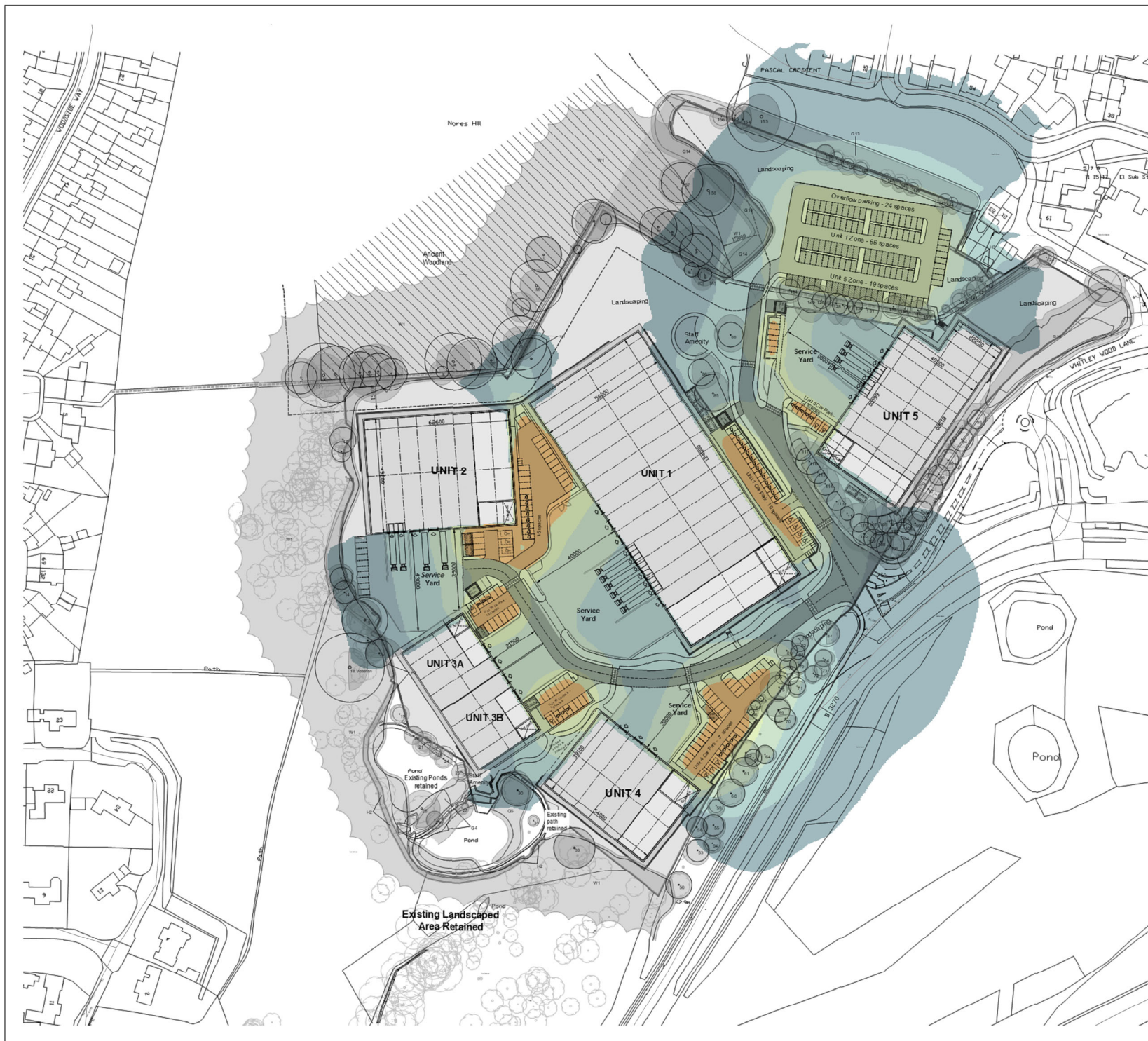


Figure 4: Measured Sound Levels – Position LT2



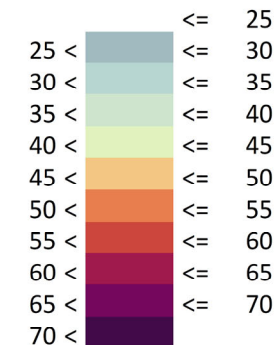
Appendix E Acoustic Modelling Results





This figure has been prepared by Stantec UK Limited ('Stantec') on behalf of its client to whom this figure is addressed ('Client') in connection with the project described and takes into account the Client's particular instructions and requirements. This figure was prepared in accordance with the professional services appointment under which Stantec was appointed by its Client. This figure is not intended for and should not be relied on by any third party (i.e. parties other than the Client). Stantec accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this figure.

Sound Level $L_{Aeq,1hr}$ dB



Appendix D Figure 5 Car Park Noise Levels - Daytime

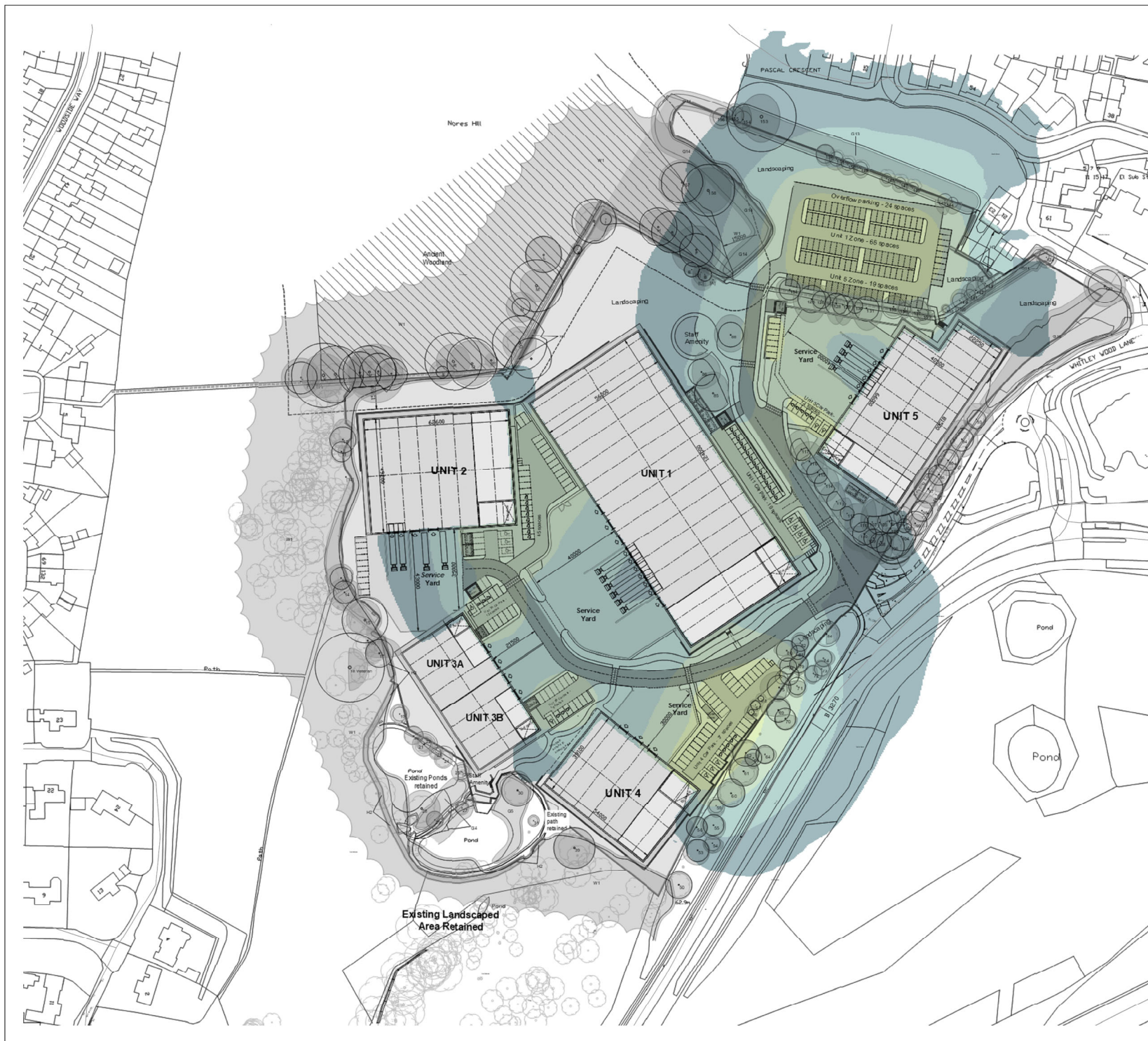
Client: Wrenbridge
Project: Shinfield Park, Reading
Project Number: 333101463
Project Engineer: MLB
Calculation at 1.5 m above ground
Created: 31/01/2025
Processed with SoundPLAN 9.0
Update 09/03/2023



Figure not to scale. Do not scale.

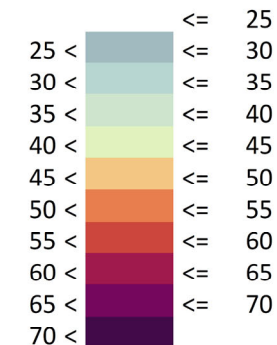
<https://www.stantec.com/uk>





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Sound Level $L_{Aeq,15min}$ dB



Appendix D Figure 6 Car Park Noise Levels - Night-time

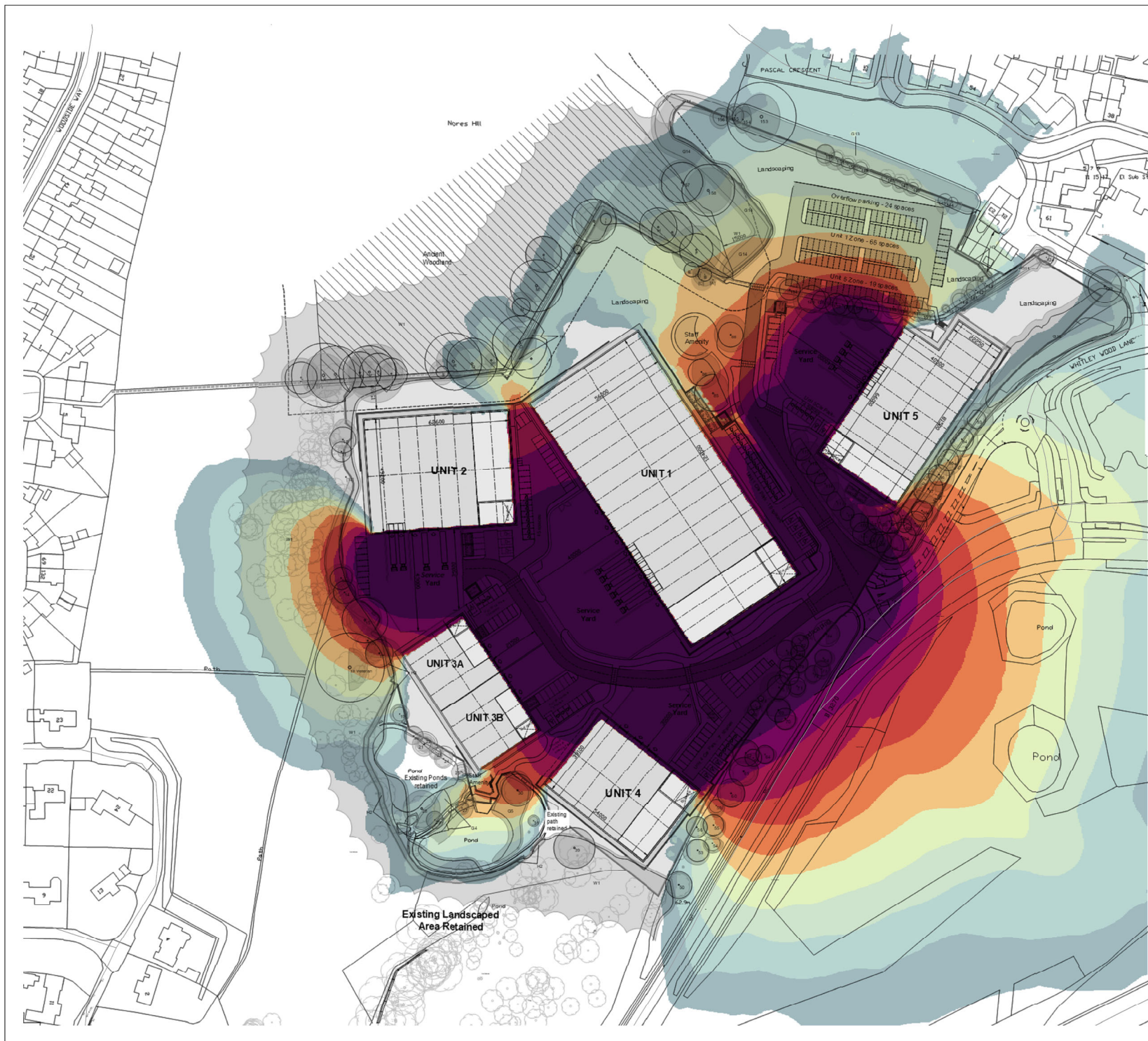
Client: Wrenbridge
Project: Shinfield Park, Reading
Project Number: 333101463
Project Engineer: MLB
Calculation at 4 m above ground
Created: 31/01/2025
Processed with SoundPLAN 9.0
Update 09/03/2023



Figure not to scale. Do not scale.

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Rating Level $L_{Ar,1hr}$ dB

28 <	<=	28
28 <	<=	30
30 <	<=	32
32 <	<=	34
34 <	<=	36
36 <	<=	38
38 <	<=	40
40 <	<=	42
42 <	<=	44
44 <	<=	46

Appendix D Figure 7 Calculated Rating Level - Daytime

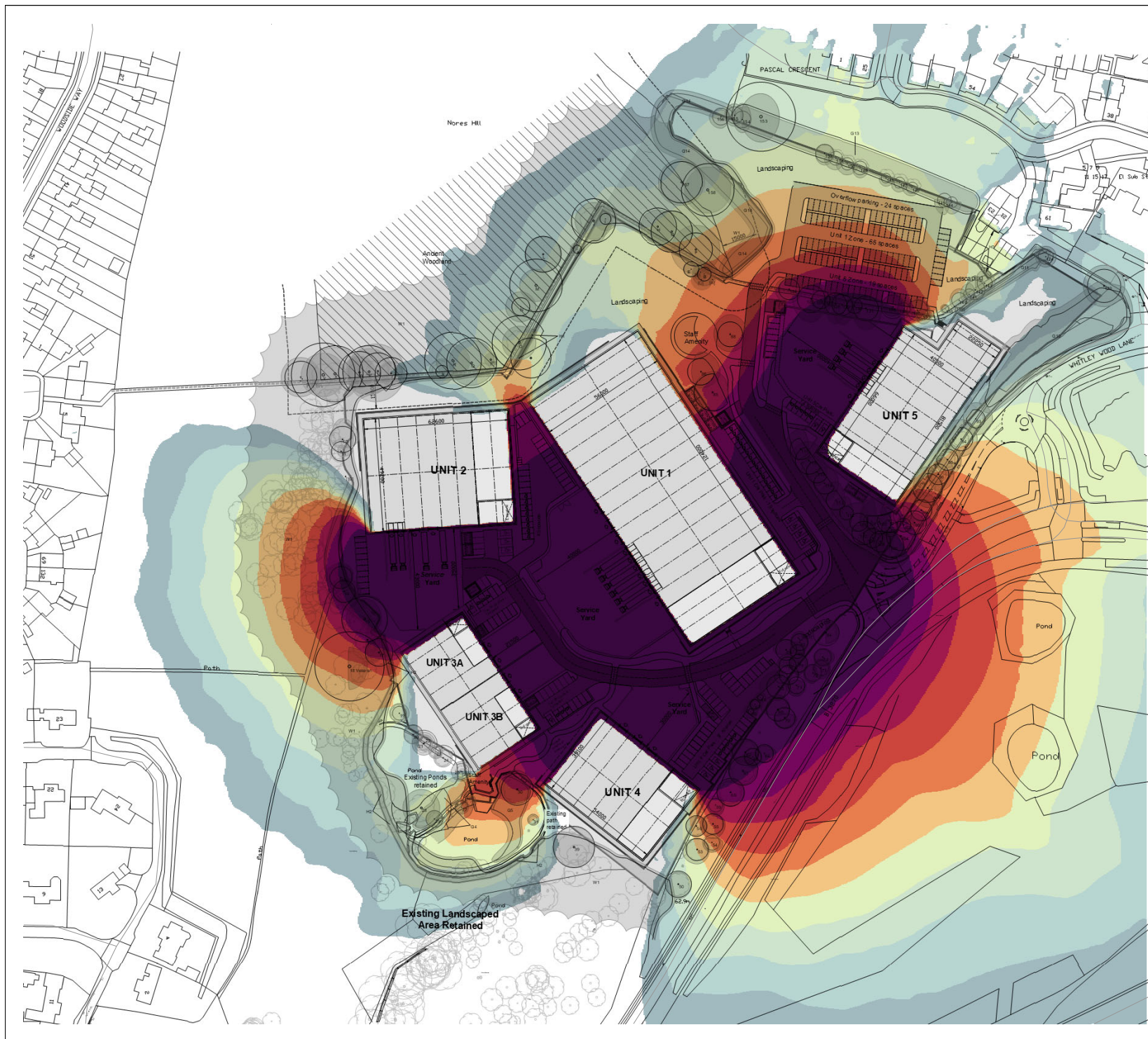
Client: Wrenbridge
Project: Shinfield Park, Reading
Project Number: 333101463
Project Engineer: MLB
Calculation at 1.5 m above ground
Created: 31/01/2025
Processed with SoundPLAN 9.0
Update 09/03/2023



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Rating Level $L_{Ar,15mins}$ dB

28 <	<=	28
30 <	<=	30
32 <	<=	32
34 <	<=	34
36 <	<=	36
38 <	<=	38
40 <	<=	40
42 <	<=	42
44 <	<=	44
46 <	<=	46

Appendix D Figure 8 Calculated Night-time Rating Level

Client: Wrenbridge
Project: Shinfield Park, Reading
Project Number: 333101463
Project Engineer: MLB
Calculation at 4 m above ground
Created: 15/08/2025
Processed with SoundPLAN 9.0
Update 09/03/2023



Figure not to scale. Do not scale.

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