



# NOISE AND VIBRATION IMPACT ASSESSMENT

LAND AT WESTWELLS ROAD

Taylor Wimpey Bristol

2064199-RSKA-RP-001-(01)





## General notes

|                      |                                       |
|----------------------|---------------------------------------|
| <b>Project Name:</b> | Land at Westwells Road                |
| <b>Title:</b>        | Noise and Vibration Impact Assessment |
| <b>Client:</b>       | Taylor Wimpey Bristol                 |
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Date: 13 July 2026

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13 July 2026

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Acoustics Ltd.



# Executive Summary

RSK Acoustics Limited was commissioned by Taylor Wimpey Bristol to undertake a noise and vibration assessment in support of a detailed planning application for residential development at the former RAF Rudloe No.2 site, Land at Westwells Road. The Proposed Development comprises residential dwellings, public open space and associated infrastructure.

Baseline noise and vibration monitoring was undertaken between Friday 19 June and Friday 26 June 2026. The survey comprised unattended noise monitoring at three locations representative of the main site boundaries and nearby sources, together with unattended vibration monitoring above Box Tunnel, which carries the Great Western Main Line beneath the Proposed Development.

The assessment has been undertaken with reference to national and local policy and guidance, including ProPG: Planning & Noise, BS 8233:2014, BS 6472-1:2008, Approved Document O and Wiltshire Council Environmental Control and Protection guidance.

In accordance with the ProPG risk assessment method, the predicted noise levels within approximately 20 metres of Bradford Road (B3109) corridor site boundary would categorise the residential areas of site as 'low/medium risk' of adverse effects due to noise. For the remainder of the site, the predicted day and night-time levels ( $L_{Aeq, 16\text{ hr}}$  and  $L_{Aeq, 8\text{ hr}}$  respectively) indicate the majority of site to be within the negligible to low risk.

Based on the outcomes of the noise modelling, external amenity noise levels are predicted to meet the desirable design criteria of 50 dB  $L_{Aeq, 16\text{ h}}$  across the Proposed Development, with layout screening and 1.8 metre high close-boarded boundary fencing. Internal noise criteria are predicted to be achieved in all habitable rooms with windows closed and trickle ventilators open, provided the building envelope achieves the performance specifications set out in this report.

The Proposed Development is located in a moderate risk location for the purposes of Approved Document O. Modelled noise levels at the nearest proposed bedroom façades are below the 50 dB  $L_{Aeq, 8\text{ h}}$  (23:00–07:00) and 65 dB  $L_{AFmax}$  occurring more than 10 times per night thresholds, meaning the simplified method of Approved Document O remains available on noise grounds for all proposed dwelling plots.

Vibration monitoring was undertaken above Box Tunnel to establish baseline levels associated with rail movements on the Great Western Main Line. The measured and derived vibration dose values are well below the BS 6472-1:2008 thresholds for adverse comment in residential buildings and indicate that vibration is not expected to constrain the Proposed Development.

Overall, the Proposed Development is considered suitable from a noise and vibration perspective, subject to the acoustic design measures identified in this report remaining within the design of the scheme.



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# 1 Introduction

## Instruction

RSK Acoustics has been appointed by Taylor Wimpey Bristol to carry out a noise and vibration assessment to support a detailed planning application for a proposed redevelopment of RAF Rudloe No.2 site on Land at Westwells Road (the 'Proposed Development').

The Proposed Development will consist of 167 dwellings, provision of public open space, and associated infrastructure.

An environmental sound survey has been undertaken to establish the existing environmental sound levels associated with environmental sound sources.

The results of the environmental sound survey have been used to establish noise levels in external amenity areas and façade incident noise levels for the proposed development, which form the basis of our assessment of the acoustic requirements of the building façades.

This report describes the assessment methodology, baseline conditions currently prevailing across the site, details of the assessments of external and internal noise levels and the proposed acoustic specifications for the critical elements of the building façades..

Mitigation measures have been identified where necessary and practicable to achieve appropriate acoustic standards.

The objectives of this report are as follows:

- Detail appropriate assessment criteria based on the requirements of the local authority and industry standard guidance
- Present the results of the environmental sound survey undertaken at the site
- Present the results of the assessment of the predicted noise levels in external amenity areas
- Present the results of the detailed assessment of the likely airborne noise ingress into habitable spaces and identify the requirement acoustic performance of critical elements of the building façades in order to achieve the proposed criteria
- Assess the change in noise level at existing receptor due to the change in traffic flow

A glossary of acoustic terminology relevant to the assessment is provided in Appendix A – Glossary.

## Site Location and Description

The site is located on a disused army base situated off Westwells Road, Rudloe, Wiltshire. Bradford Road (B3109) borders the west of the site and Westwells Road runs along the north of the site. The development will provide 167 dwellings, green space and associated infrastructure.

The site boundary does not encompass the existing fire station building which will be retained. An underground rail line passes underneath the site at a depth of approximately 50 metres.

Illustrative masterplan has been reproduced in Appendix B – Project Drawings for reference and information purposes.

A monitoring location plan is presented in Section 4 of this report (see Figure 1).



## 2 Regulatory Framework

### National Policy Guidance and Standards

A summary of the planning policies, standards and guidance documents relevant to this assessment is provided in Table 1.

*Table 2-1 Planning policies, standards and guidance*

| Document                                                                                                                                  | Summary                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Planning policy</b>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                         |
| National Planning Policy Framework (NPPF) 2025                                                                                            | The NPPF sets out the government's planning policies for England and how they are to be applied. The NPPF includes statements relating to noise and the requirement to take it into account during the planning process.                                                                                                                                                |
| Noise Policy Statement for England (NPSE) 2010                                                                                            | The NPSE sets out the long-term vision of Government noise policy: 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.                                                                                                                                      |
| <b>Standards and guidance</b>                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                         |
| BS 7445-1:2003<br><i>'Description and measurement of environmental noise'</i>                                                             | BS 7445 defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities.                                                                                                                                                                                        |
| BS 8233:2014<br><i>'Guidance on sound insulation and noise reduction for buildings'</i>                                                   | BS 8233 provides guidance for controlling noise in and around buildings. It applies to the design of new buildings and refurbished buildings undergoing a change of use.                                                                                                                                                                                                |
| BS 6472-1:2008 <i>'Guide to Evaluation of Human Exposure to Vibration From Buildings – Part 1: Vibration Sources Other Than Blasting'</i> | BS 6472 sets out a methodology to assess the likely subjective response to vibration, based on evaluating the probability of adverse comment against the quantifiable Vibration Dose Value (VDV). The VDV defines a relationship that produces consistent assessment of continuous, intermittent, occasional and impulsive vibration and the subsequent human response. |
| BS EN IEC 60942:2018<br><i>'Electroacoustics – Sound calibrators'</i>                                                                     | BS EN IEC 60942 specifies the performance requirements for sound calibrators.                                                                                                                                                                                                                                                                                           |
| BS EN 61672-1:2013<br><i>'Electroacoustics – Sound level meters'</i>                                                                      | BS EN 61672-1 provides electroacoustic performance specifications for sound measuring instruments.                                                                                                                                                                                                                                                                      |
| Overheating: <i>Approved Document O</i> , 2021                                                                                            | Approved Document O (ADO) of the Building Regulations aims to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. The document specifies internal noise limits which should be met to ensure the overheating mitigation strategy is usable.                                                             |
| ProPG: Planning & Noise<br><i>'Professional Practice Guidance on Planning &amp; Noise'</i> , 2017                                         | ProPG P&N has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the English planning system in respect of new residential developments.                                                                                                                                                                  |
| Calculation of Road Traffic Noise (CRTN), 1988                                                                                            | Used to evaluate highway design, assess planning applications, and determine eligibility for noise insulation                                                                                                                                                                                                                                                           |



| Document                          | Summary                                                                                                                                                                                                                                 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMRB LA 111 (Noise and Vibration) | Outlines methodologies for evaluating construction and operational noise/vibration based on established thresholds, including Lowest Observable Adverse Effect Levels (LOAEL) and Significant Observable Adverse Effect Levels (SOAEL). |

## Wiltshire Council Local Policy

### Wiltshire Core Strategy (Wiltshire Council, 2015)

The Wiltshire Core Strategy, together with the Wiltshire Housing Site Allocations Plan and any made neighbourhood plan was published in 2015. The Wiltshire Local Plan Review was withdrawn from examination on 19 May 2026 and carries no weight; a new Local Plan is expected to commence preparation on 30 October 2026 and is at too early a stage to carry weight. The Core Strategy's policies are not automatically out of date and remain the starting point for decision-making, notwithstanding the Wiltshire Core Strategy period ending in 2026.

The following adopted policies are relevant to noise and vibration:

- Core Policy 57 – Ensuring High Quality Design and Place Shaping. Is the lead amenity policy. Development must have regard to the compatibility of adjoining uses and the amenity of existing occupants, and demonstrate that appropriate levels of amenity are achievable within the development itself, with vibration and noise expressly identified as considerations. No numerical criteria are stated.
- Core Policy 10 – Spatial Strategy: Corsham Community Area. Major development must be well integrated into the existing settlement and supported by a masterplan. Noise is not expressly referenced; its relevance derives from the site's locational context.
- The Core Strategy contains no quantitative noise or vibration limits and does not itself reference technical standards for their assessment; assessment criteria are instead set out in the Council's technical guidance, summarised below.

### Local Technical Guidance – Planning Consultation Guidance Notes (Wiltshire Council ECP, accessed July 2026)

The Environmental Control and Protection (ECP) service's guidance provides the operative numerical criteria and survey requirements, drawing on the NPPF, PPG-Noise, NPSE (Defra, 2010), BS 8233:2014, ProPG (2017), BS 4142:2014+A1:2019 and BS 6472-1:2008.

Specific limits adopted by the Council include:

- Internal (transport noise): 30 dB  $L_{Aeq,8h}$  in bedrooms (23:00–07:00), with individual events not normally exceeding 45 dB  $L_{AFmax}$  more than 10 times per night; 35 dB  $L_{Aeq,16h}$  in living rooms (07:00–23:00). Design to achieve internal levels with windows open wherever practicable; non-openable windows are not accepted
- External: 50 dB  $L_{Aeq, 16 h}$  (daytime) for gardens and terraces
- Commercial/industrial sources: BS 4142 rating level no greater than representative background ( $L_{A90}$ ), with 5 dB below background applicable in some cases; night-time maxima from such sources not to exceed 60 dB  $L_{AFmax}$  at the façade. Closed-window mitigation is not accepted for these sources
- Vibration: screening threshold of 0.14 mm/s peak particle velocity; exceedance triggers assessment to BS 6472-1 (PPV and VDV, day and night), including re-radiated noise. A vibration assessment is required where development lies within 30 m of a railway line
- Mitigation: a five-level hierarchy (source control; site layout; dwelling layout/orientation; planning restrictions; building envelope), applied sequentially with the envelope as last resort; ventilation/overheating to Approved Documents F and O and the ANC AVO guide (2020), with mechanical ventilation limited to NR25



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## Summary

Adopted policy (principally Core Policy 57) establishes the requirement to protect and achieve acceptable amenity but contains no numerical limits. Quantitative criteria are provided solely through the ECP Planning Consultation Guidance Notes, which apply national standards and adopt Wiltshire-specific limits as set out above.



### 3 Acoustic Design Targets for Development

#### Design Targets for Residential Dwellings during Normal Conditions

For the purpose of this assessment, the acoustic standards set out in Table 3-1 have been adopted during normal conditions. The values presented in the table represent the level above which adverse effects on health and quality of life can be detected.

**Table 3-1** Criteria for residential use (normal conditions)

| Location                                                                                                                                 | Criterion                | Origin                                |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------|
| Internal daytime noise levels in living rooms and bedrooms                                                                               | 35 dB $L_{Aeq,16hr}$     | BS 8233:2014                          |
| Internal daytime noise levels within dining rooms/areas                                                                                  | 40 dB $L_{Aeq,16hr}$     | BS 8233:2014                          |
| Internal noise levels within bedrooms at night                                                                                           | 30 dB $L_{Aeq,8hr}$      | BS 8233:2014                          |
| Internal noise levels within bedrooms during the night from individual events ( $\leq 10-15$ occurrences)                                | 45 dB $L_{AFmax}$        | ProPG                                 |
| Noise levels within external amenity areas associated with dwellings                                                                     | 50 dB $L_{Aeq,T}$ [1]    | Wiltshire Council ECP<br>BS 8233:2014 |
| Residential buildings vibration dose value (daytime)                                                                                     | 0.2 to 0.4 $m.s^{-1.75}$ | BS 6472                               |
| Residential buildings vibration dose value (night-time)                                                                                  | 0.1 to 0.2 $m.s^{-1.75}$ | BS 6472                               |
| <b>Notes</b><br>[1] 50 dB $L_{Aeq,T}$ is the desirable threshold level, 55 dB $L_{Aeq,T}$ is the upper guideline level from BS 8233:2014 |                          |                                       |

#### Design Targets for Residential Dwellings during Overheating Scenario

While compliance with Approved Document O, 2021 edition of the Building Regulations (AD-O) criteria is required as evidence of compliance with Building Regulations, guidance is provided within this document regarding the noise constraints at planning stage due to the potential implications this may have on the development overheating mitigation strategy.

It is widely considered that a relaxation to the normal acoustic criteria is permissible during peak summer months where occupants may be willing to compromise on noise ingress for purpose of thermal comfort. Suitable internal noise levels during overheating periods (i.e. when open windows or other measures are required to be implemented for the control of overheating) are provided below.

**Table 3-2** Noise criteria for residential use (overheating control)

| Location                                                                                               | Criterion           | Origin |
|--------------------------------------------------------------------------------------------------------|---------------------|--------|
| Internal noise levels within bedrooms at night                                                         | 40 dB $L_{Aeq,8hr}$ | AD-O   |
| Internal noise levels within bedrooms during the night from individual events ( $\leq 10$ occurrences) | 55 dB $L_{AFmax}$   | AD-O   |

Based on typical assumptions, the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of AD-O are expected to be approximately 5 dB for 'high' risk locations and 10 dB for 'moderate' risk locations. As the site is located outside of London, it is considered to be in a 'moderate' risk location.



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## Survey Methodology

Baseline measurements were undertaken at various positions across the site between Friday 19 June 2026 and Friday 26 June 2026. The survey included continuous measurements at three unattended noise monitoring locations and one unattended vibration monitoring location in proximity to the railway line that runs below the site.

Table 4-1 below describes the monitoring locations, while Figure 1 illustrates their positions on a map.

**Table 4-1**      *Monitoring locations*

| Location | Location (what3words)  | Description                                                                                               |
|----------|------------------------|-----------------------------------------------------------------------------------------------------------|
| MP1      | extremes.gaps.skewing  | Location representative of western extent of the site adjacent to the existing Bradford Road              |
| MP2      | broad.typed.cherry     | Location representative of northern extent of the site adjacent to the Westwells Road.                    |
| MP3      | hedge.dawn.freely      | Location representative of close proximity to existing fire station.                                      |
| VB1      | ulterior.shaped.ground | Located at ground level above the existing railway tunnel, representative of proposed dwelling locations. |



**Figure 1**      *Monitoring location plan*



## Survey Equipment

The following equipment was used to undertake the noise survey.

*Table 4-2 Monitoring equipment*

| Location | Equipment           | Type        | Serial number | Calibration date |
|----------|---------------------|-------------|---------------|------------------|
| NM1      | Sound Level Meter   | Rion NL-52  | 453833        | 28 October 2024  |
| NM2      | Sound Level Meter   | 01dB Fusion | 14923         | 5 February 2025  |
| NM3      | Sound Level Meter   | 01dB Fusion | 14921         | 27 November 2024 |
| VB1      | Vibration Logger    | Rion VM-56  | 34120178      | 22 August 2024   |
| All      | Acoustic Calibrator | Rion NC-74  | 34524127      | 11 February 2026 |

All measurements were undertaken in free field conditions with the microphone positioned at least 3.5 metres away from significant reflecting surfaces and at 1.5 metres above ground height to the requirements of BS 7445-1:2003.

The sound level meters used conform to the Class 1 requirements of BS EN 61672-1:2013. The calibrator used conforms to the Class 1 requirements of BS EN IEC 60942:2018.

The equipment used had a calibration history that is traceable to a certified calibration institution which is available on request. The calibration of the sound level meters was checked before and after measurements, with no significant drift noted (within  $\pm 0.5$  dB tolerance).

The vibration measurement equipment used during the survey conforms to the requirements of BS 6472-1:2008. The equipment used had a calibration history traceable to a certified calibration institution, with certificates available on request.

## Weather Conditions

It was not possible to log meteorological conditions including wind speed and precipitation throughout the survey due to an equipment fault. Publicly available data has been reviewed from datameteo.com to provide a useful indication of general weather trends, and they indicate that the weather during the monitoring period was generally dry, hot with low wind speeds, which is considered suitable for obtaining representative sound level measurements.

*Table 4-3 Weather Conditions*

| Date       | Temperature (C) | Precipitation (mm/h) | Wind Speed 10m (m/s) |
|------------|-----------------|----------------------|----------------------|
| 2026-06-19 | (13-25) 19      | (0-0) 0              | (2-6) 4              |
| 2026-06-20 | (16-22) 19      | (0-1) 0              | (1-4) 3              |
| 2026-06-21 | (14-27) 21      | (0-0) 0              | (1-3) 1              |
| 2026-06-22 | (17-31) 24      | (0-0) 0              | (1-6) 4              |
| 2026-06-23 | (19-33) 26      | (0-12) 1             | (0-4) 3              |
| 2026-06-24 | (21-34) 28      | (0-0) 0              | (2-4) 3              |
| 2026-06-25 | (22-35) 29      | (0-0) 0              | (3-7) 5              |
| 2026-06-26 | (20-31) 26      | (0-0) 0              | (1-5) 3              |



## 5 Baseline Noise Survey Results

A summary of the measured data from the noise monitoring locations are presented in Table 5-1 to Table 5-3. Measured levels include the following metrics:

- $L_{Aeq, T}$  - the equivalent continuous A-weighted sound pressure level over a specified time interval T, representing the constant sound level that would contain the same acoustic energy as the actual fluctuating sound over that period.  $L_{Aeq, 16hr}$  and  $L_{Aeq, 8hr}$  form the primary metric for initial site noise risk assessment and overall noise impact evaluation.
- $L_{AFmax, 2 \text{ mins (10th highest)}}$  - quantifies the 10<sup>th</sup> highest maximum A-weighted sound pressure level measured using Fast (F) time weighting. The highest  $L_{AFmax}$  within each 2-minute period is used in the analysis<sup>1</sup>.
- $L_{A90, T}$  - the A-weighted sound pressure level exceeded for 90 % of the measurement time interval T.

Time history plots for each monitoring location are provided in Appendix C – Survey Results (Time History Graphs).

### Monitoring Location MP1

Table 5-1 Noise monitoring data summary – MP1

| Date                   | Time period, T                       | Measured noise levels, dB <sup>(1)</sup> |                                            |              |              |
|------------------------|--------------------------------------|------------------------------------------|--------------------------------------------|--------------|--------------|
|                        |                                      | $L_{Aeq, T}$                             | $L_{AFmax, 2 \text{ mins (10th highest)}}$ | $L_{A10, T}$ | $L_{A90, T}$ |
| 19/06/2026             | Daytime (10:45-23:00) <sup>(2)</sup> | 53                                       | -                                          | 50-59        | 35-49        |
|                        | Night-time (23:00-07:00)             | 45                                       | 63                                         | 33-54        | 24-39        |
| 20/06/2026             | Daytime (07:00-23:00)                | 53                                       | -                                          | 51-58        | 29-45        |
|                        | Night-time (23:00-07:00)             | 45                                       | 63                                         | 34-51        | 27-36        |
| 21/06/2026             | Daytime (07:00-23:00)                | 51                                       | -                                          | 43-57        | 33-44        |
|                        | Night-time (23:00-07:00)             | 48                                       | 64                                         | 41-58        | 33-49        |
| 22/06/2026             | Daytime (07:00-23:00)                | 58                                       | -                                          | 42-73        | 31-60        |
|                        | Night-time (23:00-07:00)             | 48                                       | 64                                         | 35-59        | 29-44        |
| 23/06/2026             | Daytime (07:00-23:00)                | 53                                       | -                                          | 44-59        | 28-50        |
|                        | Night-time (23:00-07:00)             | 47                                       | 64                                         | 34-58        | 27-42        |
| 24/06/2026             | Daytime (07:00-23:00)                | 53                                       | -                                          | 50-58        | 36-48        |
|                        | Night-time (23:00-07:00)             | 48                                       | 64                                         | 39-58        | 32-47        |
| 25/06/2026             | Daytime (07:00-23:00)                | 55                                       | -                                          | 51-59        | 39-52        |
|                        | Night-time (23:00-07:00)             | 47                                       | 64                                         | 34-57        | 28-43        |
| 26/06/2026             | Daytime (07:00-23:00)                | 53                                       |                                            | 48-58        | 35-48        |
|                        | Night-time (23:00-07:00)             | 45                                       | 63                                         | 35-55        | 26-41        |
| Average <sup>(3)</sup> | Daytime                              | 54                                       | -                                          | 42-73        | 28-60        |

<sup>1</sup> Studies referenced in the Approved Document O Noise Guide demonstrate that measurement sampling periods between 1-minute and 3-minutes correlate most closely to actual awakening events, compared with longer sampling periods.



|                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |    |    |       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----|----|-------|-------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time | 47 | 64 | 33-59 | 24-49 |
| <sup>(1)</sup> $L_{Aeq,T}$ values are the logarithmic average of $L_{Aeq,15min}$ samples. The $L_{A10,T}$ and $L_{A90,T}$ are the arithmetic average of $L_{A90,15min}$ samples. $L_{AFmax}$ accounts for the 10 <sup>th</sup> highest $L_{AFmax,2min}$ sample within the period.<br><sup>(2)</sup> Measurements not taken throughout full 16-hour period and therefore not included in the calculation of averaged noise levels |            |    |    |       |       |

Observations during site attendance confirmed that the adjacent Bradford Road is a dominant and consistent noise source.

## Monitoring Location MP2

Table 5-2 Noise monitoring data summary – MP2

| Date                                                                                                                                                                                                                                                                                                                                                                                                                             | Time period, T                       | Measured noise levels, dB <sup>(1)</sup> |                                       |             |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------|---------------------------------------|-------------|-------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      | $L_{Aeq,T}$                              | $L_{AFmax, 2 mins}$<br>(10th highest) | $L_{A10,T}$ | $L_{A90,T}$ |
| 19/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (11:00-23:00) <sup>(2)</sup> | 58                                       | -                                     | 47-64       | 30-43       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 48                                       | 69                                    | 29-55       | 25-36       |
| 20/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 55                                       | -                                     | 44-63       | 29-39       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 48                                       | 69                                    | 32-54       | 26-36       |
| 21/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 55                                       | -                                     | 42-63       | 32-38       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 50                                       | 69                                    | 32-63       | 30-42       |
| 22/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 60                                       | -                                     | 48-74       | 31-62       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 53                                       | 71                                    | 33-65       | 30-41       |
| 23/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 59                                       | -                                     | 38-66       | 29-51       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 52                                       | 72                                    | 31-63       | 27-41       |
| 24/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 58                                       | -                                     | 46-66       | 34-49       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 51                                       | 70                                    | 33-64       | 30-42       |
| 25/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 58                                       | -                                     | 46-65       | 35-49       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 51                                       | 70                                    | 33-63       | 28-40       |
| 26/06/2026                                                                                                                                                                                                                                                                                                                                                                                                                       | Daytime (07:00-23:00)                | 58                                       |                                       | 50-65       | 30-45       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time (23:00-07:00)             | 48                                       | 69                                    | 31-57       | 27-36       |
| Average <sup>(3)</sup>                                                                                                                                                                                                                                                                                                                                                                                                           | Daytime                              | 58                                       | -                                     | 38-74       | 27-62       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                  | Night-time                           | 50                                       | 72                                    | 29-65       | 25-42       |
| <sup>(1)</sup> $L_{Aeq,T}$ values are the logarithmic average of $L_{Aeq,15min}$ samples. The $L_{A10,T}$ and $L_{A90,T}$ are the arithmetic average of $L_{A90,15min}$ samples. $L_{AFmax}$ accounts for the 10 <sup>th</sup> highest $L_{AFmax,2min}$ sample within the period.<br><sup>(2)</sup> Measurements not taken throughout full 16-hour period and therefore not included in the calculation of averaged noise levels |                                      |                                          |                                       |             |             |

Observations during site attendance confirmed that the adjacent Westwells Road is a dominant and consistent noise source.



## Monitoring Location MP3

Table 5-3 Noise monitoring data summary – MP3

| Date                   | Time period, T                       | Measured noise levels, dB <sup>(1)</sup> |                                              |                    |                    |
|------------------------|--------------------------------------|------------------------------------------|----------------------------------------------|--------------------|--------------------|
|                        |                                      | L <sub>Aeq,T</sub>                       | L <sub>AFmax, 2 mins</sub><br>(10th highest) | L <sub>A10,T</sub> | L <sub>A90,T</sub> |
| 19/06/2026             | Daytime (10:45-23:00) <sup>(2)</sup> | 48                                       | -                                            | 41-61              | 32-45              |
|                        | Night-time (23:00-07:00)             | 39                                       | 55                                           | 31-45              | 26-37              |
| 20/06/2026             | Daytime (07:00-23:00)                | 44 (55) <sup>3</sup>                     | -                                            | 38-56              | 27-39              |
|                        | Night-time (23:00-07:00)             | 39                                       | 57                                           | 26-51              | 23-34              |
| 21/06/2026             | Daytime (07:00-23:00)                | 49                                       | -                                            | 34-66              | 28-59              |
|                        | Night-time (23:00-07:00)             | 38                                       | 56                                           | 31-51              | 27-39              |
| 22/06/2026             | Daytime (07:00-23:00)                | 49 (56) <sup>3</sup>                     | -                                            | 37-69              | 35-58              |
|                        | Night-time (23:00-07:00)             | 39                                       | 53                                           | 32-48              | 30-37              |
| 23/06/2026             | Daytime (07:00-23:00)                | 46                                       | -                                            | 37-64              | 32-43              |
|                        | Night-time (23:00-07:00)             | 38                                       | 51                                           | 35-45              | 34-37              |
| 24/06/2026             | Daytime (07:00-23:00)                | 41                                       | -                                            | 35-48              | 29-43              |
|                        | Night-time (23:00-07:00)             | 36                                       | 52                                           | 31-45              | 27-36              |
| 25/06/2026             | Daytime (07:00-23:00)                | 43                                       | -                                            | 38-54              | 35-41              |
|                        | Night-time (23:00-07:00)             | 40                                       | 57                                           | 31-50              | 27-37              |
| 26/06/2026             | Daytime (07:00-23:00)                | 45                                       | -                                            | 37-51              | 34-45              |
|                        | Night-time (23:00-07:00)             | 37                                       | 54                                           | 35-43              | 31-36              |
| Average <sup>(3)</sup> | Daytime                              | 46 (51) <sup>3</sup>                     | -                                            | 34-69              | 27-59              |
|                        | Night-time                           | 38                                       | 57                                           | 26-51              | 26-39              |

<sup>(1)</sup> L<sub>Aeq,T</sub> values are the logarithmic average of L<sub>Aeq,15min</sub> samples. The L<sub>A10,T</sub> and L<sub>A90,T</sub> are the arithmetic average of L<sub>A90,15min</sub> samples. L<sub>AFmax</sub> accounts for the 10<sup>th</sup> highest L<sub>AFmax,2min</sub> sample within the period.

<sup>(2)</sup> Measurements not taken throughout full 16-hour period and therefore not included in the calculation of averaged noise levels

<sup>(3)</sup> Parenthesis levels included short (15 – 25 second) alarm type events, daytime only.

Site observations during attendance indicated that there was limited activity from the fire station and the dominant noise source was the nearby road network.

Further analysis of the data identified up to four alarm type events of duration between 15 and 25 seconds including frequency content typical of fire alarm sirens e.g. between 500 Hz and 1.5k Hz. Based on the limited number and short duration of these events, they have been excluded from the representative L<sub>Aeq</sub> values. The data provided in Table 5-3 provides both with and without event results to enable comparison.

Based on the measured data, the alarm events are assumed to be generated at the adjacent MOD Corsham fire station. They are shown to occur during daytime hours only, as short-duration events (approximately 15–25 seconds) with external levels up to approximately 90 dB L<sub>AFmax</sub>.

The operational regime of the fire station (hours, schedule, frequency) could not be confirmed from publicly available information, and the source attribution is based on the spectral and temporal characteristics of the measured events. The survey was undertaken over a typical week and is assumed to represent the typical working of the MOD fire station.



## 6 Baseline Vibration Survey Results

Vibration monitoring was undertaken at the site on 19 June 2026 over a continuous 10-hour period. The site lies adjacent to/above Box Tunnel, which carries the Great Western Main Line between London Paddington and Bristol beneath Box Hill at Rudloe, near Corsham.

The monitoring enabled the calculation of the Vibration Dose Values (VDV) as provided in Table 6-1.

*Table 6-1 VDV monitoring levels*

| Time period         | Date       | Measured VDV, in $\text{m.s}^{-1.75}$ |        |        |
|---------------------|------------|---------------------------------------|--------|--------|
|                     |            | X                                     | Y      | Z      |
| 07.00 – 23.00 (Day) | 19/06/2026 | 0.0009                                | 0.0009 | 0.0029 |



## 7 Noise Assessment Methodology

### Noise Prediction Model

A computer noise model of the Proposed Development has been constructed using SoundPLANnoise v9.1. Noise levels across the Proposed Development have been derived from the noise prediction model, which has been calibrated against the measured levels obtained as part of the baseline survey locations.

The noise sources included within the model are those noted to be dominant, and consistent during site attendance. In this case, the nearby transportation sources. The model considers the below scenarios:

- Daytime - ambient  $L_{Aeq,16hr}$  (07:00 – 23:00)
- Night-time - ambient  $L_{Aeq,8hr}$  (23:00 – 07:00)
- Night-time – Maximum  $L_{AFmax}$  (23:00 – 07:00)

An overview of the modelling parameters is provided in Table 7-1. The results are presented in Appendix D – Noise Contour Maps.

**Table 7-1**      *Modelling parameters*

| Item                      | Setting                                                                                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Algorithm                 | Calculation of Road Traffic Noise (CRTN) - for roads during daytime and night-time.                                                                              |
| Ground absorption         | Hard, acoustically reflective ground (0.0 coefficient): Roads and hard standing areas.<br>Acoustically soft (assumed 0.7 coefficient): Grass or vegetated areas. |
| Meteorological conditions | 10 degrees Celsius.<br>70 % humidity.<br>Wind from source to receiver.                                                                                           |
| Receptor height           | Ground Floor: 1.5 metres above ground.<br>First Floor: 4.0 metres above ground.                                                                                  |
| Source Modelling          | Calibration of the model accounts for the road network acting as a source of noise impacting the site (road / line source).                                      |
| Site Layout               | SL.01_A Site Layout<br>ML.01_A Materials Layout<br>As shown in Appendix B – Project Drawings                                                                     |
| Terrain                   | OS Terrain data (1 metre resolution) has been included within the model.                                                                                         |

### Model Calibration

Differences between measured levels and predicted/modelled levels are presented in Table 7-2.

**Table 7-2**      *Noise model calibration levels*

| Location                                                 | Measured noise level, dB |              |               | Predicted noise level, dB |              |             | Difference, dB |              |             |
|----------------------------------------------------------|--------------------------|--------------|---------------|---------------------------|--------------|-------------|----------------|--------------|-------------|
|                                                          | Day                      | Night        |               | Day                       | Night        |             | Day            | Night        |             |
|                                                          | $L_{Aeq,16h}$            | $L_{Aeq,8h}$ | $L_{AFmax}^1$ | $L_{Aeq,16h}$             | $L_{Aeq,8h}$ | $L_{AFmax}$ | $L_{Aeq,16h}$  | $L_{Aeq,8h}$ | $L_{AFmax}$ |
| MP1                                                      | 54                       | 47           | 64            | 54                        | 46           | 64          | 0              | -1           | 0           |
| MP2                                                      | 58                       | 50           | 72            | 58                        | 50           | 72          | 0              | 0            | 0           |
| Note:<br>1 $L_{AFmax,2 mins}$ (10 <sup>th</sup> highest) |                          |              |               |                           |              |             |                |              |             |

Calibrated noise levels at NM1 and NM2 are within  $\pm 1$  dB(A) of measured levels during day and night-time.



## Maximum Noise Levels

An assessment of the maximum noise levels projected at each proposed dwelling has been undertaken, taking into consideration the maximum 10<sup>th</sup> highest individual night maximum ( $L_{AFmax}$ ) events analysed during the night-time dataset in accordance with ProPG guidelines.

The assessment considered the analysis of  $L_{AFmax}$  data measured between 23:00 - 07:00, in order to identify the maximum single events within a 2-minute period. Studies referenced in the Approved Document O Noise Guide demonstrate that measurement sampling periods between 1-minute and 3-minutes correlate most closely to actual awakening events, compared with longer sampling periods.

## MP3 Firestation Noise Level Analysis and Review

Monitoring position MP3 represents the nearest proposed dwelling to the existing fire station. Measured levels at MP3 were 51 dB  $L_{Aeq,16hr}$  by day and 38 dB  $L_{Aeq,8hr}$  at night, with 57 dB  $L_{AFmax}$  exceeded on no more than 10 occasions per night.

These levels combine fire station activity with distant road traffic. Because MP3 is set back from the road, road traffic alone produces levels below those measured, so the noise model could not be calibrated at this position. The model was instead calibrated and validated against measured data from MP1 and MP2, which are located near to the dominant road traffic sources. This approach represents the site's acoustic environment across both day and night-time periods.

The fire station's contribution to the overall ambient level is low and is not dominant in ProPG terms. A separate BS 4142:2014 assessment is therefore not required, and the full measured dataset at MP3 have been carried directly into the internal noise calculations. Siren use or alarm testing has been shown to be infrequent and short in duration.

For external amenity, the measured daytime level of 51 dB  $L_{Aeq,16hr}$  falls within the BS 8233:2014 guideline range of 50–55 dB  $L_{Aeq,16hr}$ . The amenity areas serving the nearest dwellings sit behind the dwellings and boundary fencing, and predicted levels within them comply with the adopted 50 dB  $L_{Aeq,16hr}$  design target.

At the nearest dwellings to MP3, the BS 8233:2014 internal guidelines: 35 dB  $L_{Aeq,16hr}$  in living rooms and bedrooms by day, and 30 dB  $L_{Aeq,8hr}$  in bedrooms at night will be achieved if constructed in accordance with the façade specification in Appendix E – External Building Fabric Acoustic Performance Specification. This conclusion holds whether or not the occasional alarm events are included in the MP3 levels, confirming that suitable internal conditions will be achieved in either case.



## 8 Site Suitability and Recommendations

### Site Overview

Noise contour maps, illustrating in graphical format how the noise attenuates across the site, are provided in Appendix D – Noise Contour Maps.

In accordance with the ProPG risk assessment method, the predicted noise levels within approximately 20 metres of Bradford Road (B3109) corridor site boundary would categorise the residential areas of site as 'low/medium risk' of adverse effects due to noise. For the remainder of the site, the predicted day and night-time levels ( $L_{Aeq, 16\text{ hr}}$  and  $L_{Aeq, 8\text{ hr}}$  respectively) indicate the majority of site to be within the negligible to low risk.

The predicted maximum noise level events are below 65 dB  $L_{AFmax}$  when predicted at the most impacted proposed receptor locations, representative of the MP1 monitoring location. The predicted maximum noise levels events, are below 65 dB  $L_{AFmax}$  across the remainder of site.

### External Amenity Noise Levels

A design target of 50 dB  $L_{Aeq, 16h}$  has been adopted for this assessment, consistent with the desirable design target within BS 8233:2014 and equal to the requirements of the Wiltshire Council ECP.

Predicted daytime noise levels comply with 50 dB  $L_{Aeq, 16h}$  across the all of the Proposed Development. Amenity areas for the dwellings nearest the Bradford Road or Westwells Road corridor are situated behind the proposed dwellings and / or boundary fencing and predicted levels within these areas achieve the 50 dB  $L_{Aeq, 16h}$  design target.

Where boundary fencing is relied upon as acoustic screening, it shall be a minimum of 1.8 metres in height, constructed without gaps at joints or at the base, with a minimum superficial mass of 10 kg/m<sup>2</sup> (e.g. close-boarded timber with battened joints, or equivalent). The fencing shall be provided to the extents shown in Figure B 2 Appendix B – Project Drawings and maintained for the life of the development.

Measured levels at MP3 near to the fire station were measured to be 51 dB  $L_{Aeq, 16hr}$ . External amenity areas for the dwellings proposed nearest to the fire station are either situated behind the proposed dwellings or 1.8m high boundary fences, therefore the levels within amenity areas for these dwellings are also predicted to achieve the 50 dB  $L_{Aeq, 16h}$  design target.

### Internal Noise Level Assessment

Internal break-in noise calculations have been undertaken in accordance with the method of BS 8233:2014 to determine the composite internal noise level for the worst-case habitable rooms on each façade. Predicted free-field noise levels, derived from the calibrated propagation model, form the basis of the calculations.

Internal noise levels have been assessed against the project criteria detailed in Table 3-1.

It is understood that ventilation to dwellings is to be provided by trickle ventilator units located within each dwelling.

Calculations have been undertaken with enough trickle ventilator units, in each room, to provide the required level of background ventilation to comply with the requirements within Approved Document F.

Our analysis includes consideration of the following:

#### Room Absorption

We have assumed the bedrooms and living rooms to be acoustically 'soft' with carpets, curtains and other soft furnishings. For the purposes of our analyses, we have assumed the average equivalent absorption coefficients detailed in Table 8-1.



**Table 8-1** Average equivalent acoustic absorption coefficients ( $\bar{\alpha}$ )

| Room                  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1k Hz | 2k Hz |
|-----------------------|-------|--------|--------|--------|-------|-------|
| Bedroom / Living Room | 0.10  | 0.18   | 0.25   | 0.27   | 0.31  | 0.32  |

## External Building Fabric Construction

The assessment has been based on a typical brick and block external wall build-up and tiled roof. The sound reduction indices associated with the external building fabric construction are provided below in Table 8-2.

**Table 8-2** Sound reduction index ( $R$ ) at octave-band centre frequency (Hz)

| Construction                                                                              | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1k Hz | 2k Hz |
|-------------------------------------------------------------------------------------------|-------|--------|--------|--------|-------|-------|
| 100 mm brick/140 mm block cavity wall                                                     | 36    | 41     | 45     | 45     | 54    | 58    |
| Tiled/slatted roof, 12 mm plasterboard internal layer with 100 mm mineral wool insulation | 19    | 24     | 34     | 40     | 45    | 49    |

Our calculations have been based on building and window dimensions obtained from drawings available in the House Type Plans and Elevations in conjunction with the submitted as part of the Site Layout for Rudloe No2 - planning document submission.

## Performance Specification Approach

The assessment adopts a performance-based specification which the design shall achieve. The glazing and ventilation specifications have been calculated based on the highest calculated incident façade noise levels, for each façade, presented in *Figure D 1* and *Figure D 2* of Appendix D – Noise Contour Maps for the daytime and night-time respectively. The  $L_{AFmax}$  levels have also been used for the assessment and are presented in *Figure D 3* of Appendix D – Noise Contour Maps.

Internal noise levels are predicted to be below 35 dB  $L_{Aeq,16h}$ , 30 dB  $L_{Aeq,8h}$  and 45 dB  $L_{AFmax}$  (night-time, not exceeded on more than 10 occasions) at habitable bedroom windows across the Proposed Development, with much of the development predicted to receive noise levels well below these values.

Conventional double glazing and trickle ventilation achieve the design criteria and can be used across the proposed development site. The minimum octave-band sound insulation performance requirements for external building constructions, conventional double glazing systems and trickle ventilators are set out in Table 8-3 and Table 8-4 and in Appendix E – External Building Fabric Acoustic Performance Specification.

**Table 8-3** Glazing Sound Insulation Performance

| Glazing Type | Minimum Sound Reduction Index ( $R$ ) value (dB) at Octave Band Frequency (Hz) |     |     |    |    | $R_w + C_{tr}^*$ |
|--------------|--------------------------------------------------------------------------------|-----|-----|----|----|------------------|
|              | 125                                                                            | 250 | 500 | 1k | 2k |                  |
| T1           | 19                                                                             | 22  | 25  | 33 | 33 | 30               |

\*The overall  $R_w$  figure is provided for guidance purposes only. The octave-band specification should be referred to in order to check compliance with the requirements.

Trickle ventilators should achieve the following minimum element normalised level differences when tested in accordance with BS EN 10140-2:2021.

**Table 8-4** Trickle Ventilator Sound Insulation Performance

| Ventilator Type | Minimum Sound Reduction Index ( $R$ ) value (dB) at Octave Band Frequency (Hz) |     |     |    |    | $D_{n,e,w}^*$ |
|-----------------|--------------------------------------------------------------------------------|-----|-----|----|----|---------------|
|                 | 125                                                                            | 250 | 500 | 1k | 2k |               |
| T1              | 26                                                                             | 27  | 28  | 30 | 30 | 30            |



| Ventilator Type | Minimum Sound Reduction Index (R) value (dB) at Octave Band Frequency (Hz) |     |     |    |    | $D_{n,e,w}^*$ |
|-----------------|----------------------------------------------------------------------------|-----|-----|----|----|---------------|
|                 | 125                                                                        | 250 | 500 | 1k | 2k |               |

\* The overall  $D_{n,e,w}$  figure is provided for guidance purposes only. The octave-band specification should be referred to in order to check compliance with the requirements.

The highest impacted receptor, in noise terms is plot 151 building type EMAP32, which is closest to Bradford Road. There are no habitable rooms with windows facing the west towards the nearby Bradford Road. The north facing bedroom 2 and the south facing bedroom 1 are to be below 35 dB  $L_{Aeq,16h}$ , 30 dB  $L_{Aeq,8h}$  and 45 dB  $L_{AFmax}$  (night-time, not exceeded on more than 10 occasions).

A further impacted receptor is plot 167 building type EMT45, which is closest to Westwells Road. There are no habitable rooms with windows facing the north towards the road, only a bathroom window. The north facing bedroom 2 and the south facing bedroom 1 are to be below 35 dB  $L_{Aeq,16h}$ , 30 dB  $L_{Aeq,8h}$  and 45 dB  $L_{AFmax}$  (night-time, not exceeded on more than 10 occasions).

The composite façade calculations demonstrate that, where the building envelope achieves the relevant performance specification in Appendix E – External Building Fabric Acoustic Performance Specification, the project internal noise criteria will be achieved in all habitable rooms with windows closed and trickle ventilators in the open position.

## Control of Overheating

The site lies within a 'moderate risk' location as defined by AD-O. Compliance may be demonstrated by the simplified method (Section 1 of AD-O) or by dynamic thermal modelling (Section 2).

Table 1 of the AD-O Noise Guide defines the external free-field noise levels above which the simplified method cannot be used. For a moderate risk location, these are 50 dB  $L_{Aeq,8h}$  (23:00–07:00) and 65 dB  $L_{AFmax}$  occurring more than 10 times per night.

Calibrated noise propagation modelling indicates that free-field noise levels at the worst-affected bedroom façade locations achieve the 50 dB  $L_{Aeq,8h}$ , and 65 dB  $L_{AFmax}$  occurring more than 10 times per night threshold.

## Summary of Site Suitability Assessment

The outcomes of the site suitability assessment and any additional requirements necessary to secure acceptable noise effects in the completed development are provided in Table 8-5 below.

**Table 8-5** Summary of site suitability assessment

| Assessment element | Criterion / guidance                                                                           | Outcome                                                                    | Additional requirements                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| External amenity   | BS 8233:2014:<br>50–55 dB $L_{Aeq,16h}$<br><br>Wiltshire Council ECP:<br>50 dB $L_{Aeq,16h}$   | Adopted 50 dB target achieved with layout screening and 1.8 m high fencing | Fencing $\geq 10$ kg/m <sup>2</sup> , min. 1.8 m height, to Appendix D extents; retained for the life of the development                     |
| Internal noise     | Table 14 (BS 8233:2014):<br><br>35–40 dB $L_{Aeq,16h}$ daytime<br><br>30 dB $L_{Aeq,8h}$ night | Achieved with windows closed and trickle vents open                        | Subject to construction specification requirements in Section 8 and Appendix E – External Building Fabric Acoustic Performance Specification |
| Internal noise     | ProPG 2017, Table 14<br><br>45 dB $L_{AFmax}$ >10 times per night                              |                                                                            |                                                                                                                                              |



| Assessment element | Criterion / guidance                                                                              | Outcome                                                                                                      | Additional requirements |
|--------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------|
| Overheating (AD-O) | AD-O 2021; AD-O Noise Guide v1.1 Table 1<br><br>50 dB $L_{Aeq,8h}$ / 65 dB $L_{AFmax}$ >10/night) | Simplified method available on noise grounds at all plots; worst-affected plot at threshold with zero margin | None                    |



## 9 Operational Road Traffic Noise Assessment

### Effects of Change in Traffic Flow on Existing Receptors

The assessment of noise change due to a change in the volumes of road traffic generated by the Proposed Development have been calculated in accordance with DMRB LA 111 (Noise and Vibration).

The traffic data has been provided by Pegasus Group, for the opening year 2031. Traffic count data for the future year 2046 (i.e 15 years post opening) has not been provided due to the level of uncertainty in combination with other scheme however, it is considered that the opening year assessment of road traffic noise change (i.e 2031) provides a robust assessment given the impact criteria (as detailed in DMRB) is lower than what it would be when assessing a future year scenario.

The scenario assessed is as follows:

- Scenario 1 – ‘Do-Minimum’ (2031) against ‘Do-Something’ (2031).

The ‘do-minimum’ data includes the baseline traffic counts without the Proposed Development and the ‘do-something’ data includes traffic counts with the Proposed Development in place, plus committed developments. Traffic count data is provided in Table 9-2.

**Table 9-1** Traffic count data

| Road link                                                                            | 2031 Baseline Opening Year |      | 2031 Opening + Committed |      |
|--------------------------------------------------------------------------------------|----------------------------|------|--------------------------|------|
|                                                                                      | AAWT 18hr                  | HGV% | AAWT 18hr                | HGV% |
| Link 1 - Westwells Road                                                              | 5792                       | 0.7  | 6510                     | 0.6  |
| Link 2 - Park Lane                                                                   | 5205                       | 0.2  | 5614                     | 0.2  |
| Link 3 - Bradford Road (north of the double mini-roundabout to the west of the site) | 6913                       | 2.0  | 7069                     | 1.9  |
| Link 4 - Bradford Road (south of the double mini-roundabout to the west of the site) | 8855                       | 1.3  | 8961                     | 1.3  |
| Link 5 - Leafy Lane                                                                  | 1438                       | 5.5  | 1598                     | 4.9  |

Table 9-2 below presents the predicted change in noise levels, based on the traffic flow predictions (based on the calculation of basic noise levels in accordance with CRTN).

**Table 9-2** Traffic Noise Predictions

| Road Links                                                                           | Noise change, dB L <sub>A10, 18hr</sub> |
|--------------------------------------------------------------------------------------|-----------------------------------------|
|                                                                                      | 2031 Opening year                       |
| Link 1 - Westwells Road                                                              | 0.5                                     |
| Link 2 - Park Lane                                                                   | 0.3                                     |
| Link 3 - Bradford Road (north of the double mini-roundabout to the west of the site) | 0.1                                     |
| Link 4 - Bradford Road (south of the double mini-roundabout to the west of the site) | 0.1                                     |
| Link 5 - Leafy Lane                                                                  | 0.3                                     |

Predictions indicate that the effect of the Proposed Development in the short term (opening development year 2031) is an increase in road traffic noise levels by a maximum of 0.5 dB L<sub>A10, 18hr</sub>. An increase of this magnitude would be of negligible impact in accordance with DMRB.



## 10 Vibration Assessment

Vibration measurements were obtained at a representative distance to the likely closest building façades along the northern extent of the Proposed Development. The measurement position was at ground level within approximately 10 metres of the Box Tunnel rail line.

Vibration monitoring was undertaken between 12:08 and 22:08 on Friday 19 June 2026. Regular discrete events attributable to train passages through Box Tunnel were evident in the measured time history PPV values.

Train movement numbers have been obtained from historical train-running records at Thingley Junction. From the records, 34 movements are estimated during the survey period (12:08 to 22:08), 60 movements within a the daytime period (07:00–23:00) and 12 within the night-time period (23:00–07:00). Derived vibration dose values are insensitive to modest count variations, as VDV scales with the fourth root of the number of events.

Table 9-2 shows the calculated VDV levels and their comparison against the guideline values contained within BS 6472-1: 2008.

*Table 10-1 Measured vibration dose values comparison against BS 6472 criteria*

| Time period                          | Vibration Dose Value / $\text{m.s}^{-1.75}$ | Criteria for Human Comfort in Residential Property* / $\text{m.s}^{-1.75}$ |
|--------------------------------------|---------------------------------------------|----------------------------------------------------------------------------|
| 16hr Day                             | <b>0.0033</b>                               | 0.2 - 0.4                                                                  |
| 8hr Night                            | <b>0.0022</b>                               | 0.1 - 0.2                                                                  |
| * Low probability of adverse comment |                                             |                                                                            |

Measured VDV levels during both daytime and night periods were below the criteria for low probability of adverse comment within BS 6472-1: 2008.



## 11 Conclusions

RSK Acoustics Limited has been instructed by Taylor Wimpey Bristol to undertake a noise assessment to support a planning application at the former RAF Rudloe No.2 site, Land at Westwells Road. The applicant is seeking full planning permission for the development of residential dwellings.

A baseline survey was undertaken between Friday 19 June and Friday 26 June 2026. The survey comprised unattended noise monitoring at three locations representative of the main site boundaries and nearby sources, together with unattended vibration monitoring above Box Tunnel, which carries the Great Western Main Line beneath the site.

External amenity noise levels are predicted to meet the adopted 50 dB  $L_{Aeq,16h}$  design target across the Proposed Development, with layout screening and 1.8 m high close-boarded or equivalent fencing. Internal noise criteria are predicted to be achieved in all habitable rooms with windows closed and trickle ventilators open, provided the building envelope achieves the performance specifications set out in this report.

The site is located in a moderate risk location for the purposes of Approved Document O. Modelled noise levels at the nearest proposed bedroom façades are below the 50 dB  $L_{Aeq,8h}$  (23:00–07:00) and 65 dB  $L_{AFmax}$  occurring more than 10 times per night thresholds, meaning the simplified method of Approved Document O remains available on noise grounds for all proposed dwelling plots.

Vibration monitoring was undertaken above Box Tunnel to establish baseline levels associated with rail movements on the Great Western Main Line. The measured and calculated vibration dose values are below the BS 6472-1:2008 thresholds for adverse comment in residential buildings and indicate that vibration is not expected to constrain the Proposed Development.

Overall, the development is considered suitable from a noise and vibration perspective, subject to the acoustic design measures identified in this report remaining within the design of the scheme.



## Appendix A – Glossary

| Term                                | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ambient sound</b>                | The total sound at a given place, usually a composite of sounds from many sources near and far.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>dB</b>                           | Decibel. Scale for expressing sound pressure level. It is defined as 20 times the logarithm of the ratio between the root mean square pressure of the sound field and a reference pressure i.e. $2 \times 10^{-5}$ Pascal.                                                                                                                                                                                                                                                                                                                                                                     |
| <b>dB(A)</b>                        | A-weighted decibel. This provides a measure of the overall level of sound across the audible spectrum with a frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies. Example sound levels include:<br>140 dB(A)      Threshold of pain<br>120 dB(A)      Threshold of feeling<br>100 dB(A)      Loud nightclub<br>80 dB(A)        Traffic at busy roadside<br>60 dB(A)        Normal speech level at 1m<br>40 dB(A)        Quiet office<br>20 dB(A)        Broadcasting studio<br>0 dB(A)         Median hearing threshold (1000 Hz) |
| <b><math>D_{n,e,w}</math></b>       | Weighted Standardized Element-Normalized Level Difference<br>The standard acoustic metric used to measure and compare the noise reduction performance of individual building components, most commonly window trickle vents                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Frequency</b>                    | The repetition rate of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to cycles per second. A thousand hertz is often denoted as kHz, e.g. 2 kHz = 2000 Hz. Human hearing ranges approximately from 20 Hz to 20 kHz.                                                                                                                                                                                                                                                                                                   |
| <b><math>L_{A10,T}</math></b>       | A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 10 % of a given time interval.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b><math>L_{A90,T}</math></b>       | A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90 % of a given time interval.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b><math>L_{Aeq,T}</math></b>       | This is defined as the notional steady sound level over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.                                                                                                                                                                                                                                                                                                                                                                                         |
| <b><math>L_{AFmax}</math></b>       | The maximum A-weighted sound pressure level in a given time period measured with a 'fast' response.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Peak particle velocity (PPV)</b> | Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b><math>R_w</math></b>             | Weighted sound reduction index. A single-number index which characterises the frequency dependent airborne sound insulation performance of building elements determined under laboratory conditions.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Vibration dose value (VDV)</b>   | Measure of the total vibration experienced over a specified period of time.<br><i>Further details of the VDV are given in BS 6841-1.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



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## Appendix B – Project Drawings





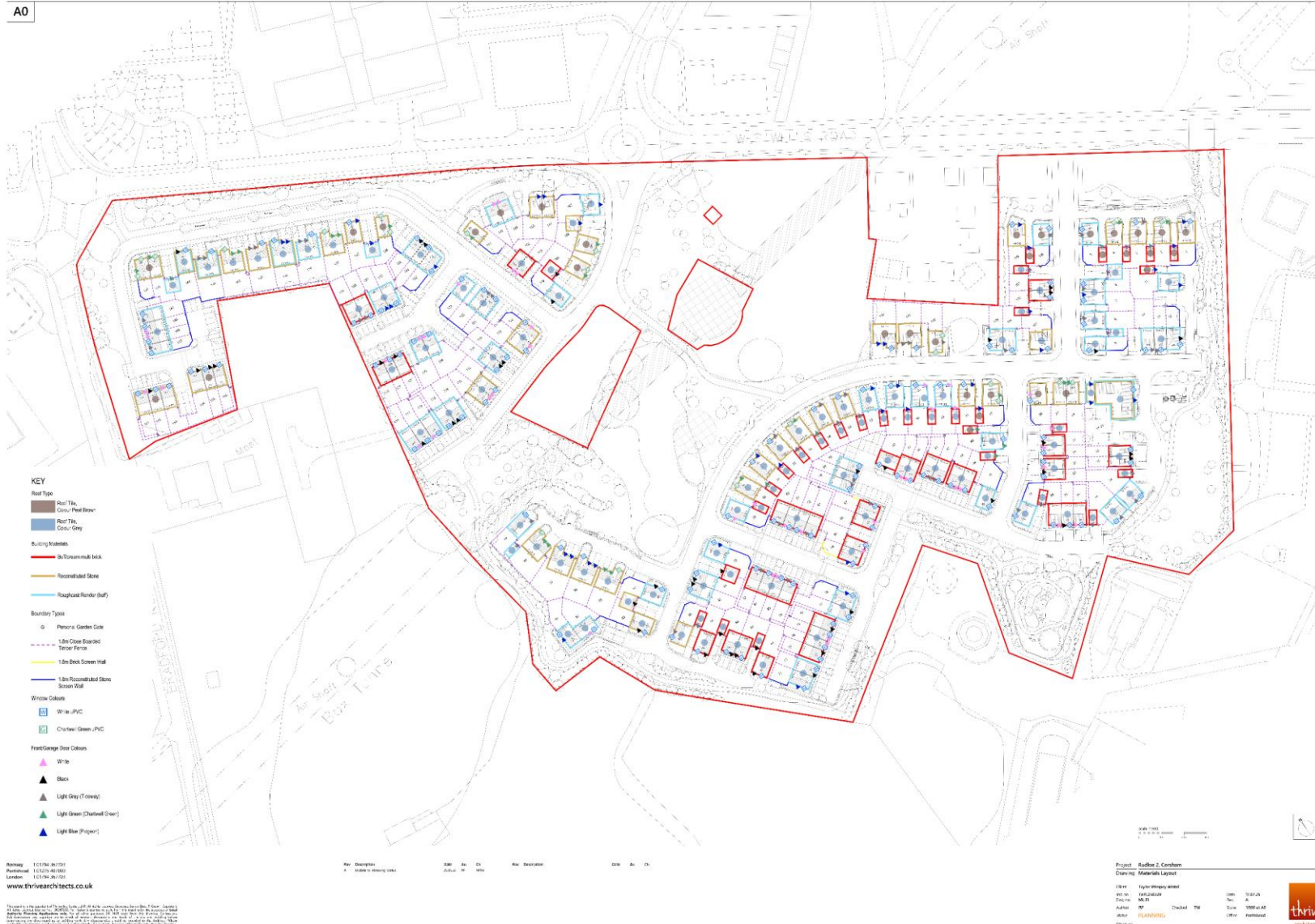


Figure B 2 ML.01\_A Materials Layout



## Appendix C – Survey Results (Time History Graphs)

### Bradford Road - MP1

Time History Plot (19 to 29 June 2026)

— LAeq    × LAFmax, 15min    .... LAF10, 15min    — LAF90, 15min

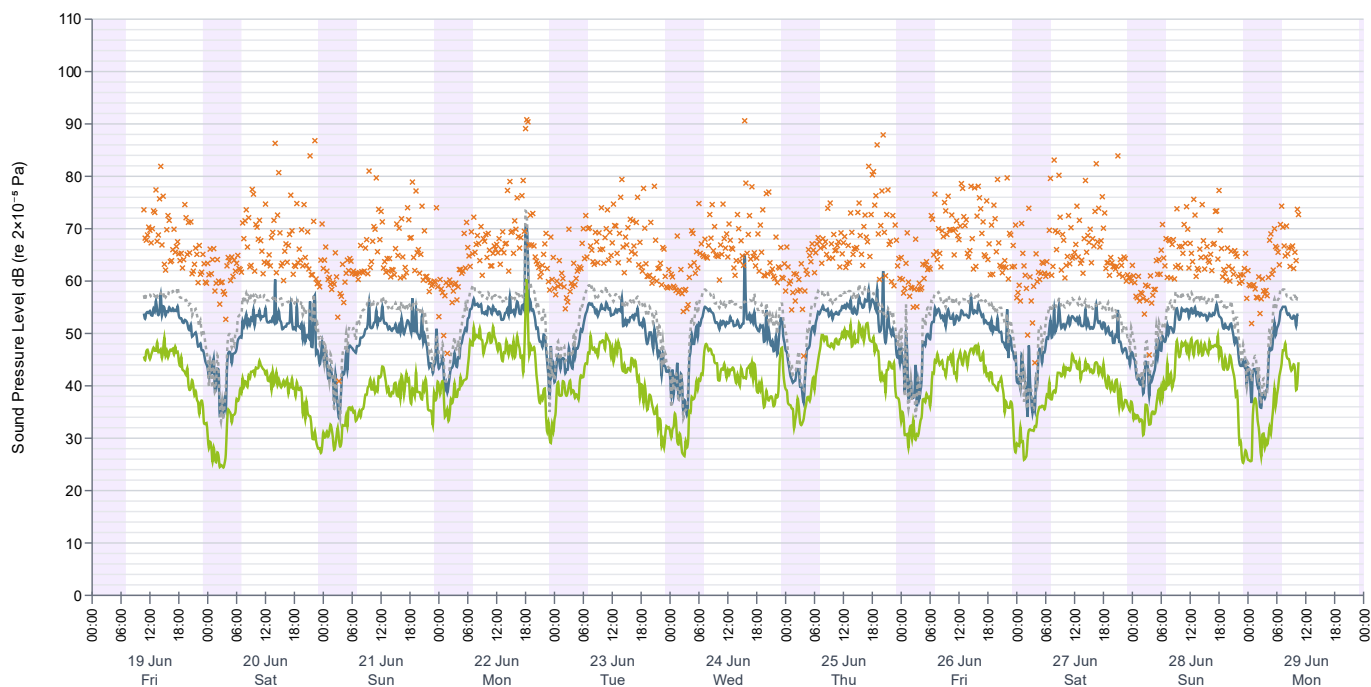


Figure C 1: MP1 Time History



## Westwells Road - MP2

Time History Plot (19 June to 1 July 2026)

— LAeq    × LAFmax, 15min    .... LAF10, 15min    — LAF90, 15min

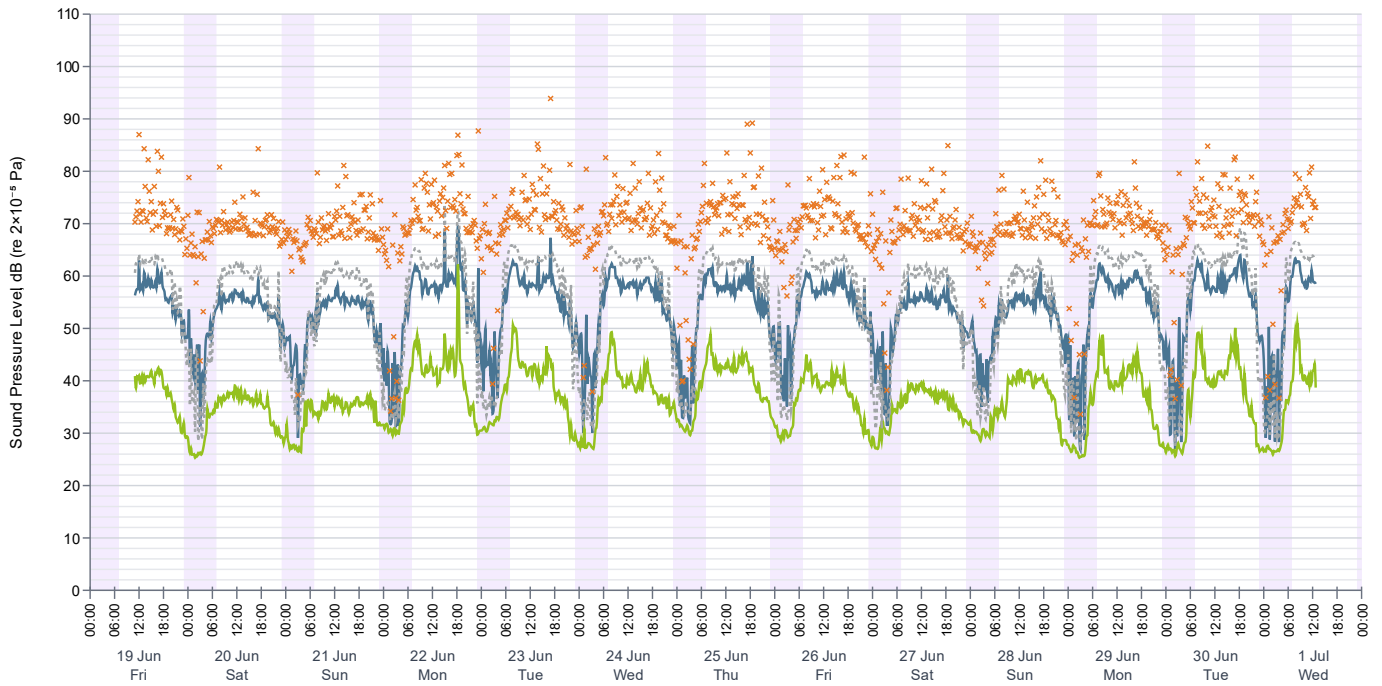


Figure C 2: MP2 Time History



## Firestation - MP3

Time History Plot (19 June to 1 July 2026)

— LAeq    × LAFmax, 15min    ..... LAF10, 15min    — LAF90, 15min

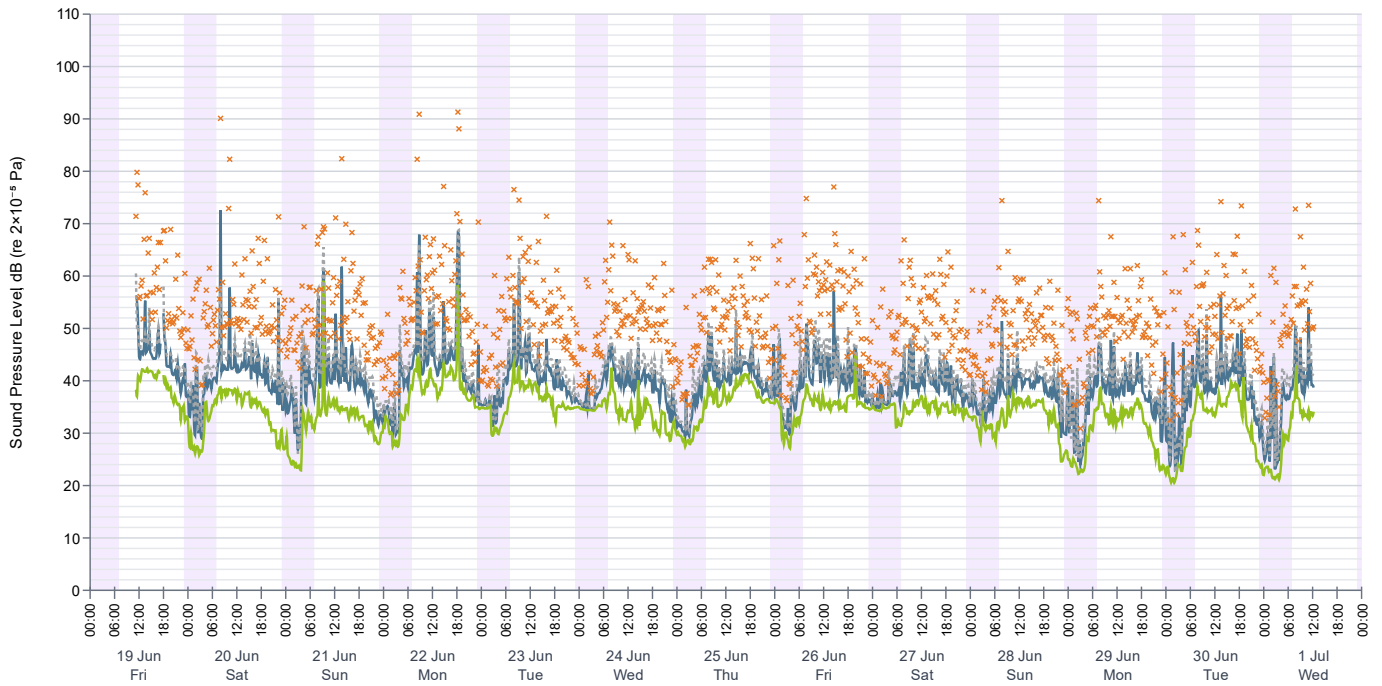


Figure C 3: MP3 Time History



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## Appendix D – Noise Contour Maps

The contours presented below are based on the parameters in Section 7.





Figure D 1: Daytime Noise Predictions dB LAeq, 16 hr





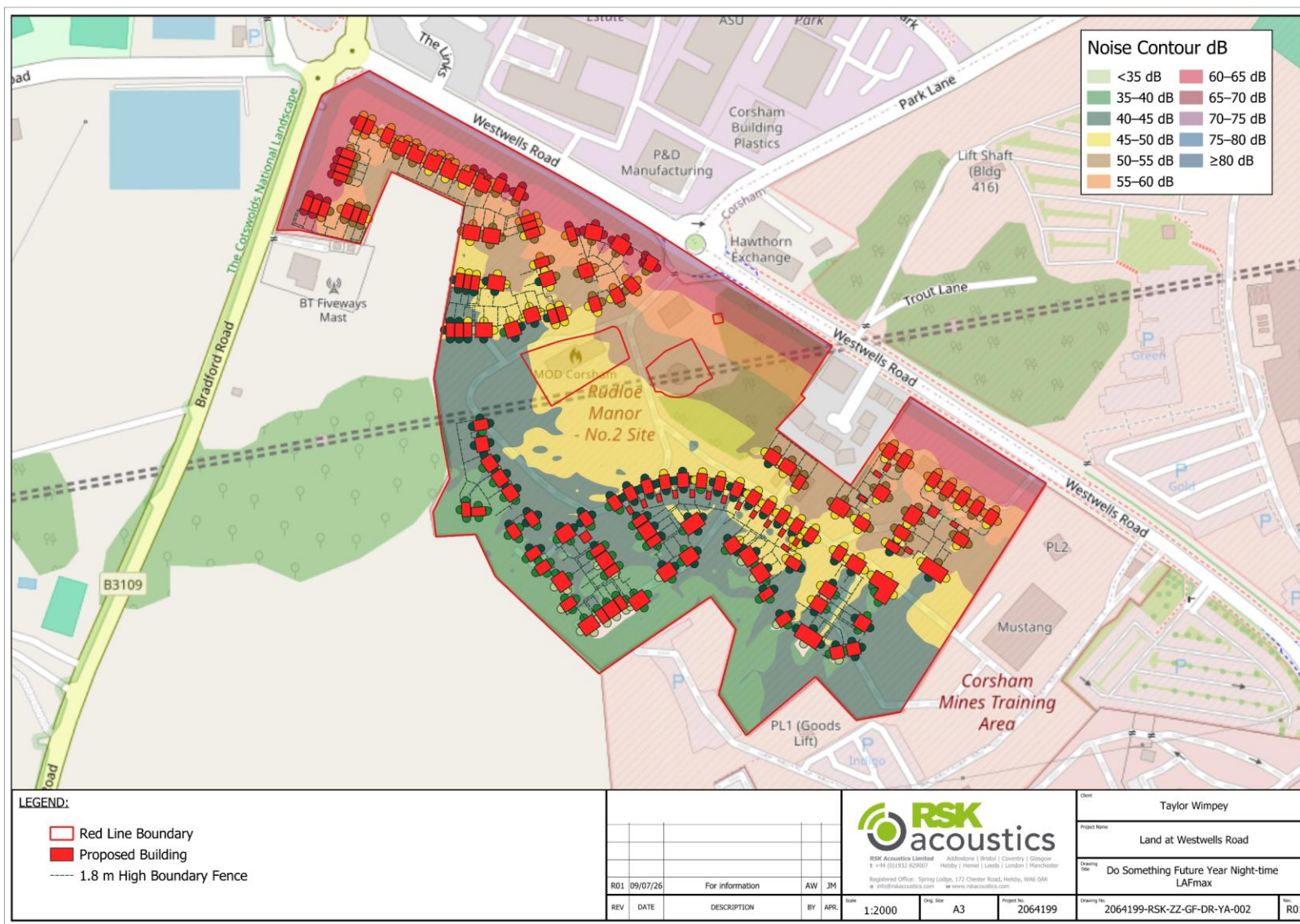


Figure D 3: Night-time Noise Predictions dB LAFmax



# Appendix E – External Building Fabric Acoustic Performance Specification

The project criteria are expressed in terms of an overall A-weighted dB sound level. Alternative frequency specific performance levels may therefore be acceptable subject to confirmation from RSKA.

Fully detailed test reports from independent acoustic test authorities shall be supplied. All test reports shall be in English or, a full English translation.

Test data should include the 1/3 octave band results from 100 Hz to 3150 Hz inclusive, together with the corresponding octave band results from 125 Hz to 4000 Hz inclusive.

As a result of wind or other atmospheric effects, external building elements should not give rise to rattling, creaking or whistling.

## Glazing Sound Insulation Performance

The complete glazing system (including frames, joints, seals, spandrel panels and opening lights and trickle vents (as appropriate)) shall achieve the following minimum sound reduction indices when tested in accordance with BS EN ISO 10140-2:2021.

**Table E 1** *Glazing Sound Insulation Performance*

| Glazing Type | Minimum Sound Reduction Index (R) value (dB) at Octave Band Frequency (Hz) |     |     |    |    | $R_w + C_{tr}^*$ |
|--------------|----------------------------------------------------------------------------|-----|-----|----|----|------------------|
|              | 125                                                                        | 250 | 500 | 1k | 2k |                  |
| T1           | 19                                                                         | 22  | 25  | 33 | 33 | 30               |

\*The overall  $R_w$  figure is provided for guidance purposes only. The octave-band specification should be referred to in order to check compliance with the requirements.

## Trickle Ventilator Sound Insulation Performance

Trickle ventilators should achieve the following minimum element normalised level differences when tested in accordance with BS EN 10140-2:2021.

**Table E 2** *Trickle Ventilator Sound Insulation Performance*

| Ventilator Type | Minimum Sound Reduction Index (R) value (dB) at Octave Band Frequency (Hz) |     |     |    |    | $D_{n,e,w}^*$ |
|-----------------|----------------------------------------------------------------------------|-----|-----|----|----|---------------|
|                 | 125                                                                        | 250 | 500 | 1k | 2k |               |
| T1              | 26                                                                         | 27  | 28  | 30 | 30 | 30            |

\* The overall  $D_{n,e,w}$  figure is provided for guidance purposes only. The octave-band specification should be referred to in order to check compliance with the requirements.

It should be noted that the acoustic specification for trickle ventilators is based on a single ventilator within the room providing an equivalent free area of 8000 mm<sup>2</sup>. If the number of ventilators (of the same free area) in a habitable space is greater than this, then the specification of each ventilator should be adjusted using the corrections in the table below.

**Table E 3** *Performance Correction (dB) For Equivalent Opening Area of Trickle Ventilators in Room (mm<sup>2</sup>)*

| Performance Correction (dB) For Equivalent Opening Area of Trickle Ventilators in Room (mm <sup>2</sup> ) |      |        |        |        |
|-----------------------------------------------------------------------------------------------------------|------|--------|--------|--------|
| 4000                                                                                                      | 8000 | 10,000 | 12,000 | 16,000 |
| -3                                                                                                        | +0   | +1     | +2     | +3     |

If the equivalent free area is not listed within the table, please refer to a suitably qualified acoustician to determine the appropriate performance correction.

