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**FI REAL ESTATE MANAGEMENT LTD**

**KINGMOOR SITE 3A, WREXHAM INDUSTRIAL ESTATE**

**NOISE ASSESSMENT REPORT**

**MARCH 2023**

**DATE ISSUED:** MARCH 2023  
**JOB NUMBER:** GM12034  
**REPORT NUMBER:** 0003  
**VERSION/STATUS:** V2.0/Final

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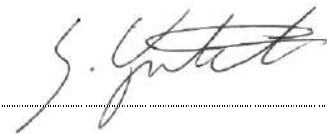
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## EXECUTIVE SUMMARY

Wardell Armstrong LLP has carried out a noise assessment to accompany an outline planning application for a proposed industrial site off Bryn Lane, Wrexham Industrial Estate.

The Proposed Development is to comprise of three large warehouse units intended for B8 use.

A baseline sound survey was undertaken in September 2022, at existing residential dwellings during the day and night-time periods. The sound survey data was used to assess the potential noise impact of the development at the local sensitive receptors.

Noise modelling was undertaken to predict the potential noise impact from the Proposed Development, as well as the anticipated changes to road traffic noise levels as a result of the scheme, at the nearest existing sensitive receptors.

The results of the noise model calculations have determined that any noise associated with the Proposed Development is unlikely to exceed the background sound levels at the nearest sensitive receptors on the B5130. On this basis, no mitigation measures are required, and existing sensitive receptors would not experience any adverse effect due to noise from the proposed development.

The results of the road traffic assessment show that the impact of increased road traffic noise due to the Proposed Development is less than +3dB and therefore the potential noise impact of development led road traffic would be negligible at all existing sensitive receptors.

When considering the Proposed Development in accordance with Welsh planning guidance (Planning Policy Wales, Edition 11, 2021), the predicted noise impact is low, and is therefore, not a significant consideration when determining the planning application.

## **1 INTRODUCTION**

- 1.1.1 Wardell Armstrong LLP (WA) was commissioned to undertake a noise impact assessment for the proposed industrial development at Site 3A, Wrexham Industrial Estate, located east of Bryn Lane.
- 1.1.2 The Proposed Development is to comprise of three warehouse units intended for B8 use, with floor areas of 17,187m<sup>2</sup>, 19,045 m<sup>2</sup> and 46,451m<sup>2</sup>, and associated car parks for visitors and staff. The site sits on the eastern boundary of the established Wrexham Industrial Estate, with existing industrial and commercial premises to the west and south.
- 1.1.3 This noise assessment has been prepared to accompany an outline planning application. The report assesses the noise modelling carried out against the results of baseline sound monitoring in accordance with current guidance and considers any need for noise mitigation where appropriate.

## **2 ASSESSMENT METHODOLOGY**

### **2.1 Local Authority Consultation**

2.1.1 The general principles of the assessment methodology were sent to Paul Campini (Enforcement Officer) at Wrexham County Borough Council (WCBC), who confirmed the approach was suitable in an email dated 14<sup>th</sup> September 2022.

### **2.2 Policy, Standards & Guidance**

2.2.1 The noise assessment has considered the following standards and guidance:

- Planning Policy Wales, Edition 11, February 2021.
- Planning guidance (Wales), Technical Advice Note (TAN) (Wales) 11, “Noise” October 1997.
- British Standard BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS8233:2014).
- Department of Transport’s technical memorandum Calculation of Road Traffic Noise 1998 (CRTN).
- Design Manual for Roads and Bridges LA 111 – Noise and Vibration, 2020.

2.2.2 Further details of these documents are included in **Appendix A**.

### **2.3 Scope of Assessment**

2.3.1 As agreed with the Enforcement Officer at WCBC, this report details the following:

- An assessment of the likely noise impacts at the nearest Existing Sensitive Receptors (ESRs) to the Proposed Development using a combination of known details of the development and assumptions made, based on previous experience on similar projects, using methodology in BS4142.
- A development generated road traffic noise assessment at the nearest ESRs, where it is predicted that road traffic flows are expected to be impacted by increased road traffic flows due to the development.

### 3 NOISE SURVEY

#### 3.1 Introduction

3.1.1 Between Monday 12<sup>th</sup> and Tuesday 13<sup>th</sup> September 2022, WA carried out a noise survey to measure the existing ambient and background sound levels at ESRs in the vicinity of the Proposed Development.

3.1.2 Unattended noise measurements were taken at one Monitoring Location (ML1) to measure the background sound levels and record audio. The monitoring location is shown on Figure 1 and is representative of all ESRs on this section of the B5130.

3.1.3 Table 1 shows the monitoring period at ML1.

| Table 1: Noise Monitoring Periods                       |                         |                         |
|---------------------------------------------------------|-------------------------|-------------------------|
| Monitoring Location                                     | Start<br>Date and Time  | Finish<br>Date and Time |
| ML1 – Representative of Existing Dwellings on the B5130 | 13/09/22<br>15:00:00 PM | 14/09/22<br>14:00:00 PM |

3.1.4 During the monitoring periods, noise from existing industrial premises including distant HGV beepers and low-level plant noise was audible, along with occasional road traffic on the B5130.

3.1.5 The noise measurements were made using a Class 1, integrating sound level meter. The microphone was mounted on a tripod 1.5m above the ground and more than 3.5 metres from any other reflecting surfaces. The sound level meter was calibrated to a reference level of 94dB at 1kHz both before and on completion of the noise survey. No significant drift in the calibration during the survey was noted.

3.1.6 A-weighted<sup>1</sup> L<sub>eqs</sub><sup>2</sup>, maximum sound pressure levels, A-weighted L<sub>90s</sub><sup>3</sup>, A-weighted L<sub>10s</sub><sup>4</sup> were measured and are presented in full in Appendix B.

<sup>1</sup> A' Weighting      An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.

<sup>2</sup> L<sub>eqs</sub>      Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

<sup>3</sup> L<sub>90</sub>      The noise level which is exceeded for 90% of the measurement period.

<sup>4</sup> L<sub>10</sub>      The noise level which is exceeded for 10% of the measurement period.

### **3.2 Meteorological Conditions**

3.2.1 The weather conditions were obtained on site during the noise survey. Between the 12<sup>th</sup> and 13<sup>th</sup> September 2022, the weather conditions were as follows:

- Temperatures between 12 and 19°C
- North-westerly winds with speeds up to 1-3m/s
- Dry and overcast, 0mm precipitation.

### **3.3 Existing Background Sound Levels**

3.3.1 The noise measurements obtained at ML1 have been analysed to establish representative background sound levels for a 1-hour daytime and 15-minute night-time period as required by BS4142. This assessment of background sound levels is provided in detail in Section 5 below.

## **4 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTY**

### **4.1 Introduction**

4.1.1 This assessment is affected by the following assumptions and limitations.

### **4.2 Assumptions**

4.2.1 The following assumptions have been made:

- For the purposes of the assessment ESRs are positioned at a height of 1.5 m above ground level during the daytime period, and 4.0m during the night-time, to represent the typical usage of a dwelling.
- The site is intended to operate 24 hours a day, however activity is likely to be reduced during the night-time period.
- A window open at 20% provides around 13 dB of noise attenuation.<sup>1</sup>
- Fixed plant for each of the three proposed units will be located to the rear of each building, and/or on the rooftop of each building.
- Proposed buildings will have pitched roofs, at a height of 25m to the eaves, and a height of 28m to the ridge.
- Proposed car parks will be at ground level only, with a total of 654 spaces for the whole development. Each parking space is assumed to be used once per hour during the daytime at as a worst-case scenario.

4.2.2 Further details of assumptions used regarding the sound sources associated with the Proposed Development are detailed in Section 5.

### **4.3 Limitations**

4.3.1 The development generated road traffic assessment has been informed by data provided by Prime Transport Ltd, as shown in Appendix C, which is limited to vehicle movement predictions between the hours of 0700 and 1900 only. No traffic flow data has been provided for night-time vehicle movements.

4.3.2 Due to the scale of the development it is expected that night-time vehicle movements, particularly HGV movements will be operational, therefore some reasonable assumptions have been made regarding this, which are detailed in Section 5.

---

<sup>1</sup> Acoustics, Ventilation and Overheating – Residential Design Guide, January 2020

- 4.3.3 The noise model which has been created using SoundPLAN version 8.2, uses the noise prediction methodology set out in *ISO 9613-2:1996 'Attenuation of sound during propagation outdoors'* which accounts for downwind propagation.
- 4.3.4 Care has been given when setting up the noise model to ensure its accuracy, and that the model accurately represents the proposed site layout and the local area (i.e., topography and existing buildings), however, some approximations have been used which therefore limits the output of each model scenario.
- 4.3.5 SoundPLAN takes into account the effects of ground attenuation, in which the total area to be calculated is assigned a coefficient based upon the ratio of soft to hard surfaces. For this model, the coefficient 0.6 has been assigned (where 1 = soft and 0 = hard), as the surrounding area to the site is a mixture of hard and soft ground conditions.
- 4.3.6 External factors such as the ambient temperature or wind direction could reduce or increase the and subsequent noise from the Proposed Development.

#### **4.4 Uncertainty**

- 4.4.1 To reduce measurement uncertainty the following steps have been taken:
- The background sound measurement locations were selected to be representative of the background sound levels at the closest receptors to the site. In accordance with guidance, the sound level meter was mounted vertically on a tripod 1.5m above the ground. The monitoring locations were also more than 3.5 metres from any other reflecting surfaces, in accordance with the methodology set out in BS7445-1:2013 'Description and Measurement of Environmental Noise'.
  - The background sound measurements were undertaken during dry and calm weather conditions.
  - The daytime background sound monitoring was undertaken over 1-hour periods in accordance with the reference period required by BS4142.
  - The night-time background sound monitoring was undertaken over 15-minute periods in accordance with the reference period required by BS4142.
  - The results of each measurement period are reported to the nearest 1dB.
  - Noise measurements were made using a Class 1, integrating sound level meter.

## **5 INDUSTRIAL NOISE ASSESSMENT**

### **5.1 Introduction**

5.1.1 The noise sources associated with the Proposed Development which may affect ESRs are:

- Noise break-out of the proposed units, where internal noise within each unit is assumed to be dominated by forklift truck movements.
- HGV movements and associated loading and unloading noise.
- Plant noise, including; air conditioning units, extractor fans, kitchen extractor units and condenser units.
- Customer and staff vehicle movements.

5.1.2 The noise sources associated with the Proposed Development are discussed in more detail below. Due to the limited development detail at this stage, the deliveries, internal noise levels and external plant modelled has been based on assumptions using our professional experience, and noise measurements undertaken for a similar development.

### **5.2 Assumptions**

#### **B8 Units**

5.2.1 Three units are proposed, their location is shown in Drawing 1204-02-001-Proposed 3 Unit Site Plan-RevP4, dated August 2022, as provided by Modern City Architecture and Urbanism.

5.2.2 Based on previous experience, and to present a robust assessment, six Air Conditioning (AC) units have been assumed to be installed at the rear of each unit of the development. The AC units are assumed to be fixed at 2m above the ground on the rear façade of each unit. Due to the size of the buildings, it is likely that roof mounted plant items will also be installed to each unit, therefore a further four AC Units have been assumed to be fixed to the roofs of Unit 1 and Unit 2, and a further six plant items fixed to the roof of Unit 3.

5.2.3 The AC units are assumed to operate 100% of the time.

5.2.4 In the absence of detailed information on the operations of each proposed building, a robust approach has been taken in which internal noise sources have been modelled within each unit, calibrated to result in an internal sound pressure level of 80 dB(A).

This reflects The Control of Noise at Work Regulations (2005) lower action value in which is recommended workers are not exposed to noise levels equating to 80 dB  $L_{Aeq,T}$  during their working day (typically 8 hours). This level most likely an overestimate.

- 5.2.5 The construction of each unit has been assumed to be Kingspan 'KS1000 RW + no lining' wall panels, 'Kingspan RW/80 + no lining' roof panels and a concrete floor. The assumed sound insulation performance and internal sound absorption properties for the external walls and roof is shown in Table 2 below.

| Table 2: Kingspan KS1000 RW + No Lining – Acoustic Performance data: Sound Insulation ( $R_w$ ) and Absorption ( $\alpha$ ) |                |      |     |     |      |      |      |      |                   |
|-----------------------------------------------------------------------------------------------------------------------------|----------------|------|-----|-----|------|------|------|------|-------------------|
| Acoustic Performance                                                                                                        | Frequency (Hz) |      |     |     |      |      |      |      |                   |
|                                                                                                                             | 63             | 125  | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Overall           |
| Sound Insulation Wall 1W ( $R_w$ )                                                                                          | 15             | 16   | 19  | 23  | 26   | 22   | 39   | -    | 25 (-3 $C_{tr}$ ) |
| Sound Insulation Roof 10R ( $R_w$ )                                                                                         | 20             | 18   | 20  | 24  | 20   | 29   | 39   | 47   | 25 (-3 $C_{tr}$ ) |
| Sound Absorption Wall + Roof ( $\alpha$ )                                                                                   | 0.07           | 0.25 | 0.2 | 0.1 | 0.15 | 0.1  | 0.08 | 0.15 | -                 |

- 5.2.6 All noise sources within the noise model are detailed in Table 3 below.

### HGV Movements

- 5.2.7 Traffic flow forecasts from Prime Transport Ltd have indicated that the Proposed Development would result in 423 total movements within the site per day (between 0700 and 1900 hours).
- 5.2.8 Detailed trip generation data has been provided indicating that during the peak daytime hours, total HGV movements would be up to 47 (arrivals and departures). Therefore, 16 HGV movement events per hour to each proposed unit have been assumed as a worst case; this is a total of 48 events per hour within the whole site, during the daytime.
- 5.2.9 There is currently no information regarding the expected night-time HGV activity on site, therefore, some reasonable assumptions have been made. It has been assumed that the development would be operational for 24 hours a day, however activity would likely be lower during the night-time than that of the daytime.
- 5.2.10 Therefore, based on the information provided, and to present a robust scenario, 6 HGV movement events per hour to each proposed unit have been assumed within the

night-time noise model, which equates to a total of 18 HGV movements on site per hour, during the night-time.

### Car Park Areas

5.2.11 Car park activity has been calculated via the SoundPLAN parking lot module; this assumes that the parking movements would be similar to that of typical visitor / staff parking and uses the sound power spectrum of a typical car engine starting for each noise event. The number of carparking spaces are as follows:

- 175 spaces for Unit 1
- 183 spaces for Unit 2
- 296 spaces for Unit 3

5.2.12 The model has been set up to assume each parking space would be used once per hour, to present a worst-case scenario.

### Summary

5.2.13 The sound power levels assumed for the Proposed Development are outlined in Table 3.

| Table 3: Assumed Sound Power Levels for Industrial Noise Model       |                                                                                              |                       |                                                                                                     |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------|
| Noise Source                                                         | Source Details                                                                               | L <sub>w</sub> dB (A) | Comment                                                                                             |
| Fixed External Air Handling Units (wall mounted on the rear facades) | 6no. point sources per unit                                                                  | 80                    | Assumed to each be 2.0m height above ground, fixed to the rear façade of each unit.                 |
| Rooftop Fixed Plant                                                  | 6no. point sources on the largest unit, 4no. on the other two units.                         | 80                    | Assumed to be fixed to the roof tops of each unit at a height of 0.5m above roof height.            |
| HGV movements                                                        | Moving point source modelled at 1.5m height above ground                                     | 101                   | 24 movements per hour during the daytime period, 14 movements per hour during the night-time period |
| HGV Ramp Drops                                                       | Point Source 0.5m above ground level                                                         | 99                    | 22 seconds per hour assumed as a worst case, located at the front of each proposed unit             |
| Internal noise source                                                | Internal Area Source, Calibrated to 80 dB(A) Sound Pressure Level inside each proposed unit. | 88                    | Based on The Control of Noise at Work Regulations (2005).                                           |

| Table 3: Assumed Sound Power Levels for Industrial Noise Model |                                                                                                                                           |                                             |                                                                                                                                                                              |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noise Source                                                   | Source Details                                                                                                                            | L <sub>w</sub> dB (A)                       | Comment                                                                                                                                                                      |
| Car parks                                                      | SoundPLAN Carpark source used in each proposed area (1 per unit). Assumes each parking bay would be used once within a worst case 1-hour. | 104<br>(Typical spectrum of a starting car) | A total of 413 parking bays have been assumed across the site. In the absence of any further information regarding this all-parking bays have been modelled at ground level. |

5.2.14 Any alternative plant that is proposed, or designed in an alternative location, should have a sound power level no more than stated in Table 3. At the design stage the Mechanical and Electrical plan should design external plant so that cumulative emissions are below the background sound level at the receptors.

### 5.3 BS4142 Assessment

#### Modelling of the Specific Industrial Sound

5.3.1 A noise model was created using modelling software SoundPLAN v8.2, based on the assumptions detailed above, to predict the development related sound levels at ESRs during the operational phase.

5.3.2 The specific sound levels from the Proposed Development have been predicted at each of the ESRs. In accordance with BS4142, the specific sound levels for the daytime and night-time have been presented for 1-hour (daytime) and 15-minute (night-time) periods respectively. The predicted specific sound levels are presented in Table 4 and daytime and night-time grid noise maps showing the specific sound noise level propagation from the site to the nearest ESRs can be seen in Figure 2 and Figure 3.

| Table 4: Predicted Specific Sound Levels |                                   |      |                                     |      |
|------------------------------------------|-----------------------------------|------|-------------------------------------|------|
| Description                              | Daytime L <sub>Aeq</sub> , 1-hour |      | Night-time L <sub>Aeq</sub> , 15min |      |
|                                          | ESR1                              | ESR2 | ESR1                                | ESR2 |
| Specific Noise Level (dB)                | 38                                | 38   | 37                                  | 37   |

#### Rating level

5.3.3 BS4142 includes guidance on the application of an additional weighting which should be applied to the specific sound level should the industrial noise be tonal, impulsive, intermittent or have any other characteristics that are readily distinctive against the residual acoustic environment, as experienced at receptors.

- 5.3.4 Any plant is assumed to be broadband in nature and will be controlled to ensure that they are not tonal. However, other noise from deliveries and HGV activity on site may be readily distinguishable over the ambient noise environment at the existing receptors (including reversing alarms and ramp drops when unloading goods). Therefore, a penalty of +3 dB has been applied to the predicted specific sound level at the ESRs.

#### **Selection of the Background Sound Level**

- 5.3.5 Section 8 of BS4142 provides guidance on the selection of the background sound level to be used in the assessment. BS4142 states that the background sound levels used for the assessment should be representative of the period being assessed (i.e. daytime or night-time periods), and that there is no “single” background sound level.
- 5.3.6 Therefore, an assessment of the measured background sound levels is required to select the most appropriate and representative background sound level. An assessment has been carried out based upon the measured sound levels during the daytime, and night-time.
- 5.3.7 Table 5 shows the selected background sound levels used in the assessment.
- 5.3.8 Further analysis of how the background sound level for the assessment was determined is shown in Appendix B.

| <b>Table 5: Representative Background Sound Levels</b> |                                                                               |                                                                                  |
|--------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Monitoring Location</b>                             | <b>Daytime Background Sound Level<br/>(<math>L_{A90,1\text{hour}}</math>)</b> | <b>Night-time Background Sound Level<br/>(<math>L_{A90,15\text{min}}</math>)</b> |
| ML1                                                    | 40                                                                            | 40                                                                               |

#### **5.4 Comparison of the Background Sound Levels and Rating Levels**

- 5.4.1 In accordance with BS4142, the predicted rating levels of operations from the proposed commercial park, at two existing sensitive receptors (which are nearest to the Proposed Development), have been compared with the representative background sound levels, as shown in Table 6.

| Table 6: Comparison of rating levels and background sound levels |                    |         |       |            |       |
|------------------------------------------------------------------|--------------------|---------|-------|------------|-------|
| Description                                                      |                    | Daytime |       | Night-time |       |
|                                                                  |                    | ESR 1   | ESR 2 | ESR 1      | ESR 2 |
| Specific Noise Level, $L_{Aeq,T}$ (dB)                           |                    | 38      | 38    | 37         | 37    |
| Acoustic<br>Character<br>Corrections                             | Tonality (dB)      | 0       | 0     | 0          | 0     |
|                                                                  | Impulsivity (dB)   | 3       | 3     | 3          | 3     |
|                                                                  | Intermittency (dB) | 0       | 0     | 0          | 0     |
| Calculated Rating Level                                          |                    | 41      | 41    | 40         | 40    |
| Measured Background Sound Level<br>$L_{A90,T}$ (dB)              |                    | 40      | 40    | 40         | 40    |
| Excess of the rating level over the<br>Background sound level    |                    | +1      | +1    | 0          | 0     |

- 5.4.2 The rating levels at ESR1 and ESR2 are 1 dB higher than the background sound levels, during the daytime, and equal to the background sound level during the night-time.
- 5.4.3 BS4142 states that as the rating level approaches +5dB above the background sound level, this is an indication of an adverse impact. Therefore, a +1 dB difference during the day and a 0 dB difference during the night, as shown in the assessment presented in Table 6, is an indication of a low impact, depending on context.
- 5.4.4 The context of this assessment and the environment surrounding the site is analysed further below.

## 5.5 BS4142 Context Assessment

- 5.5.1 BS4142:2014 states “The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs”.
- 5.5.2 The first requirement of this statement has been determined within the noise impact assessment section above. To determine the context in which the industrial sound will reside, three factors must be considered, these are:
- The absolute level of sound.
  - The character and level of the residual sound compared to the character and level of the specific sound.
  - The sensitivity of the receptor

### **Absolute Level of Sound**

- 5.5.3 To determine the first context test in BS4142 it is necessary to determine whether the residual and background sound levels are high or low. Section 11 of BS4142 states;

*“Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*

*Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.”*

- 5.5.4 The level of the background sound level is moderate, and the rating levels are also moderate at both receptors. Therefore, this is an indication that the exceedance of the rating level over the background sound is an appropriate method of assessment of impact in this case.

### **Character and Level of Residual Sound Compared with the Specific Sound**

- 5.5.5 The specific sound level from the Proposed Development is similar in character to the existing residual sound, which contains mid frequency noise from road traffic and industrial/commercial sound from premises adjacent to the Proposed Development and beyond. Therefore, the Proposed Development is in keeping with the immediate area.
- 5.5.6 The measured baseline noise data indicates that the average residual sound at ESR1 and ESR2 would be approximately 49 dB  $L_{Aeq,1hour}$  during the day and 46 dB  $L_{Aeq, 15mins}$  at night. The calculated specific sound is 41 dB  $L_{Aeq,1hour}$  during the day and 40 dB  $L_{Aeq, 15mins}$  at night. In both cases the ambient noise level would be raised by less than +1dB  $L_{Aeq,T}$ , and would not be perceptible. This does not account for screening of existing noise sources by the Proposed Development buildings themselves.
- 5.5.7 This is a positive indication that the noise impact from the Proposed Development would be low due to the existing ambient sound environment.

### Sensitivity of Receptor

5.5.8 With regard to pertinent factors to be taken into consideration, Section 11 of BS4142 states;

*“The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:*

- i) facade insulation treatment;*
- ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and*
- iii) acoustic screening.”*

5.5.9 Sensitive external areas at ESR1 and ESR2 will have moderate to high sensitivity given their residential nature.

5.5.10 During the night-time, residents would be located inside their dwellings and would benefit from noise attenuation provided by the building façade. When assessing sound levels in noise sensitive rooms, the noise attenuation provided by the overall building facade should be considered. The ESRs are unlikely to benefit from any acoustic façade treatment / mechanical ventilation, therefore, it is assumed that ventilation is provided to the dwellings via open windows.

5.5.11 When considering a partially open window at ESR1 and ESR2, the internal noise level contribution from the Proposed Development would be approximately 23 dB(A) during the night-time.

5.5.12 These predicted internal noise levels are low, and below the guideline value stated in BS8233. It is also likely that sound at a level of 23 dB(A) from the proposed development is likely to be indistinguishable to the occupant, when inside their house with windows open.

## **5.6 Summary of the BS4142 Assessment**

- 5.6.1 The assessment in Table 6 shows that the rating levels of activities associated with Proposed Development would likely be up to +1 dB higher than the background sound levels during the daytime and equal to the background sound level during the night-time at ESR1 and ESR2. This is an initial estimate that the noise impact from the Proposed Development will be low.
- 5.6.2 In accordance with BS4142, the context in which the sound resides must be considered as part of the assessment. As demonstrated in this assessment, when considering context, the noise impact at ESRs remains low. Therefore, the BS4142 assessment indicates that the noise associated with the Proposed Development will have a low impact at all ESRs.
- 5.6.3 Based on the results of this assessment, no mitigation has been proposed, however it is recommended that any plant associated with the development does not exceed the levels stated in Table 3 of this document, to ensure the predicted noise impact remains low.

## 6 DEVELOPMENT GENERATED ROAD TRAFFIC ASSESSEMENT

### 6.1 Introduction

6.1.1 The scale of the development proposals indicates a potential for additional traffic flows around the immediate area of the site. To ensure the development will not cause an adverse noise impact at ESRs due to increase road traffic flows, a road traffic noise assessment has been carried out.

6.1.2 Using the SoundPLAN modelling software, predictions of road traffic noise levels have been calculated at each of the Road Traffic ESRs (RT-ESRs) identified around the Proposed Development, with regards to the following future year scenarios that have been informed by the Prime Transport Ltd AAWT data in Appendix C:

- 2027 Without Development
- 2027 With Development (and other committed developments in the immediate area)

### 6.2 Existing Sensitive Receptors

6.2.1 The RT-ESRs identified for the development generated road traffic noise assessment are detailed in Table 7 below and shown on Figure 1.

| Table 7: Existing Sensitive Receptors for Development Generated Road Traffic Noise Assessment |                                    |                |             |                   |
|-----------------------------------------------------------------------------------------------|------------------------------------|----------------|-------------|-------------------|
| Receptor                                                                                      | Receptor Location                  | Grid Reference |             | Bearing from Site |
|                                                                                               |                                    | North          | West        |                   |
| RT-ESR1                                                                                       | Bryn Lane, Wrexham LL13 9UY        | 53°02'28.1"N   | 2°54'48.6"W | 580m, South       |
| RT-ESR2                                                                                       | 6 Bryn Ln, Wrexham LL13 9UT        | 53°03'03.3"N   | 2°54'46.7"W | 310m, North-east  |
| RT-ESR3                                                                                       | Holt, Wrexham LL13 9XG             | 53°03'06.3"N   | 2°55'09.2"W | 620m, North-east  |
| RT-ESR4                                                                                       | Hugmore Ln, Holt, Wrexham LL13 9YE | 53°03'12.0"N   | 2°55'35.2"W | 1.1km, North-east |

6.2.2 The RT-ESRs detailed above have been assessed in terms of the significance criteria outlined in LA 111 DMRB (see Appendix A).

6.2.3 The change in noise levels at RT-ESRs due to the change in road traffic flows around the Proposed Development as predicted for 2027 are presented in Table 8 below. The 2027 Without Development scenario has been compared against the 2027 With Development scenario. The significance of each predicted change is also shown in accordance with LA 111 - DMRB guidance.

6.2.4 Figure 4 illustrates the change in noise levels at each of the RT-ESRs between the 2027 Without Development and 2027 With Development scenarios.

| Table 8: Predicted Change in Road Traffic Noise Levels at ESRs, With and Without Development (2027) |                                         |                       |                                                                          |              |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------|--------------------------------------------------------------------------|--------------|
| Receptor                                                                                            | Predicted L <sub>A10</sub> , 18-hour dB |                       | Change in Road Traffic Noise Levels at ESR, With and Without Development | Noise Impact |
|                                                                                                     | 2027 Without Development                | 2027 With Development |                                                                          |              |
| RT-ESR1                                                                                             | 66.6                                    | 66.8                  | +0.2                                                                     | Negligible   |
| RT-ESR2                                                                                             | 61.3                                    | 63.2                  | +1.9                                                                     | Negligible   |
| RT-ESR3                                                                                             | 66.8                                    | 66.9                  | +0.1                                                                     | Negligible   |
| RT-ESR4                                                                                             | 70.2                                    | 70.6                  | +0.4                                                                     | Negligible   |

6.2.5 The results of the road traffic assessment in Table 8 show that the impact of increased road traffic noise is less than +3dB and therefore negligible at all RT-ESRs.

## **7 CONCLUSIONS**

- 7.1.1 Wardell Armstrong has carried out a noise assessment for a proposed B8 use development at Site 3A, Wrexham Industrial Estate.
- 7.1.2 An assessment of noise break-out, external plant and vehicle movements in accordance with BS4142 has been undertaken. The assessment has shown that activities associated with the Proposed Development are likely to be +1dB above existing background sound levels during the daytime and equal to the background sound level during the night-time, at the nearest sensitive receptors, located off the B5130.
- 7.1.3 The context assessment of the existing environment concludes that the potential noise impact from the development is low.
- 7.1.4 Existing receptors located on the B5130 to the east would not be subject to any adverse impact due to development related noise, in accordance with BS4142.
- 7.1.5 A development generated road traffic assessment courtesy of data provided by Prime Transport Ltd was also carried out, due to the scale of the development proposals.
- 7.1.6 Four receptors were identified in the vicinity of the roads expected to be affected by increased road traffic flows generated by both the Proposed Development and other committed developments in the immediate area to the site. The 2027 without development traffic flow data and the 2027 with development traffic flow data was used to create a road traffic noise model that predicted the noise level at each receptor identified for each scenario.
- 7.1.7 The results of the road traffic noise modelling indicates that the anticipated change in road traffic noise levels at the receptors under assessment would be negligible in line with DMRB LA 111.
- 7.1.8 When considering the Proposed Development in accordance with Welsh planning guidance, the predicted noise impact from both industrial noise and increased road traffic noise is low-negligible and is therefore not a significant consideration when determining the planning application.

## **APPENDICES**

## **Appendix A**

### Policy, Legislation & Guidance

## **Appendix A**

### **Guidance and Legislation**

#### ***Planning Policy Wales***

- A.1 Planning Policy Wales (PPW) is the current planning policy guidance within Wales. The planning guidance defines the primary objective of the document in paragraph 1.2 as follows:

“...to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales...”

- A.2 In particular reference to noise Paragraph 6.7.3 of the PPW states:

“Problematic forms of sound are generally experienced as noise pollution and can affect amenity and be prejudicial to health or a nuisance. Noise action plans drawn up by public bodies aim to prevent and reduce noise levels where necessary and preserve soundscape quality where it is good. Noise levels used to identify priority areas contained in noise actions plans are usually set quite high in order to focus resources on the most polluted areas and noise must meet a number of tests before it qualifies as a statutory nuisance. Lower levels of noise however, can still be annoying or disruptive and impact on amenity and as such should be protected through the planning process wherever necessary.”

#### ***Technical Advice Note 11: Noise (TAN 11)***

- A.3 TAN 11 is used to categorise noise levels for proposed residential developments. TAN 11 presents four noise exposure categories (NECs), ranging from A to D, where A represents the lowest noise levels, and D is for sites with higher noise levels. A breakdown of the NECs, and subsequent advice is provided below in Table 1 and 2.

| Table A1: Noise exposure categories for road traffic noise and mixed sources <sup>1</sup> |                         |         |         |     |
|-------------------------------------------------------------------------------------------|-------------------------|---------|---------|-----|
| Time                                                                                      | Noise Exposure Category |         |         |     |
|                                                                                           | A                       | B       | C       | D   |
| 0700-2300                                                                                 | <55                     | 55 - 63 | 63 - 72 | >72 |
| 2300-0700 <sup>2</sup>                                                                    | <45                     | 45 - 57 | 57 - 66 | >66 |

| Table A2: Advice relating to noise exposure category |              |                                                                                                                                                                                                                                                                             |
|------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NEC                                                  | Significance | Advice                                                                                                                                                                                                                                                                      |
| A                                                    | Negligible   | Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as desirable.                                                                                         |
| B                                                    | Minor        | Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection.                                                                                                             |
| C                                                    | Moderate     | Planning permission should not normally be granted. Where it is considered that permission should be given, for example, because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise. |
| D                                                    | Major        | Planning permission should normally be refused.                                                                                                                                                                                                                             |

#### A.4 TAN 11 also states that:

“This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development.”

#### ***BS8233 Guidance on sound insulation and noise reduction for buildings***

#### A.5 British Standard 8233 “Guidance on sound insulation and noise reduction for buildings” 2014 bases its advice on the WHO Guidelines. In addition, for internal noise levels it states:

<sup>1</sup> **Noise levels:** the noise level(s) ( $L_{Aeq,T}$ ) used when deciding the NEC of a site should be representative of typical conditions.

<sup>2</sup> **Night-time noise levels (2300-0700):** sites where individual noise events regularly exceed 82dB $L_{Amax}$  (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the  $L_{Aeq,8H}$  (except where the  $L_{Aeq,8H}$  already puts the site in NEC D).

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

A.6 Furthermore, with regard to external noise, the Standard states:

*“For traditional external areas that are used for amenity space such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB  $L_{Aeq,T}$  with an upper guidance value of 55 dB  $L_{Aeq,T}$  which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”*

***British Standard 4142:2014+A1:2019 (BS4142), Method for rating and assessing industrial and commercial sound:***

A.7 BS4142 is used to rate and assess sound of an industrial and/or commercial nature including:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

A.8 The standard is applicable to the determination of the following levels at outdoor locations:

- rating levels for sources of sound of an industrial and/or commercial nature; and
- ambient, background and residual sound levels, for the purposes of:

- 1) Investigating complaints;
- 2) Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
- 3) Assessing sound at proposed new dwellings or premises used for residential purposes.

- A.9 The purpose of the BS4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.
- A.10 BS4142 refers to noise from the industrial source as the 'specific noise' and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with Ridgewood Industrial Park. The 'specific noise' levels, of the existing industrial premises that have been measured are detailed in Section 4 of this report.
- A.11 BS4142 assesses the significance of impacts by comparing the specific noise level to the background noise level ( $L_{A90}$ ). Section 4 provides details of the background noise survey undertaken.
- A.12 Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. In particular BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS4142 includes allowances for a rating penalty to be added if it is found that the specific noise source contains a tone, impulse and/or other characteristic, or is expected to be present. The specific noise level along with any applicable correction is referred to as the 'rating level'.
- A.13 The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
  - A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
  - The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background

sound level, this is an indication of the specific sound source having a low impact, depending on the context.

A.14 During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

A.15 Where the initial estimate of the impact needs to be modified due to context, BS4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

***Department of Transport's technical memorandum Calculation of Road Traffic CRTN, 1998***

A.16 The Department of Transport's memorandum, "Calculation of Road Traffic Noise" (CRTN), 1988 defines a shortened measurement procedure which is used to calculate the  $L_{A10,18\text{hour}}$  noise level from a measured 3-hour period. The method requires the measurement of noise over 3 consecutive hours between 1000 and 1700 hours.

A.17 From the measured 3-hour period, the arithmetic average of the three  $L_{A10,1\text{Hour}}$  measurements is taken. The  $L_{A10,18\text{Hour}}$  noise level is then determined using the following calculation method:

- $L_{A10,18\text{Hour}} = L_{A10,3\text{hour}} - 1$

A.18 The document "Converting the UK traffic noise index  $L_{A10,18h}$  to EU noise indices for noise mapping" by P G Abbott and P M Nelson (The TRL Method) provides a calculation method to convert the calculated  $L_{A10,18\text{Hour}}$  into a daytime  $L_{Aeq}$  as described below.

- $L_{\text{day}} = 0.95 \times L_{A10,18\text{hour}} + 1.44\text{dB}$

A.19 The calculation for the night-time period is shown below.

- $L_{\text{night}} = 0.90 \times L_{A10,18\text{hour}} - 3.77$

***Design Manual for Roads and Bridges, LA 111, Noise and Vibration (May 2020)***

- A.20 The development generated road traffic assessment considers the impact of increased road traffic noise levels at existing receptors. The assessment is based on the significance criteria set out in DMRB for the assessment of long-term changes in road traffic noise. The criteria is presented in Tables A3 and A4 below.

| <b>Table A3: Road Traffic Noise Assessment – Short Term Magnitude of Change (DMRB LA111 - Noise)</b> |                                                                                     |
|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Short Term Magnitude of Impact</b>                                                                | <b>Short Term Noise Change (<math>L_{A10,18h}</math> or <math>L_{night}</math>)</b> |
| Major                                                                                                | $\geq 5.0$ dB increase                                                              |
| Moderate                                                                                             | 3.0 – 4.9 dB increase                                                               |
| Minor                                                                                                | 1.0 – 2.9 dB increase                                                               |
| Negligible                                                                                           | Less than 1.0 dB increase                                                           |

| <b>Table A4: Road Traffic Noise Assessment – Long Term Magnitude of Change (DMRB LA111 - Noise)</b> |                                                                                    |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Long Term Magnitude of Impact</b>                                                                | <b>Long Term Noise Change (<math>L_{A10,18h}</math> or <math>L_{night}</math>)</b> |
| Major                                                                                               | $\geq 10.0$ dB increase                                                            |
| Moderate                                                                                            | 5.0 – 9.9 dB increase                                                              |
| Minor                                                                                               | 3.0 – 4.9 dB increase                                                              |
| Negligible                                                                                          | Less than 3.0 dB increase                                                          |

## **Appendix B**

### Noise Monitoring Results & Background Sound Analysis

## Appendix B – Noise Monitoring Results

| Table B1: Daytime Measured Noise Levels at ML1 - Properties on B5130 |                            |                         |                         |                        |                        |
|----------------------------------------------------------------------|----------------------------|-------------------------|-------------------------|------------------------|------------------------|
| Period start                                                         | Measured Noise Levels (dB) |                         |                         |                        |                        |
|                                                                      | L <sub>Aeq,15min</sub>     | L <sub>Amin,15min</sub> | L <sub>Amax,15min</sub> | L <sub>A90,15min</sub> | L <sub>A10,15min</sub> |
| 13/09/2022 15:00                                                     | 52.8                       | 34.9                    | 71.7                    | 37.9                   | 57.4                   |
| 13/09/2022 15:15                                                     | 45.5                       | 33.4                    | 63.6                    | 37                     | 48.7                   |
| 13/09/2022 15:30                                                     | 46.6                       | 36.2                    | 59.3                    | 37.8                   | 50.7                   |
| 13/09/2022 15:45                                                     | 54.3                       | 39.4                    | 60.9                    | 49.8                   | 56.9                   |
| 13/09/2022 16:00                                                     | 47.6                       | 36.2                    | 63.5                    | 37.4                   | 52.2                   |
| 13/09/2022 16:15                                                     | 47.1                       | 34.9                    | 65.8                    | 36.4                   | 51.1                   |
| 13/09/2022 16:30                                                     | 51                         | 35.3                    | 68.6                    | 37.1                   | 55.4                   |
| 13/09/2022 16:45                                                     | 50.1                       | 34.5                    | 77                      | 36.6                   | 51.5                   |
| 13/09/2022 17:00                                                     | 47.7                       | 36.4                    | 61.5                    | 37.6                   | 52.5                   |
| 13/09/2022 17:15                                                     | 48.7                       | 35.3                    | 62.5                    | 36.9                   | 53.7                   |
| 13/09/2022 17:30                                                     | 46.9                       | 35.3                    | 67.3                    | 36.2                   | 46.1                   |
| 13/09/2022 17:45                                                     | 47.9                       | 35.9                    | 65.1                    | 37.5                   | 50.9                   |
| 13/09/2022 18:00                                                     | 54.6                       | 35.4                    | 74.1                    | 37.1                   | 58.3                   |
| 13/09/2022 18:15                                                     | 48.3                       | 35.3                    | 68.9                    | 37.3                   | 51.1                   |
| 13/09/2022 18:30                                                     | 47.3                       | 37.3                    | 68.1                    | 39.1                   | 48.6                   |
| 13/09/2022 18:45                                                     | 46.3                       | 39.6                    | 63.3                    | 39.9                   | 46.3                   |
| 13/09/2022 19:00                                                     | 48.5                       | 38.8                    | 70.9                    | 39.9                   | 50.1                   |
| 13/09/2022 19:15                                                     | 44.6                       | 39                      | 64.4                    | 39.5                   | 43.6                   |
| 13/09/2022 19:30                                                     | 46.3                       | 38.8                    | 63.5                    | 39.4                   | 49.9                   |
| 13/09/2022 19:45                                                     | 44.9                       | 38.8                    | 63.2                    | 39.2                   | 44.4                   |
| 13/09/2022 20:00                                                     | 42.4                       | 37                      | 61                      | 37.9                   | 40.9                   |
| 13/09/2022 20:15                                                     | 42.9                       | 37.8                    | 62.8                    | 38.1                   | 41                     |
| 13/09/2022 20:30                                                     | 46.7                       | 40                      | 68.3                    | 40.3                   | 44.1                   |
| 13/09/2022 20:45                                                     | 46.7                       | 40.6                    | 63.9                    | 40.9                   | 45.7                   |
| 13/09/2022 21:00                                                     | 43.7                       | 39.3                    | 63.7                    | 40.1                   | 42.8                   |
| 13/09/2022 21:15                                                     | 48.3                       | 40.7                    | 72.3                    | 41.1                   | 45.5                   |
| 13/09/2022 21:30                                                     | 46.1                       | 40.6                    | 62.6                    | 40.9                   | 45.5                   |
| 13/09/2022 21:45                                                     | 46                         | 40                      | 65.6                    | 40.5                   | 44.1                   |
| 13/09/2022 22:00                                                     | 45.1                       | 38.8                    | 64.3                    | 39.7                   | 44.1                   |
| 13/09/2022 22:15                                                     | 46.2                       | 38.3                    | 66.1                    | 39.2                   | 45                     |
| 13/09/2022 22:30                                                     | 42.3                       | 39                      | 61.3                    | 39.5                   | 41.8                   |
| 13/09/2022 22:45                                                     | 43.8                       | 38.5                    | 63.2                    | 38.7                   | 41                     |
| 13/09/2022 23:00                                                     | 40.6                       | 38                      | 46.6                    | 38.5                   | 42.4                   |
| 14/09/2022 07:00                                                     | 47.5                       | 41.6                    | 64.6                    | 42.3                   | 47.6                   |
| 14/09/2022 07:15                                                     | 49.3                       | 41.2                    | 66.5                    | 41.8                   | 49.8                   |
| 14/09/2022 07:30                                                     | 50.3                       | 41.7                    | 66.5                    | 42.5                   | 54.3                   |
| 14/09/2022 07:45                                                     | 51.2                       | 40.4                    | 65.7                    | 42.5                   | 55.7                   |
| 14/09/2022 08:00                                                     | 49.6                       | 40.6                    | 68.6                    | 41.7                   | 52.8                   |
| 14/09/2022 08:15                                                     | 48.6                       | 41                      | 63.2                    | 41.6                   | 51.6                   |
| 14/09/2022 08:30                                                     | 49.7                       | 38.4                    | 69.2                    | 39.8                   | 51.6                   |

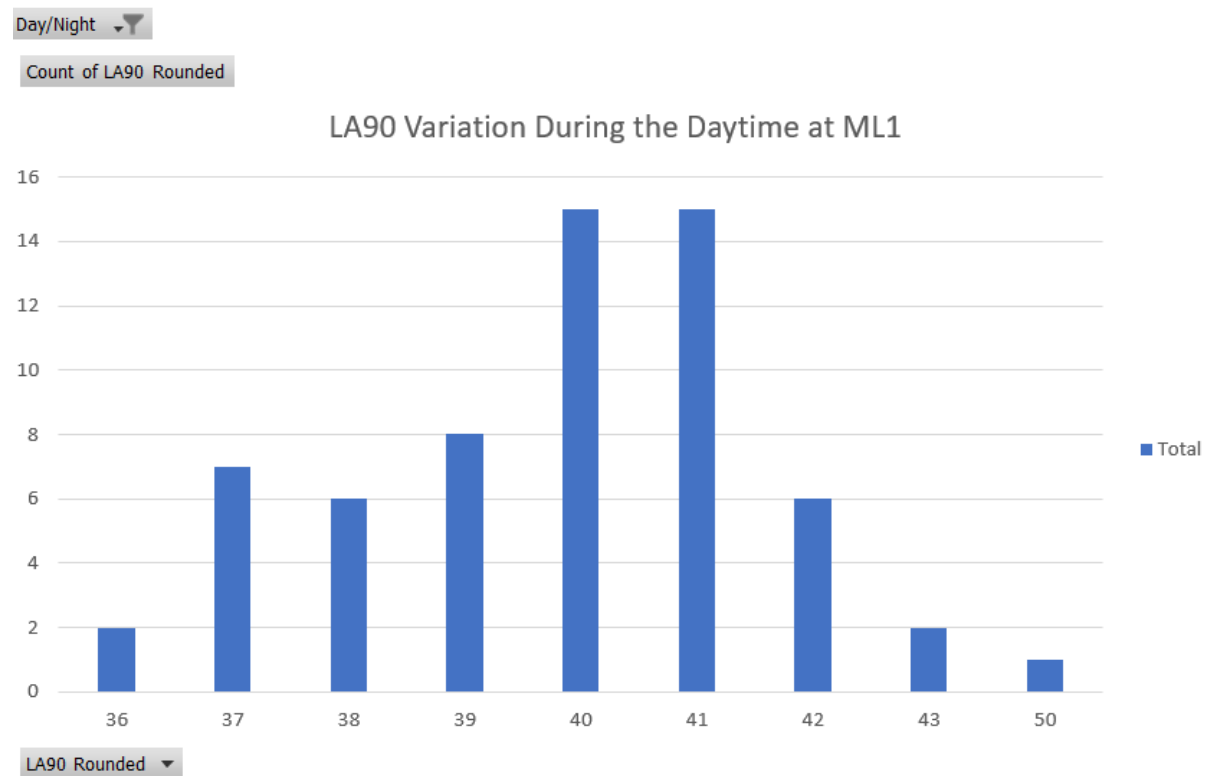
| Table B1: Daytime Measured Noise Levels at ML1 - Properties on B5130 |                            |                        |                        |                        |                        |
|----------------------------------------------------------------------|----------------------------|------------------------|------------------------|------------------------|------------------------|
| Period start                                                         | Measured Noise Levels (dB) |                        |                        |                        |                        |
|                                                                      | L <sub>Aeq,15min</sub>     | L <sub>Aeq,15min</sub> | L <sub>Aeq,15min</sub> | L <sub>Aeq,15min</sub> | L <sub>Aeq,15min</sub> |
| 14/09/2022 08:45                                                     | 50.3                       | 39.6                   | 71.9                   | 40.4                   | 53.7                   |
| 14/09/2022 09:00                                                     | 55.5                       | 38.2                   | 73.9                   | 41                     | 60.5                   |
| 14/09/2022 09:15                                                     | 45.1                       | 39.6                   | 60.1                   | 40.3                   | 45.4                   |
| 14/09/2022 09:30                                                     | 47                         | 38.9                   | 64.3                   | 40.7                   | 48.2                   |
| 14/09/2022 09:45                                                     | 46.9                       | 39.6                   | 61.6                   | 40.8                   | 49.7                   |
| 14/09/2022 10:00                                                     | 53.8                       | 38.6                   | 72.2                   | 39.8                   | 58                     |
| 14/09/2022 10:15                                                     | 46.2                       | 39.3                   | 62.1                   | 40.5                   | 49                     |
| 14/09/2022 10:30                                                     | 45.8                       | 39.5                   | 60                     | 41                     | 48.1                   |
| 14/09/2022 10:45                                                     | 54.5                       | 38                     | 73.3                   | 40.5                   | 58.5                   |
| 14/09/2022 11:00                                                     | 45.8                       | 37.2                   | 65.5                   | 39                     | 47.8                   |
| 14/09/2022 11:15                                                     | 47.7                       | 37.7                   | 67.2                   | 40.2                   | 48.3                   |
| 14/09/2022 11:30                                                     | 45.9                       | 38                     | 66.3                   | 38.9                   | 47.2                   |
| 14/09/2022 11:45                                                     | 46                         | 40.1                   | 62.1                   | 40.6                   | 47.4                   |
| 14/09/2022 12:00                                                     | 45.4                       | 39.3                   | 63.5                   | 40.3                   | 46.3                   |
| 14/09/2022 12:15                                                     | 46.9                       | 39.7                   | 62.8                   | 41.4                   | 48.7                   |
| 14/09/2022 12:30                                                     | 46.1                       | 40.5                   | 60.7                   | 41.7                   | 47.4                   |
| 14/09/2022 12:45                                                     | 50                         | 39.4                   | 83                     | 41.5                   | 47.1                   |
| 14/09/2022 13:00                                                     | 47.6                       | 39                     | 64                     | 40.3                   | 50.2                   |
| 14/09/2022 13:15                                                     | 48.8                       | 38.5                   | 75.5                   | 40.8                   | 50.4                   |
| 14/09/2022 13:30                                                     | 46.8                       | 39.9                   | 66.6                   | 40.6                   | 49                     |
| 14/09/2022 13:45                                                     | 47                         | 38.7                   | 66.1                   | 40.2                   | 47.9                   |
| 14/09/2022 14:00                                                     | 49.2                       | 39.6                   | 73.7                   | 41.1                   | 48.8                   |
| <b>Overall</b>                                                       | <b>48.8</b>                | <b>33.4</b>            | <b>83.0</b>            | <b>39.8</b>            | <b>49.1</b>            |

| Table B2: Night-time Measured Noise Levels at ML1 - Properties on B5130 |                            |                       |                       |                       |                       |
|-------------------------------------------------------------------------|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Period start                                                            | Measured Noise Levels (dB) |                       |                       |                       |                       |
|                                                                         | L <sub>Aeq,5min</sub>      | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> |
| 13/09/2022 23:00                                                        | 40.4                       | 38.5                  | 46.6                  | 38.8                  | 41.6                  |
| 13/09/2022 23:05                                                        | 39.8                       | 38                    | 44.2                  | 38.1                  | 41.1                  |
| 13/09/2022 23:10                                                        | 41.3                       | 38.4                  | 45.9                  | 39                    | 43.2                  |
| 13/09/2022 23:15                                                        | 43.2                       | 40.9                  | 54.7                  | 41.2                  | 43.6                  |
| 13/09/2022 23:20                                                        | 44.6                       | 40.6                  | 62.1                  | 40.5                  | 42.9                  |
| 13/09/2022 23:25                                                        | 41.9                       | 40.1                  | 45.2                  | 40.7                  | 43.2                  |
| 13/09/2022 23:30                                                        | 40.5                       | 37.5                  | 45.3                  | 38                    | 41.8                  |
| 13/09/2022 23:35                                                        | 48.4                       | 39.9                  | 65.3                  | 40.1                  | 48                    |
| 13/09/2022 23:40                                                        | 45.4                       | 39.9                  | 62.1                  | 40.4                  | 43.9                  |
| 13/09/2022 23:45                                                        | 46                         | 38.7                  | 65.3                  | 39.2                  | 42.6                  |
| 13/09/2022 23:50                                                        | 44.8                       | 39.5                  | 49.7                  | 40.3                  | 47.4                  |
| 13/09/2022 23:55                                                        | 46                         | 42.1                  | 50.5                  | 43.7                  | 47.3                  |
| 14/09/2022 00:00                                                        | 43.2                       | 40                    | 49.1                  | 40.6                  | 45.4                  |
| 14/09/2022 00:05                                                        | 43.8                       | 41                    | 48.7                  | 41.7                  | 45.7                  |
| 14/09/2022 00:10                                                        | 42.4                       | 39.4                  | 47.3                  | 40                    | 43.8                  |

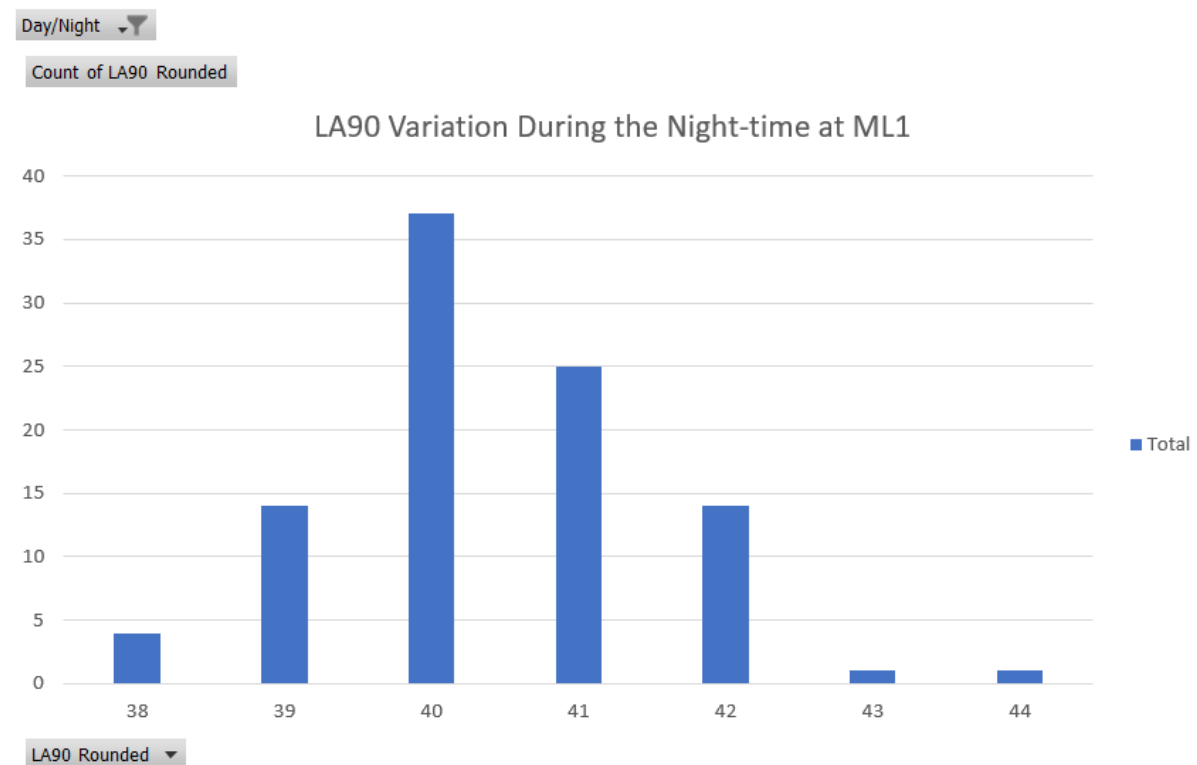
| Table B2: Night-time Measured Noise Levels at ML1 - Properties on B5130 |                            |                       |                       |                       |                       |
|-------------------------------------------------------------------------|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Period start                                                            | Measured Noise Levels (dB) |                       |                       |                       |                       |
|                                                                         | L <sub>Aeq,5min</sub>      | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> |
| 14/09/2022 00:15                                                        | 41.3                       | 39.9                  | 44.2                  | 40.1                  | 42.4                  |
| 14/09/2022 00:20                                                        | 42                         | 40                    | 48.8                  | 40                    | 44                    |
| 14/09/2022 00:25                                                        | 42.6                       | 40.8                  | 47.5                  | 40.7                  | 44.4                  |
| 14/09/2022 00:30                                                        | 40.8                       | 39.9                  | 44.2                  | 39.9                  | 41.4                  |
| 14/09/2022 00:35                                                        | 49.4                       | 39.4                  | 69.1                  | 40.2                  | 48.8                  |
| 14/09/2022 00:40                                                        | 41.7                       | 40.4                  | 49.6                  | 40.5                  | 42.7                  |
| 14/09/2022 00:45                                                        | 39.8                       | 38.3                  | 44.2                  | 38.3                  | 41.1                  |
| 14/09/2022 00:50                                                        | 43.8                       | 39.7                  | 57                    | 39.9                  | 44.9                  |
| 14/09/2022 00:55                                                        | 42.1                       | 39.4                  | 47.2                  | 39.7                  | 44.6                  |
| 14/09/2022 01:00                                                        | 40.6                       | 39.6                  | 45.8                  | 39.7                  | 41.1                  |
| 14/09/2022 01:05                                                        | 41.1                       | 39.9                  | 43.6                  | 40.1                  | 41.8                  |
| 14/09/2022 01:10                                                        | 39.3                       | 38.7                  | 43.2                  | 38.6                  | 39.8                  |
| 14/09/2022 01:15                                                        | 46.1                       | 38.2                  | 67.9                  | 38.5                  | 40.9                  |
| 14/09/2022 01:20                                                        | 39.4                       | 38.3                  | 45                    | 38.6                  | 39.9                  |
| 14/09/2022 01:25                                                        | 39.7                       | 38.7                  | 42.5                  | 38.7                  | 40.3                  |
| 14/09/2022 01:30                                                        | 42.3                       | 40.9                  | 48.1                  | 40.5                  | 43.8                  |
| 14/09/2022 01:35                                                        | 40.7                       | 39.1                  | 43.9                  | 39.3                  | 41.7                  |
| 14/09/2022 01:40                                                        | 41.5                       | 40.8                  | 43.9                  | 40.7                  | 42                    |
| 14/09/2022 01:45                                                        | 40.8                       | 39.9                  | 43.5                  | 39.9                  | 41.6                  |
| 14/09/2022 01:50                                                        | 41.3                       | 39                    | 50.1                  | 39.4                  | 42.3                  |
| 14/09/2022 01:55                                                        | 41.5                       | 39.6                  | 45.4                  | 39.6                  | 43.5                  |
| 14/09/2022 02:00                                                        | 41.8                       | 40.4                  | 45.4                  | 40.5                  | 42.7                  |
| 14/09/2022 02:05                                                        | 42.3                       | 40.7                  | 45.4                  | 40.6                  | 43.5                  |
| 14/09/2022 02:10                                                        | 42.8                       | 41.4                  | 46.3                  | 41.7                  | 43.8                  |
| 14/09/2022 02:15                                                        | 42.9                       | 41.7                  | 50                    | 41.5                  | 44.4                  |
| 14/09/2022 02:20                                                        | 42.1                       | 40.6                  | 46.4                  | 40.4                  | 43.5                  |
| 14/09/2022 02:25                                                        | 43.7                       | 42.1                  | 46.7                  | 42.1                  | 44.8                  |
| 14/09/2022 02:30                                                        | 44.1                       | 42.4                  | 48.8                  | 42.5                  | 45.3                  |
| 14/09/2022 02:35                                                        | 42.9                       | 41.4                  | 45.3                  | 41.4                  | 43.8                  |
| 14/09/2022 02:40                                                        | 43.1                       | 40                    | 48.4                  | 40.5                  | 44.4                  |
| 14/09/2022 02:45                                                        | 43                         | 41.4                  | 46.2                  | 42                    | 43.6                  |
| 14/09/2022 02:50                                                        | 45.1                       | 42.3                  | 62.7                  | 42.4                  | 44.7                  |
| 14/09/2022 02:55                                                        | 41.3                       | 39.3                  | 49                    | 39.6                  | 42.6                  |
| 14/09/2022 03:00                                                        | 41.2                       | 39.7                  | 47.5                  | 39.7                  | 42.3                  |
| 14/09/2022 03:05                                                        | 41.4                       | 40.1                  | 45.6                  | 40.1                  | 42.2                  |
| 14/09/2022 03:10                                                        | 40.9                       | 40                    | 47.7                  | 40                    | 41.7                  |
| 14/09/2022 03:15                                                        | 41.3                       | 40.4                  | 44.9                  | 40.3                  | 41.9                  |
| 14/09/2022 03:20                                                        | 40.9                       | 39.6                  | 48.6                  | 39.7                  | 41.7                  |
| 14/09/2022 03:25                                                        | 41.2                       | 40.1                  | 44.9                  | 40.1                  | 42.2                  |
| 14/09/2022 03:30                                                        | 43.1                       | 41.6                  | 47.6                  | 41.8                  | 44                    |
| 14/09/2022 03:35                                                        | 43.4                       | 42.1                  | 49.5                  | 42.2                  | 44.5                  |
| 14/09/2022 03:40                                                        | 42                         | 39.9                  | 45.3                  | 40.2                  | 43.4                  |

| Table B2: Night-time Measured Noise Levels at ML1 - Properties on B5130 |                            |                       |                       |                       |                       |
|-------------------------------------------------------------------------|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Period start                                                            | Measured Noise Levels (dB) |                       |                       |                       |                       |
|                                                                         | L <sub>Aeq,5min</sub>      | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> | L <sub>Aeq,5min</sub> |
| 14/09/2022 03:45                                                        | 42.7                       | 41.3                  | 46.7                  | 41.2                  | 44.3                  |
| 14/09/2022 03:50                                                        | 41.2                       | 40                    | 44.9                  | 40.1                  | 42                    |
| 14/09/2022 03:55                                                        | 42.8                       | 41.7                  | 46                    | 41.7                  | 43.9                  |
| 14/09/2022 04:00                                                        | 42.5                       | 41.4                  | 49.3                  | 41.2                  | 44.3                  |
| 14/09/2022 04:05                                                        | 43.1                       | 41                    | 47.1                  | 41                    | 44.7                  |
| 14/09/2022 04:10                                                        | 44.3                       | 41.5                  | 56.5                  | 41.7                  | 45.3                  |
| 14/09/2022 04:15                                                        | 42.7                       | 41                    | 47.7                  | 41.1                  | 44.1                  |
| 14/09/2022 04:20                                                        | 42.4                       | 41                    | 45.9                  | 41.1                  | 43.6                  |
| 14/09/2022 04:25                                                        | 41.6                       | 38.7                  | 46.8                  | 38.7                  | 44.2                  |
| 14/09/2022 04:30                                                        | 42.3                       | 40.9                  | 52.3                  | 41                    | 43.6                  |
| 14/09/2022 04:35                                                        | 44.8                       | 40.1                  | 62.7                  | 40.4                  | 44                    |
| 14/09/2022 04:40                                                        | 44.5                       | 39                    | 61.5                  | 39.6                  | 44.4                  |
| 14/09/2022 04:45                                                        | 38.8                       | 38.1                  | 42.4                  | 37.8                  | 40                    |
| 14/09/2022 04:50                                                        | 43.9                       | 39.1                  | 63.6                  | 39.2                  | 41.6                  |
| 14/09/2022 04:55                                                        | 46.8                       | 39.8                  | 68                    | 39.7                  | 43.7                  |
| 14/09/2022 05:00                                                        | 44.2                       | 39.6                  | 65.7                  | 39.7                  | 42.8                  |
| 14/09/2022 05:05                                                        | 44.9                       | 38.6                  | 62.9                  | 39                    | 43.5                  |
| 14/09/2022 05:10                                                        | 40.5                       | 39.1                  | 45.2                  | 39.1                  | 41.7                  |
| 14/09/2022 05:15                                                        | 44.4                       | 40                    | 63.5                  | 40.1                  | 42.9                  |
| 14/09/2022 05:20                                                        | 42.5                       | 39.4                  | 58                    | 39.8                  | 42.6                  |
| 14/09/2022 05:25                                                        | 41.7                       | 39.8                  | 46.9                  | 40.2                  | 42.7                  |
| 14/09/2022 05:30                                                        | 40.9                       | 39.4                  | 43.6                  | 39.7                  | 42                    |
| 14/09/2022 05:35                                                        | 45.5                       | 40.1                  | 66                    | 40.3                  | 43.5                  |
| 14/09/2022 05:40                                                        | 47.2                       | 40.8                  | 64.7                  | 40.7                  | 44.6                  |
| 14/09/2022 05:45                                                        | 44.8                       | 40.9                  | 60.8                  | 41.2                  | 44.3                  |
| 14/09/2022 05:50                                                        | 47.9                       | 40.8                  | 67.2                  | 40.8                  | 48.3                  |
| 14/09/2022 05:55                                                        | 45.2                       | 41.2                  | 62.6                  | 41.1                  | 44.8                  |
| 14/09/2022 06:00                                                        | 44                         | 40.5                  | 61.1                  | 40.7                  | 43.2                  |
| 14/09/2022 06:05                                                        | 46.8                       | 40.5                  | 65.4                  | 40.4                  | 46.4                  |
| 14/09/2022 06:10                                                        | 44.5                       | 40.7                  | 59.5                  | 41                    | 45.4                  |
| 14/09/2022 06:15                                                        | 49.5                       | 40.4                  | 65.3                  | 40.5                  | 52.2                  |
| 14/09/2022 06:20                                                        | 48.6                       | 40.1                  | 65.8                  | 40.3                  | 53.2                  |
| 14/09/2022 06:25                                                        | 44.7                       | 39.7                  | 61.8                  | 39.8                  | 45.1                  |
| 14/09/2022 06:30                                                        | 47.4                       | 38.3                  | 63.3                  | 38.8                  | 48.8                  |
| 14/09/2022 06:35                                                        | 45.3                       | 39.3                  | 60.3                  | 40.3                  | 48.9                  |
| 14/09/2022 06:40                                                        | 48.5                       | 41.2                  | 61.4                  | 41.7                  | 52.7                  |
| 14/09/2022 06:45                                                        | 49                         | 40.4                  | 64.5                  | 42.2                  | 50.4                  |
| 14/09/2022 06:50                                                        | 48.7                       | 41.3                  | 66.6                  | 41.8                  | 49.4                  |
| 14/09/2022 06:55                                                        | 44.6                       | 41.8                  | 61.2                  | 41.7                  | 45                    |
| <b>Overall</b>                                                          | <b>46.0</b>                | <b>37.5</b>           | <b>69.1</b>           | <b>40.3</b>           | <b>44.0</b>           |

**Figure B1: Histogram for the Selection of Daytime Background Sound at ML1**



**Figure B2: Selection of Night-time Background Sound at ML1**



## **Appendix C**

### **Prime Transport AAWT-18hr Traffic Data**

### Appendix C – Prime Transport Ltd Traffic Data

| Scenario: | 2027 Without Development – Including Other Committed Developments |           |         |
|-----------|-------------------------------------------------------------------|-----------|---------|
| Link Ref  | Link Description                                                  | 18hr AAWT | Heavy % |
| 1         | Bryn Lane to the North of Oak Road                                | 3902      | 11.11%  |
| 2         | Bryn Lane to the South of Proposed Site Access                    | 4391      | 12.14%  |
| 3         | Bryn Lane to the North of Proposed Site Access                    | 4641      | 13.56%  |
| 4         | Proposed Site Access to the East of Bryn Lane                     | 575       | 39.77%  |
| 5         | Industrial Estate Road to the North of Bryn Lane                  | 27667     | 8.42%   |
| 6         | Bryn Lane to the East of Industrial Estate Road                   | 7437      | 13.00%  |

| Scenario: | 2027 With Development – Including Other Committed Developments |           |         |
|-----------|----------------------------------------------------------------|-----------|---------|
| Link Ref  | Link Description                                               | 18hr AAWT | Heavy % |
| 1         | Bryn Lane to the North of Oak Road                             | 4279      | 10.30%  |
| 2         | Bryn Lane to the South of Proposed Site Access                 | 4768      | 11.35%  |
| 3         | Bryn Lane to the North of Proposed Site Access                 | 6886      | 15.88%  |
| 4         | Proposed Site Access to the East of Bryn Lane                  | 3197      | 22.94%  |
| 5         | Industrial Estate Road to the North of Bryn Lane               | 29868     | 9.23%   |
| 6         | Bryn Lane to the East of Industrial Estate Road                | 9638      | 14.80%  |

| Anticipated HGV Movements Associated with the Site (0700-1900) |              |              |              |                 |            |            |
|----------------------------------------------------------------|--------------|--------------|--------------|-----------------|------------|------------|
| Time                                                           | Trip Rates   |              |              | Trip Generation |            |            |
|                                                                | Arrivals     | Departures   | Total        | Arrivals        | Departures | Total      |
| 07:00-08:00                                                    | 0.018        | 0.013        | 0.031        | 15              | 11         | 26         |
| 08:00-09:00                                                    | 0.016        | 0.017        | 0.033        | 13              | 14         | 27         |
| 09:00-10:00                                                    | 0.020        | 0.023        | 0.043        | 17              | 19         | 36         |
| 10:00-11:00                                                    | 0.023        | 0.021        | 0.044        | 19              | 18         | 37         |
| 11:00-12:00                                                    | 0.027        | 0.026        | 0.053        | 23              | 22         | 45         |
| 12:00-13:00                                                    | 0.022        | 0.024        | 0.046        | 18              | 20         | 38         |
| 13:00-14:00                                                    | 0.029        | 0.020        | 0.049        | 24              | 17         | 41         |
| 14:00-15:00                                                    | 0.029        | 0.027        | 0.056        | 24              | 23         | 47         |
| 15:00-16:00                                                    | 0.027        | 0.022        | 0.049        | 23              | 18         | 41         |
| 16:00-17:00                                                    | 0.023        | 0.019        | 0.042        | 19              | 16         | 35         |
| 17:00-18:00                                                    | 0.015        | 0.015        | 0.030        | 13              | 13         | 26         |
| 18:00-19:00                                                    | 0.013        | 0.015        | 0.028        | 11              | 13         | 24         |
| <b>Daily (12hr)</b>                                            | <b>0.262</b> | <b>0.242</b> | <b>0.504</b> | <b>219</b>      | <b>204</b> | <b>423</b> |

## **DRAWINGS**

Drawing 1204-02-001-Proposed 3 Unit Site Plan-RevP4, dated August 2022

Figure 1 - Site Location, Noise Monitoring Locations and ESRs

Figure 2 - Daytime Noise Contours  $L_{Aeq,1h}$

Figure 3 - Night-time Noise Contours  $L_{Aeq,15min}$

Figure 4 - Change in Road Traffic Noise Levels 2027 Without Development vs 2027 With  
Development  $L_{A10,18hour}$

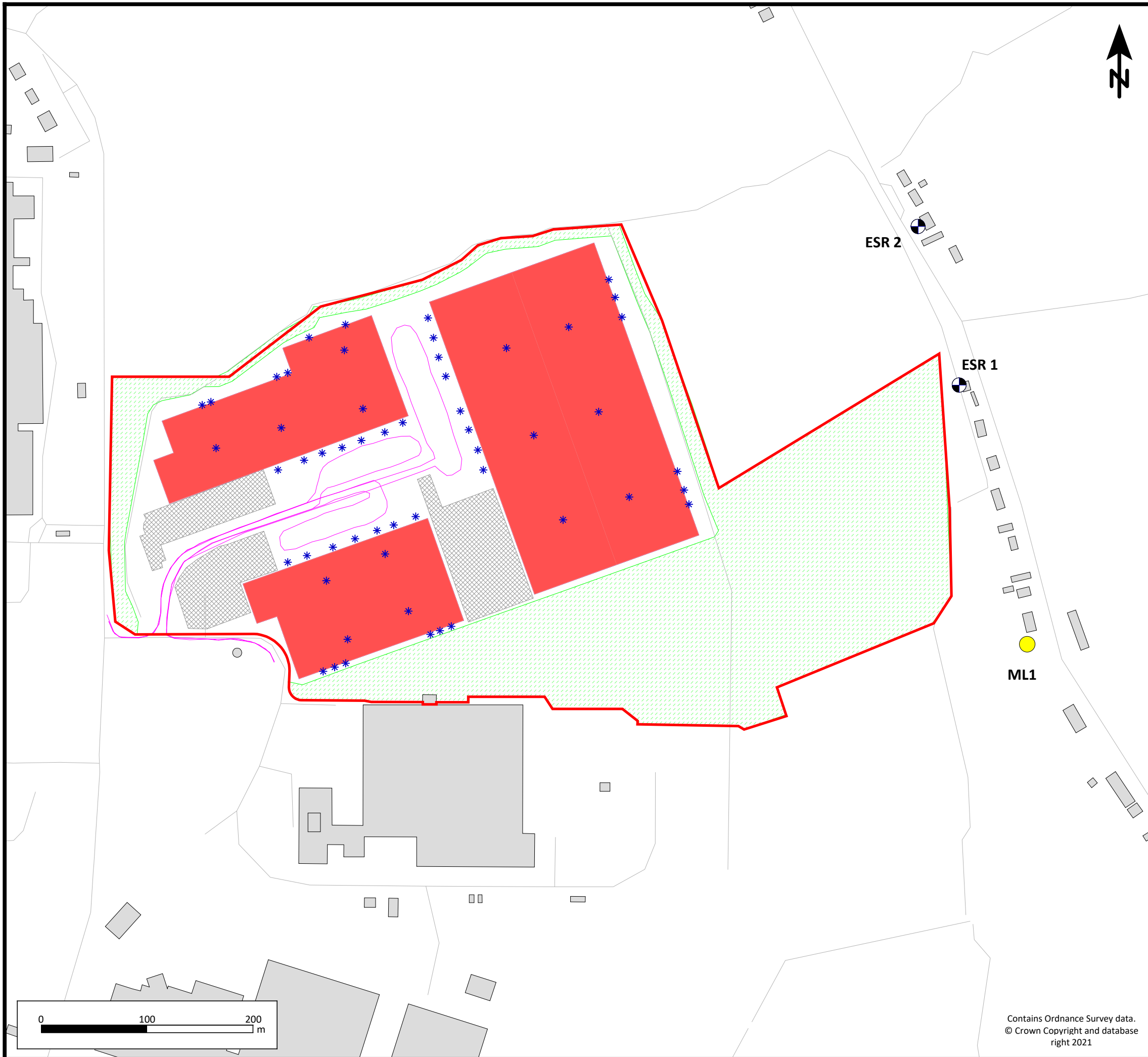


| Unit | Use | Ground Floor Area       | Mezz Office Area (5%) | Storage Mezz Area (7.5%) | Unit Total Area         |
|------|-----|-------------------------|-----------------------|--------------------------|-------------------------|
| 1    | B8  | 17,167sqm / 185,000sqft | 855sqm / 9,250sqft    | 1,263sqm / 13,875sqft    | 19,335sqm / 208,125sqft |
| 2    | B8  | 19,045sqm / 205,000sqft | 952sqm / 10,250sqft   | 1,428sqm / 15,375sqft    | 21,425sqm / 230,625sqft |
| 3    | B8  | 46,451sqm / 500,000sqft | 2,322sqm / 25,000sqft | 3,483sqm / 37,500sqft    | 52,257sqm / 562,500sqft |

|                   |                           |
|-------------------|---------------------------|
| Development Total | 93.019sqm / 1,001.250sqft |
|-------------------|---------------------------|

| Unit | Parking Number                     |
|------|------------------------------------|
| 1    | 175 spaces including 18 accessible |
| 2    | 183 spaces including 18 accessible |
| 3    | 296 spaces including 30 accessible |

[illegible]



Key

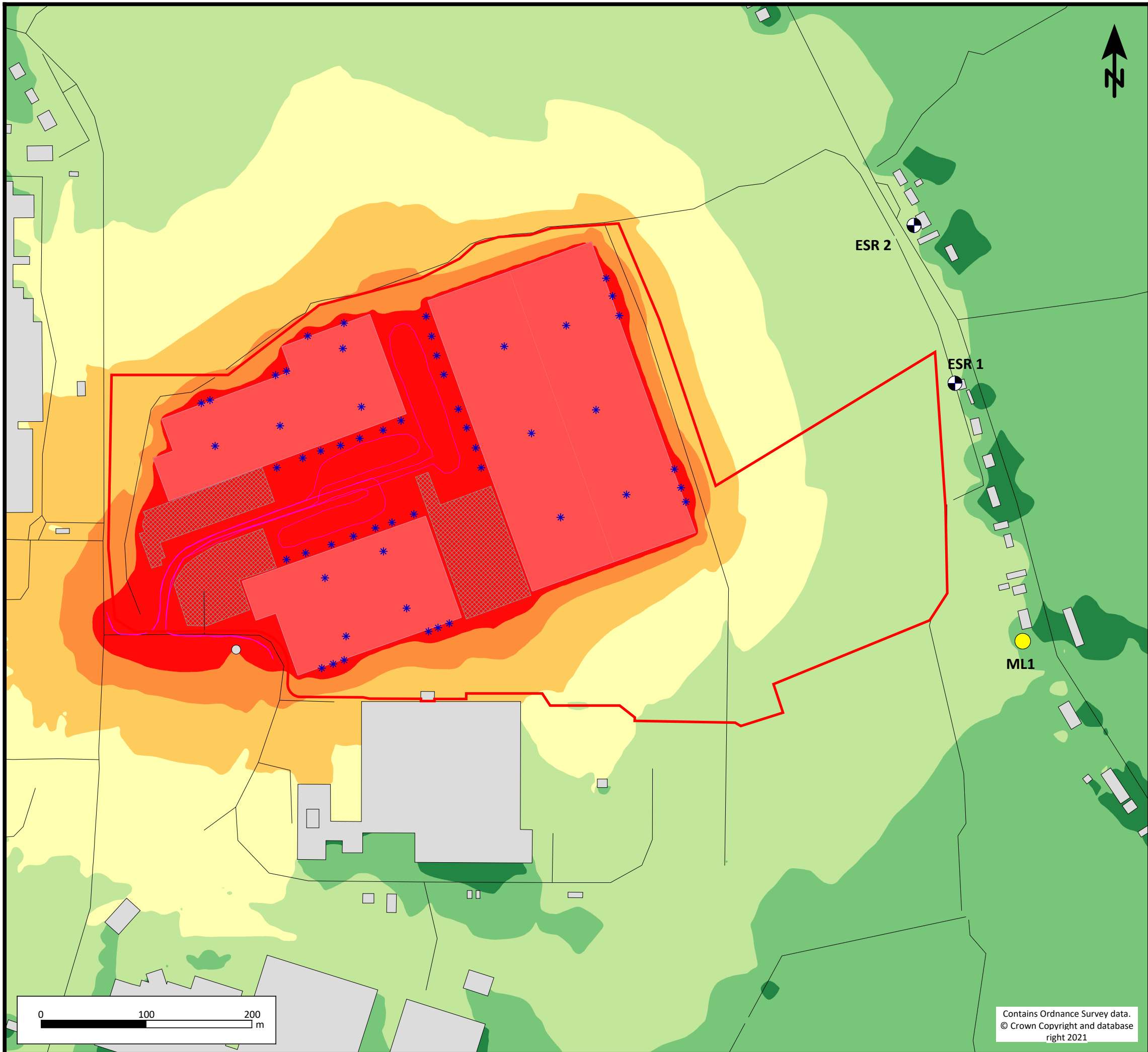
- Base Map
- Existing Buildings
- Monitoring Location
- ESR
- Site Boundary
- Proposed Ecology Zone
- Proposed Car Park
- Proposed B8 Unit
- HGV Movment
- Point Source

|                                                                                          |                  |                     |
|------------------------------------------------------------------------------------------|------------------|---------------------|
| CLIENT:<br>FI Real Estate Management                                                     |                  |                     |
| PROJECT:<br>Kingmoor Site 3A, Wrexham Industrial Estate                                  |                  |                     |
| TITLE:<br>Figure 1 - Site Location, Monitoring Location and Existing Sensitive Receptors |                  |                     |
| DRG NO:<br>GM12034/001                                                                   |                  | REV:<br>A           |
| DRG SIZE:<br>A3                                                                          | SCALE:<br>1:3600 | DATE:<br>27/03/2023 |
| DRAWN BY<br>BG                                                                           | CHECKED BY<br>MW | APPROVED BY<br>SU   |



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| <input type="checkbox"/> CARDIFF    | <input type="checkbox"/> MANCHESTER          |
| <input type="checkbox"/> CARLISLE   | <input type="checkbox"/> NEWCASTLE UPON TYNE |
| <input type="checkbox"/> EDINBURGH  | <input type="checkbox"/> SHEFFIELD           |
| <input type="checkbox"/> GLASGOW    | <input type="checkbox"/> STOKE ON TRENT      |

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Key

- Base Map
- ESR
- Existing Buildings
- Site Boundary
- Conservation Area
- Proposed Car Park
- Proposed B8 Unit
- HGV Movement
- Point Source
- Monitoring Location

Daytime  $L_{Aeq,1h}$  dB

|        |  |         |
|--------|--|---------|
|        |  | <= 30.0 |
| 30.0 < |  | <= 35.0 |
| 35.0 < |  | <= 40.0 |
| 40.0 < |  | <= 45.0 |
| 45.0 < |  | <= 50.0 |
| 50.0 < |  | <= 55.0 |
| 55.0 < |  |         |

|                                                         |                  |                     |
|---------------------------------------------------------|------------------|---------------------|
| CLIENT:<br>FI Real Estate Management                    |                  |                     |
| PROJECT:<br>Kingmoor Site 3A, Wrexham Industrial Estate |                  |                     |
| TITLE:<br>Figure 2 - Daytime Noise Contours             |                  |                     |
| DRG NO:<br>GM12034/002                                  | REV:<br>A        |                     |
| DRG SIZE:<br>A3                                         | SCALE:<br>1:3600 | DATE:<br>27/03/2023 |
| DRAWN BY<br>BG                                          | CHECKED BY<br>MW | APPROVED BY<br>SU   |



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☐ LONDON

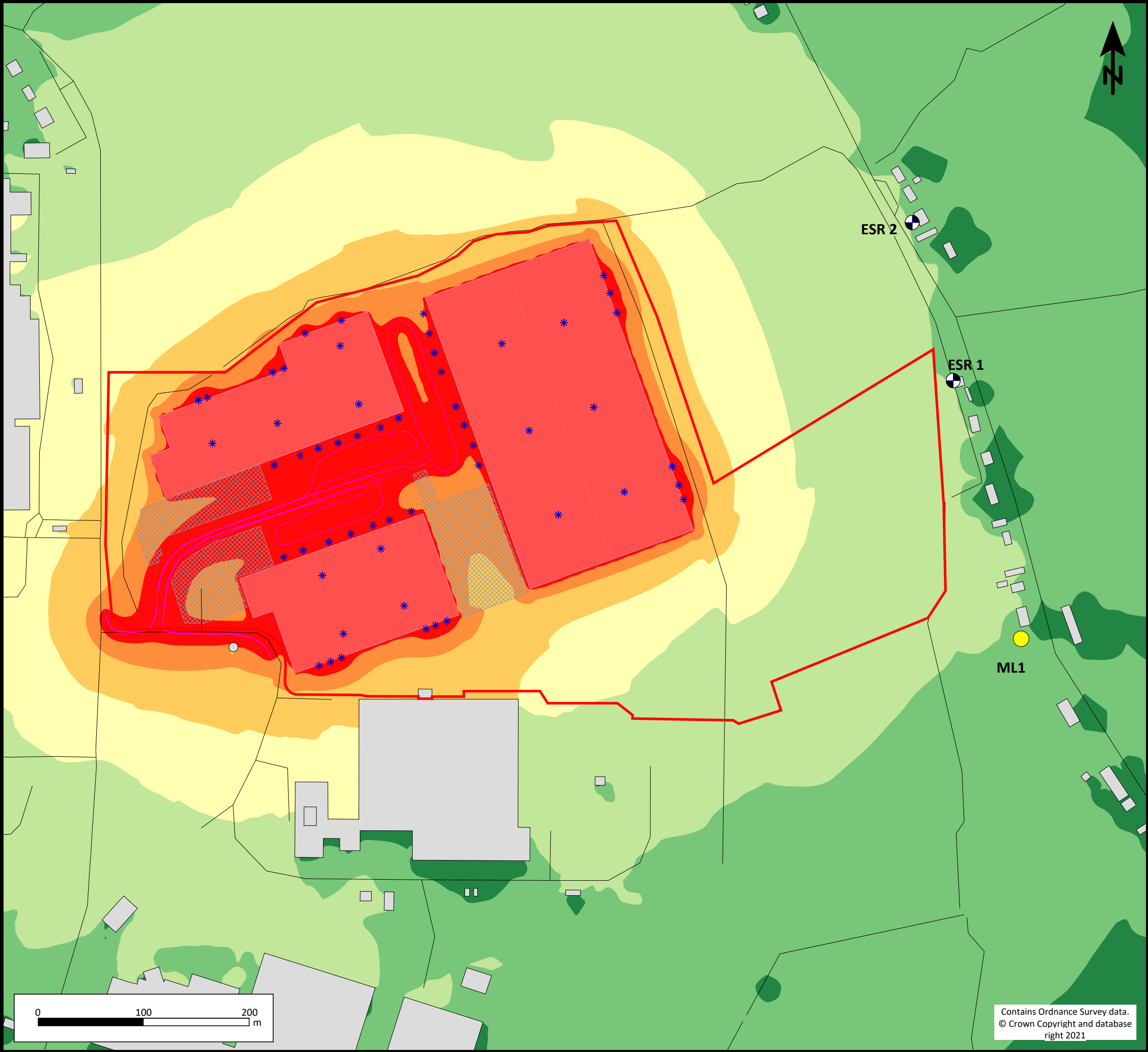
☐ MANCHESTER

☐ NEWCASTLE UPON TYNE

☐ SHEFFIELD

☐ STOKE ON TRENT

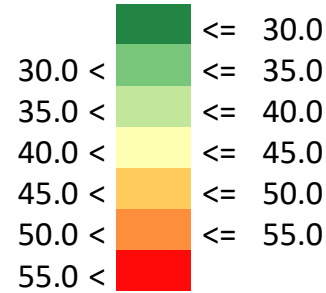
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Key

- Base Map
- ESR
- Existing Buildings
- Site Boundary
- Conservation Area
- Proposed Car Park
- Proposed B8 Unit
- HGV Movement
- Point Source
- Elevation point

Night-time  $L_{Aeq,15min}$  dB

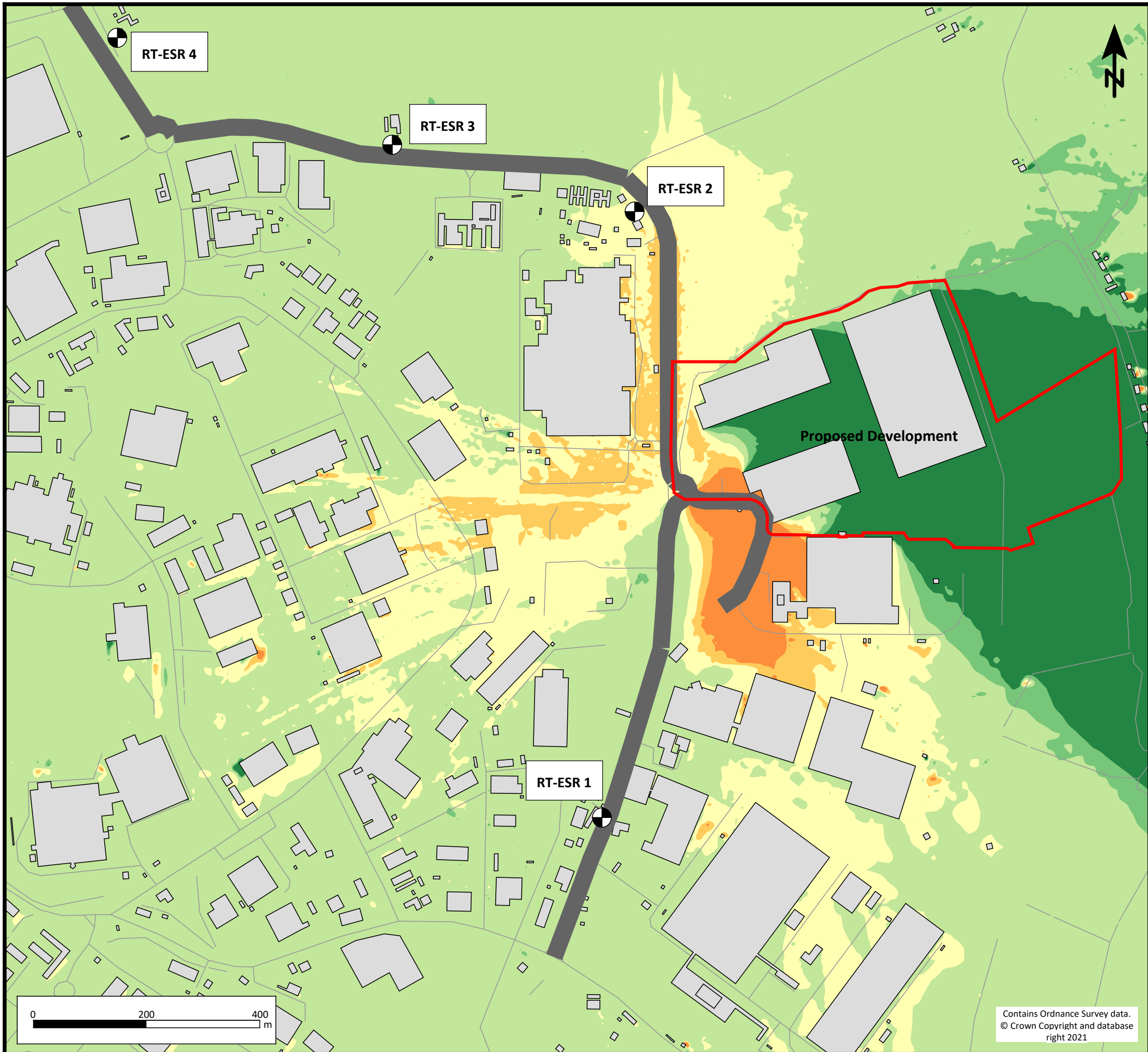


|                                                         |                  |                     |
|---------------------------------------------------------|------------------|---------------------|
| CLIENT:<br>FI Real Estate Management                    |                  |                     |
| PROJECT:<br>Kingmoor Site 3A, Wrexham Industrial Estate |                  |                     |
| TITLE:<br>Figure 2 - Night-time Noise Contours          |                  |                     |
| DRG NO:<br>GM12034/003                                  |                  | REV:<br>A           |
| DRG SIZE:<br>A3                                         | SCALE:<br>1:3600 | DATE:<br>27/03/2023 |
| DRAWN BY<br>BG                                          | CHECKED BY<br>MW | APPROVED BY<br>SU   |



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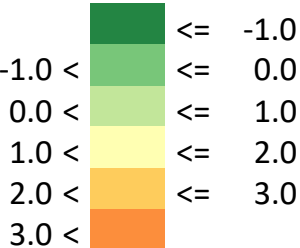
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Key

- Base Map
- Road Traffic Noise Assessment ESR
- Existing Buildings
- Site Boundary
- Road

Change in  $L_{A10,18hr}$  dB  
2025 Without Development  
- 2025 With Development



CLIENT: FI Real Estate Management

PROJECT: Kingmoor Site 3A, Wrexham Industrial Estate

TITLE: Figure 4 - Change in Road Traffic Noise Levels at ESRs, Opening Year 2027, With & Without Proposed Development

DRG NO: GM12034/004

REV: B

DRG SIZE: A3

SCALE: 1:6700

DATE: 27/03/2023

DRAWN BY BG

CHECKED BY MW

APPROVED BY SU



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