



on behalf of

**Lidl Great Britain Ltd**

for development at

**Telegraph Way, Kirkby, Liverpool L32**

**8US**

## Report Number NA103320

**Date of Report 10 October 2025**

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## Summary

A noise assessment has been undertaken to predict the potential impact of noise from the fixed plant and deliveries associated with a proposed Lidl store at Telegraph Way, Kirkby, Liverpool L32 8US.

An environmental sound survey has been undertaken to establish the existing sound climate at nearby residential noise-sensitive receptors during periods when the plant will operate and deliveries will be made.

A baseline computer noise model of the proposed development and the surrounding area has been assembled based on the proposed site layout, Lidl's BBS23 schedule plant specifications and previous measurements of delivery noise. The likely noise levels at the nearest noise-sensitive receptors due to noise from the site have been predicted and are presented within this report.

The assessment concludes that the impact of noise associated with the proposed development is likely to be low. There is no reason, therefore, for this development to be refused planning permission based on the likely noise impact.

|                         |                                                                                     |                     |                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|
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| <b>Signed:</b>          |  | <b>Signed:</b>      |  |
| <b>Date:</b>            | 15/10/2025                                                                          | <b>Date:</b>        | 15/10/2025                                                                            |

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|-----------------|------|------------|------------|--------------|
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## **Advisory Note**

The suitability of any recommended noise mitigation measures within this report should be approved by the relevant architects, structural engineers, building contractors, fire consultants and material manufacturers constituting the wider design team, prior to procurement and field application. This should ensure that when the recommended noise control measures are implemented on site, they will satisfy the requirements of all disciplines, therefore, should not cause any health and safety issues.

# Contents

|                                                                      |           |
|----------------------------------------------------------------------|-----------|
| <b>Summary .....</b>                                                 | <b>2</b>  |
| <b>1 Introduction .....</b>                                          | <b>6</b>  |
| <b>2 Policy, Standards and Guidance .....</b>                        | <b>6</b>  |
| <b>3 Assessment Methodology .....</b>                                | <b>6</b>  |
| <b>4 Site Description .....</b>                                      | <b>6</b>  |
| <b>5 Proposed Development .....</b>                                  | <b>7</b>  |
| <b>6 Local Authority Consultation.....</b>                           | <b>7</b>  |
| <b>7 Environmental Sound Survey .....</b>                            | <b>8</b>  |
| 7.1 Measurements Procedure.....                                      | 8         |
| 7.2 Environmental Sound Climate.....                                 | 9         |
| 7.3 Weather Conditions.....                                          | 9         |
| <b>8 Monitoring Results .....</b>                                    | <b>11</b> |
| <b>9 Background Sound Level .....</b>                                | <b>12</b> |
| <b>10 Noise Modelling Methodology .....</b>                          | <b>12</b> |
| <b>11 Noise Sensitive Receptors and Modelled Noise Levels.....</b>   | <b>18</b> |
| <b>12 Baseline BS 4142:2014+A1:2019 Assessment .....</b>             | <b>18</b> |
| 12.1 Cumulative Delivery Noise and Plant Noise Assessment.....       | 18        |
| 12.2 Plant Noise Assessment .....                                    | 20        |
| <b>13 Delivery LAFmax Level Analysis .....</b>                       | <b>21</b> |
| <b>14 Summary and Conclusion .....</b>                               | <b>22</b> |
| <b>APPENDICES .....</b>                                              | <b>24</b> |
| <b>Appendix 1: Policy, Standards and Guidance .....</b>              | <b>25</b> |
| <b>Appendix 2: Site Location, Monitoring and NSR Locations .....</b> | <b>29</b> |
| <b>Appendix 3: Site Layout.....</b>                                  | <b>30</b> |
| <b>Appendix 4: Environmental Sound Survey Results.....</b>           | <b>31</b> |

**Appendix 5: Noise modelling parameters ..... 34**

**Appendix 6: Noise Model Output..... 36**

**Glossary of Terms ..... 41**

# 1 Introduction

- 1.1 Miller Goodall Ltd has undertaken a noise assessment to accompany a planning application for a proposed Lidl store at Telegraph Way, Kirkby, Liverpool L32 8US. The scope of this report is to assess the potential impact of operational noise from the deliveries and fixed plant associated with the development on nearby noise-sensitive receptors (NSRs).

## 2 Policy, Standards and Guidance

- 2.1 The following planning policy and acoustic standards, and guidance have been considered in this assessment.
- Noise Policy Statement for England (NPSE).
  - National Planning Policy Framework (NPPF).
  - BS 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*'.
- 2.2 Further detail is provided in **Appendix 1: Policy, Standards and Guidance**.

## 3 Assessment Methodology

- 3.1 A BS 4142 assessment has been undertaken in relation to noise from the development. Environmental sound monitoring was undertaken to establish background noise levels at NSRs close to the development. Noise associated with the development has been modelled using CadnaA software and a rating level has been established following the methodology within BS 4142.
- 3.2 The assessment has been completed for the night-time period when the background sound levels are typically lowest to present a worst-case assessment at positions most representative of nearby NSRs.

## 4 Site Description

- 4.1 The site is located at Telegraph Way, Kirkby, Liverpool L32 8US. The site location is indicated in the figure presented in **Appendix 2: Site Location, Monitoring and NSR Locations**.

- 4.2 The site is in a suburban location on the northwest edge of Kirkby town centre, surrounded by commercial and residential developments. The A506 Hall Lane runs along the northern boundary of the site. Beyond Hall Lane, directly north of the site, is Kirkby Primary School. The nearest NSRs are located across Hall Lane to the north-east. To the south and east lies the rest of Kirkby town centre and its accompanying car parks.
- 4.3 The site is currently occupied by a car park, which, at the time of writing, was still in operation.

## 5 Proposed Development

- 5.1 The proposed development is a Lidl store. The layout is presented in **Appendix 3: Site Layout**.
- 5.2 Plant for the proposed Lidl supermarket will be provided within the development and will, potentially, operate 24 hours a day, seven days a week. There is, therefore, potential for noise from this to impact NSRs.
- 5.3 Lidl Ltd. has provided Miller Goodall Ltd. with their most up-to-date typical schedule of plant *ref BBS23*. The proposed plant includes:
- 2No. dry coolers, each with an associated pumping station serving food refrigeration.
  - 2No. VRVs serving the sales area;
  - 1No. VRV serving the Warehouse; and,
  - 1No. VRV serving back of house
- 5.4 Noise from deliveries to the store may also impact on NSRs. Lidl's standard operations require deliveries to be permitted at any time where this is feasible with respect to environmental constraints. On average, one HGV delivery per day will occur, in addition there may be one or two smaller deliveries, eg baked goods arriving in smaller vehicles.

## 6 Local Authority Consultation

- 6.1 Helen Bradshawe, a Senior Environmental Protection Officer at Knowsley Council was contacted by email in respect of the methodology used in this assessment<sup>1</sup>. It was agreed

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<sup>1</sup> Email to Helen Bradshawe dated 22/05/2025. Response dated 27/05/2025

that the methodology and assessment were acceptable. Ms Bradshawe advised that levels from any fixed plant are encouraged to be 5dB below background levels, and that the assessment should include a review of  $L_{Amax}$  levels and open windows at sensitive receptor sites.

## 7 Environmental Sound Survey

### 7.1 Measurements Procedure

- 7.1.1 Attended environmental sound monitoring was undertaken at one position, located north of the site, across the A506. This monitoring position is considered representative of the existing sound climate at the nearest NSRs to the site. The monitoring was undertaken at times when NSRs would be subject to the lowest level of noise. The monitoring position is indicated in the figure presented in **Appendix 2: Site Location, Monitoring and NSR Locations**.
- 7.1.2 Measurements were undertaken over two periods, from 07.00 hrs on Sunday, 11<sup>th</sup> May to 09:00 hrs on Sunday, 11<sup>th</sup> April (Survey 1) and from 03:00 hrs on Monday, 12<sup>th</sup> May 2025 to 04:00 hrs on Monday, 12<sup>th</sup> April (Survey 2).
- 7.1.3 The microphone was mounted in the free-field at a height of 1.5 m above local ground level.
- 7.1.4 Measurements were undertaken in accordance with BS 7445-1: 2003<sup>2</sup>.
- 7.1.5 The calibration of the sound level meter was checked before and after the measurements, with negligible deviation ( $\leq 0.1$  dB) recorded.
- 7.1.6 Both positions were monitored with the same equipment. Details of the equipment used are set out in **Table 1**.

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<sup>2</sup> BS 7445-1: 2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

**Table 1: Noise monitoring equipment**

| Equipment Description                                                       | Type Number | Manufacturer  | Serial No.   | Date Calibrated | Calibration Certification Number |
|-----------------------------------------------------------------------------|-------------|---------------|--------------|-----------------|----------------------------------|
| Class 1 <sup>[4], [5]</sup> Integrating Real Time 1/3 Octave Sound Analyser | NTi XL2-TA  | NTi Audio     | A2A-11111-E0 | 16/10/2023      | 05451/1                          |
| Microphone                                                                  | Nti MA220   | NTi Audio     | 6908         | 16/10/2023      | 05451/1                          |
| Pre-amplifier                                                               | NTi MC230A  | NTi Audio     | A14423       | 16/10/2023      | 05451/1                          |
| Class 1 Field Calibrator                                                    | CAL 200     | Larson Davies | 14154        | 22/08/2024      | 06881/2                          |
| Outdoor Microphone Housing                                                  | NTi WP30    | NTi Audio     | N/A          | N/A             | N/A                              |

7.1.7 The data has been downloaded using NTi Data Explorer software and analysed using an in-house Excel processing sheet to analytically determine representative  $L_{Aeq}$ ,  $L_{A90}$  and  $L_{AF,max}$  sound levels.

## 7.2 Environmental Sound Climate

7.2.1 During the attended monitoring during Survey 1, at MP1, the residual sound climate was noted to consist primarily of road noise from the A506. When road noise from the A506 was low, distant road noise, thought to be from the M57, and birdsong was audible.

7.2.2 During survey 2, the residual sound climate was similar to the previous survey at both points, but with significantly less road noise from the A506.

## 7.3 Weather Conditions

7.3.1 Weather forecasts provided by the Met Office ([Weather and climate change - Met Office](#)) and WUnderground ([Local Weather Forecast, News and Conditions | Weather Underground](#)) were reviewed before attending the site to confirm the weather forecast was appropriate for noise monitoring (i.e. dry, windspeed  $\leq 5$  m/s and no extreme temperatures) over the proposed monitoring period.

7.3.2 Weather conditions were observed during both surveys. A summary of the conditions at the beginning and end of the surveys is provided in **Table 2** and **Table 3**.

**Table 2: Dates, times and weather conditions during Survey 1**

| Measurement<br>Locations | Date/Time                                 | Weather conditions                                                                          |                    |               |
|--------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------|--------------------|---------------|
|                          |                                           | Description                                                                                 | At Start of Survey | On Completion |
| MP1                      | 11/05/2025, 07:00 to<br>11/05/2025, 09:00 | Temperature:                                                                                | 10 °C              | 15 °C         |
|                          |                                           | Precipitation:                                                                              | None               | None          |
|                          |                                           | Cloud cover<br>(oktas – see<br>opposite):                                                   | 6                  | 7             |
|                          |                                           | Any fog/snow/ice?                                                                           | 4                  | 4             |
|                          |                                           | Any damp<br>roads/wet<br>ground?                                                            | No                 | No            |
|                          |                                           | Wind speed:                                                                                 | 2m/s               | 2m/s          |
|                          |                                           | Wind direction:                                                                             | South East         |               |
|                          |                                           | Any conditions<br>that may cause<br>temp. inversion<br>(e.g. calm nights<br>with no cloud): | No                 | No            |
|                          |                                           |                                                                                             |                    |               |
|                          |                                           |                                                                                             |                    |               |

| Cloud Cover                                                                        |                          |                       |
|------------------------------------------------------------------------------------|--------------------------|-----------------------|
| Symbol                                                                             | Scale in oktas (eighths) |                       |
|   | 0                        | Sky completely clear  |
|   | 1                        |                       |
|   | 2                        |                       |
|   | 3                        |                       |
|   | 4                        | Sky half cloudy       |
|   | 5                        |                       |
|   | 6                        |                       |
|   | 7                        |                       |
|  | 8                        | Sky completely cloudy |

**Table 3: Dates, times and weather conditions during Survey 2**

| Measurement Locations | Date/Time                              | Weather conditions                                                              |                    |               |
|-----------------------|----------------------------------------|---------------------------------------------------------------------------------|--------------------|---------------|
|                       |                                        | Description                                                                     | At Start of Survey | On Completion |
| MP1                   | 12/04/2025, 03:00 to 12/04/2025, 04:00 | Temperature:                                                                    | 13 °C              | 14 °C         |
|                       |                                        | Precipitation:                                                                  | None               | None          |
|                       |                                        | Cloud cover (oktas – see opposite):                                             | 8                  | 6             |
|                       |                                        | Any fog/snow/ice?                                                               | No                 | No            |
|                       |                                        | Any damp roads/wet ground?                                                      | No                 | No            |
|                       |                                        | Wind speed:                                                                     | 2m/s               | 2m/s          |
|                       |                                        | Wind direction:                                                                 | East               |               |
|                       |                                        | Any conditions that may cause temp. inversion (e.g. calm nights with no cloud): | No                 | No            |
|                       |                                        |                                                                                 |                    |               |
|                       |                                        |                                                                                 |                    |               |

| Cloud Cover                                                                         |                          |                          |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------|
| Symbol                                                                              | Scale in oktas (eighths) |                          |
|    | 0                        | Sky completely clear     |
|    | 1                        |                          |
|    | 2                        |                          |
|    | 3                        |                          |
|    | 4                        | Sky half cloudy          |
|    | 5                        |                          |
|    | 6                        |                          |
|   | 7                        |                          |
|  | 8                        | Sky completely cloudy    |
|  | (9)                      | Sky obstructed from view |

## 8 Monitoring Results

8.1 The broadband measurement data for the attended monitoring at MP1 during survey 1 is presented in **Table 4**. All data are sound pressure levels in dB re 20 µPa.

**Table 4: Summary of attended sound monitoring results on Sunday, 11<sup>th</sup> April 2025**

| Monitoring Position | Period  | Start Time hh:mm | Elapsed Time, T hh:mm:ss | $L_{Aeq,T}$ dB | $L_{AF,max}$ dB | $L_{A90,T}$ dB |
|---------------------|---------|------------------|--------------------------|----------------|-----------------|----------------|
| MP1                 | Daytime | 07:00            | 00:15:00                 | 64.1           | 78.6            | 43.8           |
|                     | Daytime | 07:15            | 00:15:00                 | 65.2           | 89.0            | 43.4           |
|                     | Daytime | 07:30            | 00:15:00                 | 64.9           | 81.3            | 46.7           |
|                     | Daytime | 07:45            | 00:15:00                 | 65.6           | 90.5            | 46.3           |
|                     | Daytime | 08:00            | 00:15:00                 | 64.4           | 78.3            | 44.6           |

| Monitoring Position | Period  | Start Time<br>hh:mm | Elapsed Time, T<br>hh:mm:ss | $L_{Aeq,T}$<br>dB | $L_{AF,max}$<br>dB | $L_{A90,T}$<br>dB |
|---------------------|---------|---------------------|-----------------------------|-------------------|--------------------|-------------------|
|                     | Daytime | 08:15               | 00:15:00                    | 65.4              | 79.1               | 45.6              |
|                     | Daytime | 08:30               | 00:15:00                    | 65.5              | 77.7               | 45.3              |
|                     | Daytime | 08:45               | 00:15:00                    | 65.6              | 90.0               | 45.8              |

8.2 The broadband measurement data for the attended monitoring at MPI during survey 2 is presented in **Table 5**.

**Table 5: Summary of attended sound monitoring results on Monday, 12<sup>th</sup> April 2025**

| Monitoring Position | Period    | Start Time<br>hh:mm | Elapsed Time, T<br>hh:mm:ss | $L_{Aeq,T}$<br>dB | $L_{AF,max}$<br>dB | $L_{A90,T}$<br>dB |
|---------------------|-----------|---------------------|-----------------------------|-------------------|--------------------|-------------------|
| MPI                 | Nighttime | 03:00               | 00:15:00                    | 57.7              | 77.2               | 39.1              |
|                     | Nighttime | 03:15               | 00:15:00                    | 57.8              | 76.5               | 40.9              |
|                     | Nighttime | 03:30               | 00:15:00                    | 53.8              | 77.1               | 41.3              |
|                     | Nighttime | 03:45               | 00:15:00                    | 56.2              | 77.3               | 42.5              |

## 9 Background Sound Level

9.1 As shortened attended surveys were necessary, it is appropriate to select the lowest measured  $L_{A90,1hour}$  and  $L_{A90,15min}$  background sound levels for use in the BS4142 assessment.

9.2 The background sound levels used in the BS 4142 assessments are considered to be;

- **45 dB  $L_{A90,1hour}$**  in the daytime, this being the modal value of those measured; and
- **39 dB  $L_{A90,15min}$**  in the night-time, this being the lowest value measured.

## 10 Noise Modelling Methodology

10.1 A baseline noise model of noise from the proposed development has been assembled using CadnaA noise modelling software.

- 10.2 The general horizontal plan information of the area surrounding and including the proposed development site was imported from Google Earth. This was used to determine road positions, building footprint areas and relative locations and is considered accurate to within 5%.
- 10.3 Topography was imported from the DEFRA LIDAR dataset, and existing building height information was input based on site observations.
- 10.4 The following parameters were assigned to the model:
- Propagation of noise using algorithms within ISO 9613:2024 *Acoustics – Attenuation of sound during propagation outdoors*.
  - Default ground absorption  $G = 0.21$ . Representing mostly hard ground surrounding the site.
  - No adverse meteorological effects.
  - Two orders of reflection.
  - Buildings are reflecting with smooth non-structured facades.
  - Receiver heights of 4 m for first floor receivers.
  - Grid height for noise contour plots of 4 m, to be representative of the worst-case night-time scenario at the NSRs.
- 10.5 Details of the proposed site layout and associated plant have been obtained from drawings, CAD files and data sheets provided by the client. **Table 6** summarises the documents provided and the information obtained.

**Table 6: Technical documentation**

| Document Title                                                                 | Document Author | Information obtained                                       |
|--------------------------------------------------------------------------------|-----------------|------------------------------------------------------------|
| 2963 F407E Proposed Site Plan Type1300 – opt5 'Redirect'                       | HTC Architects  | Proposed site layout and Plant Deck Location               |
| BBS 2023 Lidl Corporate Specification, External Plant Layout and Buildersworks | Lidl            | Indicative plant layout                                    |
| 374800 – BSE 100kW_Basetec Data Sheet                                          | Bastec          | Dry cooler and pumping station noise levels and dimensions |
| VRV IV S-series heat pump Air Conditioning Technical Data RXYSQ-TY1            | Daikin          | Noise levels of VRV serving the Warehouse                  |

|                                                                        |             |                                                                     |
|------------------------------------------------------------------------|-------------|---------------------------------------------------------------------|
| VRV IV S-series heat pump Air Conditioning<br>Technical Data RXYSQ-TV9 | Daikin      | Noise levels of VRV serving<br>Back of House                        |
| Heating Technical Data RXMLQ-T, RXYLQ-T                                | Daikin      | Noise levels of VRV serving<br>Sales Area                           |
| Advancer Spectrum Mastering Multi-temp<br>brochure                     | Thermo King | Attenuation for HGV<br>Refrigeration Plant on<br>electrical standby |

- 10.6 Additional data used in the assessment has been taken from Miller Goodall's library. This includes noise data for HGV movements, HGV refrigeration plant and HGV delivery activities measured at operational Lidl stores.
- 10.7 Sound power levels associated with the fixed plant, HGV movements and delivery activity sources are provided in **Appendix 4: Noise modelling parameters**.
- 10.8 All plant is assumed to operate in a steady state with one hundred per cent on-times, during the respective daytime and night-time periods.
- 10.9 The duration of a Lidl delivery is approximately 45 minutes from arrival to departure, including approximately 40 minutes of unloading activity.
- 10.10 A solid barrier of height 1.8 m is proposed around the service yard with sliding gate access for HGVs. This has been modelled as an effective acoustic barrier, and the results of the model rely on this barrier being installed.
- 10.11 **Table 7** summarises the modelling methodology for the plant associated with the proposed development.

**Table 7: Summary of baseline CadnaA modelling methodology for proposed plant**

| Proposed Plant                                                         | Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 No. Food Refrigeration<br>Dry Coolers<br>Bastec, 374800 BSE<br>100kW | <ul style="list-style-type: none"> <li>Modelled as 2 No. respective point sources, each at a height of 1.8 m at a location within the plant area based on indicative External Plant Layout drawing.</li> <li>Broadband sound power taken from manufacturer's data sheet.</li> <li>Indicative spectrum shape taken from manufacturer's data sheet for similar pump.</li> <li>Vertical directivity assigned to represent the fans pointing vertically upwards as indicated on the manufacturer's drawings.</li> </ul> |

| Proposed Plant                                                           | Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | <ul style="list-style-type: none"> <li>Height of unit taken from manufacturer's data sheet.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2 No. Food Refrigeration Pumping Stations<br>Bastec, 374800 BSE<br>100kW | <ul style="list-style-type: none"> <li>Modelled as respective point sources, each at a height of 1 m at a location within the plant area based on indicative External Plant Layout drawing.</li> <li>Broadband sound pressure at 1 m into spherical radiation taken from manufacturer's data sheet.</li> <li>Indicative spectrum shape taken from manufacturer's data sheet for similar pump.</li> <li>Height of unit taken from manufacturer's data sheet.</li> </ul>                                                                                                                          |
| 1 No. VRV serving Warehouse<br>Daikin, RXYSQ12TY1                        | <ul style="list-style-type: none"> <li>Modelled as a point source at a height of 1.6 m at a location within the plant area based on indicative External Plant Layout drawing.</li> <li>Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case.</li> <li>The height of the unit is taken from the manufacturer's data sheet.</li> </ul>                                                                                                                                                  |
| 1 No. VRV serving Back of House<br>Daikin RXYSQ4TV9                      | <ul style="list-style-type: none"> <li>Modelled as a point source at a height of 1.3 m at a location within the plant area based on indicative External Plant Layout drawing.</li> <li>Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case.</li> <li>The height of the unit is taken from the manufacturer's data sheet.</li> </ul>                                                                                                                                                  |
| 2 No. VRVs serving Sales Area<br>Daikin RXYLQ12T                         | <ul style="list-style-type: none"> <li>Modelled as a point source at a height of 1.7 m at a location within the plant area based on indicative External Plant Layout drawing.</li> <li>Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case.</li> <li>Vertical directivity assigned to represent the fans pointing vertically upwards as indicated on the manufacturer's data sheet drawings.</li> <li>The height of the unit is taken from the manufacturer's data sheet.</li> </ul> |

10.12 **Table 8** summarises the modelling methodology for the delivery activities associated with the proposed development.

**Table 8: Summary of baseline CadnaA modelling methodology for delivery activities**

| Activity                               | Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HGV Arriving –<br>Engine               | <ul style="list-style-type: none"> <li>Modelled as a moving point source on a line moving at <math>8 \text{ kmh}^{-1}</math> at a height of 1 m. Path of travel corresponding with HGV track indicated on site layout plan, moving towards the south east area of the site from Hipperholme Road, then reversing into the loading bay.</li> <li>Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave sound power spectrum.</li> <li>1 event per hour representing a 1-hour daytime assessment period, or 4 events per hour representing a 15 minute night-time assessment period*<sup>1</sup>. as a worst case.</li> <li>The height of the source is based on observations when source measurements were undertaken.</li> </ul>                                                                 |
| HGV Arriving –<br>Refrigeration Plant  | <ul style="list-style-type: none"> <li>Modelled as a moving point source on a line moving at <math>8 \text{ kmh}^{-1}</math> at a height of 4 m, representing the height of the top of the refrigeration plant behind the drivers cab. Path of travel corresponding with HGV Arriving – Engine path noted above.</li> <li>Octave band sound pressure level spectrum at 11.5 m with hemispherical radiation converted to octave band sound power spectrum.</li> <li>1 event per hour representing a 1-hour daytime assessment period, or 4 events per hour representing a 15-minute night-time assessment period*<sup>1</sup>. as a worst case.</li> <li>The height of the source is based on observations when source measurements were undertaken, corresponding with the top of the refrigeration plant behind the driver's cab.</li> </ul> |
| HGV Departing –<br>Engine              | <ul style="list-style-type: none"> <li>Modelled as a moving point source on a line moving at <math>8 \text{ kmh}^{-1}</math> at a height of 1 m. Path of travel corresponding with HGV track indicated on site layout plan, moving forwards out of the bay to the Hipperholme Road site boundary.</li> <li>Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave sound power spectrum.</li> <li>1 event per hour representing a 1-hour daytime assessment period, or 0 events per hour representing a 15-minute night-time assessment period*<sup>1</sup>. as the arrival is used as worst case.</li> <li>The height of the source is based on observations when source measurements were undertaken.</li> </ul>                                                                                 |
| HGV Departing –<br>Refrigeration Plant | <ul style="list-style-type: none"> <li>Modelled as a moving point source on a line moving at <math>8 \text{ kmh}^{-1}</math> at a height of 4 m. representing the height of the top of the refrigeration plant behind the driver's cab. Path of travel corresponding with HGV Departing – Engine path noted above.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Activity                                         | Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                  | <ul style="list-style-type: none"> <li>Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave band sound power spectrum.</li> <li>1 event per hour representing a 1-hour daytime assessment period, or 0 events per hour representing a 15-minute night-time assessment period*<sup>1</sup>. as the arrival is used as worst case.</li> <li>The height of the source is based on observations when source measurements were undertaken, corresponding with the top of the refrigeration plant behind the driver's cab.</li> </ul>                                                                                                                                                                                                                         |
| HGV Unloading                                    | <ul style="list-style-type: none"> <li>Modelled as a line source at a height of 2 m above the loading bay ramp. representing the height of the top of the refrigeration plant behind the driver's cab. Path of travel corresponding with HGV Departing – Engine path noted above.</li> <li>Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave band sound power spectrum.</li> <li>40 minutes per hour on-time representing a 1-hour daytime assessment period, or 60 minutes per hour representing a 15-minute night-time assessment period*<sup>1</sup>.</li> <li>Height of source based on observations when source measurements were undertaken, corresponding with a distance of approximately 0.5 m above the floor of the container.</li> </ul> |
| HGV Refrigeration Plant – Stationary             | <ul style="list-style-type: none"> <li>Modelled as a point source at a height of 4 m, representing the height of the top of the refrigeration plant at a location behind the driver's cab.</li> <li>Octave band sound pressure level spectrum at 11.5 m with hemispherical radiation converted to octave band sound power spectrum.</li> <li>40 minutes per hour on-time representing a 1-hour daytime assessment period, or 60 minutes per hour representing a 15-minute night-time assessment period*<sup>1</sup>.</li> </ul>                                                                                                                                                                                                                                                                       |
| HGV Unloading<br><i>L<sub>AFmax</sub></i> levels | <ul style="list-style-type: none"> <li>A point source has been attributed with sound levels derived from historically measured <i>L<sub>AFmax</sub></i> levels of a Lidl delivery at a height of 2 m above the loading bay.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

\*<sup>1</sup>. The software allows a 1-hour assessment period only. As such, parameters are adjusted to achieve an equivalent 15-minute specific *L<sub>Aeq</sub>* noise level.

# 11 Noise Sensitive Receptors and Modelled Noise Levels

11.1 **Table 9** sets out the noise levels predicted at the worst affected NSRs that have been considered within the assessment and included within the noise model. These NSR locations are indicated in the figure presented in **Appendix 2: Site Location, Monitoring and NSR Locations**.

**Table 9: Modelled noise levels and noise sensitive receptors**

| Noise Sensitive Receptor (NSR) |                                 | Modelled Specific Noise Level<br>dB $L_{Aeq,Tr}$ |             | Modelled $L_{AFmax}$<br>Level<br><br>dB |
|--------------------------------|---------------------------------|--------------------------------------------------|-------------|-----------------------------------------|
| Reference                      | Description                     | Cumulative Plant & Delivery,                     | Plant Only, | Delivery only                           |
| NSR1                           | Kirkby C of E School, Hall Lane | 44                                               | 40          | 58                                      |
| NSR2                           | 1 Hall Lane                     | 39                                               | 36          | 45                                      |
| NSR3                           | 3 Milbrook Drive                | 38                                               | 34          | 39                                      |

11.2 Figures showing the output from the baseline noise model for the assessment scenarios are presented in **Appendix 6: Noise Model Output**. The figures show the predicted noise levels at receiver locations and corresponding noise contours.

## 12 Baseline BS 4142:2014+A1:2019 Assessment

### 12.1 Cumulative Delivery Noise and Plant Noise Assessment

12.1.1 An assessment of cumulative delivery noise and plant noise has been undertaken for the daytime and the night-time periods for the worst-affected receptors.

12.1.2 Acoustic feature corrections have been considered for the various noise sources associated with delivery noise and plant noise.

12.1.3 Analysis of modelled contributions from individual delivery noise sources indicates that the hourly averaged noise level is likely to be driven by the refrigeration plant and HGV engine

whilst the HGV is arriving and departing. The residual sound level at NSR1 is relatively high due to traffic noise from the A506 during the day. However, this noise decreases during the night period and, as these noise events are transient, the short-term 'real-time' noise level would be greater. On this basis, a 3 dB acoustic feature correction has been applied for the night-time scenario, based on the likelihood of the noise being readily distinctive.

12.1.4 The BS 4142 assessment of noise impact at the most affected NSRs is presented in **Table 10**.

12.1.5 The row for NSR1 during the night-time period has been greyed out, as it is a school and so will not be occupied during the night-time periods.

**Table 10: BS 4142 Assessment of cumulative delivery noise and plant noise**

| Assessment Period | Receptor | Background Sound Level, dB $L_{A90,15min}$ | Specific Noise Level <sup>*1</sup> , dB $L_{Aeq,Tr}$ | Acoustic Feature Correction dB | Rating Level <sup>*1</sup> , dB $L_{Ar,Tr}$ | Excess of Rating level over Background Soid level dB | Initial Estimate of Impact, Depending on Context |
|-------------------|----------|--------------------------------------------|------------------------------------------------------|--------------------------------|---------------------------------------------|------------------------------------------------------|--------------------------------------------------|
| Daytime           | NSR1     | 45                                         | 44                                                   | 0                              | 44                                          | -1                                                   | No Impact                                        |
| Daytime           | NSR2     | 45                                         | 39                                                   | 0                              | 39                                          | -6                                                   | No Impact                                        |
| Daytime           | NSR3     | 45                                         | 38                                                   | 0                              | 38                                          | -7                                                   | No Impact                                        |
| Night-time        | NSR2     | 39                                         | 39                                                   | + 3                            | 42                                          | + 3                                                  | Low Impact                                       |
| Night-time        | NSR3     | 39                                         | 38                                                   | +3                             | 41                                          | +2                                                   | Low Impact                                       |

<sup>\*1</sup> For daytime scenarios, the assessment period  $T_r$  is 1 hour. For the night-time scenario, the assessment period  $T_r$  is 15 minutes.

12.1.6 NSR1 has not been considered in the night-time assessment as it will not be operational during the night-time period. The outcome of the initial BS 4142 assessment indicates no impact for the daytime scenarios and low impact for the night-time scenarios, depending on the context.

## 12.2 Plant Noise Assessment

12.2.1 In order to determine whether the plant noise fits with the Local Authority's guidance, a second BS 4142 assessment has been done with only the plant noise modelled. **Table 11** shows the noise levels in this scenario.

**Table 11: BS 4142 Assessment of plant noise**

| Assessment Period | Receptor | Background Sound Level, dB $L_{A90,15min}$ | Specific Noise Level <sup>1</sup> , dB $L_{Aeq,Tr}$ | Acoustic Feature Correction dB | Rating Level <sup>1</sup> , dB $L_{Ar,Tr}$ | Excess of Rating level over Background Sound level dB | Initial Estimate of Impact, Depending on Context |
|-------------------|----------|--------------------------------------------|-----------------------------------------------------|--------------------------------|--------------------------------------------|-------------------------------------------------------|--------------------------------------------------|
| Daytime           | NSR1     | 45                                         | 40                                                  | 0                              | 40                                         | -5                                                    | No Impact                                        |
| Daytime           | NSR2     | 45                                         | 36                                                  | 0                              | 36                                         | -9                                                    | No Impact                                        |
| Daytime           | NSR3     | 45                                         | 34                                                  | 0                              | 34                                         | -11                                                   | No Impact                                        |
| Night-time        | NSR2     | 39                                         | 36                                                  | 0                              | 36                                         | -3                                                    | No Impact                                        |
| Night-time        | NSR3     | 39                                         | 34                                                  | 0                              | 34                                         | -5                                                    | No Impact                                        |

### Context

12.2.2 The assessments presented in **Table 10** and **Table 11** detail the results of the initial numerical assessment of noise levels at the most affected NSRs. The numerical assessment of impact is influenced by the context of the proposals, including the surrounding environment and the operating characteristics. The surrounding environment is a suburban area with relatively high background sound levels and an environmental sound climate dominated

by road traffic noise from the A506. Residents nearby are therefore likely accustomed to noise from vehicles in both the daytime and night-time periods.

- 12.2.3 The exceedances of the background sound level from cumulative operations during the night-time are minor and are driven by delivery noise. These low impacts also arise only when background noise levels are at their lowest. An assessment of the  $L_{AFmax}$  levels resulting from deliveries has been undertaken and is presented in **Section 13** of this report to further understand the impact of night-time deliveries,

## Outcome

- 12.2.4 Based on the BS 4142 assessment presented in Table 10 and Table 11, and with consideration of the context described above, it is considered that the overall impact of cumulative delivery noise and plant noise is likely to be low during both the daytime and night-time periods.
- 12.2.5 The plant noise during the night-time period is below 5dB from the night-time background levels at NSR 1 (as not in use) and NSR 3. There is only one exceedance of the requested '5 dB below background sound level' at NSR2 during the night-time, which, given the context, is unlikely to have an adverse impact.
- 12.2.6 Further context for night-time delivery noise is provided in our analysis of delivery  $L_{AFmax}$  levels below.

## 13 Delivery $L_{AFmax}$ Level Analysis

- 13.1 The EHO has requested an analysis of  $L_{AFmax}$  levels resulting from night-time deliveries. The highest potential for disturbance from delivery  $L_{AFmax}$  events is likely during nighttime deliveries.
- 13.2 Historical measurement data from delivery operations at an existing Lidl in Wigan have been input into a point source in the CadnaA 3D noise model. The HGV delivery  $L_{AFmax}$  measured at the Wigan Lidl was 85 dB(A) measured at 10 m from the source. The resulting sound power of the point source is presented in **Appendix 5: Noise Modelling Parameters**. The point source is located at the delivery bay and no screening from the HGV itself is assumed.

- 13.3 The worst-case predicted  $L_{AFmax}$  level at a noise sensitive receptor is predicted to be 58 dB at NSR 1, and 45 dB at NSR 2. These results are presented in **Appendix 6: Noise Model Output**.
- 13.4 Assuming a worst-case scenario where the occupant of the dwelling/school has their window open, an assumption regarding the sound reduction through an open window is required to determine the resulting internal  $L_{AFmax}$  level.
- 13.5 The generally accepted rule of thumb is that a window left open for ventilation provides 10 – 15 dB attenuation from external noise sources with the WHO Guidelines for Community Noise suggesting 15 dB. The DEFRA report NANR116: Open/Closed Window Research<sup>3</sup> suggests the figure to be between 12 and 18 dB. Given these ranges, a conservative estimation of 13 dB reduction through an open window is an appropriate figure to apply in this instance.
- 13.6 A direct reduction of 13 dB from the predicted 58 dB  $L_{AFmax}$  results in 45 dB (A) internally within the school. This matches the WHO Community Guidelines for Noise guidance of 45 dB  $L_{AFmax}$  in terms of suitable noise levels to avoid sleep disturbance, and so it follows that in a school during the daytime, short-term instantaneous events of this level are unlikely to cause an adverse effect. Likewise, 45 dB  $L_{AFmax}$  incident on NSR 2 would be reduced by 13 dB down to 32 dB internally. This is 13 dB below the WHO Community Guidelines for Noise guidance of 45 dB  $L_{AFmax}$ .
- 13.7  $L_{AFmax}$  levels resulting from proposed delivery operations during the night-time have, therefore, been found to be within acceptable levels at the nearest receptors.

## 14 Summary and Conclusion

- 14.1 A noise assessment has been undertaken to predict the potential impact of noise from a proposed Lidl store at Telegraph Way, Kirkby, Liverpool L32 8US on nearby noise-sensitive receptors (NSRs).
- 14.2 An environmental sound survey has been undertaken at the site to establish the existing sound climate at the nearby residential NSRs.

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<sup>3</sup> NANR116: 'Open/closed window research' Sound Insulation through ventilated open windows, Defra April 2007

- 14.3 A computer noise model of the development and surrounding site has been produced based on the proposed site layout.
- 14.4 BS 4142 assessments have been undertaken based on the measured background sound levels and the modelled noise levels due to emissions associated with the development proposals.
- 14.5 An analysis of  $L_{AFmax}$  levels at the NSRs resulting from delivery activity indicates that the resulting internal noise levels at the worst-affected residential NSRs would remain within the limits recommended by WHO Guidelines for Community Noise for the avoidance of sleep disturbance. At NSR 1, Kirkby C of E School, the predicted external  $L_{AFmax}$  level is 58 dB at the façade, corresponding to an estimated 45 dB internally with windows open. This aligns with the WHO guideline value typically applied to night-time sleep environments and, given that the receptor is a school subject to daytime deliveries only, is considered acceptable and unlikely to cause disturbance or interfere with classroom activities.
- 14.6 Based on the assessments undertaken, the report concludes that the impact of noise emissions from the proposed development is likely to be low. As such, there is no reason for this development to be refused planning permission based on the likely noise impact, or for deliveries to be limited.

# APPENDICES

# Appendix 1: Policy, Standards and Guidance

## 1 Noise Policy Statement for England

- 1.1 The Noise Policy Statement for England (NPSE<sup>4</sup>) sets out the long-term vision of noise policy. The Noise Policy aims, as presented in this document, are:

*“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse effects on health and quality of life;*
- *mitigate and minimise adverse effects on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

- 1.2 The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and the quality of life occur.

- 1.3 The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case:

*“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development”.*

- 1.4 Importantly, the NPSE goes on to state:

*“This does not mean that such adverse effects cannot occur”.*

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<sup>4</sup> Noise Policy Statement for England, Defra, March 2010

- 1.5 The Statement does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that:

*"Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available"*

- 1.6 It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

## **2 National Planning Policy Framework**

- 2.1 The National Planning Policy Framework (NPPF<sup>5</sup>) was updated most recently in December 2024. The NPPF advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described in par. 8 (c):

*"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

- 2.2 At par. 187 NPPF advises that:

*"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans..."*

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<sup>5</sup> National Planning Policy Framework, Ministry of Housing, Communities and Local Government, December 2023

2.3 Par. 198 goes on to state:

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

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

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

2.4 Par. 200 seeks to ensure that any development does not prejudice the legally permitted operations and activities of other, existing non-residential uses, stating:

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

### **3 BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’**

3.1 BS 4142:2014+A1:2019<sup>6</sup> provides guidance on the assessment of the likelihood of complaints relating to noise from industrial sources. The standard presents a method of assessing potential noise impact by comparing the noise level due to industrial sources (the Rating Level) with that of the

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<sup>6</sup> BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

existing background noise level at the nearest noise sensitive receiver in the absence of the source (the Background Sound Level).

3.2 The Specific Noise Level – the noise level produced by the source in question at the assessment location – is determined and a correction applied for certain undesirable acoustic features such as tonality, impulsivity or intermittency. The corrected Specific Noise Level is referred to as the Rating Level.

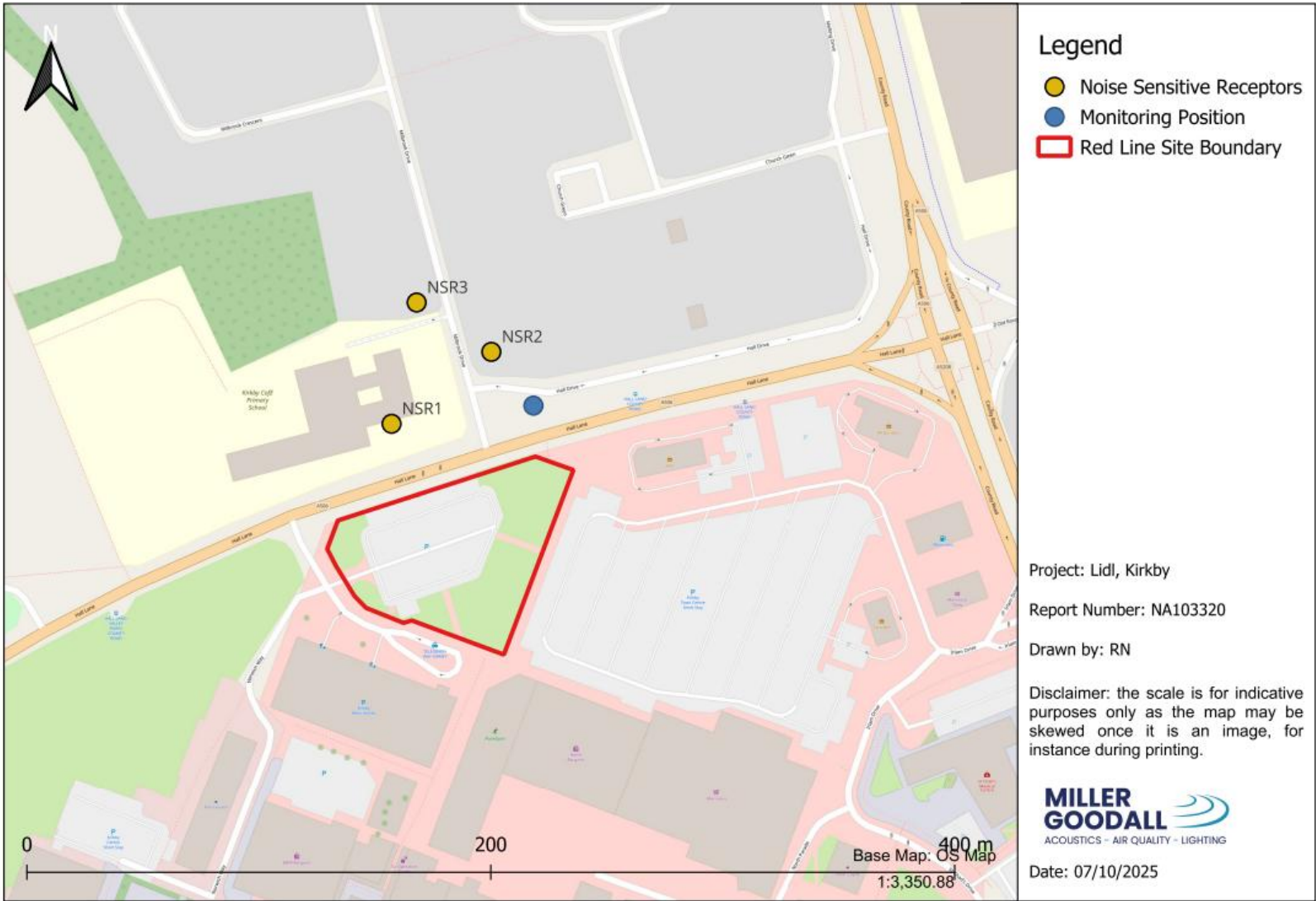
3.3 In order to assess the noise impact, the Background Sound Level is arithmetically subtracted from the Rating Level. The standard states the following:

- *Typically, the greater this difference, the greater the magnitude of the impact,*
- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context,*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context,*
- *The lower the Rating Level is relative to the measured Background Sound Level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the Rating Level does not exceed the Background Sound Level, this is an indication of the specific sound source having a low impact, depending on the context.*

3.4 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014+A1:2019 edition places emphasis upon an appreciation of the context, as follows:

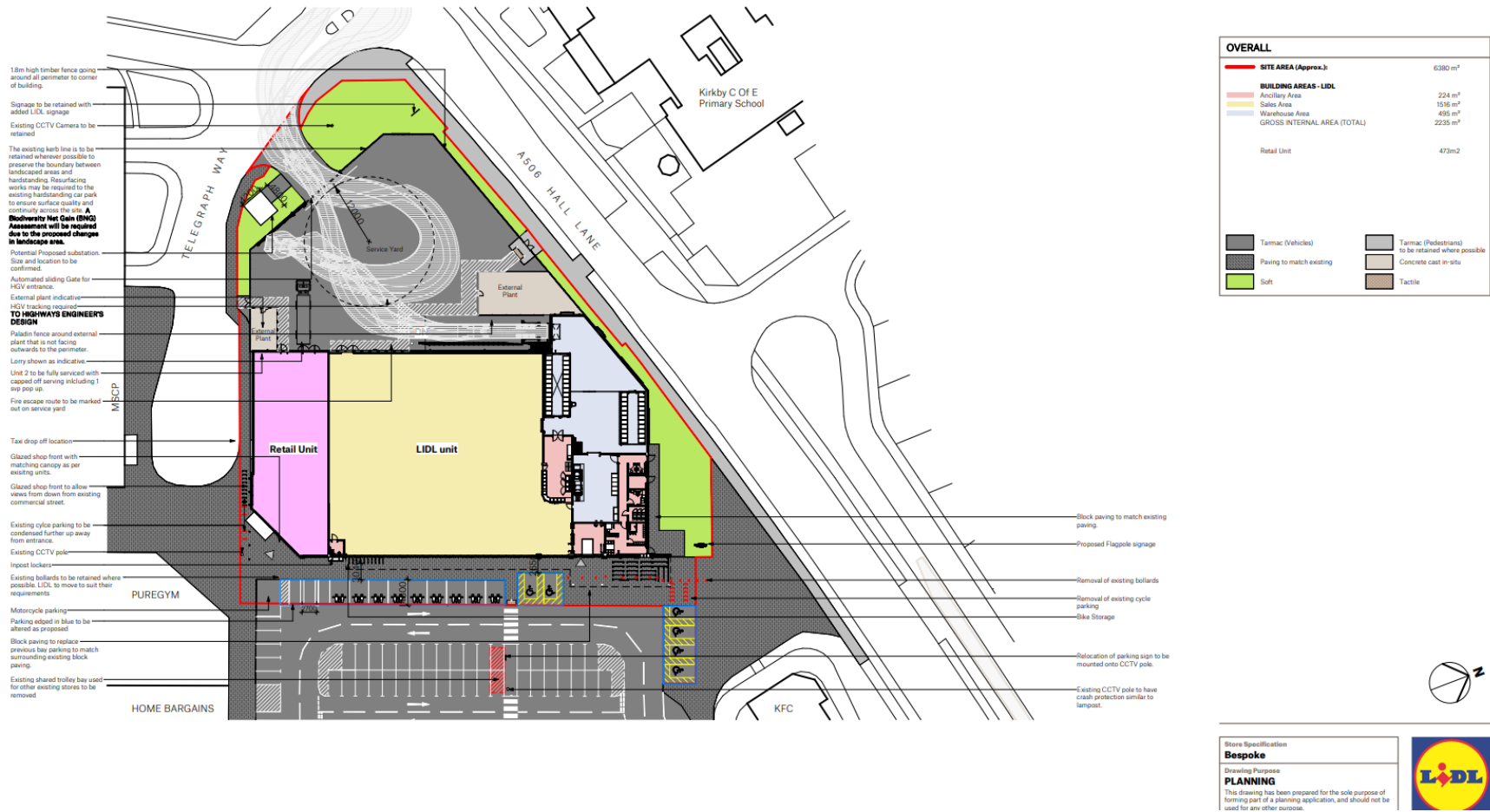
*An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.*

# Appendix 2: Site Location, Monitoring and NSR Locations



# Appendix 3: Site Layout

| Rev. | Author | Checked | Date     |
|------|--------|---------|----------|
| P26  | MIT    | DWW     | 10.09.25 |



# Appendix 4: Environmental Sound Survey Results

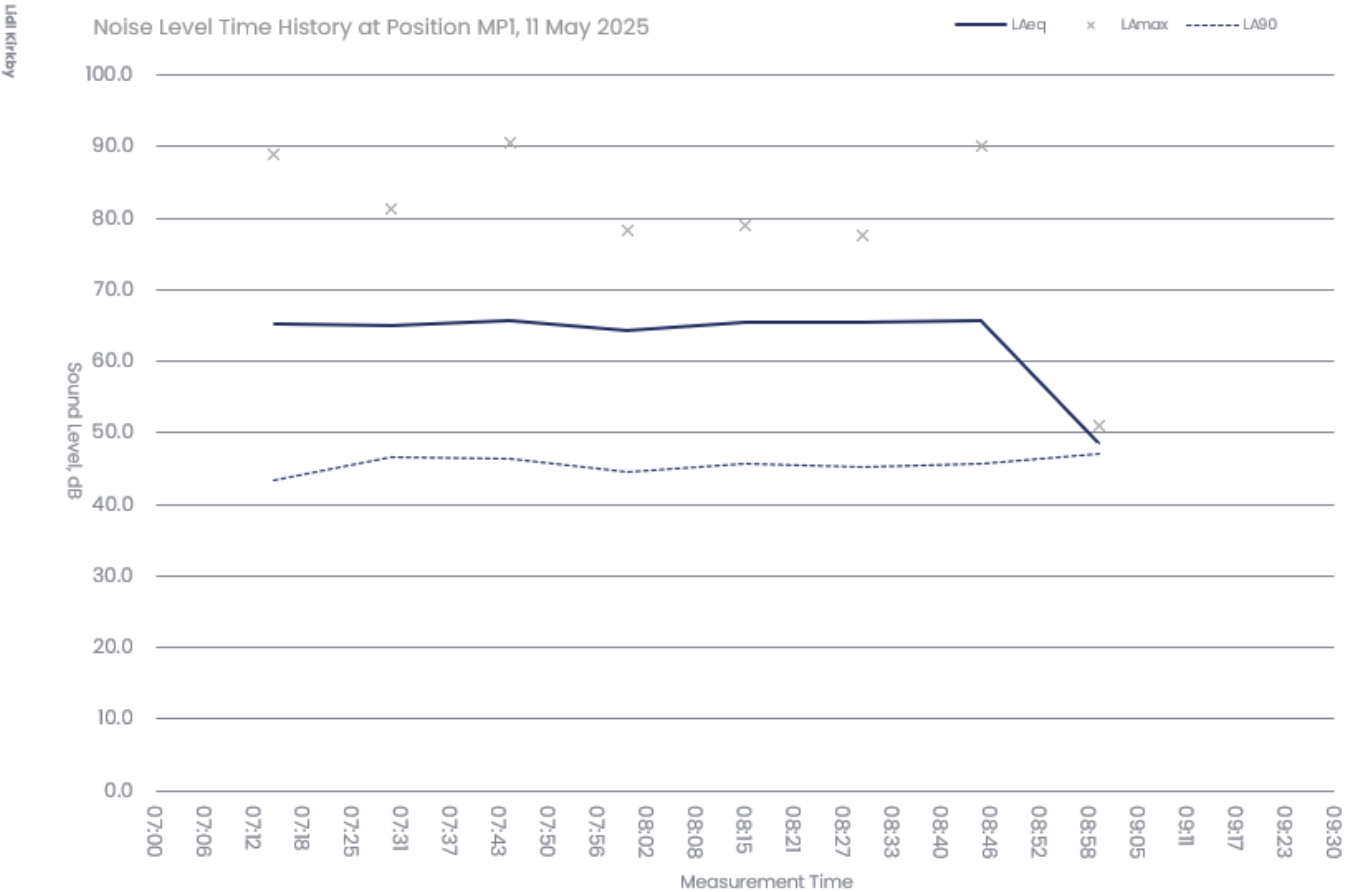


Figure 103320/TH01

Lidl Kirkby

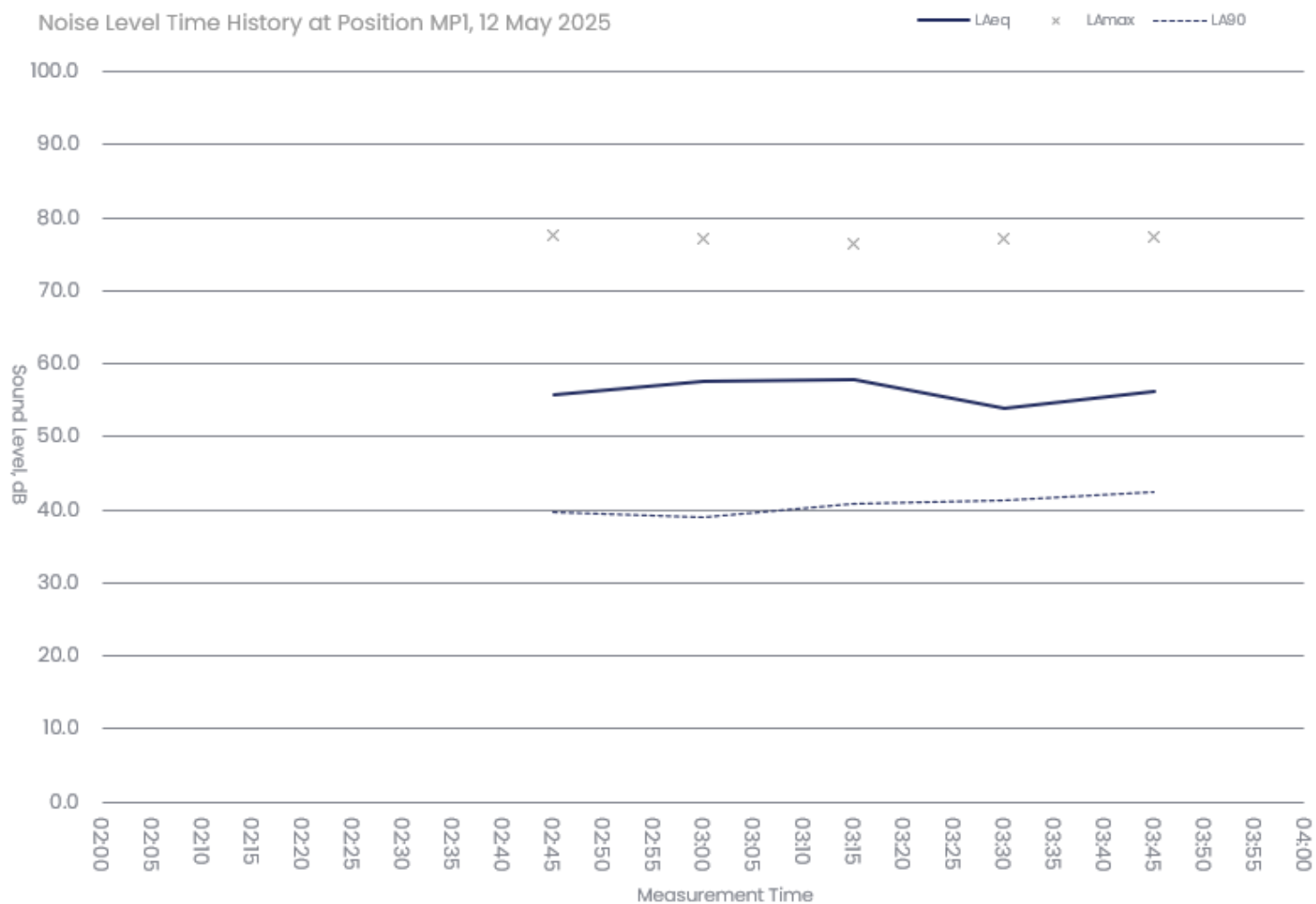
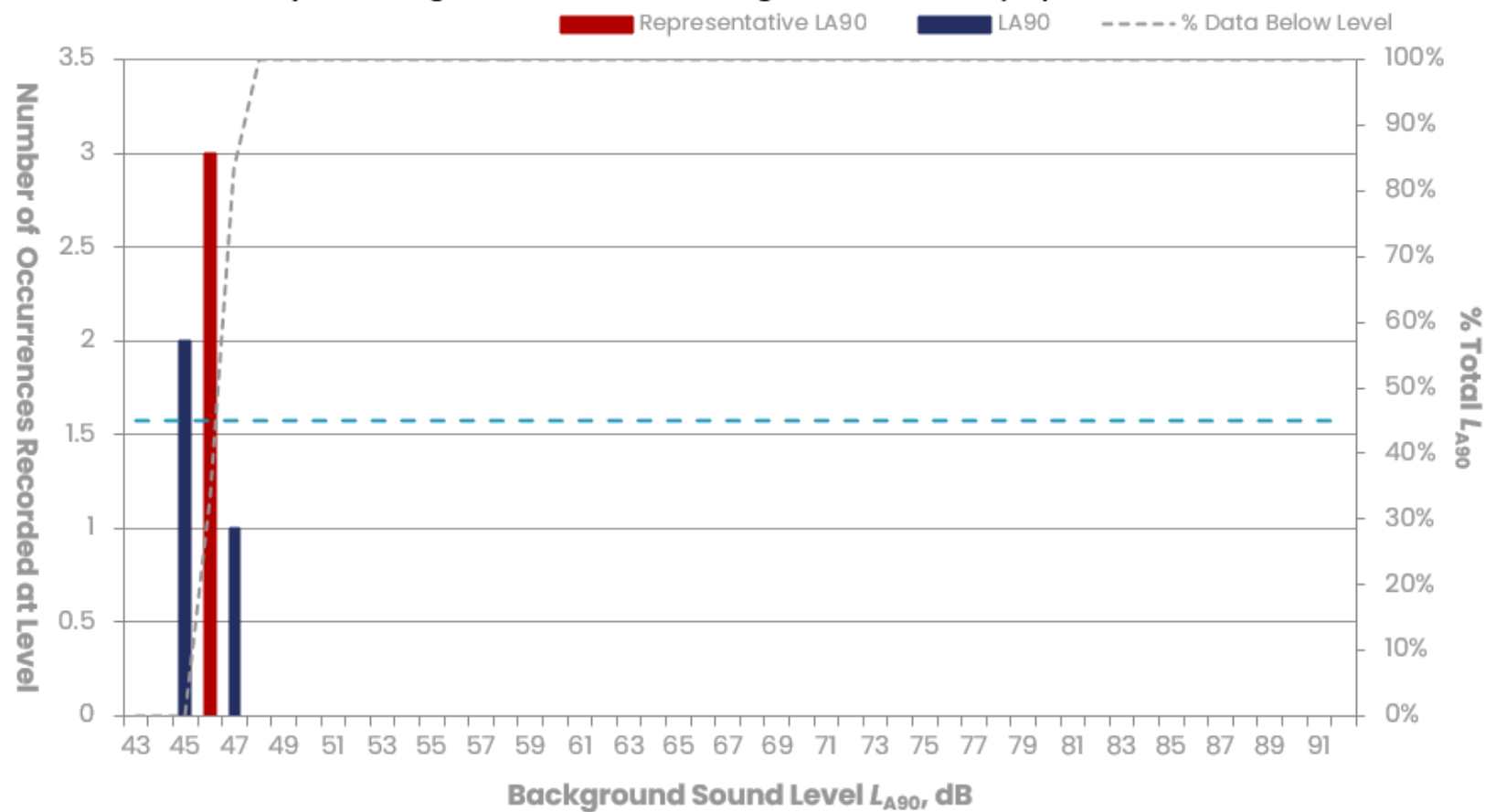


Figure 103320/TH01

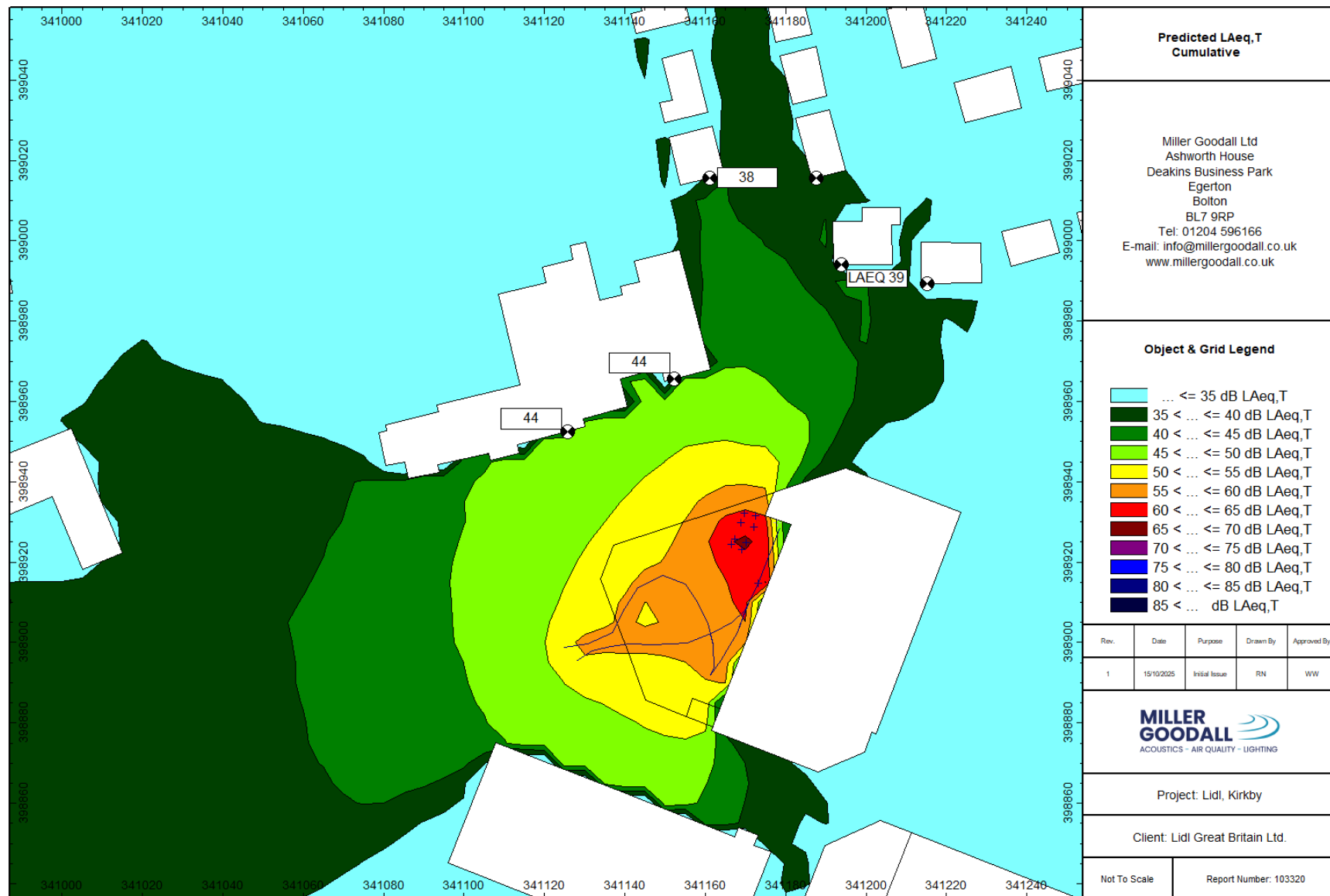
**Daytime Background Sound Level Histogram, LA90,15min (dB) 07:00 - 09:00**

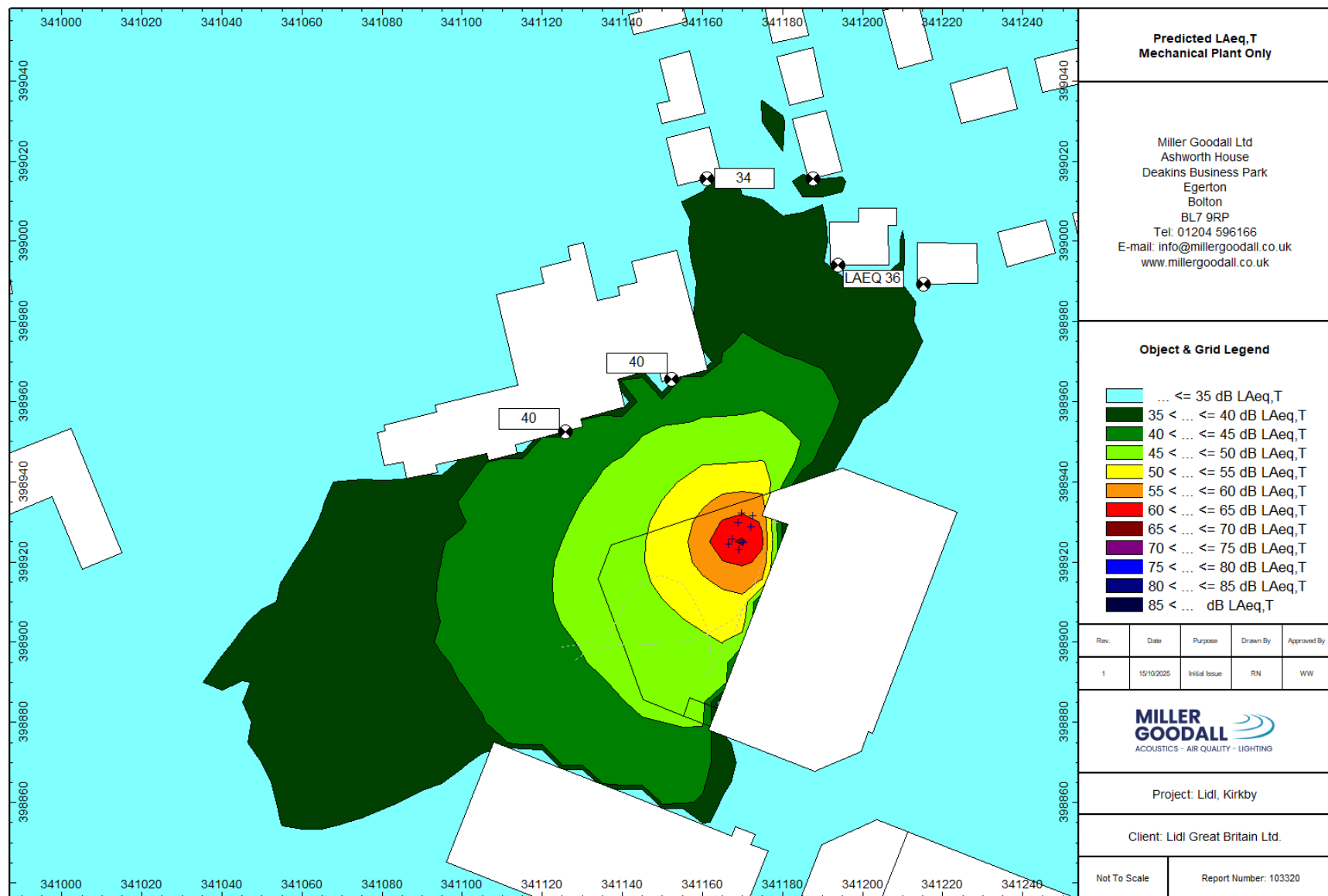


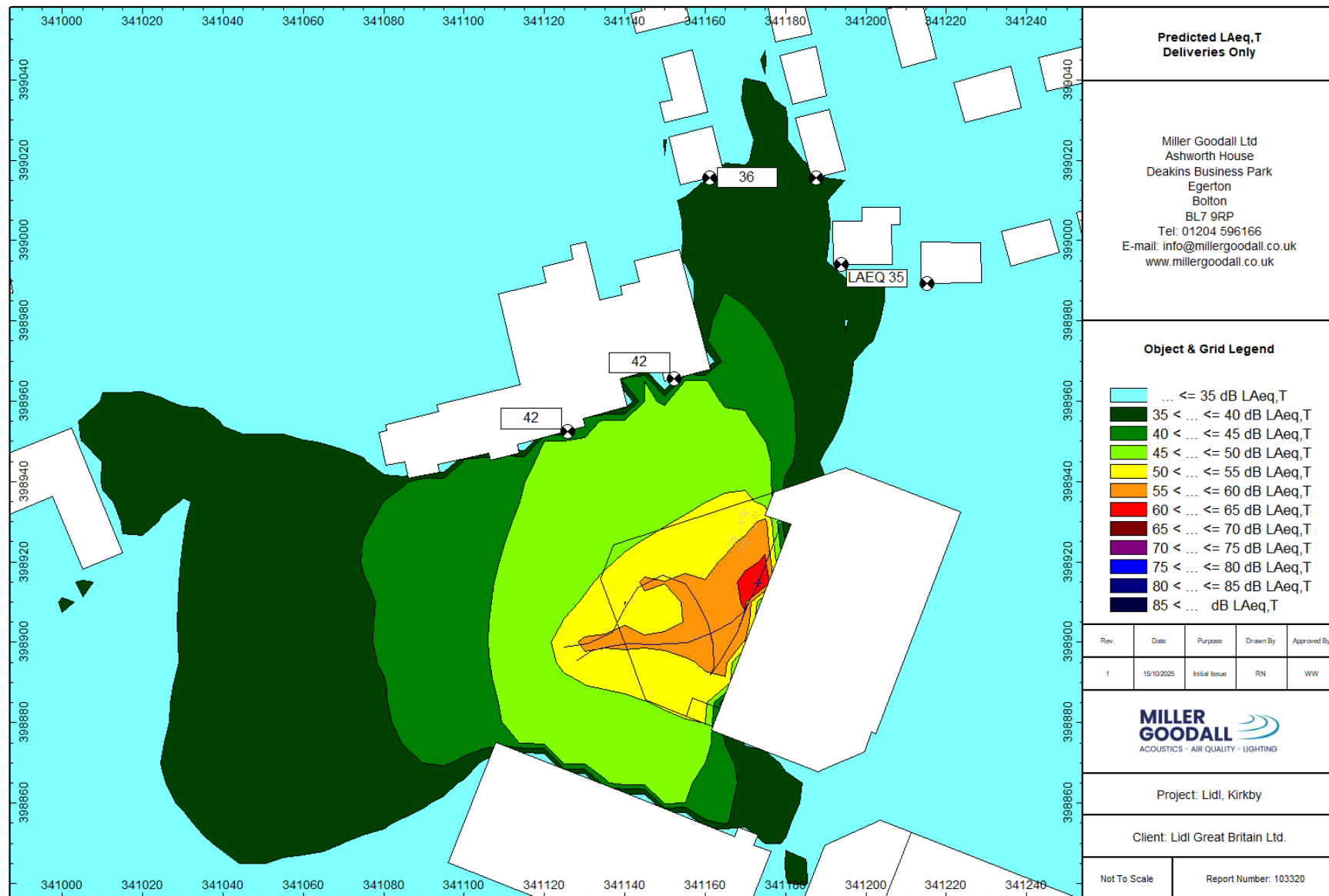
## Appendix 5: Noise modelling parameters

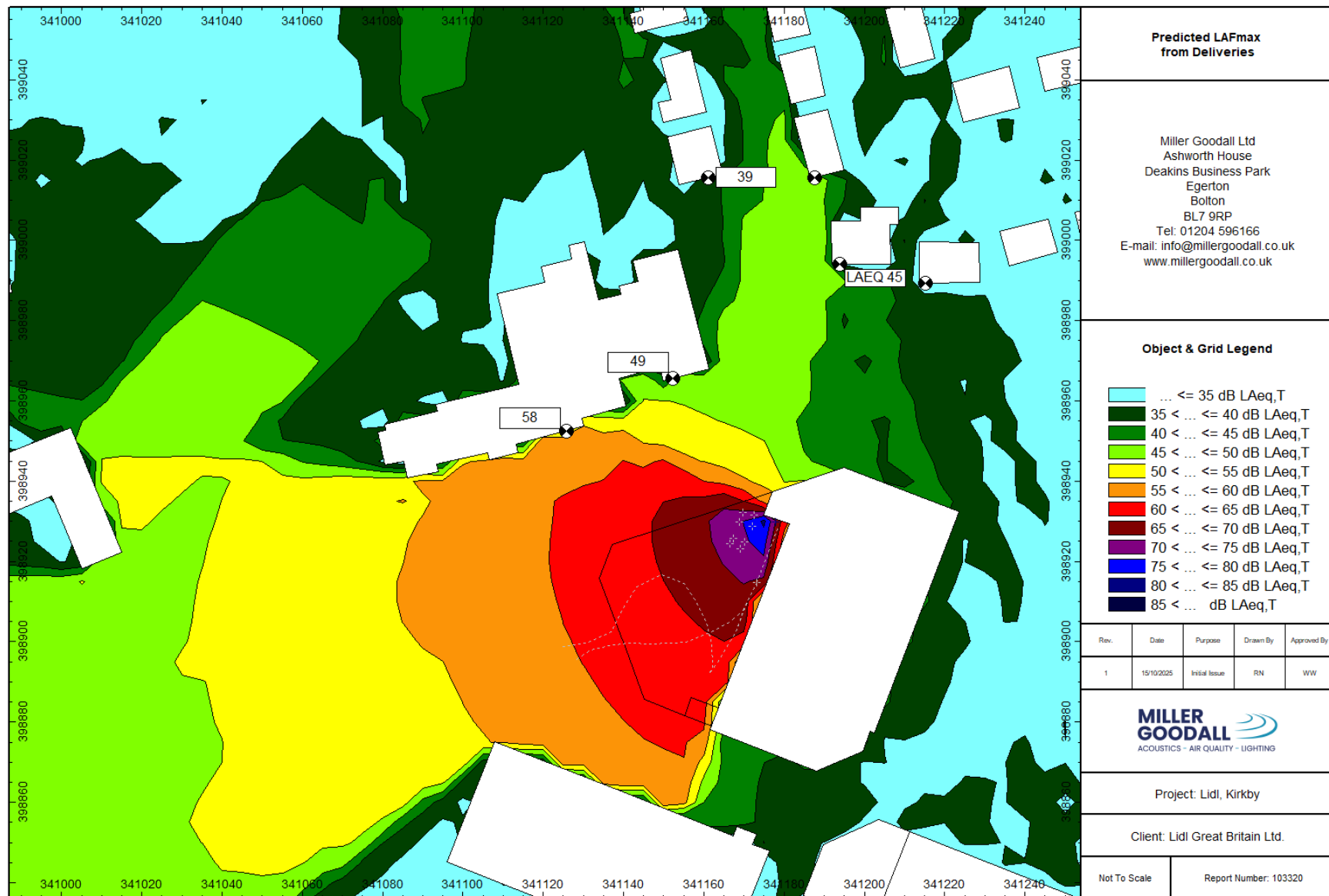
| Parameter                                                                         | Octave Band Centre Frequency, Hz |       |       |       |       |       |       |      | dB(A) |
|-----------------------------------------------------------------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|------|-------|
|                                                                                   | 63                               | 125   | 250   | 500   | 1k    | 2k    | 4k    | 8k   |       |
| HGV Engine Moving,<br>$L_w$ (dB)                                                  | 95.8                             | 93.4  | 91.6  | 95.7  | 97.5  | 95.2  | 90.9  | 90.2 | 101.6 |
| HGV Refrigeration Plant,<br>$L_w$ (dB)                                            | 111.2                            | 98.2  | 92.2  | 91.4  | 89.1  | 82.04 | 76.3  | 69.0 | 93.9  |
| HGV Unloading,<br>$L_w$ (dB)                                                      | 97                               | 90.5  | 85.1  | 83.9  | 87    | 85.4  | 80.5  | 74.3 | 91.2  |
| Basetec Dry Cooler 100kW,<br>$L_w$ (dB)                                           | 75.3                             | 79.3  | 74.3  | 69.2  | 63.2  | 56.8  | 50.1  | 40.6 | 71.0  |
| Grundfos Pump Station Magna3 D 65-150 F,<br>$L_w$ (dB)                            | 51.6                             | 51.6  | 49.1  | 50.6  | 49.4  | 47.2  | 42.4  | 38.5 | 54.0  |
| VRV Unit Serving Warehouse, Daikin RXYSQ12TY1,<br>Maximum Capacity, $L_w$ (dB)    | 11.0                             | 79.0  | 74.0  | 75.0  | 72.0  | 65.0  | 63.0  | 55.0 | 76.4  |
| VRV Unit Serving Back of House, Daikin RXYSQ4TV9, Maximum<br>Capacity, $L_w$ (dB) | 11.0                             | 68    | 68    | 66    | 64    | 58    | 54    | 43   | 68.2  |
| VRV Unit Serving Sales Area, Daikin RXYLQ12T,<br>Maximum Capacity, $L_w$ (dB)     | 91                               | 89    | 80    | 79    | 76    | 71    | 65    | 59   | 81.3  |
| HGV Delivery Unloading<br>$L_{AFmax}$ (dB) input as $L_w$ (dB)                    | 121.4                            | 114.0 | 107.6 | 103.6 | 108.7 | 108.2 | 101.6 | 96.8 | 113.3 |

## Appendix 6: Noise Model Output









## Glossary of Terms

**Decibel (dB)** The unit used to quantify sound pressure levels; it is derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20  $\mu\text{Pa}$ , the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is usually only perceptible under laboratory conditions.

**dB  $L_A$**  Decibels measured on a sound level meter incorporating a frequency weighting (A-weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB  $L_A$  broadly agree with an individual's assessment of loudness. A change of 3 dB  $L_A$  is the minimum perceptible under normal conditions, and a change of 10 dB  $L_A$  corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB  $L_A$ ; normal conversation about 60 dB  $L_A$  at 1 meter; heavy road traffic about 80 dB  $L_A$  at 10 meters; the level near a pneumatic drill about 100 dB  $L_A$ .

**$L_{A90,T}$**  The A weighted noise level exceeded for 90% of the specified measurement period ( $T$ ). In BS 4142: 2014+A1:2019 it is used to define background noise level.

**$L_{Aeq,T}$**  The equivalent continuous sound level. The sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period ( $T$ ).  $L_{Aeq,T}$  is used to describe many types of noise and can be measured directly with an integrating sound level meter.

**$L_{AF,max}$**  The highest A-weighted noise level recorded during the time period using a Fast time-weighting. It is usually used to describe the highest noise level that occurred during the event.

