MILLER GOODALL

ACOUSTICS - AIR QUALITY - LIGHTING

ENVIRONMENTAL NOISE ASSESSMENT

on behalf of

Lidl Great Britain Ltd and A G Barr Ltd

for development at

440 Hollinwood Avenue, Moston, Manchester, M40 0AE

Report Number NA103222

Date of Report 21 March 2025

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Summary

A noise assessment has been undertaken to predict the potential impact of noise from the fixed plant and HGV movements and deliveries associated with a proposed development consisting of a Lidl store at 440 Hollinwood Avenue, Moston, Manchester, M40 0AE.

An environmental sound survey has been undertaken to establish the existing sound climate at nearby residential noise-sensitive receptors (NSRs).

A computer noise model of the proposed development and surrounding site has been assembled based on the proposed site layout and plant specifications. The likely noise levels at the nearest NSRs due to site noise emissions from fixed plant and delivery noise have been predicted and are presented within this report.

The predicted noise levels and data from the environmental sound survey have been used to assess the potential impact at the most affected NSRs during daytime and night-time periods.

Based on the results of the computer modelling and the proposed site layout, mitigation has been proposed in terms of specifying noise barriers and restrictions on delivery hours.

The assessment concludes that, provided the recommended mitigation is included within the development proposals, 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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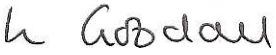
Signed:		**Signed:**	
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Advisory Note

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.

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1 Introduction

1.1 Miller Goodall Ltd has undertaken a noise assessment to accompany a planning application for a proposed Lidl retail unit at 440 Hollinwood Avenue, Moston, Manchester, M40 0AE. The scope of this report is to assess the potential impact of operational noise from 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 acoustics 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.
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

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 sound levels at noise sensitive receptors (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 daytime and night-time periods. For both periods, the first floor level at the selected noise sensitive receptors has been selected for the assessment as first floor windows are likely to receive the highest level of operational noise and may be inhabited during both periods.

3.3 The following scenarios have been considered within this assessment:

- Daytime assessment of cumulative plant and delivery noise;

- Night-time assessment of cumulative plant and delivery noise;
- Daytime assessment of plant noise only; and,
- Night-time assessment of plant noise only.

4 Site Description

4.1 The site is located at 440 Hollinwood Avenue, Moston, Manchester, M40 0AE. 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 surrounded by a mixture of commercial and residential uses. The site is bounded to the north by residential properties fronting South Crescent. Further north is the M60 motorway, approximately 175 m north of the site boundary. To the east are residential properties fronting onto St Margaret's Road. South of the site is Hollinwood Avenue, beyond which are a mix of commercial and residential properties. To the west are commercial and residential properties fronting onto Hollinwood Avenue and Greengate East. The site was previously in industrial use.

5 Proposed Development

5.1 The proposed development is a Lidl retail unit. The proposed layout is presented in **Appendix 3: Site Layout.** A delivery bay and plant area are proposed to the north-east of the development, giving rise to potential noise impacts at nearby NSRs within the new residential development.

5.2 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;

5.3 This plant will operate 24 hours a day, 7 days a week.

5.4 Lidl's standard operations typically require deliveries to be permitted from 05:00 until 00:00 hrs where this is feasible with respect to environmental constraints.

6 Local Authority Consultation

6.1 The Environmental Health Department at Manchester City Council (MCC) was consulted in respect of the methodology used in this assessment[1]. It was agreed that a background sound level survey over a weekend to capture the lowest expected sound levels at the site in two locations representative of the nearest existing residential receptors would be acceptable. It was agreed that a noise impact assessment based on the existing background sound levels and modelled operational noise based on previously measured Lidl Store operations would be suitable.

6.2 The EHO at MCC responded[2] to our consultation explaining that our proposed methodology is acceptable and requesting that we consult the MCC Planning and Noise technical guidance to advise our assessment. Further detail on MCC's local policy is outlined in **Appendix 1: Policy, Standards and Guidance**.

7 Environmental Sound Survey

7.1 Measurement Procedure

7.1.1 Unattended environmental sound monitoring was undertaken at two positions within the site from 10:00 hrs on Friday, 14 February 2025, to 10:00 hrs on Monday, 17 February 2024. The monitoring positions, MP1 and MP2, are indicated in the figure presented in **Appendix 2: Site Location, Monitoring and NSR Locations**. The microphones were mounted in the free-field at a height of 1.5 m above local ground level. These monitoring positions are considered representative of the existing environmental sound climate at the nearest existing NSRs to the development.

[1] Email from Robert Nelms of Miller Goodall Limited to Environmental Health at Manchester City Council, Graeme.souter@manchester.gov.uk and contact@manchester.gov.uk, dated 3rd January 2025.

[2] Email from Lisa Jones, Environmental Protection Officer to Robert Nelms of Miller Goodall Limited, dated 10 January 2025

7.1.2 Measurements were undertaken in accordance with BS 7445-1: 2003[3]. The calibration of the sound level meter was checked before and after the measurements, with negligible deviation (≤ 0.2 dB) recorded. Details of the equipment used are set out in **Table 1**.

Table 1: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1[4,5] Integrating Real Time 1/3 Octave Sound Analyser	NOR 140	Norsonic	1407510	04/01/2024	06568/1
Microphone	NOR 1225	Norsonic	384687	04/01/2024	06568/1
Pre-amplifier	NOR 1209	Norsonic	22462	04/01/2024	06568/1
Outdoor Microphone Housing	NOR 1217	Norsonic	N/A	N/A	N/A
Class 1 Calibrator[6]	NOR 1251	Norsonic	34123	18/12/2024	07039/1
Class 1[7,8] Integrating Real Time 1/3 Octave Sound Analyser	NOR 140	Norsonic	1406017	13/09/2023	06431/4
Microphone	NOR 1225	Norsonic	358159	13/09/2023	06431/4
Pre-amplifier	NOR 1209	Norsonic	14448	13/09/2023	06431/4
Outdoor Microphone Housing	NOR1217	Norsonic	N/A	N/A	N/A
Class 1 Calibrator[9]	Type 4231	Brüel & Kjær	2478249	22/08/2024	06881/1

7.1.3 Each measurement period consisted of sequential 100 ms samples. The data has been extracted using NorXfer and NorReview software and analysed using an in-house Excel processing sheet to analytically determine representative L_{Aeq}, L_{A90} and $L_{AF,max}$ sound levels.

[3] BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures

[4] IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

[5] IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

[6] IEC 60942 (2003) Electroacoustics – Sound calibrators

[7] IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

[8] IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

[9] IEC 60942 (2003) Electroacoustics – Sound calibrators

The 100 ms sound levels have not been presented in this report but are kept on file for future reference.

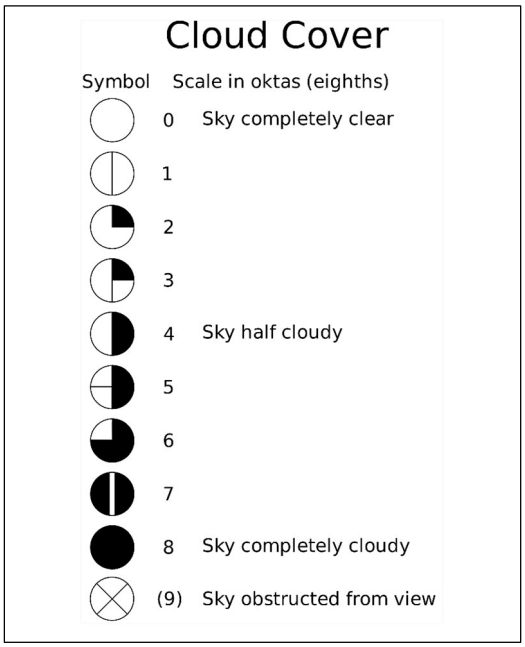
7.2 Environmental Sound Climate

7.2.1 During the installation and collection of the equipment, the residual sound climate at both measurement positions was observed to consist of road traffic noise from both the M60 and Hollinwood Avenue.

7.3 Weather Conditions

7.3.1 Weather conditions were observed when the equipment was installed and collected. A summary of the conditions at the beginning and end of the surveys is provided in **Table 2**.

Table 2: Dates, times and weather conditions during noise measurements

Measurement Locations	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
MP1, MP2	14/02/2025, 10:00 to 17/02/2025, 10:00	Temperature:	5 °C	3 °C
		Precipitation:	None	None
		Cloud cover (oktas – see opposite):	3	6
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	Slightly damp roads
		Wind speed:	7 m/s	10 m/s
		Wind direction:	SE	SE

7.3.2 Weather forecasts provided by the Met Office[10] and WUnderground[11] were reviewed before attending the site to confirm the weather forecast was appropriate for noise monitoring (i.e. dry, windspeed ≤ 5 m/s and no extreme temperatures) over the proposed monitoring period. In addition, weather history data has been reviewed for the period over which the monitoring was unattended.

7.3.3 Wind speeds were above 5 m/s on Friday and Monday, throughout Saturday and Sunday typical windspeeds were around 4.5 m/s. Data gathered during Friday and Monday have, therefore, been excluded from the reported measurement data.

8 Monitoring Results

8.1 Time history graphs for the full unattended monitoring periods at MP1 and MP2, plotted in 15-minute time intervals, are presented in **Appendix 4: Environmental Sound Survey Results**. All data are sound pressure levels in dB re 20 μPa. As previously mentioned, due to adverse weather on Friday and Monday, only Saturday and Sunday day and night time periods have been presented.

8.2 A summary of the broadband measurement data for the unattended monitoring at MP1 is provided in **Table 3**

Table 3: Summary of unattended environmental sound monitoring results at MP1

Date	Day	Period	Start Time hh:mm	Elapsed Time, T hh:mm	$L_{Aeq,T}$ *1. dB	$L_{AF,max}$ *2. dB	$L_{A90,T}$ *3. dB
15/02/2025	Saturday	Daytime	07:00	16:00	69.9	83.2	62
15/02/2025 to 16/02/2025	Saturday to Sunday	Night-time	23:00	08:00	63.5	77.8	45
16/02/2025	Sunday	Daytime	07:00	16:00	68.5	81.8	59

[10] Weather and climate change - Met Office

[11] Local Weather Forecast, News and Conditions | Weather Underground

16/02/2025 to 17/02/2025	Sunday To Monday	Night-time	23:00	08:00	64.1	79.1	44

*1. The values presented for the $L_{Aeq,T}$ are the log average of the $L_{Aeq,15min}$ values recorded within the corresponding period, of length T.

*2. The values presented for the $L_{AF,max,}$ are the 10th highest $L_{AF,max,15min}$ values recorded within the corresponding period, of length T.

*3. The values presented for the $L_{A90,T}$ have been calculated using the LRB Method from the Little Red Book of Acoustics[12], from the $L_{A90,15min}$ values recorded within the corresponding period, of length T. The value presented is the most commonly occurring $L_{A90,\ 15min}$ value during the period, for which no less than 45% of the total histogram data occurs below.

8.3 A summary of the broadband measurement data for the unattended monitoring at MP2 is provided in **Table 4**.

Table 4: Summary of unattended environmental sound monitoring results at MP2

Date	Day	Period	Start Time hh:mm	Elapsed Time, T hh:mm	$L_{Aeq,T}$*1. dB	$L_{AF,max}$*2. dB	$L_{A90,T}$*3. dB
15/02/2025	Saturday	Daytime	07:00	16:00	66.9	76.1	63
15/02/2025 to 16/02/2025	Saturday to Sunday	Night-time	23:00	08:00	64.1	76.3	54
16/02/2025	Sunday	Daytime	07:00	16:00	73.5	91.8	68
16/02/2025 to 17/02/2025	Sunday To Monday	Night-time	23:00	08:00	68.2	79.1	56

*1. The values presented for the $L_{Aeq,T}$ are the log average of the $L_{Aeq,15min}$ values recorded within the corresponding period, of length T.

*2. The values presented for the $L_{AF,max,}$ are the 10th highest $L_{AF,max,15min}$ values recorded within the corresponding period, of length T.

*3. The values presented for the $L_{A90,T}$ have been calculated using the LRB Method from the Little Red Book of Acoustics, from the $L_{A90,15min}$ values recorded within the corresponding period, of length T. The value presented is the most commonly occurring $L_{A90,\ 15min}$ value during the period, for which no less than 45% of the total histogram data occurs

[12] The Little Red Book of Acoustics: A Practical Guide, Fourth Edition (2024) published by Blue Tree Acoustics

below.

9 Background Sound Level

9.1 Based on the results of the environmental sound monitoring at MP1 and MP2 presented in **Table 3** and **Table 4**, the daytime background sound level has been determined using the LRB Method from the Little Red Book of Acoustics to be 59 dB $L_{A90,15min}$, corresponding with the daytime of Sunday 16 February 2025 at MP1.

9.2 At MP2, the daytime background sound level determined using the LRB Method from the Little Red Book of Acoustics, was 63 dB $L_{A90,15min}$, corresponding with the 16-hour daytime period of Saturday 15 February 2025.

9.3 The night-time background sound level is 44 dB $L_{A90,15min}$ at MP1 and 54 dB $L_{A90,15min}$ at MP2 corresponding with the 8-hour night-time period of Sunday and Saturday respectively.

9.4 The background sound level used in the BS 4142 assessments is, therefore;

- 59 dB $L_{A90,15min}$ for the daytime.
- 44 dB $L_{A90,15min}$ for the night-time.

9.5 These values are considered to be representative of the typical daytime and night-time background sound levels at the respective and most affected NSRs around the site.

9.6 Based on MCC's Planning and Noise technical guidance, the appropriate assessment criteria of 5 dB below background sound levels results in a daytime assessment criteria of **54 dB** during the daytime and **39 dB** during the night time.

10 Noise Modelling Methodology

10.1 A noise model of noise emissions 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. The proposed site topography, comprising a level platform for the store, car park and plant area has been incorporated by adding contour lines. The proposed delivery bay ramp has been incorporated by adding contours from local platform level to a depth of 1.4 m below local platform level, corresponding with the gradient, length and width of the proposed ramp.

10.4 The detail of proposed commercial land uses immediately adjacent to the east and south of the site are unknown. As such, any potential future commercial buildings have not been modelled, allowing a direct sound propagation path to receptors to the east and south, within the model. This is considered a conservative approach as acoustic screening provided by buildings in those locations would likely reduce noise levels at those receptors.

10.5 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 correspond with receiver heights.

10.6 Details of the proposed site layout and associated plant have been obtained from drawings, CAD files and data sheets provided by the client. **Table 5** summarises the documents provided and the information obtained.

Table 5: Technical documentation

Document Title	Document Author	Information obtained
7123-SMR-66-ZZ-DR-A-8003-S2-P3	SMR Architects	Redline boundary and Proposed Site Layout
3607 P404B Proposed Setting Out Site Plan	SMR 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 Warehouse
VRV IV S-series heat pump Air Conditioning Technical Data RXYSQ-TV9	Daikin	Noise levels of VRV serving Back of House
Heating Technical Data RXMLQ-T, RXYLQ-T	Daikin	Noise levels of VRV serving Sales Area
Advancer Spectrum Mastering Multi-temp brochure	Thermo King	Attenuation for HGV Refrigeration Plant on electrical standby

10.7 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.

10.8 Sound power levels associated with the fixed plant, HGV movements and delivery activity sources are provided in **Appendix 5: Noise modelling parameters**.

10.9 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.

10.10 The duration of a Lidl delivery is approximately 45 minutes from arrival to departure, including approximately 40 minutes of unloading activity. HGV delivery data has been adjusted for the daytime and night-time periods to determine the energy contained within the reference period.

10.11 The noise modelling includes the following mitigation:

- A 2.5 m imperforate barrier along the western length of the delivery bay.
- A 2.5 m imperforate barrier along the western and southern perimeters of the plant deck area with gaps as a worst-case representation of louvred sections.

10.12 **Table 6** summarises the modelling methodology for the plant associated with the proposed development.

Table 6: Summary of baseline CadnaA modelling methodology for proposed plant

Proposed Plant	Methodology
2 No. Food Refrigeration Dry Coolers Bastec, 374800 BSE 100kW	• 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. • Broadband sound power taken from manufacturer's data sheet. • Indicative spectrum shape taken from manufacturer's data sheet for similar pump. • Vertical directivity assigned to represent the fans pointing vertically upwards as indicated on the manufacturer's drawings. • Height of unit taken from manufacturer's data sheet.
2 No. Food Refrigeration Pumping Stations Bastec, 374800 BSE 100kW	• 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. • Broadband sound pressure at 1 m into spherical radiation taken from manufacturer's data sheet. • Indicative spectrum shape taken from manufacturer's data sheet for similar pump. • Height of unit taken from manufacturer's data sheet.
1 No. VRV serving Warehouse Daikin, RXYSQ12TY1	• 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. • Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case. • The height of the unit is taken from the manufacturer's data sheet.
1 No. VRV serving Back of House Daikin RXYSQ4TV9	• 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. • Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case. • The height of the unit is taken from the manufacturer's data sheet.

Proposed Plant	Methodology
2 No. VRVs serving Sales Area Daikin RXYLQ12T	• 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. • Octave band sound power levels for modelling of daytime operation taken directly from manufacturer's data sheet, assuming maximum duty operation as worst case. • Vertical directivity assigned to represent the fans pointing vertically upwards as indicated on the manufacturer's data sheet drawings. • The height of the unit is taken from the manufacturer's data sheet.

10.13 **Table 7** summarises the modelling methodology for the delivery activities associated with the proposed development.

Table 7: Summary of baseline CadnaA modelling methodology for delivery activities

Activity	Methodology
HGV Arriving - Engine	• Modelled as a moving point source on a line moving at 8 kmh^{-1} 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. • Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave sound power spectrum. • 1 event per hour representing a 1-hour daytime assessment period, or 4 events per hour representing a 15 minute night-time assessment period*[1], as a worst case. • The height of the source is based on observations when source measurements were undertaken.
HGV Arriving – Refrigeration Plant	• Modelled as a moving point source on a line moving at 8 kmh^{-1} 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. • Octave band sound pressure level spectrum at 11.5 m with hemispherical radiation converted to octave band sound power spectrum. • 1 event per hour representing a 1-hour daytime assessment period, or 4 events per hour representing a 15-minute night-time assessment period*[1], as a worst case. • 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.

Activity	Methodology
HGV Departing - Engine	• Modelled as a moving point source on a line moving at 8 kmh^{-1} 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. • Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave sound power spectrum. • 1 event per hour representing a 1-hour daytime assessment period, or 0 events per hour representing a 15-minute night-time assessment period*[1], as the arrival is used as worst case. • The height of the source is based on observations when source measurements were undertaken.
HGV Departing – Refrigeration Plant	• Modelled as a moving point source on a line moving at 8 kmh^{-1} 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. • Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave band sound power spectrum. • 1 event per hour representing a 1-hour daytime assessment period, or 0 events per hour representing a 15-minute night-time assessment period*[1], as the arrival is used as worst case. • 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.
HGV Unloading	• 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 drivers cab. Path of travel corresponding with HGV Departing – Engine path noted above. • Octave band sound pressure level spectrum at 10 m with hemispherical radiation converted to octave band sound power spectrum. • 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*[1]. • 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.
HGV Refrigeration Plant - Stationary	• 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. • Octave band sound pressure level spectrum at 11.5 m with hemispherical radiation converted to octave band sound power spectrum. • 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*[1]. • Attenuation of 3 dB has been applied based on manufacturer's data for the refrigeration unit in electrical standby mode.

*[1] The software allows a 1-hour assessment period only. As such, parameters are adjusted to achieve an equivalent 15-minute specific L_{Aeq} noise level.

11 Noise Sensitive Receptors and Modelled Noise Levels

11.1 **Table 8** sets out the worst affected noise sensitive receptors (NSRs) that have been considered within the assessment and included within the noise model. The NSR locations are indicated in the figure presented in **Appendix 2: Site Location, Monitoring and NSR Locations**.

Table 8: Modelled noise levels and noise sensitive receptors

Noise Sensitive Receptor (NSR)		Modelled Specific Noise Level dB $L_{Aeq,Tr}$			
Reference	Description	Cumulative Plant & Delivery, Daytime	Cumulative Plant and Delivery, Night-time	Plant Only, Daytime	Plant Only, Night-time
NSR1	11 Hollinwood Avenue.	52	52	39	39
NSR2	409 Hollinwood Avenue	47	47	36	36

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

11.3 Based on the results presented in **Table 8** and the background sound levels presented in **Section 9 Background Sound Level**, the most affected NSR due to cumulative delivery noise and plant noise is NSR1 .

12 BS 4142:2014+A1:2019 Assessment

12.1 Scenarios Assessed

12.1.1 A noise impact assessment following the methodology of BS 4142 has been undertaken to assess the potential impact of noise from the development for each scenario. Daytime and night-time assessments are presented in parallel for;

- cumulative delivery noise and plant noise; and
- plant noise in isolation.

12.2 Cumulative Delivery Noise and Plant Noise Assessment

12.2.1 The assessment of cumulative delivery noise and plant noise has been undertaken for the daytime and the night-time periods at NSR1.

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

12.2.3 Analysis of modelled contributions from individual delivery noise sources at NSR1, 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 M60 and Hollinwood Avenue. However, 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 both the daytime and night-time scenarios, based on the likelihood of the noise being readily distinctive during the short transient period. For the night-time scenario, an additional 3 dB for intermittency has been added to give a total acoustic feature correction of + 6 dB, on the basis that this feature would be more pronounced with distinctive on and off conditions due to the lower night-time residual noise level.

12.2.4 The BS 4142 assessment of noise impact at the most affected NSR is presented in **Table 9**.

Table 9: BS 4142 Assessment of cumulative delivery noise and plant noise

Assessment Period	Receptor	Background Sound Level, dB $L_{A90,15min}$	Specific Noise Level*1., dB $L_{Aeq,Tr}$	Acoustic Feature Correction dB	Rating Level*1., dB $L_{Ar,Tr}$	Excess of Rating level over Background Soid level dB	Initial Estimate of Impact, Depending on The Context
Daytime	NSR1	59	51	+ 3	54	-5	Low
Night-time	NSR1	44	51	+ 6	57	+ 13	Significant Adverse

*1. For daytime scenarios, the assessment period Tr is 1 hour. For the night-time scenario, the assessment period Tr is 15 minutes.

12.2.5 It can be seen from **Table 9** that the outcome of the initial BS 4142 assessment indicates a low to adverse impact for the daytime scenario and a significant adverse impact for the night-time scenario, depending on the context.

Context

12.2.6 The assessment presented in **Table 9** details the results of the initial numerical assessment of noise levels at the most affected NSRs. It is important to note that the numerical assessment of impact is influenced by the context of the proposals including the surrounding environment and the operating characteristics.

12.2.7 The surrounding environment is a suburban area with relatively high background sound levels and an environmental sound climate dominated by road traffic noise from Hollinwood Avenue and the M60. The development site is located at a former industrial site that will likely have had HGV movements associated with it. As such, occupants of existing dwellings are likely to be accustomed to manufacturing and road traffic noise sources. Future occupants of proposed dwellings would not be accustomed to previous noise sources but, within the context of living in a dwelling adjacent to commercial land use,

would likely be relatively tolerant of some noise due to manufacturing and commercial sources within the vicinity of their dwelling.

12.2.8 Daytime cumulative noise model scenario is shown to result in a rating level that is 5 dB below the background sound level, thereby satisfying MCC criteria of 5 dB below background.

12.2.9 Considering the operating characteristics within the context of the night-time scenario at both receptors, the primary contributor to cumulative noise levels is from delivery sources. As demonstrated by the absolute noise levels and acoustic feature corrections that have been applied, operating characteristics are likely to be distinctive against the residual sound level. Based on this and the numerical assessment indicating a significant adverse impact at NSR1 for the night-time scenario, the noise impact of night-time deliveries is likely to be significant adverse.

Outcome

12.2.10 Based on the BS 4142 assessment presented in **Table 9** 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 the daytime period and significant adverse during the night-time period. On this basis, it is considered that night-time deliveries are unlikely to be acceptable to the local authority and as such deliveries should only be permitted between the hours of 07:00 hrs and 23:00 hrs, 7 days a week.

12.3 Plant Noise

12.3.1 The assessment of plant noise in isolation has been undertaken for the daytime and the night-time periods at NSR1.

12.3.2 Acoustic feature corrections have been considered for the various plant items. No acoustic feature corrections have been added as it is considered that the plant would operate in a steady state with no distinguishable intermittency and would not be tonal.

12.3.3 The BS 4142 assessment of noise impact at the most affected NSR during the night-time period is presented in **Table 10**.

Table 10: BS 4142 Assessment of plant noise in isolation

Assessment Period	Receptor	Background Sound Level, dB $L_{A90,15min}$	Specific Noise Level dB $L_{Aeq,Tr}$	Acoustic Feature Correction dB	Rating Level[*1,] dB $L_{Ar,Tr}$	Excess of Rating level over Background Soid level dB	Initial Estimate of Impact, Depending on The Context
Daytime	NSR1	59	39	0	39	- 20	Low
Night-time	NSR1	44	39	0	39	- 5	Low

12.3.4 It can be seen from **Table 10** that the outcome of the initial numerical BS 4142 assessment indicates a low for both the daytime and night-time scenarios, depending on the context.

Context

12.3.5 The assessment presented in **Table 10** details the results of the initial numerical assessment of noise levels at the most affected NSRs. It is important to note that the numerical assessment of impact is influenced by the context of the proposals, including the surrounding environment and the operating characteristics.

12.3.6 The surrounding environment is a suburban area with relatively high background sound levels and an environmental sound climate dominated by road traffic noise from Hollinwood Avenue and the M60. The development site is located at a former manufacturing site that will likely have had mechanical plant associated with it. As such, occupants of existing dwellings are likely to be accustomed to manufacturing noise sources. Future occupants of proposed dwellings would not be accustomed to previous noise sources but, within the context of living in a dwelling adjacent to commercial land use, would likely be relatively tolerant of some noise due to manufacturing sources within the vicinity of their dwelling.

12.3.7 Considering the operating characteristics within the context of both the daytime and night-time scenarios, noise from plant items is unlikely to be readily distinctive above the residual sound level. Based on this and the numerical assessment indicating a low impact for both the daytime and night-time scenarios, the impact of noise from plant is likely to be low during both daytime and night-time periods.

12.3.8 It can be seen that MCC's criteria of 5 dB below the background sound level is achieved.

Outcome

12.3.9 Based on the numerical BS 4142 assessment presented in **Table 10** and with consideration of the context described above, it is considered that the overall impact of plant noise is likely to low and should be considered acceptable to the local authority.

13 Mitigation

13.1 Introduction

13.1.1 Mitigation has been included within the noise model. Based on this, the following mitigation will be incorporated within the development plans.

13.2 Acoustic Barriers

13.2.1 Acoustic barriers will be included along the western length of the delivery bay and on the external facing perimeter of the rooftop plant deck area. The location of the proposed acoustic barriers is indicated in the figure in **Appendix 3: Site Layout**.

13.2.2 The acoustic barriers are to be constructed from continuous, imperforate material with a minimum mass of 12 kg/m^2. Close-boarded or overlapped panelling would be suitable in this regard; hit-and-miss fencing would not. Alternatively, a proprietary acoustic fence with a minimum weighted sound reduction index of 25 dB R_w would be appropriate. The barriers are to extend from the ground to the following minimum heights:

- The plant deck area barrier shall have a minimum height of 2.5 m above the plant deck level. The required louvre for air supply to mechanical plant has been accounted for with openings within the model which provide a worst-case assessment scenario.

- The delivery area barrier shall have a minimum height of 2.5 m. The height is specified from local ground level to the west of the bay, *not* from the ramp level.

13.3 Idle Refrigeration Plant

13.3.1 It shall be ensured that during deliveries, HGV refrigeration plant will be set to electrical standby (diesel engine off) which provides 3 dB reduction to its sound emissions. As Idle refrigeration in the delivery bay is the dominant contributor to operational noise levels, this mitigation measure provides a significant reduction to overall operational noise received at the NSRs.

13.4 Delivery Hours

13.4.1 Based on the assessments undertaken, it is recommended that delivery hours are restricted to **07:00 hrs to 23:00 hrs, 7 days a week**.

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 440 Hollinwood Avenue, Moston, Manchester, M40 0AE 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).

14.3 A computer noise model of the proposed development and surrounding site has been produced based on the proposed site layout, including mitigation by way of acoustic barriers.

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. The following scenarios have been assessed:

- Daytime assessment of cumulative plant and delivery noise;
- Night-time assessment of cumulative plant and delivery noise;
- Daytime assessment of plant noise only; and,
- Night-time assessment of plant noise only.

14.5 The assessments indicate that the cumulative impact of noise from deliveries and plant would be of low impact during daytime periods and significant adverse impact during night-time periods, with the recommended mitigation included within the development.

14.6 The assessments indicate that the impact of noise from plant alone would be of low impact during both daytime and night-time periods, with the recommended mitigation included within the development.

14.7 Mitigation has been included within the noise model and restrictions to delivery hours have been considered. It is recommended that the following mitigation is incorporated within the development proposals:

- Acoustic barriers will be included as follows:
    - The plant deck area barrier shall have a minimum height of 2.5 m above the plant deck level. The required louvre for air supply to mechanical plant has been accounted for with openings within the model which provide a worst-case assessment scenario.
    - The delivery area barrier shall have a minimum height of 2.5 m. The height is specified from local ground level to the west of the bay, *not* from the ramp level.
- Idle refrigeration plant on HGVs is to be switched to electrical standby operation whilst in the delivery bay.
- It is recommended that delivery hours are restricted to 07:00 hrs to 23:00 hrs, 7 days a week.

14.8 Based on the assessments undertaken and provided the recommended mitigation measures are implemented, the assessment concludes that the impact of noise emissions from the proposed development is likely to be low. MCC criteria of 5 dB below the representative background sound level is therefore achieved. As such, there is no reason for this development to be refused planning permission based on the likely noise impact.

APPENDICES

Appendix 1: Policy, Standards and Guidance

1 Noise Policy Statement for England

1.1 The Noise Policy Statement for England (NPSE[13]) 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".

[13] 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[14]) 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*

[14] National Planning Policy Framework, Ministry of Housing, Communities and Local Government, December 2023

environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…"

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 Local Planning Policy

3.1 Manchester City Council's (MCC's) 'Planning and Noise Technical Guidance, October 2022', states the following in '3.7.1.5 Industrial/Commercial Developments':

"BS 4142 should be used to assess the likely impact of noise from industrial and commercial sources at noise sensitive premises (section 3.5). One of the indications of the impact of a BS

4142 assessment is 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.

The council consider that new developments should contribute and enhanced the area in which they are located and where possible i.e. prevent 'noise creep', contribute to the improvement of people's health and quality of life as per the NPSE. With this in mind the design objective should be:

*'**The development should be designed so as to achieve a rating of 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.'***

Where this criterion cannot be achieved, the various noise control measures considered as part of the assessment should be fully explained (i.e. relocation of noise sources, use of quieter equipment, enclosures, screening, restriction of the hours of operation) and the achievable noise level should be identified. This information will allow a judgement to be made concerning the application and its likely impact on the surrounding area.

In addition to the above, maximum noise levels should also be adequately controlled. Where particular uses generate high noise levels of a short duration (e.g. loud bangs) on a regular basis, these should aim to be controlled so as not to exceed 60 dB (L_{Amax}) at the façade of noise sensitive premises nearby in accordance with the recommendations of the World Health Organisation (section 3.6).

Deliveries and collections are usually controlled by restricting operational hours but depending on the extent of these activities, a Noise Management Plan (NMP) may be requested, which would include an assessment of noise. This would usually involve assessing the noise upon arrival, loading/unloading period and then departure.

The NMP may also need to include controls such as acoustically sealed delivery bays, and restrictions on vehicle mounted refrigeration units and audible alarm systems. Where applicable, the noise assessment will take account of multiple noise sources operating simultaneously and state the cumulative impact."

3.2 The guidance then goes on to explain that noise emissions from fixed plant should also be controlled to a Rating level 5 dB below the Background Sound Level.

4 BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

4.1 BS 4142:2014+A1:2019[15] 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 and commercial sources (the Rating Level) with that of the existing background noise level at the nearest noise sensitive receiver in the absence of the source (the Background Sound Level).

4.2 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.

4.3 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*

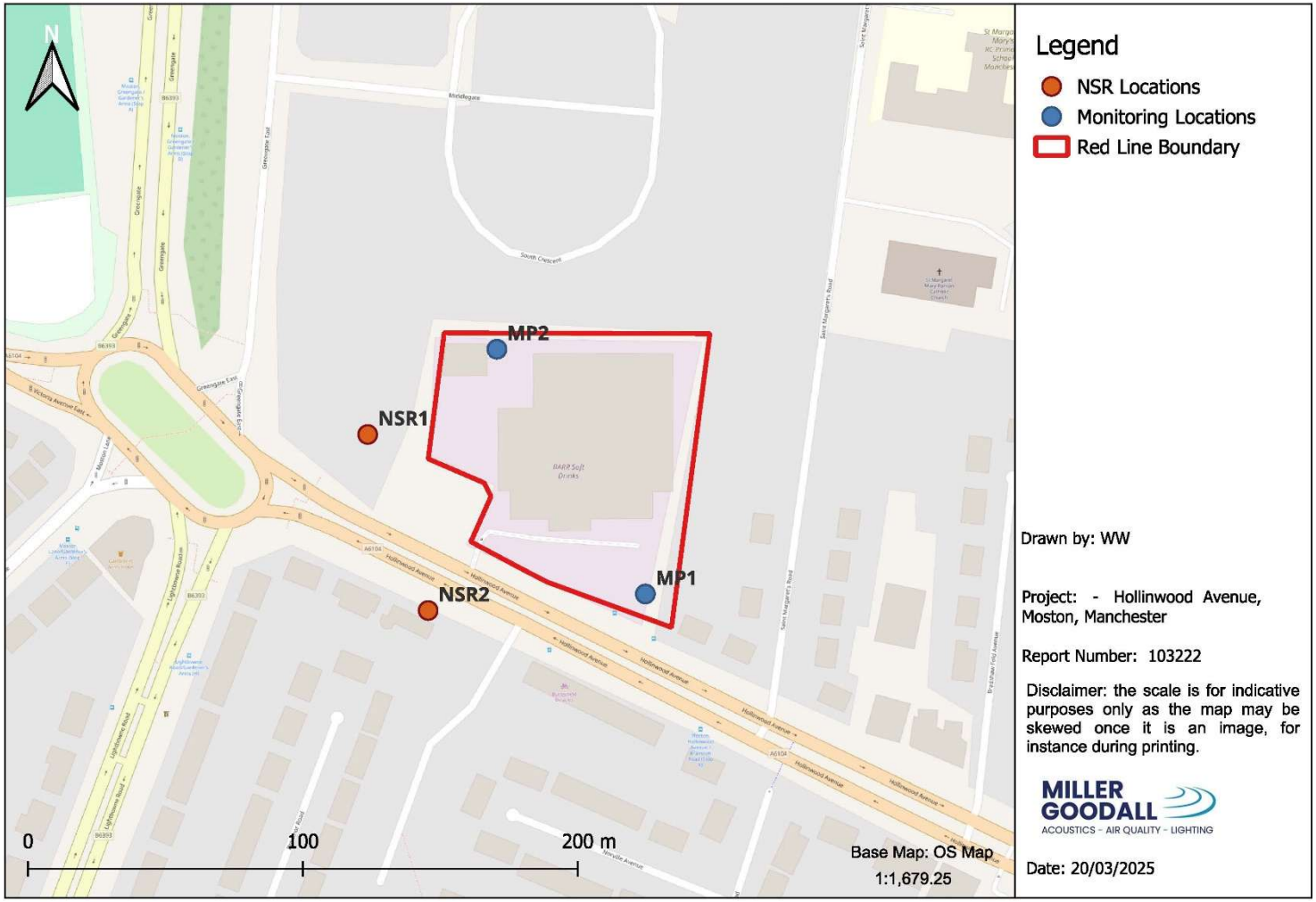
[15] BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

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

4.4 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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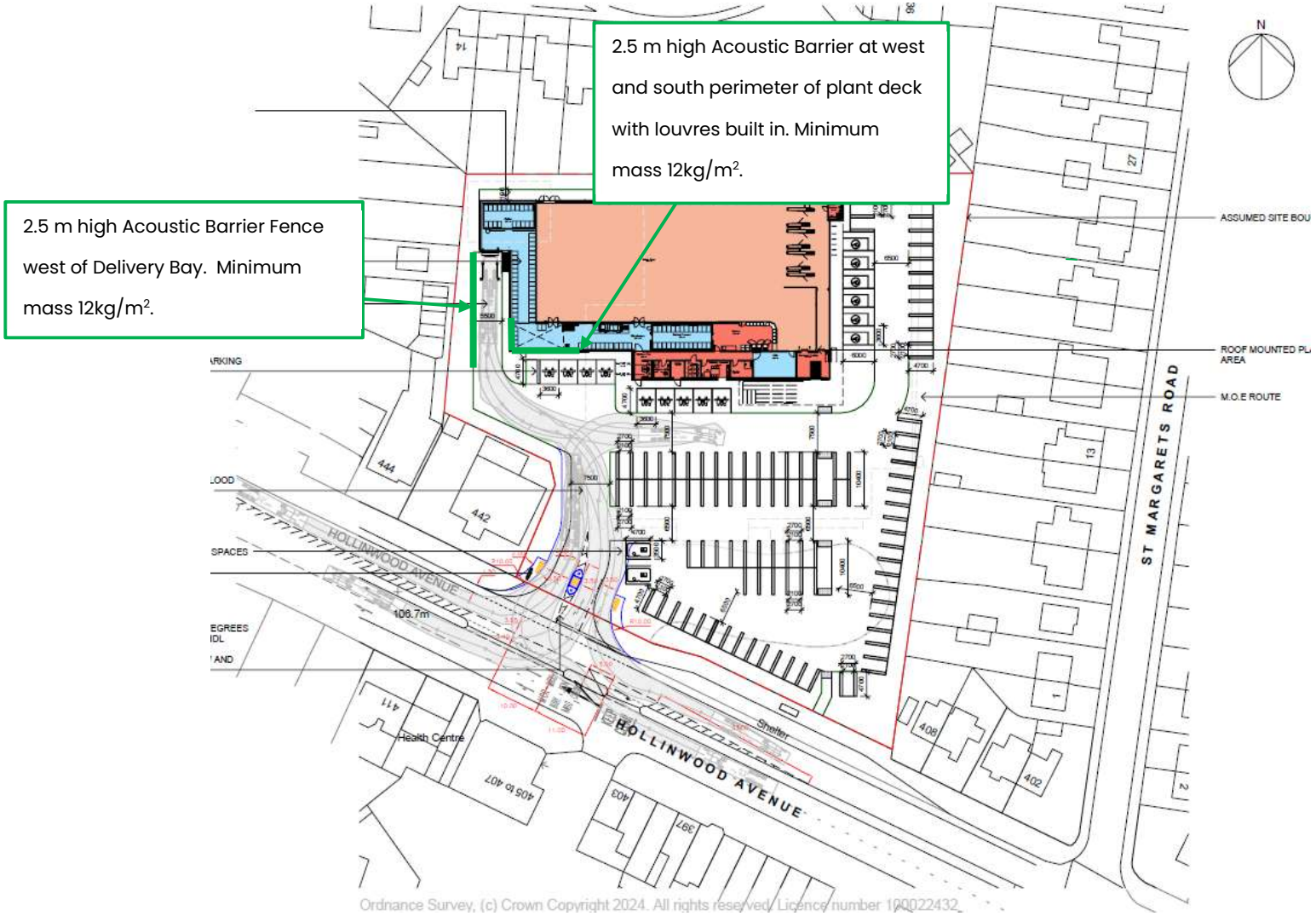
Legend
NSR Locations
Monitoring Locations
Red Line Boundary
Drawn by: WW
Project: - Hollinwood Avenue, Moston, Manchester
Report Number: 103222
Disclaimer: the scale is for indicative purposes only as the map may be skewed once it is an image, for instance during printing.
MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING
Date: 20/03/2025

Appendix 3: Site Layout



Appendix 4: Environmental Sound Survey Results

Lidl Hollinwood, Moston, Manchester

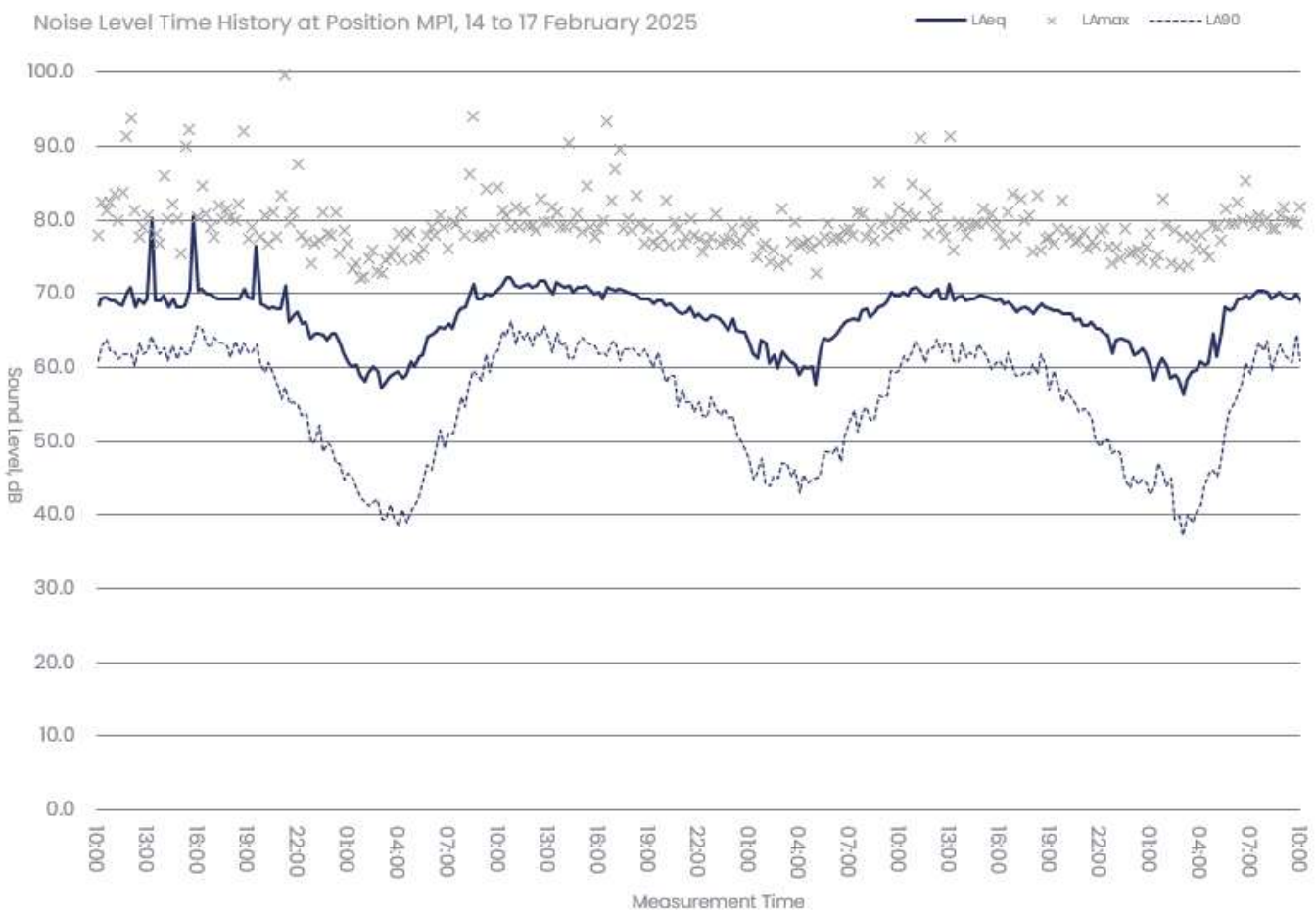


Figure 103222/TH01

Lidl Hollinwood, Moston, Manchester

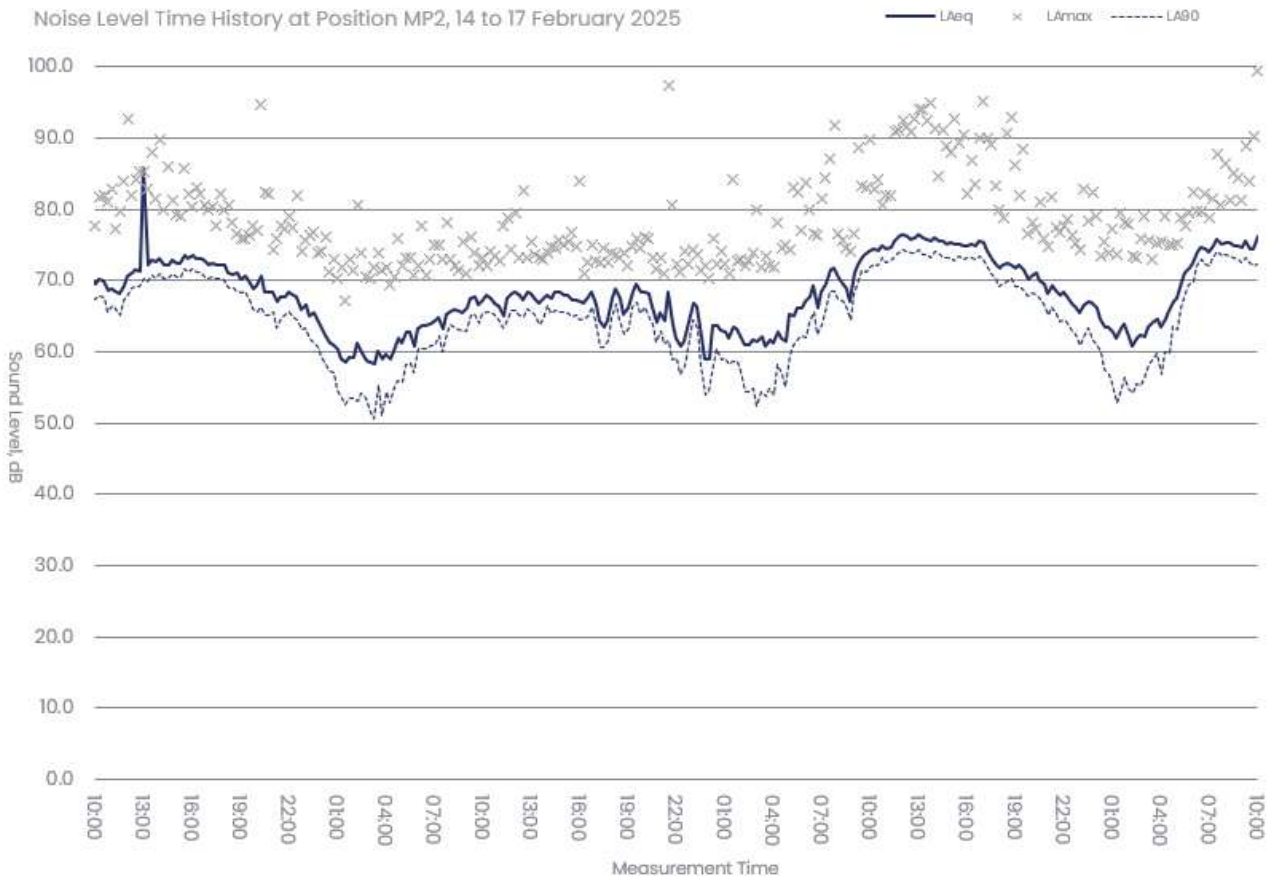
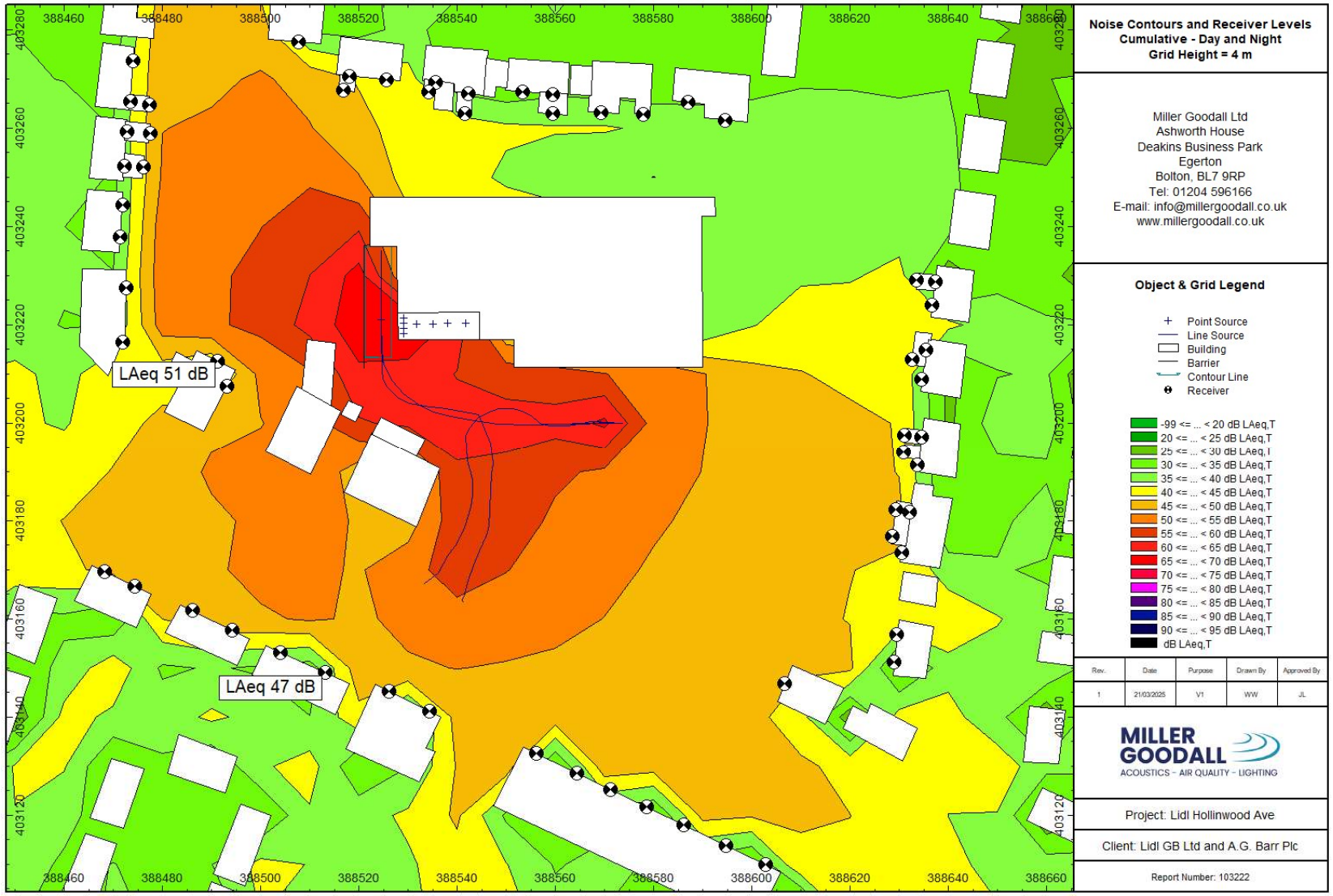


Figure 103222/TH01

Appendix 5: Noise modelling parameters

Parameter	Octave Band Centre Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
HGV Engine Moving, L_w (dB)	95.8	93.4	91.6	95.7	97.5	95.2	90.9	90.2	101.6
HGV Refrigeration Plant, L_w (dB)	111.2	98.2	92.2	91.4	89.1	82.04	76.3	69.0	93.9
HGV Unloading, L_w (dB)	97	90.5	85.1	83.9	87	85.4	80.5	74.3	91.2
Basetec Dry Cooler 100kW, 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, 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, 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 Capacity,L_w (dB)	11.0	68	68	66	64	58	54	43	68.2
VRV Unit Serving Sales Area, Daikin RXYLQ12T, Maximum Capacity, L_w (dB)	91	89	80	79	76	71	65	59	81.3

Appendix 6: Noise Model Outputs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Cumulative - Day and Night
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Ashworth House
Deakins Business Park
Egerton
Bolton, BL7 9RP
Tel: 01204 596166
E-mail: info@millergoodall.co.uk
www.millergoodall.co.uk
Object & Grid Legend
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Line Source
Building
Barrier
Contour Line
Receiver
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85 <= ... < 90 dB LAeq,T
90 <= ... < 95 dB LAeq,T
dB LAeq,T
Rev. Date Purpose Drawn By Approved By
1 21/03/2025 V1 WW JL
MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING
Project: Lidl Hollinwood Ave
Client: Lidl GB Ltd and A.G. Barr Plc
Report Number: 103222
LAeq 51 dB
LAeq 47 dB
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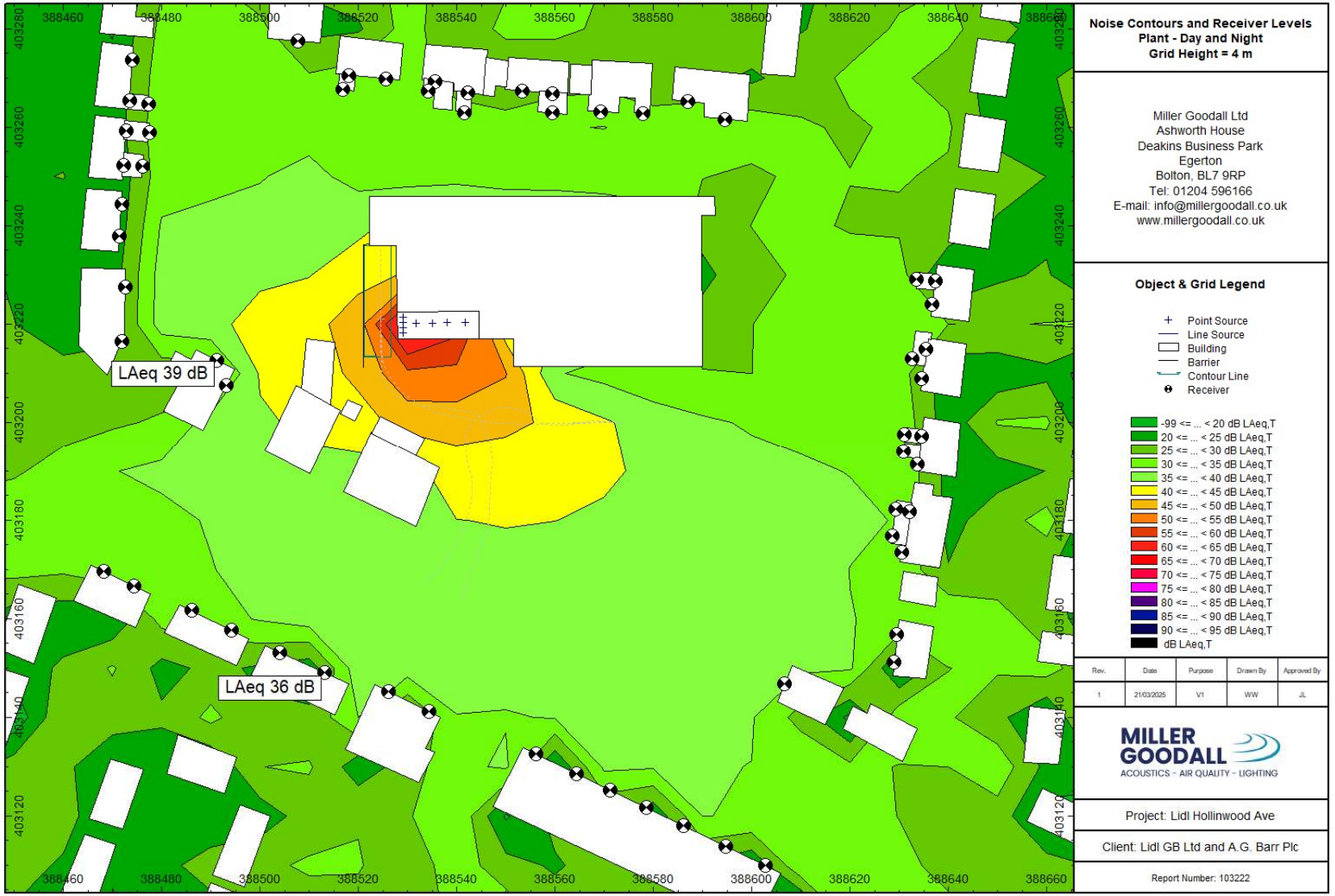
Noise Contours and Receiver Levels
Plant - Day and Night
Grid Height = 4 m
Miller Goodall Ltd
Ashworth House
Deakins Business Park
Egerton
Bolton, BL7 9RP
Tel: 01204 596166
E-mail: info@millergoodall.co.uk
www.millergoodall.co.uk
Object & Grid Legend
Point Source
Line Source
Building
Barrier
Contour Line
Receiver
-99 <= ... < 20 dB LAeq,T
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dB LAeq,T
Rev. Date Purpose Drawn By Approved By
1 21/03/2025 V1 WW JL
MILLER GOODALL
ACOUSTICS - AIR QUALITY - LIGHTING
Project: Lidl Hollinwood Ave
Client: Lidl GB Ltd and A.G. Barr Plc
Report Number: 103222
LAeq 39 dB
LAeq 36 dB
388460
388480
388500
388520
388540
388560
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388620
388640
388660
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403260
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403200
403180
403160
403140
403120

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 μPa, 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.

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