

NOISE ASSESSMENT

on behalf of

LIDL GB LTD

for the site at

**FALLOWFIELD RETAIL PARK,
MANCHESTER M14 6FS**

REPORT DATE: 31 JANUARY 2025

REPORT NUMBER: 102452-8_V2

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Summary

A noise assessment was previously undertaken to predict the potential impact of operations at a proposed Lidl store at Fallowfield Retail Park, Manchester M14 6FS. The previous report was prepared to support a full planning application for the development. Conditional planning approval has since been granted by Manchester City Council in Decision Notice *ref 139751/FO/2024*.

This report supports the partial discharge of Condition 29 which relates to noise from the proposed mechanical plant serving the foodstore section of the development. The proposed mechanical plant has been assessed against the previously measured background sound levels representative of the nearest noise-sensitive receptors. It has been found that the Rating Level at the nearest noise-sensitive receptors resulting from the selected mechanical plant at the proposed Lidl store are predicted to be lower than the '5 dB below the typical background' limit as per the requirements of Condition 29.

Prepared By	William Wright MIOA	Reviewed By	Lesley Goodall MIOA
Signed		Signed	
Date	31 January 2025	Date	31 January 2025
Version	Date	Change	Initials
1	31 January 2025	Initial Issue	WW
2	27 February 2025	Addition of plant deck acoustic louvre	WW

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, on behalf of Lidl GB Ltd, undertaken a noise assessment in respect of the impact of noise from mechanical fixed plant associated with development at Fallowfield Retail Park, Manchester. Planning permission has been granted (ref 139751/FO/2024) by Manchester City Council for the erection of a new food store (Use Class E), 1no. retail unit (Use Class E) and 1no. hot food delivery unit (sui generis) with associated car parking and landscaping. This assessment supports the partial discharge of Condition 29 of the planning approval. Which states the following:

“a) Any externally mounted ancillary plant, equipment and servicing to be installed shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to its installation, the scheme shall be submitted to and approved in writing by the City Council as Local Planning Authority in order to secure a reduction in the level of noise emanating from the site.

b) Prior to any externally mounted ancillary plant, equipment and servicing to be installed becoming operational, an approved verification report shall be submitted to and approved in writing by the City Council as Local Planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non - conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To minimise the impact of the development and to prevent a general increase in pre-existing background noise levels around the site, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies DM1 and SP1 of the Manchester Core Strategy.”

- 1.2 This report assesses the proposed schedule of mechanical fixed plant for the food store in their proposed locations in order to identify whether there is a requirement for any specific mitigation beyond the proposed plant deck screen in order to meet the criteria within section a) of condition 29.

2 Site Description

- 2.1 The site is located at Fallowfield Retail Park, Manchester M14 6FS. The site location is shown outlined in red in Appendix 1. At present, the site is occupied by commercial tenants, with plant mounted on the eastern facades of the units, and the on the roof (see Figure 1). Existing deliveries have been observed at the site at 06:00 hrs on a Sunday morning.
- 2.2 The site is located off Birchfield Road, which bounds the site to the west. Semi-detached residential dwellings are located on the opposite side of Birchfield Road, with ground floor and first floor windows facing the retail park.
- 2.3 Directly north of the site Birchfield Primary School is located.
- 2.4 To the south of the site, the B5094 Moseley Road and the A34/A5079 Kingsway, both main routes through the area meet. A few commercial premises are also located to the south of the site.

- 2.5 The site is bounded to the east by a railway line (the Styal Line), a commuter line that links Manchester to Manchester airport. On the opposite side of the railway line residential dwellings are located along Peaceville Road and Kingsmere Avenue, with ground floor and first floor windows. Some properties also have second floor windows. These properties are the closest to the proposed loading bay and plant area.
- 2.6 The railway line is significant within the context of this noise assessment since it is elevated to the site and provides significant screening to the many residential dwellings along Peaceville Road and Kingsmere Avenue (see Figure 1 below).

Figure 1: The existing site



3 Proposed Development

- 3.1 The proposed development consists of a Lidl supermarket and sub-let units, with 103 parking spaces. The existing retail units will be demolished as part of the proposal. The proposed development plans are shown in **Appendix 2**.
- 3.2 The building services consulting engineer has informed Miller Goodall Ltd. that there are 4 No. mechanical plant items to be located within the proposed plant deck area of the retail unit.
- 3.3 The plans also show a loading area for the sub-let units (Unit 4 and Unit 4A). Noise emissions associated with Unit 4 and Unit 4A are outside the scope of this assessment and may be addressed by the future tenant at a later date.

4 Policy, Guidance and Assessment Methodology

- 4.1 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'.

4.2 Further detail is provided in **Appendix 3: Policy, Standards and Guidance**.

5 Noise Survey Results

- 5.1.1 Background sound level measurements were undertaken at representative locations of the nearest residential dwellings to the proposed site to identify the pre-development background sound levels in 2022. The noise survey was undertaken in aid of report *ref 102452-4_V2 Addendum Noise Report - Lidl Fallowfield Delivery Hours*. Background sound levels in the vicinity of the site are unlikely to have changed significantly since the survey, and any change is likely to be an increase rather than a reduction. The 2022 noise survey results are therefore considered to be valid for the current assessment
- 5.1.2 Report *ref 102452-4_V2 Addendum Noise Report - Lidl Fallowfield Delivery Hours* also presents the survey methodology, weather conditions, measurement locations and survey results.
- 5.1.3 For the purposes of this assessment 39 dB $L_{AF90,15min}$ has been used as the representative background sound level for the daytime period, and 37 dB $L_{AF90,5min}$ has been used as the representative background sound level for the night-time period as was determined in report *ref 102452-4_V2 Addendum Noise Report - Lidl Fallowfield Delivery Hours*.
- 5.1.4 The monitoring period represents one of the quietest and most sensitive times of the week. Weekday mornings for example, will have higher background sound levels. The proposed representative background sound levels are therefore considered to represent a worst-case assessment.

6 Impact of Noise from the Proposed Development

6.1 Noise Modelling

- 6.1.1 Prediction of noise levels at sensitive receptors was carried out using CadnaA software package. The data from measurements taken was used to populate an environmental noise model.
- 6.1.2 The general horizontal plan information of the area surrounding and including the proposed development site was imported from Google Maps. This was used to determine road positions, building footprint areas and relative locations and is considered accurate to within 5%. Building height information was based on site observations and Digital Surface Model (DSM) survey data obtained through Google Earth. Topography was modelled with Digital Terrain Model (DTM) Lidar Survey data obtained from DEFRA to ensure that the screening effects of the railway line were modelled as accurately as possible.
- 6.1.3 The following parameters were assigned to the model:
- Propagation model: ISO 9613:2024¹
 - Default ground absorption: 0.1 (acoustically reflecting)
 - Two orders of reflection
 - Buildings are reflecting (smooth, non-structured facade)

¹ ISO 9613-2: 2024 Acoustics - Attenuation of sound during propagation outdoors – Part 2: General method of calculation

6.2 Noise Sensitive Receptor and Prediction Heights

- 6.2.1 The nearest noise sensitive dwellings to the site are located on Birchfields Road, Kingsway and Peaceville Road. The most affected Noise Sensitive Receptor (NSR) has been determined to be 1 Peaceville Road with respect to fixed plant noise. The location of the most affected NSR is indicated on the figure in **Appendix 1**.
- 6.2.2 Noise level grids are presented in **Appendix 4** and the noise levels at the noise-sensitive dwellings are also annotated on the noise grids. The annotations at the most affected NSRs, correspond to heights of 4 m above ground level for the daytime period, and night-time period, to represent first floor receptors during both periods.

6.3 Modelling of Plant Noise

- 6.3.1 Octave band noise data for the proposed plant has been provided by the building services engineering consultant. We are informed that the following mechanical fixed plant is to be installed externally, all within the plant deck area:

- CU01 – 1 no. RXYSQ12TY1 (Daikin VRV) unit
- CU02 – 1 no. RXYSQ4TV9 (Daikin VRV) unit
- CU04 and CU05 – 2 no. RXYLQ12T (AHU DX Coil) units

Table 1: Noise source data used within CadnaA

Description	Sound Power Level, L_w dB in Octave Band Centre Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
CU01 - RXYSQ12TY1	-	78	73	75	72	66	63	55	76
CU02 - RXYSQ4TV9	-	68	68	66	63	58	54	43	68
CU04 and CU05 - RXYLQ12T	91	89	80	79	76	71	65	59	81

- 6.3.2 We are informed that this concludes the schedule of all externally located mechanical fixed plant proposed as part of the development. This plant is to be located in the plant deck area
- 6.3.3 Each item of plant was modelled as a separate point source. CU01 is modelled at a height of 1.6 m and CU02 is modelled at a height of 1.3 m above the plant deck. CU04 and CU05 are modelled at a height of 1.7 m above the plant deck and have a vertical directivity applied to represent the direction of exhaust air from the top fans.
- 6.3.4 The plant is modelled as in constant operation throughout the day and the night in the worst-case.

6.4 Modelling of Baseline Mitigation

- 6.4.1 It is understood that the western side of the proposed plant deck will be screened by curtain walling, forming the façade to the west facing storefront. This has been modelled as a barrier within the CadnaA computer noise model. The location of the baseline noise mitigation is indicated on the figure in **Appendix 2**.

7 Noise Model Results

- 7.1 Full noise model results and grid are presented in **Appendix 4**. The specific noise level resulting from plant noise within the model is 32 dB $L_{Aeq,T}$ at the most affected NSR at a first-floor receptor during the daytime and night-time periods.

8 BS 4142:2014+A1:2019 Assessment

- 8.1 A BS 4142 noise impact assessment has been undertaken in order to assess the potential noise impact at the most affected NSR. The BS 4142 numerical assessment of noise impact at the most affected NSR, due to the likely fixed plant noise emissions from the proposed development, is presented in Table 2 below.

Table 2: BS 4142:2014+A1:2019 Plant Noise

Assessment Period	Receptor Location	Specific Noise Level ($L_{Aeq,15min}$ dB)	Acoustic Feature Correction (dB)	Rating Level (dB)	Background Sound Level ($L_{AF90,T}$ dB)	Excess of Rating Level over Background Sound Level (dB)	Initial Estimate of Impact
Daytime (07:00-23:00)	1 Peaceville Road First Floor	32	0	32	39	- 7	Indication of low Impact
Night-time (23:00-07:00)	1 Peaceville Road First Floor	32	0	32	37	- 5	Indication of low impact

- 8.2 It can be seen from Table 2 above that the initial BS 4142 numerical assessment of the impact of noise from fixed plant, indicates a likelihood of low impact at the most affected NSR during both the daytime and the night-time period.
- 8.3 The assessment indicates that noise from fixed plant associated with the proposed development is predicted to meet MCC's requirement for no louder than 5 dB below the typical background level as set out in Condition 29 a).

Plant Noise Impact

- 8.4 The initial numerical estimate of impact based on the excess of the rating level over the background sound level indicates that the impact of plant noise would be low, during what is expected to be one of the most sensitive periods of the week. For most of the week, background sound levels are likely to be higher.
- 8.5 The results indicate that plant noise emission levels would meet the MCC's criterion of a rating level 5 dB below the background sound level stated in Condition 29 a) at one of the most sensitive times of the week.

- 8.6 Considering both the numerical assessment and the context of the site, fixed plant noise emissions are likely to be of low impact. The requirements of Condition 29 a) are also met. As such, fixed plant noise emissions associated with the proposed development should be considered acceptable to MCC.

9 Acoustic Barrier and Plant Deck Louvre Specification

- 9.1 It is understood that the western side of the proposed plant deck will be screened by curtain walling forming the façade to the west-facing storefront. In order to mitigate noise sufficiently, the curtain walling or an additional out-of-sight non-decorative noise barrier should be designed and constructed from a continuous, imperforate material with a minimum mass of 12 kg/m². The extent and height should match the height and extent of the existing curtain walling and should be at least 2 m above the level of the plant deck.
- 9.2 Within the curtain walling is a proposed louvre for airflow to the plant deck area. This has been modelled as a 150 mm deep single-bank acoustic louvre. The louvre is currently proposed to be 5 m wide by 1 m high (5 m² area), however, if required for airflow the area can increase up to 7.5 m² without increasing the modelled total plant noise at the worst affected receptors.

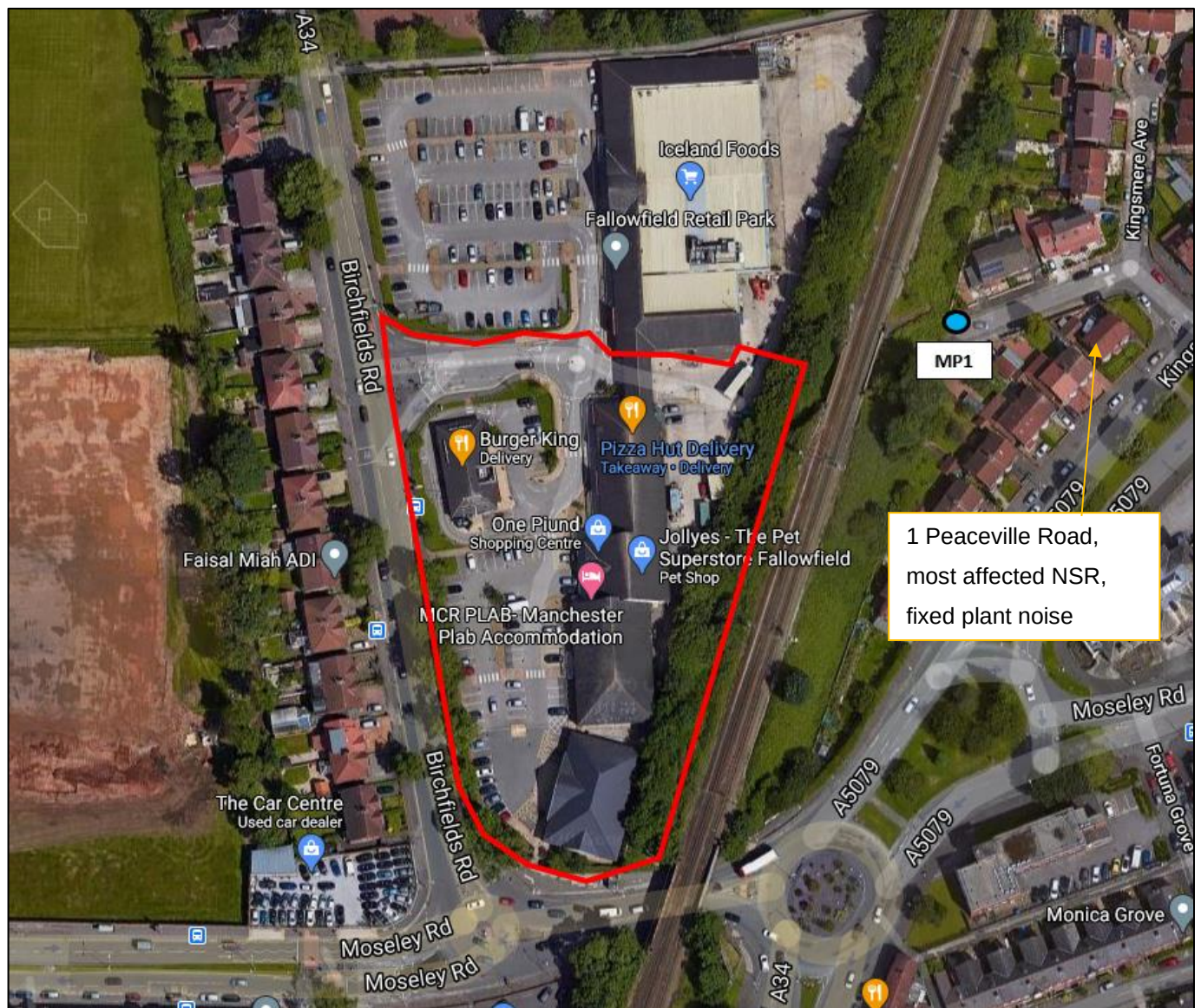
10 Conclusions

- 10.1 A noise assessment has been undertaken to predict the potential impact of fixed plant associated with the food store at Fallowfield Retail Park, Manchester M14 6FS. This was prepared to support the partial discharge of Condition 29 which requires that the resulting rating level of all mechanical fixed plant be no higher than 5 dB below the typical background sound level.
- 10.2 Background sound level measurements were undertaken at representative locations of the nearest residential dwellings to the proposed site to identify the pre-development background sound levels in 2022. It is considered that this survey data is still relevant and valid for use in the current noise impact assessment.
- 10.3 The BS 4142 assessment indicates that the impact of fixed plant emissions is likely to be low during both the daytime and the night-time periods. Based on worst case background sound levels, the assessment indicated that noise from fixed plant emissions would be likely to meet the criteria stated in Condition 29 a) during both the daytime and the night-time periods.

APPENDICES

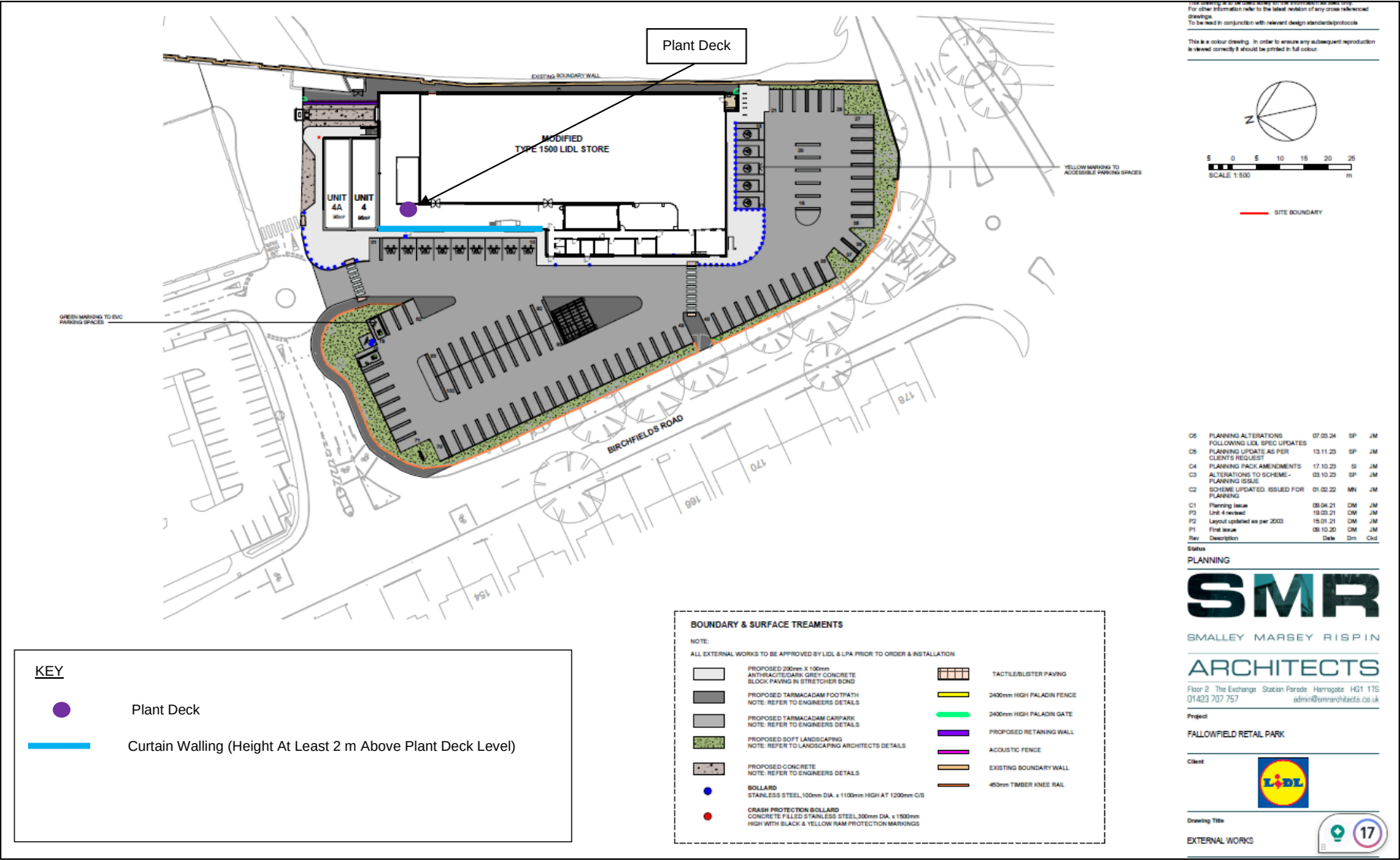
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Appendix 1: Site Location, Monitoring Location and Most Affected Noise Sensitive Receptor



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Appendix 2: Proposed Development Plan, Including Modelled Mitigation and Plant Locations



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Appendix 3: Policy, Standards and Guidance

1 Noise Policy Statement for England

- 1.1 The Noise Policy Statement for England (NPSE²) 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”.

- 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 Noise Policy Statement for England, Defra, March 2010

2 National Planning Policy Framework

2.1 The National Planning Policy Framework (NPPF³) 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...”

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

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

- 3.1 BS 4142:2014+A1:2019⁴ 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 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.*

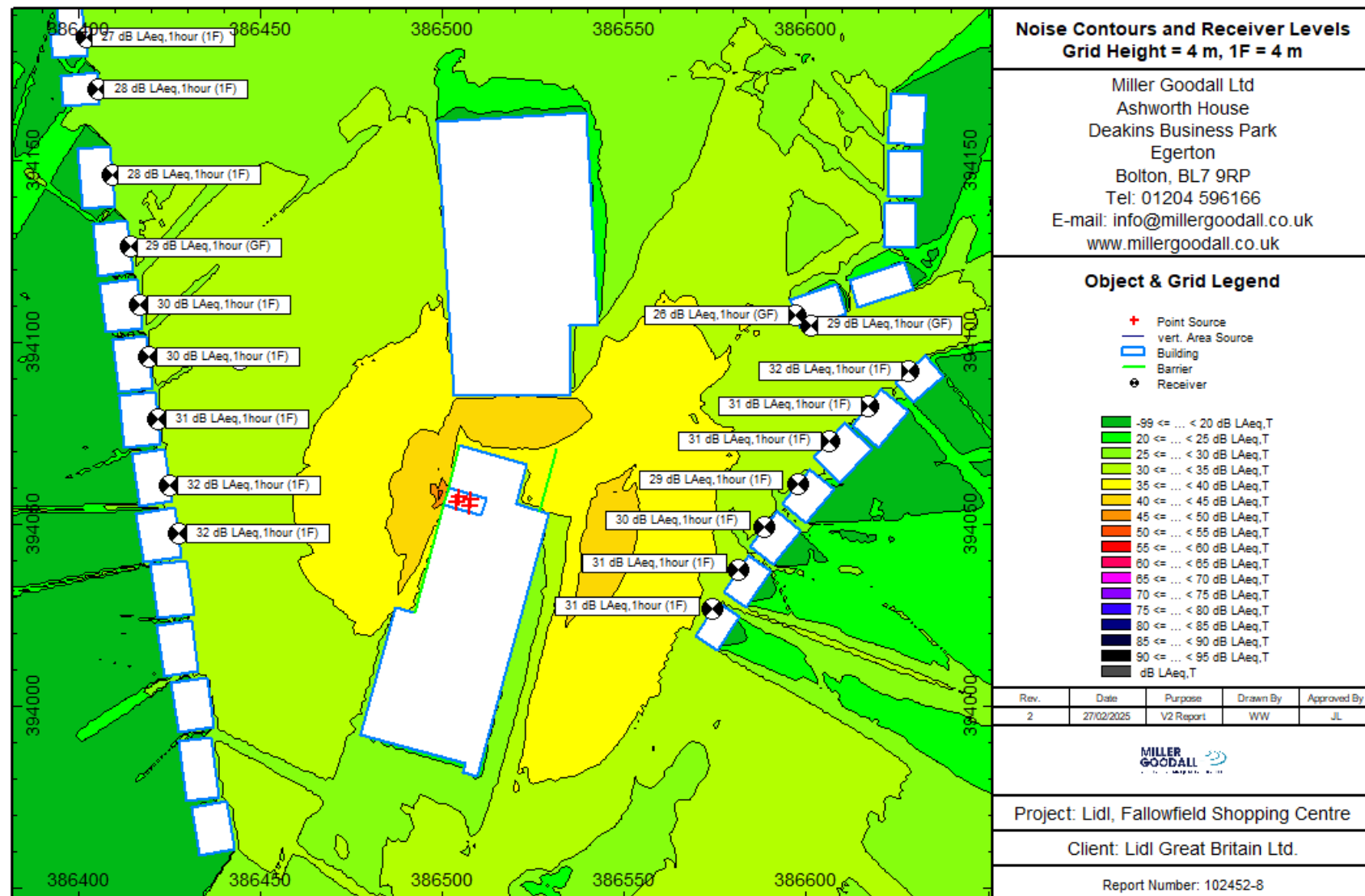
- 3.4 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014+A1:2019 edition places emphasis upon an appreciation of the context, as follows:

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.

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

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Appendix 4: Predicted Plant Specific Noise Level – 4.0 m Grid Height



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 controlled 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_{Amax}** The highest A weighted noise level recorded during the time period. It is usually used to describe the highest noise level that occurred during the event.
- R_w** Single number rating used to describe the sound insulation of building elements and is defined in BS EN ISO 10140-2: 2010 (formerly BSEN ISO 140-3:1995). It is derived by measurement under laboratory conditions and does not take into account the effects of flanking transmissions.
- $D_{nT,w}$** The weighted standardized level difference is a single figure rating used to describe the sound insulation of a construction separating two rooms, for example a wall or floor, and is defined in BS EN ISO 16283-1:2014 (formerly BSEN ISO 140-4:1998). It is derived by measurement of an in-situ construction and therefore takes into account the effects of flanking transmissions, workmanship etc.
- $D_{ne,w}$** The weighted element-normalized level difference is a single figure rating used to describe the sound insulation of small elements within a larger construction and is defined in BS EN ISO 10140-2:2010 (BSEN ISO 140-10:1991). It is most often used to rate the sound insulation performance of ventilator units e.g. trickle vents.
- C_{tr}** A single-number spectrum adaptation term used to characterise the sound insulation rating with respect to urban traffic. It is defined in ISO 717-1:2013.

