

NOISE ASSESSMENT

on behalf of

HELLERMANN TYTON

for the site at

**HELLERMANN TYTON LTD, SHARSTON
GREEN BUSINESS PARK, 1 ROBESON
WAY, ALTRINCHAM ROAD, MANCHESTER
M22 4TY**

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Summary

This report provides evidence to discharge Condition 3 of planning reference 121752/FO/2018.

The consented development is for the installation of two concrete plinths to site a total of 7 no. 12 metre high silos for the purposes of non-hazardous plastic pellet material storage.

Noise measurements have been undertaken at the site and a noise model has been created to provide sufficient information to address the condition relating to noise.

The results demonstrated that the requirements of Condition 3 would be met. We therefore recommend that Condition 3 is discharged.

Record of changes

Prepared By Reid Malster AMIOA

Reviewed By David Sproston BSc MIOA MCIEH

Signed



Signed



Date

01/09/2021

Date

01/09/2021

Version	Date	Change	Initials
1	27/08/2021	Initial Issue	RM
2	01/09/2021	Minor Amendments	RM

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1 Introduction

1.1 Miller Goodall Ltd has, on behalf of Hellermann Tyton., undertaken a noise assessment for their site at Hellermann Tyton Ltd, Sharston Green Business Park, 1 Robeson Way, Altrincham Road, Manchester M22 4TY. The site falls within the administrative boundary of Manchester City Council (MCC)

1.2 Condition 3 of the planning consent for the site (MCC planning ref: 121752/FO/2018) relating to noise states the following:

Condition 3

“Any externally mounted ancillary plant, equipment and servicing erected in connection with the development hereby approved 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

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 Policy DM1 in the Core Strategy Development Plan Document.”

1.3 There is no external fixed plant and equipment associated with the approved development, and consequently the noise criterion is limited to noise from HGV deliveries to the approved silos.

1.4 This assessment has been requested to provide sufficient information to discharge Condition 3.

2 Site Description and Consented Development

2.1 Site Description

2.1.1 The site is located at Hellermann Tyton Ltd, Sharston Green Business Park, 1 Robeson Way, Altrincham Road, Manchester M22 4TY. The site location is shown outlined in red in Appendix 1.

2.1.2 The planning consent is for the installation of two concrete plinths to site a total of 7 no. 12-metre high silos for the purposes of non-hazardous plastic pellet material storage. To the west of the main building are existing silos. 5 no. of the 7 new approved silos are to be erected at this location, with the remainder (2 no) erected on the east side of the building (as indicated in Appendix 2). The site plan for the consented development is shown in Appendix 2, with the locations of the silos marked.

2.1.3 We understand that deliveries to the silos will take place from 08:00-16:00 Monday – Thursday and from 08:00-15:00 on Friday's, with no deliveries at weekend or at night. The assessment of HGV deliveries has therefore been assessed for the daytime period.

2.1.4 The delivery of material to the silos includes an articulated HGV arriving to the site, reversing to the silos, the use of a vacuum pump (located behind the cab of the visiting HGV) to discharge material to the silos, and then the HGV departing. The process takes approximately 90 minutes to complete, during which the main source of noise is that associated with the operation of the blower pump.

2.2 Environs

- 2.2.1 To the north of the site is the M56 motorway.
- 2.2.2 The nearest residential dwellings that are most exposed to noise from HGV deliveries are located to the east of the B5166 (Longley Lane) and to the south of the site (the closets of these being on Edgecote Cl and Grosvenor Gardens).
- 2.2.3 Other existing industrial/commercial units are located on land between the site and the closest residential receptors to the south.

3 Assessment Criterion

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

- 3.1.1 BS 4142:2014+A1:2019¹ provides guidance on the assessment of the likelihood of complaints relating to noise from industrial sources,
- 3.1.2 It replaced the 1997 edition of the Standard in October 2014 and was amended in June 2019. The amended version corrected a number of printing errors and further clarified that the standard is used to assess external noise levels, and not internal noise levels (although this can form part of the discussion regarding context). The key aspects of the Standard are summarised below.
- 3.1.3 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).
- 3.1.4 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. For the daytime, the assessment is carried out for a 1hr period.
- 3.1.5 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*

¹ BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

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."

4 Noise Survey

4.1 Survey Details

4.1.1 Part attended noise monitoring has been undertaken by Paul Bentley of Miller Goodall Ltd. The noise monitoring was undertaken using 'Type 1' instrumentation calibrated to nationally traceable standards within two years of the survey, and in general accordance with BS 7445-1: 2003². Details of the instrumentation used in the survey are detailed in Table 1. Prior to and following the noise measurements acoustic field-calibration of the sound level meter, microphone and pre-amp used in the survey was performed using an acoustic calibrator that itself had been calibrated within the preceding 12 months. No significant drift (i.e., >0.1dB) in the field-calibrated noise level was observed. Calibration certificates can be provided on request. The measurement microphone was located at 1.5m above local ground and in free-field conditions (i.e. at least 3.5m away from any reflecting surfaces other than the ground. Noise levels were logged at one location (shown in Appendix 1), on the dates/times shown in Table 2, which are considered representative of the nearest dwellings to the site.

Table 1: Noise survey equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 ^{3,4} Integrating Real Time 1/3 Octave Sound Analyser	NTi XL2-TA	NTi Audio	A2A-11111-E0	06/09/2019	04410/2
Microphone	NTi MC230A	NTi Audio	A14423	06/09/2019	n/a*
Class 1 Calibrator ⁵	CAL 200	Larson Davies	14154	07/09/2020	04796/1

*No reference number available, but the certificate is available upon request.

4.2 Local Conditions

4.2.1 There were no abnormal/atypical local traffic restrictions (e.g., roadworks or temporary speed limits) in place during the surveys on any nearby roads. Weather conditions were determined both at the start and on completion of the survey, and were dry, mild. The prevailing traffic and weather conditions during the survey were therefore judged to be acceptable for the purpose of the survey and subsequent assessment.

² BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures

³ IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

⁴ IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

⁵ IEC 60942 (2003) Electroacoustics – Sound calibrators

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

Measurement Location	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
MP1	10/08/2021 09:04 – 11/08/2021 09:53	Temperature:	17 °C	16 °C
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		Precipitation:	Dry	Dry
		Cloud cover (oktas – see opposite):	5	6
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	No
		Wind speed:	5 m/s	3 m/s
		Wind direction:	West	South
		Any conditions that may cause temp. inversion (e.g. calm nights with no cloud):	No	No

4.3 Monitoring Results

4.3.1 All data are sound pressure levels in dB re 20 µPa.

4.3.2 In the absence of noise from HGV deliveries, the dominant noise source at the monitoring position was road traffic noise from the M56 and surrounding local road network.

4.3.3 A summary of the broadband measurement data obtained for the daytime period is provided in Table 3 below. Noise from two delivery events that occurred during the monitoring have been excluded from the results in Table 3 to assist in determining the background and residual sound levels at the nearest dwellings to the site. Noise levels for the two HGV delivery events are given in Table 4. The dominant source of noise during a delivery was from the on-board vacuum pump on the HGV.

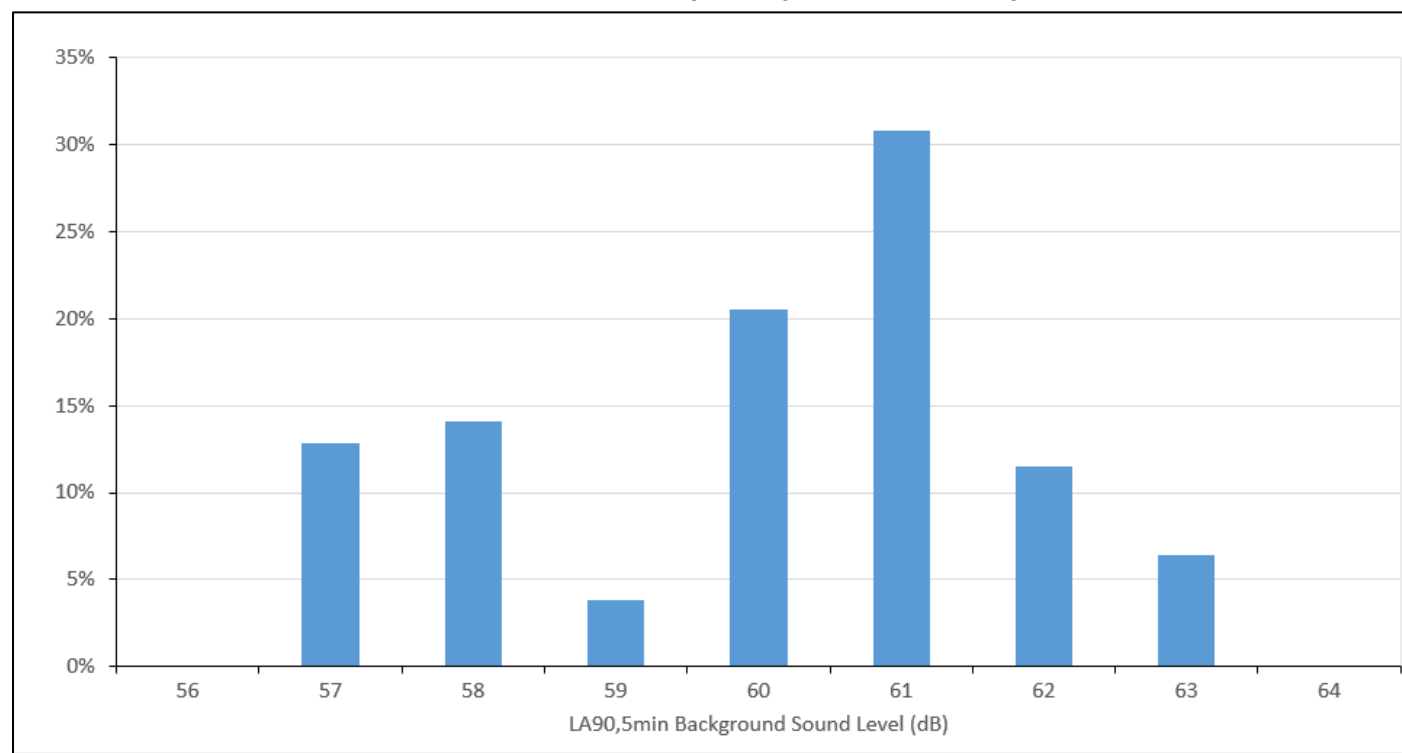
Table 3: Summary of noise measurements (delivery events excluded)

Day/Night	Monitoring Period	L_{Aeq} (dB)	$L_{AFmax,5min}$ Range (dB)	Mode $L_{AF90,T}$ (dB)
Day	10/08/2021 09:04 –22:59	66	63-106	60
Day	11/08/2021 06:59 –09:49	62	63-92	58
Day Delivery Hours (average)	10/08/2021 09:04 –15:59, 11/08/2021 07:59 –09:53	67	63-105	61

Table 4: Summary of delivery noise measurements

Delivery Event	Monitoring Period	L_{Aeq} (dB)	$L_{AFmax,5min}$ Range (dB)	Mode $L_{AF90,5min}$ (dB)
Delivery 1	10/08/2021 09:59 –11:34	82	78-103	82
Delivery 2	10/08/2021 14:29 –15:59	81	82-105	81

4.3.4 Statistical analysis of the measured Background Sound Levels ($L_{A90,5min}$) within the delivery hours (08:00-16:00 Monday to Thursday) with delivery events excluded is shown in the Chart 1 below.

Chart 1: Statistical analysis of $L_{A90,5min}$ Background Sound Levels between 08:00-16:00 on 10/08/2021 & 11/08/2021 (delivery events excluded)

4.3.5 Based on the analysis, we consider 61 dB $L_{AF90,5min}$ as the typical daytime Background Sound Level during delivery hour periods.

5 Impact of Noise from the Proposed Development

5.1 Noise Modelling – Prediction of Specific Noise Level

5.1.1 Predictions of noise from HGV deliveries at the site have been undertaken using the CadnaA noise modelling package. Specific model parameters were applied as follows:

- Propagation of noise using algorithms within ISO 9613: 1993 *Acoustics - Attenuation of sound during propagation outdoors*. Roads were modelled as line sources at a height of 0.5 m above ground level and calibrated using spectral data measured during the survey.
- Default ground absorption $G = 0.2$
- No adverse meteorological effects.
- Two orders of reflection.

5.1.2 Noise from two delivery events were measured during the survey and the results are shown in Table 4. Based on the monitoring results, a point source was calibrated within the model consistent with the louder of the two deliveries (82 dB $L_{Aeq,T}$ at MP1). The calibrated sound power level associated with a HGV delivery is 105.7 dB L_w

5.1.3 Within the model, one delivery event has been assumed to occur at each group of new silos (e.g. two simultaneous delivery events in total). The calculated Specific Noise Level at the most affected residential receptor to the south was 44 dB $L_{Aeq,1hour}$. For the most affected residential receptor to the east, the calculated Specific Noise Level was 49 dB $L_{Aeq,1hour}$. The full noise modelling results are shown in Appendix 3.

5.2 BS 4142:2014+A1:2019 Assessment

5.2.1 A BS 4142 noise impact assessment has been undertaken in order to assess the potential noise impact at the most affected receptor to the south. The assessment was undertaken for the delivery hours associated with the silo's (08:00-16:00 Monday to Thursday, 08:00-15:00 on Friday's).

5.2.2 Based on the assumptions outlined in 5.1, the outcome of the initial BS 4142 assessment is shown in Table 5.

Table 5: BS 4142:2014+A1:2019 Plant Noise

Assessment Period	Predicted Specific Noise Level (dB)	Acoustic Feature Correction (dB)	Rating Level (dB)	Background Sound Level ($L_{AF90,5min}$, dB)	Excess of Rating Level over Background Sound Level (dB)	Initial Estimate of Impact
Daytime	49 ($L_{Aeq,15min}$)	+ 4 (Tonality)	53	60	-7	Low Impact

5.2.3 A +4 dB Character Correction has been applied for tonality. The dominant noise source during a delivery event is noise emitted from the vacuum pump. The delivery process is not impulsive, since raw materials are transferred exclusively with the vacuum pump (as opposed to a supermarket delivery, where goods would be rolled off a tail-lift onto the ground).

- 5.2.4 It can be seen from the above assessment that the requirements of Condition 3 have been met. We therefore recommend that the condition is discharged, provided deliveries to the silos occur within the specified delivery hours only (08:00-16:00 Monday to Thursday, 08:00-15:00 Friday's).

6 Recommendation

- 6.1.1 In order to help ensure that the noise criterion of Condition 3 is met, we recommend that deliveries to the silos occurs within the specified delivery hours only. Deliveries outside of these hours may be feasible if a quieter pumping system can be used, but this would subject to further assessment.

7 Conclusions

- 7.1.1 Conditional planning consent has been for the construction of concrete plinths to erect 7 no. storage silos at Hellermann Tyton Ltd, Sharston Green Business Park, 1 Robeson Way, Altrincham Road, Manchester M22 4TY, planning reference 121752/FO/2018. Condition 3 has been addressed as part of this assessment.
- 7.1.2 Noise measurements of delivery events to existing silos at the site were undertaken, as well as unattended monitoring of Background Sound Levels within the area. A noise model of the site was created, and the results were used to predict noise levels from delivery events at nearby residential receptors.
- 7.1.3 The results of the noise monitoring and noise modelling demonstrated that the requirements of Condition 3 would be met, provided deliveries to the silos occur within the specified delivery hours (08:00-16:00 Monday to Thursday, 08:00-15:00 Friday's).
- 7.1.4 We therefore recommend that Condition 3 is discharged.

APPENDICES

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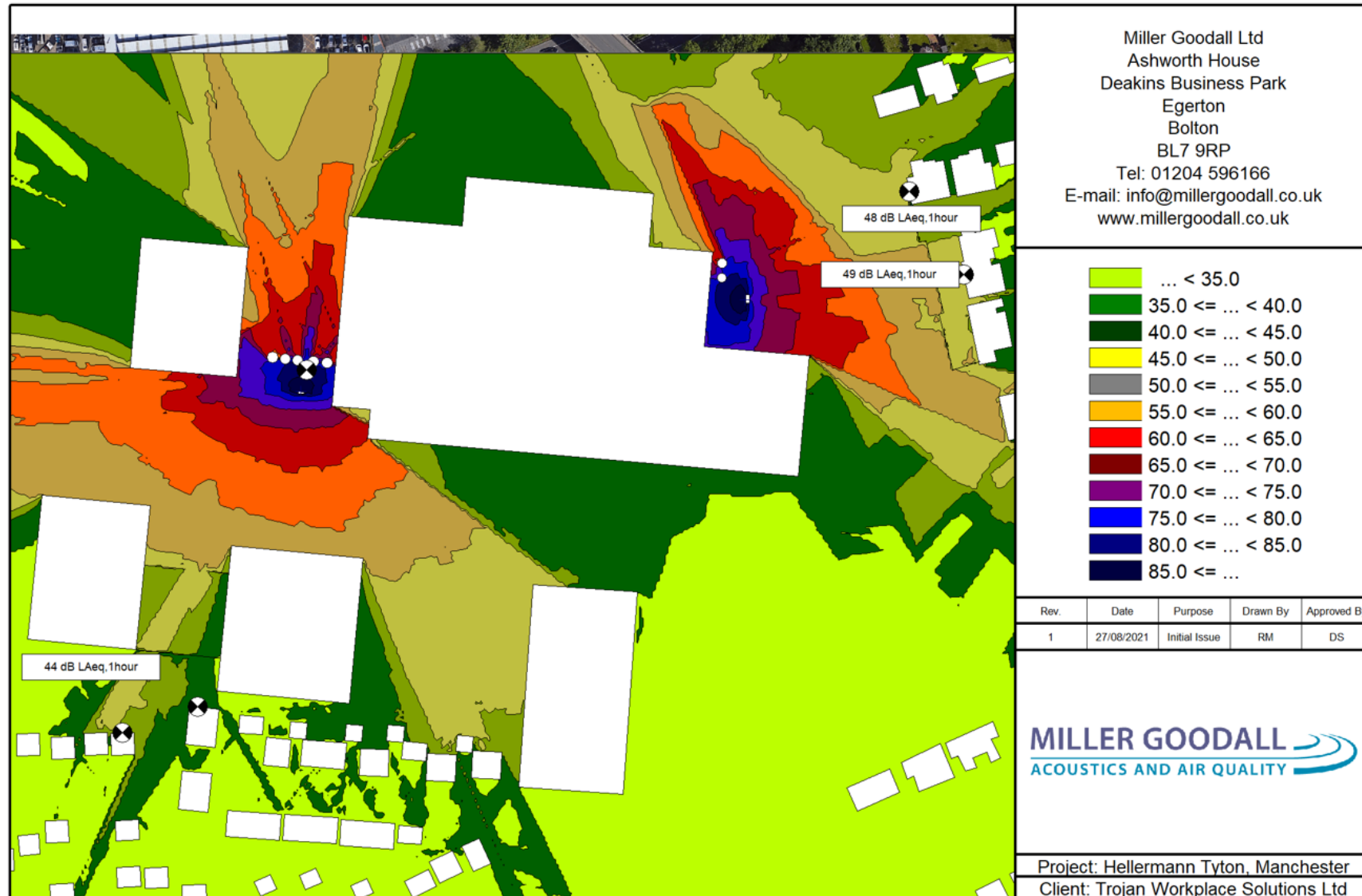
Appendix 1: Monitoring Position and Assessment Receptors



The site plan illustrates the layout of the proposed new facility. Key areas include:

- TOOL ROOM** and **MULTI-HEAD** at the top center.
- BAY 1 / BAY 2** and **BAY 3** in the upper middle section.
- NEW SILOS** (New Silos) in a box on the right side, adjacent to Bay 3.
- EXISTING SILOS** (Existing Silos) in a box on the left side, adjacent to the RAW MATERIALS area.
- RAW MATERIALS** area on the left side.
- AUTOMATED BAY / BAY 1** in the lower middle section.
- BULK STORES** running vertically between the upper and lower bays.
- LOGISTICS** area on the right side, below Bay 3.
- OFFICES** at the bottom center.
- LONGLEY LANE** on the right side of the plan.
- EXISTING OIL STORAGE AREA** at the top right corner.
- EXISTING PARKING** area at the bottom right.
- NEW PARKING** area at the bottom left.
- EXISTING BUILDING** on the far left.
- EXISTING ROAD** at the bottom left.
- EXISTING FENCE** at the bottom left.
- EXISTING LIGHTS** at the bottom left.
- EXISTING SIGN** at the bottom left.
- EXISTING UTILITY** at the bottom left.
- EXISTING WASTE** at the bottom left.
- EXISTING WATER** at the bottom left.
- EXISTING GAS** at the bottom left.
- EXISTING ELECTRICITY** at the bottom left.
- EXISTING TELEPHONE** at the bottom left.
- EXISTING CABLE** at the bottom left.
- EXISTING SATELLITE** at the bottom left.
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Appendix 3: Noise Modelling Results: $L_{Aeq,1hour}$ Daytime Delivery Noise (dB) - 4.0m Grid Height



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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.

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