

Summary

A noise assessment was undertaken to assess the impact of a proposed Lidl store at the Site of the former Spotted Cow Public House, New Hey Road, Huddersfield, HD3 4GP. The Local Authority was consulted with regards to the methodology of the assessment and an approach was agreed. The assessment addressed three noise sources: noise from deliveries (for both daytime and night-time periods), noise from proposed external plant (for both daytime and night-time periods) and noise from the car park of the proposed Lidl.

A CadnaA noise model was created, which was inclusive of the proposed topography of the Lidl site, and inclusive of an adjacent proposed residential development, which is under construction at the time of writing. Noise sources within the model included delivery noise (based on measurements of a Lidl delivery), noise from external plant (based on the proposed M&E schedule) and noise from the proposed car park (predictions made based on the German road noise standard RLS-90).

Noise from deliveries and external plant were assessed in accordance with BS4142:2014 for both daytime and night time periods using noise monitoring data, and predicted noise levels from the CadnaA noise model. The assessments all indicated likelihood of a low impact for daytime periods. The assessment of night-time delivery noise identified that a significant adverse impact was likely. We have subsequently recommended that deliveries are restricted to daytime hours (07:00-23:00), and made recommendations for the control of noise by best practicable means through recommendations for a noise management plan.

Predictions of noise levels from the proposed car park were compared to measured noise levels within the area, and predicted noise from the car park was found to be below typical noise levels within the area. Having observed that fencing along the eastern site boundary was not consistent, we have recommended that a 1.8 m high acoustic fence is erected along the eastern boundary of the site. We are of the opinion that with this mitigation there will not be a significant impact on residential amenity as a result of noise from the car park.

In conclusion our assessment has identified that noise should not be a barrier to development in this instance.

Record of changes

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Reviewed By Jo Miller MIOA

Signed

Signed

Date

21st September 2020

Date

21st September 2020

Version	Date	Change	Initials
1	21st September 2020	Initial Issue	JLM
2	5 th April 2019	Updated site plan including recommended mitigation	RM
3	15 th April 2019	Minor changes to text	RM
4	18 th September 2020	Updated site plan	RM

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1 Introduction

- 1.1 Miller Goodall Ltd has, on behalf of Lidl Great Britain Limited, undertaken a noise assessment in respect of the impact of noise from deliveries, external plant and car-parking associated with a proposed Lidl store on the site of the former Spotted Cow Public House.

2 Site Description

- 2.1 The development is proposed at the New Hey Road, Huddersfield, HD3 4GP. The site location is shown outlined in red on Appendix 1. The site layout for the proposed store is provided in Appendix 2.
- 2.2 The site is bordered to the south by New Hey Road, and bordered to the north and the east by existing residential properties. Salendine Nook Baptist church is located approximately 50 m to the west of the site.
- 2.3 The south end of the site boundary is bordered by land which, at the time of writing, is being developed for residential use, this application is for 22 new build dwellings. A site plan for this development is shown in Appendix 3.

3 Proposed Development

- 3.1 The development consists of the demolition of the Spotted Cow public house and the erection of a new Lidl store with 131 associated car park spaces. Road access to the development site is off New Hey Road. Demolition of the Spotted Cow public house has already been undertaken.
- 3.2 We understand from the plans that the development involves significant changes to the topography of the site in order to accommodate the new Lidl store. Essentially, the site will be altered so that ground height will be similar to that at New Hey Road, and retaining walls with heights of up to 9 m are required at the site.
- 3.3 The proposed operating hours of the Lidl store are 08:00-22:00 daily Monday to Saturday and for six hours between 10:00 and 17:00 on Sunday..

4 Policy Context

4.1 Noise Policy Statement for England

- 4.1.1 The Noise Policy Statement for England (NPSE¹), published in March 2010, sets out the long-term vision of Government 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

¹ Noise Policy Statement for England, Defra, March 2010

- where possible, contribute to the improvement of health and quality of life.”

4.1.2 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.

4.1.3 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 of the Statement). 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”.

4.1.4 Importantly, the NPSE goes on to state:

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

4.1.5 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”

4.1.6 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.

4.2 National Planning Policy Framework

4.2.1 The National Planning Policy Framework (NPPF²) initially published in March 2012, was updated in July 2018. One of the documents that the NPPF replaces is Planning Policy Guidance Note 24 (PPG 24) “Planning and Noise”³.

4.2.2 The revised 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 contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”

² National Planning Policy Framework, Ministry of Housing, Communities and Local Government, July 2018

³ Planning Policy Guidance 24: Planning and Noise, DCLG, September 1994

4.2.3 At par. 170 we are advised 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.

4.2.4 Par. 180 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.

4.3 Planning Practice Guidance – Noise

4.3.1 As of March 2014, a Planning Practice Guidance⁴ for noise was issued which provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

4.3.2 In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

“...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation”.

4.3.3 Examples of these factors include:

- The source and absolute noise level of the source along with the time of day that it occurs;
- Where the noise is non-continuous, the number of noise events and pattern of occurrence;
- The frequency content and acoustic characteristics of the noise;
- The effect of noise on wildlife;

⁴ Planning Practice Guidance – Noise, <http://planningguidance.planningportal.gov.uk/blog/guidance/noise/>, 06 March 2014

- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design;
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

4.3.4 The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

"Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed".

4.3.5 The PPG was amended in December 2014 to clarify guidance on the potential effect of noise from existing businesses on proposed new residential accommodation. Even if existing noise levels are intermittent (for example, from a live music venue), noise will need to be carefully considered and appropriate mitigation measures employed to control noise at the proposed accommodation.

5 Local Authority Consultation

- 5.1 Kevin Ellam, Senior Technical Office within Pollution and Noise Control at KC was consulted in respect of the methodology used in this assessment⁵. It was agreed that noise from the proposed Lidl site would be assessed to the methodology outlined in BS4142:2014, along with relevant comparisons in relation to BS8233:2014 criteria for internal noise levels. It was agreed that the most affected residential façade would be the north east facing façade of Plot 18 of the adjacent proposed residential development (see Appendix 3), due to its proximity to the Lidl site's proposed loading bay and delivery area.
- 5.2 It was agreed residential properties along Deer Croft Crescent were unlikely to be exposed to adverse noise levels, due to the proposed topographical changes to the site, which would place a 9 m retaining wall between the proposed Lidl and the residential properties along Deer Croft Crescent. It was also observed that these properties would be fully screened from deliveries by the proposed Lidl building itself.
- 5.3 It was agreed that the noise impact of proposed external plant associated with the new Lidl store would be assessed in accordance with BS4142:2014 methodology.
- 5.4 It was agreed that specific noise levels would be determined within the assessments from predictions within a CadnaA Noise Model that is inclusive of the proposed topography of the site, and of the adjacent residential development.
- 5.5 The local authority also requested that monitoring and assessment was also undertaken to assess the impact on neighbouring residential properties bordering the site boundary on the south east of the site.

⁵ Email to Kevin Ellam on 05/02/2019

- 5.6 Further consultation was undertaken with the local authority after a visit to the site in order to undertake noise monitoring made it clear that construction works associated with the adjacent residential development had already begun, and that any daytime noise monitoring would not be representative of typical daytime background noise levels as a result of this noise. It was agreed that monitoring data from 2018 contained within the noise assessment for the adjacent residential development would be suitable to use within this noise assessment, and that this monitoring was representative of the most affected residential façade identified within Plot 18.

6 Acoustic Standards and Guidance

6.1 ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development – May 2017

6.1.1 ProPG: Planning and Noise is new guidance with the aim of delivering sustainable development and promoting good health and well-being through the effective management of noise which may impact on new residential developments. The guidance aims to complement the national planning policy and encourages the use of good acoustic design at the earliest phase of the planning process. It builds upon the recommendations of various other guidance documents including NPPF, NPSE and PPG-Noise, BS 8233 and WHO.

6.1.2 The guidance is applicable to new residential developments which would be exposed predominantly to noise from existing transport sources. The ProPG advocates a risk based approach to noise using a two-stage process:

- Stage 1 – an initial noise risk assessment of the proposed development site; and
- Stage 2 – a systematic consideration of four key elements: –
 - Element 1 – demonstrating a ‘Good Acoustic Design Process’;
 - Element 2 – observing internal ‘Noise Level Guidelines’;
 - Element 3 – undertaking an ‘External Amenity Area Noise Assessment’; and
 - Element 4 – consideration of ‘Other Relevant Issues’.

6.1.3 The ProPG approach is underpinned by the preparation and delivery of an ‘Acoustic Design Statement’ (ADS), whereby the higher the risk for noise at the site, the more detailed the ADS. The ADS should address the following issues:

- Present the initial site noise risk assessment, including the pre-development acoustic conditions prior to development;
- Describe the external noise levels that occur across the site both before and after any necessary mitigation measures have been incorporated. The external noise assessment with mitigation measures in place should use an informed judgement of typical worst-case conditions;
- Demonstrate how good acoustic design is integrated into the overall design and how the proposed acoustic design responds to specific circumstances of the site;
- Confirm how the internal noise level guidelines will be achieved, including full details of the design measures and building envelope specifications;
- A detailed assessment of the potential impact on occupants should be undertaken where individual noise events are expected to exceed 45 dB $L_{AF,max}$ more than 10 times a night inside bedrooms;

- Priority should be given to enable the use of openable windows where practical across the development. Where this is not practical to achieve the internal noise level guidelines with windows open, then full details of the proposed ventilation and thermal comfort arrangements must be provided;
- Present the findings of the external amenity area noise assessment;
- Present the findings of the assessment of other relevant issues;
- Confirm for a low risk site how adverse impacts of noise will be mitigated and minimised;
- Confirm for a medium or high noise risk site how adverse impacts of noise will be mitigated and minimised and clearly demonstrate that a significant adverse noise impact has been avoided.

6.1.4 ProPG target noise levels are based on existing guidance from BS 8233 and WHO (see below). Table 1 below outlines the guidance noise levels for different room types during day and night times.

Table 1: ProPG guideline indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,F}$

6.1.5 The footnotes to this table suggest that internal noise level limits can be relaxed by up to 5 dB where development is considered necessary or desirable, and still represent “reasonable” internal conditions. They also suggest that in such cases, external levels which exceed WHO guidance target levels (see WHO section below) may still be acceptable provided that reasonable internal noise levels are achieved. Although, where the acoustic environment of external amenity areas is intrinsic to the overall design, “noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$ ”. The wording of ProPG (and BS 8233:2014) is clear that exceedance of guideline noise levels in external areas should not prohibit the development of desirable developments in any event.

6.2 BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

6.2.1 This standard provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (1999)⁶. These guideline noise levels are shown in Table 2, below.

⁶ World Health Organisation Guidelines for Community Noise, 1999

Table 2: BS 8233: 2014 guideline indoor ambient noise levels for dwellings

Location	Activity	07:00 to 23:00	23:00 to 07:00
Living Room	Resting	35 dB $L_{Aeq,16hr}$	-
Dining room/area	Dining	40 dB $L_{Aeq,16hr}$	-
Bedroom	Sleeping (daytime resting)	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$

6.2.2 BS 8233:2014 advises that:

“regular individual noise events...can cause sleep disturbance. A guideline value may be set in terms of SEL^7 or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values”.

6.2.3 BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The standard states that it is “desirable” that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ whilst recognising that development in higher noise areas such as urban areas or those close to the transport network may require a compromise between elevated noise levels and other factors that determine if development in such areas is warranted. In such circumstances, the development should be designed to achieve the lowest practicable noise levels in external amenity areas.

6.3 World Health Organisation (WHO) Guidelines for Community Noise 1999

6.3.1 The WHO Guidelines 1999 recommends that to avoid sleep disturbance, indoor night-time guideline noise values of 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for individual noise events should be applicable. It is to be noted that the WHO Night Noise Guidelines for Europe 2009⁸ makes reference to research that indicates sleep disturbance from noise events at indoor levels as low as 42 dB L_{AFmax} . The number of individual noise events should also be taken into account and the WHO guidelines suggest that indoor noise levels from such events should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night.

6.3.2 The WHO document recommends that steady, continuous noise levels should not exceed 55 dB L_{Aeq} on balconies, terraces and outdoor living areas. It goes on to state that to protect the majority of individuals from moderate annoyance, external noise levels should not exceed 50 dB L_{Aeq} .

⁷ Sound exposure level or L_{AE}

⁸ WHO Night Noise Guidelines for Europe 2009

6.4 BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound'

6.4.1 BS 4142: 2014⁹ provides guidance on the assessment of the likelihood of complaints relating to noise from industrial sources. It replaced the 1997 edition of the Standard in October 2014. The key aspects of the Standard are summarised below.

6.4.2 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).

6.4.3 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.

6.4.4 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.*

6.4.5 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 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.

6.4.6 The 2014 edition of BS 4142 also introduces a requirement to consider and report the uncertainty in the data and associated calculations and to take reasonably practicable steps to reduce the level of uncertainty.

⁹ BS 4142:2014 Methods for rating and assessing industrial and commercial sound

7 Noise Survey

7.1 Measurements of Existing Noise Sources

7.1.1 Noise measurements were undertaken at two monitoring locations in accordance with BS 7445-1: 2003¹⁰ by Reid Malster AMIOA of Miller Goodall Ltd. The calibration of the sound level meter was checked before and after measurements with negligible deviation (<0.1 dB). Details of the equipment used are shown in Table 3, below. At the first monitoring position attended monitoring was undertaken, and at the second monitoring position unattended monitoring was undertaken.

Table 3: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 ^{11, 12} Integrating Real Time 1/3 Octave Sound Analyser	NOR 140	Norsonic	1406017	23/05/17	03238/2
Microphone	NOR 1225	Norsonic	151206	23/05/17	03238/2
Class 1 Calibrator ¹³	Type 4231	Brüel & Kjær	2478249	13/07/18	03885/1
Outdoor microphone housing	NOR 1217	Norsonic	12175146	N/a	N/a

7.1.2 The noise monitoring was undertaken at the times specified in Table 4, below. Weather conditions were determined both at the start and on completion of the survey. It is considered that meteorological conditions were appropriate for environmental noise measurements. The measurement locations are also shown in Appendix 1.

7.1.3 The measurement locations are detailed below:

- MP1 approximately 18 m north of New Hey Road and approximately 5 m west of the front garden of the nearest neighbouring property
- MP2 approximately 75 m North of New Hey Road, located on the boundary of Plot 18 of the adjacent residential development (Most affected residential façade was agreed with the local authority to be the north east facing façade within Plot 18).

¹⁰ BS 7445-1: 2003 Description and measurement of environmental noise - Part 1: Guide to quantities and procedures

¹¹ IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

¹² IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

¹³ IEC 60942 (2003) Electroacoustics – Sound calibrators

Table 4: Dates, times and weather conditions during noise measurements

Measurement Locations	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
P1	15/02/19 13:40 to 15/02/19 14:10 15/02/19, 14:30 to 19/02/19, 08:15	Temperature:	14 °C	6 °C
		Precipitation:	Dry	Dry
		Cloud cover (oktas – see opposite):	2	6
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	Slight
		Wind speed:	2 m/s	5 m/s
		Wind direction:	North	East
		Any conditions that may cause temp. inversion (e.g. calm nights with no cloud):	No	No

Cloud Cover

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

7.1.4 Measurements were made under free-field conditions at a height of 1.5 m above the ground.

7.1.5 It was observed on site that earth works and construction works associated with the adjacent residential development had begun, and that this constituted a significant noise source within the area. It was observed that noise from these works impacted the proposed Lidl site in its entirety. This noise also impacted the attended monitoring undertaken at MP1, meaning that the monitoring undertaken at this location is not representative of typical daytime background noise levels.

7.1.6 The unattended monitoring undertaken at MP2 was also impacted by noise associated with the construction work, meaning that all survey data recorded while construction works were underway is not representative of typical background noise levels within the area. However, we understand that the construction works are limited to daytime hours only, and so the unattended monitoring results do contain data representative of typical background noise levels during the night time, and subsequently this data has been utilised within this noise assessment.

7.1.7 The noise sources within the vicinity of the measurement locations are summarised in Table 5, below:

Table 5: Description of noise sources affecting the site

Measurement Locations	Noise Sources
MP1	Road traffic noise from New Hey Road, significant construction noise from adjacent site, distant road traffic noise from M62 motorway, pedestrians walking, talking and occasionally shouting along New Hey Road
MP2	Road traffic noise from New Hey Road, distant road traffic noise from M62 motorway and significant construction noise from the adjacent site during daytime hours

7.2 Monitoring Results

7.2.1 A summary of the broadband measurement data is provided in Charts 1-3 below and Table 6 below. All sound pressure levels in dB re 20 μ Pa.

Chart 1: Attended Noise Monitoring Data (MP1)

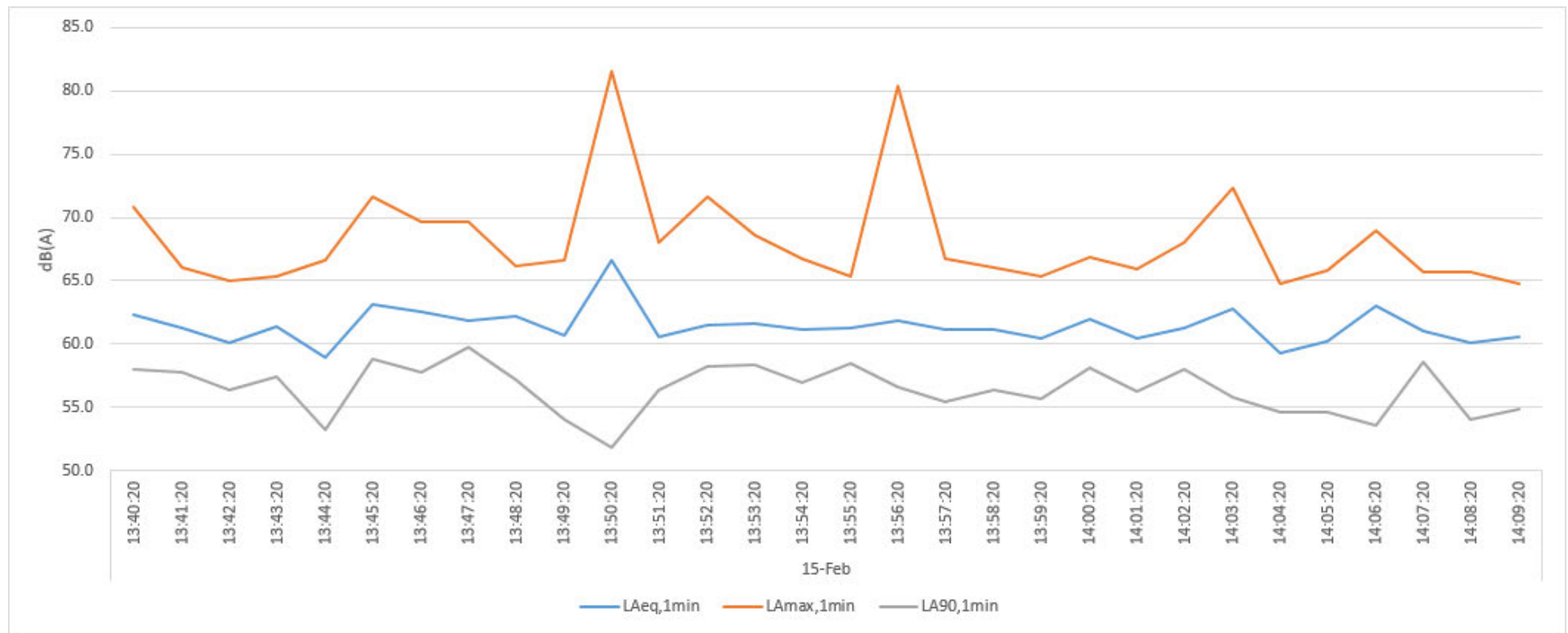


Chart 2: Unattended Noise Monitoring Data (MP2)

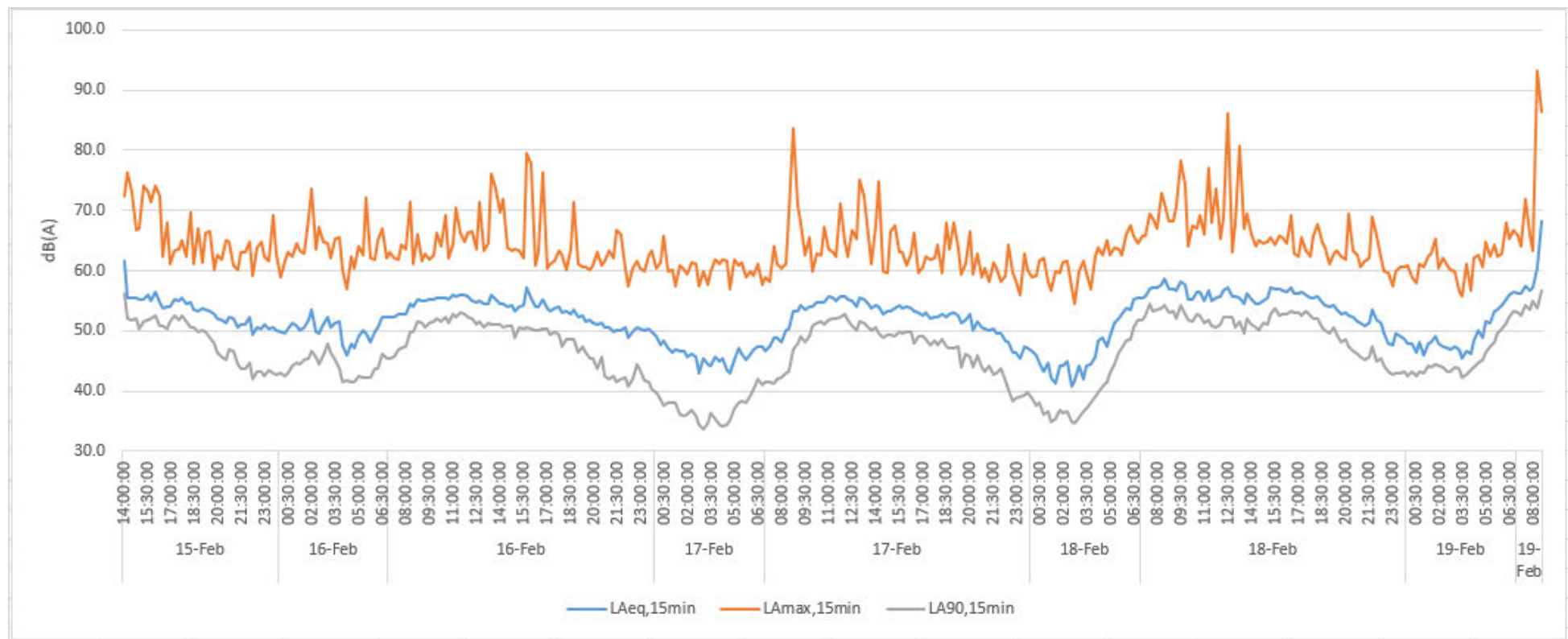


Chart 3: Unattended Noise Monitoring Data (Night Time Only) at MP2

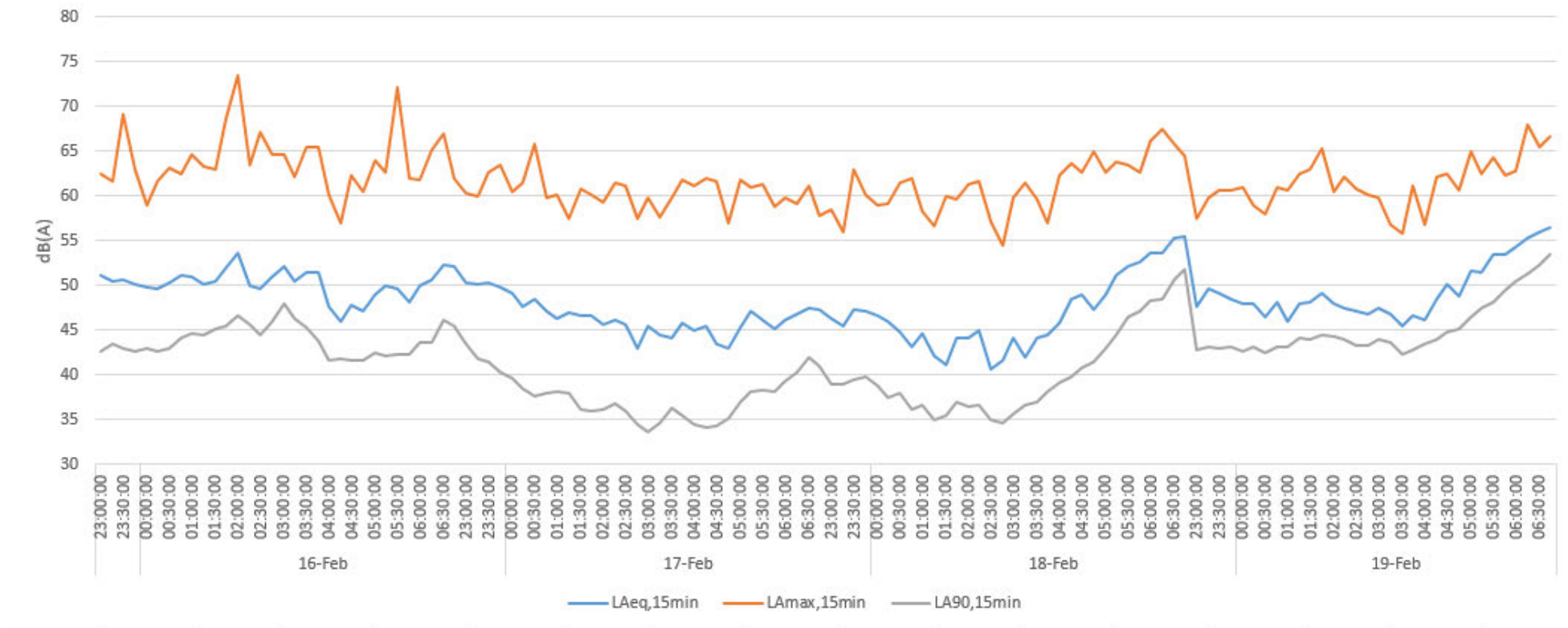


Table 6: Summary of noise measurements

Measurement Location	$L_{Aeq,T}$ (dB)	95 th % $L_{AFmax,1min}$ (dB)	$L_{AF90,T}$ (dB)
MP1*	62 dB $L_{Aeq,30min}$	77 dB $L_{AFmax,1min}$	58 dB $L_{AF90,30min}$
MP2 (Day Only*)	54 dB $L_{Aeq,16hour}$	65 dB $L_{AFmax,1min}$	51 dB $L_{AF90,16hour}$
MP2 (Night Only)	50 dB $L_{Aeq,8hour}$	62 dB $L_{AFmax,1min}$	43 dB $L_{AF90,8hour}$

* Affected by construction noise

- 7.2.2 Noise monitoring was also undertaken by Environmental Noise Solutions Ltd as part of a Noise Impact Assessment for the adjacent residential development on 28/03/18 at four monitoring positions across the site of the proposed residential development. This data was available within the public domain, and the local authority have confirmed that they consider this data to be representative of current typical noise levels within the area. The monitoring locations identified in the Noise Impact Assessment are shown in Figure 1 below (Please note that the noise impact assessment uses the proposed site layout at the time of the report, which has since changed) and the monitoring data is provided in Table 7 below.
- 7.2.3 It is also considered that due to the similar distance from the road and similar road conditions (e.g. speed limit), MP1 of the noise survey undertaken by Environmental Noise Solutions Ltd is representative of typical daytime noise levels at the existing residential properties bordering the eastern site boundary on the south end of the site.

Figure 1: Adjacent Residential Development Noise Monitoring Positions



Table 7: Noise Monitoring Data (Adjacent Residential Development)

Position	Date	Time	LAeq (dB)	LA90 (dB)	LA10 (dB)	LA1 (dB)	LAFMax	Comments
MP1 (1.5m)	28/03/18	1000–1015	58	54	60	67	70	New Hey Road traffic (partially screened)
MP1 (1.5m)	28/03/18	1028–1043	58	55	60	64	69	
MP1 (4.0m)	28/03/18	1000–1100	61	54	64	67	73	New hey Road traffic (unscreened)
MP1 (4.0m)	28/03/18	1100–1200	61	55	64	69	73	
MP1 (4.0m)	28/03/18	1200–1300	61	56	64	68	73	
MP1 (4.0m)	28/03/18	2250–2220	56	47	61	65	67	
MP1 (4.0m)	28/03/18	2340–2355	54	45	58	64	67	
MP1 (4.0m)	28/03/18	0012–0027	52	40	56	63	70	
Daytime Ambient Noise Level 61 dB LAeq (0700–2300) based on CRTN								
Night Time Ambient Noise Level (2300–0700) based on TRL								
Night time maximum up to 65 dB LA1 (15 mins) and up to 73 dB LAFMax (robustly daytime maxima adopted)								
MP2 (1.5m)	28/03/18	1058–1113	56	53	58	61	64	New Hey Road traffic Distant M62 traffic
MP2 (4.0m)	28/03/18	1042–1057	58	54	61	64	67	
Comparison of LA10 at MP1 and MP2 illustrates line source attenuation (3 dB per doubling distance)								
MP3 (1.5m)	28/03/18	1214–1229	52	50	54	56	59	Distant New Hey Road traffic Distant M62 traffic
MP3 (4.0m)	28/03/18	1158–1213	55	53	56	58	61	
MP3 (4.0m)	28/03/18	1300–1315	54	52	56	60	63	
Daytime Ambient Noise Level ≤ 55 dB LAeq,T								
MP4 (4.0m)	28/03/18	1232 –1247	55	52	56	61	65	Distant New Hey Road traffic Distant M62 traffic
MP4 (4.0m)	28/03/18	1317–1332	55	52	56	59	62	
MP4 (4.0m)	28/03/18	2322–2337	50	46	52	55	57	
MP4 (4.0m)	28/03/18	2357–0012	47	42	49	54	57	
Daytime Ambient Noise Level ≤ 55 dB LAeq,T								
Night Time Ambient Noise Level ≤ 50 dB LAeq,T								

8 Impact of Noise from the Proposed Development: Noise Modelling

8.1 Noise Modelling

8.1.1 Predicted 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.

8.1.2 The general horizontal plan information of the area surrounding 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 of existing buildings was based on site observations. Topography for the area surrounding the proposed site was modelled using OS Terrain 5 data, and the topography of the proposed site was modelled using the proposed site topography, with retaining walls modelled as barriers. The proposed site topography is shown in Appendix 4.

8.1.3 The following parameters were assigned to the model:

- Propagation model: ISO 9613¹⁴
- Ground absorption: 0.8 (equivalent to grassed areas) for the majority of the model, while hard surfaced areas (e.g. New Hey Road and the proposed Lidl site in its entirety) had a ground absorption area of 0.1.

¹⁴ ISO 9613-2: 1996 Acoustics - Attenuation of sound during propagation outdoors – Part 2: General method of calculation

- Two orders of reflection
- Buildings are reflecting (smooth, non-structured facade)

8.1.4 Noise sources within the model include noise from deliveries, noise from proposed external plant and noise from the car park.

8.2 Noise from Deliveries

8.2.1 Noise from deliveries within this report will be assessed in accordance with BS4142:2014 methodology.

8.2.2 At present, LIDL's best practice delivery methodology reduces noise by removing the requirement for refrigeration units on the exterior of delivery wagons, the operation of the whole delivery process is undertaken by one person which reduces the requirement for talking and shouting and all goods and waste are moved in sealed containers.

8.2.3 The process takes approximately 40 minutes including the entry of the delivery vehicle into the yard, opening the rear container doors, reversing onto the ramp, unloading the stock, loading waste to be removed and finally leaving the site.

8.2.4 Octave band data for a typical delivery is shown below in Table 8. This data, measured at 2.0m from the mid-point of the wagon when parked (16.5 m articulated vehicle), shows the measured noise level at a Lidl store in Colne, Lancashire during a delivery adjusted to take account of the contributions from residual sound at the monitoring location due to other noise sources not associated with the LIDL store.

8.2.5 Table 8 below shows a single figure value for the entire measurement and a calibrated value for a 15.0 m line source which represents the delivery wagon in the noise modelling.

8.2.6 Table 8 also shows data for a typical L_{AFmax} noise level associated with the delivery, noted to be movement of containers within the wagon once parked. This is modelled as a calibrated point source at 4.0m height at the midpoint of the wagon.

8.2.7 It is our understanding that there will be up to **two deliveries per day** at the proposed store.

Table 8: Octave Band Noise Data of a Lidl Delivery

	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz	dB(A)
Measured Noise Levels (dB) at 2 m									
Total Delivery ($L_{eq,T}$)	37.7	48.4	52.6	58.4	61.3	61.1	60.7	57.2	67.2
Typical Max event ($L_{Fmax,T}$)	55.7	66.9	79.2	85.8	87.4	87.7	82.4	74.8	92.6
Calibrated Model Noise Sources (dB) ($L_w.m^{-1}$ of 15m line source)									
Total Delivery	76.6	77.2	73.9	74.3	74	72.6	72.5	71.5	87.0
Typical Max event	89.5	98.7	96.0	91.0	90.0	91.7	92.6	97.6	106.2

8.2.8 Noise maps of the predicted delivery noise levels have been provided in Appendix 6

8.3 Noise from External Plant

8.3.1 Noise from deliveries within this report will be assessed in accordance with BS4142:2014 methodology.

8.3.2 Modelling of external plant was undertaken using the proposed Mechanical Equipment Schedule for the proposed Lidl store. Appendix 5 A & B shows the proposed layout of the external plant area, and the elevation of the external plant area.

Table 9: Octave Band Plant Noise Data

Item of plant	Notes	Sound Power Level, dB(A) in Octave Band Centre Frequency, Hz								Sound Pressure Level at 1 m dB(A)
		63	125	250	500	1k	2k	4k	8k	
Fixed Items – External Plant Yard (operate 24 hours)										
Food Refrigeration Dry Cooler	2no. Units	16	26	31	38	40	39	34	28	37
DX Outdoor Unit (Sales Area)	4no. Units	-	49	55	61	61	62	61	55	59
VRF Outdoor Unit	1no. Unit	50	58	59	63	66	63	58	50	63

8.3.3 This data was used within the noise model to predict a specific noise level in order to undertake a BS4142:2014 assessment.

8.3.4 Noise maps of the predicted plant noise levels have been provided in Appendix 7.

8.4 Noise from the Car Park

- 8.4.1 The local authority has requested that noise from the proposed Lidl car park is addressed at the existing residential properties bordering the south east of the site as part of this noise assessment
- 8.4.2 There is no UK guidance for the modelling and prediction of car park noise and therefore noise from the car park has been modelled based on the German road noise standard RLS-90 for parking lots. Using this standard, the sound power level of car park areas is predicted based on the number of parking spaces and the frequency that each parking space is used per hour.
- 8.4.3 The noise model assumes that all of the 131 parking spaces for cars are in use. It is assumed that a worst-case 1200 vehicles enter the car park over a 16-hour day, giving a rate of 0.57 entry per space each hour.
- 8.4.4 Maximum noise levels from car door slams have also been assessed within an L_{AFmax} assessment based on a typical 'worst-case' $L_{AFmax,T}$ noise level of 65 dB at 10m. Most car door slams would be below this level.
- 8.4.5 CadnaA noise modelling, utilising the RLS-90 calculation algorithms and maximum noise point sources, has been used to determine the noise levels from the car park at the residential properties bordering the south east of the site.
- 8.4.6 As discussed in Section 7.2.5 of this report, we are of the opinion that due to distance from the road and similar road conditions (e.g. speed limit), the monitoring undertaken by Environmental Noise Solutions Ltd in March 2018 at MP1 (marked on Appendix 1 as MP1 of March 2018 survey) is representative of the properties neighbouring the south east of the proposed Lidl site.
- 8.4.7 Noise maps of the predicted car park noise levels have been provided in Appendix 8.

8.5 BS 4142: 2014 Assessments

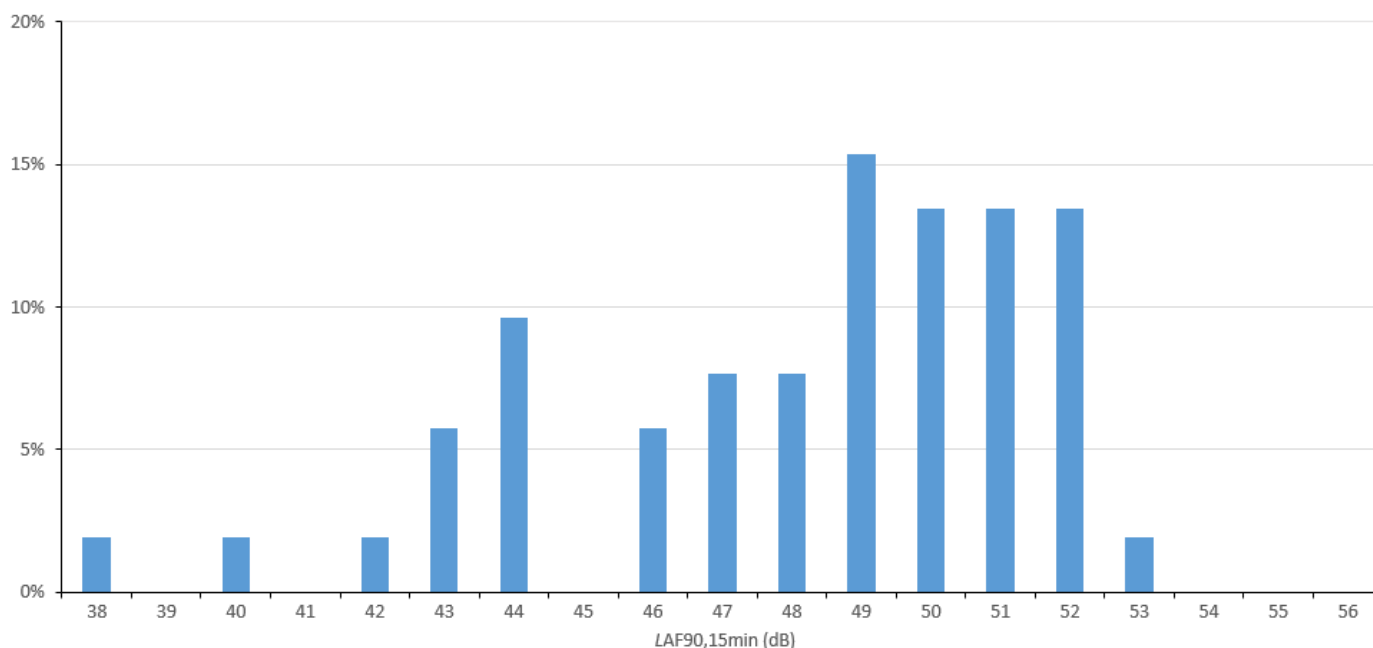
- 8.5.1 BS4142:2014 noise impact assessments have been undertaken in order to assess the potential noise impact at the most affected residential façades within the vicinity of the proposed development site and is detailed in following sections of the report.

8.6 BS4142: 2014 Assessment: Delivery Noise Daytime Impact

- 8.6.1 The results of the noise survey undertaken by Environmental Noise Solutions Ltd in March 2018 as part of the Noise Impact Assessment for the adjacent residential development show two 15 minute measurements at MP4 (see Appendix 1 for monitoring positions) of 55 dB $L_{A90,15min}$. It has been discussed previously that during the noise survey undertaken in respect of the assessment for the proposed Lidl site, that daytime noise was impacted by construction works from the adjacent residential development. Based on analysis of the audio from our noise survey at MP2, it is our understanding that construction works did not take place on Sunday 17/02/19.

8.6.2 Statistical analysis of $L_{A90,1\text{hour}}$ noise levels on Sunday 17/02/19 at MP2 (agreed with the Local Authority to be representative of the most affected residential façade with regards to delivery noise), identifies 51 dB as an appropriate background sound level. However, this analysis was not considered to provide sufficient clarity in this instance, so $L_{A90,15\text{min}}$ levels were analysed instead, which identified 49 dB as a more appropriate background sound level for this assessment. This is shown in Chart 4 below. Since deliveries are proposed to take place daily, using 49 dB as a background sound level is appropriate, and will present a worst-case assessment. It should also be considered that this level is based on survey data over a longer period of time than the March 2018 survey data.

Chart 4: Statistical Analysis of Daytime $L_{A90,15\text{min}}$ Background Sound Levels (17/02/19 07:00 hrs – 17/02/19 23:00 hrs)



8.6.3 The daytime BS4142:2014 Noise Impact Assessment for delivery noise is shown in Table 10 below.

Table 10: BS 4142:2014 Noise Impact Assessment: Daytime Delivery Noise

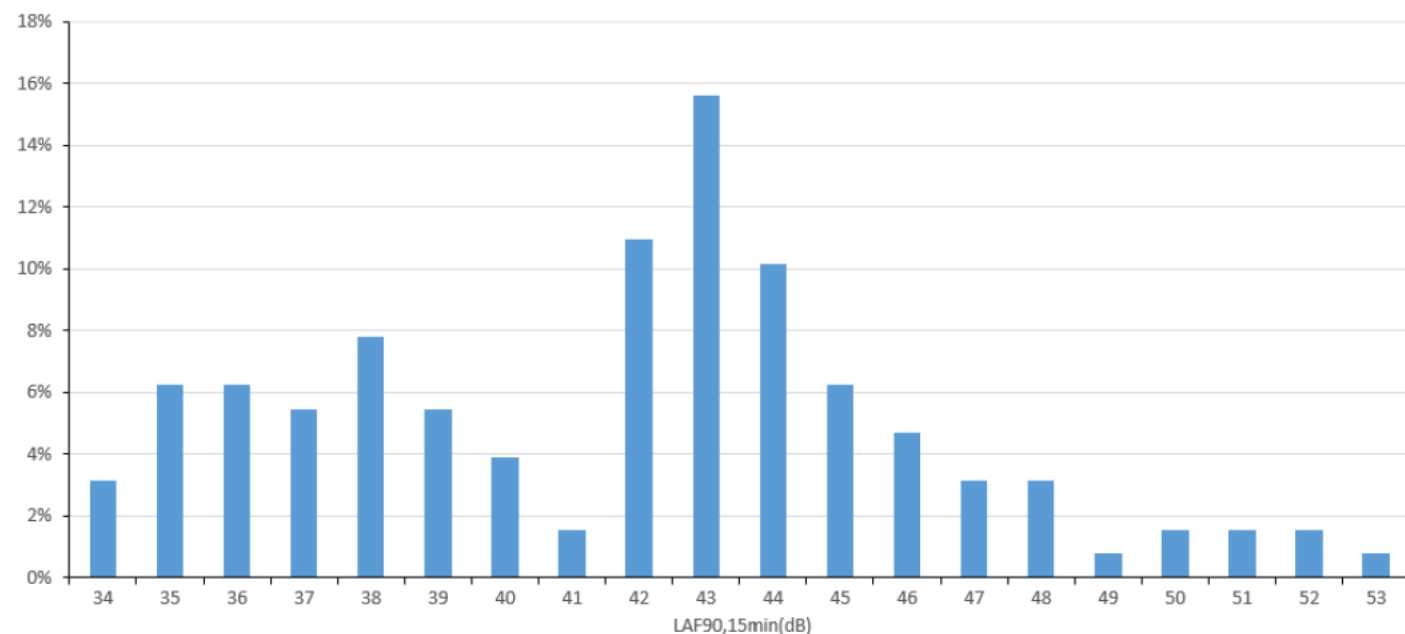
Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,1\text{hour}} = 49 \text{ dB}$	8.1.2 8.3	Determined by statistical analysis of $L_{A90,1\text{hour}}$ measurements between 07:00 and 23:00 on Sunday 17/02/19 at MP2 (MP2 marked on Appendix 1)
Assessment made during the daytime, so the reference interval is 1 hour		7.2	
Specific Sound Level	$L_{Aeq,1\text{hour}} = 48 \text{ dB}$	7.3.3 eqn(2)	Based on predicted levels of a 40 minute delivery.
Acoustic feature correction	+4 dB	9.2	Impulsiveness (banging sounds from loading) clearly perceptible at receptor
Rating Level	$(48 + 4) \text{ dB} = 52 \text{ dB}$		
Excess of Rating Level over Background Sound Level	$(52 - 49) \text{ dB} = +3 \text{ dB}$		
Assessment indicates likelihood of low impact		11	Initial estimate only
Context		11	The site is located along New Hey Road, which is a direct route to the M62 motorway and is subject to high levels of traffic.
		8.5	The background sound level was determined by statistical analysis of data surveyed during Sunday daytime hours, which will present a worst-case daytime assessment.
Uncertainty of the assessment		10	The model is based on recent source measurements of a Lidl delivery in Colne, Lancashire. The delivery measured followed Lidl's current best practice delivery methodology, which incorporates significant measures to reduce noise associated with its deliveries.
			The model is inclusive of the proposed topography of the site, and of the topography of the loading bay. It is therefore considered that the uncertainty of this assessment is low.

8.6.4 It can be seen from the above table that the noise impact of delivery noise during the daytime, based on the BS 4142:2014 methodology, indicates a likelihood of low impact at the most affected residential façade (Plot 18 of the adjacent proposed residential development). We are therefore of the opinion that mitigation will not be required with respect to daytime noise from deliveries.

8.7 BS4142: 2014 Assessment: Delivery Noise Night-time Impact

8.7.1 For this assessment, the background sound level was determined by statistical analysis of $L_{A90,15min}$ levels during night time hours (23:00-07:00) between 15/02/19 and 19/02/19 at MP2 (agreed with the Local Authority to be representative of the most affected residential façade with regards to delivery noise), which identified 43 dB $L_{A90,15min}$ as an appropriate background sound level for this assessment. This is shown in Chart 5 below:

Chart 5: Statistical Analysis of $L_{A90,15min}$ Night-time (23:00-07:00) Background Sound Levels (15/02/19 – 19/02/19)



8.7.2 The night-time BS4142:2014 Noise Impact Assessment for delivery noise is shown in Table 11 below.

Table 11: BS 4142:2014 Noise Impact Assessment: Night-time Delivery Noise

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,15min} = 43 \text{ dB}$	8.1.2 8.3	Determined by statistical analysis of $L_{A90,15min}$ measurements during night time hours (23:00-07:00) between 15/02/19 and 19/02/19 at MP2 (MP2 marked on Appendix 1)
Assessment made during the daytime, so the reference interval is 15 minutes		7.2	
Specific Sound Level	$L_{Aeq,15min} = 50 \text{ dB}$	7.3.3 eqn(2)	Based on the deliveries during the full period of the night-time assessment
Acoustic feature correction	+4 dB	9.2	Impulsiveness (banging sounds from loading) clearly perceptible at receptor
Rating Level	$(50 + 4) \text{ dB} = 54 \text{ dB}$		
Excess of Rating Level over Background Sound Level	$(54 - 43) \text{ dB} = +11 \text{ dB}$		
Assessment indicates likelihood of significant adverse impact.		11	Initial estimate only
Context		11	The site is located along New Hey Road, which is a direct route to the M62 motorway and is subject to high levels of traffic.
		8.5	The background sound level was determined by statistical analysis of data that included Friday, Saturday and Sunday. The assessment is therefore considered to be worst-case.
Uncertainty of the assessment		10	The model is based on recent source measurements of a Lidl delivery in Colne, Lancashire. The delivery measured followed Lidl's current best practice delivery methodology, which incorporates significant measures to reduce noise associated with its deliveries.
			The model is inclusive of the proposed topography of the site, and of the topography of the loading bay. It is therefore considered that the uncertainty of this assessment is low.

- 8.7.3 It can be seen from the above table that the initial estimate of the noise impact of delivery noise during the daytime, based on the BS 4142:2014 methodology, indicates a likelihood of significant adverse impact at the most affected residential façade (Plot 18 of the adjacent proposed residential development). We have assessment mitigation options around the loading bay however, due to the height of the bedroom window overlooking the loading bay, the effect is not significant until the barrier is in the order of 5 m, which is not considered a practical mitigation measure.
- 8.7.4 As a result of the outcome of this assessment, recommendations have been made for a noise management plan, and this is shown in Appendix 10.

8.8 BS4142: 2014 Assessment: External Plant Noise Daytime Impact

- 8.8.1 Analysis of predicted noise levels within the noise model shows that the residential façade most affected by noise from the proposed external plant is the north facing façade of Plot 17 of the adjacent proposed residential development (The location of this façade is marked on Appendix 3).
- 8.8.2 Given the similar distance from New Hey Road, it is our opinion that the data at MP2 used within the BS4142: 2014 daytime noise impact assessment is also representative of background noise levels at the north facing façade of Plot 17 of the adjacent proposed residential development. This assessment therefore uses the background sound level of 49 dB $L_{A90,1\text{hour}}$ determined by statistical analysis of $L_{A90,1\text{hour}}$ levels during daytime hours (07:00-23:00) on Sunday 17/02/19 (shown in Chart 4).
- 8.8.3 The daytime BS4142:2014 Noise Impact Assessment for external plant noise is shown in Table 12 below.

Table 12: BS 4142:2014 Noise Impact Assessment: Daytime External Plant Noise

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{A90,1\text{hour}} = 49 \text{ dB}$	8.1.2 8.3	Determined by statistical analysis of $L_{A90,15\text{min}}$ measurements between 07:00 and 23:00 on Sunday 17/02/19 at MP2 (MP2 marked on Appendix 1)
Assessment made during the daytime, so the reference interval is 1 hour		7.2	
Specific Sound Level	$L_{Aeq,1\text{hour}} = 33 \text{ dB}$	7.3.3 eqn(2)	
Acoustic feature correction	+3 dB	9.2	Intermittency
Rating Level	$(33 + 3) \text{ dB} = 36 \text{ dB}$		
Excess of Rating Level over Background Sound Level	$(36 - 49) \text{ dB} = -13 \text{ dB}$		
Assessment indicates likelihood of low impact		11	Initial estimate only
Context		11 8.5	The site is located along New Hey Road, which is a direct route to the M62 motorway and is subject to high levels of traffic. The background sound level was determined by statistical analysis of data that included Friday, Saturday and Sunday. The assessment is therefore considered to be worst-case.
Uncertainty of the assessment		10	The model is inclusive of the proposed topography of the site. It is therefore considered that the uncertainty of this assessment is low.

- 8.8.4 It can be seen from the above table that the initial estimate of the noise impact of external plant noise during the daytime, based on the BS 4142:2014 methodology, indicates a likelihood of low impact at the most affected residential façade (Plot 17 of the adjacent proposed residential development). We are therefore of the opinion that mitigation will not be required with respect to daytime noise from the proposed external plant.

8.9 BS4142: 2014 Assessment: External Plant Noise Night-time Impact

- 8.9.1 Analysis of predicted noise levels within the noise model shows that the residential façade most affected by noise from the proposed external plant is the north facing façade of Plot 17 of the adjacent proposed residential development (The location of this façade is marked on Appendix 3).
- 8.9.2 Given the similar distance from New Hey Road, it is our opinion that the data at MP2 used within the BS4142: 2014 daytime noise impact assessment is also representative of background noise levels at the north facing façade of Plot 17 of the adjacent proposed residential development. This assessment therefore uses the background sound level of 43 dB $L_{A90,15min}$ determined by statistical analysis of $L_{A90,15min}$ levels during night-time hours (23:00-07:00) between 15/02/19 and 19/02/19 (shown in Chart 5).
- 8.9.3 The night-time BS4142:2014 Noise Impact Assessment for external plant noise is shown in Table 13 below.

Table 13: BS 4142:2014 Noise Impact Assessment: Night-time External Plant Noise

Results		Relevant Clauses of BS 4142:2014	Commentary
Background Sound Level	$L_{AF90,15min} = 43 \text{ dB}$	8.1.2 8.3	Determined by statistical analysis of $L_{A90,15min}$ measurements during night time hours (23:00-07:00) between 15/02/19 and 19/02/19 at MP2 (MP2 marked on Appendix 1)
Assessment made during the daytime, so the reference interval is 15 minutes		7.2	
Specific Sound Level	$L_{Aeq,15min} = 33 \text{ dB}$	7.3.3 eqn(2)	
Acoustic feature correction	+3 dB	9.2	Intermittency
Rating Level	$(33 + 3) \text{ dB} = 36 \text{ dB}$		
Excess of Rating Level over Background Sound Level	$(36 - 43) \text{ dB} = -7 \text{ dB}$		
Assessment indicates likelihood of low impact		11	Initial estimate only
Context		11	The site is located along New Hey Road, which is a direct route to the M62 motorway and is subject to high levels of traffic.
		8.5	The background sound level was determined by statistical analysis of data surveyed during Sunday daytime hours, which will present a worst-case daytime assessment.
Uncertainty of the assessment		10	The model is inclusive of the proposed topography of the site. It is therefore considered that the uncertainty of this assessment is low.

8.9.4 It can be seen from the above table that the initial estimate of the noise impact of external plant noise during the night-time, based on the BS 4142:2014 methodology, indicates a likelihood of low impact at the most affected residential façade (Plot 17 of the adjacent proposed residential development). We are therefore of the opinion that mitigation will not be required with respect to night time noise from the proposed external plant.

8.10 Assessment of Car Park Noise: Daytime Impact

8.10.1 As discussed in Section 7.2.5 of this report, we are of the opinion that due to distance from the road and similar road conditions (e.g. speed limit), the monitoring undertaken by Environmental Noise Solutions Ltd in March 2018 at MP1 (marked on Appendix 1 as MP1 of March 2018 survey) is representative of the properties neighbouring the south east of the proposed Lidl site.

8.10.2 The attended measurements at MP1 (marked on Appendix 1 as MP1) undertaken by Miller Goodall Ltd was impacted by construction noise from the adjacent proposed residential development, and is therefore not necessarily representative of typical acoustic environment.

8.10.3 With regards to the background noise level ($L_{A90,T}$), we consider it appropriate that 54 dB $L_{A90,1\text{hour}}$ as measured by Environmental Noise Solutions Ltd in March 2018 is used as the background sound level in this assessment (the lowest of the three measurements considered), and that this will present a worst-case scenario based on the available measured data.

8.10.4 As discussed in Section 8.4.6 of this report, the specific noise level has been predicted at the most affected residential façade with windows, at first floor height (4 m within the noise model). This is shown on Appendix 1. The predicted specific noise level at this receptor was 50 dB $L_{Aeq,16\text{hour}}$.

8.10.5 Table 14 below shows a comparison of the predicted noise levels, and the measured noise levels from the monitoring undertaken by Environmental Noise Solutions Ltd.

Table 14: Comparison of Predicted Car Park Noise Levels and Measured Noise Levels

Metric	Level dB	Notes
Predicted $L_{Aeq, 16\text{hour}}$	50	0.57 events per hour per space
Predicted internal level $L_{Aeq, 16\text{hour}}$	35	Assuming 15 dB attenuation from open window Daytime BS8233 criteria is 35 dB $L_{Aeq,16h}$
Predicted L_{AFmax}	62	SPL of 62 dB at 10 m
Baseline $L_{Aeq,3\text{hour}}$ *	60	10 dB above predicted noise from car park
Baseline $L_{A90,1\text{hour}}$	54	4 dB above predicted noise from car park
Baseline L_{AFmax}	73	Three L_{AFmax} measurements of 73 dB are stated in the results of the March 2018 survey for daytime period considered

*This is the average of the available daytime data at MP1 of the March 2018 survey, at a height of 4 m (consistent with the height of the noise model receptor)

8.10.6 There is currently no consistent fencing between the gardens of the south eastern properties, we would therefore recommend a 1.8 m high acoustic fence along the eastern boundary of the car park. This is shown in Figure 2 below.

Figure 2: Location of Proposed Acoustic Fence (Marked in Blue)



8.10.7 Since the initial issue of this report, the recommended acoustic fence has been incorporated into the site plan (see Appendix 2).

- 8.10.8 The noise comparisons in Table 14 show that the predicted noise from the car park will not exceed the baseline ambient noise levels at the existing receptors. Potential L_{AFmax} events will be below the existing maximum levels within the area.
- 8.10.9 We are of the opinion that this is a worst case assessment. The RLS-90 standard assumes that each car park space is used equally at all times. We believe it is likely that the spaces near to the entrance of the store are likely to be more frequently used. We also consider that assessing to first floor bedroom height also contributes to the assessment being worst case.
- 8.10.10 Considering the assessment above, and with the implementation of the recommended mitigation, it is not considered that the car park for the proposed Lidl will cause any significant impact to residential amenity at the identified receptor.

9 Construction Noise and Vibration Impacts

- 9.1 It is common for the control of construction noise, vibration and dust emission to be addressed by the application of Best Practicable Means (BPM) and detailed within a Construction and Environmental Management Plan (CEMP). This document is prepared for the specific development in question and normally controlled via planning condition.
- 9.2 Prior to commencement of works, a quantitative noise impact assessment using guidance in BS 5228¹⁵ on site may also be required but in our experience is usually unnecessary, providing a robust CEMP is in place and agreed upon by the Local Authority.

10 Conclusions

- 10.1 A noise assessment was undertaken to assess the impact of a proposed Lidl store at the Site of the former Spotted Cow Public House, New Hey Road, Huddersfield, HD3 4GP. The Local Authority was consulted with regards to the methodology of the assessment and an approach was agreed. The assessment addressed three noise sources: noise from deliveries (for both daytime and night-time periods), noise from proposed external plant (for both daytime and night-time periods) and noise from the car park of the proposed Lidl.
- 10.2 A CadnaA noise model was created, which was inclusive of the proposed topography of the Lidl site, and inclusive of an adjacent proposed residential development, which we understand is currently under construction. Noise sources within the model included delivery noise (based on recent measurements of a Lidl delivery), noise from external plant (based on the proposed M&E schedule) and noise from the proposed car park (predictions made based on the German road noise standard RLS-90).

¹⁵ BS 5228 Noise and Vibration Control on Construction and Open Sites - Part 1: Noise: 2009+A1:2014

- 10.3 Noise from deliveries and external plant were assessed in accordance with BS4142:2014 for both daytime and night time periods using noise monitoring data, and predicted noise levels from the CadnaA noise model. The assessments all indicated likelihood of a low impact for daytime periods, however a significant adverse impact has been identified for the night-time periods with relation to delivery noise. An assessment of additional mitigation methods has been assessed, however a noise barrier around the loading bay would need to be significant in order to have any impact. Our recommendation would therefore be to limit the hours of delivery to 07:00 to 23:00 hours.
- 10.4 Predictions of noise levels from the proposed car park were compared to measured ambient sound levels. Predicted noise from the car park was found to be below typical ambient sound levels in the area. Having observed that there is not consistent fencing to the gardens of the neighbouring properties along the eastern site boundary, we recommend improved mitigation in the form of a 1.8 m high acoustic fence. Based on the assessment and the implementation of the recommended improvement in mitigation, any adverse effects of noise from activities in the car park will be negligible.
- 10.5 In conclusion our assessment has identified that noise should not be a barrier to development in this instance.

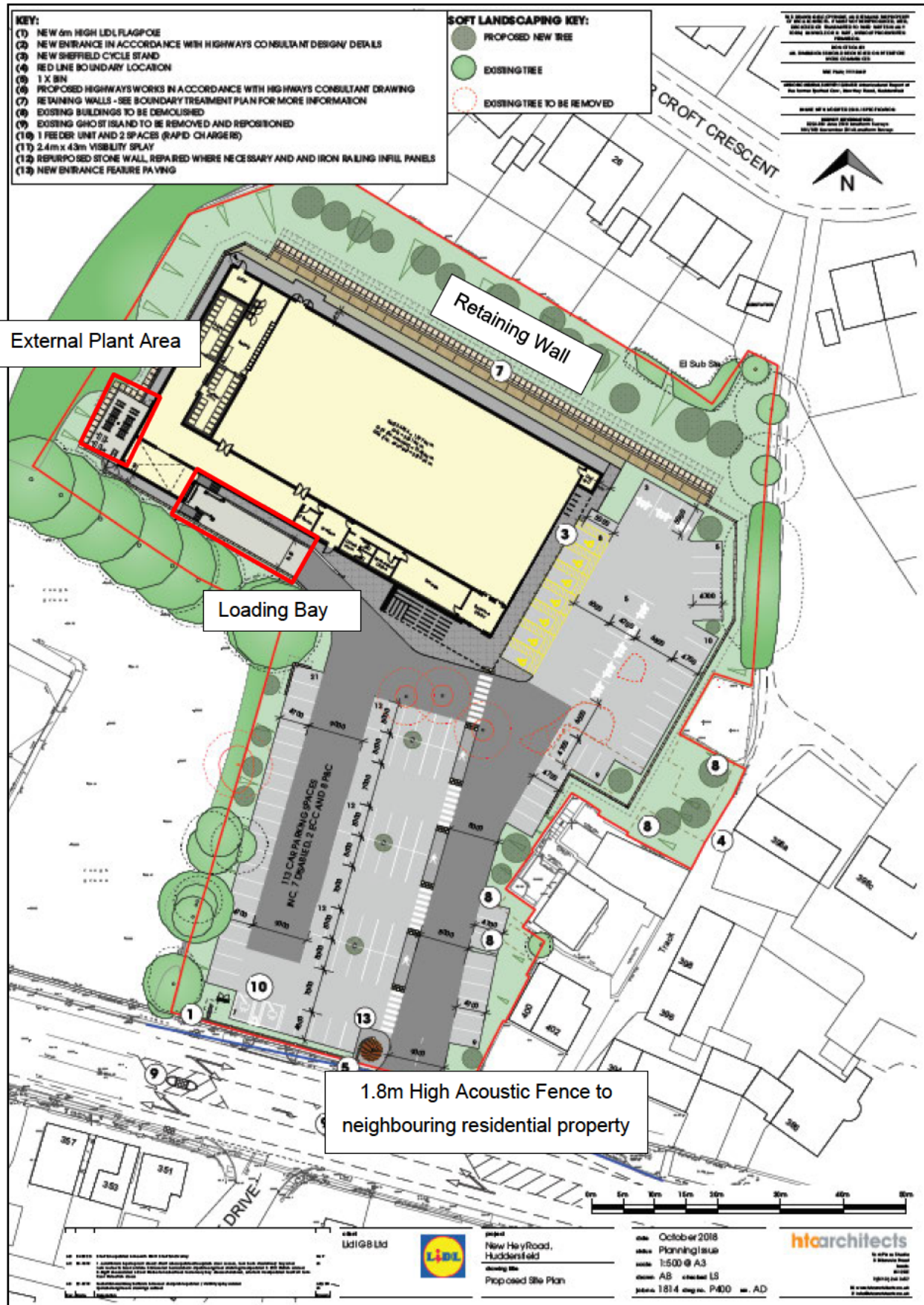
APPENDICES

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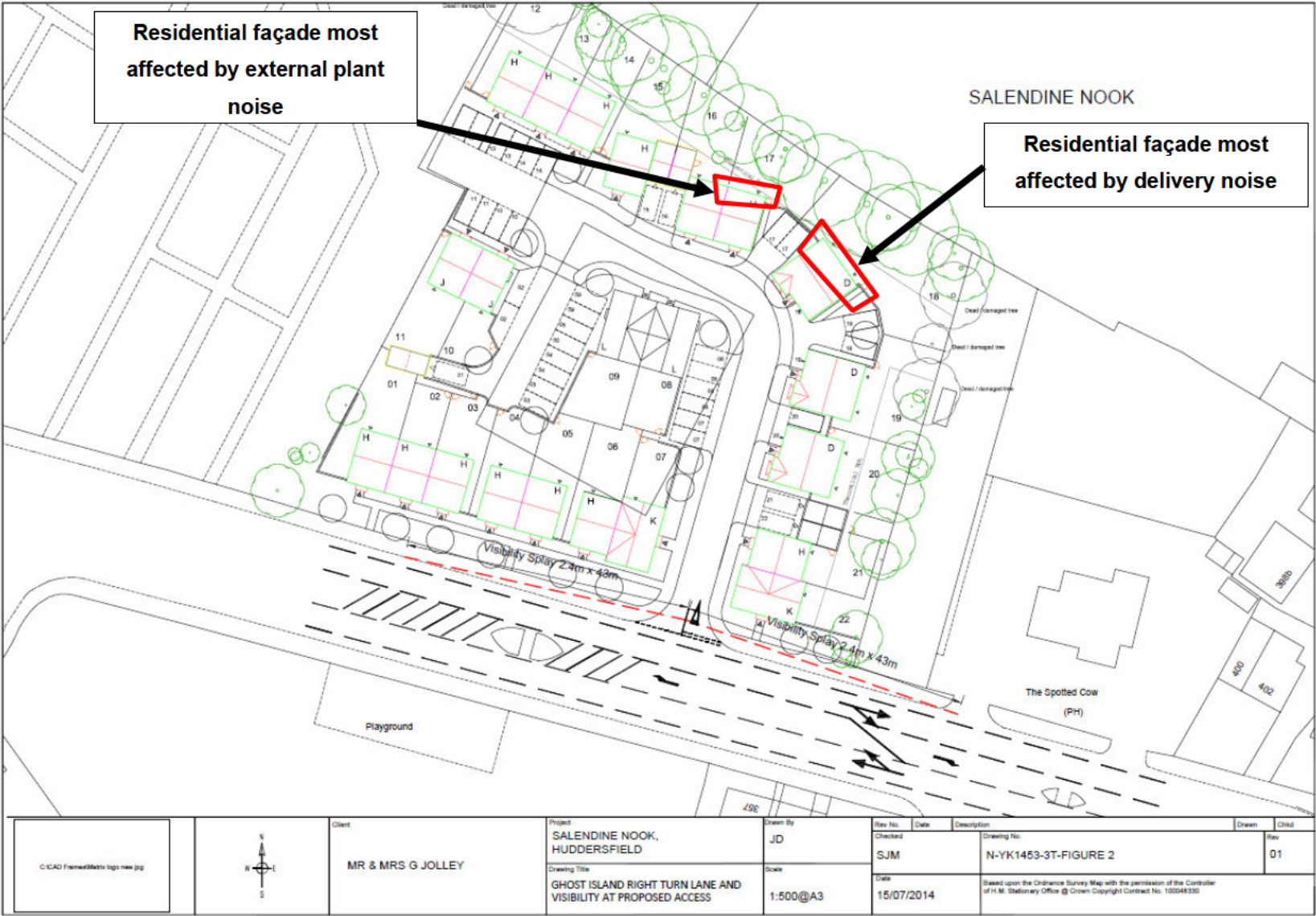
Appendix 1: Site Location and Monitoring Positions



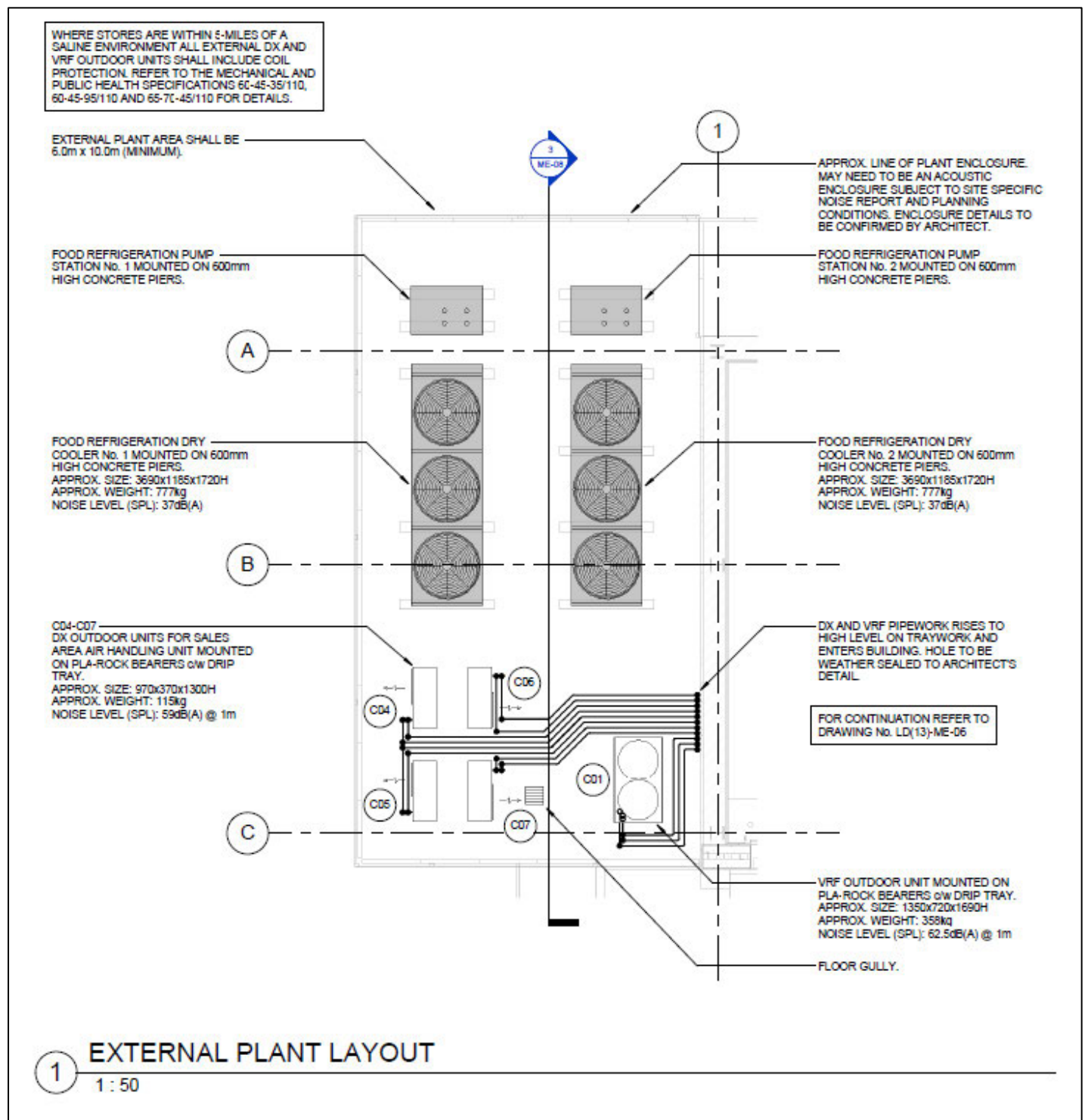
Appendix 2: Proposed Site Plan



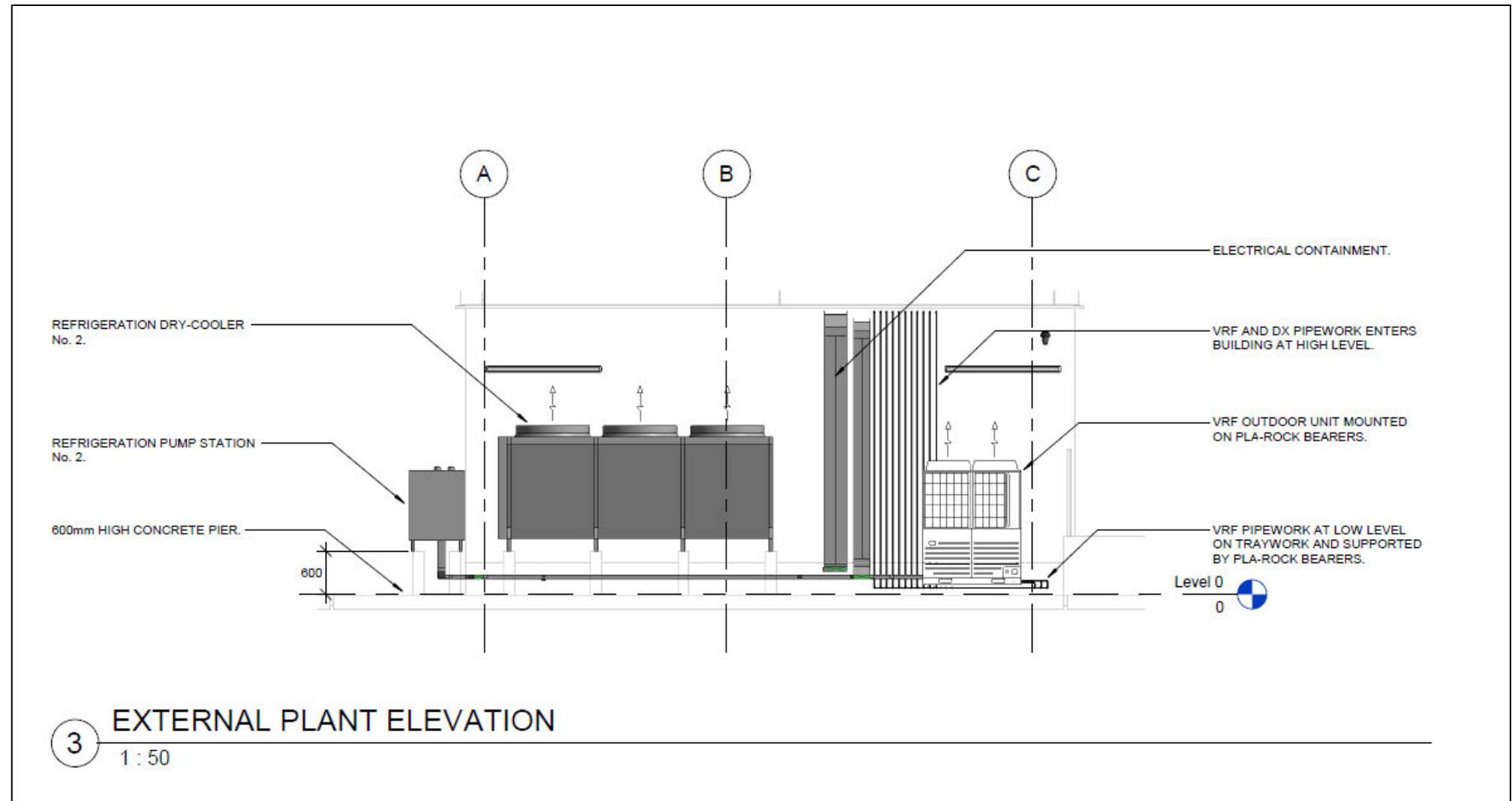
Appendix 3: Proposed Site Plan of Adjacent Residential Development



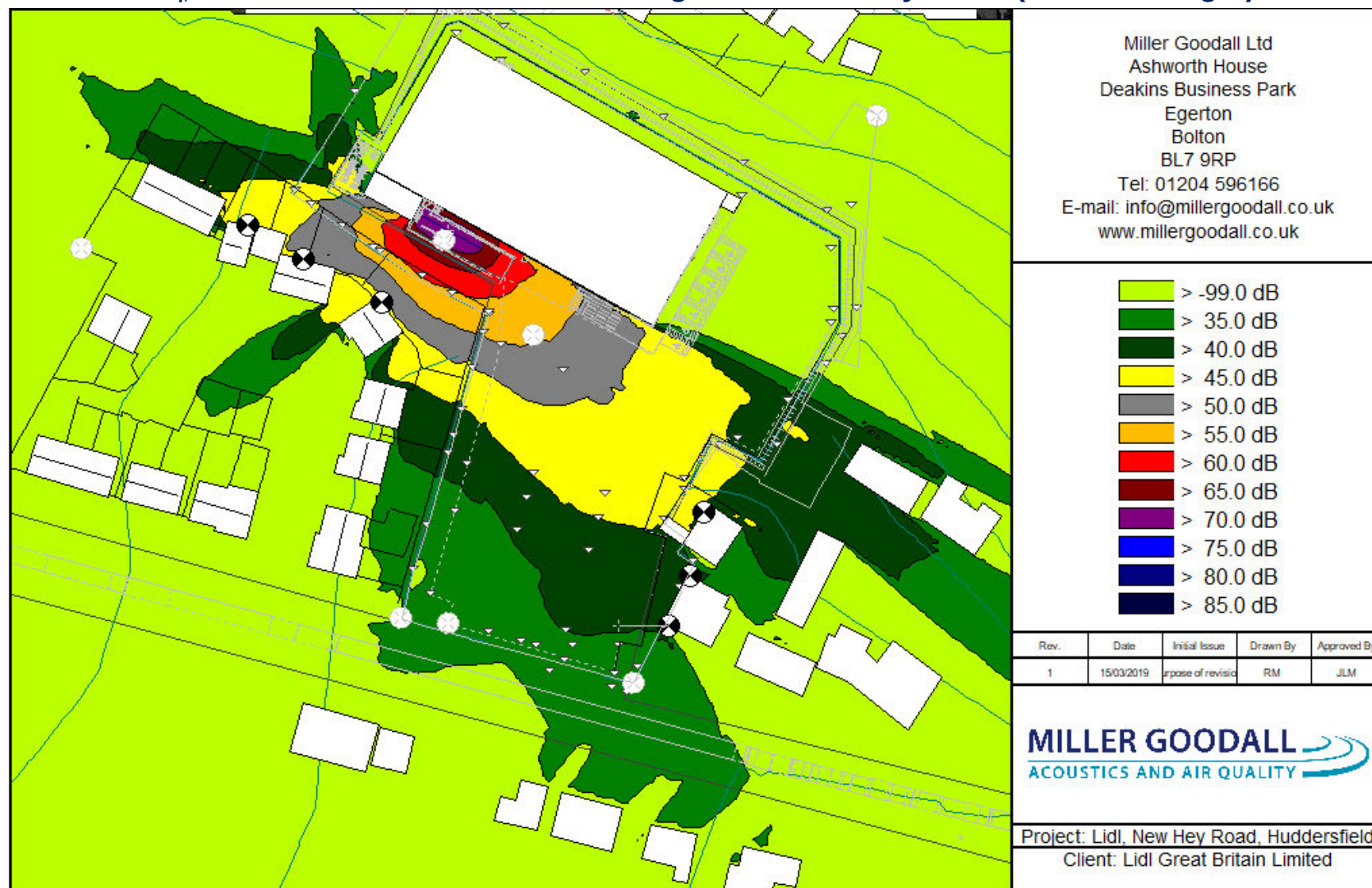
Appendix 5A: Proposed Layout of External Plant Area



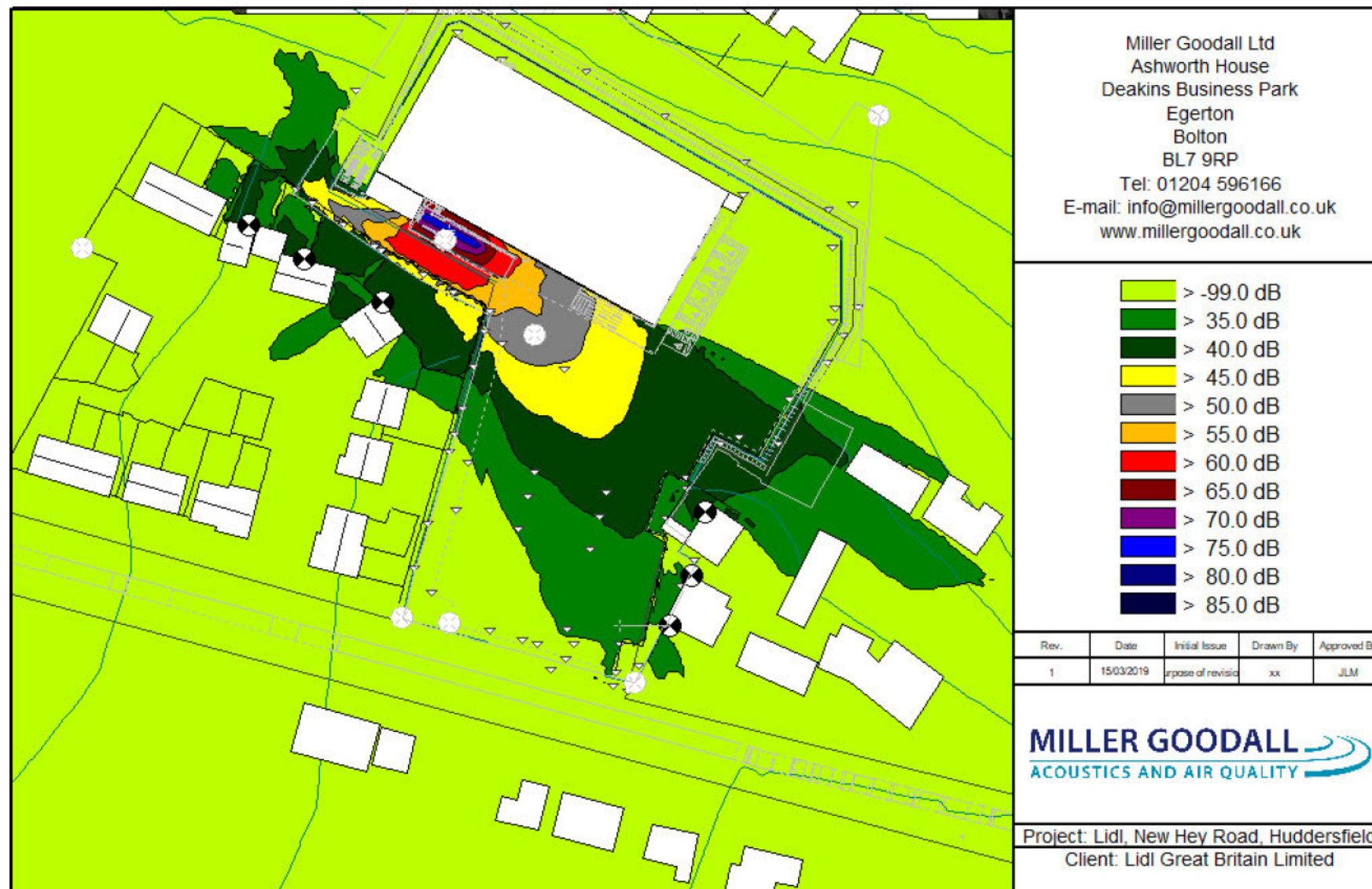
Appendix 5B: Proposed Elevation of External Plant Area



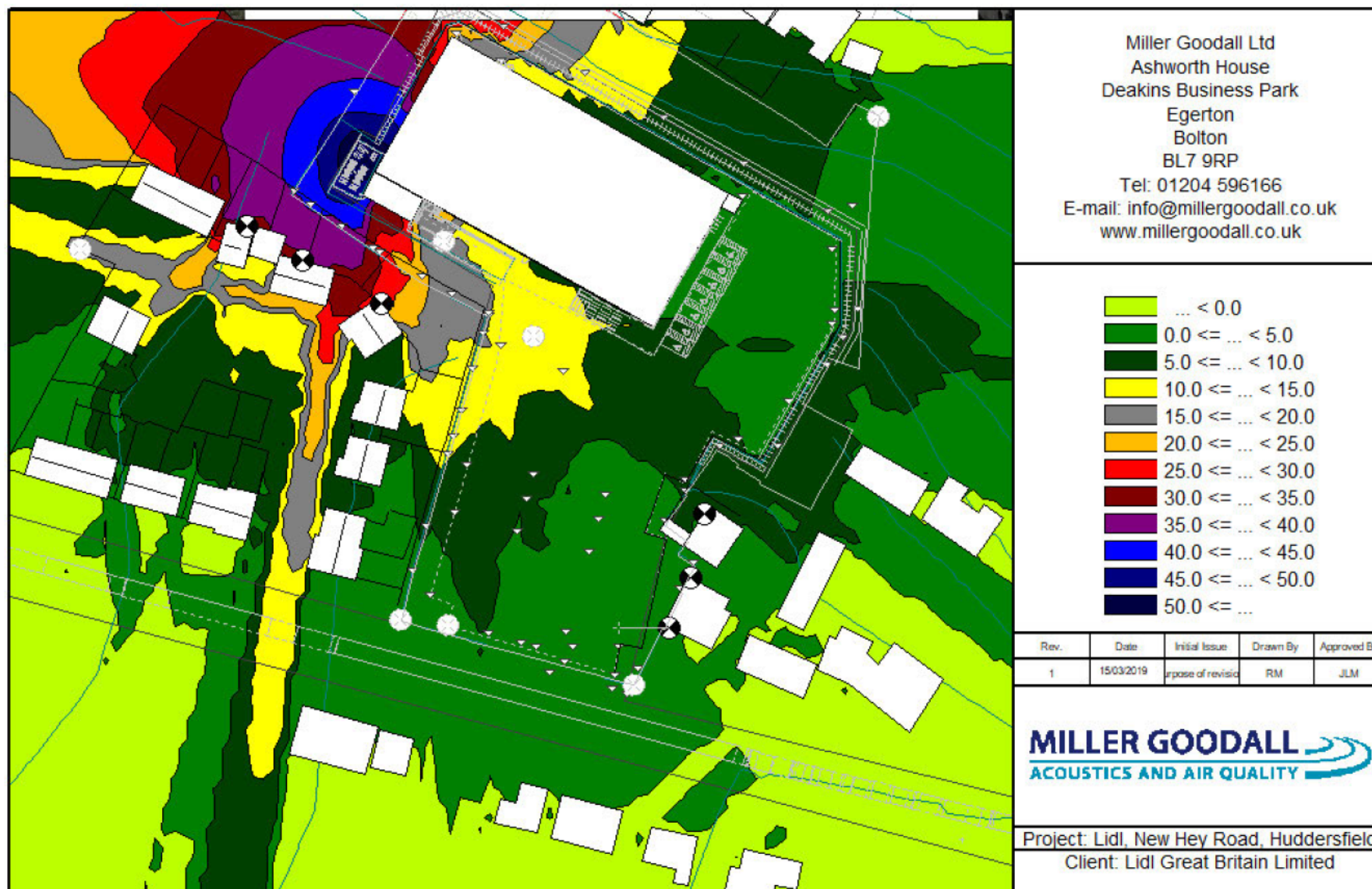
Appendix 6A: $L_{Aeq,15min}$ Noise Model Predictions of Night-Time Delivery Noise (4 m Grid Height)



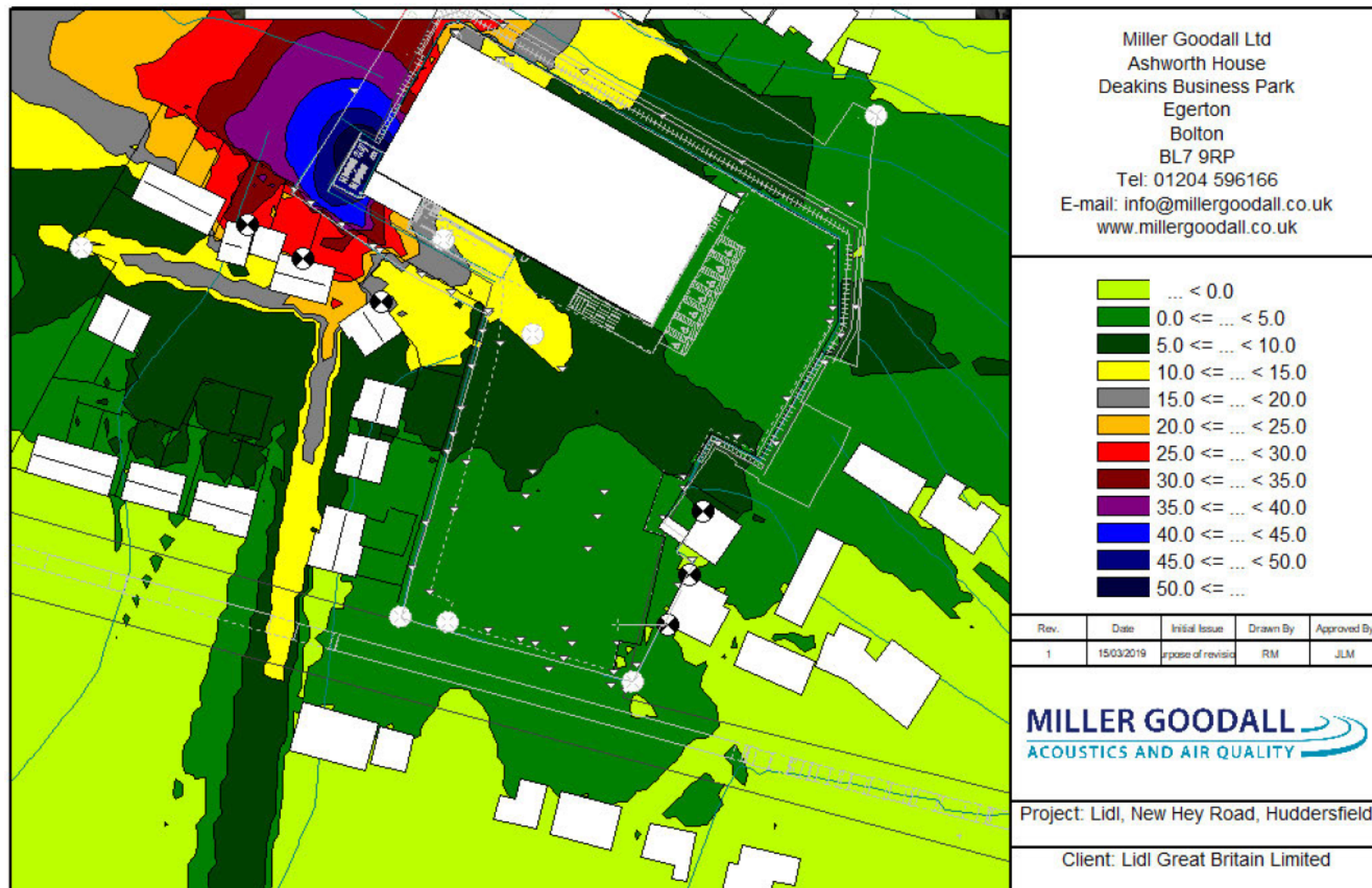
Appendix 6B: $L_{Aeq,1hour}$ Noise Model Predictions of Daytime Delivery Noise (1.5 m Grid Height)



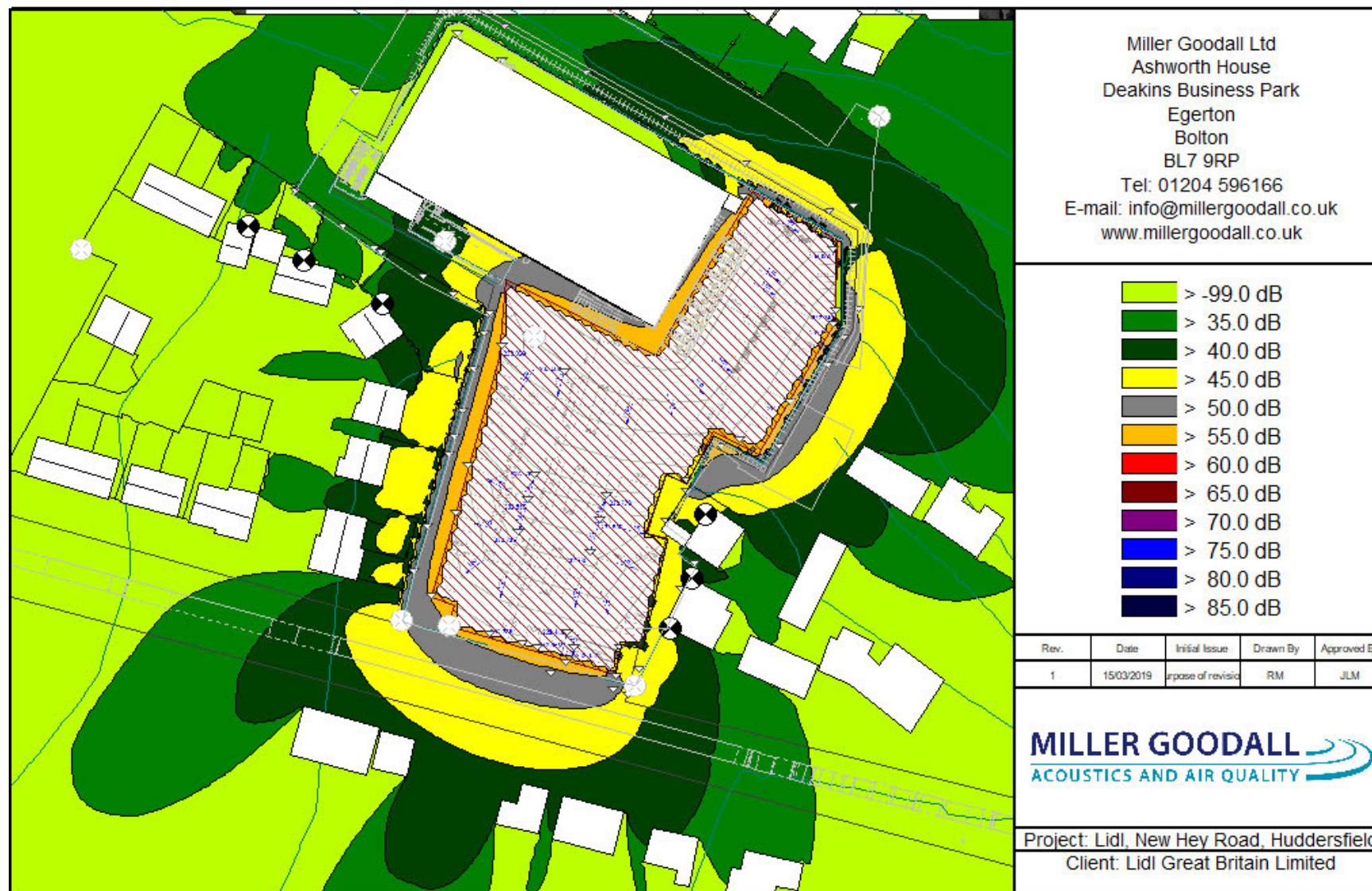
Appendix 7A: $L_{Aeq,15min}$ Noise Model Predictions of Night-Time Plant Noise (4 m Grid Height)



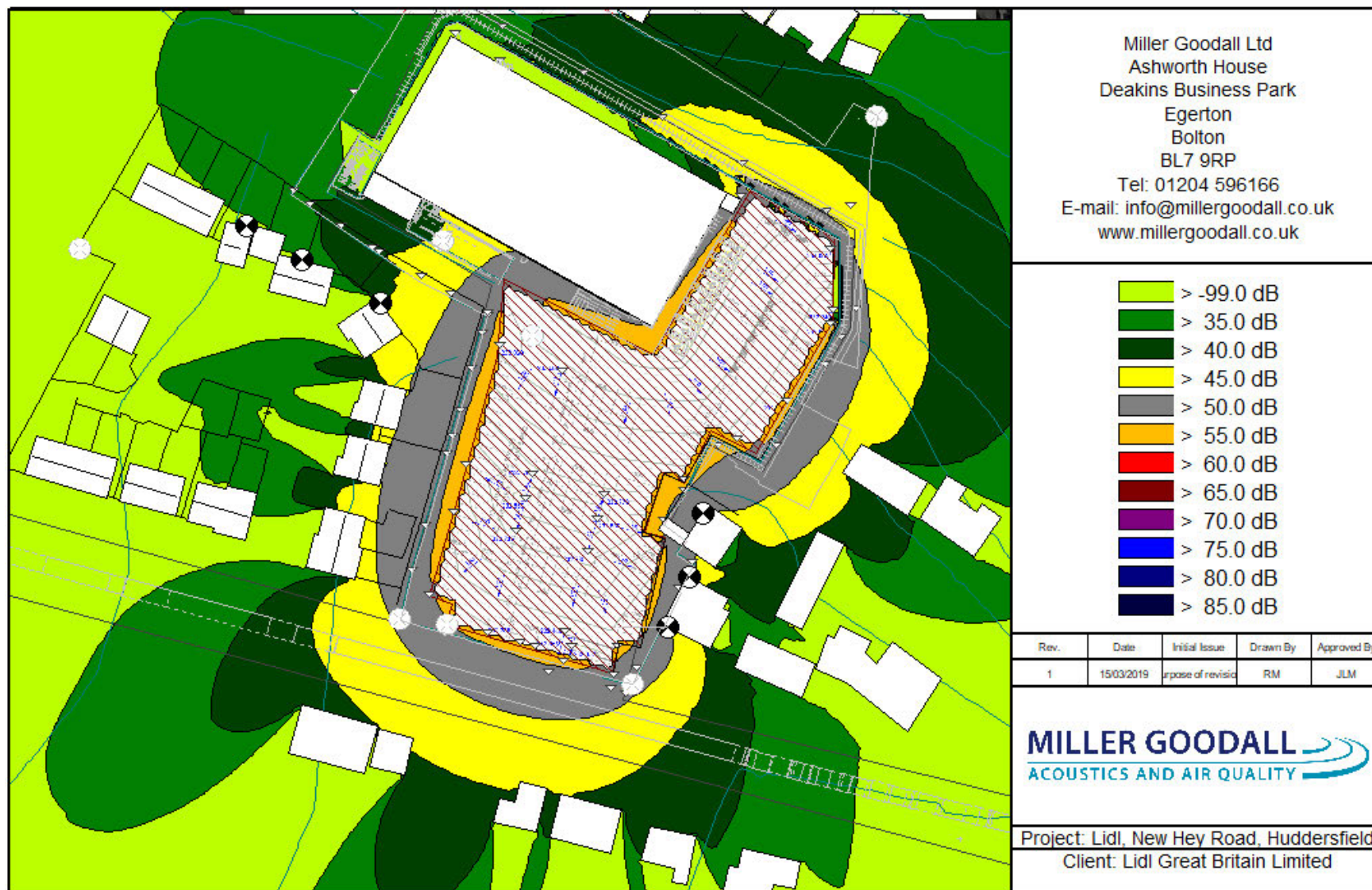
Appendix 7B: $L_{Aeq,1hour}$ Noise Model Predictions of Daytime Plant Noise (1.5 m Grid Height)

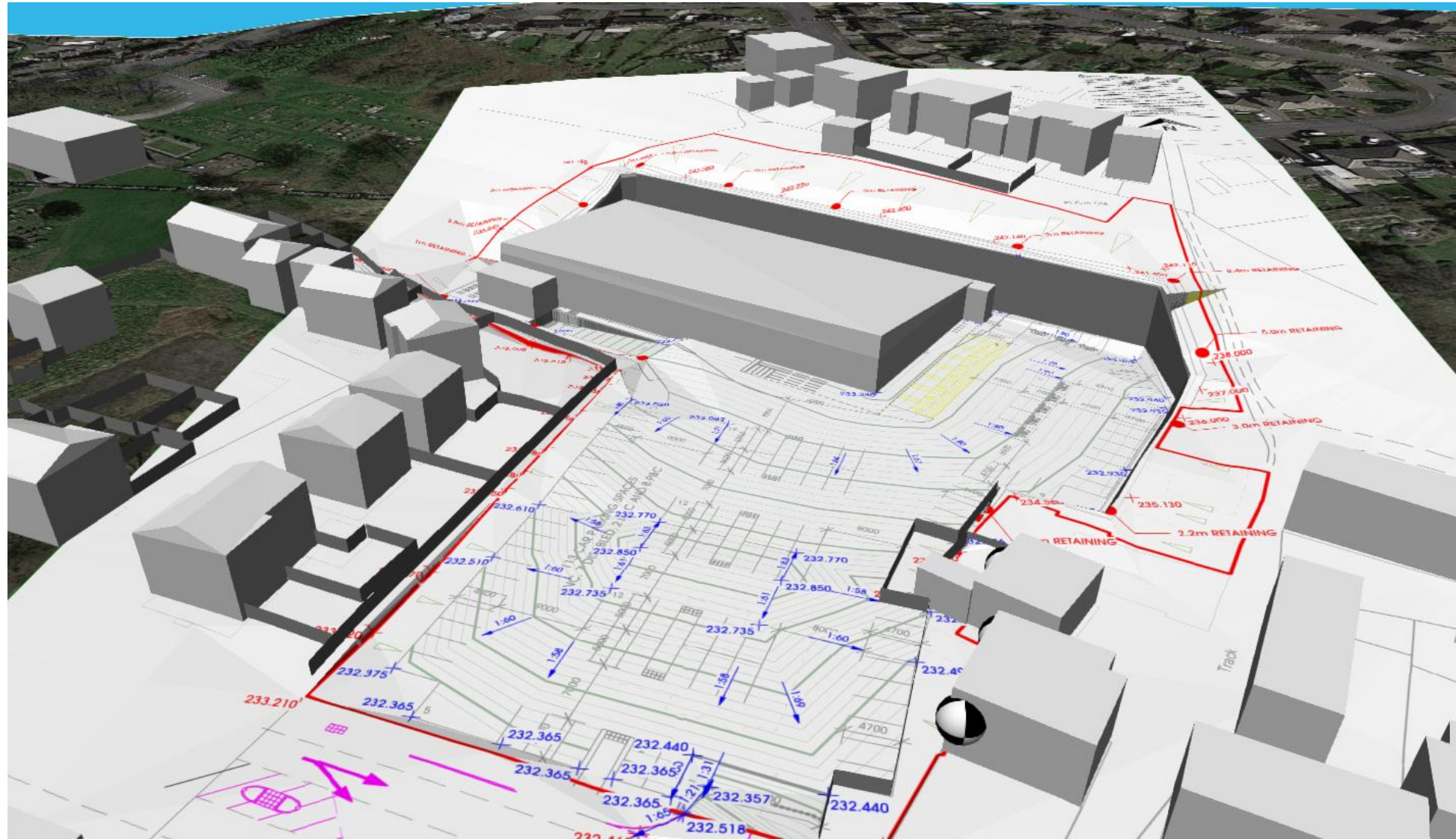


Appendix 8A: $L_{Aeq,1hour}$ Noise Model Predictions of Daytime Car Park Noise(1.5 m Grid Height)



Appendix 8B: $L_{Aeq,1hour}$ Noise Model Predictions of Daytime Car Park Noise(4 m Grid Height)





Appendix 10: Recommendations for Noise Management Plan

- Key reporting details shall be provided to local members of the public, all elected members and Local Authority if complaints are received;
- Retailer to record vehicle arrival / delivery times for correlation with any potential complaints;
- Retailer supply chain / transport department to produce a “driver charter” to ensure detailed briefing of drivers engaged in servicing the store during deliveries;
- Retailer to invest in and deliver any relevant staff training particularly in relation to the noise management plan as part of the induction of staff;
- Retailer to advise supply chain if any delivery is non-compliant with the agreed operational aspects for deliveries to the site.
- The retailer shall undertake a site assessment every 6 months to identify any areas of potential noise including servicing of delivery bay doors, etc. Any recommendations from this assessment shall be implemented within 1 week of receipt of the report.
- Retailer and supply chain to ensure engines are turned off whilst HGVs are waiting for deliveries to commence.
- Reversing alarms to be switched off when the vehicle arrives into the delivery area between the hours of 22:00 to 07:00 hours, since during this time the only people attending the delivery are the driver and the Lidl employee who is suitably trained in the safe movement of the vehicle into the loading area.
- Noise within the service yard will be controlled in the following way:
 - The HGV delivery reverses into the loading area with a sealed unloading dock between the vehicle and the store and consequently the loading/unloading activities are restricted to within the vehicle and Lidl building;
 - Staff members are trained and supervised to ensure there is no shouting or unnecessary noise within the service yard area during deliveries;
 - Drivers are enforced to turn off cab radios during attendance at site.
 - Unloading bays are fitted with dock levellers or dock plates which mechanically adjust to ensure a continuous surface between the trailer and delivery area.
- Signage will be located within the delivery area reminding staff to ensure that noise is controlled at all times to protect the amenity of local residents.
- Lidl to maintain a log of any complaints received by the store and record actions taken in relation to complaints.
- Refrigerator units are not required

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: 1997 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.

$L_{A10(18 \text{ hour})}$ Often referred to as the UK road traffic noise index, this is the arithmetic average of the values of L_{A10} hourly for each of the 18 one hour periods between 06:00 and 00:00.

L_{da}

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