

NOISE IMPACT ASSESSMENT FOR PROPOSED NEW LIDL STORE, LAND AT THE FORMER ST LUKE'S HOSPITAL SITE, BLACKMOORFOOT ROAD, CROSLAND MOOR, HUDDERSFIELD

1.00 INTRODUCTION

- 1.01 Environmental Noise Solutions Ltd (ENS) has been commissioned by Lidl GB Ltd to undertake a noise impact assessment for a proposed food store at the former St Luke's Hospital Site, Blackmoorfoot Road, Crosland Moor, Huddersfield (hereafter referred to as the application site).
- 1.02 Planning permission for the development (ref: 2023/62/91405/W) was granted by Kirklees Council in August 2025, subject to conditions. Conditions 20 and 32 relate to the control of noise as follows:

20. Prior to the above ground works commencing, a further/addendum noise assessment report by a suitably competent person shall be submitted to and approved in writing by the Local Planning Authority. The report shall include:

- an assessment of all noise emissions from the car parking area of the proposed development*
- details of existing background and predicted future noise levels at the boundary of the nearest noise sensitive premises*
- a written scheme of how the occupants of the above-mentioned noise sensitive premises will be protected from noise from the proposed development including details of all necessary noise attenuations*

The development shall not be brought into use until all works comprised within the measures specified in the approved report have been carried out in full and such measures shall be thereafter retained.'

'32. Prior to the hereby approved development being brought into use, a Delivery Noise Management Plan shall be submitted to and approved in writing by the Local Planning Authority. The plan shall detail the control measures that will be taken to ensure that excessive noise does not arise from the deliveries and the actions that will be taken to prevent a loss of amenity. The approved Delivery Noise Management Plan shall thereafter be adhered to.'

- 1.03 This updated Noise Impact Assessment has been prepared to accompany an application under Section 73 for an amendment to the levels strategy for the scheme, whereby the finished floor level for the store will be raised by 300mm.

This Noise Impact Assessment goes on to:

- Assess the potential impact of the proposed development and the car park with reference to pertinent guidelines and the requirements of condition 20 of planning permission 2023/62/91405/W
- Provide recommendations for structural and management controls, as necessary, to protect the noise amenity of the nearest residential dwellings where necessary.
- Provide a delivery noise management plan

- 1.04 This report details the methodology and results of the assessment. In addressing the requirements of conditions 20 and 32, those conditions can be reworded as compliance conditions should permission under S73 be granted

- 1.05 This report has been prepared for Lidl GB Ltd for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Lidl GB Ltd and ENS as to the extent to which the findings may be appropriate for their use.
- 1.06 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

2.00 PROPOSED FOODSTORE DEVELOPMENT AND APPLICATION SITE SETTING

- 2.01 The proposed development consists of the erection of a foodstore (Use Class E) with associated access, parking, servicing area and landscaping. The proposed layout plan is contained in Appendix 2 for reference.
- 2.02 The application site is located at the former St Luke's Hospital site in the Crossland Moor area of Huddersfield. Irregular in shape, the application site is bound by (see Appendix 3 for site location plan):
- Blackmoorfoot Road to the north-west with residential dwelling opposite the application site.
 - Residential dwellings to the south and south-west on Turnstone Way.
 - Turnstone Way to the north-east with residential dwellings beyond on Chapel Terrace.
- 2.03 The nearest noise sensitive receptors (NSRs) to the application site are considered to be the following:
- NSR1 – Residential dwellings to the south and west on Turnstone Way
 - NSR2 – Residential dwelling to the north-east on Chapel Terrace
 - NSR3 – Residential dwellings to the north-west on Blackmoorfoot Road

3.00 BASELINE NOISE SURVEY

- 3.01 In order to determine the baseline noise levels in the vicinity of the application site, a baseline noise survey was undertaken on Wednesday 31st August 2022 through to Thursday 1st August 2022.
- 3.02 For the purpose of the assessment, the following noise monitoring positions were adopted (see Appendix 3 for approximate monitoring positions):
- MP1 was located in the southern corner of the application site adjacent to the residential dwellings on Turnstone Way (NSR1)
 - MP2 was located to the north-east of the application site on in a position representative of the residential dwellings on Chapel Terrace (NSR2)
 - MP3 was located in the north-western corner of the application site (screened from Blackmoorfoot Road) in a position representative of the rear façades of the residential dwellings on Blackmoorfoot Road (NSR3)
 - MP4 was located on Blackmoorfoot Road
- 3.03 Noise measurements were undertaken in free field conditions using a Bruel & Kjaer 2250 Type 1 integrating sound level meter at 1.5 metres above ground level. Measurements consisted of A-weighted broadband parameters, together with linear octave band L_{eq} levels.
- 3.04 The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end, using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration level was noted. Weather conditions throughout the surveys were appropriate for monitoring, with dry conditions and wind speeds of < 5 m/s.
- 3.05 The following table contains a summary of the measurement data for each monitoring session, at each monitoring position, rounded to the nearest decibel.

Table 3.1 – Baseline Noise Measurement Data Summary

Position	Date	Time	$L_{Aeq, T}$ (dB)	L_{A90} (15 min) (dB)	
				Range	Typical
MP1	31/08/22	0833-0933	46	43–44	43
	31/08/22	1223-1325	49	43–45	44
	31/08/22	1630-2200	48	36–45	44
	31/08/22	2200-2345	42	30–36	32
	01/09/22	0208-0700	45	30–43	33
	01/09/22	0700-1131	53	42–49	46
MP2	31/08/22	0948-1050	56	43–44	43
MP3	31/08/22	1105-1136	54	47–48	47
	31/08/22	1328-1401	54	46–47	46
MP4	31/08/22	1143-1216	67	52	52
	31/08/22	1416-1446	67	54–57	56

- 3.06 The ambient noise climate in the vicinity of the application site is due to road traffic on Blackmoorfoot Road and the wider surrounding road network.
- 3.07 Typical¹ background noise levels at MP1 (representative of NSR1) were measured at circa **43 dB L_{A90} (15 min)** during the daytime, and circa **33 dB L_{A90} (15 min)** during the night-time. Noise levels at remaining positions were higher due to increased proximity to Blackmoorfoot Road.

¹ 'Typical' values are considered to be either the modal average (i.e. most occurring) or the mean average, whichever is the lower of the two data sets.

4.00 NOISE IMPACT ASSESSMENT CRITERIA

National Planning Policy Framework

4.01 The National Planning Policy Framework (NPPF) was updated in February 2025 and sets out the Government's planning policies for England and how these are expected to be applied.

4.02 Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 187 where it states that planning policies and decisions should contribute to and enhance the natural and local environment by:

'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of.....noise pollution'.

4.03 Paragraph 198 advises that:

'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 shouldmitigate 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'.

4.04 The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF

Noise Policy Statement for England

4.05 The Noise Policy Statement for England (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

- Avoid significant adverse impacts on health and quality of life.
- Mitigate and minimise adverse impacts on health and quality of life.
- Where possible, contribute to the improvement of health and quality of life.

4.06 NPSE describes the following levels at which noise impacts may be identified:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

Planning Practice Guidance – Noise

4.07 Planning Practice Guidance on Noise (PPG) is an online resource (as updated October 2019) which provides additional guidance and elaboration on the NPPF. It advises that 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.
- Whether or not a good standard of amenity can be achieved.

- 4.08 In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also presents a table of noise exposure hierarchy, which relates the NOAEL, LOAEL and SOAEL levels to the subjective perception of noise and examples of outcomes (reproduced in Table 4.1 below).

Table 4.1: Summary of noise exposure hierarchy (from NPPG, Noise)

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

- 4.09 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'.

- 4.10 British Standard BS 4142:2014+A1-2019 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS 4142) describes methods for determining, at the outside of a building, noise levels from factories or industrial premises and a method for assessing whether the noise is likely to give rise to adverse impacts, and states:

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. Typically, the greater this difference, the greater the magnitude of the impact. For example:

- *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*

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the absolute level of sound.

- 4.11 The rating level is described as the specific sound level (the equivalent continuous A-weighted sound pressure level at the assessment position (NSR) produced by the specific sound source over the given reference time interval) plus any adjustment for the characteristic features of the sound. The character correction relates to whether and to what degree the specific sound is assessed to have an element of tonality, impulsivity and/or characteristics that are readily distinctive against the residual acoustic environment.
- 4.12 The background noise level is the A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 percent of a given time interval, T, measured using time weighting 'F' and quoted to the nearest whole number of decibels.

IEMA Guidelines for Environmental Noise Impact Assessment

- 4.13 The IEMA Guidelines for Environmental Noise Impact Assessment provide recommendations for approaches to noise impact assessment in the context of the Environmental Impact Assessment (EIA) process. However, the principles in the guidelines are relevant to all types of project where noise effects are likely to occur, regardless of size including small developments which are not screened as EIA development.
- 4.14 The guidelines provide a number of examples regarding approach to impact assessment. In circumstances where a noise environment may be altered by addition or removal of a noise source, considered to be within the prevailing acoustic character of an area, assessment of impact magnitude may be performed by considering the relative change in ambient noise level, as shown in Table 4.2.

Table 4.2 – Example Noise Impact Magnitude Descriptors

Relative Change (dB(A))	Magnitude / Scale of Change
≤ 2.9	Negligible
3.0 – 4.9	Small
4.9 – 9.9	Medium
≥ 10.0	Large

5.00 NOISE IMPACT OF THE PROPOSED FOOD STORE

5.01 The principal noise sources potentially associated with the proposed Lidl food store are considered to be:

- Noise associated with servicing arrangements (HGV deliveries)
- Noise associated with the car park
- Delivery noise management plan

5.02 The following sections of the noise impact assessment discuss the potential noise impacts of the above activities on the amenity of the nearest NSRs.

Noise Associated with Servicing Arrangements (Deliveries)

5.03 Condition 35 of Planning Permission Ref 2023/62/91405/W restricts deliveries to the foodstore as follows:

'35. There shall be no deliveries to or dispatches from the premises outside the hours of:

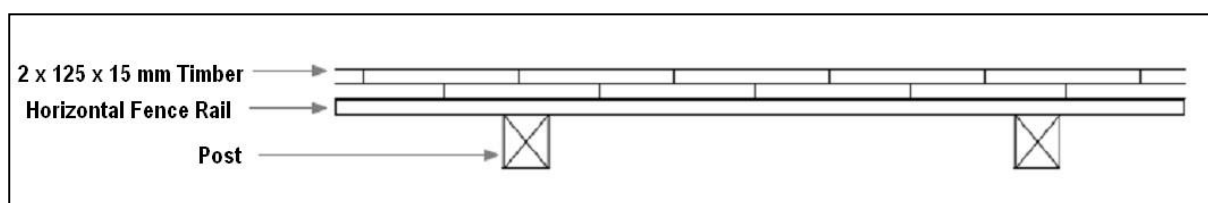
- *Monday to Saturday: 0800hrs to 2200hrs*
- *Sunday: 1000hrs to 1800hrs.'*

5.04 The delivery process involves an HGV reversing into the delivery bay, where a delivery plate is lowered into the rear of the HGV. The unloading of the HGV then takes place without the need for ramps or lifts, due to the rear of the trailer being level with the delivery area.

5.05 During unloading, the principal noise source associated with deliveries is that of palletted goods being moved over the delivery plate. Measurements have previously been undertaken by ENS at numerous Lidl food stores. Typical specific noise levels associated with the delivery unloading process have been measured at **58 dB L_{Aeq,T}** at a distance of 10 metres.

5.06 In order to screen NSR1 from the loading bay, it is recommended that a circa 2.4-metre-high solid timber fence is installed along the south-eastern and southern sites boundaries (see Appendix 2 for location of fence). The base of the fence should be on top of the proposed retaining wall.

5.07 The timber barrier should be built in double-thickness solid timber construction as illustrated below. The barrier should have no gaps or holes (cover strips should also be used to prevent gaps forming over time) and should be fully sealed at the ground (i.e. include a gravel board).



5.08 In order to predict the resultant noise levels at the nearest NSRs, the following relationship may be employed:

$$SPL_{NSR} = SPL_{REF} - DA - SA \text{ where}$$

SPL_{NSR} is the resultant sound pressure level at the nearest NSR (dB)

SPL_{REF} is the calculated sound pressure level at source (dB)

DA is the distance attenuation of noise

SA is the screening attenuation of noise

5.09 Distance attenuation (DA) is calculated as follows:

$$DA = 20 \times \log (D_{SOURCE} / D_{REC}) \text{ where,}$$

D_{SOURCE} = distance to source; and

D_{REC} = distance to receiver.

- 5.10 Screening attenuation (SA) for unloading activities is calculated using the Maekawa barrier calculation in conjunction with Lidl delivery noise octave data and the path difference between the direct sound path and the screened sound path due to the proposed 2.4-metre-high timber fence atop the surrounding retaining wall and/or the intervening store.
- 5.11 For reference, ground level at NSR1 is above the ground level of the proposed store.
- 5.12 NSR2 and NSR3 are both significantly screened from the loading bay by the development itself.
- 5.13 The resultant delivery noise levels at the NSRs are set out in Table 5.1 as follows.

Table 5.1 – Resultant Delivery Noise Levels at NSRs

Receptor	Noise Level at Source	Distance Attenuation	Screening Attenuation	Noise Level at NSR
NSR1	58 dB L_{Aeq} (45 mins)	-5 decibels ($20 \cdot \log(10/18)$)	-15 dB	38 dB L_{Aeq} (45 min)
NSR2	58 dB L_{Aeq} (45 mins)	-12 decibels ($20 \cdot \log(10/40)$)	-20 dB	26 dB L_{Aeq} (45 min)
NSR3	58 dB L_{Aeq} (45 mins)	-20 decibels ($20 \cdot \log(10/105)$)	-20 dB	18 dB L_{Aeq} (45 min)

- 5.14 BS 4142 requires that an adjustment can be made for the characteristic features of the sound. Unloading noise may contain subjectively impulsive characteristics. Whilst the absolute unloading noise levels are relatively low (and below existing background levels), a **+6 dB penalty** is robustly applied for impulsivity at NSR1. Delivery noise levels at remaining receptors are significantly lower and therefore a **+3 dB penalty** is considered robust.
- 5.15 On the basis of the above, BS 4142 delivery noise assessments at the nearest NSRs are set out in Table 5.3 as follows.

Table 5.2 – Daytime BS 4142 Delivery Noise Assessment

Results	NSR1	NSR2	NSR3	Comment
Resultant sound level	38 dB L_{Aeq} (45 min)	26 dB L_{Aeq} (45 min)	18 dB L_{Aeq} (45 min)	Calculated level at receptor
Specific sound level	37 dB L_{Aeq} (1 hour)	25 dB L_{Aeq} (1 hour)	17 dB L_{Aeq} (1 hour)	Reference period is 1 hour
Acoustic feature correction	+ 6 dB	+ 3 dB	+ 3 dB	Unloading noise may contain impulsive characteristics
Rating level	43 dB L_{Ar} (1 hour)	28 dB L_{Ar} (1 hour)	20 dB L_{Ar} (1 hour)	-
Background sound level	43 dB $L_{A90, T}$	43 dB $L_{A90, T}$	43 dB $L_{A90, T}$	Daytime background level
Excess of rating over background sound level	0 dB	-15 dB	-23 dB	Indication of a low impact, subject to context, at all NSRs

- 5.16 The delivery rating levels do not exceed background noise levels at the nearest NSRs. In accordance with BS 4142, this is an indication of a low impact, subject to context.
- 5.17 It is therefore considered that noise associated with deliveries is at the No Observed Adverse Effect Level as: it may be heard, but does not cause any change in behaviour or attitude; and it can slightly affect the acoustic character of the area, but not such that there is a perceived change in the quality of life.

Noise Associated with the Customer Car Park

- 5.18 Based on previous measurements at other Lidl stores, the following Sound Exposure Level (SEL) values have been determined at 10 metres distance.

Table 5.3 – Car Park Noise Sound Exposure Levels (SELs)

Noise Event	SEL at 10 metres
Car arrives	58 dB(A)
Door slams	52 dB(A)
Trolley movements	48 dB(A)
Car ignition and depart	62 dB(A)

- 5.19 The following formula is used for calculating the ambient noise level (L_{Aeq}) from measured activity SELs:

$$L_{Aeq, T} = 10 \times \log_{10} [((n \times 10^{SEL1/10}) + (n \times 10^{SEL2/10}) + (n \times 10^{SEL3/10}) + (n \times 10^{SEL4/10})) / T] \text{ where:}$$

T is reference time interval (i.e. 3600 seconds)

SEL1 is the single event level of a vehicle arrival (i.e. 58 dB(A))

SEL2 is the single event level of door slams (i.e. 52 dB(A))

SEL3 is the single event level of a trolley movements (i.e. 48 dB(A))

SEL4 is the single event level of a vehicle departure (i.e. 62 dB(A))

n is the number of occurrences of the SELs

- 5.20 On the assumption that each bay will be used twice in a single hour period, with door slams occurring on arrival and departure, the resultant noise level associated with a single parking bay is calculated at **32 dB L_{Aeq} (1 hour)** at 10 metres. Adopting the 10 nearest bays to NSR1, this equates to a worst-case cumulative level of **42 dB L_{Aeq} (1 hour)** at 10 metres.
- 5.21 The 10 closest car parking bays are set back at least 20 metres from the nearest NSRs (NSR1). Correcting for distance, the worst-case car park noise level is therefore taken as **≤ 36 dB L_{Aeq} (1 hour)** at the nearest receptors.
- 5.22 The existing daytime ambient noise level in the vicinity of the nearest NSRs was measured at **46–49 dB L_{Aeq} (1 hour)**.
- 5.23 As predicted noise associated with the car park is at least 10 dB below the existing ambient noise level, there is no increase to the ambient noise level. With reference to Table 4.2, the impact is deemed to be 'Negligible'.
- 5.24 It should also be noted that the predicted car park level assumes 100% of car parking spaces are in use, whereas experience from previous sites indicates that use of the car park (especially during the evening) will be much lower.

Delivery Noise Management Plan

- 5.25 Condition 32 of Planning Permission Ref 2023/62/91405/W requires a delivery noise management plan be implemented for the site as follows:

'32. Prior to the hereby approved development being brought into use, a Delivery Noise Management Plan shall be submitted to and approved in writing by the Local Planning Authority. The plan shall detail the control measures that will be taken to ensure that excessive noise does not arise from the deliveries and the actions that will be taken to prevent a loss of amenity. The approved Delivery Noise Management Plan shall thereafter be adhered to.'

- 5.26 Deliveries to the foodstore are restricted to daytime hours only and have been calculated below the existing background noise level at all NSRs. Notwithstanding this, Appendix 5 contains a Delivery Noise Management Plan.

6.00 CONCLUSIONS

- 6.01 A noise impact assessment has been undertaken for a proposed food store at land at St Luke's Hospital Site, Blackmoorfoot Road, Crosland Moor, Huddersfield.
- 6.02 The ambient noise climate in the vicinity of the application site is due to road traffic on Blackmoorfoot Road and the wider surrounding road network.
- 6.03 An assessment of the noise impact of the proposed Lidl food store has been undertaken, in line with the National Planning Policy Framework Planning Practice Guidelines on Noise. Mitigation measures have been recommended, as appropriate.
- 6.04 The proposed amendments to the scheme are minor in nature, comprising the raising of the FFL of the store by 300mm and have a negligible impact on noise levels and the finding of this report.
- 6.05 Provided the recommendations contained within this noise impact assessment are implemented, noise is not considered to represent a constraint to the proposed Lidl food store.

I trust the foregoing is sufficient for your needs. Should you have any queries regarding the above, please do not hesitate to contact me.

Yours sincerely



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For Environmental Noise Solutions Limited

Appendix 1

Glossary of Acoustic Terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night-time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T . $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T . L_{A90} is typically taken as representative of background noise.

$L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

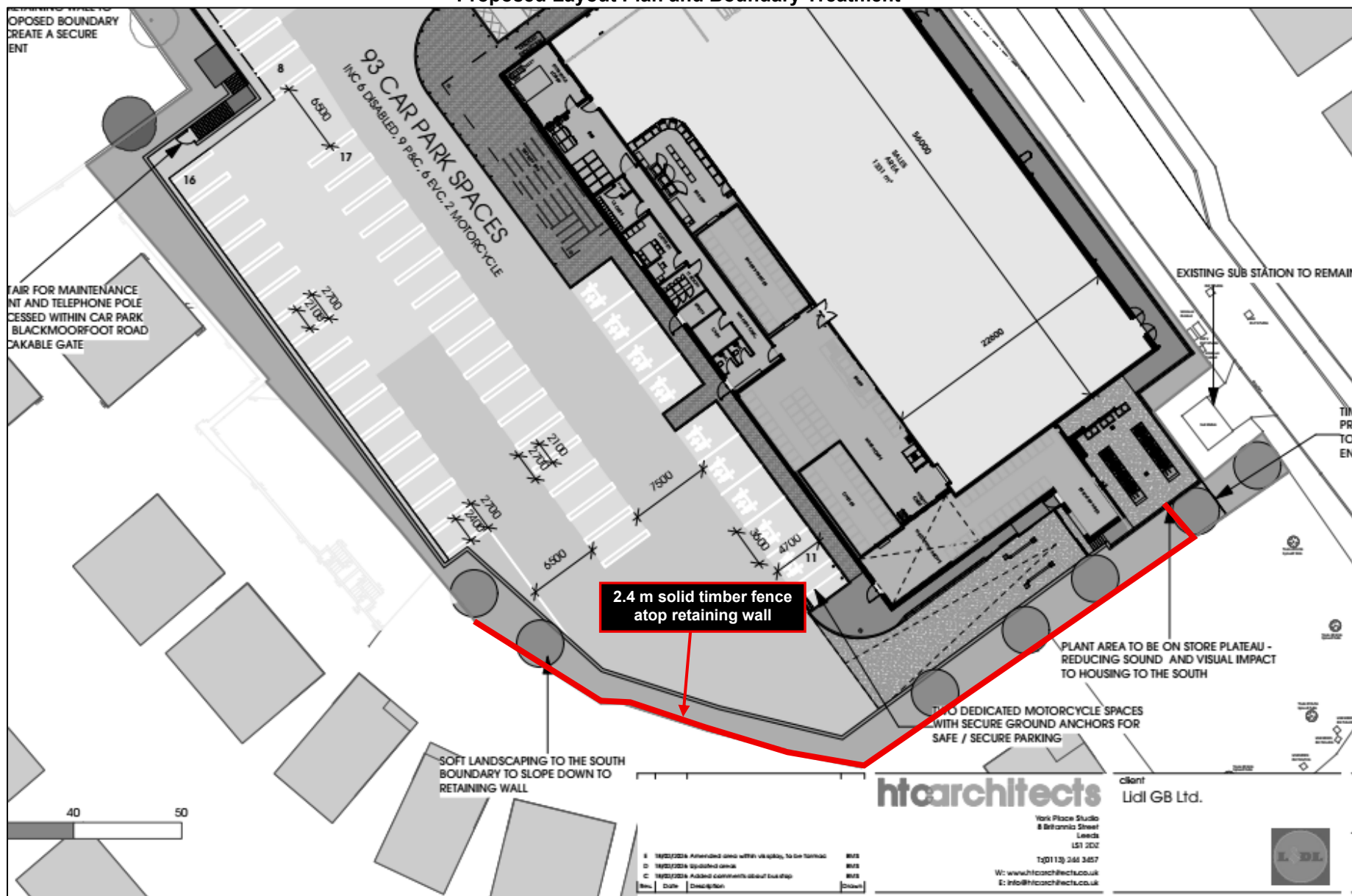
Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

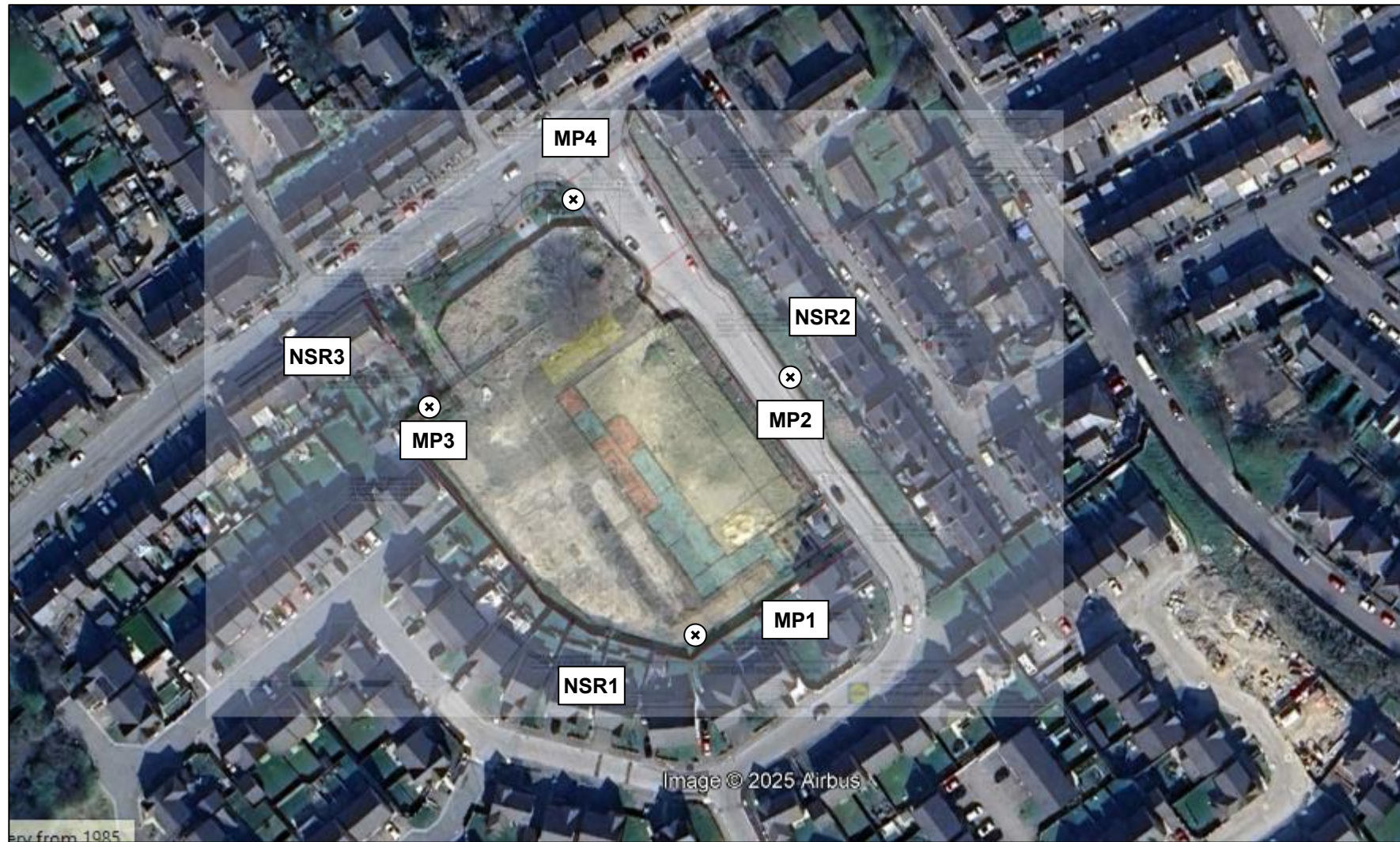
Weighted Airborne Sound Insulation ($D_{nT,w}$)

Single number quantity which characterises the airborne sound insulation between rooms.

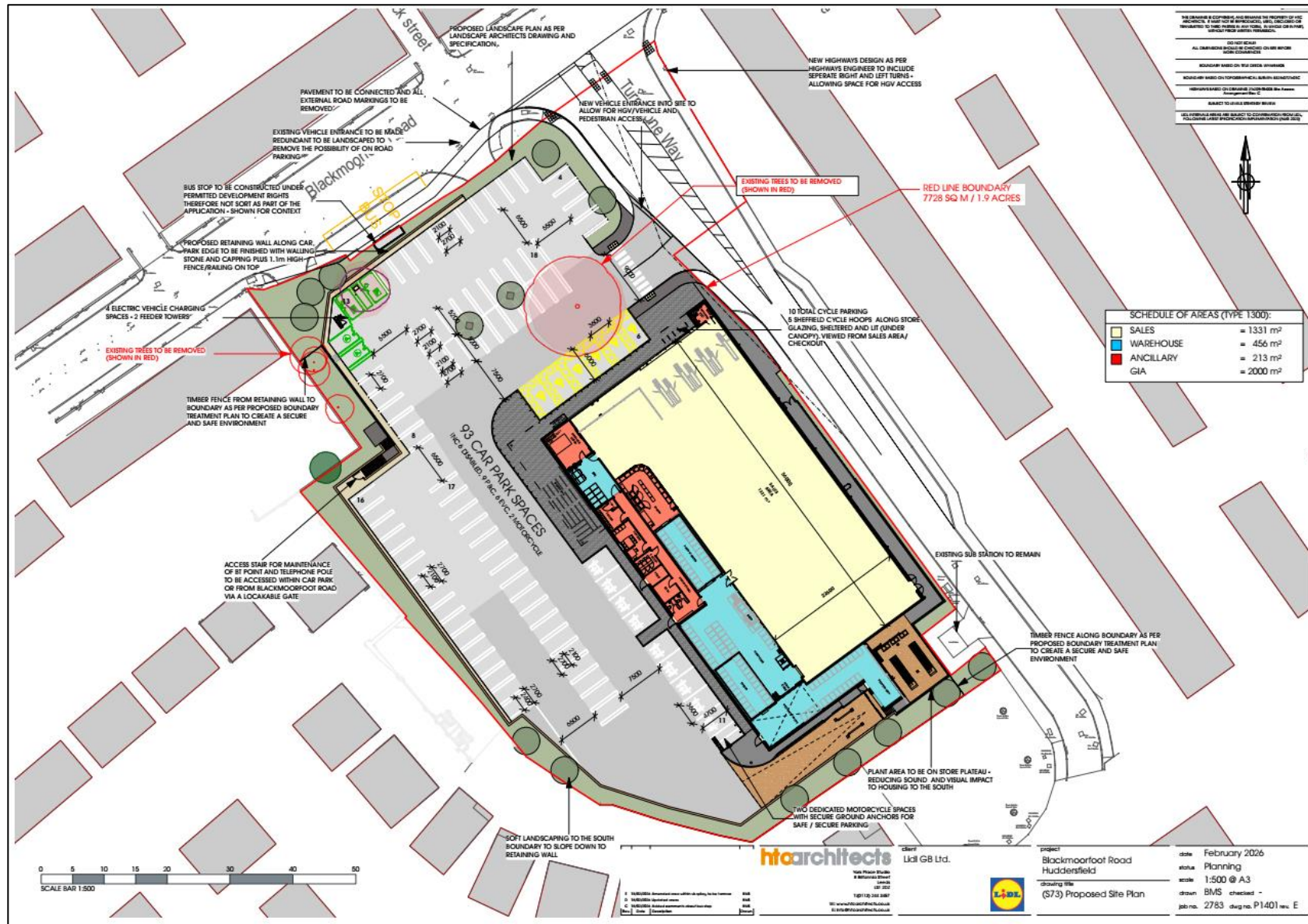
Appendix 2 Proposed Layout Plan and Boundary Treatment



Appendix 3
Site Plan and Noise Monitoring Locations



Appendix 4 Updated Site Drawings



Appendix 5

Delivery Management Plan

The Journey

- During the final approach to the store, refrigeration units within vehicles will be switched off and remain switched off during unloading (note: refrigeration units not required with insulated boxes)
- When within the service yard, vehicles will switch off their engines
- Access into the service yard should be unrestricted. However, if entry is restricted, vehicles should stop; switch off engines, radios and headlights, and contact store staff

Within the Delivery Yard

- There shall be no deliveries to or dispatches from the premises outside the hours of:
 - Monday to Saturday: 0800hrs to 2200hrs
 - Sunday: 1000hrs to 1800hrs.
- Vehicle radios will be switched off
- Vehicle headlights will be switched off when stationary and vehicle lights will be used for vehicle manoeuvring only, to aid safe movement
- The use of external alarms or speakers will be prohibited within the delivery yard
- The internal alarm will be muffled to reduce potential for disturbance
- Noise generation from vehicle manoeuvring into loadings to be kept to a minimum
- At all times drivers will be advised to: engage gears within minimal noise; keep engine revs to a minimum; apply brakes gently; and close doors with minimal noise

Unloading/Re-loading

- Ensure delivery bay doors and loading plates are well maintained to minimise noise when opening and closing
- Ensure the delivery point and surrounding areas are clear of obstructions so vehicles can manoeuvre easily
- Make sure the driver knows the precise location of your delivery point and is aware of any local access issues
- Drivers should ensure that engine and refrigeration units are switched off once vehicle the vehicle is stationary and in the unloading position
- Drivers should seek to: lower loading plates into the correct position with minimal noise; avoid making contact with trailer walls, lift guardrails and other obstructions; and maintain conversation to a minimum.

The Return Journey

- All vehicle doors will be closed with minimal noise
- Drivers should refrain from starting up vehicle refrigeration units (if required) until the vehicle is a reasonable distance from the store and neighbouring dwellings
- Drivers should seek to: engage gears within minimal noise; keep engine revs to a minimum; apply brakes gently; and accelerate gently until the vehicle is a reasonable distance from the store