



BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

ENVIRONMENT

Aldi Stores Ltd
Proposed Foodstore
Pennylands, Skelmersdale

Noise Impact Assessment

MCP2095

ENVIRONMENT

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Proposed Foodstore
Pennylands, Skelmersdale

Noise Impact Assessment

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EXECUTIVE SUMMARY

BWB Consulting Ltd was appointed by Aldi Stores Limited to undertake an environmental noise assessment for a proposed food store at Pennylands, Skelmersdale.

The existing noise environment is dominated by traffic on the M58 and the surrounding road network.

A baseline noise survey was undertaken at the Site in October 2018. The survey, and subsequent assessment work, have been undertaken in accordance with current standards and guidance, following consultation with West Lancashire Borough Council

A detailed noise assessment has been undertaken to determine the likely impact of the proposed development on the nearest noise sensitive receptors. The noise assessment indicates that the proposed food store is unlikely to give rise to an adverse noise impact at the nearest noise sensitive receptors. It is therefore considered that noise need not be a determining factor in the granting of planning approval for the Proposed Development.

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1. INTRODUCTION

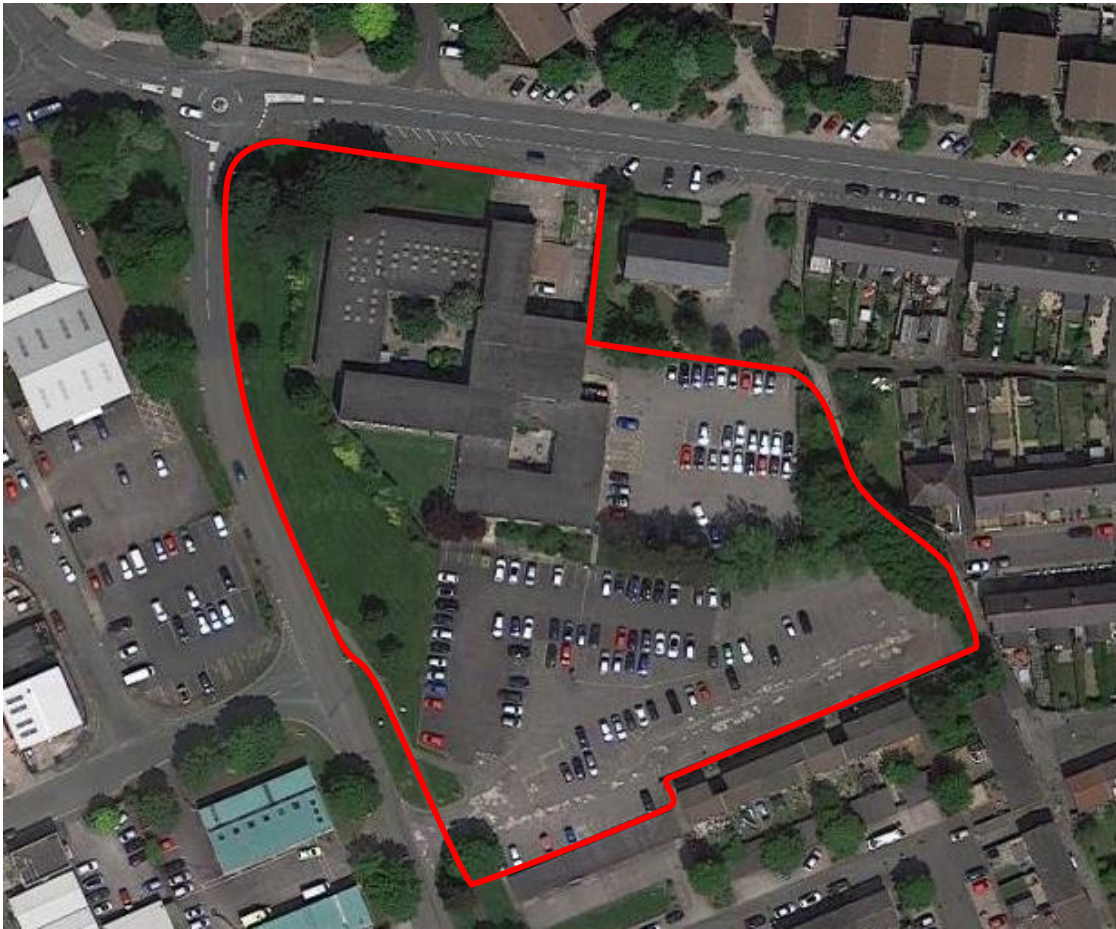
Appointment & Background

- 1.1 BWB Consulting Ltd was appointed by Aldi Stores Limited to undertake an environmental noise assessment for a proposed food store and retail unit at Land off Pennylands, Skelmersdale.
- 1.2 This assessment has been undertaken based on the results of a baseline noise survey on the Site. The results of the survey have been assessed in accordance with current standards and guidance, following consultation with West Lancashire Borough Council.
- 1.3 This report is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology can be found in **Appendix A**.

Site Setting

- 1.4 The proposed development site currently comprises a disused building and associated car parking. To the north, the site is bounded by High Street and the Lancashire Probation Service building, with residential dwellings beyond. To the east, the site is bounded by residential dwellings on Ashwall Street and High Street. To the south, the site is bounded by residential dwellings on Waldron. To the west, the site is bounded by Westgate, with commercial buildings and associated car parking beyond.
- 1.5 **Figure 1.1** below shows the Site location.

Figure 1.1: Site Location



Proposed Development

- 1.6 The proposed development comprises demolition of the existing building on the site and the erection of a new-build food store (circa 1,786 m²) and retail unit (circa 372 m²) with associated access via High Street and Westgate, and car parking (151 No. spaces proposed).
- 1.7 An indicative site plan is provided overleaf in **Figure 1.2**.

Figure 1.2: Indicative Site Plan



Existing Sensitive Receptors

- 1.8 The nearest existing sensitive receptors (ESRs) are located adjacent to the northern, eastern and southern boundaries of the Site. Details of each receptor considered within the assessment are detailed below in **Table 1.1** and shown in **Appendix B**.

Table 1.1: Existing Noise Sensitive Receptors

ESR	Address	Grid Coordinates		Bearing from site	Distance from site boundary
		Easting	Northing		
1	Waldron, WN8 8AL	346957	405824	South	3m
2	Ashwall Street, WN8 8AN	346988	405878	East	8m
3	High Street, WN8 8AT	346980	405924	East	20m
4	High Street, WN8 8BD	346912	405969	North	19m

- 1.9 An impact may be experienced at other receptors, but this is likely to be equal to or less than those stated above.

2. STANDARDS AND GUIDANCE

National Planning Policy Framework (NPPF)

- 2.1 Published in July 2018, this document sets out the Government's planning policies for England and supersedes the previous NPPF published in 2012. It makes the following reference to noise in the section entitled *Conserving and enhancing the natural environment*:

"170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

- 2.2 It also makes the following references to noise in the Section entitled *Ground conditions and pollution*:

"180. 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 life⁶⁰;

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.

⁶⁰ See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

And

"182. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent

of change') should be required to provide suitable mitigation before the development has been completed."

BS 8233:2014: Guidance On Sound Insulation And Noise Reduction For Buildings

- 2.3 This standard provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.
- 2.4 The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in **Table 2.1** below:

Table 2.1: Summary of internal ambient noise levels to be achieved in habitable rooms

Activity	Location	Internal noise level criteria (L _{Aeq,T} , dB)	
		Daytime (07:00 - 23:00hrs)	Night-time (23:00 - 07:00hrs)
Resting	Living room	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30

- 2.5 Whilst BS 8233:2014 recognises that a guideline value may be set in terms of SEL or L_{AFmax} for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: *Guidelines for Community Noise*.
- 2.6 With respect to external amenity space such as gardens and patios it is stated that it is desirable that the noise level does not exceed 50 dB L_{Aeq,T}, with an upper guideline value of 55 dB L_{Aeq,T} which would be acceptable in noisier environments. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

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

- 2.7 As with the 'good' and 'reasonable' criteria in BS 8233, the L_{AFmax} criterion in BS 8233 is largely concordant with the World Health Organisation (WHO) guidance: 1999: *Guidelines for community noise*. This document draws upon guidance from Vallet and Vernay, which states:

"For good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night."

BS 4142: 2014 Methods for Rating and Assessing Industrial and Commercial Sound

2.8 This standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.9 The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The Standard advises the purpose of the methodology includes the assessment of sound from any plant and activities associated with existing industrial and/or commercial uses at proposed residential dwellings.

2.10 If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features such as tonal qualities and/or distinct impulses, to give a 'rating' level ($L_{Ar,T}$). The Standard effectively compares and rates the difference between the rating level of the specific sound and the typical background sound level ($L_{A90,T}$) in the absence of the specific sound.

2.11 The Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) the source in question operates or is proposed to operate in the future.

2.12 Comparing the rating level with the background sound level, BS 4142 states:

"Typically, the greater this difference, the greater the magnitude of 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."

The Design Manual for Roads and Bridges (DMRB): Volume 11: Environmental Assessment

- 2.13 Section 3 Part 7 of this document is pertinent to noise and vibration and was first published by the Department of Transport in 1993 with subsequent amendments, the latest of which is November 2011 (reference HD213/11 Revision 1). This document sets out procedures for undertaking the environmental assessment of new road schemes, including the assessment of noise impacts from road traffic. In particular, Section 3 Part 7 describes a method for assessing the severity of a noise impact, in terms of the number of people who will be bothered by any noise increases/decreases due to a new road scheme. When undertaking a DMRB assessment, the methodology contained within the Department for Transport 1988 document *Calculation of Road Traffic Noise (CRTN)* should be used to calculate levels of road traffic noise.
- 2.14 Although the DMRB strictly applies to new road schemes, the principles of the approach contained within the document can also be applied to the assessment of noise from road traffic in general. The Proposed Development has the potential to affect road traffic noise levels along existing roads, hence there is a need for such an assessment.
- 2.15 The DMRB assessment methodology suggests that the magnitude of noise changes from a project should be classified into levels of impact. Section 3 Part 7 considers how the magnitude of change can be affected by whether a noise level change occurs in the short term (e.g. as a result of a sudden opening of a scheme), or in the long term (e.g. gradually over time, such as that associated with natural traffic growth).
- 2.16 The example classification scale for short term changes is the most stringent and is presented in **Table 2.2** below:

Table 2.2: Classification of magnitude of noise changes in the short term

Noise change (LA _{10,18hour} , dB)	Magnitude of change
0	No change
0.1 to 0.9	Negligible
1.0 to 2.9	Minor / low
3.0 to 4.9	Moderate / medium
≥ 5.0	Major / high

Consultation with West Lancashire Borough Council

- 2.17 At the outset of the project consultation was undertaken with Ms. Jill Antrobus, Principal Environmental Health Officer at West Lancashire Borough Council (WLBC), by email dated 9th October 2018 outlining the proposed survey and assessment methodologies as follows.
- Undertake a baseline noise survey to determine the existing noise levels at the nearest existing noise sensitive receptors;
 - Predict the noise levels generated by the development based on historic data from measurements at similar sites;

- Assess the impact of noise from any fixed plant where detailed information was available. If the required information was not available, noise limits will be set to be achieved by fixed plant and equipment associated with the Site at nearest noise sensitive receptors in accordance with BS4142:2014, based on the results of the baseline noise monitoring;
- Assess the impact of on-site operational activities, including HGV movements, in accordance with BS4142:2014;
- Assess the impact of the use of car parking areas at the nearest existing noise sensitive receptors, in accordance with BS8233;
- Assess the impact of development generated road traffic on the local road network, in accordance with the principles found in the Design Manual for Roads and Bridges (DMRB), where traffic data is available; and,
- Where appropriate, noise mitigation measures would be considered to reduce the noise to within acceptable levels at the nearest existing receptors.

2.18 A response was received via email on 12th October stating the following;

"I am happy with the scope for the noise assessment that you are proposing.

...

For fixed plant we normally look for a target level of 5dB below background.

For all sources – including delivery noise we can allow a rating level above background of around +3dB depending on the context."

3. BASELINE NOISE SURVEY

Survey Methodology

- 3.1 A baseline noise survey has been undertaken to determine the prevailing noise climate at locations considered representative of the nearest noise sensitive receptors relative to the Site. During the survey, monitoring was undertaken at Measurement Location 1 (ML1) as identified in **Figure 3.1** below.

Figure 3.1: Baseline noise survey location



- 3.2 On-site observations undertaken during the noise survey indicate that the noise climate at the Site is dominated by distant road traffic on the M58, located to the south of the development site, and that High Street to the north is not heavily trafficked during the daytime and night-time periods.
- 3.3 Onsite observations indicate that the noise climate does not vary significantly across the site. Due to the distance between the M58 and the proposed development site, and the fact that High Street is not heavily trafficked, it is considered that the noise levels measured at ML1 are representative of the background noise levels at all existing noise sensitive receptors in the vicinity of the Site off Waldron, Ashwall Street and High Street.

- 3.4 Measurement equipment was installed in free-field conditions at a height of 1.5m above ground level. The periods measured at ML1 are presented in **Table 3.1**.

Table 3.1: Baseline survey periods at ML1

Period	Duration	Start Time	End Time
Evening	2-Hour	18/10/18 21:00hrs	18/10/18 23:00hrs
Night-Time	2-Hour	18/10/18 23:00hrs	19/10/18 01:00hrs
Daytime	2-Hour	19/10/18 12:00hrs	19/10/18 14:00hrs

Measurement Equipment

- 3.5 The baseline noise survey was undertaken using a Class 1 sound level meter. A calibration check was undertaken prior to and upon completion of the survey. No significant calibration drift was found to have occurred. All laboratory calibration (biennial for the sound level meter and annual for the calibrator) was up-to-date at the time of the noise survey. The equipment used for the survey is summarised in **Table 3.2** below.

Table 3.2: Noise monitoring equipment

Equipment	Make & Model	Serial Number	Calibration due Date
Sound Level Meter	SVAN 971	72615	21/06/2020
Pre-Amplifier	SVAN SV18	72283	
Microphone	ACO Pacific 7052E	69463	
Calibrator	SV33A	76650	30/07/2019

Meteorological Conditions

- 3.6 During the survey wind conditions were calm (< 5ms⁻¹) with no precipitation. These conditions are considered conducive for obtaining representative measurement results.

Measurement Results

- 3.7 A summary of measured noise levels at ML1 are presented in **Table 3.3** overleaf.

Table 3.3 – Summary of measured sound pressure levels at ML1

Period	Duration	Start Time	Sound Pressure Level (dB)	
			L _{A90,T}	L _{Aeq,T}
Daytime	1 hour	1200hrs	51	53
	1 hour	1300hrs	52	55
Evening	1 hour	2100hrs	51	56
	1 hour	2200hrs	51	54
Night-time	15 min	2300hrs	51	53
	15 min	2315hrs	51	54
	15 min	2330hrs	51	54
	15 min	2345hrs	50	53
	15 min	0000hrs	48	50
	15 min	0015hrs	46	50
	15 min	0030hrs	47	50
	15 min	0045hrs	45	50

4. NOISE ASSESSMENT

Delivery Noise Assessment

Food Store Deliveries

- 4.1 Activities associated with deliveries to the proposed food store have been assessed in accordance with BS 4142.
- 4.2 The indicative masterplan, as shown in **Figure 1.2**, the delivery bay is located adjacent to the eastern site boundary, approximately 20m from ESR2 to the west along Ashwall Street.
- 4.3 To assess the potential noise impact from deliveries, historic noise data measured on a similar site has been used. The noise data used in the following assessment is summarised in **Table 4.1** below:

Table 4.1 – Summary of historic delivery noise data used in assessment

Description	SEL at 10m (dBA)
HGV Arriving/Departing	87
Loaded trolley being wheeled	75
Trolley being unloaded (by hand)	57
Empty trolley being wheeled	73
Cumulative	87

- 4.4 The assessment of food store deliveries is based on the following assumptions:
- Servicing can occur at any time during a 24-hour period.
 - A single HGV would visit site in a worst-case 15-minute period between 23:00 – 07:00.
 - A single HGV would visit site in a worst-case hourly period between 07:00 – 23:00hrs.
 - The nearest noise sensitive receptors relative to the loading bay are 20m to the east.
 - Partial screening will be provided by the installation of a dock levelling system.
- 4.5 Based on the above historic noise data and assumptions outlined above, the specific sound levels have been calculated, taking into account losses associated with screening and distance, at the nearest noise sensitive receptors. The specific sound levels have then been assessed in accordance with BS 4142 as outlined in **Tables 4.2 & 4.3** below.

Table 4.2 – BS 4142 Assessment of food store delivery activity (23:00 – 07:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level at 10m ($L_{Aeq,15mins}$)	57	7.3.5
Distance loss (20m)	-6	
Specific sound level at the receptor ($L_{Aeq,15mins}$)	51	
Partial screening Correction	-5	-
Acoustic feature correction	+3 ¹	9.2
Rating level ($L_{Ar,15mins}$)	49	9.2
Background sound level ($L_{A90,15mins}$)	49 ²	8
Excess over background	+0	-
BS 4142 impact	Low impact	-
Commentary	¹ +3 dB penalty applied for characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment. ² Arithmetic average of $L_{A90, 15 min}$	

Table 4.3 – BS 4142 Assessment of food store delivery activity (07:00 – 23:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level at 10m ($L_{Aeq,1hour}$)	51	7.3.5
Distance loss (20m)	-6	
Specific sound level at the receptor ($L_{Aeq,1hour}$)	45	
Partial screening Correction	-5	-
Acoustic feature correction	+3 ¹	9.2
Rating level ($L_{Ar,1hour}$)	43	9.2
Background sound level ($L_{A90,1hour}$)	51 ²	8
Excess over background	-8	-
BS 4142 impact	Low impact	-
Commentary	¹ +3 dB penalty applied for characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment. ² Arithmetic average of daytime and evening $L_{A90,1hour}$	

Retail Unit Deliveries

- 4.6 As seen in the current Site Plan, shown in **Figure 1.2**, the Retail Unit service lay-by is located towards the northern site boundary, at approximately 40m from ESR4.
- 4.7 The assessment of retail unit deliveries is based on the following assumptions:
- Servicing can occur at any time during a 24-hour period.
 - A single HGV would visit site in a worst-case 15-minute period between 23:00 – 07:00.
 - A single HGV would visit site in a worst-case hourly period between 07:00 – 23:00hrs.
 - The nearest noise sensitive receptors relative to the service lay-by are 40m to the north.

- 4.8 Based on the above historic noise data and assumptions outlined above, the specific sound levels have been calculated, taking into account losses associated with screening and distance, at the nearest noise sensitive receptors. The specific sound levels have then been assessed in accordance with BS 4142 as outlined in **Tables 4.4 & 4.5** below.

Table 4.4 – BS 4142 Assessment of retail unit delivery activity (23:00 – 07:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level at 10m ($L_{Aeq,15mins}$)	57	7.3.5
Distance loss (40m)	-12	
Specific sound level at the receptor ($L_{Aeq,15mins}$)	45	
Acoustic feature correction	+3 ¹	9.2
Rating level ($L_{Ar,15mins}$)	48	9.2
Background sound level ($L_{A90,15mins}$)	49 ²	8
Excess over background	-1	-
BS 4142 impact	Low impact	-
Commentary	¹ +3 dB penalty applied for characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment. ² Arithmetic average of $L_{A90, 15 min}$	

Table 4.5 – BS 4142 Assessment of retail unit delivery activity (07:00 – 23:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level ($L_{Aeq,1hour}$)	51	7.3.5
Distance loss (40m)	-12	
Specific sound level at the receptor ($L_{Aeq,1hour}$)	39	
Acoustic feature correction	+3 ¹	9.2
Rating level ($L_{Ar,1hour}$)	42	9.2
Background sound level ($L_{A90,1hour}$)	51 ²	8
Excess over background	-9	-
BS 4142 impact	Low impact	-
Commentary	¹ +3 dB penalty applied for characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment. ² Arithmetic average of daytime and evening $L_{A90,1hour}$	

4.9 The above assessment indicates that noise generated by retail unit deliveries is unlikely to give rise to an adverse impact.

4.10 However, the following 'good practice' measures are recommended to minimise any potential noise impact.

- 'White noise' reversing beepers should be used (if required).
- Engines should be switched off when HGVs are stationary.
- A 5mph speed limit should be applied when HGV's are moving around the site.
- Trolleys should be kept well serviced.
- Goods should not be dropped from height.

Car Park Noise Assessment

4.11 Noise from on-site (non-commercial) vehicle movements and the car park have been assessed against the guidelines outlined in BS 8233.

4.12 The parking spaces closest to the nearest noise sensitive receptors are located towards the southern Site boundary, approximately 15m from ESR1 along Waldron.

4.13 To assess the potential noise impact from the car park area, historic noise data measured at a similar site has been used. The noise data used in the following assessment is summarised in **Table 4.6** below:

Table 4.6 – Summary of historic noise data used in assessment

Description	SEL at 10m (dBA)
Car arriving/departing	63
Car manoeuvring	65
Engine starting	65
Cumulative	69

4.14 The assessment is based on the following assumptions:

- There will be 70No. arrivals and 70No. departures during a worst-case daytime hourly period.
- The nearest noise sensitive receptors relative to the car park are located to the south of the site along Waldron.
- All parking spaces could be used simultaneously.
- The calculation has been undertaken assuming that all movements will occur in the southern area of the proposed carpark.

4.15 Based on the above historic noise data and assumptions outlined above, the $L_{Aeq,1hour}$ noise levels have been predicted, taking into account losses associated with screening and distance, at the nearest noise sensitive receptors. An inside to outside loss, assuming an open window, of -15dB (Ref: BS 8233) has been applied. The predicted internal noise levels have then been compared against the internal noise level guidelines outlined in BS 8233 as outlined in **Table 4.7** below.

Table 4.7 – Summary of car park noise assessment

Predicted incident noise level ($L_{Aeq,1hour}$, dB)	Predicted internal noise level ($L_{Aeq,1hour}$, dB)	BS 8233 guideline internal noise level ($L_{Aeq,16hour}$, dB)
45	30	35

4.16 The above assessment indicates that noise from the car park could give rise to internal noise levels, which would be below the guideline daytime internal noise level, as recommended in BS8233 during a peak hour with windows open.

4.17 It should also be noted that as the positioning of the proposed service road provides 15m of distance between the proposed car park and nearest residential dwellings on Waldron, the impact of the proposed car park will be lower than the impact of the existing car park on the Site, which extends up to the site boundary.

Development Generated Road Traffic Noise Assessment

- 4.18 Noise generated by additional road traffic movements on the local road network have been assessed in accordance with CRTN calculation procedures and compared with the classification scale for short term changes outlined in DMRB.
- 4.19 Calculations have been undertaken for the assessment year 2023 both with and without the proposed development. Road traffic speeds have been applied based on the speed limits applicable to each link. The traffic data supplied has included for other committed developments for the assessment year and are detailed within the Transport Assessment.
- 4.20 The predicted changes in road traffic noise levels are shown in **Table 4.8**.

Table 4.8 – Summary of development generated road traffic noise assessment

Road link	2023 no development (BNL)	2023 with development (BNL)	Increase in noise due to the development (dB)
High Street (West of Whitehey Road)	59.9	60.4	+0.6
High Street (East of Whitehey Road)	60.2	60.5	+0.4
Whitehey Road (South of High Street)	54.9	55.6	+0.7
B5312 (East of Westgate)	64.5	64.7	+0.2
B5312 (West of Westgate)	60.1	60.5	+0.3
B5312 (North of Old Town Way)	60.1	60.3	+0.2
Westgate (North of B5312, South of High Street)	59.7	61.1	+1.4

- 4.21 The above assessment indicates that during the daytime, the greatest predicted road traffic noise level increase is 1.4 dB on Westgate, north of the B5312 and south of High Street.
- 4.22 Comparing this increase in road traffic noise level with the classification scale for short term changes outlined in the DMRB, the predicted magnitude of change can be classified as minor/low.

Fixed Building Services Plant Noise Assessment

Food Store Fixed Plant

- 4.23 A number of items of fixed building services plant are proposed to be installed at the food store that have the potential to generate noise.
- 4.24 It is understood that the plant compound is proposed to be located at the northern facing façade of the food store as shown in **Figure 1.2**. The plant compound is located approximately 45m from ESR3.

4.25 Details of the proposed items of fixed building services plant are outlined in **Table 4.9** below.

Table 4.9 – Details of proposed food store fixed building services plant

Description	Manufacturer	Model No.	Quantity	Sound Pressure Level* (L _{Aeq,T} , dB at 10m)	
				Daytime	Night-time
AC Condensing Unit	Fujitsu	AOYG12LMCA	1	34	Not running
Refrigeration Pack	Bitzer	2No. 4KTC-10K 2No. 4FTC-20K 2No. 4JTC-10K 2No. 2MME-07K 2No. K2E220RA3081	1	33	33
Refrigeration Condenser	Kelvion	GF-PC203FSH E2H-091E380	1	31	31

4.26 Based on the Manufacturer's data outlined in **Table 4.9** above, the specific sound levels have been calculated, taking into account losses associated with screening and distance, at the nearest noise sensitive receptors. The specific sound levels have then been assessed in accordance with BS 4142 as outlined in **Tables 4.10 - 4.11**.

Table 4.10 – BS 4142 Assessment of food store fixed plant (07:00 – 23:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level at 10m (L _{Aeq,1hour})	38	7.3.5
Distance loss (45m)	-13	
Specific sound level at the receptor (L _{Aeq,1hour})	25	
Acoustic feature correction	+3 ¹	9.2
Rating level (L _{Ar,1hour})	28	9.2
Background sound level (L _{A90,1hour})	51 ²	8
Excess over background	-23	-
BS 4142 impact	Low impact	-
Commentary	¹ +3dB added for slight perceptible tonality ² Arithmetic average of daytime and evening L _{A90,1hour} values	

Table 4.12 – BS 4142 Assessment of food store fixed plant (23:00 – 07:00)

Description	Sound Level (dB)	Relevant BS 4142 Clause
Specific sound level at 10m ($L_{Aeq,15mins}$)	35	7.3.5
Distance loss (45m)	-13	
Specific sound level at the receptor ($L_{Aeq,1hour}$)	22	
Acoustic feature correction	+3 ¹	9.2
Rating level ($L_{Ar,15mins}$)	25	9.2
Background sound level ($L_{A90,15mins}$)	49 ²	8
Excess over background	-24	-
BS 4142 impact	Low impact	-
Commentary	¹ +3dB added for slight perceptible tonality ² Arithmetic average of daytime and evening $L_{A90,15mins}$ VALUES	

4.27 The above assessment indicates that environmental noise emissions from the proposed items of fixed building services plant could give rise to a low impact at the nearest existing noise sensitive receptors.

Retail Unit Fixed Plant

4.28 It is anticipated that there may be fixed plant associated with the proposed retail unit that may have the potential to generate noise. However, at this stage details of the proposed type, number and precise location of any such plant or the nature of its operation are not available. In the absence of detailed information, it is appropriate to specify suitable noise control limits to which any plant should conform.

4.29 It is considered that the rating level of fixed plant noise sources should not exceed 5dB below prevailing background sound level when measured at the nearest existing sensitive receptors, in order to meet the requirements of WLBC.

4.30 Noise from retail unit plant should achieve the following noise level limits, at the nearest noise sensitive receptors:

- A rating level limit of 46 dB during the daytime; and,
- A rating level limit of 44 dB during the night-time.

4.31 The above rating level limits apply at least 3.5 metres from the façade of any residential property i.e. in free-field conditions.

-
- 4.32 In accordance with BS 4142, the assessment of plant noise emissions should include appropriate rating corrections for tonal, irregular or intermittent plant where applicable, before comparison with the above limits.
- 4.33 Once the detailed nature of such future uses is confirmed, noise from any fixed plant can be considered to ensure that the above limits can be met.
- 4.34 It should be noted that the derived rating level limits would be applicable to the total noise from the simultaneous operation of all external plant serving the proposed development. As such, noise emissions from individual items of plant will need to be lower than the given limit, although the exact limit for each individual item of plant will be dependent upon its type, noise characteristics, location etc. This issue is best addressed during the detailed design stage.

5. CONCLUSIONS AND RECOMMENDATIONS

- 5.1 BWB Consulting Ltd was appointed by Aldi Store Limited to undertake an environmental noise assessment for a proposed food store and retail unit at Pennylands, Skelmersdale.
- 5.2 A baseline noise survey was undertaken at the Site in June 2018. The survey, and subsequent assessment work, have been undertaken in accordance with current standards and guidance, following consultation with WLBC.
- 5.3 A detailed noise impact assessment has been undertaken considering the various potential sources of noise associated with the food store. The assessment indicates that the proposed food store is unlikely to give rise to an adverse noise impact at the nearest existing noise sensitive receptors. It is therefore considered that noise need not be a determining factor in the granting of planning approval for the Proposed Development.

APPENDICES

APPENDIX A: Glossary of Terms

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Acoustic Terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building façade.

APPENDIX B: Existing Noise Sensitive Receptors





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