

Unit H, Plas Coch Retail Park, Wrexham, LL11 2BW

Noise Assessment

784-B038288



Prepared on Behalf of EPIC (No. 1) Ltd

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Contents

1.0	Introduction.....	1
2.0	Assessment Criteria	4
3.0	Assessment Methodology	5
4.0	Noise Survey	8
5.0	Assessment Of Effects	12
6.0	Conclusions Of Noise Assessment	15
	Appendices.....	16
	Appendix A – Acoustic Terminology And Abbreviations.....	17
	Appendix B – report conditions.....	19

1.0 INTRODUCTION

1.0 Purpose of this Report

This report presents the findings of a noise impact assessment undertaken in support of a Section 73 application at Unit H, Plas Coch Retail Park, Wrexham in relation to servicing hours. This report considers the potential noise impact of the following noise sources:

- Refrigerated HGV movements
- Refrigerated HGV unloading/loading

The existing servicing hours are outlined in Condition 9 of planning permission WRR CB00421, which states:

“No service vehicles shall be permitted to enter the site other than between the hours of 7.30 am and 8.00 pm Mondays to Saturdays.”

Condition 9 is proposed to be amended as follows:

“With the exception of vehicles servicing Unit H as shown on drawing ref. SK220304_02, no service vehicles shall be permitted to enter the site other than between the hours of 7.30 am and 8.00 pm Mondays to Saturdays.”

A description of the existing noise environment in and around the site is provided. The noise levels from the facility have been predicted at local representative receptors using CADNA noise modelling software which incorporates ISO 9613 methodologies and calculations.

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and Report Conditions are presented in Appendix B.

1.1 Legislative Context

This report is intended to provide information relevant to the local planning authority and their consultees in support of a planning application for the above proposed development. Future Wales: The National Plan 2040 and Planning Policy Wales (PPW) set out the land use planning policies of the Welsh Government. They are supplemented by a series of Technical Advice Notes (TANs), Technical Advice Note 11 which relates to Noise, Welsh Government Circulars, and policy clarification letters, which together provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation. A well-functioning planning system is fundamental for sustainable development and achieving sustainable places.

Paragraph 6.7.5 of PPW says *“In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.”*

Paragraphs 6.7.6 and 6.7.7 say *“In proposing new development, planning authorities and developers must, therefore:*

- *address any implication arising as a result of its association with, or location within, air quality, noise action planning priority areas or areas where there are sensitive receptors;*
- *not create areas of poor air quality or inappropriate soundscape; and*
- *seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer.”

Paragraph 6.7.24 says *“The potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport-related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided, and assessment undertaken.”*

TAN 11 provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.

1.2 Acoustic Consultants' Qualifications, Professional Memberships

The lead project Acoustic Consultant is Kat Lail. The report has been checked by Graham Davis and verified by Nigel Mann. Relevant qualifications, membership and experience are summarised below.

Table 1.2 Acoustic Consultants' Qualifications & Experience

Name	Education	Institute of Acoustics Post Graduate Diploma in Acoustic and Noise Control (Pass Date)	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Kat Lail	BA 2019 LLM 2020	-	April 2021	-	-
Graham Davis	BA 2008	Nov 2013	Sep 2011	Jan 2014	-
Nigel Mann	BSc 1997 MSc 1999	Nov 2001	Nov 1998	Nov 2001	Jul 2005

2.0 ASSESSMENT CRITERIA

2.1 Noise Intrusion Assessment Criteria

The criteria in the World Health Organisation Recommendations in their 'Guidelines for Community Noise' (1999) have been chosen as a suitable method for determining an adequate level of noise control to ensure that noise levels within existing properties meet the following recommended noise level targets; these targets are:

Living rooms	$L_{Aeq} = 35$	
Bedrooms	$L_{Aeq} = 30$	$L_{Amax, \text{night-time}} = 45 \text{ dB}$

Typical façades, regardless of construction, will offer around 15 dB sound insulation when windows are open. For the purposes of this assessment, the maximum external noise level from the source under consideration will be 50 dB(A) during the daytime, and 45 dB(A) during the night-time to ensure a maximum daytime L_{Aeq} of 35 dB, and a maximum night-time L_{Aeq} of 30 dB within habitable rooms are achieved.

2.2 Change in Noise Level for Sensitive Receptors

In order to assess the effects of the overall change in noise levels as a result of the scheme, the following effect level descriptors, derived from the Institute of Environmental Management & Assessment (IEMA) 'Guidelines for Environmental Noise Impact and Assessment', October 2014.

Table 2.1 IEMA Noise Effect Level Descriptors

Effect Level	Noise Level Criteria	Justification
None/not Significant	Change in Noise Levels $L_{A10 \text{ 18hr}}$ (dB) 0.0 – 2.9>	No Action Negligible change in noise level
Moderate	Change in Noise Levels $L_{A10 \text{ 18hr}}$ 3.0 – 4.9 (dB)	Change <3.0 dB, minor change in noise level no action required Change > 3.0dB <4.9 dB, moderate change in noise level. Mitigate to achieve: Change in Noise Levels $L_{A10 \text{ 18hr}} < 3.0$
Substantial	Change in Noise Levels $L_{A10 \text{ 18hr}}$ 5.0 – 9.9 (dB)	Change > 5.0dB, major change in noise level. Mitigate to achieve: Change in Noise Levels $L_{A10 \text{ 18hr}} < 3.0$
Very Substantial	Change in Noise Levels > $L_{A10 \text{ 18hr}}$ 10.0 (dB)	Change > 5.0dB, major change in noise level. Mitigate to achieve: Change in Noise Levels $L_{A10 \text{ 18hr}} < 3.0$

3.0 ASSESSMENT METHODOLOGY

3.1 Noise Modelling Methodology

The development has been assessed using three-dimensional noise modelling of source noise levels at a large number of locations both horizontally and vertically. CADNA noise modelling software has been used. This model is based on ISO 9613 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically.

The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data, assumptions and model settings as given in the table below have been used.

Table 3.1 Modelling Parameters Sources and Assumptions

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	Ordnance Survey	Ordnance Survey
Building heights – around site	Tt Observations	8 m height for two storey residential properties, with 3 m per additional storey and 4 m for Bungalows.
Barrier heights	Tt Observations	Existing garden fences at a height of 1.8m have been included within the modelling, which are based on available drawings and site observations.
Receptor positions	Tt	1 m from façade, height of 1.5 m for ground floor, 4 m for first floor properties. 4.0 m height for model grid.
Proposed Plans	Smithdesign	Drawing no: SK220304_02 Dated: Jan 2022

It is acknowledged that a number of these assumptions will affect the overall noise levels presented in this report. However, it should be noted that certain assumptions made, as identified above, are worst-case.

3.2 Model Input Data

Delivery Noise Data

Noise of a delivery event has been known to vary from site to site by as much as 22 dB L_{Aeq} at 5m distance even with the same vehicle type. Similarly, individual events using the same vehicle and at the same location have been recorded to vary by as much as 14 dB.

As such, the following worst-case calculations have been based on measurements of refrigerated HGVs delivering goods. All measurements were undertaken in free-field conditions. In addition to noise from the unloading process, the levels used in the assessment includes noise from the vehicle pulling up to the unloading bay, manoeuvring into position and then pulling away once unloading/loading is complete,

together with other sources such as trolleys and reversing beepers; events are modelled as a point source.

HGV Unloading Event Noise Data

2 minutes at L_p 67.5 dB at 3 m distance	(vehicle manoeuvring at parking bay)
30 minutes at L_p 76.8 dB at 3 m distance	(vehicle unloading)
1 minute at L_p 67.5 dB at 3 m distance	(vehicle leaving)
27 Minutes of quiet with engine off	

$$\text{Daytime } L_{Aeq} (1\text{hour}) = 10\log(1/60)(2 \text{ mins} \times 10^{0.1 \times 67.5\text{dB}} + 30 \text{ mins} \times 10^{0.1 \times 76.8\text{dB}} + 1 \text{ mins} \times 10^{0.1 \times 67.5\text{dB}})$$

$$= 73.8 \text{ dB at 3 m distance}$$

15 minutes at L_p 76.8 dB at 3 m distance	(vehicle unloading)
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$$\text{Night-time } L_{Aeq} (15\text{mins}) = 10\log(1/15)(15 \text{ mins} \times 10^{0.1 \times 76.8\text{dB}})$$

$$= 76.8 \text{ dB at 3 m distance}$$

Maximum Noise Levels

$$L_{Amax} = 89.4 \text{ dB at 3m distance}$$

HGV Movement Noise Data

Worst-case noise-levels have been calculated using this data to represent a worst-case in any 1-hour daytime (07:00 – 23:00) period and 15-minute period during the night-time (23:00 – 07:00).

2 x 10 seconds at L_p 67.5 dB at 3m distance (Single HGV vehicle arriving/leaving)

$$\text{Daytime } L_{Aeq} (1\text{hour}) = 10\log(1/60)(20 \text{ seconds} \times 10^{0.1 \times 67.5\text{dB}})$$

$$= 44.9 \text{ dB at 3 m distance (modelled as a line source)}$$

$$\text{Night-time } L_{Aeq} (15\text{mins}) = 10\log(1/15)(20 \text{ seconds} \times 10^{0.1 \times 67.5\text{dB}})$$

$$= 51.0 \text{ dB at 3 m distance (modelled as a line source)}$$

Maximum Noise Levels

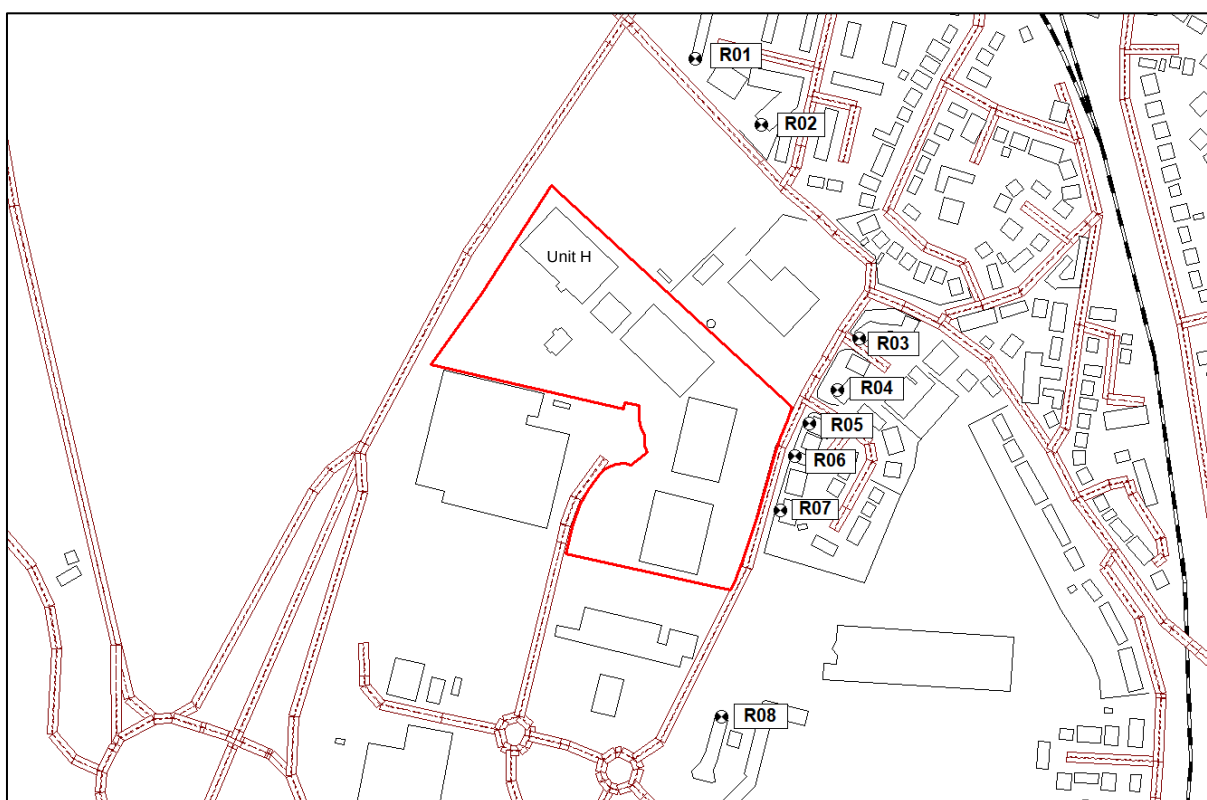
$$L_{Amax} = 81.3 \text{ dB at 3m distance (modelled as multiple point sources)}$$

3.3 Sensitive Receptors

Table 3.2 below summarises receptor locations that have been selected to represent worst-case residential receptors with respect to direct noise from the site. The receptor positions are shown illustratively on Figure 3.1 below.

Table 3.2 Sensitive Receptor Locations

Ref.	Description	Use Classification	Height (m) Daytime/Night-time
R01	14 Finney Close	Residential	1.5
R02	34 Stansty Road	Residential	4.0
R03	1 Stansty Close	Residential	1.5/4.0
R04	1 Felming Drive	Residential	1.5/4.0
R05	Plas Coch Road	Residential	1.5/4.0
R06	Plas Coch Road	Residential	1.5/4.0
R07	Plas Coch Road	Residential	1.5/4.0
R08	Plas Coch Road	Residential	10.0

Figure 3.1 Sensitive Receptor Locations


Not to scale
OS Licence No. AL553611

4.0 NOISE SURVEY

4.1 Noise Survey Methodology

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels. Equipment used during the survey included:

Rion NL-52	Environmental Noise Analyser	s/n	710313
Rion NL-52	Environmental Noise Analyser	s/n	710472
Rion NL-52	Environmental Noise Analyser	s/n	1176464
Rion NL-52	Environmental Noise Analyser	s/n	710471
Rion NC-75	Sound Calibrator	s/n	35480543

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice, a drift of -0.1 dB was observed. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

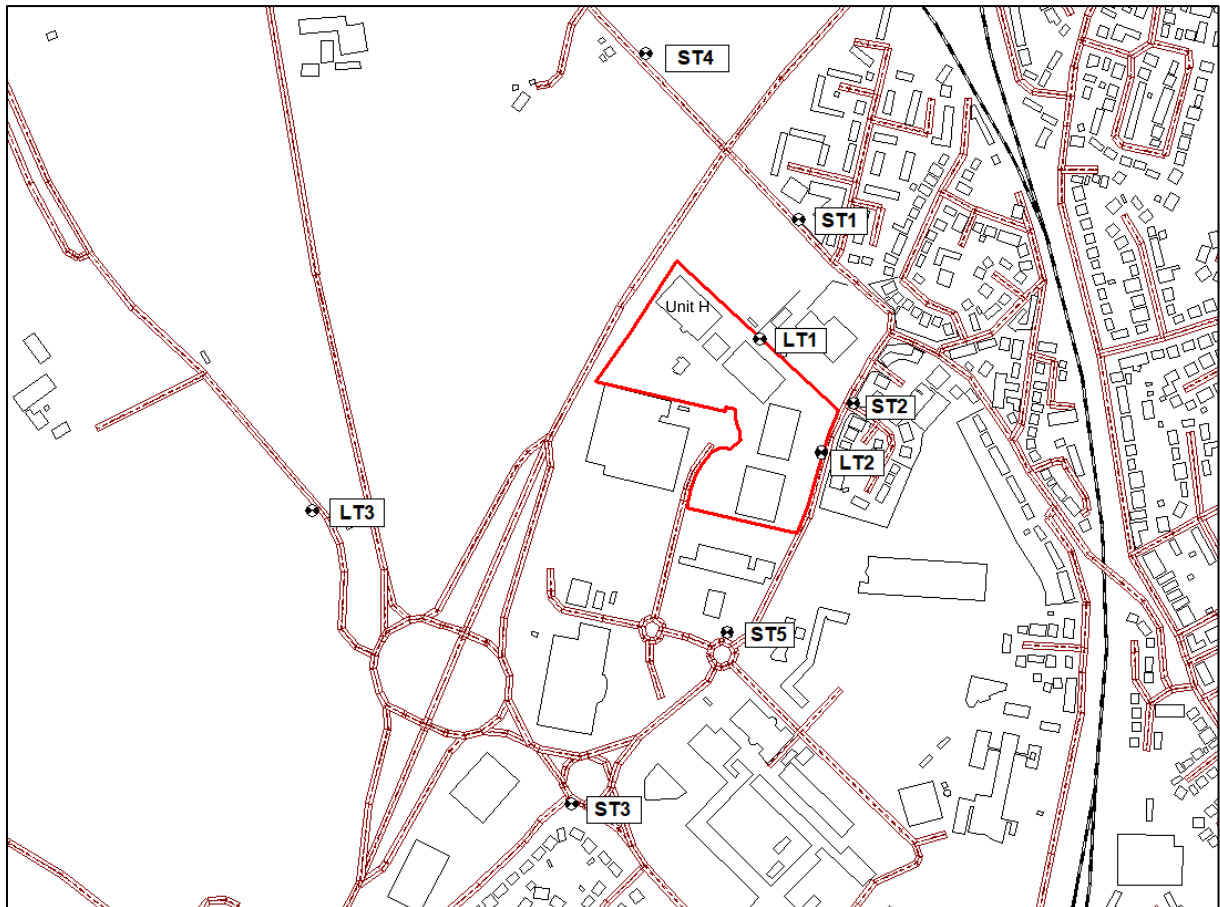
A baseline monitoring survey was undertaken at seven locations (as specified in the following table and shown in Figure 4.1 below) from Friday 8th April 2022 to Tuesday 12th April 2022. Attended short-term measurements were undertaken at five locations during day, evening and night-time periods with three additional unattended locations measured over a 96-hour period. The raw data collected from the long-term monitoring is available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 *The Description and Measurement of Environmental Noise: Guide to quantities and procedures*. Weather conditions during the survey period were observed as being mostly dry with some scattered showers. Anemometer readings confirmed that wind speeds were less than 5 ms⁻¹ at all times during the attended survey, with a predominant south-easterly wind direction during the survey.

Table 4.1 Noise Monitoring Locations

Ref	Description
LT1	Northern boundary of shared service yard, located south of Ysgol Plas Coch
LT2	Eastern boundary of shared service yard, west of Plas Coch Road
LT3	On Summerhill Road, northwest of Crispin Lodge
ST1	Entrance to Stansty House Care Home, Stansty Road
ST2	Corner of Fleming Drive and Plas Coch Road
ST3	Southwest of roundabout connecting Berse Road and Mold Road
ST4	On Stansty Chain Road, northeast of Oakhurst Cottage
ST5	Southeast of Plas Coch Pub

Figure 4.1 Noise Monitoring Locations



Not to scale
OS Licence No. AL553611

4.2 Noise Survey Results

The ambient noise climate in the vicinity of the site was characterised by road traffic noise from A483, Plas Coch Road, Stansty Road, Mold Road, Berse Road and Stansty Chain Road as well as some localised contributions attributable to residential properties and occasional air traffic.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period). For the long-term (LT) locations, the presented $L_{Aeq,T}$ and $L_{A10,T}$ are average noise levels whilst the L_{A90} is the modal noise level of each 5 minute measurement over the stated survey period.

Table 4.2 Meteorological Conditions during the Survey

Survey Location	Date & Time	Temperature (°C)	Wind Speed (m/s)	Wind Direction	Cloud Cover (Oktas)	Observed Noise Sources
Day ST1	11/04/2022 14:50	17	1-2	SE	8	Road traffic noise from A483. Cars entering and leaving nearby car park. Frequent traffic on Stansty Road. Birdsong and children playing football on nearby pitch.
Day ST2	11/04/2022 15:11	17	2-3	SE	8	Frequent passing traffic on Plas Coch Road. Some dogs barking as well as residents chatting and air traffic noise.
Day ST3	11/04/2022 16:09	16	2-3	SE	7	Road traffic noise from nearby roundabout and Mold Road and Berse Road.
Day ST4	11/04/2022 14:30	17	2-3	SE	7	Road traffic noise from A483, birdsong, infrequent traffic on Stansty Chain Road.
Day ST5	11/04/2022 15:39	16	2-3	SE	8	Road traffic noise from Plas Coch Road.
Evening ST1	11/04/2022 21:05	14	1-2	SE	-	Road traffic noise from A483.
Evening ST2	11/04/2022 21:24	14	1-2	SE	-	Distant road traffic noise and infrequent passing traffic on Plas Coch Road.
Evening ST3	11/04/2022 22:09	14	1-2	SE	-	Road traffic noise from Mold Road and Berse Road.
Evening ST4	11/04/2022 20:44	14	1-2	SE	-	Road traffic noise from A483 and infrequent traffic on Stansty Chain Road.
Evening ST5	11/04/2022 21:43	14	1-2	SE	-	Road traffic noise from Plas Coch Road.
Night ST1	11/04/2022 23:23	14	0-1	SE	-	Road traffic noise from A483. Distant helicopter.
Night ST2	11/04/2022 23:56	13	0-1	SE	-	Distant road traffic noise and infrequent traffic on Plas Coch Road. Distant helicopter.
Night ST3	12/04/2022 00:33	13	0-1	SE	-	Road traffic noise from Mold Road and Berse Road. Distant loading sounds.
Night ST4	11/04/2022 23:05	13	0-1	SE	-	Road traffic noise from A483. Distant helicopter.
Night ST5	12/04/2022 00:14	13	0-1	SE	-	Road traffic noise from Plas Coch Road.

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2×10^{-5} Pa).

Table 4.3 Results of Baseline Noise Monitoring Survey (Average Levels)

Period	Duration (T)	Monitoring Date and Times	Location	L _{Aeq,T} (dB)	L _{Amax,T} (dB)	L _{Amin,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
Weekday Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00	LT1	55.8	83.6	36.1	55.1	49.0
Weekday Night-time 23:00 – 07:00	16 Hours	08/04/2022 – 12/04/2022 23:00 - 07:00		47.4	72.0	26.6	47.9	33.0

Period	Duration (T)	Monitoring Date and Times	Location	L _{Aeq,T} (dB)	L _{Amax,T} (dB)	L _{Amin,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
Weekend Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00		54.1	87.0	30.7	53.3	48.0
Weekend Night-time 23:00 – 07:00	16 hours	08/04/2022 – 12/04/2022 23:00 - 07:00		46.1	79.3	28.4	48.3	38.0
Weekday Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00	LT2	68.0	96.8	39.0	71.5	52.0
Weekday Night-time 23:00 – 07:00	16 Hours	08/04/2022 – 12/04/2022 23:00 - 07:00		58.8	94.0	28.5	51.2	32.0
Weekend Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00		67.5	96.0	32.9	70.4	52.0
Weekend Night-time 23:00 – 07:00	16 hours	08/04/2022 – 12/04/2022 23:00 - 07:00		58.3	91.8	28.8	53.7	40.0
Weekday Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00	LT3	66.8	94.5	41.5	70.3	58.0
Weekday Night-time 23:00 – 07:00	16 Hours	08/04/2022 – 12/04/2022 23:00 - 07:00		57.9	83.9	28.4	54.6	36.0
Weekend Daytime 07:00 - 23:00	32 Hours	08/04/2022 – 12/04/2022 07:00 - 23:00		65.6	96.0	39.7	68.4	54.0
Weekend Night-time 23:00 – 07:00	16 hours	08/04/2022 – 12/04/2022 23:00 - 07:00		57.9	89.6	27.9	54.8	45.0
Daytime 07:00 - 19:00	15 Mins	11/04/2022 14:50	ST1	59.3	77.0	48.8	60.5	52.1
	15 Mins	11/04/2022 15:11	ST2	61.3	81.0	44.0	65.5	48.9
	15 Mins	11/04/2022 16:09	ST3	67.0	77.5	56.0	69.4	62.3
	15 Mins	11/04/2022 14:30	ST4	61.8	75.5	57.0	63.2	59.4
	15 Mins	11/04/2022 15:39	ST5	59.8	75.6	52.2	62.3	56.2
Evening 19:00 - 23:00	15 Mins	11/04/2022 21:05	ST1	51.2	69.8	42.7	52.8	47.3
	15 Mins	11/04/2022 21:24	ST2	56.1	71.8	37.8	60.8	40.6
	15 Mins	11/04/2022 22:09	ST3	62.5	83.3	44.8	65.4	50.7
	15 Mins	11/04/2022 20:44	ST4	58.7	79.0	50.8	58.6	53.8
	15 Mins	11/04/2022 21:43	ST5	59.4	84.3	39.2	60.4	42.5
Night-time 23:00 - 07:00	15 Mins	11/04/2022 23:23	ST1	49.2	69.8	37.5	52.7	42.3
	15 Mins	11/04/2022 23:56	ST2	53.6	73.1	33.6	51.8	38.6
	15 Mins	12/04/2022 00:33	ST3	56.8	76.1	34.1	59.4	36.9
	15 Mins	11/04/2022 23:05	ST4	53.6	75.5	42.2	55.2	47.8
	15 Mins	12/04/2022 00:14	ST5	45.7	65.7	34.3	44.9	37.2

All values are sound pressure levels in dB re: 2x 10⁻⁵ Pa

5.0 ASSESSMENT OF EFFECTS

5.1 Operational Noise Intrusion Assessment

Internal noise levels, at nearby sensitive receptors from all sources of potential noise associated with the refrigerated HGV deliveries have been assessed at existing properties with windows open, where a reduction from a partially open window of 15 dB has been used, and with windows closed where an assumption of single glazing with a sound reduction of 30 dB has been used.

Table 5.1 Daytime Noise Intrusion Levels $L_{Aeq,1 \text{ hour}}$

Location	Description	External L_{Aeq} at 1m from facade	Internal L_{Aeq} with windows open	Internal L_{Aeq} with windows closed	WHO Criteria Internal L_{Aeq}
R01	14 Finney Close	31.1	16.1	1.1	35
R02	34 Stansty Road	37.1	22.1	7.1	35
R03	1 Stansty Close	25.1	10.1	0.0	35
R04	1 Fleming Drive	26.9	11.9	0.0	35
R05	Plas Coch Road	29.7	14.7	0.0	35
R06	Plas Coch Road	29.0	14.0	0.0	35
R07	Plas Coch Road	25.9	10.9	0.0	35
R08	Plas Coch Road	21.6	6.6	0.0	35

All values are sound pressure levels in dB re: 2×10^{-5} Pa.

Table 5.2 Night-time Noise Intrusion Levels $L_{Aeq,15 \text{ mins}}$

Location	Description	External L_{Aeq} at 1m from facade	Internal L_{Aeq} with windows open	Internal L_{Aeq} with windows closed	WHO Criteria Internal L_{Aeq}
R01	14 Finney Close	34.1	19.1	4.1	30
R02	34 Stansty Road	41.5	26.5	11.5	30
R03	1 Stansty Close	34.3	19.3	4.3	30
R04	1 Fleming Drive	36.2	21.2	6.2	30
R05	Plas Coch Road	38.4	23.4	8.4	30
R06	Plas Coch Road	37.9	22.9	7.9	30
R07	Plas Coch Road	34.7	19.7	4.7	30
R08	Plas Coch Road	26.7	11.7	0.0	30

All values are sound pressure levels in dB re: 2×10^{-5} Pa.

Table 5.3 Night-time Noise Intrusion Levels L_{Amax}

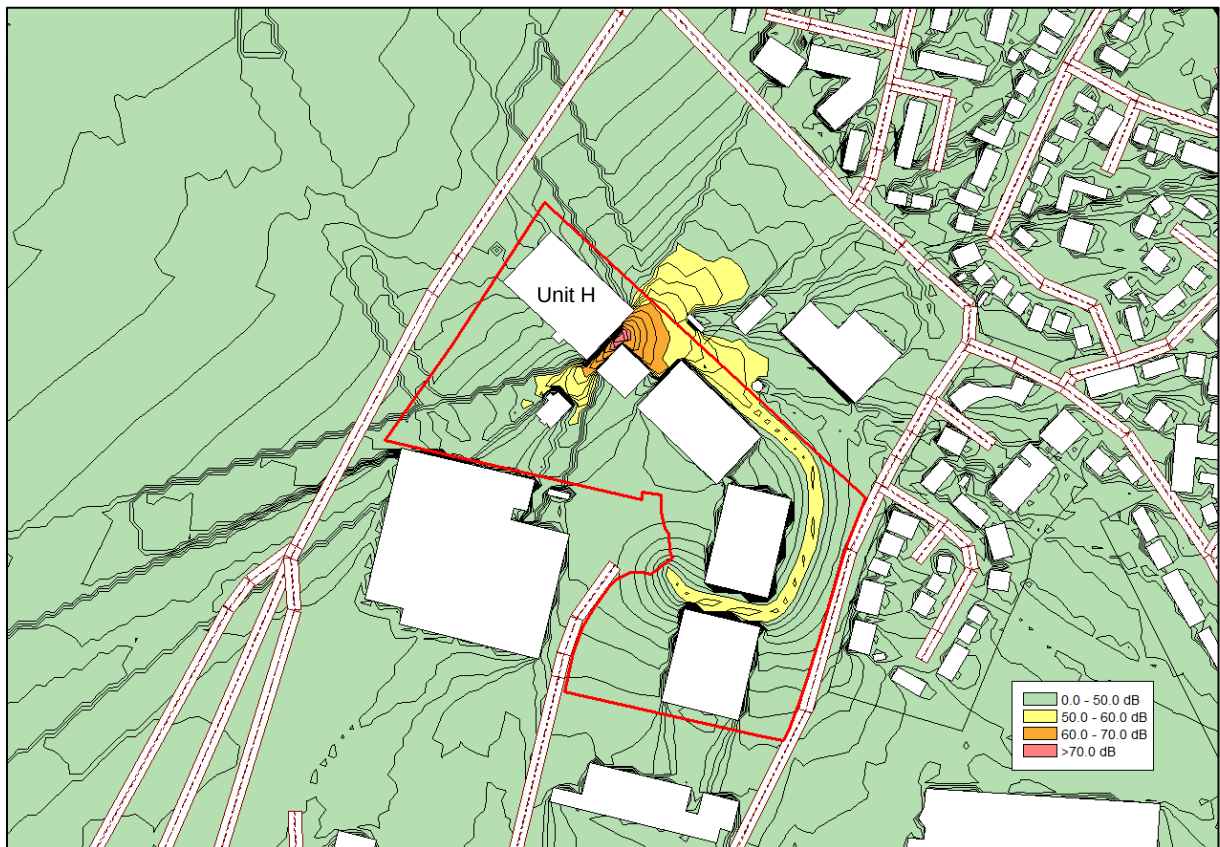
Location	Description	External L_{Amax} at 1m from facade	Internal L_{Amax} with windows open	Internal L_{Amax} with windows closed	WHO Criteria Internal L_{Amax}
R01	14 Finney Close	46.5	31.5	16.5	45
R02	34 Stansty Road	54.0	39.0	24.0	45
R03	1 Stansty Close	45.2	30.2	15.2	45
R04	1 Fleming Drive	47.2	32.2	17.2	45
R05	Plas Coch Road	47.3	32.3	17.3	45
R06	Plas Coch Road	48.3	33.3	18.3	45
R07	Plas Coch Road	44.5	29.5	14.5	45

Location	Description	External L_{Amax} at 1m from facade	Internal L_{Amax} with windows open	Internal L_{Amax} with windows closed	WHO Criteria Internal L_{Amax}
R08	Plas Coch Road	38.7	23.7	8.7	45

All values are sound pressure levels in dB re: 2×10^{-5} Pa.

The assessment presented in the tables above demonstrate that internal L_{Aeq} and L_{Amax} noise levels within nearby dwellings from the proposed activities are predicted to be below noise intrusion criteria at all existing receptors in a windows-open and windows closed scenario. Therefore, the proposed extension to delivery hours at Unit H is not expected to result in any significant adverse impacts at nearby dwellings.

Figure 5.2 Noise Contour Plot Night-time $L_{Aeq,15mins}$



Grid height 4m
Not to scale
OS Licence No. AL553611

Operational Noise Intrusion Assessment

Notwithstanding the favourable assessments presented above, this assessment compares the existing baseline ambient noise levels (L_{Aeq}) to the proposed scheme noise levels (L_{Aeq}) at the closest sensitive properties; the difference between the 'existing' and the 'proposed' development scenarios are presented below in the table below.

Table 5.4 Difference Between the 'Existing Noise Levels' and 'Proposed' Scenarios

Ref.	Description	Daytime/Evening			Night-time		
		Existing L_{Aeq} (baseline ambient noise levels)	Combined L_{Aeq} (baseline ambient noise levels + proposed sources)	Contribution	Existing L_{Aeq} (baseline ambient noise levels)	Combined L_{Aeq} (baseline ambient noise levels + proposed sources)	Contribution
R01	14 Finney Close	51.2	51.2	0.0	49.2	49.3	0.1
R02	34 Stansty Road	51.2	51.4	0.2	49.2	49.9	0.7
R03	1 Stansty Close	56.1	56.1	0.0	53.6	53.7	0.1
R04	1 Felming Drive	67.5	67.5	0.0	58.3	58.3	0.0
R05	Plas Coch Road	67.5	67.5	0.0	58.3	58.3	0.0
R06	Plas Coch Road	67.5	67.5	0.0	58.3	58.3	0.0
R07	Plas Coch Road	67.5	67.5	0.0	58.3	58.3	0.0
R08	Plas Coch Road	59.4	59.4	0.0	45.7	45.8	0.1

All values are sound pressure levels in dB re: 2x 10⁻⁵ Pa.

When compared with the criteria in Table 2.1 of this report, noise levels are predicted to experience a worst-case change in noise level of up to 0.7 dB and therefore the overall change in ambient noise level is expected to be negligible and is considered not to be significant (noise level changes of up to ± 3 dB are generally imperceptible to the human ear).

As such, the proposed extension to servicing hours is not expected to result in a significant change in ambient noise levels at existing dwellings and is not expected to be readily distinguishable and is expected to have a negligible impact.

6.0 CONCLUSIONS OF NOISE ASSESSMENT

This report presents the findings of a noise impact assessment undertaken for a proposed extension to servicing hours at Unit H, Plas Coch Retail Park, Wrexham.

Assessments of noise intrusion at existing properties has shown that L_{Aeq} and L_{Amax} noise from the proposed servicing activities are predicted to be below noise intrusion criteria at all existing receptors in a windows-open and windows closed scenario.

Furthermore, the proposed extension to servicing hours is not expected to result in a significant change in ambient noise levels at existing dwellings and is expected to have a negligible impact.

Therefore, the proposed extension to servicing hours at Unit H is not expected to result in any significant adverse impacts at nearby dwellings.

APPENDICES

APPENDIX A – ACOUSTIC TERMINOLOGY AND ABBREVIATIONS

An explanation of the specific acoustic terminology referred to within this report is provided below.

- dB** Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.
- dB(A)** Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.
- L_{Aeq}** Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq, 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 16 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower than the $L_{Aeq, 07:00 - 23:00}$.
- L_{Amin}** The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.
- L_{Amax}** The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.
- L_n** Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say, 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10, 1 hr} = x$ dB.
- The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90} , the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.
- R_w** The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

An explanation of abbreviations used within this report is provided below.

CADNA – Computer Aided Noise Abatement
DMRB – Design Manual for Roads and Bridges
HGV – Heavy Goods Vehicle
UDP – Unitary Development Plan
UKAS – United Kingdom Accreditation Service

APPENDIX B – REPORT CONDITIONS

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