



Planning Noise Impact Assessment for a New Aldi Food Store at Ruthin Road, Wrexham, LL13 7TU

Report ref.

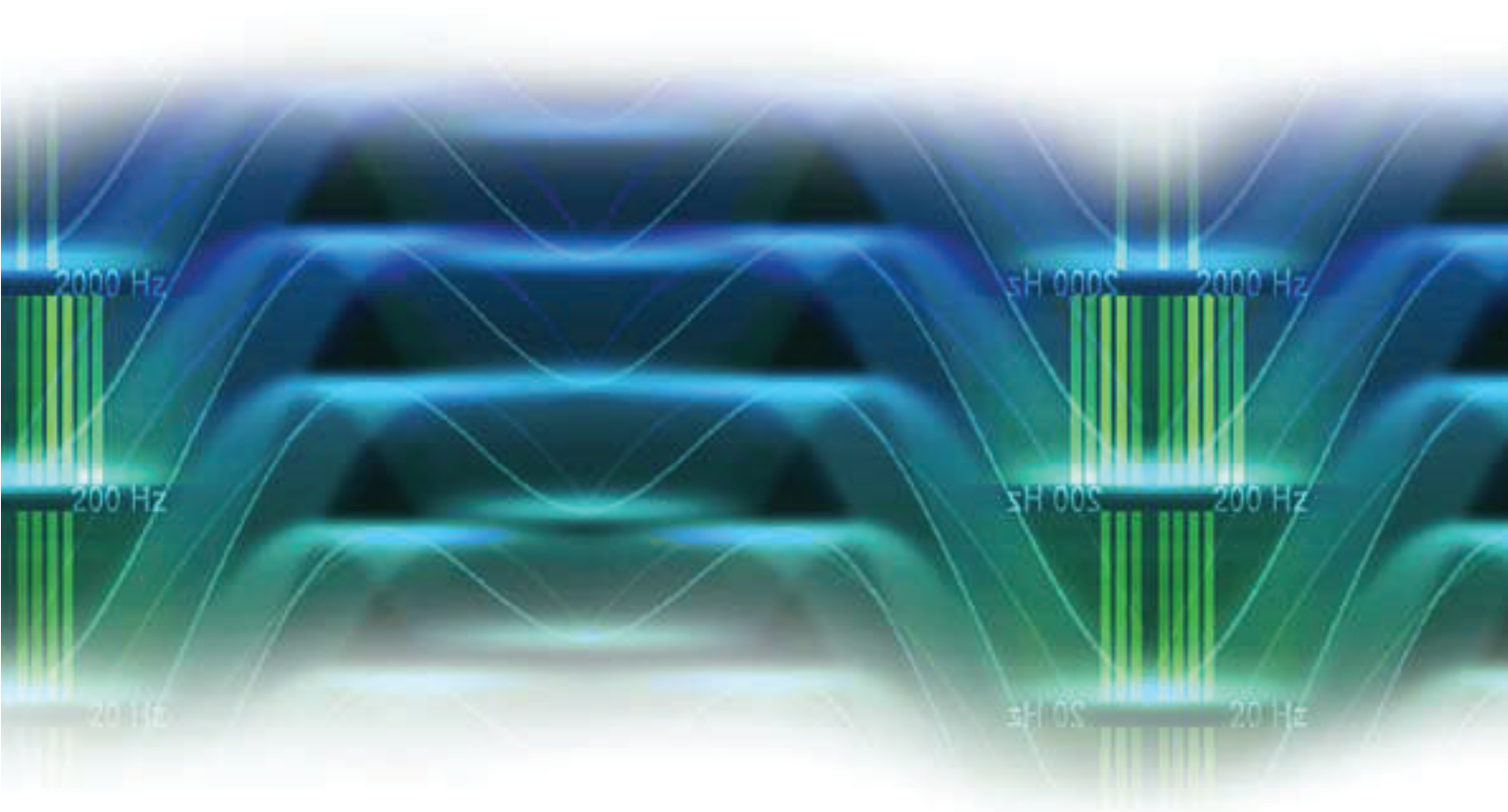
RK1847/15473

Date

January 2016

Issued to

Aldi Stores Ltd

**Issued by**

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Senior Consultant



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1. INTRODUCTION

Aldi Stores Limited has been granted planning permission, subject to conditions, for a new 1,820m² (GEA) food store at land off Ruthin Road in Wrexham. Two of the conditions relate to noise.

Condition 3. *The rating level of any noise generated by air handling plant associated with the development shall not exceed the pre-existing background level by more than 5dB(A) at any time. The noise levels shall be determined at nearby noise sensitive premises, and measurements and assessment shall be made in accordance with BS4142:2014 Method of Rating Industrial Noise Affecting Mixed Residential and Industrial areas.*

Condition 9. *With the exception of the demolition of the existing buildings no further development shall take place until a detailed background noise survey and proposed mitigation scheme to protect the amenities of nearby residential properties from the impact of the use of the service area, shall be submitted to and approved, in writing, by the Local Planning Authority. The scheme as approved shall be fully implemented prior to first use of the supermarket and retained thereafter. If other acceptable mitigation is not appropriate the service hours will be implemented.*

Accordingly, Spectrum Acoustic Consultants has been commissioned by Jones Lang LaSalle, on behalf of Aldi Stores to carry out a noise impact assessment for the purpose of satisfying the requirements of the noise related conditions associated with the development.

2. SITE DESCRIPTION AND PROPOSALS

The consented development is located at land off Ruthin Road in Wrexham. The rear of the site is currently used by Wrexham County Borough Council and the front of the site is currently used as an ambulance station. Ruthin Road bounds the site to the south and has a number of residential properties located along it. Centenary Road bounds the site to the east and provides access to a Morrisons supermarket which is located adjacent to the development site. At the rear of the development site to the north is Wrexham Maelor Hospital. Bounding the development site to the west is Wrexham County Borough Council's offices. An existing site location plan is included in Appendix A

The store would have provision for 149 car parking spaces, 8 of which are for disabled users and 9 of which are for parent and child users. The mechanical plant equipment and delivery bay are to be located on the north side of the store. Scheme layout plans are included in Appendix B.

The Aldi food store is consented trade between 08:00 and 22:00, Monday to Saturday and a six hour period between 10:00 and 18:00 on Sundays. Deliveries are consented between 07:30 and 18:00 Monday to Friday, between 08:00 and 16:00 on a Saturday and at no time on a Sunday or Bank Holiday. However, Aldi require more flexibility is required in terms of deliveries. Therefore, it is proposed that deliveries are unrestricted.



3. ASSESSMENT METHODOLOGY

To assess the environmental noise impact of a new commercial development, it is generally accepted that the predicted noise levels from the use need to be compared with the existing background noise levels at the nearest noise sensitive receptor locations to the site. The potential noise impacts identified in the planning conditions include continuous noise from mechanical services plant, as well as intermittent noise from deliveries.

This assessment adopts the assessment methodology set out in BS 4142:2014 *Methods for rating and assessing industrial and commercial sound*, by comparing the predicted noise levels from both mechanical plant and deliveries, with the existing background noise levels, as measured at locations representative the nearby residential receptor locations. Further detail on the BS 4142:2014 assessment procedure is provided in Section 5 of this report.

Spectrum has previously carried out a detailed noise measurement survey at an existing Aldi food store to measure and evaluate noise produced through the delivery process. This involved vehicle movements on site and unloading activity. The results from the survey have been used to inform the BS 4142:2014 assessment, relating to the potential noise impact from deliveries to the new store.

4. BACKGROUND NOISE MEASUREMENT SURVEY

4.1 COMMUNITY RECEPTOR LOCATIONS

For the purpose of the noise assessment, the following noise measurement locations have been identified as being representative of the most sensitive positions to the proposed store:

- Position A – Ruthin Road
- Position B – Rear of the development site representative of the Wrexham Maelor Hospital (non-residential).

The locations are illustrated on the existing site location plan, included in Appendix A.

4.2 NOISE SURVEY DETAILS AND INSTRUMENTATION

The background noise measurement survey, completed for providing information to use in the noise impact assessment, was carried out from Thursday 14 to Saturday 16 January 2016. The attended measurements were recorded in accordance with the procedures outlined in BS 4142:2014, with noise samples recorded in terms of 15 minute periods. The microphone positions are shown on the existing site location plan included in Appendix A.

The parameters recorded during the measurement survey included L_{Aeq} , L_{A90} and L_{AFmax} . In accordance with BS 4142 guidance, L_{A90} is used for describing background noise and, as such, will be used for the purpose of the noise impact assessment. L_{Aeq} is used to describe the ambient noise level, with L_{Amax} representing the maximum noise level measured during the sample period.



The following instrumentation was used during the noise measurement survey:

- Bruel & Kjaer Type 2260 Sound Level Meter s/n 2311704
- Bruel & Kjaer Type 4189 Microphone s/n 2733049
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 2688672

Before and after the survey, the sound level meter was field-calibrated in accordance with the manufacturer's guidelines, and no significant drift was observed. The meter, microphone and field calibrator are laboratory calibrated biennially in accordance with UKAS procedures or to traceable National Standards.

During the noise survey, the weather was mild with occasional light rain showers and low wind speeds. The conditions were adequate for noise measurement purposes.

4.3 NOISE SURVEY RESULTS

During the daytime, ambient noise levels in the environment around the development site in Wrexham are controlled by road traffic movements. During the night time, road traffic movements reduce and mechanical services plant located at the Wrexham Maelor Hospital and Morrisons is audible.

Environmental noise record sheets detailing the full breakdown of results from the attended noise measurement survey are included in Appendix C. Table 1 shows the typical background noise levels during the sensitive periods at each of the noise measurement locations.

Measurement Location	Typical Background LA90 Noise Levels (dB)			
	14:00-16:00 (1 hour)	22:00-23:00 (1 hour)	23:00-01:00 (15 min)	05:30-07:00 (15 min)
Position A – Ruthin Road	55	44	39	45
Position B – Rear of the development site representative of the Wrexham Maelor Hospital (non-residential).	53	44	43	46

Table 1: Summary of the measured background noise levels during sensitive periods

During the sensitive night-time period when deliveries are intended to be carried out and all of mechanical plant items would be running, background noise levels are typically $L_{A90,15 \text{ min}}$ 39dB at the nearest residential properties on Ruthin Road.

5. ASSESSMENT CRITERIA

The noise impact assessment relating to both mechanical plant and deliveries at the proposed store will be carried out in accordance with the procedures set out in BS 4142. This Standard provides a method for assessing whether industrial sound is likely to give rise to an adverse impact on people living in the locality of the site and uses the concept of a 'Rating Level', which is based on the 'Specific Level' from the new development, (measured in terms of L_{Aeq} at the defined assessment position), with corrections applied to account for any tonal or impulsive characteristics in the noise (as these can increase the likelihood of an adverse impact).



The assessment level is obtained by comparing the Rating Level with the existing Background Sound Level (measured in terms of L_{A90} at the assessment position). Where the Rating Level exceeds the Background Sound Level by 10dB(A) or more, an indication of a significant adverse impact is likely. Where this is reduced to 5dB(A), the impact would likely to be adverse.

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 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. In line with the requirements of Condition 3, the Rating Levels associated with mechanical services plant and deliveries at the development should not exceed 5dB above the Background Sound Levels for the relevant periods.

Additionally, Guidelines for Community Noise – World Health Organisation, 1999 (WHO) provides precautionary guideline noise levels to avoid moderate annoyance and sleep disturbance. For outdoor living areas during the day time period (07:00-23:00), table 4.1 of WHO references a guideline façade level of $L_{Aeq(16\text{-hour})}$ 50dB(A). For outside bedrooms (with windows open) during the night time period (23:00-07:00), table 4.1 of WHO references a guideline façade level of $L_{Aeq(8\text{-hour})}$ 45dB(A).

For the assessment of the potential noise impact, consideration will therefore be given to the BS 4142:2014 assessment level, together with the precautionary guideline noise limits defined by the WHO Guidelines.

6. POTENTIAL NOISE IMPACTS

For the planned operation of the store, the following noise impacts have been identified for the assessment:

- Noise produced from mechanical services plant
- Noise produced from deliveries

In order to accurately assess the level of potential noise impact, a quantitative prediction for each of the above is provided.

6.1 PREDICTION OF MECHANICAL PLANT NOISE

The mechanical plant layout proposals are outlined on the plans included in Appendix B. All of the condensing units would be located externally, close to the northern aspect of the store and these would run continuously throughout the daytime and night time periods. The ventilation system would only operate when staff would be working at the store, which could occur during the critical early morning hours.

The extraction fan system has been designed to discharge to atmosphere via a roof cowl located on the roof of the store. An air handling unit is proposed to be located inside a dedicated plant room within the store. However, noise levels from this unit are low and would be insignificant outside of the plant room, once the effects of the building attenuation have been accounted for. Therefore, the air handling unit has been omitted from the noise prediction.



Typical noise outputs (in terms of sound power levels) generated by standard versions of each item of mechanical plant to be included in the proposed scheme, are shown in Table 2. This information is based upon data provided in specifications issued by the mechanical services contractor and equipment suppliers.

Plant Item	No. off	Sound Power Level Lw(A) ¹	Equivalent Sound Pressure Level at 10m (dB)
Arctic Circle Condensing Pack	1	73	45
Low Temperature Condensing Unit	2	73	45
High Temperature Condensing Unit	1	73	45
Extract Fan Unit	1	82	54

Table 2: Sound Power Levels of External Mechanical Plant

Predictions of how the noise from each of the mechanical plant sources propagates to sensitive community receptors, together with the cumulative effect of all these noise sources, has been determined by noise modelling using proprietary software (Predictor²) which meets the requirement of ISO 9613 Part 2:1996³. The noise model takes account of the following in its calculations procedures:

- Source sound power level (for point, line and area sources)
- Reflection from nearby structures and source directivity
- Distance from noise source (geometric spreading)
- Atmospheric absorption
- Acoustic screening of intervening structures and topography
- Ground absorption
- Ground effects (which includes the height of ground relative to the noise source)

Detailed noise calculations, providing information on total specific noise at each receptor, together with the contributions from each individual noise source, at each receptor location, are computed. To illustrate the scheme, a diagram showing the distribution and locations of mechanical plant noise sources, superimposed on a 3D view of the site, is included in Appendix D. A noise map, showing the noise contours produced by the mechanical services plant is also provided in Appendix D of this report.

Initial predictions concluded that unmitigated noise levels associated with the mechanical services plant at the proposed Aldi store would be significant at the nearby residential receptor locations. Consequently, mitigation options were discussed with the developer in order to reduce the noise impact. Accordingly, the developer is proposing to incorporate a 10dB(A) in-line silencer into the store's extraction fan system.

Predicted specific noise levels at each of the nearby receptor locations with the proposed mitigation in place are provided in Table 3 below.

¹ Sound power levels (LWA) are calculated from sound pressure level (LpA) measurements made at a specified distance from equipment.

² Bruel and Kjaer – Predictor V11 Environmental Noise Calculation Software Package, Type 7810

³ ISO 9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation to determine Noise Levels



Receptor	L _{Aeq} dB(A)	L _{Aeq} Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
R1 – 165 Ruthin Road	25	-	8	10	20	21	18	11	-
R2 – 154 Ruthin Road	24	-	7	9	19	20	17	8	-
R3 – 178 Ruthin Road	17	-	1	3	13	13	10	-	-

Table 3: Predicted specific noise contribution from the mechanical services plant at the nearby residential receptor locations.

As indicated in Table 3, with the proposed mitigation in place, predicted noise levels at the community locations, from the combined mechanical services plant, would be in the range of L_{Aeq} 17-25dB(A).

6.2 PREDICTION OF DELIVERY NOISE

For the purpose of this assessment, the specific L_{Aeq} noise level produced by a delivery to the proposed Aldi food store, at the noted residential receptor locations, will be established by prediction.

The delivery process is broadly similar at all Aldi stores. Consequently, as the basis of the prediction, the typical noise levels produced during this activity have been referenced from detailed noise measurements covering deliveries made to the Aldi store in Sandbach, Cheshire.

For these measurements, continuous 2-second noise measurements were carried out at a height of 1.5m above ground, approximately 10m from the acoustic centre of the noise source (in this case the delivery operation). The same instrumentation was used, as for the background noise survey detailed in Section 4.2.

Deliveries to Aldi stores typically last between fifty minutes, and an hour and twenty minutes. However, this period can be variable depending on the amount of stock being accepted by the store, with some delivery cycles taking just thirty to forty minutes. The procedure for a delivery is for the delivery vehicle to reverse and lock into a dock sleeve within the loading bay, so that stock is directly unloaded into the store warehouse with no external unloading.

Observations made during the measurement survey indicated that noise from the delivery vehicle (a HGV) is evident when the vehicle arrives, manoeuvres into position (with reverse alarm on) on the loading bay and then departs. However, the engine of the vehicle is then turned off once it has docked onto the loading bay, so for the greater part of the delivery, HGV engine noise is not evident.

With respect to noise from unloading of the vehicle, noise produced in the delivery bay area primarily consists of noise breaking out of the side of the trailer from pallets of stock being moved using a pallet truck, operating within the trailer and the dock sleeve. It is worth noting that the trailer of the vehicle under test was a temperature controlled unit, with noise emanating from a dedicated, diesel powered refrigeration motor. This presents a typical worst case delivery scenario, with regards to noise.



The noise profile taken over the delivery period (of approximately 40 minutes) is shown in Figure 1 below.

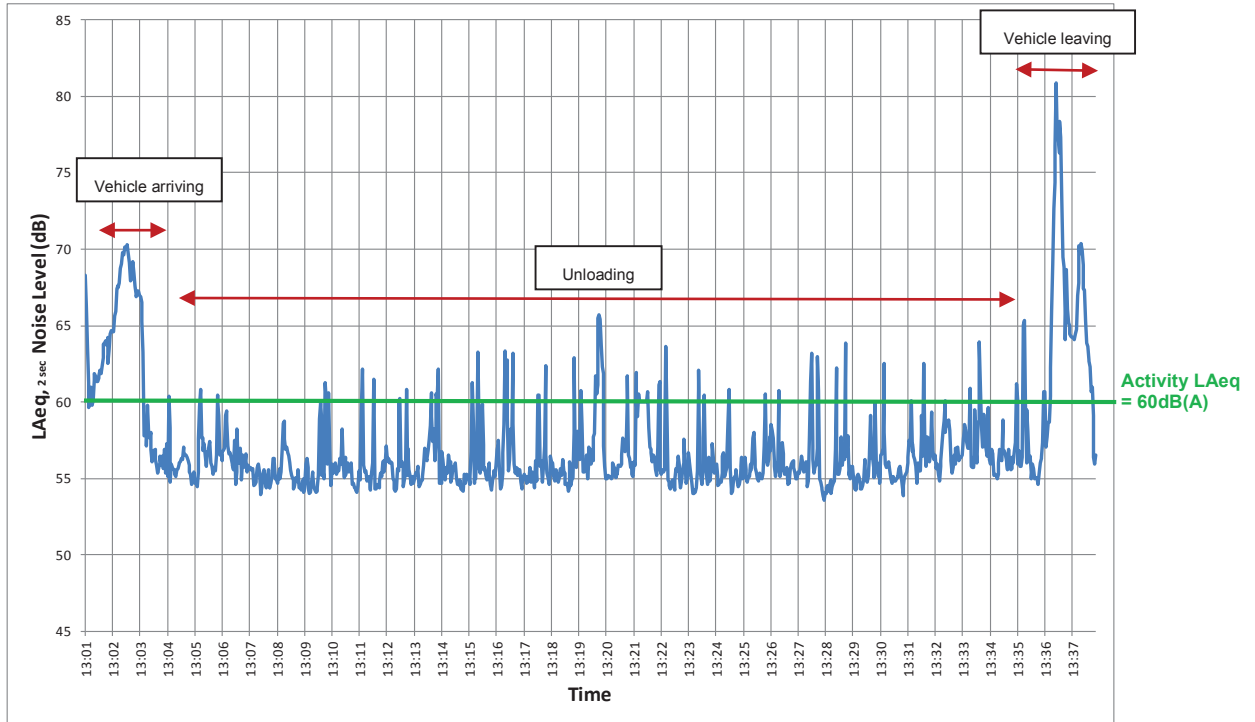


Figure 1: Measured noise levels from delivery activity at approximately 10m from the centre of the delivery area

Prediction methodologies use the sound power level (L_w) of a source as input data, so for this purpose the measured delivery activity noise level, expressed in terms of $L_{Aeq,T}$, needs to be converted to the equivalent activity sound power level. This is derived using the measured delivery $L_{Aeq,T}$ (where T is the delivery period), corrected firstly for the pre-existing ambient noise levels in the absence of the delivery and then to take account of the measurement surface area enveloping the noise source. A summary of the calculated activity sound power level associated with the delivery operation is shown in Table 4 below.

Detail	dB(A)	Octave Band Sound Power Levels (dB)							
		63	125	250	500	1k	2k	4k	8k
Activity $L_{Aeq,T}$ at 10m	60	66	65	55	53	55	54	45	38
L_p to L_w Correction	25	25	25	25	25	25	25	25	25
Activity Sound Power Level L_w	85	91	90	80	78	80	79	70	63

Table 4: Calculated activity sound power level associated with delivery operation

To accurately evaluate the overall effect of delivery noise, it is necessary to consider the noise that is likely to be generated by this operation, at the nearby residential receptor locations.

The sound power level of the delivery activity (as detailed in Table 4) is used as a starting point for the purpose of predicting noise levels in the surrounding environment and at specified community receptor locations near to the site, using an environmental noise propagation model. As with mechanical plant noise, the prediction of noise associated with deliveries is carried out using Bruel & Kjaer's 'Predictor' software.



The noise map, showing the noise contours produced by the delivery is included in Appendix E of this report. Predicted specific noise levels at the nearby receptor locations are provided in Table 5 below.

Receptor	L_{Aeq} dB(A)	L_{Aeq} Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
R1 – 165 Ruthin Road	17	7	13	8	9	10	7	-	-
R2 – 154 Ruthin Road	20	8	16	11	12	14	10	-	-
R3 – 178 Ruthin Road	20	8	15	10	11	13	9	-	-

Table 5: Predicted specific noise contribution from the delivery activity at the nearby residential receptor locations.

As indicated in Table 5, predicted noise levels at the community locations would be in the range of L_{Aeq} 17-20dB(A).

7. ASSESSMENT OF NOISE IMPACTS

7.1 ASSESSMENT OF MECHANICAL PLANT NOISE

All of the proposed mechanical plant items would run continuously. Consequently, for the purposes of this assessment, the predicted plant rating levels will be compared with the background sound levels measured during the night time period, at the nearby residential receptor locations.

Table 6 shows a BS4142 assessment covering the mechanical plant noise impact. None of the mechanical plant items emit any distinct tones or impulses. Nor do the items emit any characteristics which are readily distinctive against the existing acoustic environment. Therefore an acoustic feature correction has not been included in the rating level.

Residential Position	Rating Level (dB)	Background L_{A90} noise level (dB)	Assessment Level (dB) (Background excess)
R1 – 165 Ruthin Road	25	39	-14
R2 – 154 Ruthin Road	24	39	-15
R3 – 178 Ruthin Road	17	39	-22

Table 6: Predicted rating levels from mechanical plant at the nearby residential properties, compared with the measured night time (23:00-01:00) background L_{A90} level

The study predicts that at the nearest residential positions, mechanical plant rating levels would be comfortably lower than the background noise levels during the night time. Furthermore, mechanical plant noise levels would be comfortably lower than the WHO $L_{Aeq,8\text{ hour}}$ 45dB advised night time criteria at all of the nearby residential receptor locations. Consequently, the proposed mechanical plant would have a low noise impact.



7.2 ASSESSMENT OF DELIVERY NOISE

Service deliveries to the store are proposed to be unrestricted. Table 7 shows a BS4142 assessment covering the delivery noise impact. As indicated, the predicted delivery rating levels are compared with the background sound levels measured during the most sensitive night-time period (23:00-01:00), when background noise levels are lower, at the nearby residential receptor locations.

In this instance the rating level includes a +6dB(A) feature correction, as the delivery noise contains some occasional bangs and clatters, which may be considered as having impulsive character. No on-time correction has been applied, as the duration of the loading activity is typically equal to or greater than the 1-hour assessment period.

Residential Location	Specific Activity Noise (dB)	Feature Correction (dB)	Rating Level (dB)	Background L_{A90} noise level (dB)	Assessment Level (dB) (Background excess)
R1 – 165 Ruthin Road	17	+6	23	39	-16
R2 – 154 Ruthin Road	20	+6	26	39	-13
R3 – 178 Ruthin Road	20	+6	26	39	-16

Table 7: Predicted rating level of delivery activity at the residential properties, compared with the sensitive night-time period (23:00-01:00) background L_{A90} level

The study predicts that at the nearest residential properties, delivery rating levels would be comfortably lower than the background noise levels during the sensitive night time period. Again, delivery noise levels would also be comfortably lower than the WHO $L_{Aeq,8 \text{ hour}}$ 45dB advised night time criteria at all of the nearby residential receptor locations. Consequently, unrestricted deliveries to the store would have a low noise impact.

8. CONCLUSIONS

In order to satisfy the requirements of two noise related planning conditions set by Wrexham County Borough Council, a noise assessment has been completed to consider the potential impacts of noise produced by mechanical services plant and deliveries, associated with a consented Aldi food store at land off Ruthin Road in Wrexham.

A background noise measurement survey has been conducted at locations representative of the most sensitive positions to the development site and predictions of noise from the cumulative mechanical plant equipment has been completed, utilising a proprietary software package. An assessment of the potential noise impact produced by deliveries to the store has also been completed.

The conclusions resulting from these noise assessments may be summarised as follows:

- Noise limits for mechanical plant at the Aldi store have been established for the sensitive night time period, based on measured background sound levels, as well as taking account of BS 4142 and the WHO guidelines. Predictions have indicated that with the proposed mitigation measures in place, overall noise levels from these services would meet noise limit objectives and consequently have a low impact.



- Noise limits for deliveries to the Aldi store have been established for the sensitive night-time, based on measured background noise levels, as well as taking account of BS4142 and the WHO guidelines. Predictions have indicated that noise from unrestricted deliveries would also meet noise limit objectives and consequently have a low impact.

The assessment has indicated that with the proposed mitigation measures in place, the consented development would have a low noise impact on the nearby proposed and existing residential community. Therefore, the requirements of Condition 3 and Condition 9 have now been satisfied.

Report Code: E/C/R



APPENDIX A

Existing site location plans



Wrexham Maelor Hospital

Wrexham Maelor Hospital

N

Position B

Council Offices

Proposed Aldi Store

Morrisons

Coch

A525

A525

A525

Ruthin Rd

Gibson St

Peel St

A525

R1. 165 Ruthin Rd

R3. 178 Ruthin Rd

R2. 154 Ruthin Rd

Position A

Ysgol Clywedog

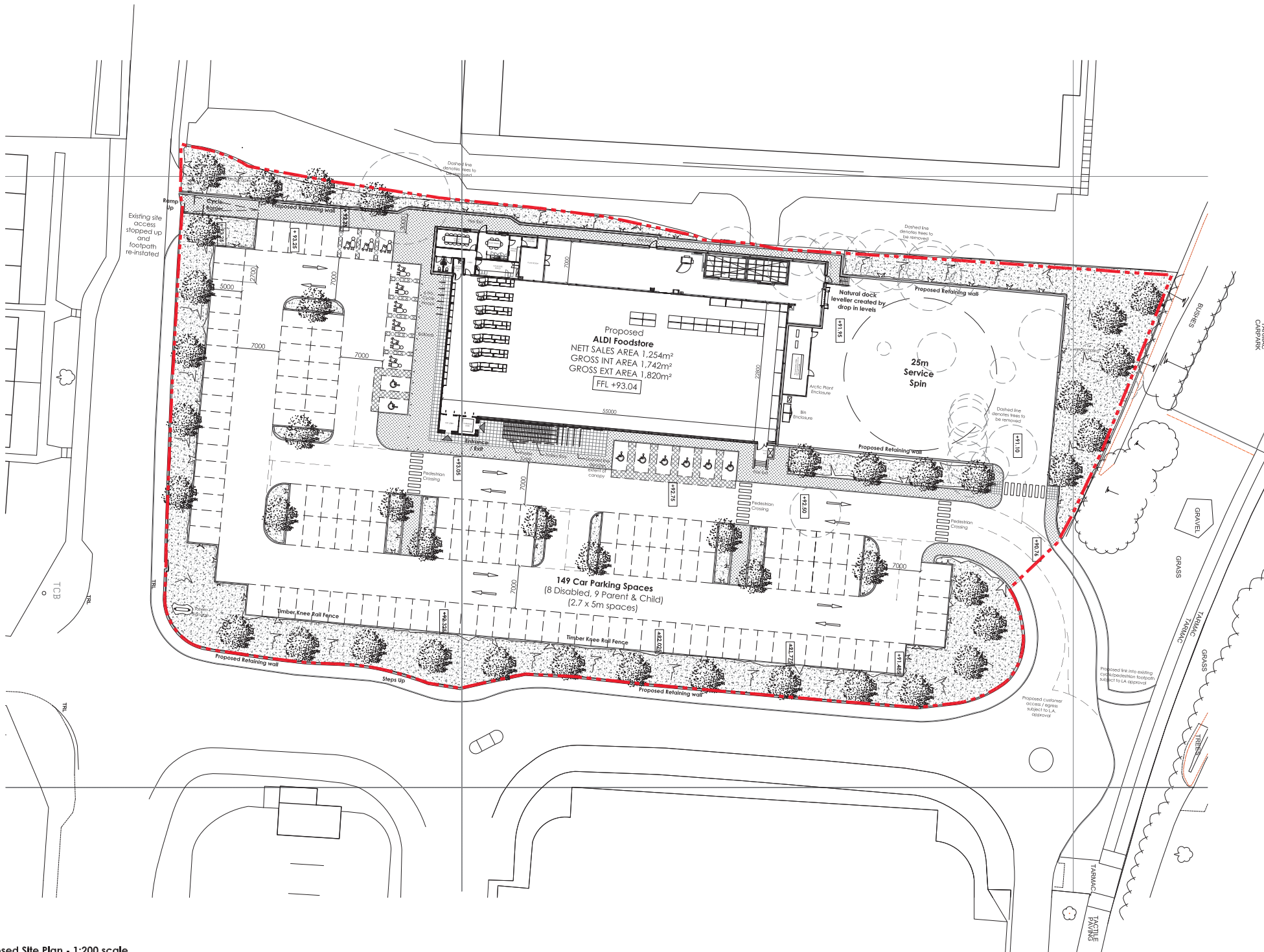
Centenary Rd

Empire St



A P P E N D I X B

Proposed scheme layout drawings



KEY

- FOOTPATH SPEC: 200mm (with 40mm deep stone) mastic asphalt on 50mm dense tar base course in accordance to BS4987 or 100mm sub base of type 1 hardcore.
- Paving 450x450x50mm smooth ground finish bedded on m/s. 50mm wet dry environment mastic on well compacted 250mm hardcore bed, built up to be confirmed by Structural Engineer.
- 102.700 Proposed Levels.
- Existing site boundary.
- Existing tree to be removed.
- Proposed tree.

Note:

- Car park will be kept to be permeable, paved by Aggro Unleaved.
- Call scan required locally to locate all existing services prior to proposed works.

Site Area -
11,391sqm / 2.815acres

Rev	Description	Date	By	Check
F	02/11/15	02/11/15	02/11/15	02/11/15
E	02/11/15	02/11/15	02/11/15	02/11/15
D	02/11/15	02/11/15	02/11/15	02/11/15
C	02/11/15	02/11/15	02/11/15	02/11/15
B	02/11/15	02/11/15	02/11/15	02/11/15
A	02/11/15	02/11/15	02/11/15	02/11/15

PROPOSED DEVELOPMENT
AMBULANCE STATION SITE
BURNHILL ROAD
WREDSHAM

ALDI STORES LTD.

PLANNING

1:200

0839NES-102

HARRIS



APPENDIX C

Environmental Noise Record Sheets



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 1 of 2
RK1856/15473

Location: Position A - Ruthin Road

Project: 15473 - Aldi Wrexham

Date: 14/01/2016, 15/01/2016, 16/01/2016

Instrumentation: Bruel & Kaejer 2260/5

Calibration Times: 14:07, 16:12, 22:05, 01:20, 11:35

Plant Operating Condition: --

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise)).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
14/01/2016	14:09	15	3.8	NW	10	67	61	55	76	52	64	Traffic, wind in trees
14/01/2016	14:53	15	2.5	NW	5	67	61	55	91	53	66	Traffic, wind in trees, seagulls
14/01/2016	15:33	15	3.8	NW	5	69	63	56	85	53	67	Traffic, wind in trees
14/01/2016	22:06	15	0	--	80	67	54	46	75	44	62	Traffic
14/01/2016	22:51	15	0	--	80	57	45	43	72	41	55	Traffic
14/01/2016	23:34	15	0	--	80	54	44	41	82	39	54	Traffic
15/01/2016	00:14	15	0	--	80	52	42	38	70	35	52	Traffic
15/01/2016	00:53	15	0	--	80	55	42	39	74	36	55	Light hum from hospital plant, Morrisons delivery
15/01/2016	11:38	15	2.3	NW	30	68	63	58	89	54	67	Traffic
15/01/2016	12:23	15	2.8	NW	30	68	62	55	77	52	64	Traffic
16/01/2016	05:51	15	0	--	20	58	48	44	72	40	55	Traffic, birdsong, Morrisons delivery
16/01/2016	06:33	15	0	--	20	61	49	45	80	41	58	Traffic, birdsong, Morrisons delivery

Date	Time	LA90 (dB)	L90 Octave Band Pressure Level								Comments	
			31	63	125	250	500	1k	2k	4k		8k
14/01/2016	14:09	55	66	64	56	51	50	51	47	38	---	Traffic, wind in trees
14/01/2016	14:53	55	65	62	55	51	50	51	47	38	---	Traffic, wind in trees, seagulls
14/01/2016	15:33	56	65	64	56	52	50	52	48	38	---	Traffic, wind in trees
14/01/2016	22:06	46	50	51	48	41	40	43	38	30	---	Traffic
14/01/2016	22:51	43	47	47	44	37	36	40	33	---	---	Traffic
14/01/2016	23:34	41	50	47	43	37	36	38	30	---	---	Traffic
15/01/2016	00:14	38	47	46	42	35	32	34	---	---	---	Traffic
15/01/2016	00:53	39	47	46	42	35	33	35	---	---	---	Light hum from hospital plant, Morrisons delivery
15/01/2016	11:38	58	64	63	56	52	52	54	52	46	34	Traffic
15/01/2016	12:23	55	64	62	55	50	49	51	47	39	---	Traffic
16/01/2016	05:51	44	49	48	43	38	38	41	32	---	---	Traffic, birdsong, Morrisons delivery
16/01/2016	06:33	45	52	52	46	39	39	41	34	---	---	Traffic, birdsong, Morrisons delivery



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 2 of 2
RK1856/15473

Location: Position B - Near Hospital car park

Project: 15473 - Aldi Wrexham

Date: 14/01/2016, 15/01/2016, 16/01/2016

Instrumentation: Bruel & Kaejer 2260/5

Calibration Times: 14:07, 16:12, 22:05, 01:20, 11:35

Plant Operating Condition: --

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise)).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
14/01/2016	14:32	15	1.8	NW	10	56	54	53	65	52	55	Traffic, wind in trees, seagulls
14/01/2016	15:12	15	2.2	NW	5	55	54	53	62	51	54	Traffic, wind in trees, birdsong
14/01/2016	15:53	15	1.8	NW	5	56	54	53	64	52	55	Traffic, wind in trees
14/01/2016	22:29	15	0	--	80	50	47	44	62	42	49	Traffic, hospital plant noise
14/01/2016	23:11	15	0	--	80	51	47	45	62	42	49	Traffic, hospital plant noise
14/01/2016	23:54	15	0	--	80	48	45	43	58	41	46	Traffic, hospital plant noise
15/01/2016	00:34	15	0	--	80	49	43	41	59	40	46	Traffic, hospital plant noise, Morrisons delivery
15/01/2016	12:01	15	1.8	NW	50	54	53	51	59	50	53	Traffic, noise from hospital building site
16/01/2016	06:12	15	0	--	20	51	49	46	57	43	49	Traffic, hospital plant noise, birdsong, Morrisons delivery

Date	Time	LA90 (dB)	L90 Octave Band Pressure Level								Comments	
			31	63	125	250	500	1k	2k	4k		8k
14/01/2016	14:32	53	60	59	52	47	50	50	41	---	---	Traffic, wind in trees, seagulls
14/01/2016	15:12	53	60	59	51	46	49	50	40	---	---	Traffic, wind in trees, birdsong
14/01/2016	15:53	53	59	58	51	47	50	51	40	---	---	Traffic, wind in trees
14/01/2016	22:29	44	48	50	48	40	42	40	33	---	---	Traffic, hospital plant noise
14/01/2016	23:11	45	49	50	48	41	42	41	33	---	---	Traffic, hospital plant noise
14/01/2016	23:54	43	49	50	48	40	42	38	31	---	---	Traffic, hospital plant noise
15/01/2016	00:34	41	47	49	48	39	40	34	---	---	---	Traffic, hospital plant noise, Morrisons delivery
15/01/2016	12:01	51	58	57	50	46	46	49	41	---	---	Traffic, noise from hospital building site
16/01/2016	06:12	46	51	51	48	43	40	44	35	---	---	Traffic, hospital plant noise, birdsong, Morrisons delivery



APPENDIX D

Results of the noise prediction model relating to mechanical plant

15473 - Aldi Ruthin Road, Wrexham
Mechanical Plant Noise

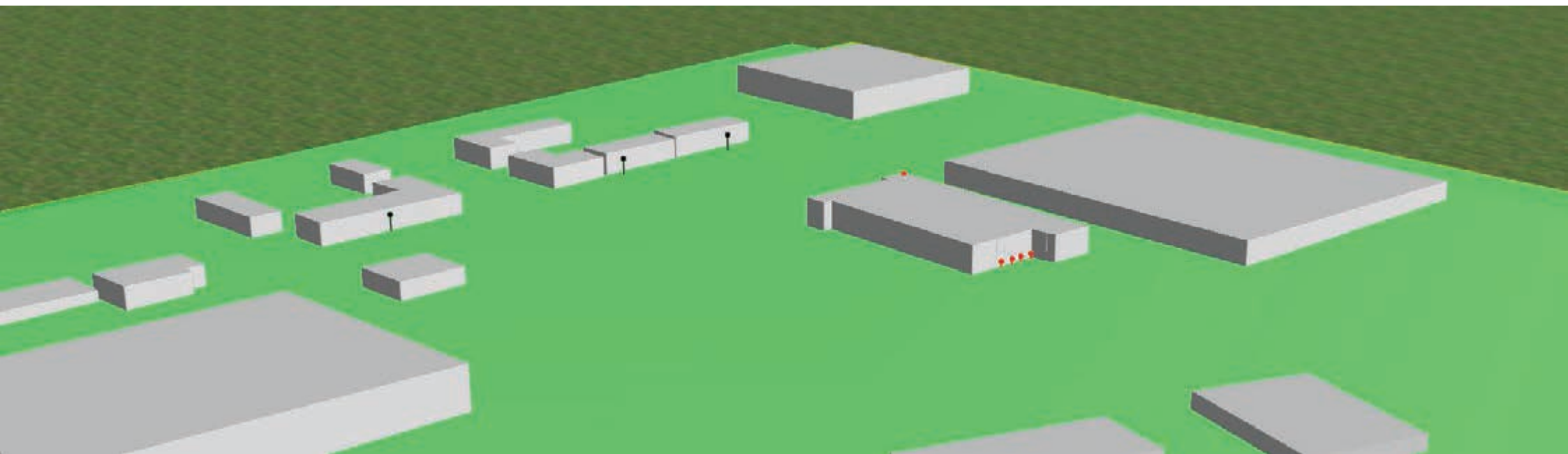
Spectrum Acoustics Consultants, UK

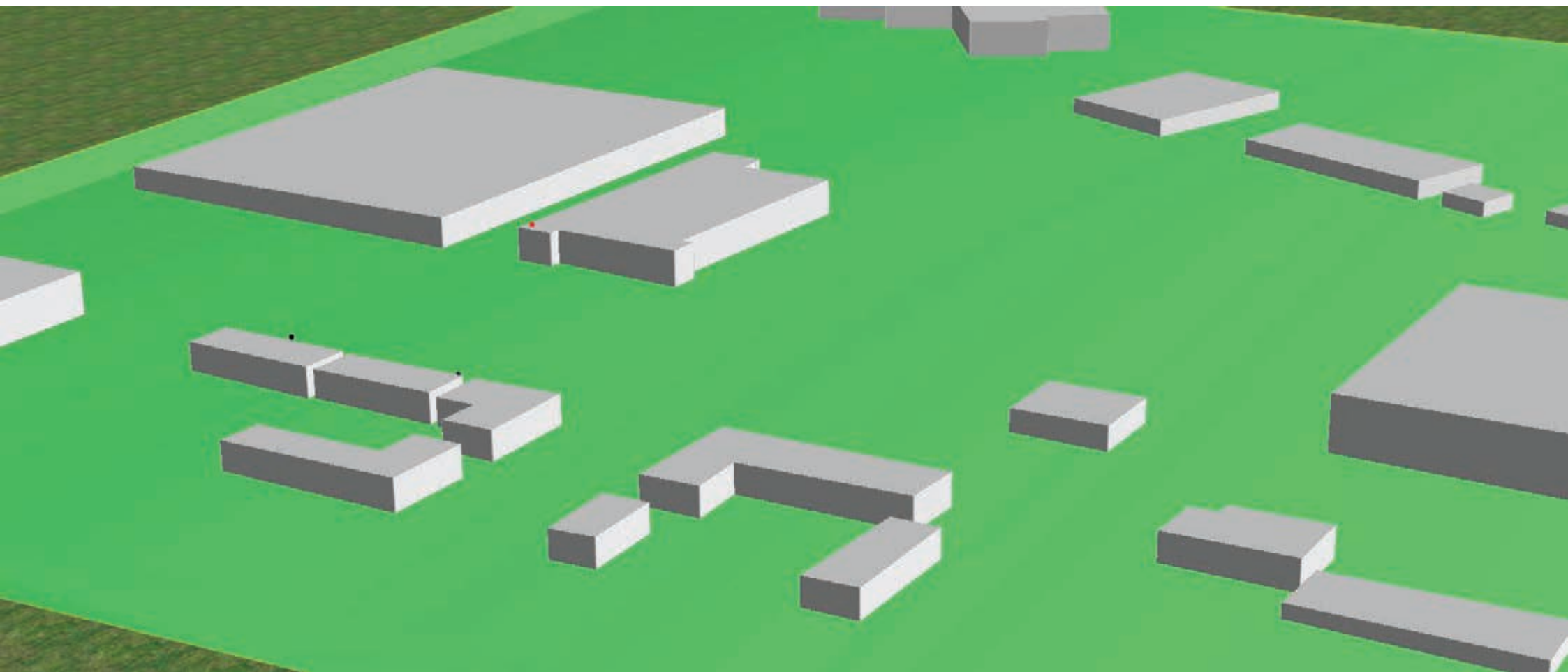
Report: Table of Results
Model: Mechanical
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name		Height	Night								
Receiver	Description		Total	63	125	250	500	1000	2000	4000	8000
House 1_A	R1. 165 Ruthin Road	4.00	25	--	8	10	20	21	18	11	--
House 2_A	R2. 154 Ruthin Road	4.00	24	--	7	9	19	20	17	8	--
House 3_A	R3. 178 Ruthin Road	4.00	17	--	1	3	13	13	10	--	--

All shown dB values are A-weighted









A P P E N D I X E

Results of the noise prediction model relating to deliveries

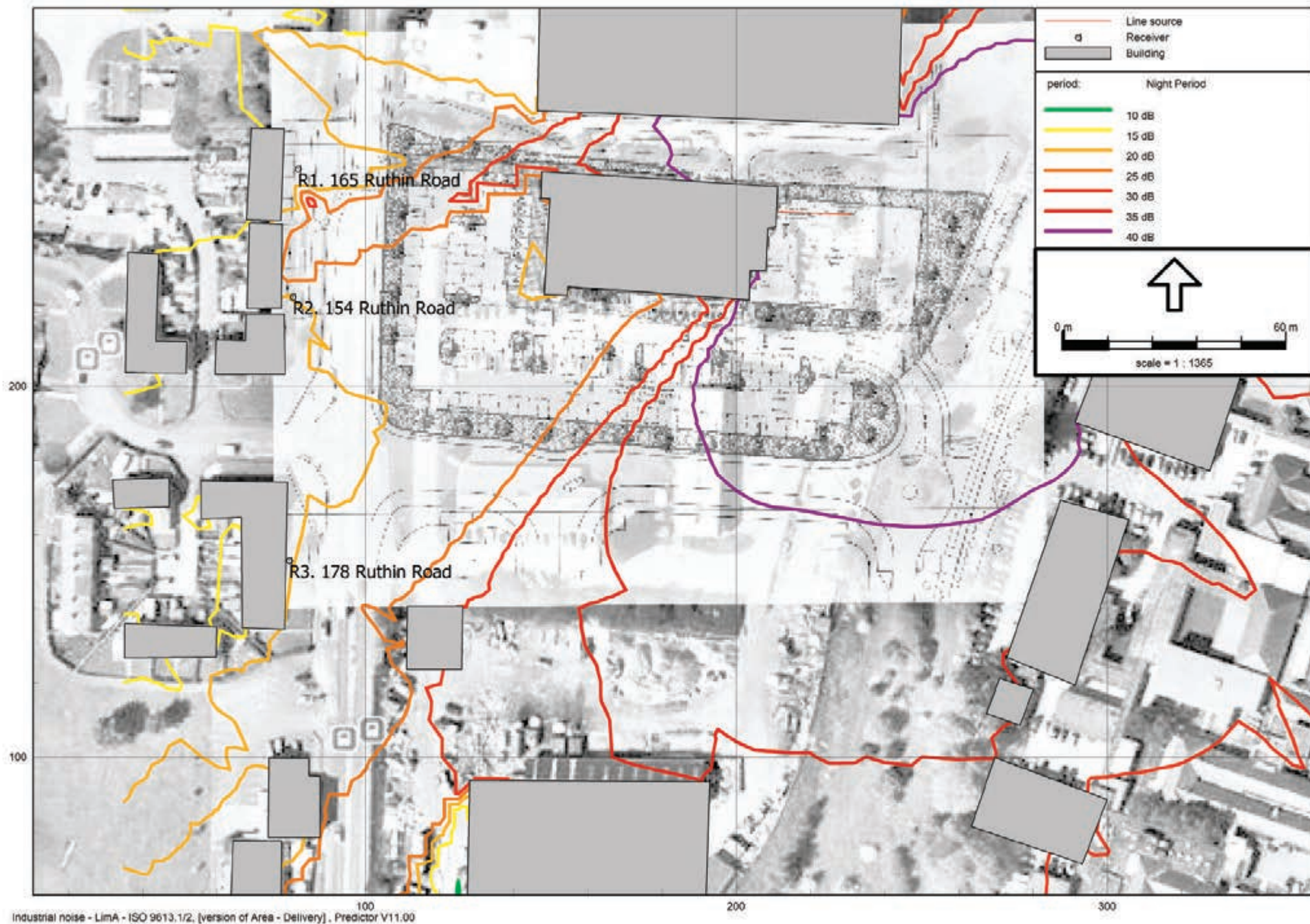
15473 - Aldi Ruthin Road, Wrexham
Delivery Noise

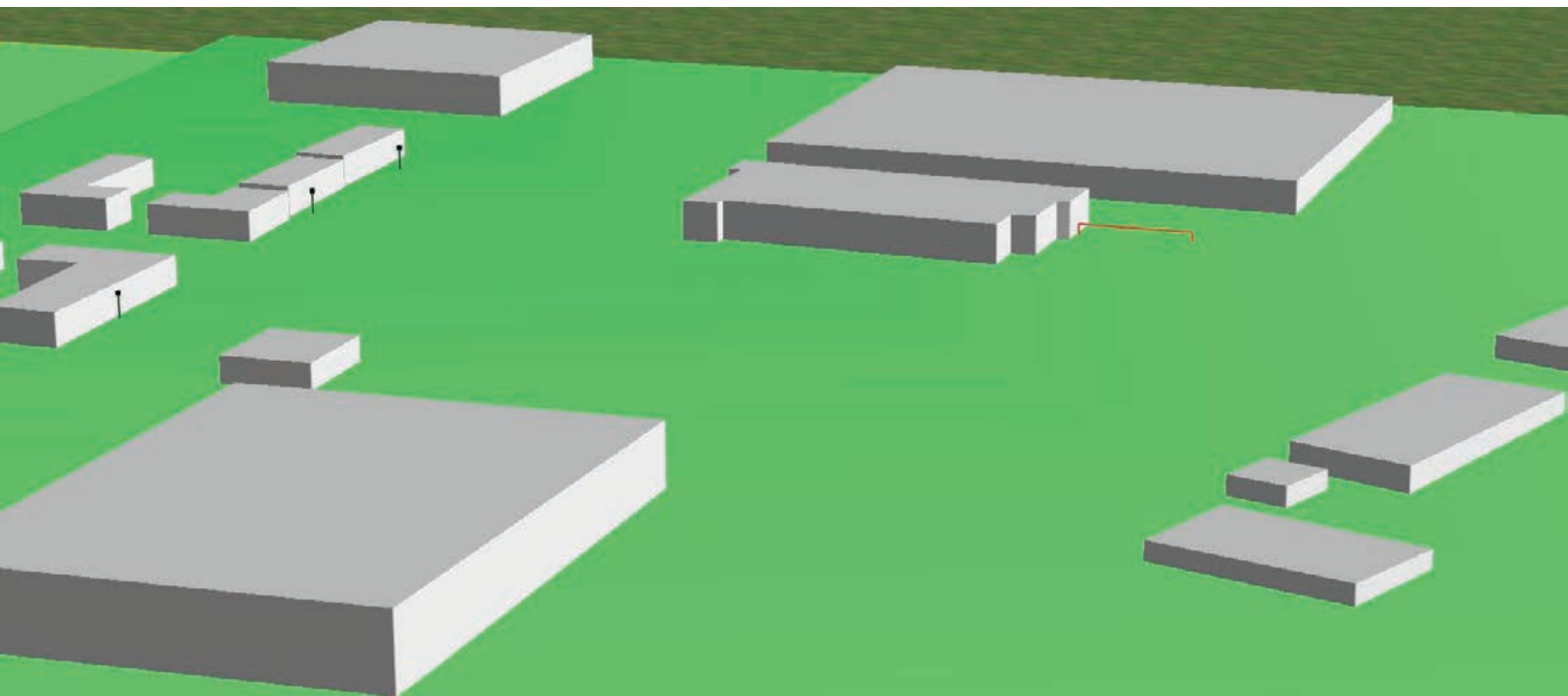
Spectrum Acoustics Consultants, UK

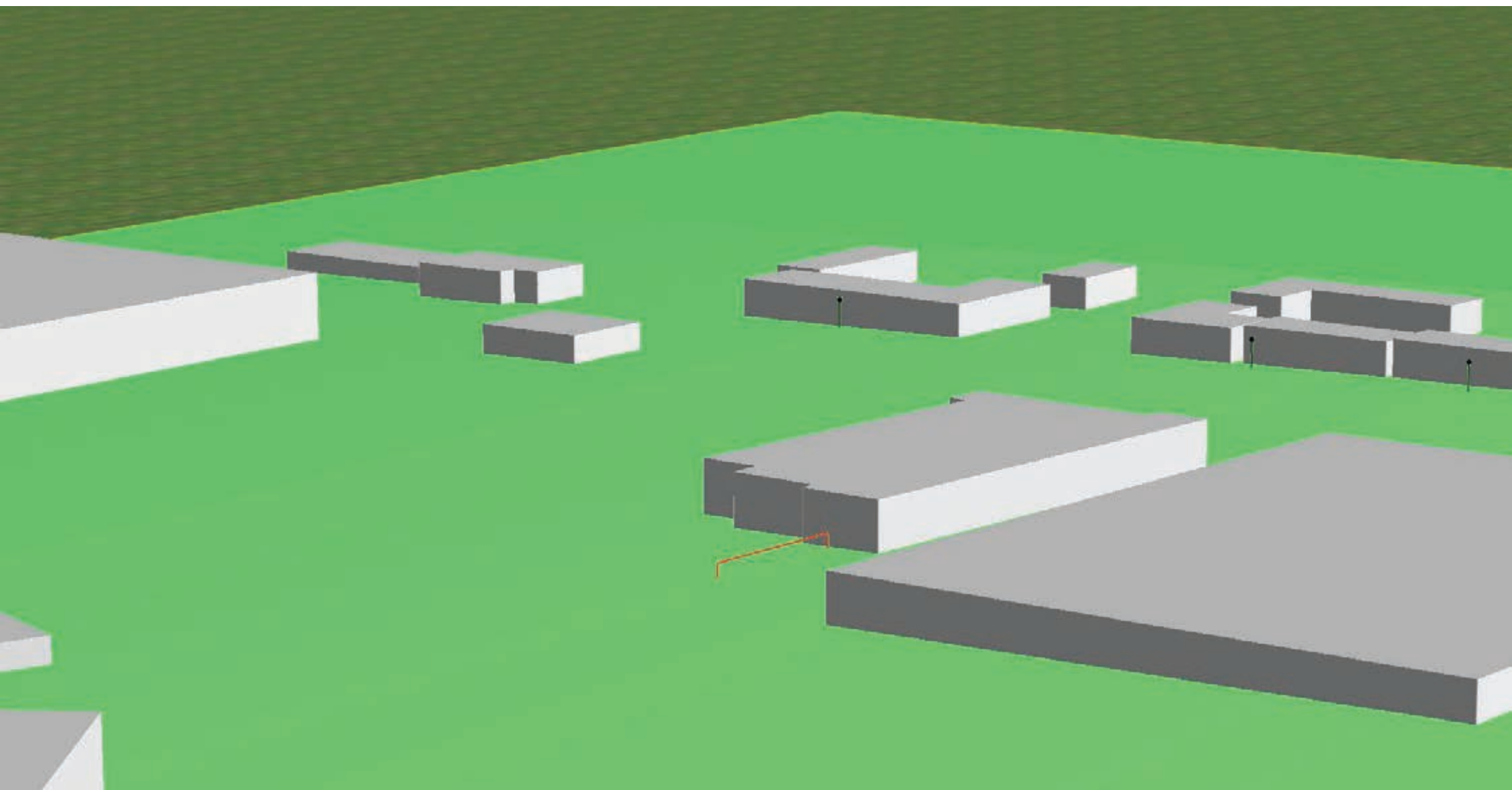
Report: Table of Results
Model: Delivery
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name			Night									
Receiver	Description	Height	Total	63	125	250	500	1000	2000	4000	8000	
House 1_A	R1. 165 Ruthin Road	4.00	17	7	13	8	9	10	7	--	--	
House 2_A	R2. 154 Ruthin Road	4.00	20	8	16	11	12	14	10	--	--	
House 3_A	R3. 178 Ruthin Road	4.00	20	8	15	10	11	13	9	--	--	

All shown dB values are A-weighted







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