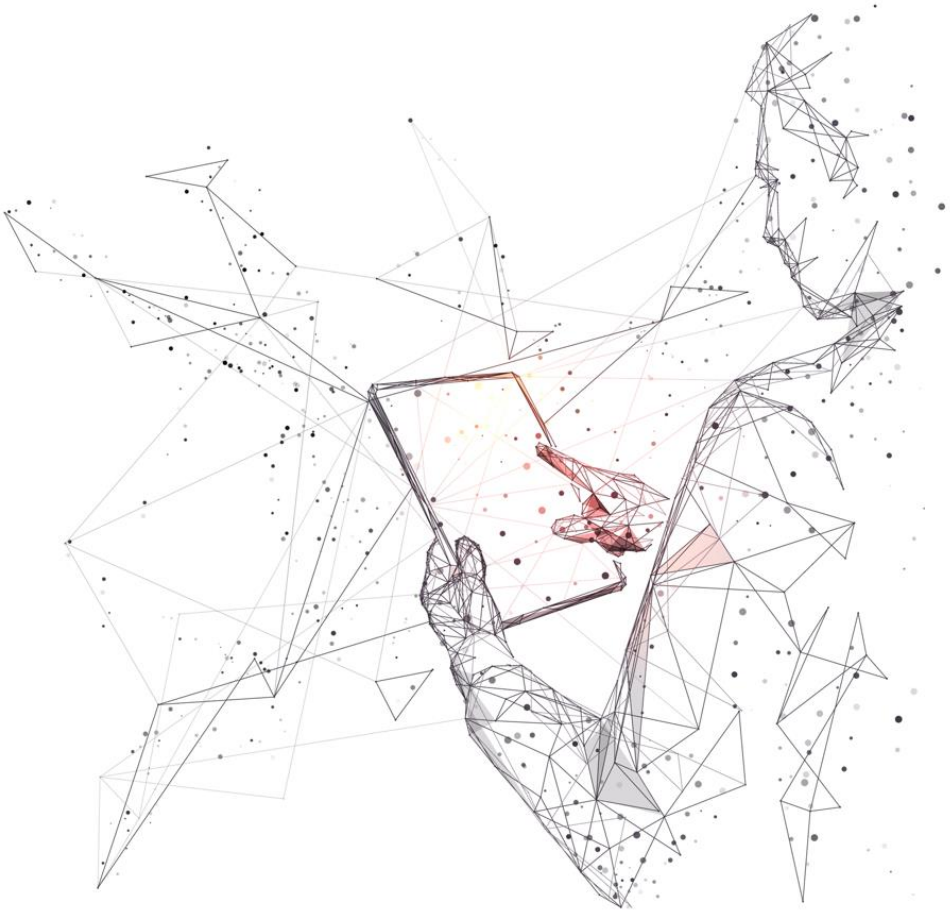
JULY 28, 2023



BS4142:2014 ASSESSMENT OF VEETEC MOTOR GROUP, 1-3 UXBRIDGE ROAD, HAYES, UB4 0JN

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1.0 Introduction

1.0.1 This report has been commissioned to determine the noise impact of the Veetec Motor Group taking up residence in 1-3 Uxbridge Road, Hayes, UB4 0JN.

1.0.2 The assessment has been conducted in line with the BS4142:2014 as it is the introduction of industrial noise source(s) to a mixed industrial and residential area.

2.0 Site Details

2.0.1 The site is located on the corner of Uxbridge Road just West of Hayes Bridge.

2.0.2 The Veetec Motor Group provide vehicle bodyshop and vehicle repair services. The site is therefore going to introduce noises that would include hand tools such as impact wrenches, cutting tools and general manual tools.

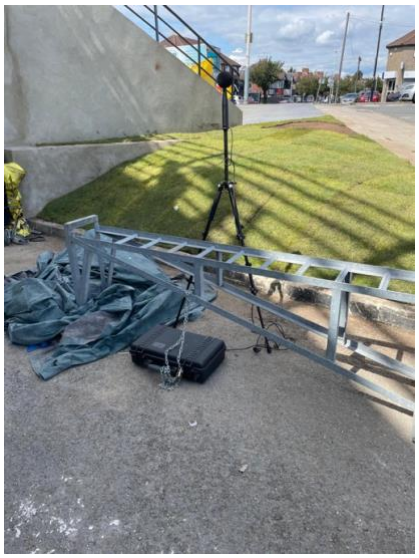
2.0.3 The closest Noise Sensitive Receptors (NSRs) are located on 'Delamere Road' to the North, and 'Bankside' to the East of the site

2.0.5 The noise sources are not currently active and therefore background noise levels were taken for the assessment without the specific noise level present.

2.1 Location of Monitors

2.1.1 The noise location was chosen based on the proximity to the closest NSR. Roadworks were taking place within 20m of the ideal noise monitoring position on Delamere Road and therefore the monitoring took place equidistant from the road edge on the other side of Uxbridge Road/The Broadway.

Figure 1



2.1.2 Measurements were made in 15 minute periods, on 1 second averaging, to allow for the removal of anomalies and increased accuracy. The data was averaged into L_{Aeq1hr} daytime with data also recorded for L_{AMax} and L_{A90} for the BS4142:2014 assessment. The assessment was conducted for a period of 3hrs during both quiet and busy periods to see if there was any variation in the noise impact based on time of day. The workshop will not be active during the night periods so only daytime readings were gathered.

2.1.3 The monitoring was conducted using 1 x Type 1 NTi XL2 sound level with batteries and outdoor microphone protection.

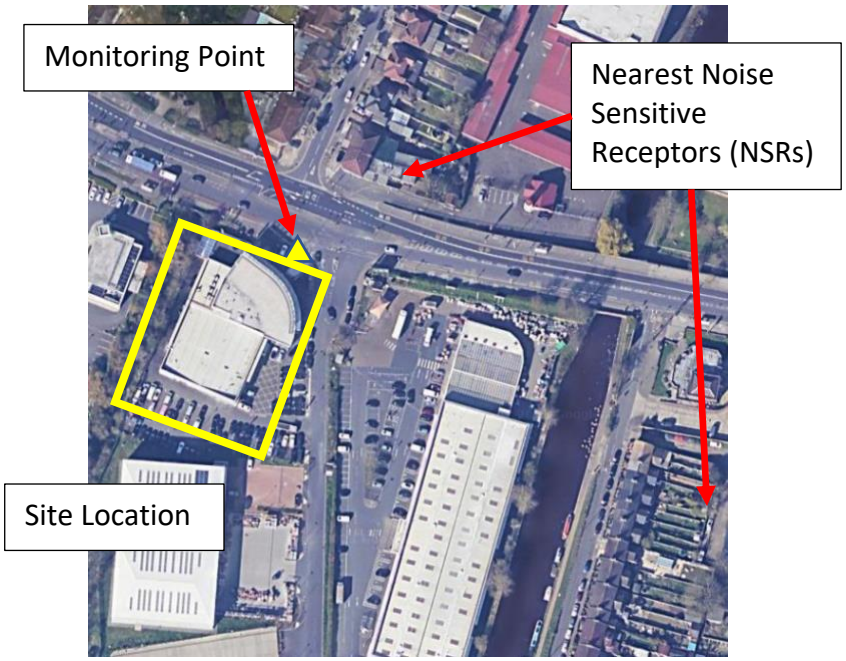
2.1.4 All measurements were taken after a field calibration was undertaken to ensure accuracy and repeatability of measurements.

2.1.5 Further data such as wind speed, wind direction, rainfall intensity, temperature and cloud cover were all recorded at the beginning and end of the assessment at the monitoring location.

2.1.6 Any anomalies (such as noise by the engineer during setup and collection of the kit) were removed from the survey for a true reflection of the ambient levels in the vicinity. This was done by recording audio throughout the survey at each location and listening back through the files during the analysis process to confirm what was recorded manually during the survey.

2.2 Plan Views of Site with Designated Work Areas

Figure 2



3.0 Legislation

3.0.1 The National Planning Policy Framework (NPPF) sets out the Government's economic, environmental and social planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 174 of the NPPF states the following:

"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…."

Paragraph 185 goes on to mention:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;"

3.0.2 The NPPF reinforces the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life;
- and where possible, contribute to the improvement of health and quality of life."

3.0.3 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

"... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."

3.1 Local Authority Criteria

3.1.1 The Local Plan for the London Borough of Hillingdon provides further specification on the require criteria for both noise management and noise assessment.

3.1.2 Section 8.138 states; "Guidance has already been set out at the national level by the NPPF. This guidance sets out a clear rationale as to where sensitive development should be located in relation to existing noise/ pollution sources, and also provides guidance on where potentially noise polluting development should be located."

3.1.3 Policy EM8 goes on to say; "The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies. The Council will seek to ensure that noise sensitive development and noise

generating development are only permitted if noise impacts can be adequately controlled and mitigated."

3.2 BS4142:2014 +A1 (2019)

3.2.1 The Local plan also makes reference to the measurement procedure used for BS41421:2014 as the best method for noise impact from industrial sources.

3.2.2 Noise effects on residential properties due to the current operational hours have been assessed according to the guidance in BS 4142:2014. This standard primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the 'specific sound' from the proposed development) at residential sensitive receptors.

3.2.3 The specific sound level may then be corrected for the character of the sound (e.g. perceptibility of tones and/or impulses), if appropriate, and it is then termed the 'rating level', whether or not a rating penalty is applied. The 'residual sound' is defined as the ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

3.2.4 According to BS 4142:2014, the background sound levels adopted for the assessment should be representative of the periods being assessed. The standard recommends that the background sound level should be collected from continuous measurements of normally not less than 15-minute intervals. However, the Standard states that there is no 'single' background sound level that can be derived from such measurements. It is particularly difficult to determine what is 'representative' of the night-time period because it can be subject to a wide variation in background sound levels between the shoulder night periods.

3.2.5 The method chosen for this section of the report is to use the data collected at the nearest NSR for the day and night periods to provide the ambient and background noise levels. The mode $L_{Aeq\_1hr(Day)}$ and $L_{Aeq\_15min(Night)}$ value will then be used for each time period over the course of the measurement as the most appropriate way of creating a representative value.

3.2.6 The specific sound levels have been determined separately in terms of the L_{Aeq1hr} during the daytime $L_{Aeq15min}$ during the night-time. Daytime is typically between 07:00 and 23:00 hours and night-time is

typically between 23:00 and 07:00 hours, so these periods have been adopted for this assessment.

3.2.7 At each of the most likely sensitive receptor locations, the rating level has been determined from the predicted specific sound level. Where it has considered it to be appropriate, a rating penalty has been applied for tonality, impulsivity and/or intermittent specific sounds as described in the commentary to paragraph 9.2 of BS4142:2014. This has been applied with consideration for the main sound sources from site that contribute to the level of specific sound at the receptor location.

3.2.8 As per the requirements of the standard, an initial estimate of the impact of the specific sound has been obtained by subtracting the measured background sound level from the rating level of the specific sound. Table 2 provides the initial evaluation of impact following this method.

Table 1

Magnitude	Difference Between rating Level and Background Level	Comments
High	**+10dB**	**Significant Adverse impact Likely**
Medium	**+5 to +10dB**	**Adverse impact Likely**
Low	**0 to +5 dB**	**Adverse impact unlikely**
Negligible	**Less than 0dB**	**Adverse impact unlikely**
No Change	**-10 dB**	**No adverse impact**

3.2.9 Following the initial evaluation of impact, the context of the sound has also been considered, which is a key requirement of the Standard. In evaluation of the context, the following factors have been considered:

- the absolute level of the sound;
- the character and level of the residual sound compared to the character and level of the specific sound and
- the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

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4.0 Results

4.1

Table 2

Location	Start Date/Time	L_{Amax}	L_{Aeq1hr} (Mode)	$L_{Aeq15min}$ (Mode)	L_{A90}
	19/07/23				
Day (0700-2300)	14.40pm-17.40pm	87.9dBA	61.8dBA	61.3dBA	53.9dBA

Figure 3

Comments
Large amounts of traffic and high background noise
**based on Appendix C*

Table 3

Cloud Cover	Temperature (Celcius)	Prescence of fog/snow/ice	Wind Speed (m/s)	Wind Direction
3	16 (1hr mode)	No	1.1	NE

5.0 Analysis of Results

5.1 Calculated Results

5.1.1 The specific noise level for the site has been calculated using the CadnaA noise modelling software. This is based on the input details from measured mechanic tool noise from other sites. Based on previously conducted assessments the breakout noise from the roller-shutter areas has been given the value of 85dB sound power for each of the two shutters.

5.1.2 As the source was not present at the time the modelling software calculates the specific noise impact at each of the nearest Noise Sensitive Receptors (NSRs).

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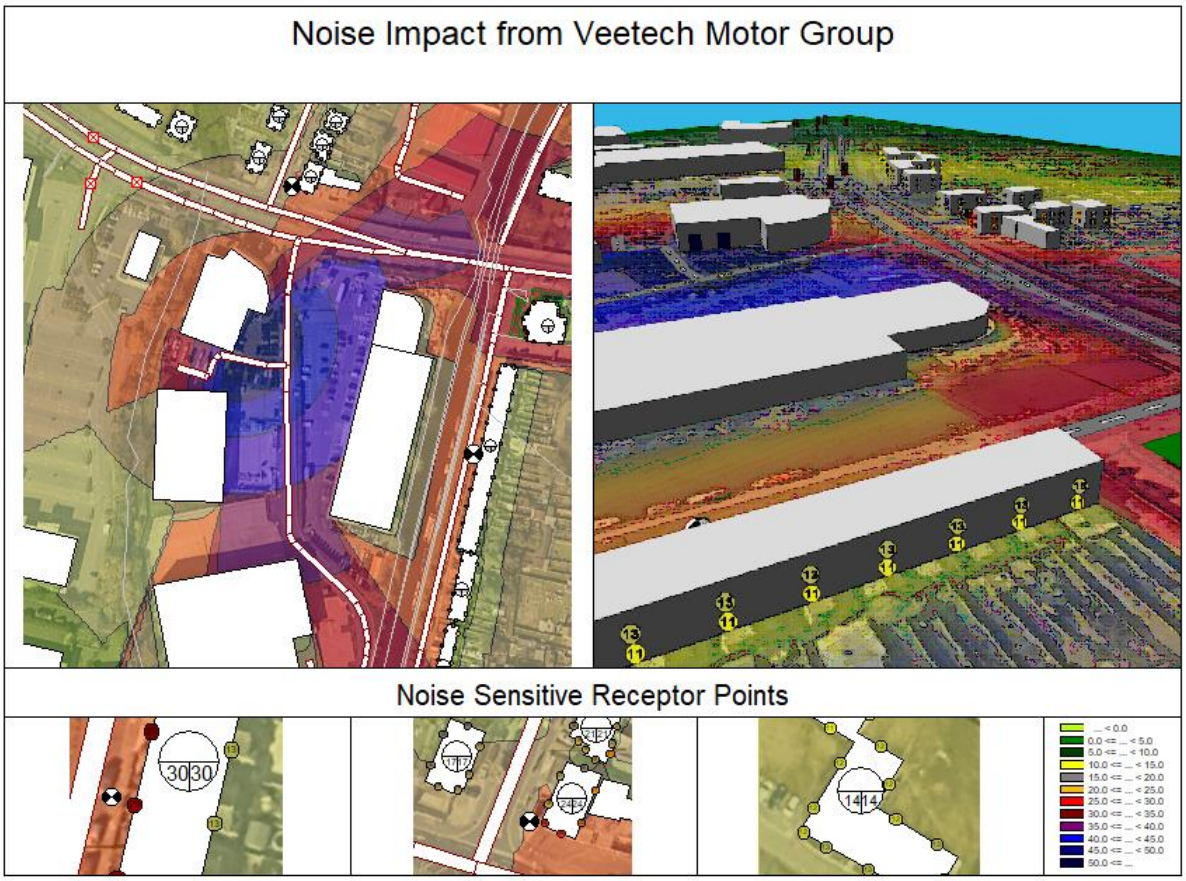
5.1.3 Figure 4 below shows the calculated value for the nearest NSR. Appendix D shows the full calculation spec to include barrier attenuation, ground attenuation and reflections.

Figure 4



5.1.4 With the calculated specific noise level being at a maximum of 30dBA at the closest NSR window, and 24dBA at the next; 30dBA has been used in the calculations in table 4 to assess the noise impact of the units.

Table 4

Measurement Type	*Parameter*	*Result*	*Comment*
	Day		
Ambient sound	**L_{Aeq}**	**62dBA**	**Measured at NSR-Source present**
Residual sound level	**L_{Aeq1hr}**		

Background sound level	L_{A901hr}	**54dBA**	**Measured at NSR- Source present**
Specific Sound Level	L_{Aeq1hr}	**30dBA**	**Modelled**
Acoustic Feature Correction	**dBA**	**+9**	**Likely to be largely impulsive noise**
Rating Level	**dBA**	**39dBA**	
Difference of Background vs Rating level	**dBA**	**-15dB**	
Likelihood of complaints			**No Adverse impact**

6.0 Conclusion and Further Comments

6.1 Discussion of Levels

6.1.1 The specific noise level of the Veetech bodyshop and vehicle repair area below the required levels, in accordance with BS4142:2014, for there to be the likelihood of adverse impact on the nearest NSR.

6.1.2 Despite the above comment there may be times where levels are above those predicted based on repairs and mechanical noise taking place outside of the designated garages. There is still over 15dB of room before the background noise level is reached and therefore there is little likelihood of the background noise being exceeded at the nearest NSRs even if 'noisy' activities take place outside of the garages.

6.1.3 A 9dB penalty has also been applied. This is the maximum penalty that can be applied as the noise from the site is likely to be inconsistent and at a higher decibel level; therefore more likely to cause annoyance if heard.

7.0 Credentials

Name	Title	Credentials
James Flitton BSc AMIOA	**Acoustic Consultant**	**CSCS Professionally Qualified person**

		Associate Member Institute of Acoustics
		Affiliate Member of IDE
		Affiliate Member of IOR
Signed		

Appendix A – Acoustic Terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).

Parameter	Description
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A –weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

Appendix B – Survey

Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

This model of sound level meter submitted for periodic testing successfully completed the applicable pattern-evaluation tests given in IEC 61672-2. The pattern approval certificate is available at www.nti-audio.com/XL2.

Sound Level Meter

Manufacturer	NTi Audio		
Type	XL2-TA	S/N	A2A-22077-F0
Firmware	V4.71		
Microphone Model	M2230		
Preamplifier	MA220	S/N	11392
Microphone Capsule	MC230A	S/N	A24696
Performance class	Class 1		
Customer Inventory Nr.			

Customer

Crimson Remote Services Ltd
7 Hicks Grove
Thoresby Vale
Edwinstowe
Nottinghamshire

Date 07 February 2023

Certificate UK-23-018

Results PASSED
(for detailed report see next pages)

Operator David Young

NTi Audio UK Ltd • Office 33C Julians Road • Stevenage
Hertfordshire, SG1 3ES, UK • uk@nti-audio.com

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Instrumentation

CRIMSON REMOTE SERVICES LTD

NTi AUDIO

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **Class 1 Sound Calibrator CAL200**
- Serial Number: **19829**

- Date of Calibration: **30 November 2022**
- Certificate Number: **44895-19829-CAL200**
- Results: **PASSED**
  (for detailed report see next page)

Tested by: D.Young

Signature:

NTi Audio UK Ltd, Office 33C Julians Road, Stevenage, Hertfordshire, SG1 3ES Tel No: +44 (0) 1438 870832
email: uk@nti-audio.com Web: www.nti-audio.com. VAT Number 314751712

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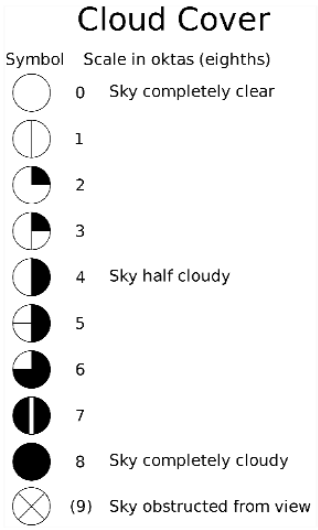
Appendix C – Weather Conditions Chart Used
(Blank version)

Weather Conditions				
Measurement Location	**Date/Time**	**Description**	**Beginning of Survey**	**End of Survey**
As indicated on **Error! Reference source not found.**		Temperature:		
		Precipitation:		
		Cloud cover (oktas - see guide)		
		Presence of fog/snow/ice		
		Presence of damp roads/wet ground		
		Wind Speed (m/s)		
		Wind Direction		
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)		

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Appendix D – CadnaA Calculation data

Receiver
Name: Delamere Road
ID:
X: 30680961.5 m
Y: 5710170.0 m
Z: 0.00 m

vert. Area Source, ISO 9613, Name: "", ID: ""

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	I/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
11	30680932.64	5710089.20	3.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	49.7	0.2	0.0	0.0	0.0	19.2	0.0	0.0	11.9
12	30680932.64	5710089.20	4.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	49.7	0.2	0.0	0.0	0.0	18.2	0.0	0.0	13.0
13	30680932.64	5710089.20	2.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	49.7	0.2	0.6	0.0	0.0	19.6	0.0	0.0	11.0
14	30680932.64	5710089.20	0.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	49.7	0.2	9.9	0.0	0.0	13.3	0.0	0.0	7.9
15	30680932.64	5710089.20	1.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	49.7	0.2	3.7	0.0	0.0	18.0	0.0	0.0	9.4

vert. Area Source, ISO 9613, Name: "", ID: ""

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	I/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
16	30680929.71	5710080.83	3.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	50.5	0.2	0.0	0.0	0.0	17.3	0.0	0.0	13.0
17	30680929.71	5710080.83	4.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	50.5	0.2	0.0	0.0	0.0	16.3	0.0	0.0	14.0
18	30680929.71	5710080.83	2.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	50.5	0.2	0.5	0.0	0.0	17.8	0.0	0.0	12.1
19	30680929.71	5710080.83	0.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	50.5	0.2	9.7	0.0	0.0	11.5	0.0	0.0	9.1
20	30680929.71	5710080.83	1.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	50.5	0.2	3.3	0.0	0.0	16.3	0.0	0.0	10.6

Receiver
Name: Bankside
ID:
X: 30681064.7 m
Y: 5710017.8 m
Z: 0.00 m

vert. Area Source, ISO 9613, Name: "", ID: ""

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	I/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
1	30680929.71	5710080.83	1.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	54.5	0.3	3.7	0.0	0.0	6.7	0.0	0.0	15.9
2	30680929.71	5710080.83	0.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	54.5	0.3	10.8	0.0	0.0	0.6	0.0	0.0	14.9
3	30680929.71	5710080.83	2.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	54.5	0.3	0.5	0.0	0.0	8.8	0.0	0.0	16.9
4	30680929.71	5710080.83	4.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	54.5	0.3	0.0	0.0	0.0	7.3	0.0	0.0	19.0
5	30680929.71	5710080.83	3.67	0	DEN	500	72.3	5.8	0.0	3.0	0.0	54.5	0.3	0.0	0.0	0.0	8.2	0.0	0.0	18.0

vert. Area Source, ISO 9613, Name: "", ID: ""

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	I/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
6	30680932.64	5710089.20	1.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	54.5	0.3	4.3	0.0	0.0	6.1	0.0	0.0	15.7
7	30680932.64	5710089.20	0.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	54.5	0.3	11.5	0.0	0.0	0.0	0.0	0.0	14.7
8	30680932.64	5710089.20	2.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	54.5	0.3	0.7	0.0	0.0	8.7	0.0	0.0	16.8
9	30680932.64	5710089.20	4.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	54.5	0.3	0.0	0.0	0.0	7.3	0.0	0.0	18.9
10	30680932.64	5710089.20	3.56	0	DEN	500	72.1	5.9	0.0	3.0	0.0	54.5	0.3	0.0	0.0	0.0	8.3	0.0	0.0	17.9