



Azymuth Acoustics UK

Professional Acoustic Services

Noise Impact Assessment

Ref: AA0548

4no. External Condensers

Proposed Starbucks Drive-through

Unit 1,

Victoria Retail Park,

Bury

On behalf of

Mr. Anis Patel

Lion Share Properties Ltd.

Synergie House,

332 Manchester Road,

Bolton,

BL3 2QS



Azymuth Acoustics UK
Viridor House
No.3 Bolholt Terrace
Bury/Gtr Manchester
BL8 1PP

Tel: +44 (0)161-762 1055
Fax: +44 (0)161-761 1094
Matthew@acousticsuk.com
www.acousticsuk.com

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Ref: AA0548	Signature:	Name:	Date:
Produced by:		James Gibson BEng (Hons)	13/08/24
Checked by:		Dominic McCann, BEng (Hons), MIOA, Director	14/08/24
Approved by:		Matthew Gibson, BEng (Hons), CEng, CEnv, Director	14/08/24

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1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) has been contracted by Lion Share Properties Limited to perform a Noise Impact Assessment (NIA) in relation to a proposed Starbucks Café / Drive-thru at Victoria Retail Park, Bury.

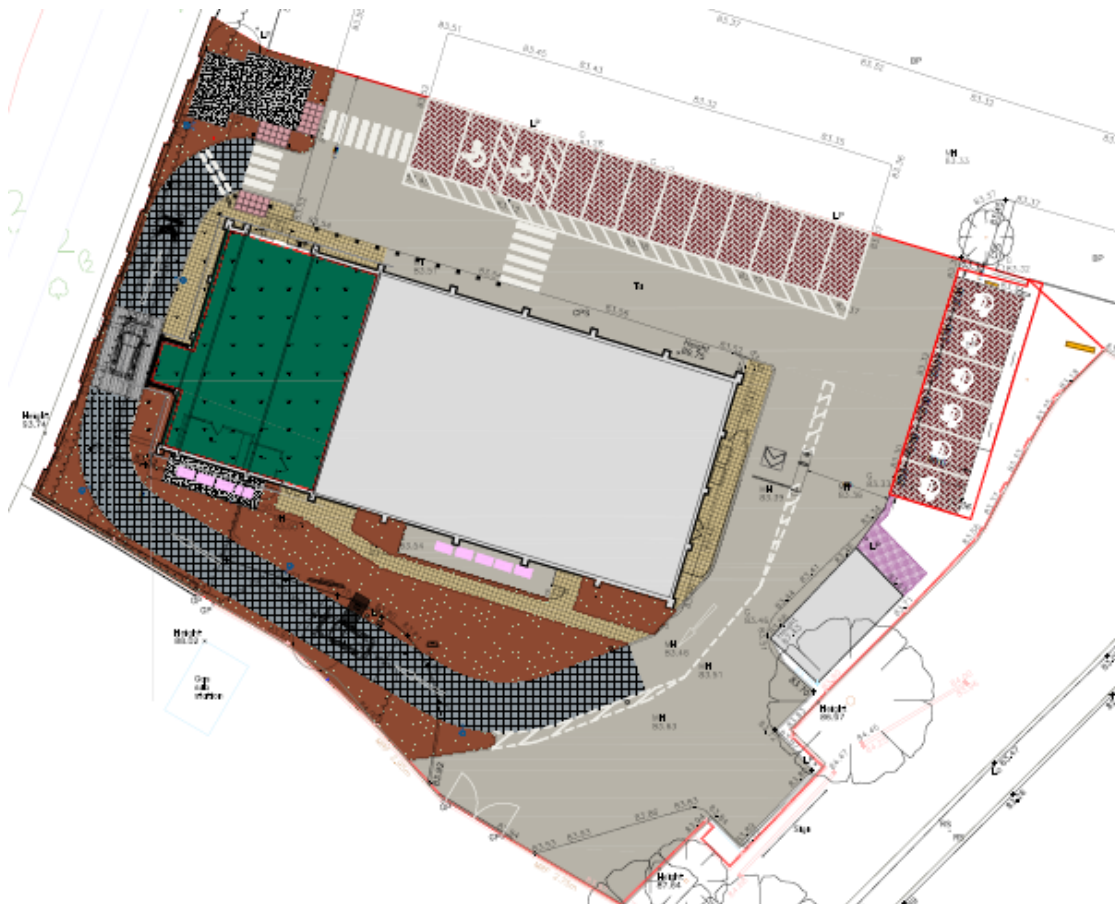


Figure 1 – Site plan of proposed development at Victoria Retail Park

This noise impact assessment is intended to provide information relating to potential noise levels emitting from the site in order to support the detailed planning application for the commercial development. In particular, the report sets out the following details:

- The results of a baseline noise survey undertaken in the vicinity of Victoria Retail Park and the closest residential receptors.
- The appropriate assessment criteria and guidance relating to noise in the environment as associated with this kind of development
- Recommendations to meet the targets as set out by the assessment criteria

It is assumed that all drawings and information provided by the client is up to date and correct.

2.0 Baseline Noise Survey

2.1 Measurement Procedures

The instrumentation used for the NIA consisted of a SvanTek 971 type 1 precision sound level meter. The equipment was calibrated before and after measurements. The sound level meter measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement record.

Daytime noise level measurements were undertaken between 13:59hrs and 16:30hrs on Friday 9th August 2024 as well as between 17:36hrs and 19:03hrs on Monday 12th August 2024.

The noise measurements were undertaken using the sound level meter at the position(s) shown in Figure 2 below:

- Position 1: Outside the front of Mencap building towards the proposed Starbucks, 0.3m from carpark road edge and ~60m from the nearest road.
- Position 2: In the Mencap carpark, 0.3m from carpark road edge and ~25m from the nearest road.
- Position 3: Between 13/15 Ainsworth road and 21-27 Ainsworth Road, ~0.5m from road edge.



Figure 2 – Noise measurement positions around the Victoria Retail Park site.

2.2 Summary of Measurements

2.2.1 Noise Survey

The following table summarises the results of the noise measurements undertaken at the proposed site in terms of the average daytime noise levels.

Location	Period	L _{AFmax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Pos 1: Outside the Proposed Starbucks Development.	Day	82.7	66.4	64.9	53.6	46.6
Pos 2: MenCap Car Park	Day	84.5	70.5	70.4	61.0	53.9
Pos 3: 13-15 Ainsworth Road	Day	91.1	76.4	78.3	68.5	57.3

Table 1 – Summary of noise measurements

Azymuth assumes that all measured noise levels are typical of the surrounding environment.

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

2.3 Description of Noise Climate

The noise climate surrounding the Victoria Retail Park site is affected by traffic noise on both the B6196 (Ainsworth Road) and the A58 (Bolton Road). The measured background sound level on Ainsworth Road varied between 49-62dB L_{A90} with a typical minimum value being ~50dBA, this value has been used for the subsequent noise assessment presented in Section 4.2 of this report.

The weather on both days attended on site was dry with wind speeds less than 5mph.

3.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth Acoustics UK has reviewed various guidance documents and standards, these include:

- Initial Planning advice from Bury MBC
- National Planning Policy Framework (NPPF 2021)
- British Standard 8233:2014
- World Health Organisation Guidelines on Community Noise
- British Standard 4142:2014+A1:2019

3.1 Initial Planning Advice from Bury MBC

The purpose of this noise assessment is to assist with the re-submission of a planning application for the proposed redevelopment; in re-submitting this planning application the local planning authority has requested the following additional information:

- Noise - The proposed site plan indicates that air conditioning units would be installed in a compound at the rear of the two units. The proposed compounds would be bounded by 2 metre high timber fencing. No details of the air conditioning units or the associated noise levels have been provided. As such, there is insufficient information to assess whether the proposed development would have an adverse impact upon the amenity of the neighbouring properties in terms of noise. Therefore, the proposed development would conflict with Policy EN7/2 of the Bury Unitary Development Plan.
- The application and submitted plans contain insufficient information in relation to the air conditioning unit to enable the impact of the noise generated to be properly assessed. Therefore, the proposed development would conflict with Policy EN7/2 - Noise Pollution of the Bury Unitary Development Plan.

The Bury MBC Policy EN7/2 seeks to avoid adverse effects of noise pollution. This is considered to be consistent with the NPPF in that pollution control is one of the integral aspects of securing sustainable development and is one of the core planning principles. It is also consistent with the approach to controlling pollution as set out in section 11 of the NPPF.

3.2 National Planning Policy Framework (NPPF) 2021

The NPPF provides guidance to local authorities taking into account noise in making planning decisions. Paragraph 185 of the National Planning Policy Framework (NPPF) states that planning policies and decisions should aim to:

- Mitigate and reduce to a minimum to a minimum potential adverse impacts resulting from new development – and avoid noise giving rise to significant adverse impacts on health and quality of life,
- Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;

The NPPF states that the planning system should distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework. In addition, NPPF states that the planning system should 'prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'.

3.3 British Standard 8233: 2014

BS 8233 provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq, T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living Room	35	-
Dining	Dining Room / Area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 2 – Noise Limits for Residential Properties Suggested in BS 8233

3.4 World Health Organisation Environmental Noise Guidelines (ENG) 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The 2018 guidelines supersede the Community Noise Guidelines from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB L_{Aeq} for continuous noise and 45dB L_{Amax} for typical single sound events (which are exceeded 15 times or more per night – see ProPG Appendix A.12 for more details).

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

3.5 British Standard 4142:2014+A1:2019

“Methods for assessing and rating industrial sound” describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard 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.

- Typically, the greater the difference between background sound and industrial/commercial noise, the greater the magnitude of the impact.



- 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.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

BS 4142 notes that: "Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

3.6 Recommended Noise Assessment Criteria

Based on the guidance above it is recommended that the following criteria would be reasonable with the aim of minimising the impact of noise on the surrounding environment.

- Noise levels originating from the proposed premises shall not exceed the background sound level at the nearest residential receptors believed to be located at 13-15 Ainsworth Road. This implies a daytime / evening noise limit of 50dBA.

4.0 Assessment of Results

4.1 SoundPLAN Model

Azymuth has undertaken acoustic modelling with the SoundPLAN noise modelling software to predict and visualise the impact of noise from the site on the surrounding environment.

The condenser units proposed at the Victoria Retail Park are listed below, Azymuth has assumed that the models that have been provided are correct and are as listed below:

- Toshiba RAV-SM564UTP-E
- Toshiba RAV-SM1404UTP-E

The octave band data has been taken from the respective data sheets for each condenser as shown in Tables 4 and 5.

Octave Band Data for Toshiba RAV-SM564UTP-E:

Hz Bands								dBA
63	125	250	500	1000	2000	4000	8000	
79	67	67	61	59	38	30	30	64dBA

Table 4 – Octave band Data for Toshiba RAV-SM564UTP-E

Octave Band Data for Toshiba RAV-SM1404UTP-E

Hz Bands								dBA
63	125	250	500	1000	2000	4000	8000	
71	72	71	67	64	54	50	28	69dBA

Table 5 – Octave band Data for Toshiba RAV-SM1404UTP-E

Azymuth have modelled the condenser units to be running at 100% capacity for 24 hours a day to reflect an absolute worst-case scenario. If the condenser units are to be running for a lesser amount of time than modelled, then the overall noise impact shall be less.

4.1.1 Grid Noise Map (GNM)

Azymuth have produced the following GNM to visualise the effect of noise emitting from the premises on the surrounding environment.

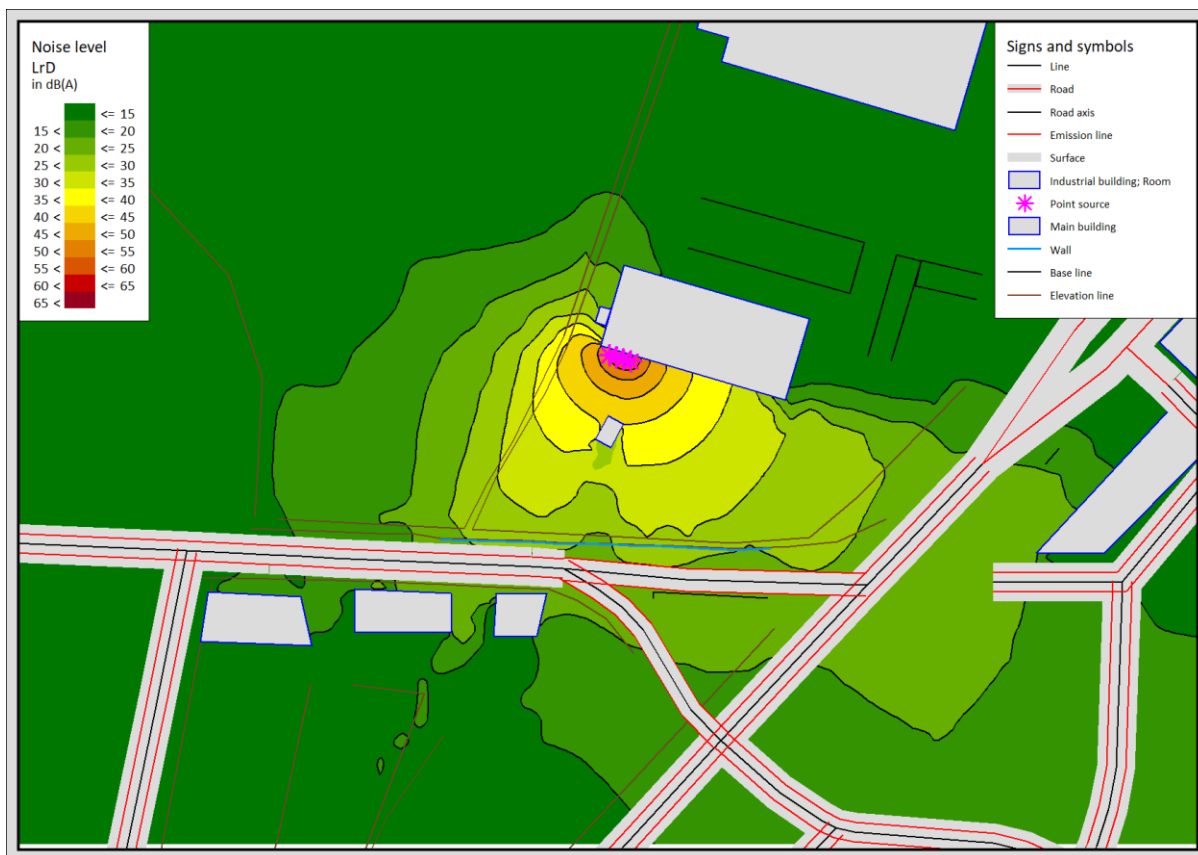


Figure 3 – GNM showing the noise propagation from the proposed condensers.

4.1.2 Façade Noise Map (FNM)

Azymuth has produced the following FNMs to show the typical noise levels incident on the facades of the worst-affected residential receptors.



Figure 4 – FNM showing the estimated noise levels on nearest residential facades.

The façade noise map, along with the measurements at Position 3 in Table 1, indicate that there is no adverse effect from the proposed external condensers (as per BS 4142) as the existing noise from the surrounding roads is completely dominant.

4.2 BS 4142 Assessment

The following table identifies the nearest noise sensitive receptors and the predicted sound level at these receptors as a result of the 4no. Starbucks outdoor condenser units operating simultaneously. The table also shows how the predicted levels compare to the relevant background sound levels at each respective receptor.

No penalties for tonality, intermittency or impulsivity have been applied.

Receiver	Distance from Source to Receiver (~m)	Noise Level at Receptor (dBA)	Background Sound Level at Receptor, L ₉₀ (dBA)	Rating Level re. Background Sound Level
Nearest Residential Receptors for BS 4142				
15 Ainsworth Road – GF	50	22.9	50	-27.1
15 Ainsworth Road – 1F	50	26.9	50	-23.1
21 Ainsworth Road – GF	60	22.7	50	-27.3
21 Ainsworth Road – 1F	60	25.6	50	-24.4

Table 3 – BS 4142 assessment of noise originating from the Starbucks condenser units

All of the calculated noise levels (with all the condenser units operating simultaneously) do not exceed the relevant background sound level at each receptor, this is an indication of the specific sound source having no impact as per BS 4142.

5.0 Summary and Conclusions

Azymuth has undertaken a noise impact assessment in relation to 4no. condenser units proposed at a new Starbucks Café/Drive-thru to be located in Victoria Retail Park, Bury.

The lowest typical background sound levels in the vicinity of the nearest residential receptors were measured to be nominally 50dB L_{A90} during the daytime and early evening periods.

Azymuth have produced a noise model in SoundPLAN 8.2 to predict and visualise the effect of noise from the condenser units on the surrounding environment.

The calculated noise levels experienced at the nearest residential receptor location(s) is ~23-27dBA (depending primarily on the floor level). An assessment of these noise levels employing the methodology set out in BS4142 indicates that the noise levels are at least 20dB below the background sound levels at this location and as such no noise impacts are predicted.



Appendix A – Glossary of Acoustic Terms

Decibel (dB)

This is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)

This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level

The human ear is sensitive to sound over a range of frequencies between approximately 20Hz to 20kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}

This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T_{30} or T_{60})

This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60dB, after the source has been switched off. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)

Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

$SRI = L_1 - L_2 + 10 \log (S/A)$, where:

L_1 = Noise level in the source room

L_2 = Noise levels in the receiving room

S = Surface area of test specimen

A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)

This is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.



Appendix B – Noise Survey Data

Start	Position	Time	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Pos 1 Friday 9th August							
14:04:00	1	00:05:00	78	59.9	63.2	56	52.1
14:09:00	1	00:05:00	80.8	58.9	61.1	54.8	49.9
14:14:00	1	00:05:00	91.9	67.1	63.4	56.3	50.1
14:19:00	1	00:05:00	78.7	60.8	64.6	56.4	47.5
14:24:00	1	00:05:00	84.1	62.3	63.1	56.9	48.8
15:07:00	1	00:05:00	75.8	63	67.5	53.7	48.1
15:12:00	1	00:05:00	80.8	63.2	66.7	52.4	49.3
15:17:00	1	00:05:00	80.8	62.7	66.5	52.2	47
15:22:00	1	00:05:00	79.5	61.9	65.5	53.6	48.8
15:27:00	1	00:05:00	75.4	58.9	60.3	52.5	49
15:32:00	1	00:05:00	68.5	52.8	54.3	51.1	46.7
Pos 2 Friday 9th August							
14:28:00	2	00:05:00	91.5	74.2	77	67.5	61.4
14:33:00	2	00:05:00	88.2	72.7	75.6	65.6	59.3
14:38:00	2	00:05:00	89.4	73.1	72.5	66.4	60.8
14:43:00	2	00:05:00	86.3	72.6	76.5	68	54.1
14:48:00	2	00:05:00	82.5	69.3	74	64.2	52.7
14:53:00	2	00:05:00	81.6	69.3	74	61.4	52.8
14:58:00	2	00:05:00	82.7	64.1	67.9	55.7	48.6
15:38:00	2	00:05:00	91.7	65.7	62.8	56.8	50.7
15:43:00	2	00:05:00	77.3	58.8	60.1	57.2	53.1
15:48:00	2	00:05:00	70.6	58.8	61.6	57.2	51.8
15:53:00	2	00:05:00	74.1	60.9	63.8	58.5	54.9
15:58:00	2	00:05:00	75.7	58.9	60.6	56.6	51.4
Pos 3 Friday 9th August							
16:05:00	3	00:05:00	89.3	75.2	72.2	66.2	61.5
16:10:00	3	00:05:00	91.5	74.2	77	67.5	61.4
16:15:00	3	00:05:00	88.2	72.7	75.6	65.6	59.3
16:20:00	3	00:05:00	89.4	73.1	72.5	66.4	60.8
16:25:00	3	00:05:00	89.7	74.7	73.9	61.2	52.9
16:30:00	3	00:05:00	86.3	72.6	76.5	68	54.1
Pos 1 Monday 12th August							
18:43:00	1	00:05:00	92.7	73.9	74.5	53.8	45.8
18:48:00	1	00:05:00	90.4	69	69.9	55.9	44.8
18:53:00	1	00:05:00	94.4	71.2	69.1	54.6	39.9
18:58:00	1	00:05:00	88.9	62.4	62.1	48.6	40.8
19:03:00	1	00:05:00	91.7	66.8	65.6	51.6	40.4
Pos 2 Monday 12th August							
17:36:00	2	00:05:00	84.9	61.3	62.3	52.9	48.8
17:41:00	2	00:05:00	87.8	69.5	73.4	60.7	51.6
17:46:00	2	00:05:00	87.4	70.3	73.9	59.3	51.8
17:51:00	2	00:05:00	92.9	73.5	77.4	61.2	54.9
17:56:00	2	00:05:00	86.1	70.9	74.9	62.3	55
18:01:00	2	00:05:00	89.5	75.4	79.3	66.8	56.2



Start	Position	Time	L _{Amax}	L _{Aeq}	L _{A10}	L _{A50}	L _{A90}
Pos 3 Monday 12th August							
18:03:00	3	00:05:00	93.5	78.4	81	70.3	57.6
18:08:00	3	00:05:00	95	78.8	82.4	69.1	48.7
18:13:00	3	00:05:00	92.7	78.1	81.3	72.5	59.9
18:18:00	3	00:05:00	91.9	77.2	81.3	69.7	55.7
18:23:00	3	00:05:00	89.7	76	79.9	71.4	61.1
18:28:00	3	00:05:00	92.9	77.1	81	70.4	51.3
18:33:00	3	00:05:00	92.6	77.3	80.5	70.7	61.9
18:38:00	3	00:05:00	92.7	77.6	81.1	70.6	56.6

Table B1 – Fully tabulated noise measurement results