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Project:

**M Local 33 Chichester Road, Bognor
Regis, PO21 2XH**

Title:

Plant noise assessment

quietly moving forward

Report Title	M Local 33 Chichester Road, Bognor Regis, PO21 2XH Plant noise assessment
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1 INTRODUCTION

- 1.01 Environmental Equipment Corporation Limited has been commissioned by Williams Southern Ltd to undertake a noise survey at 33 Chichester Road, Bognor Regis with a view to measuring the prevailing background noise in the vicinity and assessing the noise impact of proposed external mechanical services.
- 1.02 The site is proposed to be refurbished and will be operated as a new M-Local retail outlet.
- 1.03 This assessment includes:
- The results of a noise survey undertaken on a typical weekday period; and
 - the setting of plant noise limits in accordance with the requirements of Arun District Council.
 - Assessment of the noise impact of the proposed plant.
- 1.04 This report is prepared solely for Williams Southern Ltd. Environmental Equipment Corporation Limited accepts no responsibility for its use by any third party.
- 1.05 Whilst every effort has been made to ensure that this report is easy to understand, it is necessarily technical in nature. To assist the reader, an explanation of the terminology used in this report is contained in Appendix A.

2 SITE

- 2.01 The site is located on the south west side of Chichester Road, sandwiched between Town Cross Avenue and Hillsboro Road as indicated on the aerial view shown in Appendix B.
- 2.02 The property is bound by the following:
- North East– Chichester Road with residential dwellings beyond;
 - South East – Hillsboro Road with residential properties beyond;
 - South West– Residential dwelling of 86 Hillsboro Road;
 - North West – Electrical Wholesalers with residential properties on Town Cross Avenue beyond.
- 2.03 The business currently conducted on the site is second hand car sales. The building is two storey with 1st floor being residential.
- 2.04 Plant proposals include the installation of a number of items in a compound at the rear of the premises. The plant details are included in Section 7 of this report and a layout drawing is shown in Appendix B. The plant will be screened by the rear elevation of the building from the existing residential dwellings located above the proposed store. The side windows of 86 Hillsboro Road face the rear car park area of the proposed store and plant area though their line of sight to the plant is fully screened by the brick boundary wall of the car park. These windows are considered representative of the worst case noise receptor. The existing noise climate around the site is controlled by vehicular movement on Chichester Road during the daytime and by more distant, non-local road traffic noise at night.

3 GUIDANCE

- 3.01 National Planning Policy is presented in Appendix C of this document and informal discussions have taken place with Graham Evans, a Senior Environmental Health Officer with Arun District Council (ADC), regarding appropriate assessment methodologies and the setting of plant noise limits.
- 3.02 Graham has indicated that the Sussex County-wide noise policy is in the process of being drafted and is thus not presently available to issue. In the absence of this Graham has requested that plant noise be assessed in accordance with BS 4142: 1997 '*Method for rating industrial noise affecting mixed residential and industrial areas*'. A full description of this standard is given in Appendix C.
- 3.03 ADC consider an appropriate and acceptable noise target in this regard is to ensure that cumulative plant noise be designed or limited so that its rating level is 5dB less than the prevailing background noise level. If and where the background noise drops below the lower limits at which BS4142 is considered valid, a maximum rating level of 30dB(A) is considered appropriate.

4 MEASUREMENTS

- 4.01 Environmental noise measurements were carried out over a weekday period, between 1655 hours Monday, 2nd December and concluded 0915 hours the following day, to establish the existing noise levels at the site. The survey methodology and results are set out below.
- 4.02 Noise measurements have been carried out at the following location, as shown in Appendix B and described as:
- Position 1: located on the rear section of flat roof at a height of approximately 1.5 metres above the roof surface. The measurement was not located within 3.5 metres of any reflecting surfaces, other than the mounting surface.
- 4.03 Noise measurements at this location are considered to be representative of those at the rear of the property specifically for the periods relevant to the minimum background noise i.e. those late at night and during the early hours of the morning in the absence of significant road traffic on Chichester Road.

5 EQUIPMENT

- 5.01 Equipment for the survey was as follows:-

- Brüel & Kjær type 2238 Integrating Sound Level Meter conforming to Class 1 BS EN 61672, Type 1 BS EN 60804 & BS EN 60651: 1994.
- Brüel & Kjær Condenser Microphone and Connecting Leads.
- Brüel & Kjær Outdoor Microphone Kit, type UA1404.
- Tripod.

- 5.02 The equipment holds current UKAS or equivalent accreditation and serial numbers as follows:

Sound Level Meter B&K2238	Serial No.	2736836
	Calibration Date	20 th June 2013
	Cal Certificate No.	01356/2
½" Condenser Mic. B&K4188	Serial No.	2760436
	Calibration Date	20 th June 2013
	Cal Certificate No.	01356/2
Calibrator B&K4231	Serial No.	2389051
	Calibration Date	21 st June 2013
	Cal. Certificate No.	01356/1

N.B. Copies of calibration certificates are available upon request.

- 5.03 The equipment was calibrated both before and after the survey with no difference noted in the levels.

6 RESULTS

- 6.01 The weather during the survey was suitable for noise measurement, it being dry with little wind for the duration of the survey.
- 6.02 A list of the levels measured is included in Appendix D and represented graphically in Appendix E.
- 6.03 A summary of the time averaged ambient levels and lowest measured background levels over the measurement periods are shown in Table 6.1. The minimum L_{A90} is the lowest five minute measurement in the specified period.

Location	Period	Average $L_{Aeq,T}$ – dB	Minimum L_{A90} – dB
Position 1	Day time (0700-1900 hrs)	59.9	48.5
	Evening (1900-2300 hrs)	58.5	36.5
	Night-time (2300-0700 hrs)	54.0	23.0

Table 6.1: Free-Field Measured Ambient and Lowest Background Noise Levels

7 PLANT NOISE ASSESSMENT

- 7.01 On the basis of the measured noise levels and the appropriate and acceptable noise limits discussed in section 3, Table 7.1 sets out the recommended noise limits that the proposed items of plant should meet.

Period	Measured Existing $L_{A90,T}$	Proposed Noise Limit L_{Ar}
Day/Evening	37 dB	32 dB
Night	23 dB	30 dB

Table 7.1: Suggested Plant Noise Emission Limits Based on Lowest Measured L_{A90} , Free-field dB – limits to be met 1m from noise sensitive windows

- 7.02 The proposed scheme includes the following plant items:

Plant ref	Model	Noise level		Notes
		day	night	
Refrigeration condenser	RRC048004N	25dB(A)	13dB(A)	sound pressure at 10m
Refrigeration condenser (LT1)	JEHS-0500-L3	36dB(A)	36dB(A)	Sound pressure at 10m
Air conditioning unit	RAS8.0HRNSE	55dB(A)	-	Sound pressure at 1m
Air conditioning unit	RAS4.0HRNSE	54dB(A)	-	Sound pressure at 1m
Air conditioning unit	RAC50WPA	52dB(A)	52dB(A)	Sound pressure at 1m

Table 7.2: Proposed plant details

- 7.03 The LT1 fridge condenser and air conditioning (AC) condensers will be located in acoustic enclosures offering 5dB and 9dB noise control respectively.
- 7.04 The following tables summarise calculations to assess the levels of noise that will result at the closest noise affected façade of 86 Hillsboro Road at the rear of the proposed store car park:

Item	Noise Level		Notes
	Day	Night	
Refridge condenser	25 dB(A)	13 dB(A)	Sound pressure level at 10m
Conformal area Losses over 12 metres	- 1 dB	- 1dB	Distance to closest window
Barrier Effect	- 5 dB	- 5dB	Boundary wall screening
Reflections	+ 6 dB	+ 6dB	Additional reflections – store facades
Total Noise Level	25 dB(A)	13 dB(A)	Side windows 86 Hillsboro Rd

Table 7.3: Plant Noise Calculation – Refridge condenser

Item	Noise Level		Notes
	Day	Night	
LT1 condenser	36 dB(A)	36 dB(A)	Sound pressure level at 10m
Conformal area Losses over 13 metres	- 2 dB	- 2 dB	Distance to closest window
Noise control	-5 dB	-5 dB	Acoustic shroud
Barrier Effect	- 5 dB	- 5 dB	Boundary wall screening
Reflections	+ 3 dB	+ 3 dB	Additional reflections – store facades
Total Noise Level	27 dB(A)	27 dB(A)	Side windows 86 Hillsboro Rd

Table 7.4: Plant Noise Calculation – LT1 condenser

Item	Noise Level		Notes
	Day	Night	
AC units	59 dB(A)	52 dB(A)	Sound pressure level at 1m
Conformal area Losses over 12 metres	- 19 dB	- 19 dB	Distance to closest window
Noise control	-9 dB	-9 dB	Acoustic enclosure
Barrier Effect	- 5 dB	- 5 dB	Boundary wall screening
Reflections	+ 3 dB	+ 3 dB	Additional reflections – store facades
Total Noise Level	29 dB(A)	22 dB(A)	Side windows 86 Hillsboro Rd

Table 7.5: Plant Noise Calculation – AC units

Item	Noise Level	
	Day	Night
Refrigeration condenser	25 dB(A)	13 dB(A)
LT1 condenser	27 dB (A)	27 dB(A)
AC units	29 dB(A)	22 dB(A)
Total Noise Level	32 dB(A)	28 dB(A)

Table 7.6: Cumulative plant noise level

Property	Period	Proposed Noise Limit L_{Ar}	Predicted $L_{Aeq,T}$	Exceedance of noise limit
86 Hillsboro Road	Daytime/Evening	32 dB	32 dB	0 dB
	Night-time	30 dB	28 dB	-2dB

Table 7.7: Assessment of Predicted Chiller Noise Levels Based on Proposed Noise Limit, Free-field dB(A)

- 7.05 On the basis of the assessment outlined above and the proposed noise control measures, the plant noise limits will be met with no expected adverse impact to existing residential amenity. Therefore noise emissions should not be considered a material constraint to the operation of the plant.

APPENDIX A

GLOSSARY OF TECHNICAL TERMS

TECHNICAL TERMS AND UNITS

Decibel (dB) - This is the unit used to measure sound. The human ear has an approximately logarithmic response to sound over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). We therefore use a logarithmic scale to describe sound pressure levels, intensities and power levels. The logarithms used are to base 10; hence, an increase of 10 dB in sound pressure level corresponds to a doubling in perceived loudness of the sound.

Sound Power Level (SWL) - This is a function of the noise source alone and is independent of its surroundings. It is a measure of the amount of sound power output measured in decibels.

Sound Pressure Level (SPL) - This is a function of the source and its surroundings and is a measure of the sound pressure at a point in space. For example, a sound pressure level measured at 1 metre from a sound source of certain sound power in reverberant room will not be the same as the sound pressure level 1 metre from the sound source measured in open space.

Octave and One-Third Octave Bands - The human ear is sensitive to sound over a range of approximately 20 Hz to 20 KHz and is generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum is divided into frequency bands and the sound pressure level is measured in each band. 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. For finer analysis, each octave band may be split into one-third octave bands.

"A" Weighting - A number of frequency weightings have been developed to imitate the ear's varying sensitivity to sound of different frequencies. The most commonly used weighting is the "A" weighting. The "A" weighted SPL can be measured directly or derived from octave or one-third octave band SPLs. The result is a single figure index which gives some idea of the subjective loudness of the sound, but which contains no information as to its frequency content.

Noise Rating (NR) Curves - The "A" weighted sound pressure level cannot be used to define a spectrum or to compare sounds of different frequencies. NR curves convey frequency information in a single-figure index. This is done by defining the maximum permissible sound pressure level at each frequency for each curve. To measure the noise rating of a given environment, the SPL is measured in octave or one-third octave bands and the noise rating is then the highest NR curve touched by the measured levels.

Intermittency and Time-Weighting - The degree of annoyance caused by a noise also depends on its duration and intermittency of a noise. Intermittent, impulsive or repetitive noises tend to be more annoying than continuous noises. Various time-weightings have been derived to measure sounds of differing intermittences and these can be measured directly on modern equipment. The most common time-weightings in use are as follows:-

L_{90} This is the sound pressure level exceeded for 90% of the measurement period. It is widely used to measure background noise levels.

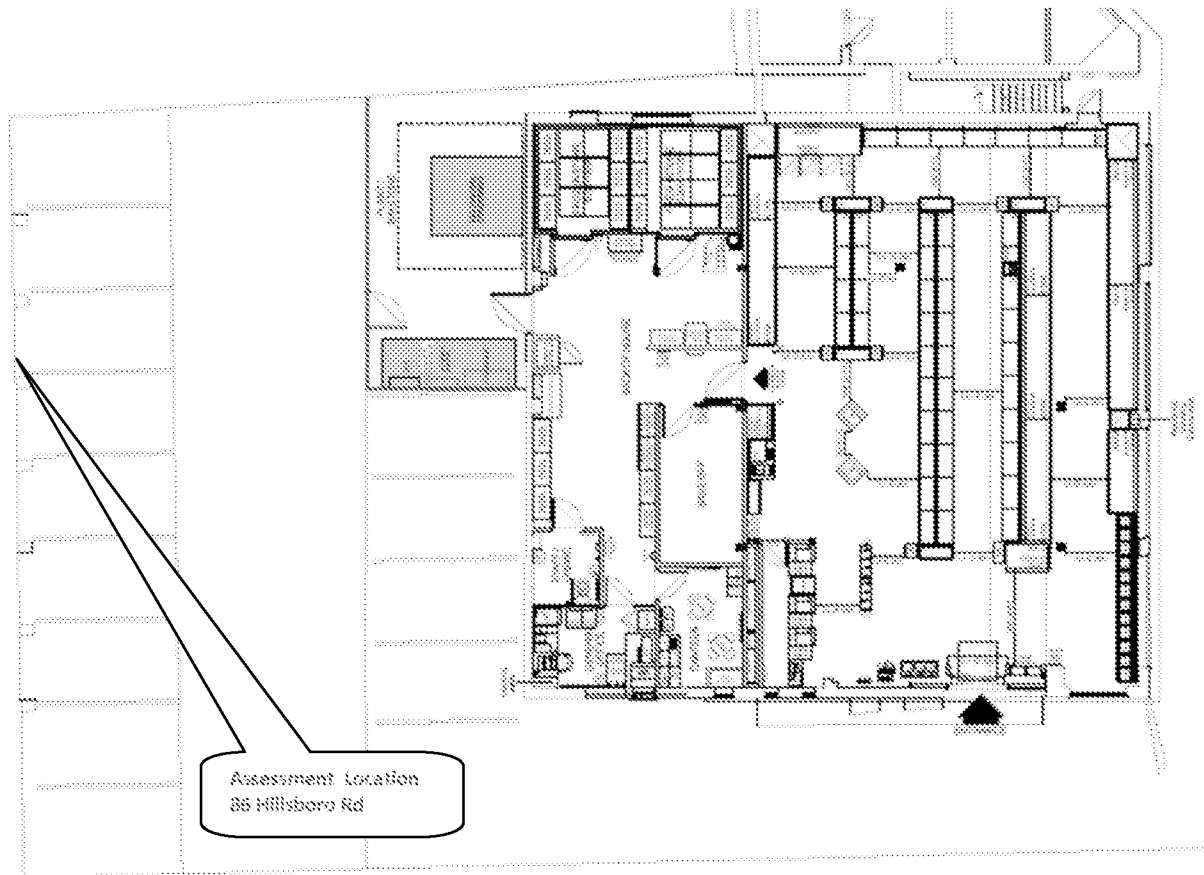
L_{10} This is the sound pressure level exceeded for 10% of the measurement period. It is widely used to measure traffic noise. For a given measurement period, the L_{10} level is by definition greater than or equal to the L_{90} level.

L_{eq} The equivalent continuous noise level is often used to measure intermittent noise. It is defined as the notional steady noise level that would contain the same acoustic energy as the varying noise. Because the averaging process used is logarithmic, the L_{eq} level tends to be dominated by the higher noise levels measured.

APPENDIX B

**AERIAL VIEW, SITE PLAN
&
MEASUREMENT LOCATION**





GROUND FLOOR PLAN

APPENDIX C

RELEVANT ASSESSMENT STANDARDS

National Planning Policy Framework and the Noise Policy Statement for England

The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) on 27th March 2012 and upon its publication, the majority of planning policy statements and guidance notes were withdrawn, including Planning Policy Guidance 24 Planning and Noise, which previously presented the government's overarching planning policy on noise.

The NPPF contains four aims, which are set out at paragraph 123 in Section 11 of the document, titled *Conserving and enhancing the natural environment*:

"Planning policies and decisions should aim to:

avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

The Department for Environment Food and Rural Affairs published the Noise Policy Statement for England (NPSE) in March 2010. The explanatory note of NPSE defines the following terms used in the NPPF:

"NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

The NPSE does not define any of the above effect levels numerically.

The NPSE presents the Noise Policy Aims as:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy and 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."

It can be seen that the first two bullet points are similar to Section 11 of the NPPF, with a third aim that seeks to improve health and quality of life. The NPSE later expands on the Noise Policy Aims, stating:

2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

2.25 This aim (the third aim), seeks where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim."

It is clear that noise described in the NPSE as SOAEL that would lead to significant adverse effects should be avoided, although there is no definition as to what constitutes a significant adverse effect. Similarly, noise should be mitigated where it is high enough to lead to adverse effects, termed the LOAEL, but not so high that it leads to significant adverse effects.

British Standard 4142

British Standard (BS) 4142: 1997 *Method for rating industrial noise affecting mixed residential and industrial areas* is intended to be used to assess whether noise from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises is likely to give rise to complaints from people residing in nearby dwellings.

The procedure contained in BS4142 for assessing the likelihood of complaints is to compare the "specific noise level", which is the measured or predicted noise level from the source in question immediately outside the dwelling, with the background noise level. Where the noise contains a "distinguishable discrete continuous note (whine, hiss, screech, hum etc.) or if there are distinct impulses in the noise (bangs, clicks, clatters or thumps), or if the noise is irregular enough to attract attention" then a correction of +5dB is added to the specific noise level to obtain the "rating level" or L_{Ar} .

The likelihood of noise provoking complaints is assessed by subtracting the background noise level from the rating noise level. BS4142 states:

"A difference of around 10dB or higher indicates that complaints are likely. A difference of around 5dB is of marginal significance. A difference of -10dB is a positive indication that complaints are unlikely."

The standard also notes that:

"The greater this difference the greater the likelihood of complaints."

In the context of the NPPF, it is considered that a situation where BS4142 suggests complaints are unlikely would equate to the No Observed Effect Level (NOEL). The situation where BS4142

suggests complaints are likely would equate to the Significant Observed Adverse Effect Level (SOAEL).

The Lowest Observed Adverse Effect Level (LOAEL) has been equated to the situation that BS4142 describes as “marginal” as this is the only intermediate threshold identified in BS4142.

Setting plant noise limits in accordance with the requirements of WCC will result in noise levels either below the NOEL or between the LOAEL and the NOEL depending on the measured ambient noise level.

This assessment is carried out over a one hour period for the daytime and a five minute period for the night-time. Day or night are not defined in the standard but it states that night should cover the times when the general adult population are preparing for sleep or are actually sleeping. For the purposes of this assessment, it is assumed that daytime and night-time are 07:00 to 23:00 hours and 23:00 to 07:00 hours respectively.

BS4142 has been referenced in setting noise limits for any fixed plant proposed as part of the proposed development.

APPENDIX D

SURVEY RESULTS
(TABULAR)

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Tabulated Results

Time	L _{Aeq}	L _{Amax}	L _{A90}
16:55	61.0	83.7	51.0
17:00	59.4	73.8	51.0
17:05	58.1	65.3	49.5
17:10	58.1	65.0	50.0
17:15	61.6	79.3	50.5
17:20	59.2	66.6	50.0
17:25	59.1	66.2	50.0
17:30	59.4	70.1	51.5
17:35	59.5	65.9	52.0
17:40	58.0	67.2	48.5
17:45	58.7	68.4	51.0
17:50	68.8	89.6	48.5
17:55	58.8	68.0	50.5
18:00	63.4	82.7	49.5
18:05	58.0	64.8	49.0
18:10	58.8	66.3	50.5
18:15	58.7	66.1	49.5
18:20	59.2	69.4	52.0
18:25	58.3	65.6	49.5
18:30	59.7	72.0	51.5
18:35	59.0	66.8	50.5
18:40	60.2	75.0	48.5
18:45	59.9	65.2	52.0
18:50	58.6	68.3	48.5
18:55	57.9	64.2	50.0
19:00	59.0	68.4	51.0
19:05	58.8	64.5	50.5
19:10	58.0	64.5	49.0
19:15	58.4	66.2	49.5
19:20	57.7	66.9	48.5
19:25	58.7	65.5	49.5
19:30	58.6	67.5	50.5
19:35	58.9	64.3	51.0
19:40	58.3	66.4	48.5
19:45	60.3	67.5	52.0
19:50	59.4	66.6	49.0
19:55	58.9	64.8	51.0
20:00	66.3	88.6	49.5
20:05	58.0	66.1	49.0
20:10	58.4	67.3	48.0
20:15	58.3	66.1	49.0
20:20	57.5	65.8	47.0
20:25	57.7	65.0	48.5
20:30	59.7	72.0	48.0
20:35	58.3	64.1	50.0
20:40	58.8	67.0	48.5
20:45	59.2	70.6	49.0
20:50	58.0	65.7	46.5

Time	L _{Aeq}	L _{Amax}	L _{A90}
20:55	57.1	65.9	45.0
21:00	56.7	64.3	47.0
21:05	58.7	66.0	47.5
21:10	57.8	66.4	48.5
21:15	56.7	67.5	43.0
21:20	58.2	66.8	47.5
21:25	57.7	65.4	45.5
21:30	57.6	67.1	48.5
21:35	58.3	67.0	45.5
21:40	57.0	65.2	43.5
21:45	57.2	64.6	46.0
21:50	57.1	65.7	47.5
21:55	57.4	66.5	44.5
22:00	57.3	67.4	46.5
22:05	57.9	65.3	47.0
22:10	57.8	65.1	47.5
22:15	57.5	65.1	47.0
22:20	56.8	65.6	44.5
22:25	57.0	67.1	42.5
22:30	56.9	66.4	42.5
22:35	55.8	65.4	42.0
22:40	56.6	65.3	45.5
22:45	55.9	65.6	42.5
22:50	55.7	66.1	36.5
22:55	57.3	66.5	41.0
23:00	56.8	69.0	41.5
23:05	56.7	69.6	42.5
23:10	56.8	67.3	46.0
23:15	53.7	64.1	35.5
23:20	55.5	67.5	34.5
23:25	56.3	66.3	36.0
23:30	55.9	65.7	35.5
23:35	54.3	63.9	36.5
23:40	53.6	64.5	39.0
23:45	54.6	67.0	34.5
23:50	56.7	67.5	41.5
23:55	55.2	65.5	37.0
00:00	55.4	69.2	33.0
00:05	54.7	65.6	35.5
00:10	54.7	67.5	37.5
00:15	53.9	65.5	34.0
00:20	52.6	69.5	30.0
00:25	49.1	62.0	30.0
00:30	57.1	69.9	40.0
00:35	50.0	62.8	29.0
00:40	52.4	67.8	29.0
00:45	52.2	65.9	32.0
00:50	53.9	68.6	30.5

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Williams Southern Ltd

Tabulated Results

Time	L _{Aeq}	L _{Amax}	L _{A90}
00:55	50.9	62.0	31.0
01:00	50.2	65.1	30.5
01:05	54.0	71.1	31.0
01:10	52.2	64.3	30.5
01:15	48.2	62.6	30.5
01:20	51.5	68.4	26.5
01:25	52.7	72.3	23.5
01:30	50.6	64.6	27.0
01:35	45.5	60.1	28.5
01:40	47.1	60.6	26.5
01:45	47.2	62.4	26.0
01:50	50.8	62.9	28.5
01:55	49.2	64.7	27.5
02:00	47.9	63.1	26.0
02:05	48.8	64.7	29.0
02:10	43.9	60.1	27.5
02:15	44.6	56.8	31.0
02:20	45.8	61.5	25.5
02:25	46.1	62.6	24.0
02:30	49.3	64.4	27.0
02:35	45.9	61.8	23.0
02:40	47.1	62.2	25.0
02:45	48.6	66.9	24.5
02:50	40.3	57.4	24.0
02:55	51.1	64.2	27.0
03:00	47.5	65.5	29.0
03:05	49.2	63.8	27.0
03:10	31.5	42.4	25.5
03:15	48.5	65.4	27.0
03:20	50.8	66.0	28.5
03:25	43.6	60.3	27.5
03:30	48.9	65.5	28.5
03:35	45.5	60.6	26.0
03:40	41.7	59.2	25.0
03:45	47.6	64.3	29.5
03:50	47.6	65.2	23.5
03:55	47.6	67.4	30.0
04:00	45.0	61.2	30.5
04:05	46.7	64.4	27.5
04:10	36.6	57.6	28.5
04:15	50.1	66.7	31.5
04:20	53.0	67.8	29.5
04:25	52.3	66.4	29.0
04:30	47.1	60.1	30.5
04:35	48.8	65.9	28.5
04:40	52.2	65.3	33.0
04:45	52.4	66.4	34.0
04:50	51.1	64.4	32.0

Time	L _{Aeq}	L _{Amax}	L _{A90}
04:55	53.4	66.5	34.0
05:00	55.0	67.6	35.0
05:05	56.0	70.7	38.0
05:10	56.8	68.7	40.5
05:15	54.2	65.2	37.5
05:20	54.7	67.1	38.0
05:25	57.0	70.8	39.5
05:30	57.3	67.4	42.5
05:35	55.4	67.5	40.0
05:40	55.4	65.7	39.0
05:45	55.8	67.4	43.5
05:50	56.4	68.2	45.0
05:55	56.3	66.2	44.0
06:00	58.3	73.9	49.5
06:05	58.1	67.4	45.0
06:10	57.4	68.4	45.5
06:15	58.2	67.7	42.0
06:20	58.2	66.7	49.0
06:25	58.3	67.4	47.0
06:30	57.2	64.0	48.0
06:35	58.7	70.1	49.0
06:40	59.0	67.9	48.0
06:45	57.9	65.3	48.5
06:50	58.6	67.0	49.0
06:55	60.0	68.0	51.5
07:00	60.2	69.2	52.5
07:05	59.9	67.0	52.0
07:10	59.1	71.5	50.5
07:15	59.5	68.2	49.5
07:20	58.6	64.9	50.5
07:25	59.6	69.6	51.5
07:30	58.2	63.8	51.0
07:35	59.8	71.2	51.0
07:40	59.0	67.0	50.0
07:45	60.1	67.9	51.5
07:50	58.9	66.7	51.0
07:55	58.0	66.7	49.5
08:00	59.3	76.0	50.0
08:05	59.5	67.4	51.0
08:10	58.6	70.8	50.0
08:15	58.8	65.3	50.5
08:20	59.7	66.9	50.5
08:25	57.4	64.1	50.5
08:30	59.3	74.0	51.0
08:35	59.4	67.5	51.5
08:40	59.9	76.6	50.5
08:45	58.6	68.1	51.0
08:50	59.7	67.5	50.5

APPENDIX E
SURVEY RESULTS
(GRAPHICAL)

Noise Level Time History at M Local Bognor Regis



LAeq LAFmax LAF90

