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SARUM ACADEMY PHASE 1

SALISBURY

PLANT NOISE ASSESSMENT

Technical Report: R11145-4 Rev 1

Date: 28th May 2026

For: Morgan Sindall Construction – South
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24 Acoustics Document Control Sheet

Project Title: Sarum Academy Phase 1, Salisbury – Plant Noise Assessment

Report Ref: R11145-4 Rev 1

Date: 28th May 2026

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Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed and Approved by
0	Approved for issue	Kiel Edwards	Neil McLeod
1	Update	Kiel Edwards	Neil McLeod

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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Morgan Sindall Construction South, to undertake a noise assessment for proposed new plant at Sarum Academy, Salisbury.
- 1.2 This report presents the results of the assessment, following site visits and a background noise survey undertaken between 20th and 25th June 2025.
- 1.3 All sound pressure levels quoted in this report are in dB relative to 20 μ Pa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

- 2.1 Sarum Academy is an existing secondary and 6th form school located off Westwood Road in the northwest of Salisbury. A new 8FE teaching building is proposed which forms phase 1 of the Sarum Academy redevelopment plan (4 phases in total). The new building will comprise 13 teaching rooms, office spaces, a group room and associated storage and circulation spaces spread over two floors.
- 2.2 24 Acoustics has been instructed by Morgan Sindall to assess noise from proposed rooftop plant serving the new teaching building at the nearest residential properties.
- 2.3 The site comprises Sarum Academy's existing teaching blocks and outside areas, with the proposed teaching building location currently being grassed/paved areas. The new teaching building will be near the centre of the school site. A staff car parking area is proposed to the north, with the existing buildings to the northeast and southeast retained.
- 2.4 The nearest residential properties to the proposed rooftop plant are on Westwood Road, approximately 140 metres to the west.
- 2.5 New rooftop plant will comprise six air source heat pump units (ASHP) and two solar inverters. It is assumed that the ASHP units will operate on demand at any time of day or night. The solar inverters will only operate during daylight hours. Therefore, this assessment will consider the specific noise level against daytime (07:00 to 19:00 hours), evening (19:00 to 23:00 hours) and night-time (23:00 to 07:00 hours) background noise levels.
- 2.6 Figure 1 shows the existing school site with the proposed building shown in Figure 2.

3.0 RELEVANT CRITERIA

National Planning Policy Framework and Noise Policy Statement for England

3.1 The National Planning Policy Framework (NPPF) states in relation to noise that planning policies and decisions should aim to:

- 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.

3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims.

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life.

3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

3.4 The NPPF and NPSE documents do not refer to specific noise criteria. When considering the impact of noise from new plant 24 Acoustics considers that the spirit of the requirements of the NPPF and NPSE will be complied with if criteria from British Standard 4142:2014 are adopted.

BS 4142:2014 Methods for Rating Industrial and Commercial Sound

- 3.5 BS 4142:2014 provides a method for rating the effects of industrial and commercial sound on residential receptors.
- 3.6 The standard advocates a comparison between the representative measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction should be applied.
- 3.7 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact, also depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).
- 3.8 BS 4142 requires the noise impact to be assessed depending on the context. In relation to situations where background noise levels are low, the standard states “Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night”.

Local Authority Requirements

- 3.9 Wiltshire Council’s Planning Guidance Notes for noise from fixed plant reference the guidance of BS 4142 and require a rating level of at least 5 dB below the background noise level at the nearest receptor location.

4.0 NOISE MEASUREMENTS

- 4.1 Noise measurements were undertaken between the 20th and 25th June 2025 to determine the existing background noise levels in the area, using the following equipment:

- | | |
|------------------------------------|------------|
| • Rion precision sound level meter | Type NL-32 |
| • Brüel & Kjær acoustic calibrator | Type 4231 |

- 4.2 The noise monitoring equipment was located to the northern boundary of the site at a height of approximately 2m above local ground level. The monitoring location is shown in Figure 1.
- 4.3 Measurements were undertaken in samples of 5 minutes in terms of the overall free-field A-weighted L_{eq} , L_{90} and $L_{max,f}$ noise levels. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use".
- 4.4 The instrumentation's calibration was checked before and after the survey in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards.
- 4.5 The instrumentation was fitted with environmental weather shields during the surveys. Weather conditions during the surveys were variable with short periods of precipitation. Measurements affected by meteorological conditions have been removed from the assessment.
- 4.6 The results of the background noise surveys are shown graphically in Appendix B with representative typical background noise levels summarised in Table 1.

Daytime dB LA90, 1 hour (07:00 - 19:00)	Evening dB LA90, 1 hour (19:00 - 23:00)	Night-Time dB LA90,15 min (23:00 - 07:00)
39	35	32

Table 1: Summary of Measured Typical Background Noise Levels.

- 4.7 24 Acoustics determines the typical background noise level as the average minus one standard deviation.

5.0 PLANT NOISE ASSESSMENT

Plant Noise Data

- 5.1 The proposed plant will comprise six Daikin ASHP units and two solar inverter units located to the flat roof of the new teaching building, as shown in Figure 2. Manufacturer's noise data for the proposed Daikin units is shown in Table 2.

Daikin Unit Model	Level	Manufacturer's Single Octave Band (Hz) Sound Level (dB)								dBA
		63	125	250	500	1k	2k	4k	8k	
EWYT/EWATO 50CZ-A2 (x2)	L _w	77	72	63	59	56	55	54	48	64
EWYE030CZN /P-A1 (x2)	L _w	70	61	60	60	56	47	47	45	61
RZAG140N2V 1B	L _w	76	72	71	71	62	58	54	49	70
RZAG60A	L _p at 1m	52	54	53	49	43	38	33	24	50

Table 2: ASHP Manufacturer's Stated Noise Data.

- 5.2 The proposed solar inverters will comprise one Solar Edge SE25k/30K/33.3K (manufacturer's stated noise level of 62 dBA at 1m) and one SMA Sunny Tripower x 60 (manufacturer's stated noise level of 63 dBA at 1m).
- 5.3 Calculations have been undertaken to determine the level of noise from the proposed plant at the nearest residential properties on Westwood Road and include corrections for distance (approximately 140m) and atmospheric absorption.
- 5.4 Resultant plant noise levels at the nearest receptor location will be in the order of 25 dB L_{Aeq,T} during all periods.

BS 4142:2014 Assessment

- 5.5 Table 3 presents the calculated plant noise level at the nearest residential property on Westwood Road, alongside the BS 4142 rating noise level. Due to the low predicted levels and significant distances involved, the proposed plant is not considered to contain tonal or other distinctive characteristics that would be perceptible at the receptor locations.

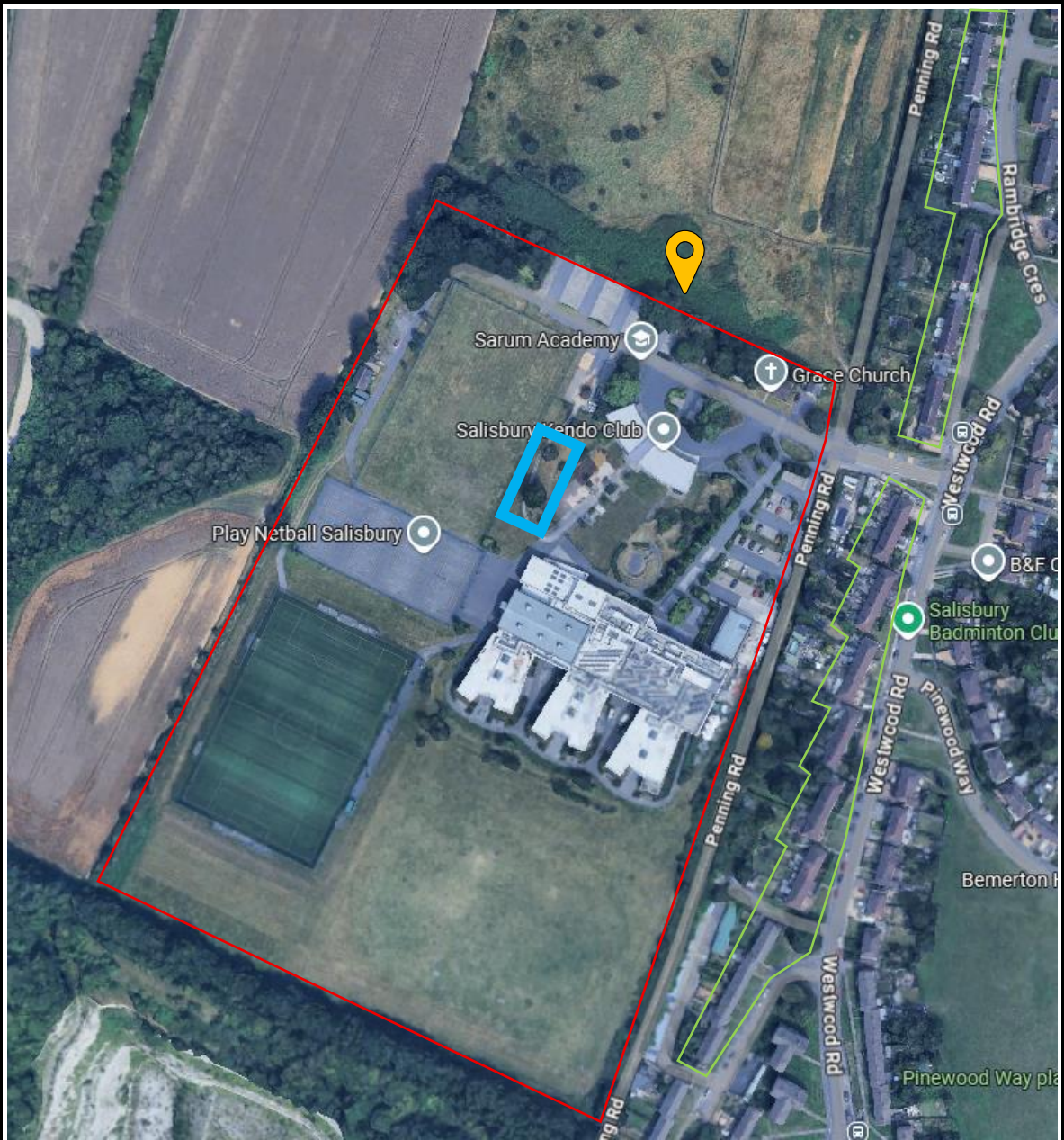
	Predicted ASHP Noise Levels – Westwood Road		
	Daytime 07:00 to 19:00	Evening 19:00 to 23:00	Night-Time 23:00 to 07:00
Representative Background Noise Level	39 dB L _{A90} , 1 hour	35 dB L _{A90} , 1 hour	32 dB L _{A90} , 15 min
Specific Source Noise Level	25 dB L _{Aeq} , 1 hour	25 dB L _{Aeq} , 1 hour	25 dB L _{Aeq} , 15 min
Rating Correction	0 dB	0 dB	0 dB
Rating Noise Level	25 dBA	25 dBA	25 dBA
Difference	-14 dBA	-10 dBA	-7 dBA

Table 2: BS 4142 Plant Rating Noise Level – Westwood Road

- 5.6 As shown above, the BS 4142 rating levels will be at least 5 dBA below the representative background noise level during all periods. This is considered a low noise impact based on the guidance of BS 4142: 2014.
- 5.7 In context there is existing services plant serving the school and forms a part of the existing noise climate in the area hence noise from the proposed services plant would not be distinctive.
- 5.8 The above assessment demonstrates that proposed plant noise levels at the nearest residential properties will be in line with the guidance of Wiltshire Council and BS 4142: 2014 and hence acceptable.

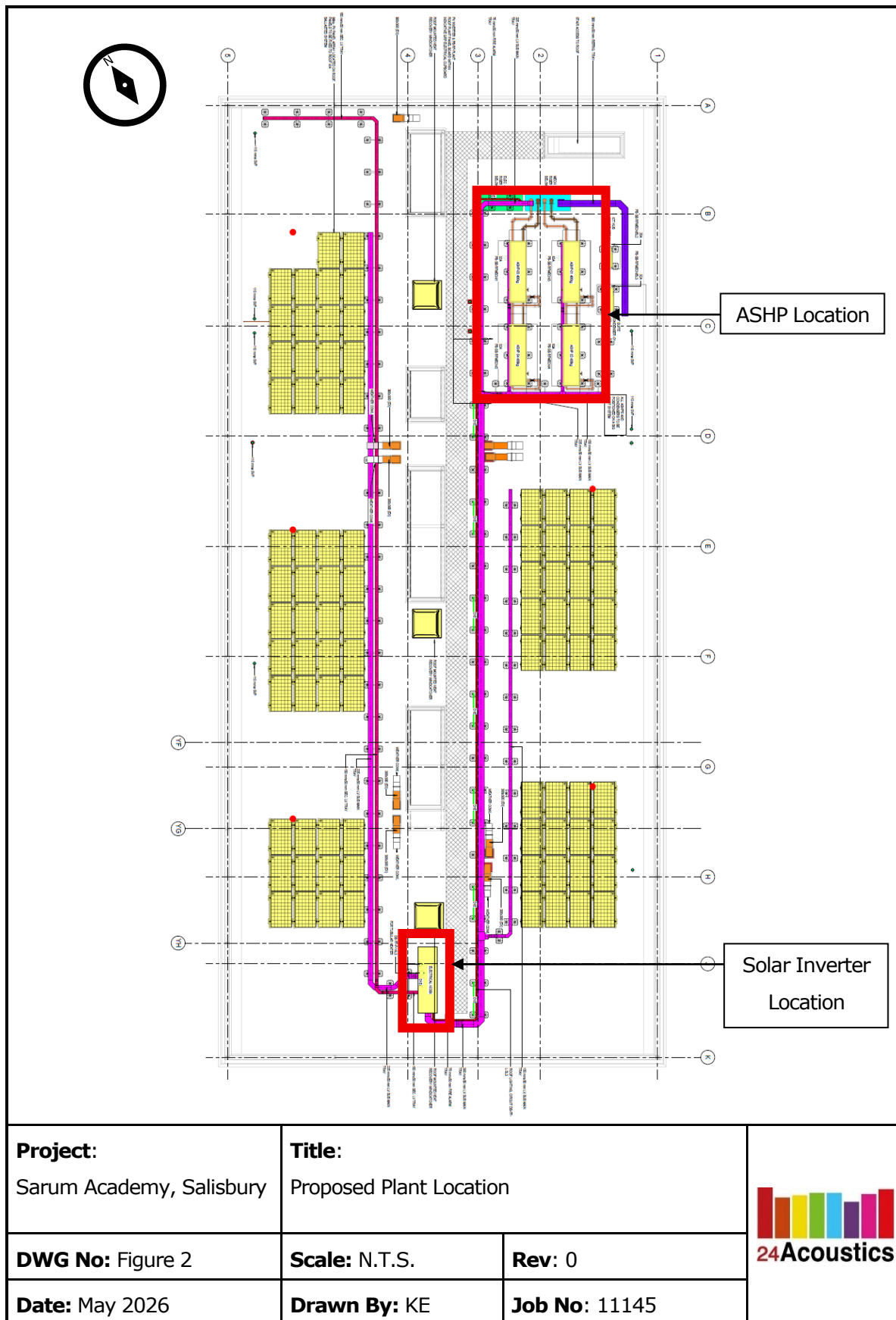
6.0 CONCLUSIONS

- 6.1 24 Acoustics Ltd has been instructed by Morgan Sindall Construction to undertake a noise assessment for a proposed air source heat pumps and solar inverters at Sarum Academy, Salisbury, Wiltshire.
- 6.2 Environmental noise measurements have been undertaken to determine the existing background noise levels representative of nearby residential properties.
- 6.3 Calculations have been undertaken, based on manufacturer's noise data, to determine the plant noise levels at the nearest residential receptor locations.
- 6.4 The assessment demonstrates that the rating noise level from the proposed ASHP and solar inverter units at the nearest residential receptor locations will be at least 5 dBA below the representative background noise level during all periods. Therefore, noise from the proposed plant is acceptable.



	School Site Location	
	Receptor Location – Westwood Road	
	New Teaching Building Location	
	Measurement Location	
Project: Sarum Academy, Salisbury	Title: Site Location, Receptor Location and Noise Measurement Location.	
DWG No: Figure 1	Scale: N.T.S.	Rev: 0
Date: May 2026	Drawn By: KE	Job No: 11145





APPENDIX A – ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B – AMBIENT NOISE SURVEY RESULTS

