



REPORT REFERENCE:

SA – 8310

INTERNAL NOISE ASSESSMENT

CLIENT:

Ayre Chamberlain Gaunt

SITE:

Whitley Park Primary & Nursery School

Brixham Road

Reading

Berkshire

RG2 7RB

Report Presented By

Mr. B. J. Scrivener MIOA.

A handwritten signature in black ink, appearing to be 'B. J. Scrivener'.

Sound Advice Acoustics Ltd

2 West Links, Tollgate, Chandlers Ford, Hampshire, SO53 3TG

Tel: 02380 641357

soundadviceacoustics.co.uk

1	INTRODUCTION.....	3
2	DRAWINGS.....	4
2.1	FLOOR PLAN	4
3	REVERBERATION TIMES IN TEACHING AND STUDY AREAS	5
3.1	CONSTRUCTION DETAILS	6
3.2	SUMMARY OF RESULTS.....	7
4	CALCULATIONS	8
5	BRITISH STANDARD 4142:2014+A1:2019.....	9
5.1	CRITERIA	9
5.2	SCOPE OF BRITISH STANDARD 4142: 2014+A1: 2019	9
5.3	TERMS AND DEFINITIONS	9
5.4	ASSESSMENT POSITION	9
5.5	RATING LEVELS (CHARACTER CORRECTION)	9
5.6	SUBJECTIVE METHOD	10
5.7	ASSESSMENT CRITERION.....	10
5.8	ASSESSMENTS	11
5.8.1	Daytime (08:00 – 18:00).	11
5.9	ASSESSMENT CONCLUSION	11
6	NPPF & NPSE.....	12
7	CONCLUSION SUMMARY:	13
7.1	REVERBERATION:	13
7.2	WALL & FLOOR CONSTRUCTIONS:	13
7.2.1	Measured Background Noise Levels.....	13
7.1	PROPOSED PLANT CRITERIA	13
7.1	ASSESSMENT.....	14
7.1.1	Daytime (08:00 – 18:00)	14

1 INTRODUCTION

Sound Advice Acoustics Ltd has been instructed by Ayre Chamberlain Gaunt to assess the building acoustic requirements for the refurbishment and new buildings at Whitley Park Primary & Nursery School, Brixham Road, Reading, Berkshire, RG2 7RB.

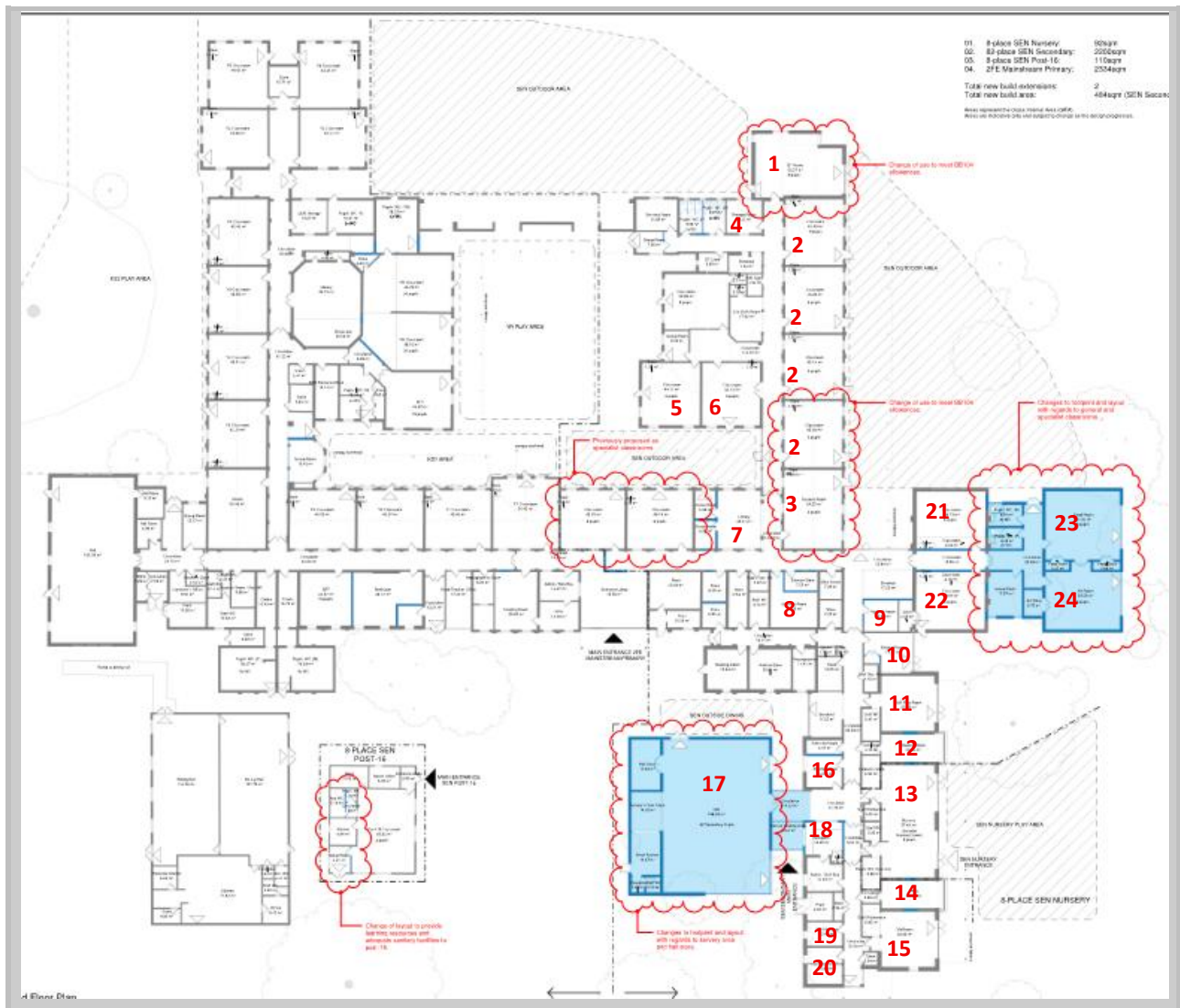
The assessment has been carried out generally in accordance with the requirements of Part E of Schedule 1 of the Building Regulations 2000. Approved Document E (2003 Edition) came into effect from 1st July 2003 and now includes all new school buildings as E4 – ‘Acoustic Conditions in Schools’. Guidance for these particular requirements is given in Building Bulletin 93, February 2015.

The following areas are to be assessed within this report:-

1. Reverberation Times in Teaching and Study Areas.
2. Airborne Sound Insulation Between Spaces and Airborne Sound Insulation Between Corridors and other General Open Spaces
3. Plant Noise.

2 DRAWINGS

2.1 Floor Plan



The rooms have been labelled above with the figure number (See section 3.2) in order to clearly indicate which rooms are specified.

3 REVERBERATION TIMES IN TEACHING AND STUDY AREAS

The calculated reverberation time within each type of room of the proposed construction has been evaluated and is detailed.

In addition, further calculations have been made with regards to any additional acoustic materials that may need to be introduced within the room in order to meet the requirements within Building Bulletin 93. These are incorporated within the attached figures and shown as (*) figures, if required. Those rooms that have met the requirements within Building Bulletin 93 with the proposed construction specifications have not required additional calculations.

FLOORS	<u>125</u>	<u>250</u>	<u>500</u>	<u>1.0k</u>	<u>2.0k</u>	<u>4.0k</u>	<u>Freq (Hz)</u>
Carpet Tile	0.10	0.15	0.25	0.30	0.30	0.30	α
Vinyl / Epoxy	0.02	0.02	0.03	0.04	0.04	0.05	α
Parquet Flooring	0.20	0.15	0.10	0.10	0.05	0.10	α

WALLS	<u>125</u>	<u>250</u>	<u>500</u>	<u>1.0k</u>	<u>2.0k</u>	<u>4.0k</u>	<u>Freq (Hz)</u>
Painted Brick	0.02	0.03	0.04	0.05	0.07	0.08	α
Plasterboard	0.07	0.12	0.08	0.08	0.06	0.05	α
Glass	0.15	0.05	0.03	0.03	0.02	0.02	α
Doors	0.14	0.10	0.06	0.08	0.10	0.10	α

CEILINGS	<u>125</u>	<u>250</u>	<u>500</u>	<u>1.0k</u>	<u>2.0k</u>	<u>4.0k</u>	<u>Freq (Hz)</u>
Plasterboard	0.07	0.12	0.08	0.08	0.06	0.05	α
Ecophon Focus E	0.15	0.55	0.9	0.95	0.95	0.95	α

3.1 Construction Details

The following table demonstrates the amount in m2 of each product required for each room.

Room	Floor Finish	m ²	Ceiling Finish	m ²	Wall Finish	Wall Sorba m ²
DT Room	Carpet	57	Ecophon Focus E	63	P/B on Stud	N/A
	Vinyl	6				
Classrooms 2-5	Carpet	41	Ecophon Focus E	46	Painted Brick	N/A
	Vinyl	5				
Science Room	Vinyl	55	Ecophon Focus E	55	Painted Brick	35
Therapy Room	Vinyl	36	Plasterboard	36	Painted Brick	N/A
Classrooms 9	Carpet	40	Ecophon Focus E	44	Painted Brick	N/A
	Vinyl	4				
Classroom 10	Carpet	40	Ecophon Focus E	44	Painted Brick	N/A
	Vinyl	4				
Library	Carpet	30	Plasterboard	30	Painted Brick	N/A
Sensory Room	Carpet	23	Ecophon Focus E	10	Painted Brick	N/A
				13		
Hygiene Room	Vinyl	13	Ecophon Focus E	13	Painted Brick	N/A
Medical Room	Vinyl	19	Ecophon Focus E	19	Painted Brick	N/A
Soft Play	Carpet	38	Ecophon Focus E	38	Painted Brick	N/A
Meeting Room	Carpet	21	Ecophon Focus E	21	Painted Brick	N/A
Nursery	Carpet	18	Ecophon Focus E	30	P/B on Stud	75
	Vinyl	12				
PPA	Carpet	21	Plasterboard	21	Painted Brick	N/A
Staff Room	Carpet	40	Plasterboard	45	Painted Brick	N/A
	Vinyl	5				
Parent Room	Carpet	14	Ecophon Focus E	14	Painted Brick	N/A
Hall	Timber	198	Ecophon Focus E	198	Painted Brick	N/A
Reception	Carpet	15	Plasterboard	15	Painted Brick	N/A
Site Manager	Carpet	10	Plasterboard	10	Painted Brick	N/A
Head Teacher	Carpet	15	Plasterboard	15	Painted Brick	N/A
Classroom 25-26	Carpet	35	Ecophon Focus E	39	Painted Brick	30
	Vinyl	4				
Food Room	Vinyl	62	Ecophon Focus E	62	Painted Brick	60
Art Room	Carpet	50	Ecophon Focus E	55	Painted Brick	40
	Vinyl	5				

3.2 Summary Of Results

Fig.	Room Name	T _{mf}	T _{mf}	Reverberation Times						
		Required	Achieved	63Hz	125Hz	250Hz	500Hz	1.0kHz	2.0kHz	4.0kHz
1	DT Room	≤0.4	0.3	2.01	1.31	0.54	0.34	0.31	0.31	0.30
2	Classrooms 2-5	≤0.4	0.3	1.90	1.21	0.52	0.34	0.31	0.31	0.31
3	Science Room	≤0.4	0.4	2.82	1.44	0.58	0.39	0.37	0.37	0.37
4	Therapy Room	≤1.0	0.4	1.11	0.67	0.48	0.44	0.37	0.39	0.40
5	Classrooms 9	≤0.4	0.3	1.93	1.22	0.52	0.34	0.31	0.31	0.31
6	Classroom 10	≤0.4	0.3	1.92	1.22	0.52	0.34	0.31	0.31	0.31
7	Library	≤1.2	0.9	1.88	1.33	1.03	1.02	0.86	0.87	0.90
8	Sensory Room	≤0.4	0.4	2.34	1.35	0.66	0.48	0.41	0.41	0.41
9	Hygiene Room	≤1.0	0.4	2.37	1.52	0.59	0.41	0.37	0.36	0.36
10	Medical Room	≤1.0	0.4	2.04	1.43	0.58	0.41	0.37	0.36	0.35
11	Soft Play	≤0.4	0.3	1.92	1.19	0.51	0.33	0.30	0.30	0.30
12	Meeting Room	≤0.8	0.3	1.13	0.84	0.45	0.32	0.29	0.29	0.29
13	Nursery	≤0.8	0.5	3.92	1.86	0.75	0.51	0.50	0.51	0.51
14	PPA	≤1.2	0.9	1.32	1.01	0.88	0.94	0.81	0.83	0.87
15	Staff Room	≤1.2	1.0	2.44	1.54	1.12	1.11	0.91	0.92	0.95
16	Parent Room	≤0.8	0.3	1.44	1.00	0.47	0.33	0.29	0.29	0.29
17	Hall	≤0.8-1.2	0.9	3.39	2.06	1.17	0.90	0.83	0.86	0.83
18	Reception	≤1.5	0.9	1.36	1.06	0.90	0.96	0.80	0.81	0.85
19	Site Manager	≤1.2	0.8	1.76	1.21	0.91	0.96	0.76	0.75	0.77
20	Head Teacher	≤1.2	0.9	2.19	1.40	1.02	1.02	0.82	0.81	0.83
21	Classroom 25-26	≤0.4	0.4	3.58	1.76	0.69	0.46	0.42	0.42	0.42
22	Food Room	≤0.4	0.4	3.37	1.81	0.70	0.46	0.44	0.44	0.44
23	Art Room	≤0.4	0.4	2.94	1.66	0.70	0.47	0.44	0.43	0.43

4 CALCULATIONS

The following calculations have been based on the recorded LA90 background noise level over a typical 24 hour period at the measurement position 1.

DAYTIME 08:00 – 18:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
54.7	51.4	49.2	48.3	49.9	46.5	41.1	35.5	31.2		Recorded Background Noise Levels
3	3	3	3	3	3	3	3	3		Reflection at Residential
5	5	5	5	5	5	5	5	5		BS 4142: 2014+A1:2019 Corrections
5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4		LAeq - LA90
30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6		Distance Correction
0	0	0	0	0	0	0	0	0		Barrier Attenuation
3	3	3	3	3	3	3	3	3		Reflection at Source
44.3	41.0	38.8	37.9	39.5	36.1	30.7	25.1	20.8	43	Target Level at Residential
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		Reflections
30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6		Distance and Barriers
68.9	65.6	63.4	62.5	64.1	60.7	55.3	49.7	45.4	68	Calculated Noise Source Level @ 1.0m
48.9	45.6	43.4	42.5	44.1	40.7	35.3	29.7	25.4	48	Calculated Noise Source Level @ 10.0m

The above calculations have demonstrated that in order to meet the criteria of +/-0 dB below the recorded background noise level, the following external noise level plant criteria should be achieved at 1.0m and 10m from all units operating at the same time under normal load.

DAYTIME 08:00 – 18:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
68.9	65.6	63.4	62.5	64.1	60.7	55.3	49.7	45.4	68	Calculated Noise Source Level @ 1.0m
48.9	45.6	43.4	42.5	44.1	40.7	35.3	29.7	25.4	48	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10 ⁻⁵ Pa)										

The above calculations have been made on the worst-case scenario with the plant being positioned no closer than 34.0m (linear) to the nearest affected window.

Based on the above being achieved, the following noise assessment can be concluded.

5 BRITISH STANDARD 4142:2014+A1:2019

5.1 Criteria

We have calculated the nearest noise sensitive premises to that of the residential accommodation units nearby with the proposed plant being no closer than 34m away.

5.2 Scope of British Standard 4142: 2014+A1: 2019

In the assessment of the existing surrounding commercial premises, consideration has been given to the scope of British Standard 4142:2014+A1:2019, which in section 1, details applicability of this standard to rating assessing sound of an industrial and/or commercial nature. It is considered appropriate that both the background noise levels and the rating noise levels obtained fall within the scope of British Standard 4142:2014+A1:2019 by using outdoor sound levels to assess the effect of sound on local residents.

5.3 Terms and Definitions

Symbol	Term	Definition
AP	Assessment Position	Position externally at the façade property under investigation at which the assessment is undertaken which is usually 1m from the 1 st floor bedroom window.
EP	Equivalent Position	Position at which the background noise levels are measured if there is no access to the assessment position or if source under investigation is audible.
$L_s = L_{Aeq, T}$	Specific Level	The average continuous equivalent sound pressure level of the source at the assessment position.
$L_{A,r,Tr}$	Rating Level	The average continuous equivalent sound pressure level of the source at the assessment position with a correction to account for the characteristic features.
$L_r = L_{Aeq, T}$	Residual Level	The average continuous equivalent sound pressure level at the assessment position without the source operating.
$L_{A90, T}$	Background Level	The sound pressure level that is not exceeded 90% of the time at the assessment position.
$L_a = L_{Aeq, T}$	Ambient Level	The totally encompassing sound at the assessment position including the residual and specific noise.

5.4 Assessment Position

The assessment position 1 was established as the residential accommodation premises nearby and no closer than 34m from the proposed plant.

5.5 Rating Levels (Character Correction)

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS 4142:2014+A1:2019. There are 3 methods for approaching this.

- Subjective method
- Objective method (for tonality)
- Reference method

5.6 Subjective Method

The subjective method establishes a rating penalty that is added to the specific noise level if any of the following is present at the assessment position. If a tone is expected to be present a character correction of 0 dB to 6 dB is added depending on how perceptible it is at noise sensitive locations.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Tonality Ranging from not tonal to prominently tonal	Not tonal	+0
	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6

If the source is expected to be impulsive a character correction of 0 dB to 9 dB is added depending on how perceptible it is at noise sensitive locations.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Impulsivity Considering both the rapidity and any overall change in sound levels	Not impulsive	+0
	Just perceptible	+3
	Clearly perceptible	+6
	Highly perceptible	+9

When the sound features are neither tonal nor impulsive, a character correction of +3 is added for the readily distinctive quality against the acoustic environment or for the intermittency of the source.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Readily Distinctive	Is not present	+0
	Is present	+3
Intermittency	Is not present	+0
	Is present	+3

5.7 Assessment Criterion

The significance of the resulting noise on the residential property depends on the margin by which it exceeds the background noise levels. British Standard 4142:2014+A1:2019 provides the following guidance within section 11.

Difference	Assessment of Impact
+10 dB	Indication of a significant adverse impact
+5 dB	Indication of an adverse impact
+0 dB	Indication of low impact

5.8 Assessments

5.8.1 Daytime (08:00 – 18:00).

Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1 \text{ hour}}$	43 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	48 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1 \text{ hour}}$	48 dB	8.1	Modal Background Noise Level
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Assessment	+/- 0 dB		
Conclusion	The assessment level is 'Low Impact'		

5.9 Assessment Conclusion

The background noise levels were measured at the equivalent position, chosen as it most represented the closest noise sensitive façade, located within the existing school grounds between 07:00 on 5th September and 07:00 on 8th September 2025

It can be seen from the above assessments that with any new plant achieving the proposed maximum noise level criteria detailed within this report, an assessment conclusion of Low Impact could be expected. Therefore, no further mitigation measures would be required if the design criteria was adhered to.

6 NPPF & NPSE

The National Planning Policy Framework 2024 (NPPF) and assessments to the Noise Policy Statement for England 2010 (NPSE) should be made in conjunction with each other. Paragraphs 198 - 201 of the National Planning Policy Framework 2024 (NPPF) states the following:

Paragraph 198 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.

Paragraph 199 Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications.

Paragraph 200 Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

Paragraph 201 The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities

The Noise Policy Statement for England gives various levels of effect as detailed within this report.

With the maximum plant specifications achieved within this report, the development can be implemented within the guidelines of the aforementioned documents and ensure a conclusion of **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.

7 CONCLUSION SUMMARY:

This report and assessment have been compiled to ensure that all acoustic aspects of this development are compliant with Building Bulletin 93 'Acoustic design of Schools' and British Standard 4142: 2014+A1:2019 'Method for Rating Industrial Noise Affecting Mixed residential and Industrial Areas'.

7.1 Reverberation:

The calculations have demonstrated that the reverberation criteria should be achieved.

7.2 Wall & Floor Constructions:

The calculations have demonstrated that the airborne wall criteria should be achieved.

7.2.1 Measured Background Noise Levels

Continuous background noise measurements were undertaken between the 5th – 8th September 2025 at Assessment Position 1. The maximum day time levels were found to be $L_{Aeq, 10 \text{ hour}}$ 52.3 dB. The modal 1-hour day time background noise levels between 08:00 and 18:00 was found to be $L_{A90 1 \text{ hour}}$ 41.0 dB at the assessment position.

Assessment Position	Date Start	Date Finish	Daytime LAeq
Position 1 Front	05/09/2025	08/09/2025	58.6

Assessment Position	Date Start	Date Finish	Daytime LA90
Position 1 Front	05/09/2025	08/09/2025	48.0

7.1 Proposed Plant Criteria

Calculations and assessments are to be made within this report to generate a maximum noise level criteria to which all plant should be selected to. The maximum noise level calculated is to be achieved at 1.0m & 10m from the units in situ with all units operating under normal load.

The following calculations have been based on the recorded LA90 background noise level over a typical 24 hour period at the measurement position 1.

The above calculations have demonstrated that in order to meet the criteria of +/- 0dB below the recorded background noise level, the following external noise level plant criteria should be achieved at 1.0m and 10m from all units operating at the same time under normal load.

DAYTIME 08:00 – 18:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
68.9	65.6	63.4	62.5	64.1	60.7	55.3	49.7	45.4	68	Calculated Noise Source Level @ 1.0m
48.9	45.6	43.4	42.5	44.1	40.7	35.3	29.7	25.4	48	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10 ⁻⁵ Pa)										

The plants criterion was set as any proposed system is not operational and any new plant is yet to be designed.

7.1 Assessment

7.1.1 Daytime (08:00 – 18:00)

Rating Level	48 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1 \text{ hour}}$	48 dB	8.1	Modal Background Noise Level (08:00 – 18:00)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	+/- 0 dB		
Conclusion	The assessment level is 'Low Impact'		