PLANT NOISE ASSESSMENT

332 GORING ROAD, GORING BY SEA, BN12 4PE

RASSASY FERRING

JULY 2025

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1 INTRODUCTION

Anderson Acoustics Ltd was commissioned to undertake a noise impact assessment to support a planning application for the installation of supply and extract plant serving a commercial kitchen at 332 Goring Road, BN12 4PE.

An assessment of the impact of noise at the nearest noise sensitive premises from the proposed plant has therefore been conducted in accordance with the requirements of local authority guidance and is reported herein.

This report is technical in nature and, as such, a summary of noise units and acoustic terminology can be found here for reference.

2 LOCAL AUTHORITY REQUIREMENTS

2.1 Local Authority Guidance

With respect to plant noise limits, the *Planning Noise Advice Document: Sussex* (2023) states:

> *The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014 + A1: 2019.*

2.2 British Standard 4142: 2014+A1:2019

BS 4142 provides methods for rating and assessing sound/noise of an industrial or commercial nature in relation to residential premises. The assessment methodology evaluates the "specific sound level" of each industrial or commercial sound source, corrects for distinguishable features to derive the "rating level", and compares this with the "background sound level".

The advice is that the background sound level ($L_{AF90,T}$) should be derived from continuous measurement of normally not less than 15-minute intervals over the period of interest, and that it should not be the lowest level, but representative of typical conditions at the noise-sensitive receiver(s) relevant to the periods of operation.

The specific sound level ($L_{Aeq,T}$) is obtained (by measurement or calculation) over a reference period of 1 hour in terms of the daytime (07:00 to 23:00) and 15 minutes during the night-time (23:00 to 07:00).

The rating level ($L_{Ar,Tr}$) is the specific sound level corrected to account for any acoustic features present in the sound in question, as experienced at the receptor, such as distinguishable, discrete, continuous note (a whine, hiss, screech or hum etc.) or distinct impulses (bangs, clatters or thumps etc.). Where no correction is warranted, the rating level is equal to the specific level.

The "subjective method" to calculate the rating level incorporates the following corrections (particularly appropriate for new sources that cannot be measured in-situ):

- Up to +6 dB due to tonality, subjectively this might be +2 for a tone that is just perceptible, +4 where it is clearly perceptible and +6 where it is highly perceptible.
- Up to +9 dB for impulsivity, subjectively this might be +3 for impulsivity that is just perceptible, +6 where it is clearly perceptible and +9 where it is highly perceptible; and
- Up to +3 dB for other acoustic features that are neither tonal nor impulsive, though readily distinctive at the receptor.

An "initial estimate" of the impact of the specific sound is calculated by subtracting the measured background sound level from the rating level. The following advice applies:

a) Typically, the greater this difference, the greater the magnitude of the impact.

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

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) 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.

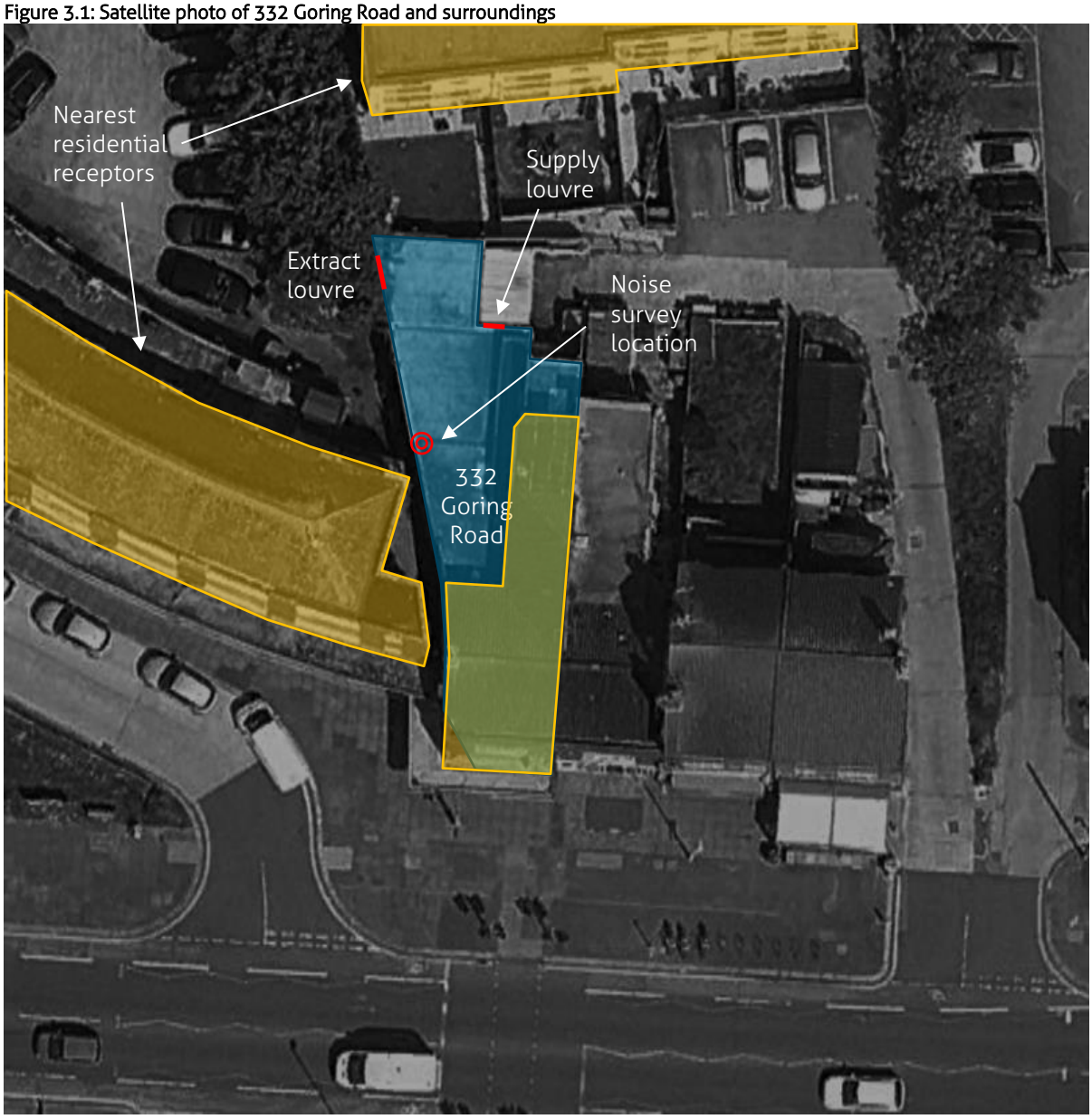
The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

3 SITE DETAILS

The site in question is 332 Goring Road, Goring by Sea, BN12 4PE. The site, noise survey location and nearest noise sensitive receptors are presented below in Figure 3.1.

During the site visit, the noise environment was noted to be dominated by road traffic noise on Goring Road. Two existing extract fans (serving other commercial premises) were noted to be in the vicinity but neither were operating on installation and collection of the noise monitors.

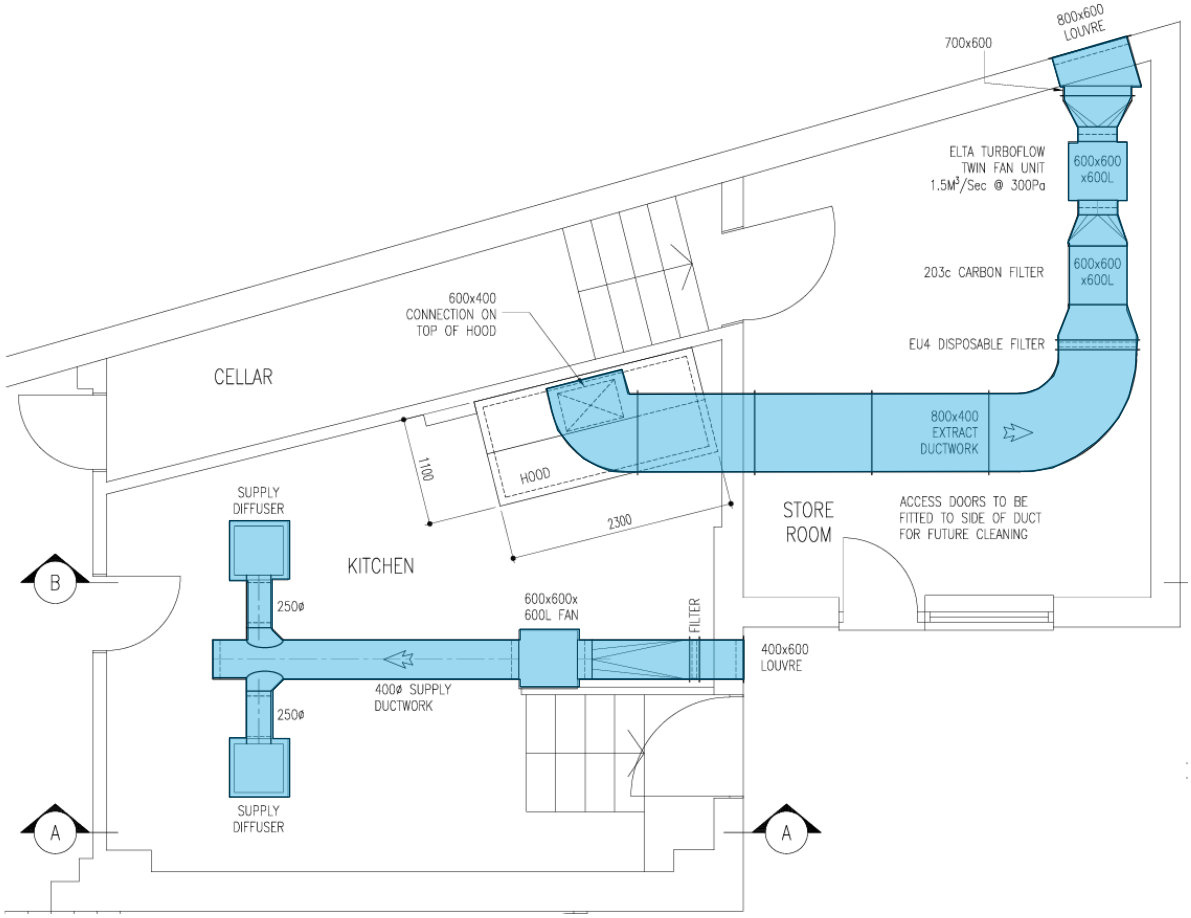
Figure 3.1: Satellite photo of 332 Goring Road and surroundings



The proposal is to install a supply and extract fan and associated ductwork to serve a new commercial kitchen. The proposed installation is shown in Figure 3.2. It is understood the extract and supply fans will be used daily from 10am to 10pm.

The nearest noise sensitive receptors are understood to be the rear facades of 334-340 Goring Road at first floor level.

Figure 3.2: Location of proposed kitchen ventilation



4 NOISE MEASUREMENTS

4.1 Continuous Noise Monitoring

A noise survey was conducted at the premises to capture ambient and background noise data representative of the nearest noise-sensitive receptors.

Consecutive 15-minute measurements of the $L_{Aeq,T}$ and $L_{A90,T}$ noise indices were obtained using the 'F' time weighting between approximately 15:15 hrs on Thursday 17th and 09:15 hrs on Monday 21st July 2025.

Noise levels were measured using a Rion NL-52 precision integrating sound level meter powered by dry cell batteries and stored inside a weatherproof security box with a weatherproof windshield fitted to the microphone. The microphone was fitted to a pole at a height of 2m, measuring under free field conditions.

The location, shown in Figure 3.1, is deemed representative of the nearest noise sensitive receptor.

The equipment was calibrated before and after the survey using a Svantek SV36 sound calibrator to generate a calibration level of 94.0 dB at 1 kHz. No significant calibration drift was observed.

4.2 Equipment Details

Table 4.1: Equipment details

Equipment	Serial no.	Calibration due	Calibration certification number
Rion NL-52 sound level meter	00732147	26/01/2026	TCRT24/1062
Svantek SV36 calibrator	35125828	25/04/2027	TCRT24/1343

4.3 Weather Conditions

Weather conditions during the survey period were obtained from an internet source www.wunderground.com (weather station at Gatwick Airport) which indicated dry conditions with low to moderate breezes occasionally exceeding 5 m/s during the survey period. At the time of setting up the noise monitor, weather conditions were clear and dry.

It is considered that the weather conditions for the survey did not affect the noise measurements.

4.4 Noise Survey Results

The results of the continuous noise monitoring survey are summarised below in Table 4.2. The time series plot is shown in Appendix A.

Table 4.2: Unattended noise survey results (free-field)

Time period	$L_{Aeq,T}$ dB	Typical $L_{A90,15min}$ dB[1]
Day (07:00 – 23:00)	56	49
Night (23:00 – 07:00)	49	38
Operating Hours (10:00 – 22:00)	57	49

[1] Based on modal value

5 NOISE IMPACT ASSESSMENT

5.1 Design Criteria

In order to meet the Local Authority design criteria, the plant noise at the nearest receptors should not exceed 49 dB $L_{Aeq,1hr.}$

5.2 Assessment

5.2.1 Source levels

The sound level data for the proposed extract fan (Elta SMB500/4-1AC) and supply fan (Elta Raptor SPA400/4-1AC) is presented in Table 5.1.

Table 5.1: Published in-duct sound power levels of proposed extract and supply fans, dB

Element	Metric	63	125	250	500	1000	2000	4000	8000	dBA
Extract - Outlet	In-duct L_w	79	76	82	74	73	70	66	59	85
Supply - Intake	In-duct L_w	66	69	65	62	64	63	58	53	73

The in-duct sound power levels for the fresh air intake and exhaust do not take into account any losses provided by the duct work, nor by the proposed attenuators. Table 5.2 provides the sound power levels of the fresh air intake and exhaust at the termination points. Calculations of attenuation through the ductwork are given in Appendix B.

Table 5.2: Calculated sound power levels of proposed extract and supply fans at termination points, dB

Element	Metric	63	125	250	500	1000	2000	4000	8000	dBA
Extract - Outlet	L_w at termination	72	73	82	74	73	70	66	59	79
Supply - Intake	L_w at termination	57	64	63	61	63	63	58	53	68

Although third octave band data is not available, the calculated spectrum does not appear to exhibit tonality, therefore no character corrections for tonality have been applied.

5.2.2 Noise model

Noise levels from the termination point of the ductwork and breakout from the fan have been estimated at the nearest sensitive receptors using the 3D noise modelling software CadnaA.

The software allows the site topography, existing buildings and sound sources to be built into the model such that the propagation of the various sound sources generated by the proposed development can be simulated and predicted at the nearest Noise Sensitive Receptors (NSR's). Calculations are carried out using the methodology outlined in ISO 9613, which considers the effects of the topographical conditions throughout the area, ground absorption, atmospheric absorption, acoustic reflections and acoustic screening, as well as applying a light downwind propagation correction to represent a worst-case.

The results of the noise modelling are used to determine the likely impact of noise levels incident on each NSR surrounding the site during its proposed operation.

The following general settings were used in the model:

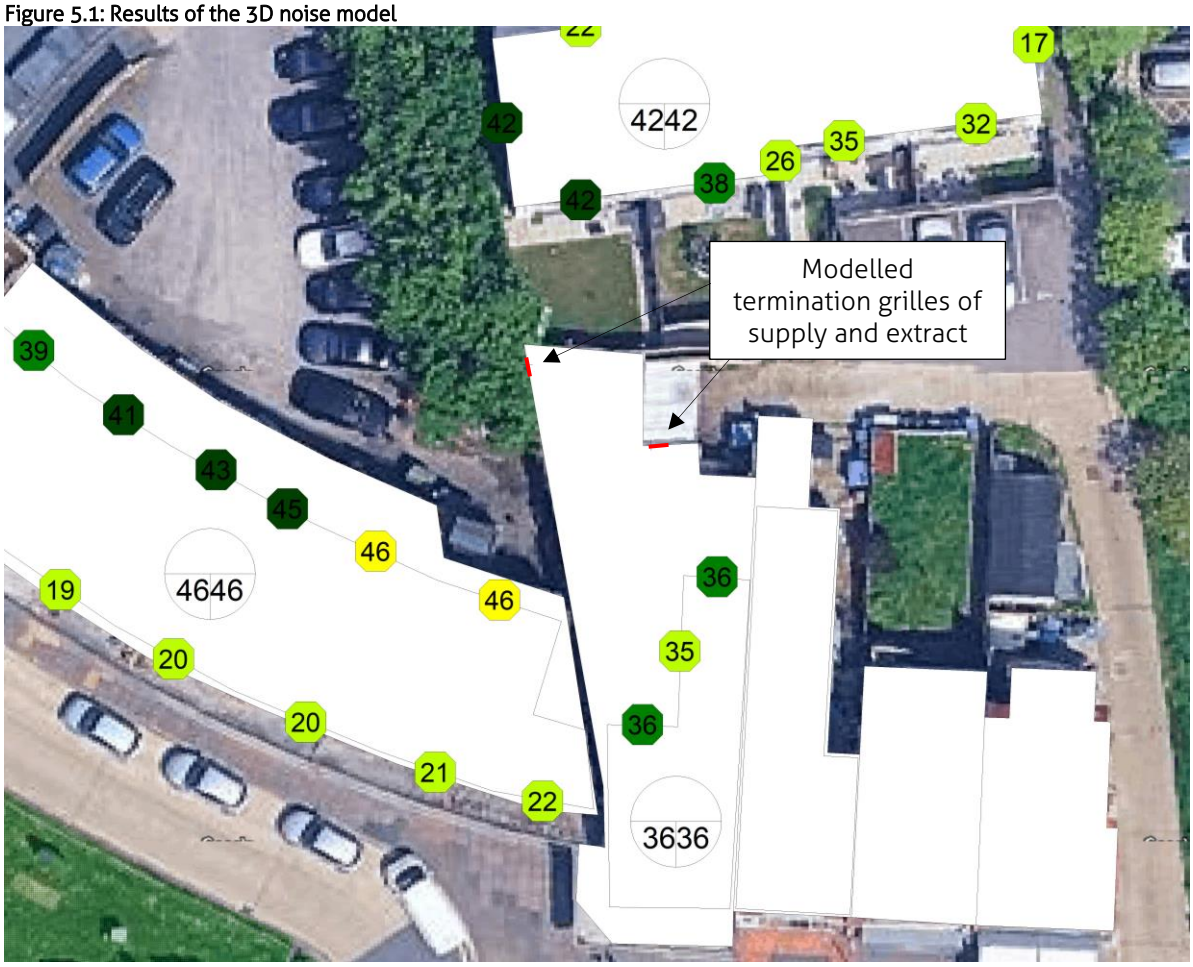
- The termination grilles were modelled as point sources at a height corresponding to the centre of each duct.
- Ground absorption has been set to acoustically hard for the entire site due to the urban nature of the area and to represent a worst case scenario.
- Buildings were set as reflecting with an absorption coefficient of 0.21.
- Buildings were imported from OpenStreetMap and modified to match architect's drawings where possible.

5.2.3 Results

Figure 5.1 shows the result of the noise model. Noise levels to the rear to 334-340 Goring are predicted to be 46dB $L_{Ar,Tr}$.

Therefore the rating level complies with the plant noise criteria and it is recommended that planning is not refused on noise grounds.

Figure 5.1: Results of the 3D noise model



6 CONCLUSION

Anderson Acoustics has completed a noise impact assessment for the installation of a new supply and extract fan serving a commercial kitchen at 332 Goring Road, BN12 4PE.

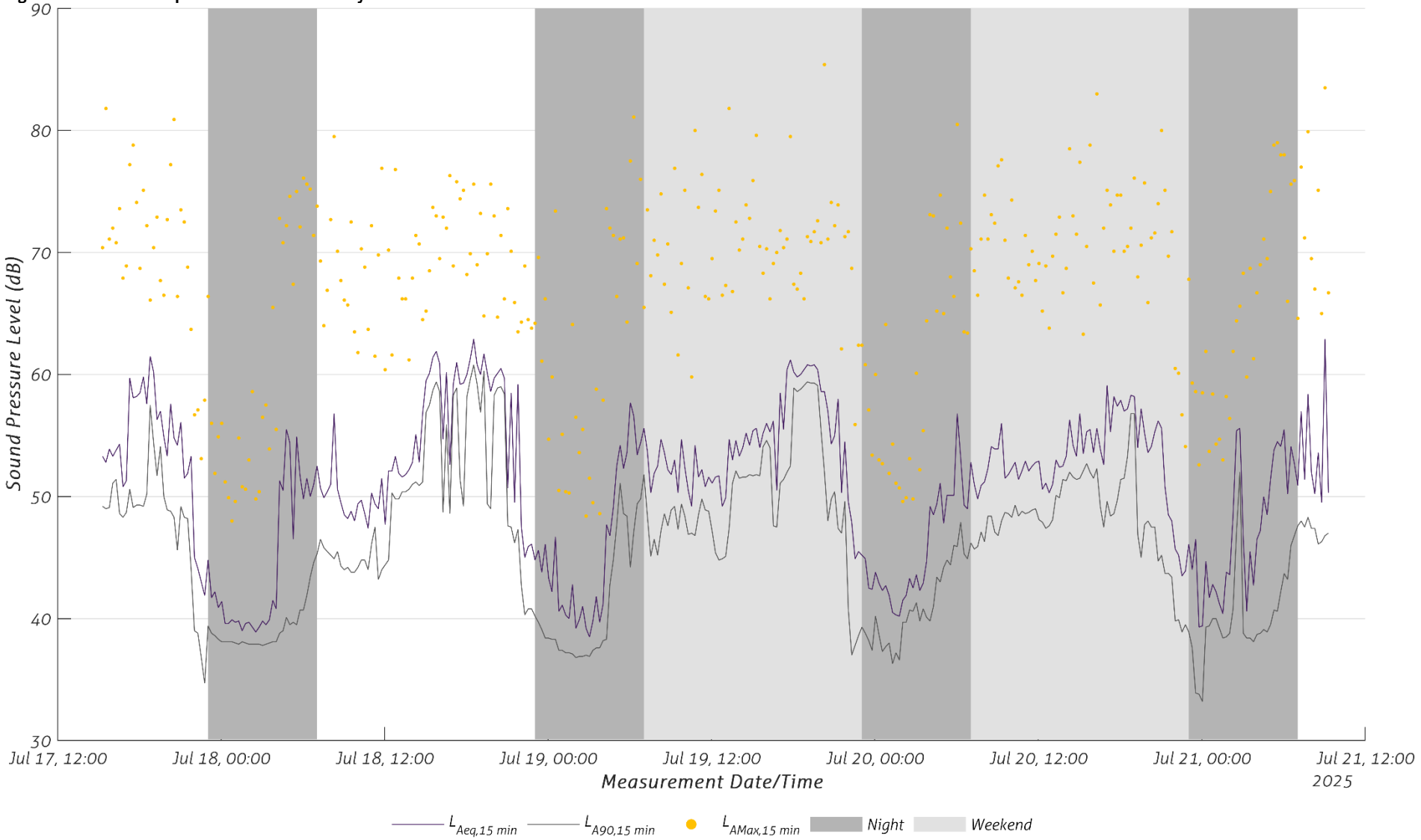
An assessment of the noise impact from the operation of the proposed plant has been undertaken in accordance with the Worthing Borough Council planning noise criteria, which are detailed in the *Planning Noise Advice Document: Sussex* (2023).

Noise levels from the proposed plant are predicted to comply with the Local Authority criteria. It is recommended that planning permission is not refused on noise grounds.

APPENDIX A

ENVIRONMENTAL NOISE SURVEY DETAILS

Figure A.1: Time series plot of unattended survey



APPENDIX B

DUCT CALCULATIONS

Figure B.1: Duct attenuation calculations (extract fan)

Fan Details: Elta SMB500/4-1AC — EXHAUST

	m^3/s	N/m^2		SWL	63	125	250	500	1k	2k	4k	8k
Fan Duty:	1.6			Spectrum	79	76	82	74	73	70	66	59
Type	Description	Mtrs/No. off	Dimension									
1	RECT DUCT	1	700		1	1	0	0	0	0	0	0
Grille size:	800 mm X	600 mm		Grille location:	2	1=Free Space, 2=Flush, 3=Jn. of 2 surfaces, 4=Corner						
End Reflection Loss:	0.48 m^2				6	2	0	0	0	0	0	0
				Sound Power Leaving:	72	73	82	74	73	70	66	59

Figure B.2: Duct attenuation calculations (supply fan)

Fan Details: Elta Raptor SPA400/4-1AC — FRESH AIR INTAKE

	m^3/s	N/m^2		SWL	63	125	250	500	1k	2k	4k	8k
Fan Duty:	0.66			Spectrum	66	69	65	62	64	63	58	53
Type	Description	Mtrs/No. off	Dimension									
1	RECT DUCT	1.6	400		1	1	1	1	0	0	0	0
Grille size:	400 mm X	600 mm		Grille location:	2	1=Free Space, 2=Flush, 3=Jn. of 2 surfaces, 4=Corner						
End Reflection Loss:	0.24 m^2				8	4	1	0	0	0	0	0
				Sound Power Leaving:	57	64	63	61	63	63	58	53