

Plot I, Kingsway Business Park, Rochdale OL16 4NR

Plant Noise Impact

for NIRAS Group UK, The Cornerstone Market Place, Kegworth DE7 2EE

Our Reference
21879R01SWPK

Your Reference
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Executive Summary

Environoise Consulting Limited has been instructed by NIRAS Group UK to provide an assessment of the noise impact of proposed effluent treatment plant at Plot 1, Kingsway Business Park, Rochdale OL16 4NR.

The key report findings are as follows:

Plant Noise Impact

- A noise survey was done between Monday 18th and Tuesday 19th July 2022 (Lower Lane) and Thursday 13th and Monday 17th April 2023 (Dig Gate Lane) to determine representative background noise levels ($L_{A90(T)}$) at the nearest residential receptors (NSRs).
- Predicted plant noise levels meet the plant noise limit at the nearest NSRs for the daytime and night-time periods, indicating a 'low impact' in accordance with BS 4142. Therefore, no further mitigation is required.

1 Criteria

1.1 BS 4142+A1:2019

1.1.1 BS 4142:2014+A1:2019ⁱ provides a method of determining the 'impact of specific sound' on dwellings due to industrial and commercial noise sources through comparison between the measured background noise level (L_{A90}) and the noise source rating level ($L_{Ar,Tr}$) under consideration. The rating level is the specific noise level plus penalties of up to 18dB added for features to account for the character of the noise as follows:

- **Tonality:** +2dB penalty: Just perceptible; +4dB penalty: Clearly perceptible and +6dB penalty: Highly perceptible.
- **Impulsivity:** +3dB penalty: Just perceptible; +6dB penalty: Clearly perceptible and +9dB penalty: Highly perceptible.
- **Intermittency:** +3dB penalty: identifiable on/ off conditions.

1.1.2 When comparing the rating plant noise level against the background noise level, BS 4142:2014+A1:2019 provides the following noise impact descriptors:

- +10dB(A) is likely to be an indicator of 'a significant impact, depending on the context'.
- +5dB(A) is likely to be an indicator of 'an adverse impact, depending on the context'.
- No excess of the background noise level is an indicator of 'a low impact, depending on the context'.

2 Noise Survey

2.1 Noise Survey Procedure

- 2.1.1 An unattended noise survey was done between 09.00hrs, Monday 18th and 11.00hrs, Tuesday 19th July 2022 (Position 1) and between 09.00hrs, Thursday 13th and 08.15hrs, Monday 17th April 2023 to determine background noise levels ($L_{A90(15min)}$) at positions representative of the nearest residential receptors (NSRs) on Lower Lane, 435 metres to the north west and Dig Gate Lane, 240 metres to the south east. Figure 2.1 shows the proposed effluent treatment plant location, measurement position and NSRs.

Figure 2.1: Site location, measurement position and NSRs.



Calibration

- 2.1.2 The sound level meters were calibrated before and after the surveys, with no recorded drift greater than 0.5dB; therefore, the measurements are acceptable.

Weather

- 2.1.3 There was no rain and wind speeds were ≤ 5 ms throughout both noise surveys; therefore, weather conditions were suitable.

Noise Environment

- 2.1.4 At Position 1, the dominant noise sources at the start and end of the survey were distant industrial noise from the ASDA chilled distribution centre, approximately 180m to the south, and distant road traffic from the M62, approximately 730m to the south.
- 2.1.5 At Position 2, the dominant noise source was road traffic along the M62 with ASDA chilled distribution centre also contributing to the noise environment.

2.2 Background Noise Levels

- 2.2.1 To assess the impact of plant, BS 4142 requires the use of a 'representative' background noise level. We have considered this to be the lowest modal value of any one daytime and night-time period at Position 2 (Dig Gate Lane) and the lowest measured background noise level at Position 1 (Lower Lane receptors) due to the shorter survey period. Plant noise limits have been given to achieve a 'low impact, depending on the context', as per BS 4142, see Table 2.1.

Table 2.1: Measured background noise levels and plant noise limits.

Position	NSR	Period	Measured background noise level [L _{A90} (15mins) (dB)]		Plant noise limit [L _{A,r,Tr} (dB)]
			Range	Representative Value	
1	Lower Lane	Daytime (07.00 – 23.00)	36 – 54	36	36
		Night-time (23.00 – 07.00)	42 – 54	42	42
2	Dig Gate Lane	Daytime (07.00 – 23.00)	46 – 62	51	51
		Night-time (23.00 – 07.00)	43 – 60	45	45

3 Noise Impact

3.1 Proposed Plant Items

- 3.1.1 Manufacturers sound pressure data for the proposed effluent treatment plant is given in Table 3.1. The key colour corresponds with the location shown in Figure 2.1.

Table 3.1: Proposed plant and sound pressure level data (see Figure 2.1).

Key	Item	No. of units	Sound pressure level at 1m (dB L _{pA})
	Roto-Sieve RS 24 rotating drum screen	1	70

3.2 Assessment

- 3.2.1 Using the manufacture's sound data, the calculated sound pressure level at the nearest receptors (L_{p,(NSR)}) has been calculated as follows:

$$L_p \text{ (NSR)} = L_{pA} - 20 \times \log (r/R)$$

Where:

L_{p (NSR)} = sound pressure level at the noise-sensitive receptor

L_{pA} = sound pressure level [70dB]

r = distance of plant to receptor [435m for Lower Lane, 240m for Dig Gate Lane]

R = reference sound pressure level measurement distance [1m]

- 3.2.2 The effluent treatment plant compound is to be enclosed with 2.4-metre-high mesh fencing with clear openings at gate posts. This will provide negligible sound reductions and therefore has not been applied to the calculations.
- 3.2.3 Acoustic feature corrections have been applied independently for the different receptors due to the greater distance from the plant to NSR 1 than NSR 2, see Table 3.2.

Table 3.2: BS 4142 acoustic feature corrections for plant sources.

NSR	Acoustic feature correction
Lower Lane	Impulsivity: No correction due to the continuous, non-varying nature of plant equipment. Tonality: +4dB for 'clearly perceptible noise' to account for any tonal characteristics of plant. Intermittency: No correction due to the distance between plant and receptor which contains plant from other industrial units in the vicinity.
Dig Gate Lane	Impulsivity: No correction due to the continuous, non-varying nature of plant equipment. Tonality: +4dB for 'clearly perceptible noise' to account for any tonal characteristics of plant. Intermittency: +3dB for identifiable on/off conditions.

3.2.4 Table 3.3 presents the plant noise impact assessment to the nearest NSR.

Table 3.3: Plant noise impact assessment at the nearest NSRs.

NSR		Daytime (07.00 – 23.00)	Night-time (23.00 – 07.00)
Lower Lane	Highest predicted specific noise level at NSR (dBA)	17	17
	Acoustic feature correction (dBA)	+4	+4
	Rating plant noise level ($L_{A,T,r}$ [dB])	21	21
	Plant noise limit (dBA)	36	42
	Level of excess (dB)	0 (-15)	0 (-21)
	BS4142 impact descriptor	Low impact	Low impact
Dig Gate Lane	Highest predicted specific noise level at NSR (dBA)	22	22
	Acoustic feature correction (dBA)	+7	+7
	Rating plant noise level ($L_{A,T,r}$ [dB])	29	29
	Plant noise limit (dBA)	51	45
	Level of excess (dB)	0 (-22)	0 (-16)
	BS4142 impact descriptor	Low impact	Low impact

3.3 Discussion

3.3.1 As shown in Table 3.3, the plant noise limits are met at both considered NSRs for the daytime and night-time periods, indicating a 'low impact' in accordance with BS 4142. Therefore, no further noise mitigation is required.

3.3.2 The difference between background noise levels and predicted effluent treatment plant noise levels is ≥ 15 dB for both NSRs; therefore effluent treatment plant is sufficiently low so as not to contribute to the background noise level at the NSRs.

Appendix A: Noise Survey Time Histories

Figure A1: Noise survey time history – Position 1.

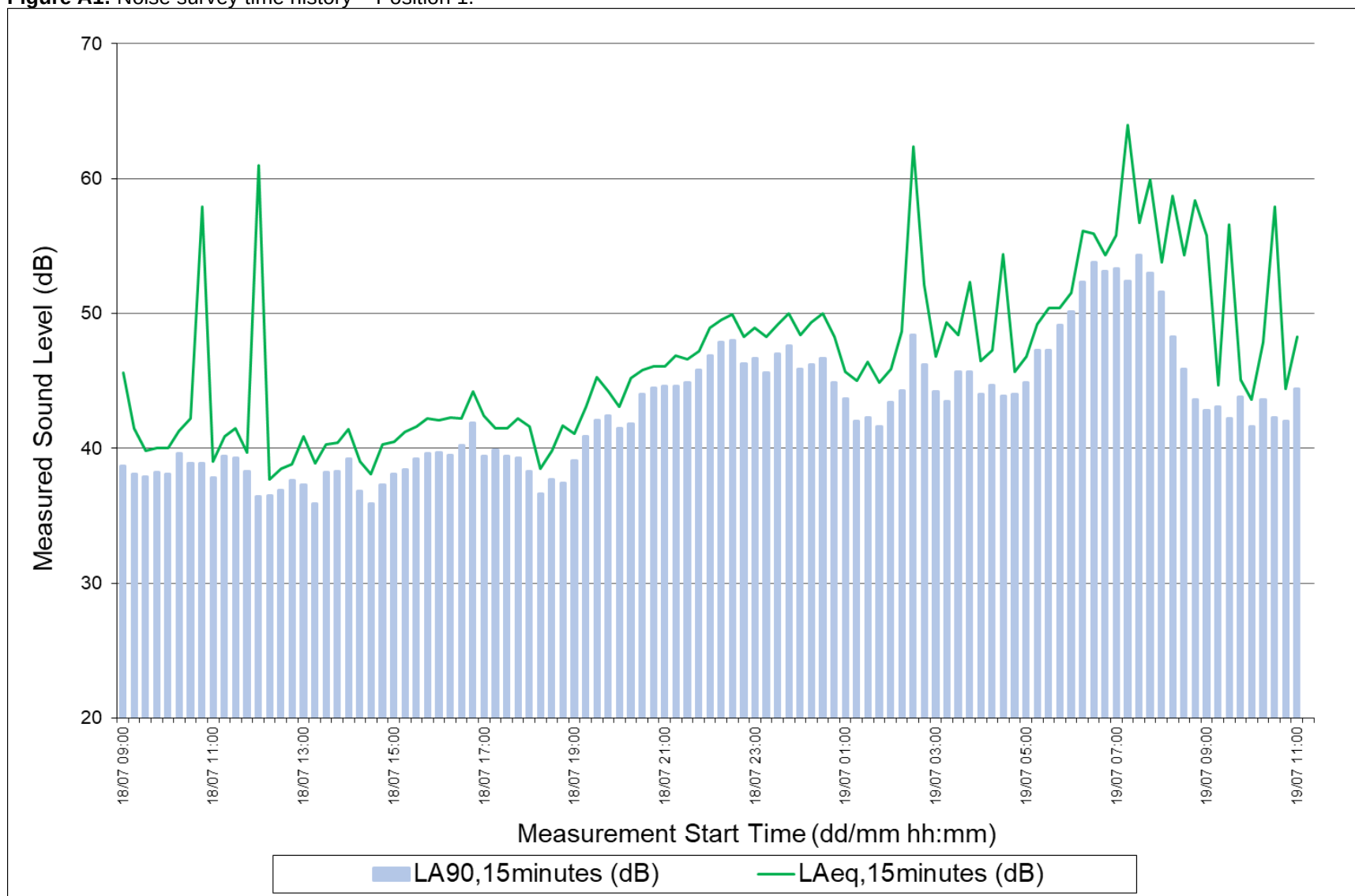
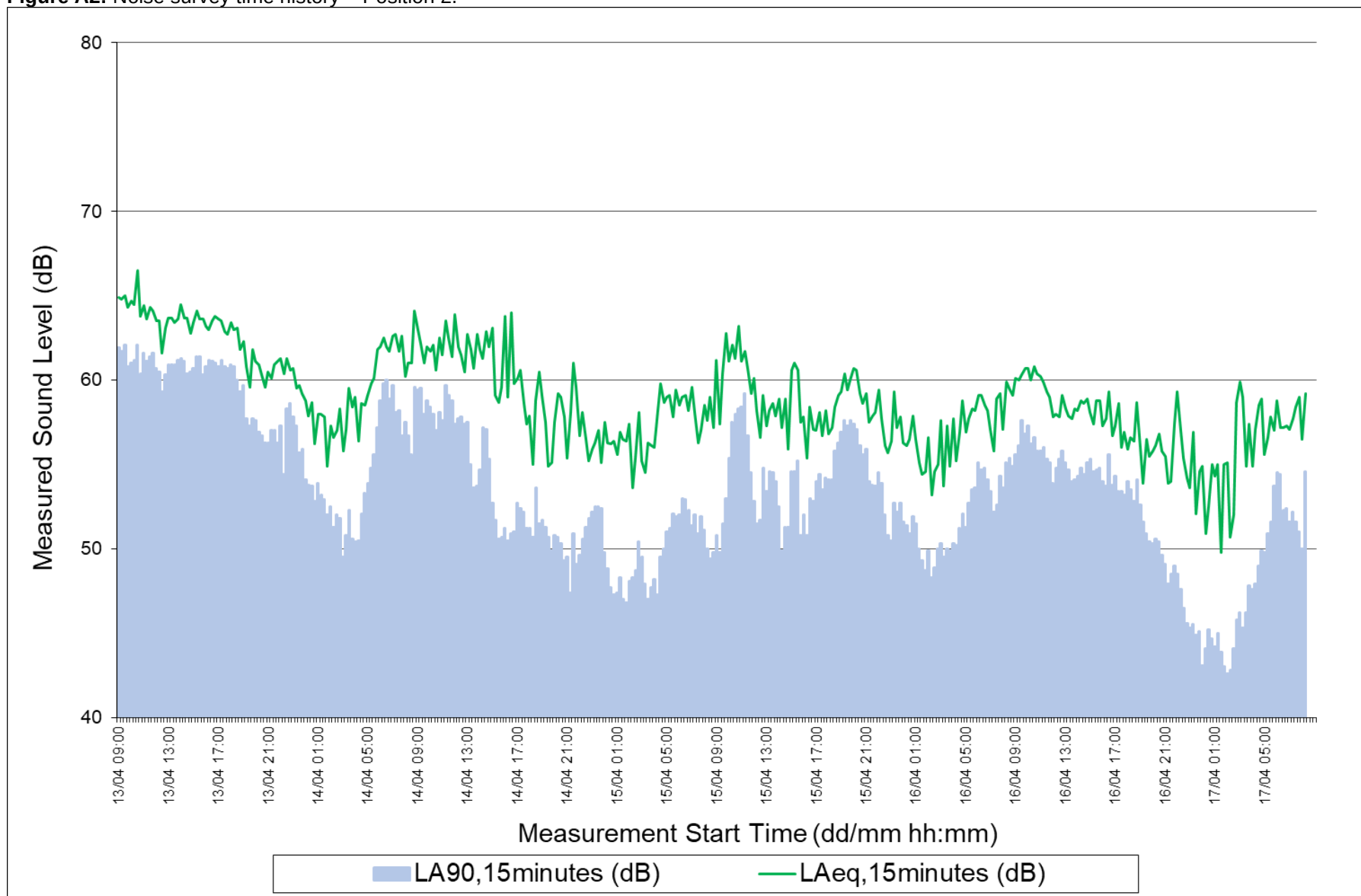


Figure A2: Noise survey time history – Position 2.

References

ⁱ BS 4142:2014+A1:2019 'Methods for rating or assessing industrial and commercial sound', 2014.