Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 17.2: Baseline Noise Report

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Contents

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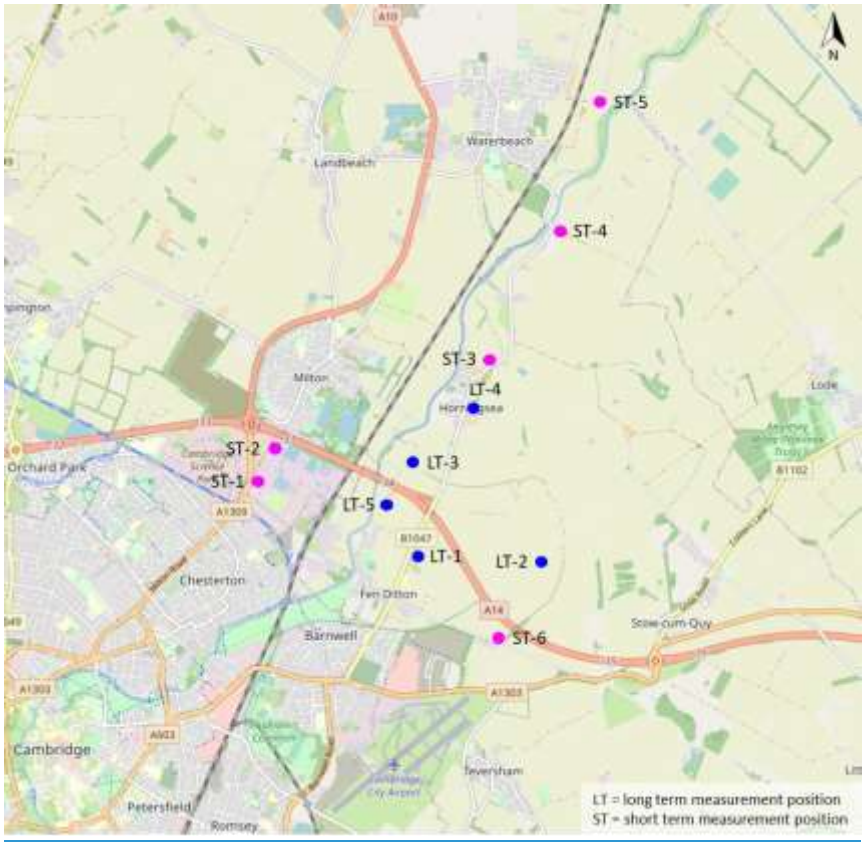
1 Introduction

1.1 Location

1.1.1 The noise surveys for the Proposed Development were undertaken between 10th to the 19th of January 2022 and comprised long term (LT) and short term (ST) measurements.

1.1.2 The measurement positions are shown in Figure 1.1 below and detailed in Table 1-1.

1.1.3 Measurement locations were selected to be representative the nearest receptor locations surrounding the Proposed Development. Photographs for each measurement location are included in Section 3.



Source: © OpenStreetMap contributors. (data is available under the Open Database Licence, ~~https://www.openstreetmap.org/copyright~~https://www.openstreetmap.org/copyright) with Mott MacDonald mark-up

Figure 1.1: Noise measurement locations

Table 1-1: Noise measurement location details

Measurement ~~ID~~ ID	Closest address	Easting, Northing BNG
~~Measurement ID~~	~~Closest address~~	~~Easting, Northing BNG~~
LT-1	North-east of 82 Horningsea Road, Fen Ditton, CB5 8SZ	548860, 260828 ~~548860, 260828~~

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LT-2	South of property at Low Fen Drove Way, Horningsea, 550277, 260642 CB25 9AT	~~550277, 260642~~
LT-3	2 Biggin Abbey Cottages, Biggin Lane, CB5 8TB 548699, 261726	~~548699, 261726~~
LT-4	Scotsdales garden centre, High St, Horningsea, CB25 549403, 262335 9JG	~~549403, 262335~~
LT-5	East of Red House Close, Green End, CB5 8SX 548426, 261274	~~548426, 261274~~
ST-1	South section of Cowley Road, Merlin Place, Milton, CB4 547016, 261496 0DP	~~547016, 261496~~
ST-2	North section of Cowley Road, Milton, CB4 0WS 547252, 261903	~~547252, 261903~~
ST-3	Clayhithe Road, Horningsea, CB25 9JE 549565, 262837	~~549565, 262837~~
ST-4	Unnamed road east of Clayhithe Road, Clyhithe, CB25 550293, 264336 9JB	~~550293, 264336~~
ST-5	Corner of Bannold Road and Long Drove, Waterbeach, 550730, 265775 CB25 9LN	~~550730, 265775~~
ST-6	Corner of High Ditch Road and Low Fen Drove Way, Fen 549775, 259803 Ditton, CB5 8TF	~~549775, 259803~~

Source: Mott MacDonald

1.2 Methodology

1.2.1 All equipment used for baseline noise measurements complies with Class 1 requirements given in BS EN 61672. The sound level meters (SLM) were fitted with a microphone and windshield which is suitable for the outdoor environment. All short term noise measurements were taken at a height of between 1.2 and 1.5m above local grade level, whereas long term were taken at 1.5m above local ground level.

1.2.2 All measurement locations were chosen to be 'free field', i.e. at least 3.5m from an acoustically reflective façade. Measurements were completed by a Mott MacDonald acoustician competent in environmental noise monitoring and completed in accordance with the principles of British Standard (BS) 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures.

1.2.3 The calibration level of all equipment was checked before and after the measurement periods and no significant changes were noted.

1.2.4 A full inventory of this equipment is shown in Table 1-2.

Table 1-2: Inventory of noise measurement equipment

Item	Model	Serial Number	Calibrated until
LT	Rion NL-52	743137	21/01/2023
	Rion NL-52	1143539	26/04/2023
	Rion NL-52	1143538	05/02/2022
	Rion NL-52	754168	05/02/2022
	Rion NL-52	1176426	17/02/2022
ST	Rion NL-52	1176427	17/02/2022
Calibrator	Larson Davis CAL200	6353	22/03/2022

Source: Mott MacDonald

1.2.5 Noise levels were measured in decibels for a range of stated descriptors as appropriate (e.g. L_{Aeq}, L_{A10}, L_{A90}, and $L_{Amax,f}$). Equipment was configured to measure using the fast time weighting and A frequency weighting in 15-minute intervals both for long term and short term. Long term measurements were also recorded using $L_{p,200ms}$ samples which have been analysed to determine the 15-minute and 1-hour L_{A90} values for analysis in accordance with BS 4142 guidance for relevant assessment periods.

1.2.6 Long term L_{A90} noise measurements have been analysed to determine the representative background noise levels. Following analysis, the modal value is considered to be representative of background noise levels at all assessment locations.

1.2.7 The weather conditions during the survey (ST measurements and installation and collection of LT measurements) were considered suitable to undertake noise measurements. Historic meteorological data have been supplied by the Met Office © Crown copyright 2018, at ~~wow.metoffice.gov.uk~~ wow.metoffice.gov.uk from Bedford observation site, except for rain information which has been supplied from a registered weather site in Cambridge. Actual wind speeds at the site would be expected to be lower than those recorded at the meteorological station as the microphone was located closer to the ground. Table 1-3 summarises weather conditions.

Table 1-3: Weather summary

Date	Condition	Wind speed range (m/s)	Temperature range (°C)	Notes
10/01/2022	Dry, 90% cloud cover	No wind	6	Survey data
	Dry	1.3-5.8	1 to 7	Historic data
11/01/2022	Light rain (constant), wet ground, 80-100% cloud cover	No wind	3 to 9	Survey data
	Rain	1.3-5.8	3 to 10	Historic data
12/01/2022	Dry, cold/frost morning, damp ground, 10-30% cloud cover, occasional sunny spell	No wind	0 to 7	Survey data
	Dry	2.2-4.5	0 to 8	Historic data

13/01/2022	Dry	1.3-4.0	0 to 8	Historic data
14/01/2022	Dry	0.0-4.0	-2 to 7	Historic data
Sat 15/01/2022	Dry	0.9-3.1	-2 to 4	Historic data
Sun 16/01/2022	Dry	1.3-4.9	2 to 8	Historic data
17/01/2022	Dry	1.3-4.9	1 to 9	Historic data
18/01/2022	Dry, sunny, 0% cloud cover occasional breeze in the morning	0.8-3.2	3 to 7	Survey data
	Dry	0.9-6.3	-1 to 6	Historic data
19/01/2022	Dry, 40-80% cloud cover occasional wind	0.0-2.6	4 to 7	Survey data
	Dry	2.2-8.5	2 to 9	Historic data

Source: ~~https://wow.metoffice.gov.uk/~~ https://wow.metoffice.gov.uk/ (Met Office © Crown copyright 2019)

1.3 Limitations

1.3.1 Inevitably there is a degree of variation in measured noise levels. Contributory factors to this variation include tolerances in instrumentation readings, meteorological conditions and the inherent difference in the acoustic environment during the course of a day and indeed over longer periods as the noise sources influencing a given location vary. Any acoustic measurement is a snapshot of the noise climate at the time of the measurement. Every effort has been made to limit variation in the measurements reported. Measures taken to limit variation include:

- Undertaking surveys with appropriately qualified and trained acoustic engineers;
- Use of measurement equipment calibrated to appropriate standards by accredited bodies and checked on site using calibrated reference sound sources;
- Following best practice methodology for environmental noise measurement set out in BS7445;
- Measuring under appropriate meteorological conditions; and,
- Measuring at times and locations that are representative of the noise climate at any particular location.

2 Measurement Results

2.1 Short term

2.1.1 The results of the short term 15-minute measurement samples taken at the short-term measurement locations are shown in Table 2-1.

Table 2-1: Summary of short term attended noise measurements

Location	Date	Start time	$L_{A10,15min}$ dB	$L_{A90,15min}$ dB	$L_{Aeq,15min}$ dB	$L_{Amax,15min}$ dB
ST-1	19/01/2022	09:09	67	83	71	55
		09:24	66	86	71	54
		09:39	66	80	70	54
		09:54	66	83	70	54
ST-2	10/01/2022	16:15	59	70	60	57
		16:30	62	89	61	56
		16:45	62	89	62	57
		17:00	59	69	61	57
ST-3	12/01/2022	12:41	68	82	73	46
		12:56	68	84	72	46
		13:11	68	82	73	45
		13:26	67	83	72	44
ST-4	12/01/2022	09:23	51	79	51	48
		09:38	49	62	51	47
		09:53	49	57	51	46
		10:08	51	73	51	47
ST-5	18/01/2022	11:40	46	~~46~~	63	47	43
		11:55	56	~~56~~	82	52	43
		12:10	56	~~56~~	77	56	43
		12:25	52	~~52~~	74	51	41
ST-6	12/01/2022	14:05		62	81	61	50
		14:20		59	78	60	50

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	14:35		60	80	59	51
~~Location~~		~~Date~~	~~Start time~~	~~$L_{Aeq,15min}$ dB~~	~~$L_{Amax,15min}$ dB~~	~~$L_{A10,15min}$ dB~~
				~~$L_{A90,15min}$ dB~~		
	14:50		~~14:50~~	62	78	64	51
				~~78~~			
				~~64~~			
				~~51~~			

Source: Mott MacDonald

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2.2 Long term

2.2.1 Long term measurements have been analysed to determine the following parameters:

- Representative daytime $L_{A90,1hour}$ and night-time $L_{A90,15min}$ in accordance with BS 4142.
- $L_{Aeq,T}$ daytime (12hour), evening, (4hour) and night-time (8hour) values in accordance with BS 5228.

2.2.2 All levels have been rounded to the nearest whole number. Partial measurements of periods at the start and end of the survey have been included.

2.2.3 Table 2-2 summarises LT measurement data for each measurement position relevant to BS4142 assessment. Representative background noise levels have been selected from analysis of modal noise level values (provided in detail for each LT location in following sections) for relevant daily periods to provide a reasonable worst case level for assessment. The time periods for each parameter are:

- Representative $L_{A90,1hour\ daytime}$ - between 07:00 and 23:00;
- Representative $L_{A90,15min\ night\ time}$ - between 23:00 and 07:00;
- $L_{Aeq,16h\ day\ time}$ - between 07:00 and 23:00; and,
- $L_{Aeq,8h\ night\ time}$ - between 23:00 and 07:00.

Table 2-2: Summary of free field LT data for BS 4142 assessment

Location	Representative $L_{A90,1h\ day}$ dB	Representative $L_{A90,15min\ night}$ dB	$L_{Aeq,16h\ day}$ dB	$L_{Aeq,8h\ night}$ dB
Weekdays, Saturday and Sunday				
LT-1	50	41	56	53
LT-2	49	40	56	53
LT-3	52	42	61	57
LT-4	45	38	51	47

LT-5	50	40	59	55

Source: Mott MacDonald

2.2.4 BS 5228-1:2009+A1:2014 presents example methods for the assessment of noise impacts due to construction activities. BS5228-1 also provides relevant time periods for example methods relating to these impacts. Time periods refer to different times of the day, and days of the week to reflect the differences in the sensitivity of receptors. Measurement data has been analysed to consider the time periods accordingly:

- $L_{Aeq,daytime}$ ○ $L_{Aeq,12h\ daytime}$ - between 07:00 and 19:00 from Monday to Friday; and, ○ $L_{Aeq,6h\ daytime}$ - between 07:00 and 13:00 on Saturday.

- $L_{Aeq,evening\ time\ and\ weekends}$
  - ○ $L_{Aeq,4h\ evening}$ - between 19:00 and 23:00 from Monday to Friday; ○ $L_{Aeq,10h\ weekend}$ - between 13:00 and 23:00 on Saturday; and, ○ $L_{Aeq,16h\ weekend}$ - between 07:00 and 23:00 on Sunday.

- $L_{Aeq,8h\ night\ time}$ - between 23:00 and 07:00.

2.2.5 Table 2-3 summarises LT measurement data for each measurement position relevant to BS 5228-1 assessment.

Table 2-3: Summary of free field LT data for BS 5228 assessment

Location	$L_{Aeq,12h}$ daytime dB	$L_{Aeq,4h}$ evening dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,6h}$ daytime dB	$L_{Aeq,10h}$ weekend dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,16h}$ night dB	$L_{Aeq,8h}$ dB	weekend
	Weekdays			Saturday			Sunday		~~Sunday~~
LT-1	57	54	54	55	52	45	55	54	~~54~~
LT-2	57	53	54	53	53	48	52	53	~~53~~
LT-3	62	59	58	59	59	52	57	56	~~56~~
LT-4	52	48	48	49	50	44	47	46	~~46~~
LT-5	60	56	56	54	53	47	56	56	~~56~~

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2.2.6 The following sections provide detailed results for each LT measurement location.

LT-1

2.2.7 Horningsea Road, Fen Ditton, CB5 8SZ. This measurement location is at the northern end of residential community on Horningsea Road and representative of closest receptors to potential construction and operational noise impacts. The location was near to a small-holding business. However, due to regulations at the time of surveys animals remained

inside sheds/enclosures and were not allowed outside. LT-1 is approximately 50m north-east to 82 Horningsea Road. Other residential properties are to the south of this location. The B1047-Horningsea Road is to the west/north-west and the A14 is to the north and east of LT-1.

2.2.8 Road traffic noise from A14 dominated the noise climate. Table 2-4 and

~~2.2.9~~ Table 2-5 present the data collected at LT-1. Figure 2.1 below shows the time history.

Table 2-4: Summary of free field LT-1 data for BS 5228 assessment

Date	LAeq,12h daytime dB	LAeq,4h evening dB	LAeq,8h night dB	LAeq,6h daytime dB	LAeq,10h weekend dB	LAeq,8h night dB	LAeq,16h weekend dB	LAeq,8h night dB
	Weekdays			Saturday			Sunday	~~Sunday~~
10/01/2022	57[A]	53	~~50~~ 50	---	---	---	---	---
11/01/2022	58	57	~~55~~ 55	---	---	---	---	---
12/01/2022	57	54	~~52~~ 52	---	---	---	---	---
13/01/2022	56	53	~~54~~ 54	---	---	---	---	---
14/01/2022	57	~~57~~	~~57~~ 57	52	---	---	---	---
15/01/2022	---	—	—	---	---	55	52	45
16/01/2022	---	—	—	---	---	---	---	---
17/01/2022	57	~~57~~	~~54~~ 54	56	---	---	---	---
18/01/2022	59[B]	~~59[B]~~	—	---	---	---	---	---

partial periods: [A] 3h, [B] 7h

Date	LAeq,12h daytime dB	LAeq,4h evening dB	LAeq,8h night dB	LAeq,6h daytime dB	LAeq,10h weekend dB	LAeq,8h night dB	LAeq,16h weekend dB	LAeq,8h night dB	
14/01/2022	57	~~57~~	~~57~~ 57	52	---	---	---	---	—
15/01/2022	---	—	—	---	---	55	52	45	—
16/01/2022	---	—	—	---	---	---	---	55	54 ~~54~~
17/01/2022	57	~~57~~	~~54~~ 54	56	---	---	---	---	—
18/01/2022	59[B]	~~59[B]~~	—	---	---	---	---	---	—

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Table 2-5: Summary of free field LT-1 data for BS 4142 assessment

Date ~~Date~~	Modal $L_{A90,1h\ day}$ ~~Modal $L_{A90,1h\ day}$~~ dB	Modal $L_{A90,15min\ night}$ ~~Modal $L_{A90,15min\ night}$~~ dB	$L_{Aeq,16h\ day}$ ~~$L_{Aeq,16h\ day}$~~ dB	$L_{Aeq,8h\ night}$ ~~$L_{Aeq,8h\ night}$~~ dB
10/01/2022	50A	43	55A	50
11/01/2022	53	46	58	55
12/01/2022	53	43	57	52
13/01/2022	50	43	56	54
14/01/2022	54	43	57	52
Sat 15/01/2022	50	39	53	45
Sun 16/01/2022	53	41	55	54
17/01/2022	49	45	56	56
18/01/2022	50B	---	59B	---

partial periods: [A] 7h, [B] 8h

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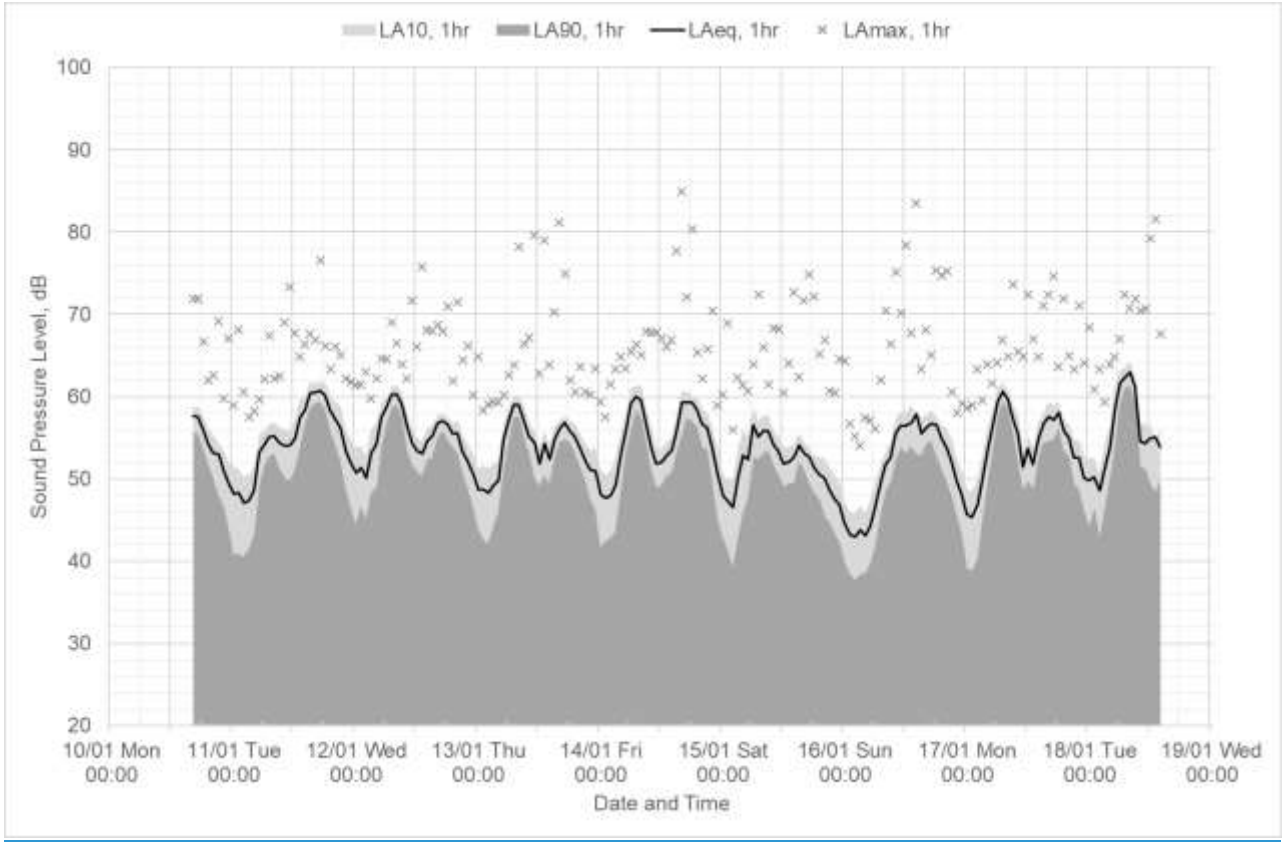
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LA90, 1hr
LAeq, 1hr
LAmax, 1hr
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90
80
70
60
50
40
30
20
10/01 Mon 00:00
11/01 Tue 00:00
12/01 Wed 00:00
13/01 Thu 00:00
14/01 Fri 00:00
15/01 Sat 00:00
16/01 Sun 00:00
17/01 Mon 00:00
18/01 Tue 00:00
19/01 Wed 00:00
Date and Time

Figure 2.1: LT-1 plot of results

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~~**Figure 2.1: LT-1 plot of results**~~

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LT-2

2.2.~~10~~9 Position LT-2 was located on the outskirt of a small area of woodland approx. 350m south-west of The Gate House residential dwelling on Low Fen Drove Way, Horningsea, CB25 9AT. Fields occupy the surrounding area, there are no other residential properties within 1km radius, and the A14 is to the west and south. This measurement location was selected as the nearest safe and secure position to The Gate House property.

2.2.1~~1~~0 Road traffic noise from A14 dominated the noise climate. Table 2-6 and

2.2.12 Table 2-7 present the data collected at LT-2. Figure 2.2 below shows the time history. **Table 2-6: Summary of free field LT-2 data for BS 5228 assessment**

Date	$L_{Aeq,12h}$ daytime dB	$L_{Aeq,4h}$ evening dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,6h}$ daytime dB	$L_{Aeq,10h}$ weekend	$L_{Aeq,8h}$ night dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,16h}$ weekend dB	$L_{Aeq,8h}$ night dB
	Weekdays			Saturday				Sunday	
11/01/2022	51A	46	54	---	---	---		---	---
12/01/2022	58	54	55	---	---	---		---	---
13/01/2022	58	54	54	---	---	---		---	---
14/01/2022	56	53	47	---	---	---		---	---
15/01/2022	---	---	---	53	53	48		---	---
16/01/2022	---	---	---	---	---	---		52	53
17/01/2022	56	55	54	---	---	---		---	---
18/01/2022	58	52	53	---	---	---		---	---
19/01/2022	58B	---	---	---	---	---		---	---

partial periods: [A] 6h, [B] 4h

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Table 2-7: Summary of free field LT-2 data for BS 4142 assessment

Date	Modal $L_{A90,1h\ day}$ dB	Modal $L_{A90,15min\ night}$ dB	$L_{Aeq,16h\ day}$ dB	$L_{Aeq,8h\ night}$ dB
11/01/2022	43A	42	50A	54
12/01/2022	54	45	58	55
13/01/2022	50	44	57	54
14/01/2022	49	40	55	47
Sat 15/01/2022	50	42	53	48
Sun 16/01/2022	49	44	52	53
17/01/2022	50	49	56	54
18/01/2022	52	46	57	53
19/01/2022	55B	---	58B	---

partial periods: [A] 10h, [B] 5h

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2.2.13~~1~~ This measurement location was closer to the A14 compared to the Gate House receptor (approximately 730m compared to 1100m). A verification measurement was therefore undertaken during the daytime on collection of the LT-2 equipment. Comparison of verification measurements showed noise levels due to the A14 at the Gate House were 2.6 dBA lower compared to results at LT-2. The values in tables presented above are directly from LT-2 data. However, a 2.6dBA correction will be applied to results for assessment within the ES to ensure measured baseline noise levels from LT-2 are representative for assessments at the Gate House receptor.

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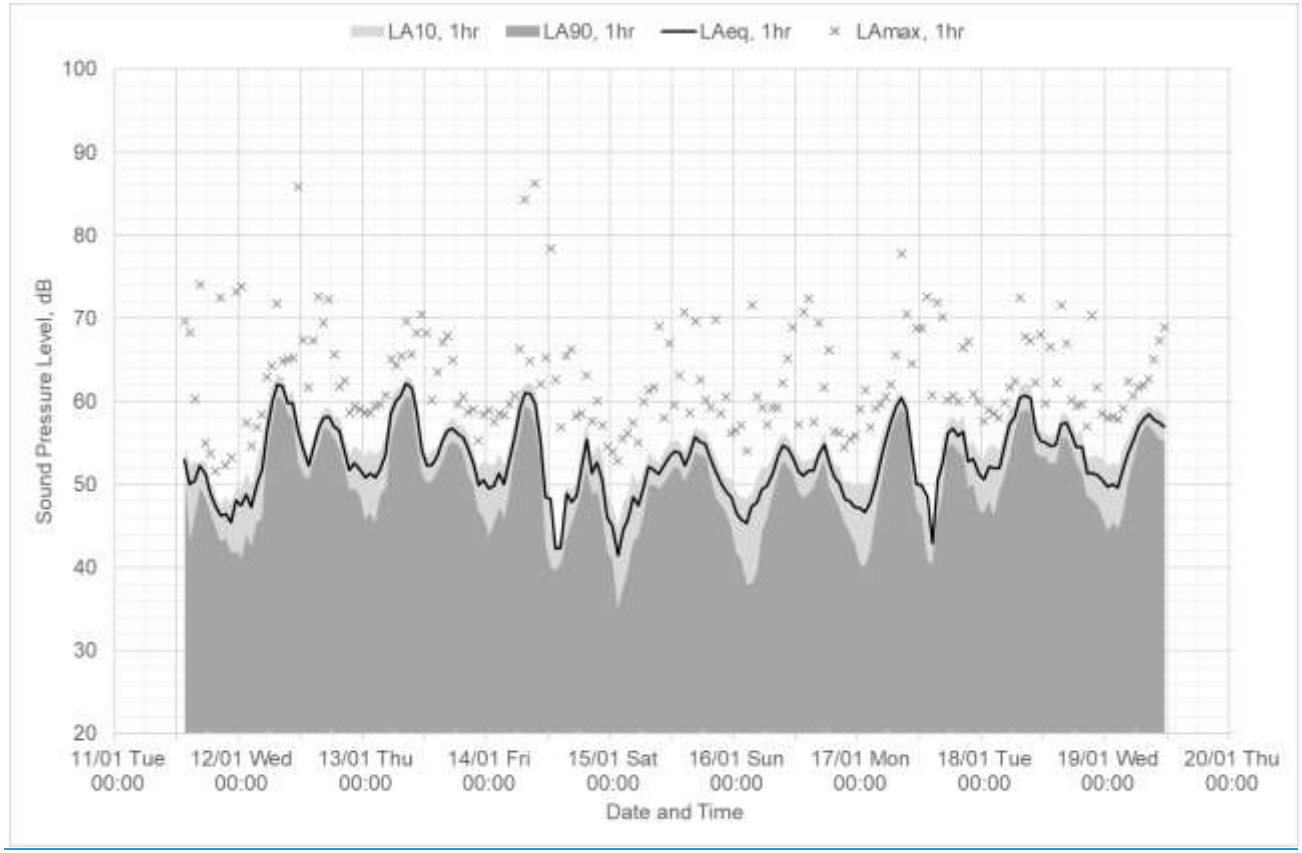
Figure : LT-


LA10, 1hr
LA90, 1hr
LAeq, 1hr
LAmax, 1hr
Sound Pressure Level, dB
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90
80
70
60
50
40
30
20
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12/01 Wed 00:00
13/01 Thu 00:00
14/01 Fri 00:00
15/01 Sat 00:00
16/01 Sun 00:00
17/01 Mon 00:00
18/01 Tue 00:00
19/01 Wed 00:00
20/01 Thu 00:00
Date and Time

Figure : LT-

~~Figure~~ 2.2~~: LT~~ 2 plot of results

~~17~~

Figure : LT-

LT-3

2.2.142 Position LT-3 was located in the rear garden of 2 Biggin Abbey Cottages, Biggin Lane, CB5 8TB bordering with garden of 1 Biggin Abbey Cottages. Fields occupy the surrounding area, the River Cam is to the west, other residential properties are to the north and south, the B1047-Horningsea Road is to the east and the A14 with junction 34 is to the south.

2.2.153 Road traffic noise from A14 dominated the noise climate. Table 2-8 and

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~~2.2.16~~ Table 2-9 present the data collected at LT-3. Figure 2.3 below shows the time history. **Table 2-8: Summary of free field LT-3 data for BS 5228 assessment**

Date	$L_{Aeq,12h}$ daytime dB	$L_{Aeq,4h}$ evening dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,6h}$ daytime dB	$L_{Aeq,10h}$ weekend dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,16h}$ weekend dB	$L_{Aeq,8h}$ night dB
	Weekdays			Saturday			Sunday	
11/01/2022	59A	52	58	---	---	---	---	---
12/01/2022	63	59	59	---	---	---	---	---
13/01/2022	62	59	57	---	---	---	---	---
14/01/2022	59	62	52	---	---	---	---	---
15/01/2022	---	---	---	59	59	52	---	---
16/01/2022	---	---	---	---	---	---	57	56
17/01/2022	61	59	58	---	---	---	---	---
18/01/2022	63	63	58	---	---	---	---	---
19/01/2022	64B	---	---	---	---	---	---	---

partial periods: [A] 7h, [B] 2h

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Table 2-9: Summary of free field LT-3 data for BS 4142 assessment

Date	Modal $L_{A90,1h\ day}$ dB	Modal $L_{A90,15min\ night}$ dB	$L_{Aeq,16h\ day}$ dB	$L_{Aeq,8h\ night}$ dB
11/01/2022	54A	46	57A	58
12/01/2022	60	53	62	59
13/01/2022	58	51	62	57
14/01/2022	55	45	60	52
Sat 15/01/2022	58	42	59	52
Sun 16/01/2022	52	46	57	56

17/01/2022	54	50	61	58
18/01/2022	58	48	63	58
19/01/2022	62B	---	64B	---

partial periods: [A] 13h, [B] 3h

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Figure : LT-

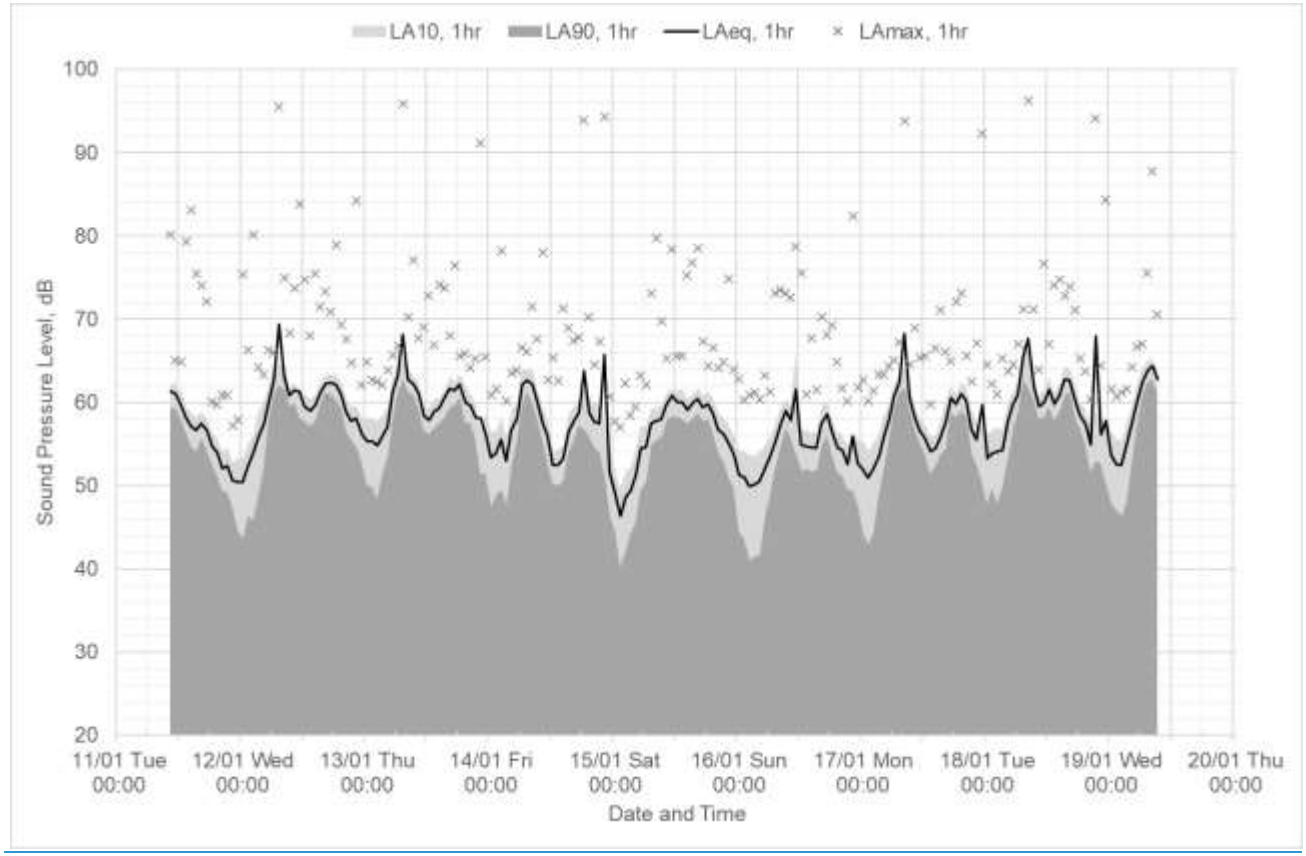
LA10, 1hr
LA90, 1hr
LAeq, 1hr
LAmax, 1hr
Sound Pressure Level, dB
100
90
80
70
60
50
40
30
20
11/01 Tue 00:00
12/01 Wed 00:00
13/01 Thu 00:00
14/01 Fri 00:00
15/01 Sat 00:00
16/01 Sun 00:00
17/01 Mon 00:00
18/01 Tue 00:00
19/01 Wed 00:00
20/01 Thu 00:00
Date and Time

Figure : LT-

~~Figure~~ 2.3~~: LT-~~3 plot of results

~~21~~

Figure : LT-

LT-4

2.2.17~~-~~4 Position LT-4 was located on the northern perimeter of an outdoor space to the north of Scotsdale garden centre and at the rear of 74-76 High Street, Horningsea, CB25 9JG. LT~~-~~4 is approximately 65m east to 74 High Street, which is the nearest residential dwelling. Other residential properties are to the west and north, the garden centre is located to the south, fields are to the east, the High Street is to the west and the A14 is to the south.

2.2.18~~-~~5 Road traffic noise from A14 dominated the noise climate. Table 2-10 and

~~Cambridge Waste Water Treatment Plant Relocation Project~~
~~Baseline Noise Report~~

~~2.2.19~~ Table 2-11 present the data collected at LT-4. Figure 2.4 below shows the time history. **Table 2-10: Summary of free field LT-4 data for BS 5228 assessment**

Date	$L_{Aeq,12h}$ daytime dB	$L_{Aeq,4h}$ evening dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,6h}$ daytime dB	$L_{Aeq,10h}$ weekend dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,16h}$ weekend dB	$L_{Aeq,8h}$ night dB
	Weekdays			**Saturday**			**Sunday**	
11/01/2022	44A	38	45	---	---	---	---	---
12/01/2022	53	49	48	---	---	---	---	---
13/01/2022	53	50	46	---	---	---	---	---
14/01/2022	49	48	43	---	---	---	---	---
15/01/2022	---	---	---	49	50	44	---	---
16/01/2022	---	---	---	---	---	---	47	46
17/01/2022	50	49	49	---	---	---	---	---
18/01/2022	53	49	49	---	---	---	---	---
19/01/2022	53B	---	---	---	---	---	---	---

partial periods: [A] 7h, [B] 6h

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Table 2-11: Summary of free field LT-4 data for BS 4142 assessment

Date	Modal $L_{A90,1h\ day}$ dB	Modal $L_{A90,15min\ night}$ dB	$L_{Aeq,16h\ day}$ dB	$L_{Aeq,8h\ night}$ dB
11/01/2022	39A	34	42A	45
12/01/2022	52	43	52	48
13/01/2022	47	41	53	46
14/01/2022	42	38	49	43
Sat 15/01/2022	47	39	50	44
Sun 16/01/2022	46	38	47	46

17/01/2022	45	44	50	49
18/01/2022	46	43	52	49
19/01/2022	47B	---	53B	---

partial periods: [A] 11h, [B] 7h

~~Cambridge Waste Water Treatment Plant Relocation Project Baseline Noise Report~~

Figure : LT-

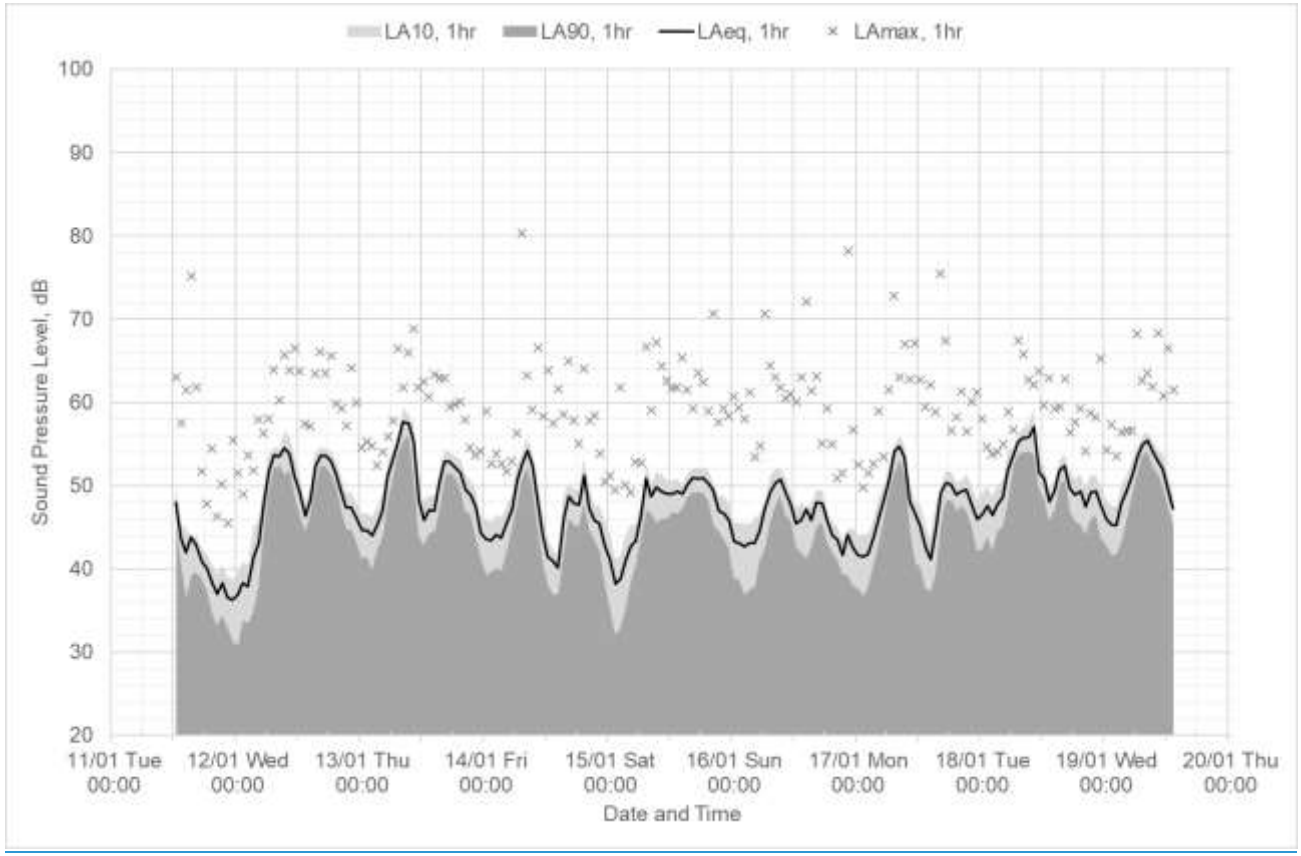
LA10, 1hr
LA90, 1hr
LAeq, 1hr
LAmax, 1hr
Sound Pressure Level, dB
100
90
80
70
60
50
40
30
20
11/01 Tue 00:00
12/01 Wed 00:00
13/01 Thu 00:00
14/01 Fri 00:00
15/01 Sat 00:00
16/01 Sun 00:00
17/01 Mon 00:00
18/01 Tue 00:00
19/01 Wed 00:00
20/01 Thu 00:00
Date and Time

Figure : LT-

~~Figure 2.4: LT-~~ 2.4 4 plot of results

Figure : LT-

LT-5

2.2.~~20~~16 Position LT-5 was located on the western perimeter of field directly east of Red House Close, Green End, CB5 8SX. LT-5 is approximately 40m east to Red House Close, which is the nearest residential receptor at this location. Fields occupy the surrounding area, the River Cam is to the west, other nearby residential properties are to the north (Poplar Hall and Poplar Hall Farm), the B1047-Horningsea Road is to the east and the A14 with junction 34 is to the north.

2.2.~~2~~17 Road traffic noise from A14 dominated the noise climate. Table 2-12 and

~~2.2.22~~ Table 2-13 present the data collected at LT-5. Figure 2.5 below shows the time history. **Table 2-12: Summary of free field LT-5 data for BS 5228 assessment**

Date	$L_{Aeq,12h}$ daytime dB	$L_{Aeq,4h}$ evening dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,6h}$ daytime dB	$L_{Aeq,10h}$ weekend dB	$L_{Aeq,8h}$ night dB	$L_{Aeq,16h}$ weekend night dB	$L_{Aeq,8h}$ dB
	Weekdays			**Saturday**			**Sunday**	
11/01/2022	63A	58	57	---	---	---	---	---
12/01/2022	59	56	55	---	---	---	---	---
13/01/2022	59	55	56	---	---	---	---	---
14/01/2022	60	58	53	---	---	---	---	---
15/01/2022	---	---	---	54	53	47	---	---
16/01/2022	---	---	---	---	---	---	56	56
17/01/2022	60	55	57	---	---	---	---	---
18/01/2022	59	54	51	---	---	---	---	---
19/01/2022	59B	---	---	---	---	---	---	---

partial periods: [A] 3h, [B] 6h

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Table 2-13: Summary of free field LT-5 data for BS 4142 assessment

Date	Modal $L_{A90,1h\ day}$ dB	Modal $L_{A90,15min\ night}$ dB	$L_{Aeq,16h\ day}$ dB	$L_{Aeq,8h\ night}$ dB
11/01/2022	62A	48	61A	57
12/01/2022	56	48	59	55
13/01/2022	56	44	58	56
14/01/2022	58	44	60	53
Sat 15/01/2022	50	40	53	47
Sun 16/01/2022	52	42	56	56
17/01/2022	58	46	59	57
18/01/2022	52	40	58	51
19/01/2022	56A	---	59A	---

partial period: [A] 7

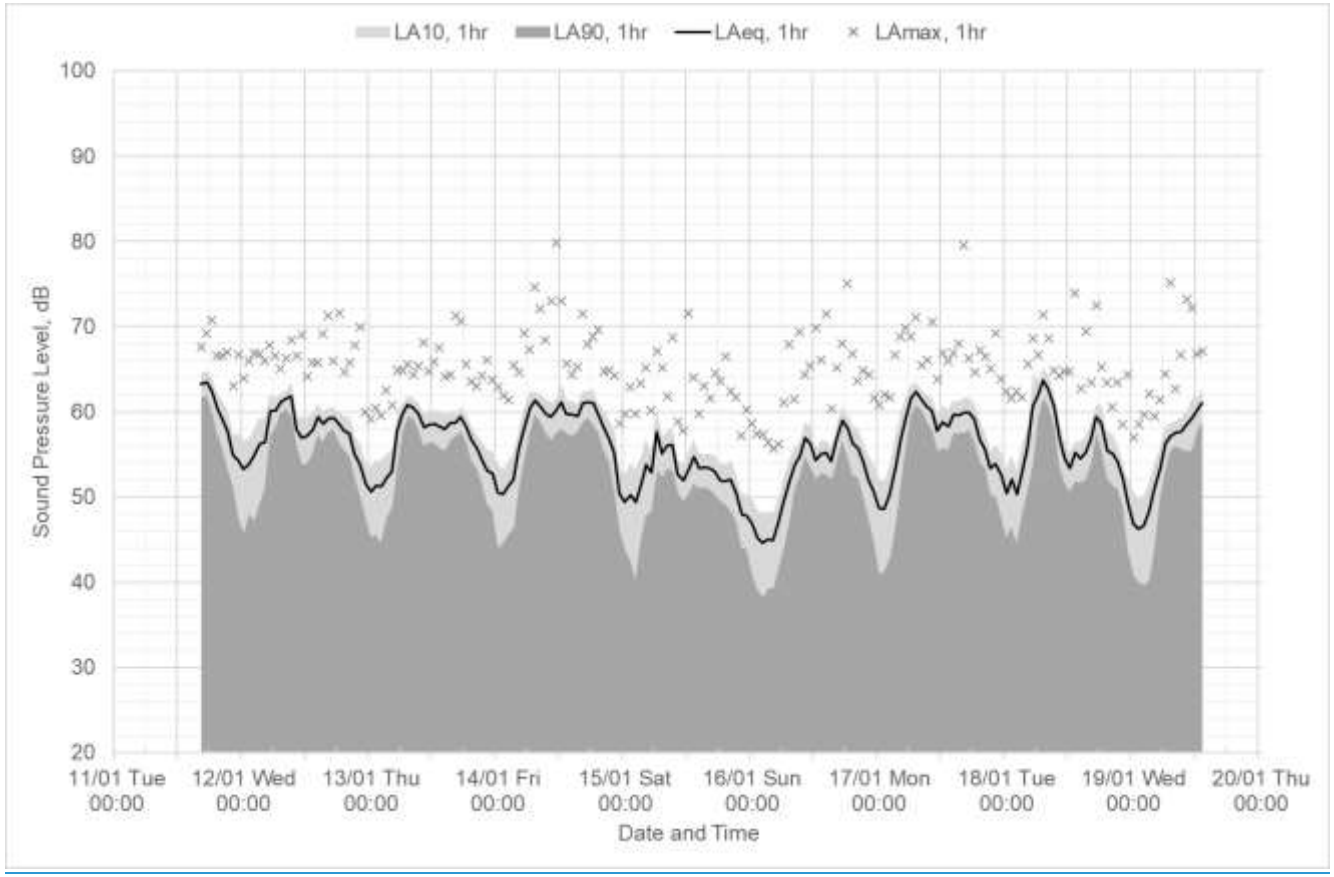

Figure 2.5: LT-5 plot of results

3 Photographs of Measurement Locations

Figure 3.1: Long term

Figure 3.2: Short term

4 Acoustic Glossary

A-weighting The human ear also has a non-linear frequency response, being most sensitive in the frequency range 1 kHz to 4 kHz and is less sensitive at higher and lower frequencies. The A-weighting is a frequency function commonly applied to the linear output of a microphone to simulate the subjective response of the ear. A-weighted levels are usually indicated by a subscript A or postscript (A).

Z-weighting A flat frequency response between 10Hz and 20kHz excluding microphone response.

Decibel Sound and noise are commonly described using the decibel (dB) scale, which is logarithmic in nature to relate to the response of the human ear. The range of human hearing commonly varies from the threshold of audibility (0 dB) to the threshold of pain (120 dB). Such limits are seldom experienced in practice and typical levels might vary between 30 dB in a quiet bedroom at night to 90 dB at the kerbside of a busy road.

Sound Pressure Level (L_p) The logarithmic measure of the root mean square sound pressure relative to a reference sound pressure. The reference sound pressure in air is 20 micro Pascals and represents the threshold of hearing in a healthy young person.

~~**Equivalent continuous noise level L_{eq}** The equivalent continuous noise level, $L_{Aeq,T}$, is the notional level of a steady sound which, at a given position and over the same period of time (T), would deliver the same sound energy as the fluctuating one. Used to quantify time-varying noise from industrial sources.~~

~~**Maximum sound pressure level $L_{(max)}$** The lowest sound pressure level reached within the measurement period.~~

~~**Minimum sound pressure level $L_{(min)}$** The lowest sound level reached within the measurement period.~~

Equivalent continuous noise level L_{eq}	The equivalent continuous noise level, $L_{Aeq,T}$, is the notional level of a ~~**noise level L_{eq}**~~ steady sound which, at a given position and over the same period of time (T), would deliver the same sound energy as the fluctuating one. Used to quantify time-varying noise from industrial sources.
Maximum sound pressure level $L_{(max)}$	The lowest sound pressure level reached within the measurement ~~**level $L_{(max)}$**~~ period.
Minimum sound pressure level $L_{(min)}$	The lowest sound level reached within the measurement period.
L_n	A statistical parameter where the sound pressure level exceeded for a 'n' percentage of the measurement period.
Fast weighting	The sound pressure level is weighted to the response time of the ear (125ms).

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Get in touch

You can contact us by:

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**

Writing to us at **Freepost: CWWTPR**

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/