

A303 Sparkford to Ilchester Dualling Scheme TR010036

6.3 Environmental Statement

Appendix 11.1 Baseline Noise Survey Results

APFP Regulation 5(2)(a)
Planning Act 2008

Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009
July 2018



Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations
2009**

**A303 Sparkford to Ilchester Dualling
Scheme**

Development Consent Order 201[X]

**6.3 Environmental Statement
Appendix 11.1 Baseline Noise Survey Results**

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference:	TR010036
Application Document Reference:	6.3
Author:	A303 Sparkford to Ilchester Dualling Scheme Project Team, Highways England

Version	Date	Status of Version
Rev 0	July 2018	Application Issue

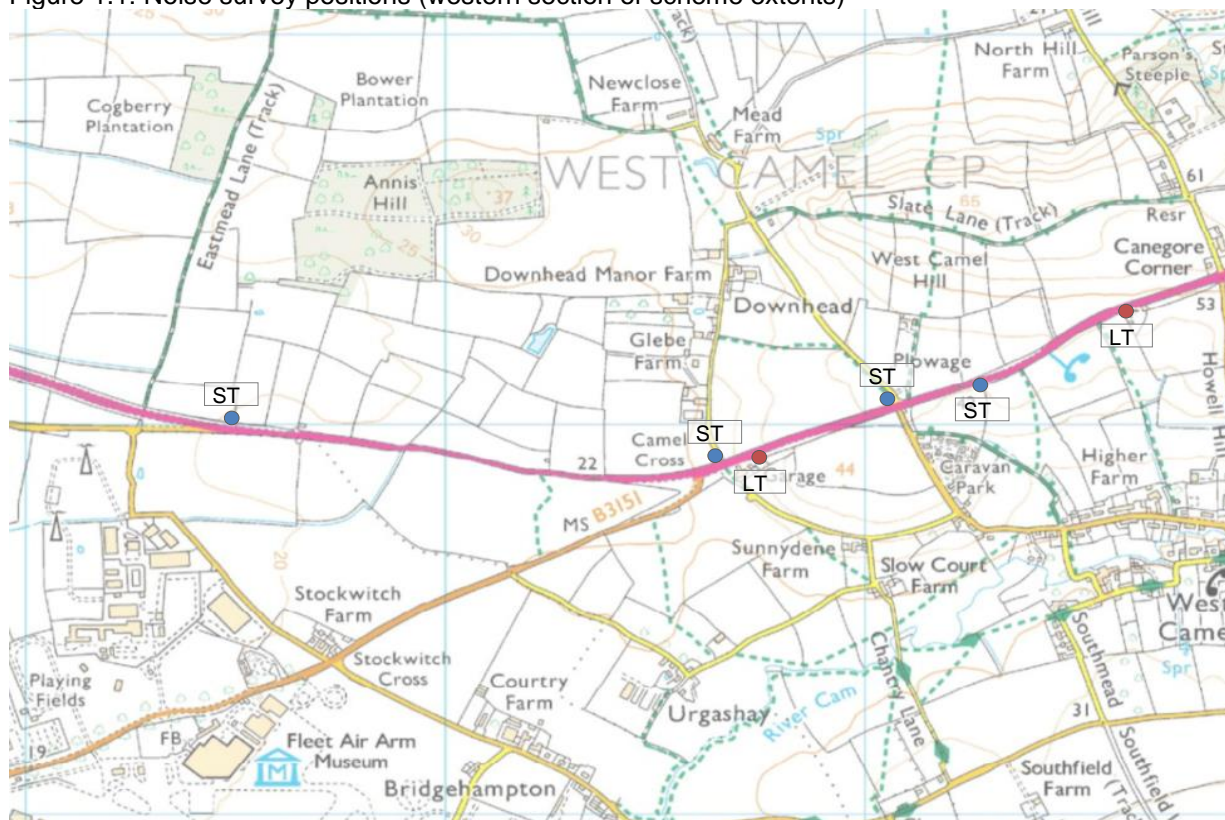
Table of Contents

1	Study area	1
2	Methodology	3
2.1	Measurement procedure	3
2.2	Weather conditions	4
2.3	Noise descriptors	5
3	Results	6
3.2	Short term	6
3.3	Long term	14

1 Study area

- 1.1.1 This technical appendix details the survey results used to inform Chapter 11 Noise and Vibration, Volume 6.1.
- 1.1.2 The priority for undertaking measurements was given to areas representative of sensitive receptors and residential properties considered likely to be potentially most severely affected by the proposed A303 Sparkford to Ilchester Dualling scheme (hereafter referred to as 'the scheme') based on the proximity to the physical works. In the majority of cases, the closest accessible position representative of the property was used. The measurement locations are shown in Figure 1.1 and Figure 1.2.
- 1.1.3 Short-term (ST) measurements were conducted during the day time of the 28 February 2018, 1 March 2018, 14 March 2018 and 15 March 2018.
- 1.1.4 Four long-term (LT) measurements were conducted over various periods:
- One measurement over two days - from 28 February 2018 to 2 March 2018
 - Two measurements over one week - from 28 February 2018 to 8 March 2018
 - One measurement over two weeks - from 28 February 2018 to 15 March 2018

Figure 1.1: Noise survey positions (western section of scheme extents)



Source: Contains Ordnance Survey data © Crown copyright and database right 2014

Figure 1.2: Noise survey positions (eastern section of scheme extents)



Source: Contains Ordnance Survey data © Crown copyright and database right 2014

2 Methodology

2.1 Measurement procedure

2.1.1 Short-term measurements were attended whereas the long-term measurements were unattended. Table 2.1 presents details of the noise measurement equipment used. Sound level meter equipment used during surveys was designed to comply with the following standards:

- Type 1 standard as defined within International Electro-technical Commission (1979) IEC 651:1979. Sound level meters.
- Class 1 standard as defined within International Electro-technical Commission (2002) IEC 61672-1:2002. Electroacoustics-Sound level meters: Specifications.

2.1.2 The field calibrator used was designed to be in compliance with International Electro-technical Commission (2003) IEC 60942:2003 Electroacoustics-Sound calibrators.

2.1.3 Before and after each measurement session, the reference calibration of all sound level meters was checked using the field calibrator. Variations of no greater than 0.2 dB were noted over all the measurement periods.

Table 2.1: Equipment summary

Measurement type	Sound level meter	
	Model	Serial number
Long-term	Rion NL-52	00976152
	Rion NL-52	01193556
	Rion NL-52	00754168
	Rion NL-52	01176427
Short-term	Rion NL-52	00821105
	Rion NL-52	01176426
	Norsonic 140	1404108
Calibrator	Larson Davis CAL200	12460

2.1.4 For short-term and long-term measurements, the microphones were supported using a tripod at a height of 1.2 to 1.5 metres above the ground and fitted with a windshield suitable for outdoor use. Unless stated otherwise, measurements were conducted in the acoustic free field (more than 3.5 metres away from any walls or vertical reflecting surfaces). Where measurements were undertaken in close proximity to buildings (a façade measurement), the horizontal distance between the microphone and the façade was one metre, where possible or otherwise stated.

2.1.5 For all the long-term measurements, the A-weighted equivalent continuous noise level ($L_{Aeq,day}$, $L_{Aeq,evening}$ and $L_{Aeq,night}$ and $L_{A10,18hour}$) were obtained along with a number of statistical indices (L_{AMax} , L_{A10} , L_{A90}) over contiguous 15 minute intervals.

- 2.1.6 Photographs (to allow repeatability of the measurements) and descriptions of the site, noise climate and weather conditions were noted at each measurement. Where possible, measurements were conducted under dry conditions. Wind speeds were checked using a hand-held anemometer to be within the guideline limit of 5m/s for noise monitoring.
- 2.1.7 Significant extraneous noise events were excluded from the attended measurements unless they were regular features of the noise climate in that area.
- 2.1.8 All measurements were undertaken by consultants competent in environmental noise monitoring, and completed in accordance with the principles of BS 7445-1: 2003¹.

2.2 Weather conditions

- 2.2.1 The weather conditions during the survey (short-term measurement and installation and collection of long-term) were considered suitable to undertake noise measurements. Historic meteorological data have been supplied by the Met Office © Crown copyright 2018, the Met Office, at <https://www.metoffice.gov.uk/> from Yeovilton observation site and are summarised in Table 2.2.
- 2.2.2 Actual wind speeds at the site would be expected to be less than those recorded at the meteorological station as the microphone was located closer to the ground.

Table 2.2: Weather summary

Date	Condition	Wind speed range (m/s)		Predominant wind direction	Temperature range (°C)	
		min	max		min	max
28 February 2018	Cloudy, light snow in the evening	4.9	11.6	ENE	-5	0.3
01 March 2018*	Snow	7.2	10.8	ENE	-5.4	-1
02 March 2018	Cloudy, light rain and light snow	6.7	10.8	ENE	-1	-0.4
03 March 2018	Haze, light rain, cloudy	1.3	8.0	E	0.9	3.8
01 March 2018	Cloudy, rain	1.9	8.0	S	1.9	10.3
05 March 2018	Cloudy, rain	0.9	8.0	SSE	2.4	9.6
06 March 2018	Cloudy	0.5	3.6	SSW	2.4	9.6
07 March 2018	Cloudy, haze/light rain	---	6.7	W	-1	10.4
08 March 2018	Cloudy	2.2	9.4	WSW	3.7	9.9
09 March 2018	Cloudy, rain	0.5	6.7	ESE	1.5	11.7
10 March 2018	Cloudy, rain	0.9	8.0	S	6.3	13.2
11 March 2018	Mist, overcast, rain	0.5	8.0	E	4.9	11.6
12 March 2018	Light rain, cloudy	2.2	9.4	WNW	6.2	11.3
13 March 2018	Cloudy	1.3	6.7	WNW	4	11.5
14 March 2018	Cloudy, rain	3.1	11.6	SE	5.3	12.2
15 March 2018	Rain, cloudy	3.1	8.5	SE	7.9	11.5

¹ British Standards (2003) BS 7445-1: 2003 Description and measurement of environmental noise.

2.3 Noise descriptors

2.3.1 The data and assessments presented within this Technical Appendix refer to certain noise parameters. These are defined below.

- L_{Amax} – the highest value of the A-weighted sound pressure level with a specified time weighting that occurs during a given event.
- $L_{Aeq,T}$ – also referred to as the continuous equivalent noise level, it is the A-weighted sound pressure level that is the same amount of sound energy as the time varying noise over the same period of time (T).
- $L_{A10,T}$ – the A-weighted sound pressure level that is exceeded for 10% of a given time interval (T).
- $L_{A90,T}$ – also referred to as the background noise level, it is the A-weighted sound pressure level that is exceeded for 90% of a given time interval (T).
- A-weighting – As seen in the parameters above, this weighting is the sound level as perceived by the human ear by giving a correction for the frequencies the human ear is less sensitive to.

3 Results

- 3.1.1 A summary of the results of the baseline noise measurements is provided for each position from Table 3.1 to Table 3.12. Additionally, the results of the long-term noise measurement are presented graphically from Figure 3.9 to Figure 3.15.
- 3.1.2 For all the short-term measurements, statistical indices (L_{Aeq} , L_{AMax} and L_{A10}) were obtained over contiguous 15 minutes intervals.
- 3.1.3 For all the long-term measurements, the A-weighted equivalent continuous noise level ($L_{Aeq,day}$, $L_{Aeq,evening}$ and $L_{Aeq,night}$) and $L_{A10,18hour}$ were obtained along with a number of statistical indices (L_{AMax} , L_{A10}) over contiguous 15 minutes intervals.
- 3.1.4 $L_{Aeq,day}$ is between 07:00 and 19:00, $L_{Aeq,evening}$ is between 19:00 and 23:00 and $L_{Aeq,night}$ is between 23:00 and 07:00. $L_{A10,18hour}$ is between 06:00 and 24:00.
- 3.1.5 Measurements were not undertaken at ST2 or LT4 due to safety and access reasons.

3.2 Short term

ST1

- 3.2.1 Attended short term measurements were undertaken at ST1. In addition, unattended measurements were undertaken overnight between 28 February and 1 March 2018.
- 3.2.2 Position ST1 is located in a small layby area (providing access to farmland) north of the existing A303 carriageway opposite westbound slip road to Podimore (refer to Figure 3.1).

Figure 3.1: ST1 photograph



Table 3.1: ST1 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	13:00	79.8	110.3	78.7
	13:15	75.1	84.6	79.0
	13:30	74.6	86.3	78.8
	13:45	75.5	85.5	79.4
	14:00	75.6	88.5	79.2
	14:15	75.7	87.1	79.2
	14:30	75.6	85.2	79.4
	14:45	75.5	84.8	79.3
	15:00	75.9	91.6	79.3
	15:15	75.9	85.7	79.6
	15:30	76.0	86.8	79.5
	15:45	75.6	85.7	79.1
	16:00	75.7	85.0	79.3
	16:15	76.8	96.3	79.7
	16:30	76.7	86.7	79.9
	16:45	76.7	92.9	79.9
	17:00	76.0	86.3	79.4
	17:15	75.8	85.1	79.3
	17:30	76.2	87.9	79.6
	17:45	76.0	85.4	79.3
	18:00	75.3	85.7	79.1
	18:15	74.9	85.2	78.9
	18:30	74.4	85.8	78.5

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
	18:45	73.9	85.0	78.1
	19:00	72.8	85.6	77.2
	19:15	73.0	84.8	77.4
	19:30	72.5	86.1	77.2
	19:45	72.3	84.2	77.3
	20:00	71.2	85.7	76.6
	20:15	71.3	85.6	76.3
	20:30	71.0	84.7	76.4
	20:45	69.7	84.7	75.1
	21:00	70.0	85.4	75.1
	21:15	68.6	83.2	74.3
	21:30	69.8	85.0	75.2
	21:45	70	84.5	75.7
	22:00	68.7	84.8	74.2
	22:15	67.2	82.9	72.1
	22:30	67.7	86.6	71.6
	22:45	67.4	85.9	70.2
	23:00	67.2	84.0	70.9
	23:15	67.2	82.4	70.8
	23:30	64.1	84.4	61.5
	23:45	65.7	84.1	64.0
1 March 2018*	00:00	66.6	85.3	68.5
	00:15	64.0	83.9	60.1
	00:30	64.1	83.9	61.9
	00:45	64.8	85.1	61.7
	01:00	66.3	86.9	64.1
	01:15	65.5	83.5	63.5
	01:30	65.4	86.2	61.3
	01:45	63.6	84.2	59.3
	02:00	62.2	83.2	57.2
	02:15	64.3	86.9	59.8
	02:30	64.0	84.9	60.7
	02:45	65.4	84.9	63.2
	03:00	65.9	84.6	63.5
	03:15	66.5	86.5	63.7
	03:30	65.1	86.7	61.9
	03:45	66.1	86.0	62.6
	04:00	65.2	84.7	63.1
	04:15	66.0	84.3	64.5
	04:30	67.4	84.8	66.5
	04:45	67.3	86.3	68.2
	05:00	68.8	87.7	70.5
	05:15	69.2	90.1	72.4
	05:30	70.0	86.0	74.4
	05:45	69.5	85.6	74.1
	06:00	71.4	86.4	76.5
	06:15	71.3	84.8	76.8
	06:30	72.7	89.3	77.7
	06:45	73.3	84.7	78.3
	07:00	74.2	85.6	79.0
	07:15	73.9	86.2	78.7
	07:30	74.8	84.8	79.0
	07:45	74.9	86.4	79.1
	08:00	75.0	86.9	79.0
14 March 2018	15:24	75.9	88.1	79.3
15 March 2018	11:36	77.3	97.2	80.2

*weather condition: starting to snow

ST3

- 3.2.3 Position ST3 is located north of the existing A303 at the end of the vehicle turning circle approximately opposite Wayne's Bar and Grill restaurant (refer to Figure 3.2).

Figure 3.2: ST3 photograph



Table 3.2: ST3 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	14:14 ^A	69.5	79.2	72.3
01 March 2018*	15:48	78.0	86.6	81.6
14 March 2018	14:43	71.8	81.8	74.9
15 March 2018	12:00	72.2	83.8	75.4

^A measurement of 12 minutes

*weather condition: starting to snow

ST4

- 3.2.4 Position ST4 is located on the roadside verge north west of the junction between the existing A303 and road to Downhead (refer to Figure 3.3).

Figure 3.3: ST4 photograph



Table 3.3: ST4 data summary

Date	Start time	L_{Aeq} dB(A)	L_{Amax} dB(A)	L_{A10} dB(A)
28 February 2018	14:20	70.8	81.5	74.8
01 March 2018*	08:40	69.9	80.4	74.2
14 March 2018	14:48	72.8	83.6	76.1
15 March 2018	11:57	74.3	84.4	77.9

*weather condition: starting to snow

ST5

3.2.5 Position ST5 is located at the south west end of the layby area south of the A303 between West Camel Methodist Church and Plowage Lane (refer to Figure 3.4).

Figure 3.4: ST5 photograph



Table 3.4: ST5 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	15:00	72.5	88.2	75.9
01 March 2018*	10:07	74.3	85.5	78.4
14 March 2018	14:17	77.6	89.3	80.9
15 March 2018	11:11	77.5	87.7	81.1

*weather condition: starting to snow

ST6

3.2.6 Position ST6 is located on the roadside verge south east of the junction between the existing A303 and Gason Lane (refer to Figure 3.5).

Figure 3.5: ST6 photograph



Table 3.5: ST6 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	08:39	68.7	78.5	72.2
01 March 2018*	09:10	76.5	87.5	80.8
14 March 2018	13:39	77.0	86.8	81.1
15 March 2018	10:42	77.4	87.5	81.3

*weather condition: starting to snow

ST7

3.2.7 Position ST7 is located on the public footpath just south of the existing A303 on the boundary of the Ridge Copse wooded area (refer to Figure 3.6).

Figure 3.6: ST7 photograph



Table 3.6: ST7 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	15:45	75.7	88.1	79.7
01 March 2018*	09:10	73.0	85.6	77.3
14 March 2018	10:42	75.3	89.8	79.1
15 March 2018	13:43	73.4	84.9	77.0

*weather condition: starting to snow

ST8

3.2.8 Position ST8 is located within the field north of the layby area between the Hazlegrove Roundabout and the A303 road bridge over the A359. The survey location within the field is located near to the south east field boundary opposite the entrance slip road to the layby area (refer to Figure 3.7).

Figure 3.7: ST8 photograph



Table 3.7: ST8 data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
28 February 2018	16:30	70.2	76.5	72.7
01 March 2018*	09:40	68.0	75.7	71.1
14 March 2018	13:07	70.5	76.8	73.2
15 March 2018	13:02	70.0	81.2	72.7

*weather condition: starting to snow

3.3 Long term

LT1

- 3.3.1 Position LT1 is located approximately 50 metres north east of Wayne's Bar and Grill restaurant entrance (refer to Figure 3.8).

Figure 3.8: LT1 photograph



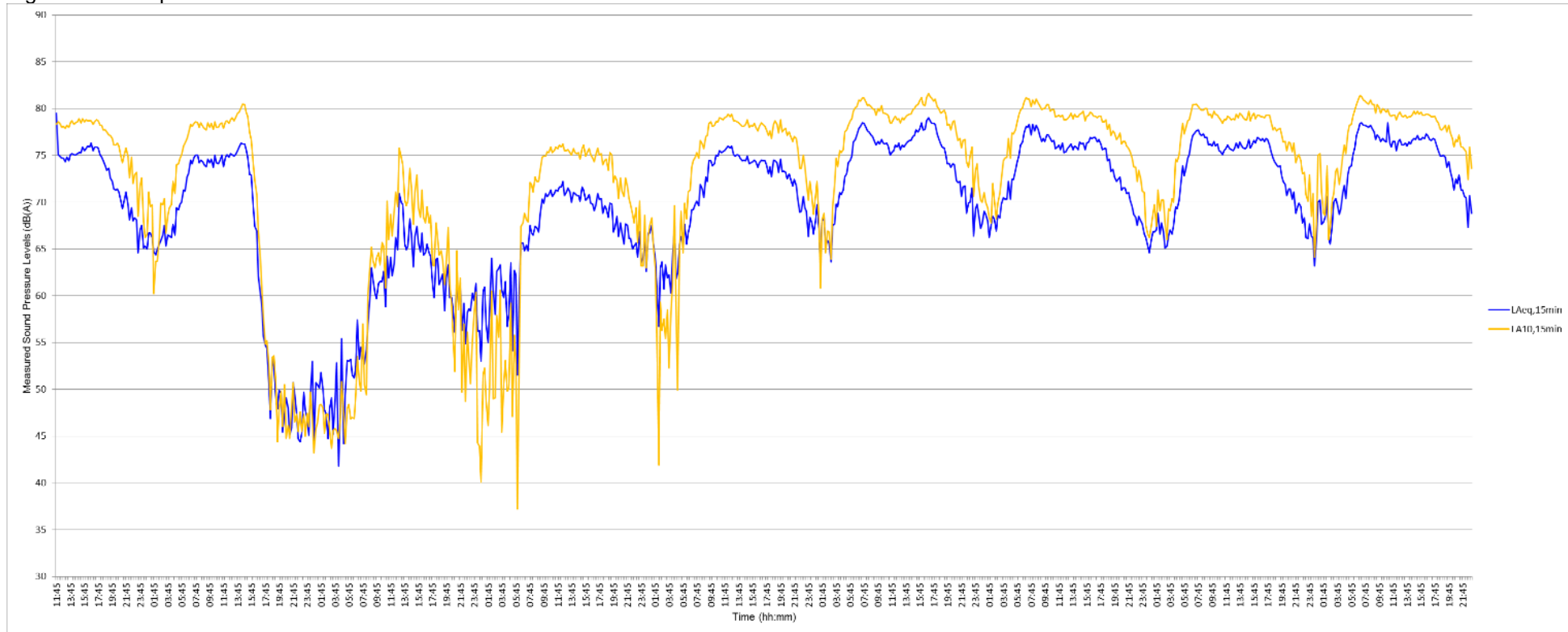
Table 3.8: LT1 data summary

Date	L _{Aeq,day} dB(A)	L _{Aeq,evening} dB(A)	L _{Aeq,night} dB(A)	L _{A10,18hour} dB(A)
28 February 2018	76.9 ^A	71.1	68.1	76.9 ^B
01 March 2018 *	73.6	48.5	50.2	66.9
02 March 2018	64.4	60.1	60.9	62.6
03 March 2018	70.1	67.4	64.9	72.4
04 March 2018	74.1	72.7	71.3	76.9
05 March 2018	77.2	73.3	71.5	79.0
06 March 2018	76.6	71.8	70.0	78.4
07 March 2018	76.3	71.6	71.3	78.1
08 March 2018	76.9	72.5	---	78.8 ^C

*weather condition: snow

^Afor 12.15h; ^Bfor 7.15h; ^Cfor 17h

Figure 3.9: LT1 plot of results



LT2

3.3.2 Position LT2 is located on the West Camel Methodist Church northern boundary which adjoins the existing A303 (refer to Figure 3.10).

Figure 3.10: LT2 photograph



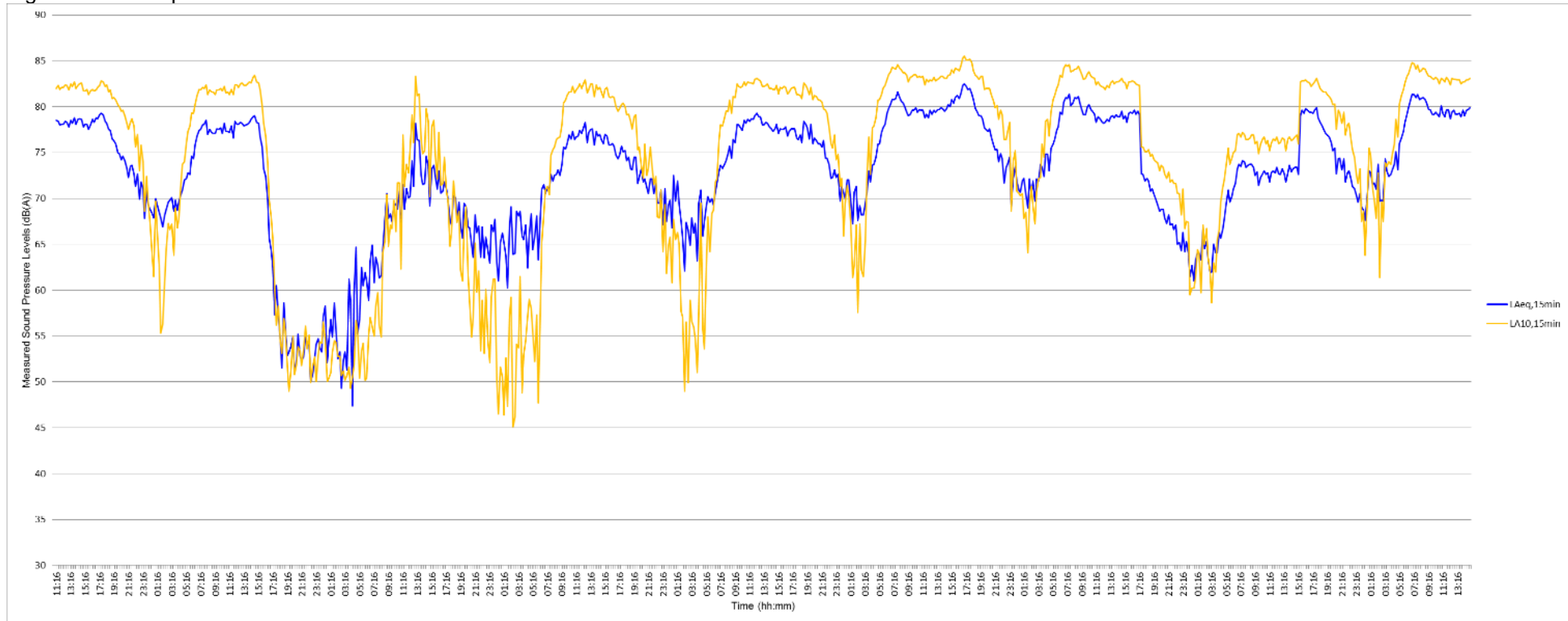
Table 3.9: LT2 data summary

Date	L _{Aeq,day} dB(A)	L _{Aeq,evening} dB(A)	L _{Aeq,night} dB(A)	L _{A10,18hour} dB(A)
28 February 2018	78.3 ^A	74.1	71.2	80.3 ^B
01 March 2018 *	76.7	53.5	58.2	70.8
02 March 2018	71.2	66.9	66.7	66.6
03 March 2018	75.7	72.1	69.0	76.7
04 March 2018	77.4	76.0	74.3	80.2
05 March 2018	80.4	76.6	74.6	82.5
06 March 2018	79.0	68.3	67.0	79.3
07 March 2018	75.8	74.6	74.5	77.9
08 March 2018	79.9 ^C	---	---	83.3 ^D

*weather condition: snow

^Afor 8.15h; ^Bfor 13.15h; ^Cfor 8h; ^Dfor 9h

Figure 3.11: LT2 plot of results



LT3

3.3.3 Long term unattended measurements were undertaken at LT3. In addition, short term attended measurements were undertaken at LT3 on 15 March 2018.

3.3.4 Position LT3 is located on the southern boundary of a field which adjoins the existing A303 at Camel Hill Farm (refer to Figure 3.12).

Figure 3.12: LT3 photograph



Table 3.10: LT3 (short term) data summary

Date	Start time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)
15 March 2018	09:55	76.0	89.3	79.7
15 March 2018	12:29	75.8	87.6	79.2

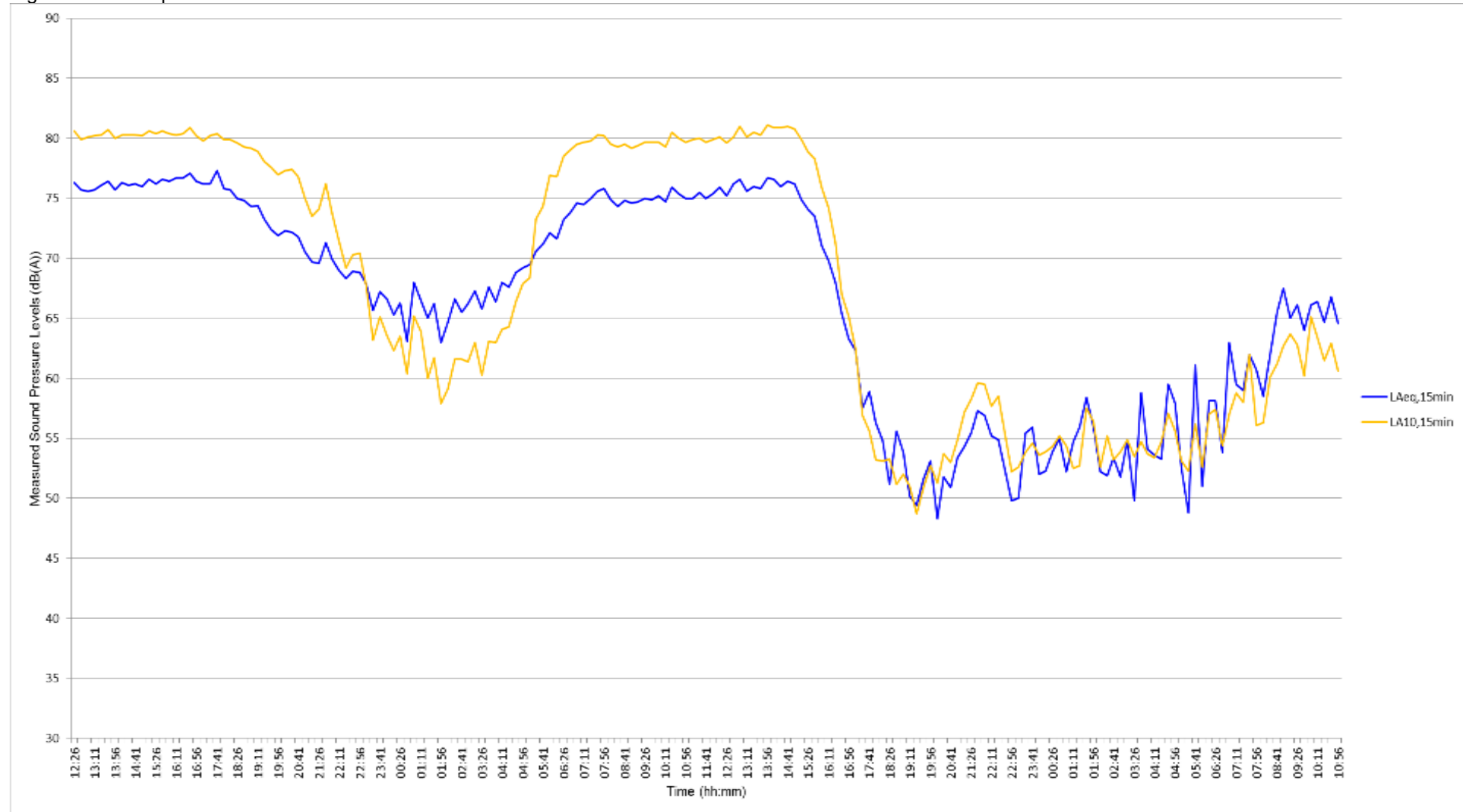
Table 3.11: LT3 (long term) data summary

Date	L _{Aeq,day} dB(A)	L _{Aeq,evening} dB(A)	L _{Aeq,night} dB(A)	L _{A10,18hour} dB(A)
28 February 2018	76.2 ^A	71.6	68.5	77.3 ^B
01 March 2018*	74.3	53.8	55.4	69.7
02 March 2018	64.4 ^C	---	---	59.7 ^D

*weather condition: snow

^Afor 6.5h; ^Bfor 11.5h; ^Cfor 4h; ^Dfor 5h

Figure 3.13: LT3 plot of results



LT5

3.3.5 Position LT5 is located at Hazel Park, caravan site (refer to Figure 3.14).

Figure 3.14: LT5 photograph



Table 3.12: LT5 data summary

Date	L _{Aeq,day} dB(A)	L _{Aeq,evening} dB(A)	L _{Aeq,night} dB(A)	L _{A10,18hour} dB(A)
28 February 2018	63.2 ^A	60.1	55.2	63.3 ^B
01 March 2018*	61.2	51.2	49.0	58.6
02 March 2018	51.8	47.6	46.3	53.5
03 March 2018	57.8	53.3	49.2	59.2
01 March 2018	59.4	57.3	55.6	61.2
05 March 2018	62.7	58.0	61.5	63.5
06 March 2018	61.7	57.9	55.4	63.2
07 March 2018	62.4	57.2	58.4	63.4
08 March 2018	63.9	59.1	57.5	64.6
09 March 2018	63.3	60.4	53.5	64.2
10 March 2018	62.3	57.9	53.8	63.3
11 March 2018	62.7	61.4	56.6	63.7
12 March 2018	67.0	58.0	55.6	64.7
13 March 2018	62.3	56.6	53.6	63.1
14 March 2018	62.5	58.5	55.4	63.0
15 March 2018	62.8 ^C	---	---	64.5 ^D

*weather condition: snow

^Afor 8.5h ; ^Bfor 13.5h; ^Cfor 3h; ^Dfor 4h

Figure 3.15: LT5 plot of results

