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Real Estate

Land East of Leeds Road, Chidswell

Environmental Statement - Volume 2 – Chapter 9

April 2020

Important notice: This Environmental Statement has been prepared by Deloitte Real Estate, with technical input from Re-form; Delta Simons; Patrick Parsons; Brooks Ecological; Pell Frischmann; and Cotswold Archaeology ("the Consultants"). Chapter 1, Volume 1 of this Environmental Statement sets out the parties responsible for preparing each Chapter and associated figures and appendices.

Although we have read the Consultants' reports for consistency and provide our observations based on our knowledge and experience, we accept no liability or responsibility for the Consultant's Reports and will not be responsible for the technical content of Chapters 7-14 and Chapter 15, Volume 1; nor Volume 2, nor the technical content of the associated separate Non-Technical Summary.

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15 Type 1 Cumulative Effects	N/A
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9.1 Baseline Noise Survey Details

Appendix 9.1

Appendix 9.1 – Baseline noise survey details

9.166 Baseline noise levels at the existing receptors, likely to experience changes in noise from traffic were measured by Apex Acoustics at various locations in 2019. The measurement positions are shown in Figure 9. 1.

	Figure:	**Figure 9. 1**		
	Title:	**Noise survey positions**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/2020**	**Scale:**	**None**

9.167 Long term monitoring was undertaken at location LT1 from 23rd October to 24th October 2019. Short term monitoring was undertaken on 23rd October and 20th November 2019.

9.168 The measurements were taken at 1.5 m above ground level, complying with the requirements of British Standard BS 7445 (BSI, 2003). All monitoring locations were located at least 3.5m from any reflecting surface, other than the ground (i.e. free-field).

9.169 For the noise monitoring undertaken by Apex Acoustics Ltd the equipment details are shown in Table 9. 1.

Table 9. 1 – Equipment used in the survey

Equipment	Model	Serial no.
Sound level meter	XL2	A2A-11084-E0
Calibrator	Larson Davis CAL 200	10665
Sound level meter	XL2	A2A-11062-E0
Calibrator	Larson Davis CAL 200	13403

9.170 The noise monitoring instrumentation was to log L_{Aeq}, LA90, and L_{Amax} values in 1-second contiguous intervals at all monitoring locations.

9.171 The calibration of the equipment was checked prior to, and after, the monitoring periods and no significant changes (± 0.7 dB) were noted.

9.172 Details of weather conditions during the surveys are given in Table 9. 2.

Table 9. 2 – Weather condition when the noise surveys were carried out

Position	Weather condition
LT1, LT2	Temperature around 3 oc; wind speed < 5 m/s; cloud cover 70% to 100%
ST1, ST2 and ST3	Temperature around 7 oc; wind speed < 5 m/s; cloud cover 10%
ST4, ST5, ST6, ST6, ST7, ST8, ST9	Temperature around 8 oC, wind speed < 5 m/s; cloud cover 40 to 90%

9.173 The measurements at ST4 to ST9 followed the shortened measurement procedure described in CRTN. The $L_{A10,18hr}$ is calculated from the measured 3 hour $L_{A10,1hr}$ by the following equation:

$$L_{A10,18hr} = \frac{1}{3}\sum L_{A10,1hr} \text{ dB}$$

9.174 The measured $L_{A10,1hr}$ and calculated corresponding $L_{A10,18hr}$ levels are shown in Table 9. 3.

Table 9. 3 – Measured short term noise levels

Position	Measured $L_{A10,1hr}$, dB			Calculated $L_{A10,18hr}$, dB
	1st hour	2nd hour	3rd hour	
ST4	74.9	75.3	75.8	74.3
ST5	74.9	74.6	74.1	73.5
ST6	75.6	76.5	76.5	75.2
ST7	70.3	69.6	70.4	69.1
ST8	63.8	62.8	61.6	61.7
ST9	65.1	63.5	61.8	62.5

9.175 The time history of the long term measurements are shown in Figure 9. 2 and Figure 9. 3.

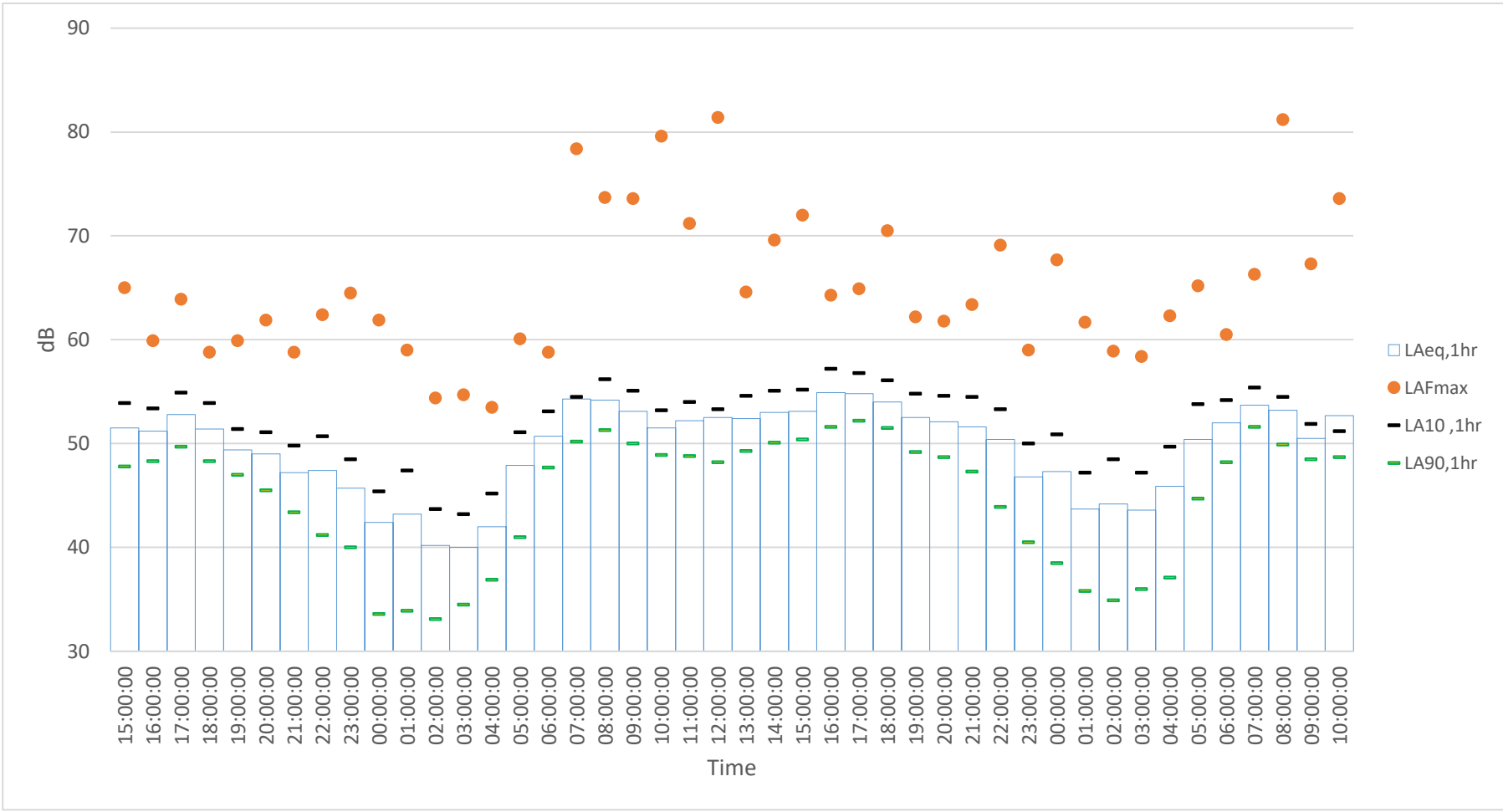

	Figure:	**Figure 9. 2**		
	Title:	**Measured time history (1hr resolution) at LT1**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/20**	**Scale:**	**None**

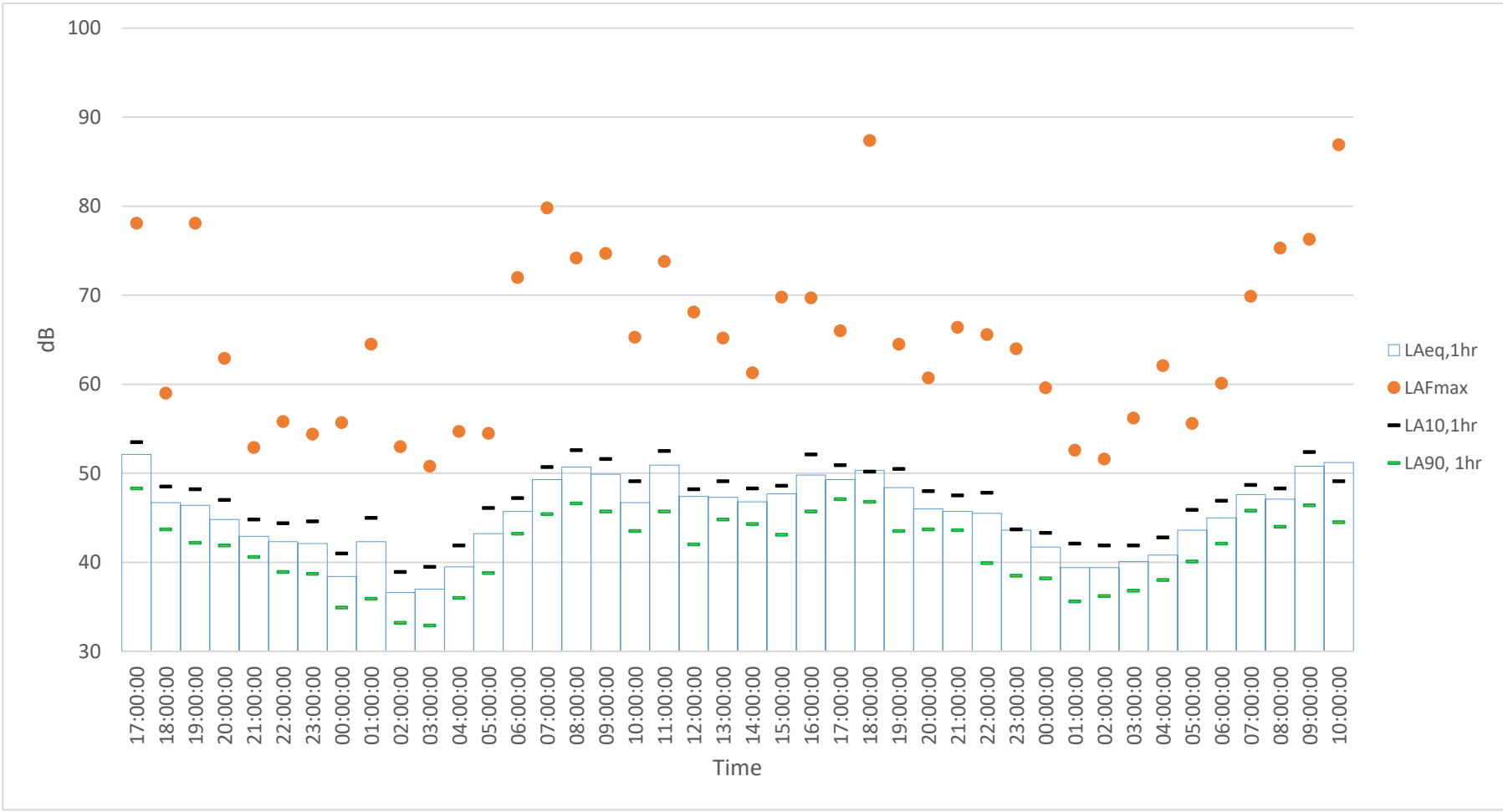

	Figure:	**Figure 9. 3**		
	Title:	**Measured time history (1hr resolution) at LT2**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/20**	**Scale:**	**None**

9.2 Acoustic Modelling and Predicted Noise Levels

Appendix 9.2

Appendix 9.2: Acoustic modelling and predicted noise levels

9.176 The noise impact from the road traffic due to the Proposed Development is modelled following the guidance in DMRB and CRTN, implementing with Cadna/A software.

9.177 The study area is determine by the guidance in DMRB. The terrain heights are taken from the environmental agency's data in 1 m resolution. The study area, most affected roads by the Proposed Development and receiver positions are shown in Figure 9. 1.

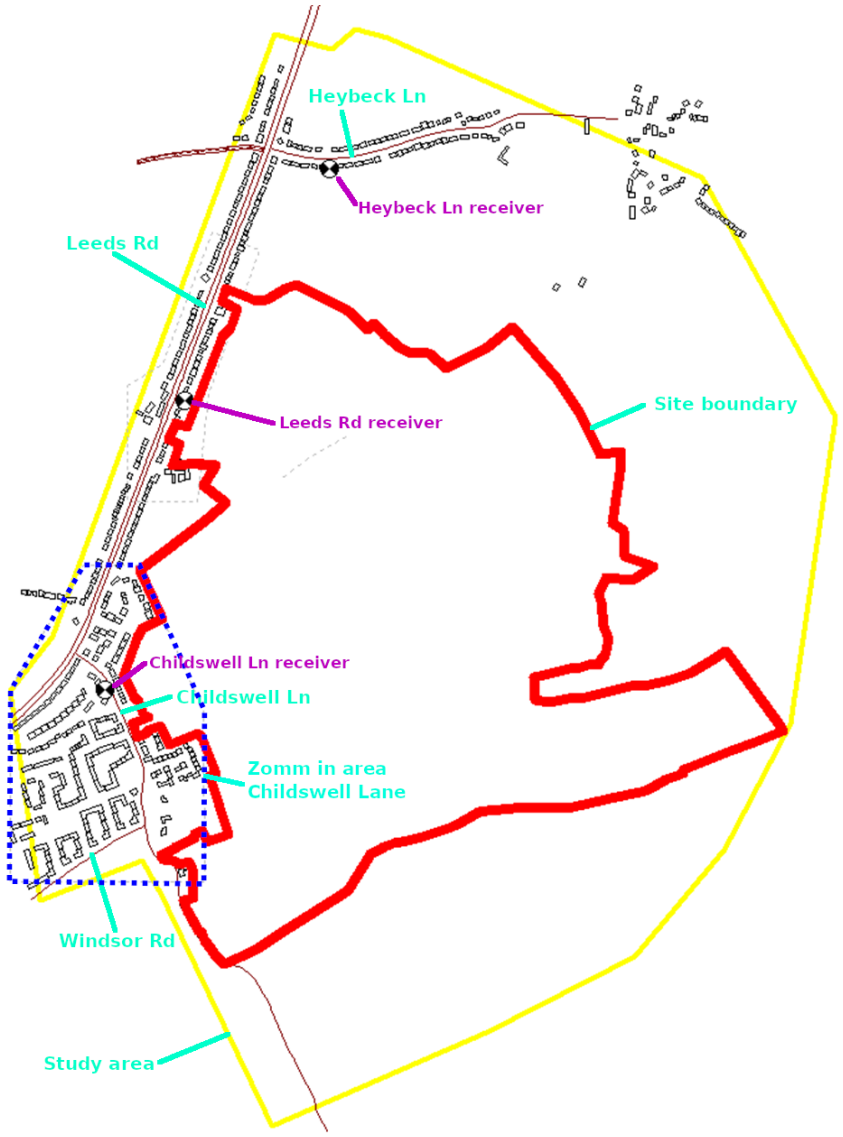

	Figure:	**Figure 9. 1**		
	Title:	**Plan view of the acoustic model**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/2020**	**Scale:**	**None**

9.178 The road traffic noise levels are predicted based on the transport simulation data as shown in Table 9. 1.

Table 9. 1 – Road traffic data used in the acoustic model

Link detail	Baseline year 2019	Completion year 2030		HGV%	Speed, mph
	AAWT	AAWT			
	Do-minimum	Do-minimum	Do-something		
A653 Dewsbury Road (Hesketh La to Syke Rd)	24613	28678	35774	5%	38
A653 Leeds Rd (Syke Rd to Heybeck La)	26151	32347	40300	3%	30
Soothill La	9811	10354	12736	1%	31
Heybeck La (Leeds Rd to Site Access 1)	6938	10312	12235	1%	31
Heybeck La (East of Site Access 1)	6938	10312	10936	4%	40
A653 Leeds Rd (Heybeck La to Site Access 2)	25103	33909	44313	4%	39
A653 Leeds Rd (Site Access 2 to Site Access 3)	24549	31376	41478	3%	38
A653 Leeds Rd (Site Access 3 to Chidswell La)	23995	28843	34499	5%	35
A653 Leeds Rd (Chidswell La to Owl La)	22252	26611	35992	0%	22
Chidswell La (A653 Leeds Rd to Site Access 4)	3027	3857	7582	0%	22
Chidswell La (Site Access 4 to Windsor Rd)	2602	6164	7236	6%	30
Chidswell La (East of Windsor Rd)	375	483	483	3%	30
Windsor Rd	2332	5793	6865	6%	30
Chidswell Lane (East of Barratt land)	375	483	483	5%	38

9.179 The calculated noise levels of DMBL, DMCY, and DSCY are shown as follows.

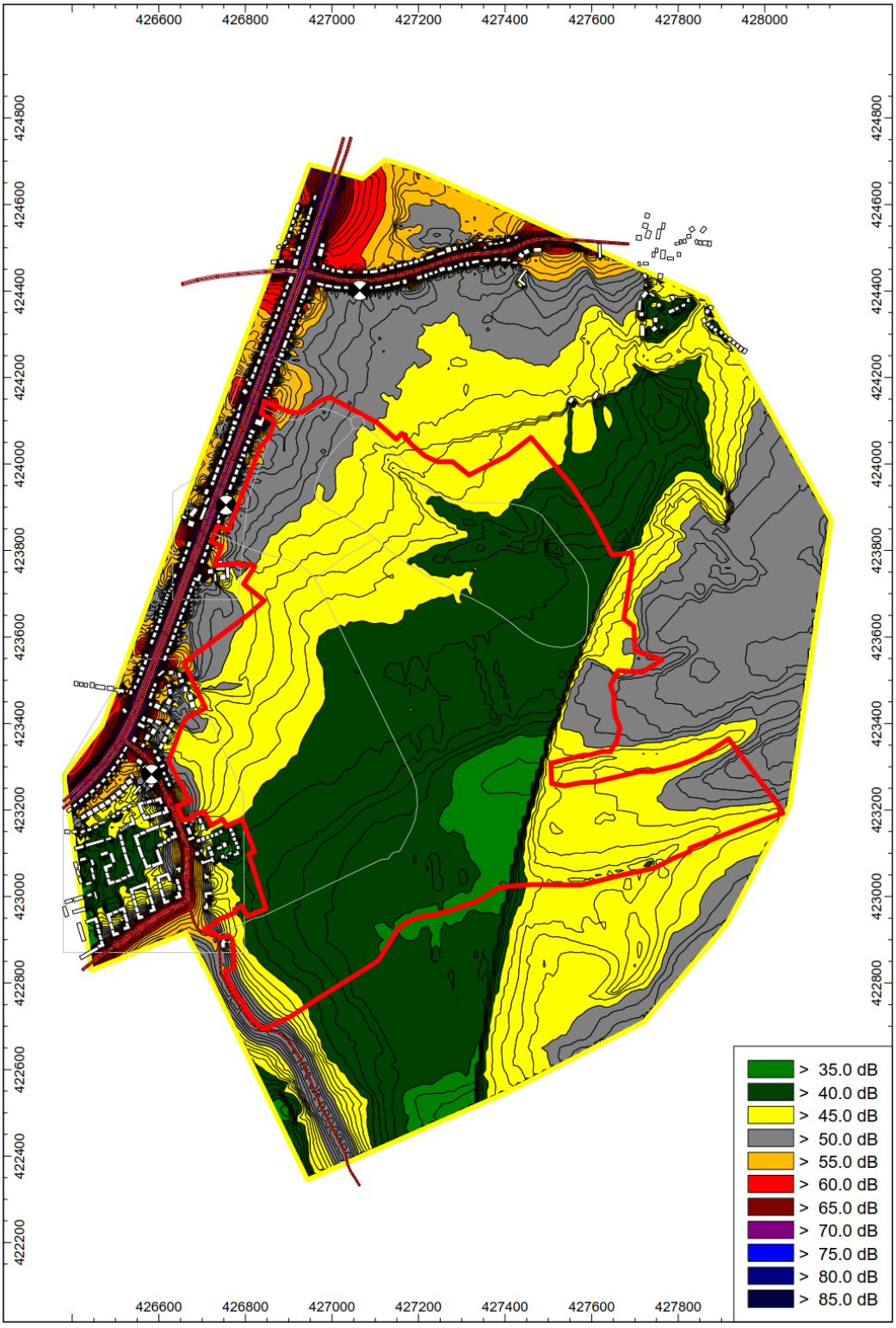

	Figure:	**Figure 9. 2**		
	Title:	**DMBY 2019**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/2020**	**Scale:**	**None**

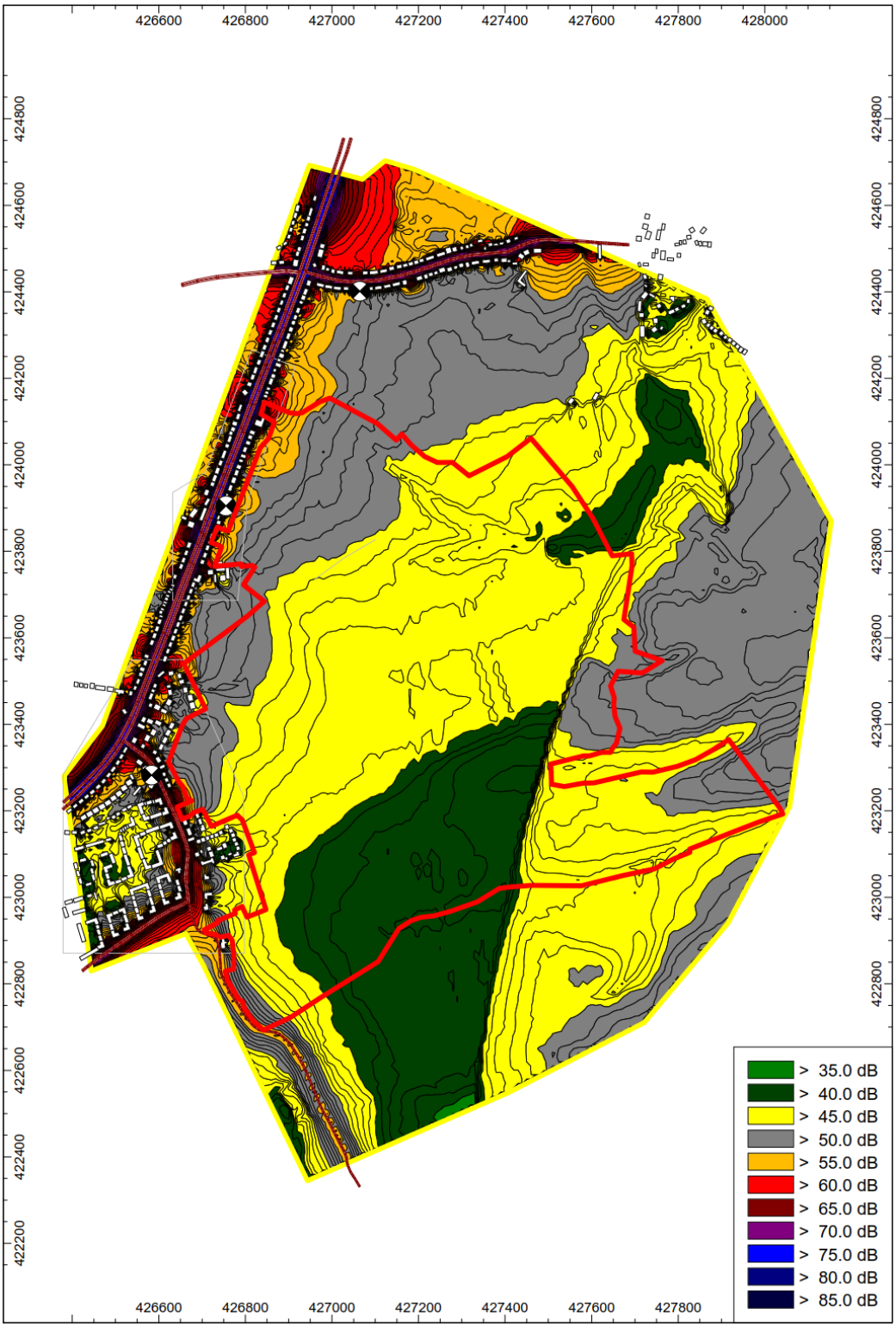

	Figure:	**Figure 9. 3**		
	Title:	**DSCY 2030**		
	Project:	**Leeds Road, Chidswell**		
	Date:	**26/02/2020**	**Scale:**	**None**

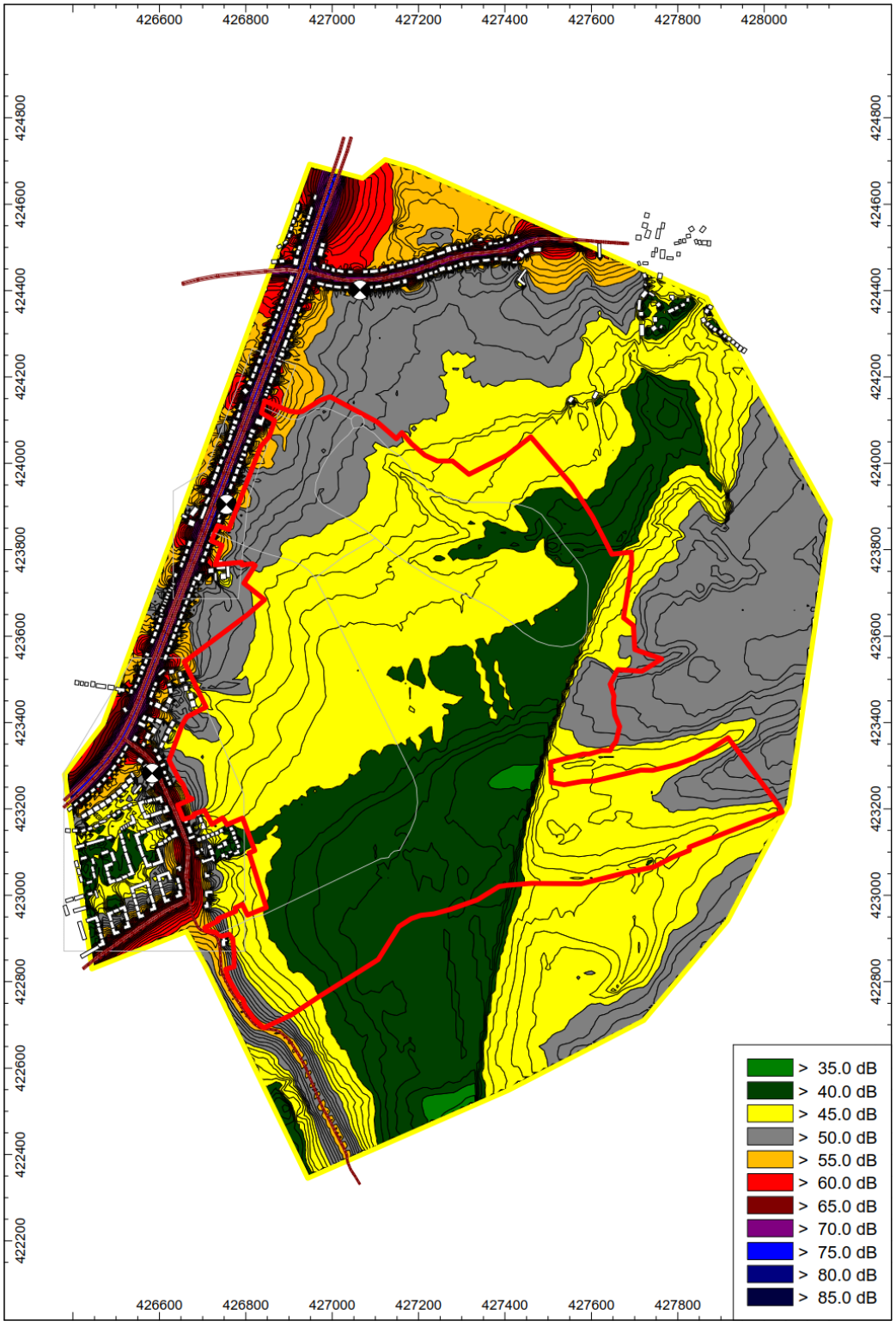

Figure:	**Figure 9. 4**			
Title:	**DMCY 2030**			
Project:	**Leeds Road, Chidswell**			
Date:	**26/02/2020**	**Scale:**	**None**	

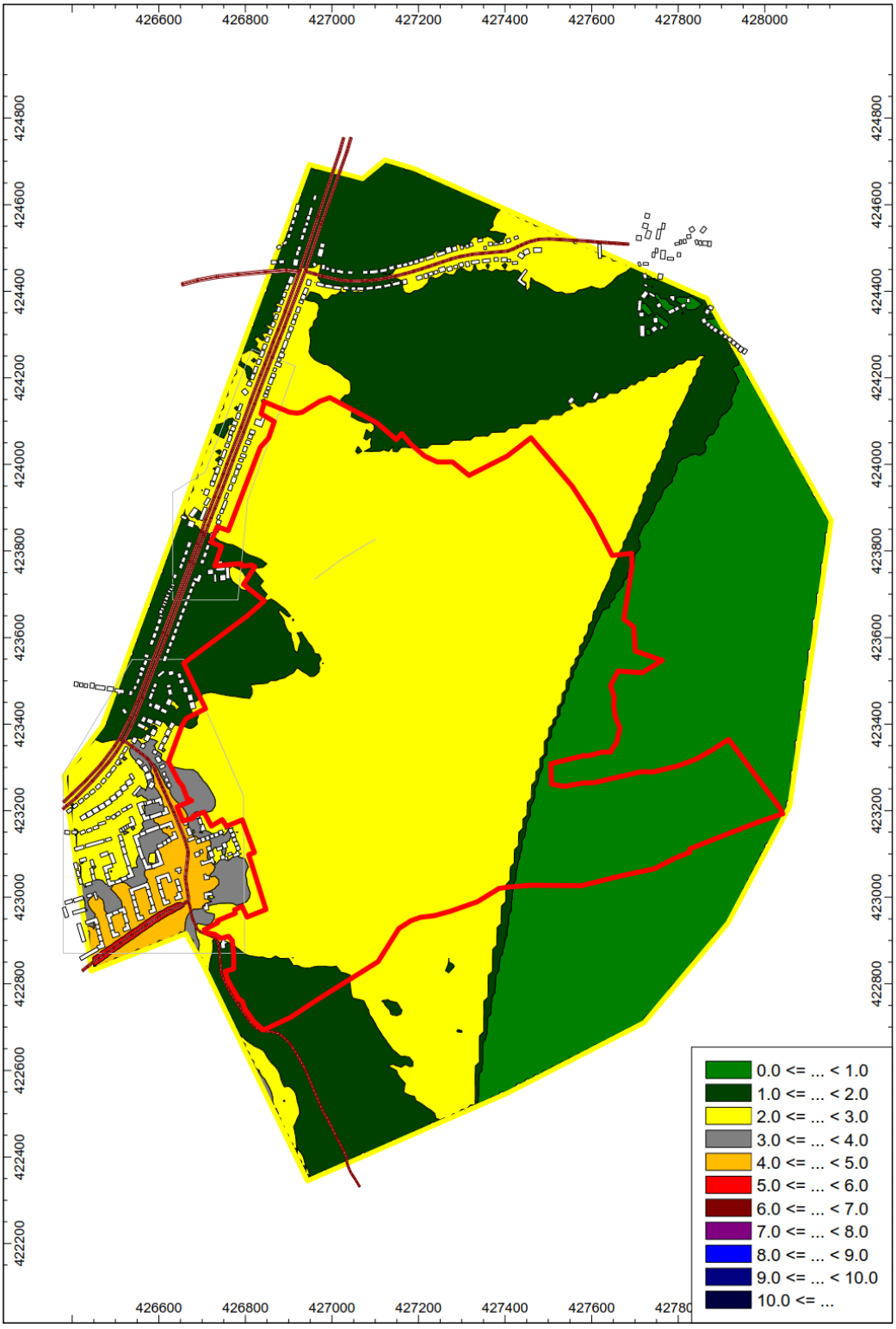

Figure:	**Figure 9. 5**
Title:	**Long term DSCY – DMBY**
Project:	**Leeds Road, Chidswell**

	Date:	26/02/2020	Scale:	None

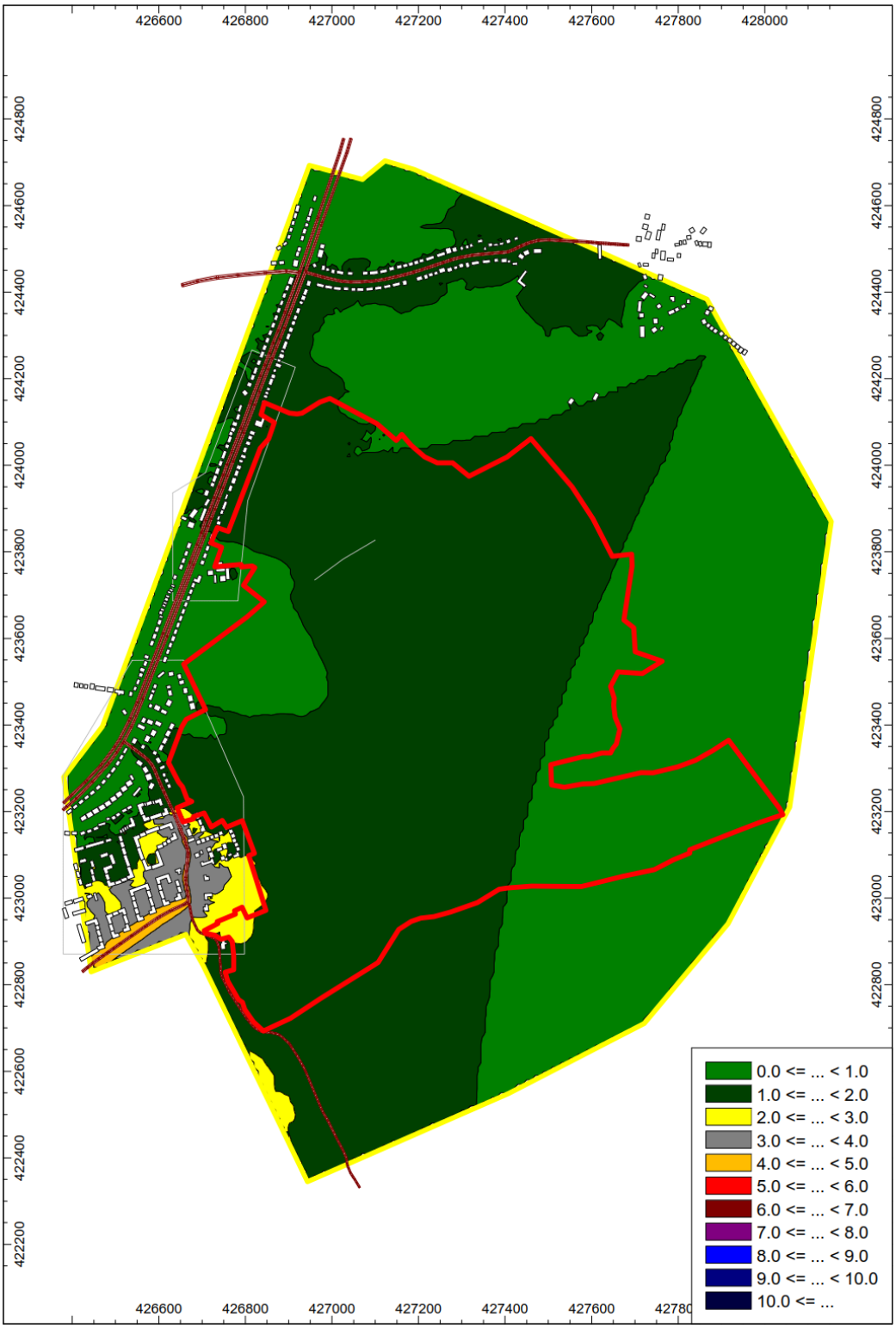

	Figure:	Figure 9. 6		
	Title:	Non-project change DMCY – DMOY		
	Project:	Leeds Road, Chidswell		
	Date:	26/02/2020	Scale:	None

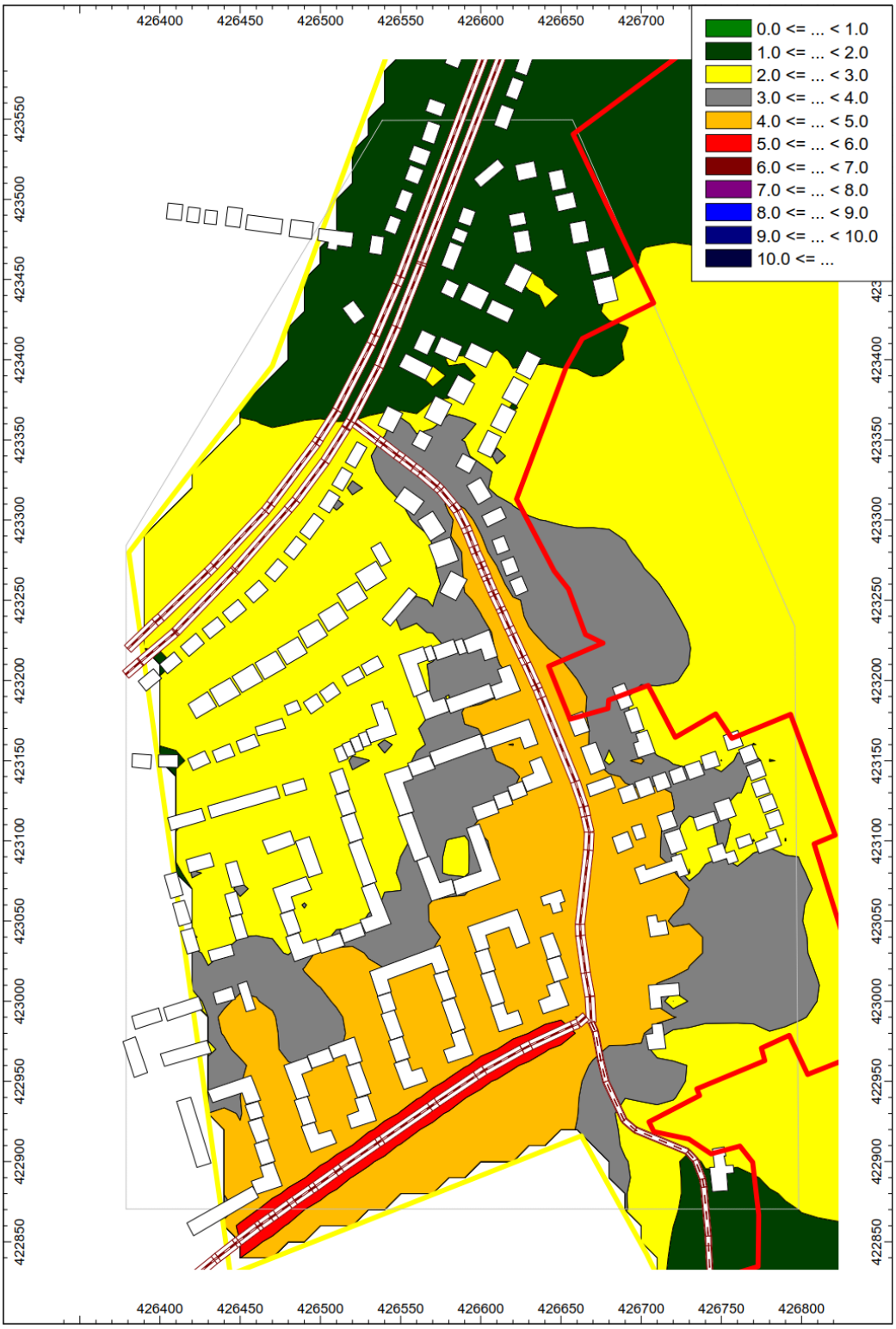

Figure:	**Figure 9. 7**		
Title:	**Long term DSCY – DMBY, Chidswell Ln, with proposed traffic control measure**		
Project:	**Leeds Road, Chidswell**		
Date:	**26/02/2020**	**Scale:**	**None**

Appendix 9.3: Glossary and abbreviations

Sensitive receptor

9.180 Receptors which are potentially sensitive to noise, such as residential dwellings.

Decibel

9.181 This is the unit of measurement used for sound pressure levels and noise levels are usually quoted in decibels (dB). The decibel scale is logarithmic rather than linear.

A-weighting

9.182 In addition to its non-linear amplitude response, the human ear has a non-linear frequency response; it is less sensitive at low and high frequencies and most sensitive in the range 1 kHz to 4 kHz (cycles per second). The A-weighting is applied to measured sound pressure levels so that these levels correspond more closely to the subjective response. A-weighted noise levels are often expressed in dB(A).

L_{A10} index

9.183 LA10 is the A-weighted sound level in dB that is exceeded 10% of the measurement period. This is the standard index used within the UK to describe traffic noise.

$L_{A10,18hr}$ index

9.184 The LA10,18h noise level is arithmetic mean of all the levels of LA10 during the period from 06:00 to 24:00. From research it has been found that subjective response to road traffic noise is closely linked to higher noise levels experienced and is correlated well with the LA10,18h index.

L_{Aeq} index

9.185 The equivalent continuous sound level (L_{Aeq}) is the level of a notional steady sound, which at a given position and over a defined period of time, would have the same A-weighted acoustic energy as the fluctuating noise.

L_{Amax} index

9.186 The maximum A-weighted level measured during a given time period

L_{night}

9.187 A façade noise index derived from the $L_{A10,18hr}$ using the TRL conversion method.

Façade sound level

9.188 A facade sound level is that determined 1 metre in front of a building façade. Sound is reflected from hard surfaces in a similar manner to light by a mirror and the effect is to produce a slightly higher (about 2.5 dB) sound level than would occur if the building was not there.

Free-field sound level

9.189 The sound level which is measured or calculated, in the open, without any reflections from nearby surfaces.

DMRB

9.190 Design Manual for Roads and Bridges

CRTN

9.191 Calculation of Road Traffic Noise

DMCY

9.192 Do-minimum completion year scenario

DSCY

9.193 Do-something completion year scenario

DMFY
9.194 Do-minimum future year scenario

Do-minimum
9.195 Scenario without the project

Do-something
9.196 Scenario with the project

Long term
9.197 More than 10 years after the baseline year

Non-project noise change
9.198 Noise change based on the DMOY against DMFY scenario, with no project impementation

HGV
9.199 Heavy goods vehicles

PPV
9.200 Peak particle velocity

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This report has been prepared for the CC Projects, a subsidiary company of the Church Commissioners for England, and on the understanding that it will be made publically available.

The information contained within this report is provided to assist CC Projects with this Application for Outline Planning Permission. The report makes use of a range of third party data sources. Whilst every reasonable care has been taken in compiling this report, Deloitte LLP cannot guarantee its accuracy.