

The Great Grid Upgrade

Chesterfield to Willington

Preliminary Environmental Information Report

Volume 3: Appendix 14A Baseline Noise Survey Data

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nationalgrid

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14A. Baseline Noise Survey Data

14A.1 Introduction

- 14A.1.1 This appendix has been produced to support **Chapter 14 Noise and Vibration in Volume 1** of the Preliminary Environmental Information Report (PEIR). It presents results of the baseline noise survey conducted for the Chesterfield to Willington Project (the Project).
- 14A.1.2 Noise monitoring data from two locations representative of noise sensitive receptors (NSRs) near the proposed new 400 kilovolt (kV) Chesterfield Substation are included, collected in 2024. This was for the purpose of a Town and Country Planning Application for a separate National Grid project (Chesterfield to High Marnham), distinct from this Project. In addition, baseline noise surveys have been conducted at nine locations representative of NSRs within the Study Area for use within the construction noise assessment for the Project.
- 14A.1.3 The PEIR presents the baseline noise levels from the noise surveys undertaken to date. Further requirement for additional baseline noise surveys will be agreed in consultation with the local planning authorities to support the preparation of the Environmental Statement.

14A.2 Noise Survey Methodology

Introduction

- 14A.2.1 Noise monitoring was carried out in accordance with the principles outlined in:
- BS 7445-1:2003. Description and Measurement of Environmental Noise - Guide to Quantities and Procedures (BS 7445) (Ref 14A.1);
 - BS 4142. 2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142) (Ref 14A.2); and
 - BS 5228 (2009) + A1 (2014): Code of Practice for Noise and Vibration Control on Construction and Open Sites. Part 1 – Noise. (BS 5228) (Ref 14A.3).

Survey Procedure

Long-term measurements

- 14A.2.2 Noise monitoring data from two locations representative of NSRs near the proposed new Chesterfield Substation are included, collected in 2024, for the purposes of the separate Chesterfield to High Marnham project.
- 14A.2.3 Long-term unattended noise measurements were undertaken over the period Tuesday 13 August 2024 to Friday 23 August 2024 at the monitoring locations presented in **Table 14A.1**. The survey locations are shown in **Figure 14.1 Baseline Monitoring Locations and Study Area**.

Table 14A.1: Locations of long-term noise monitoring

Monitoring Location	Location Description	Coordinates British National Grid (BNG)		Monitoring Date and Time
		X (Easting)	Y (Northing)	
ML1	South of the existing National Grid Chesterfield Substation	440946	369585	13 August 2024 10:45am to 23 August 2024 10:00am
ML2	West of the existing National Grid Chesterfield Substation	440746	369955	

14A.2.4 The measurements were made using Class 1 sound level meters (SLM) calibrated as per the requirements in BS 4142. The microphones were mounted on tripods and positioned approximately 2 m above ground level.

14A.2.5 A field calibration check was carried out before and after the survey in accordance with section 6.1 of BS 4142. The drift noted was less than 0.1 dB in each case.

14A.2.6 Noise monitoring data for periods with wind gusts with speeds higher than 4 m/s or periods of rainfall were excluded from the dataset used in this assessment.

Short-term measurements

14A.2.7 Short-term attended noise monitoring was undertaken on Monday 9 June and Tuesday 10 June 2025. The noise survey was conducted at nine positions (marked as P1 to P9 on **Figure 14.1 Baseline Monitoring Locations and Study Area**), representative of nearby receptors within the construction noise Study Area for the Project.

14A.2.8 The calibration of the SLM was verified at both the beginning and end of every measurement session. No significant drift was observed during the measurement period. The SLM had undergone laboratory calibration within the previous 24 months, and the acoustic calibrator had been laboratory calibrated within 12 months of the survey.

14A.2.9 The measurements were undertaken for a total duration of one hour at each location.

14A.2.10 The microphone was mounted on a tripod and positioned 1.2 m to 1.5 m above ground level in accordance with the requirements of BS 7445.

14A.2.11 Weather conditions were observed during the setup and collection of the instrumentation. Weather conditions were dry with wind speeds less than 5 m/s throughout the monitoring period.

Noise Monitoring Equipment

14A.2.12 **Table 14A.2** summarises the noise monitoring equipment used for the noise surveys.

Table 14A.2: Noise monitoring equipment

Monitoring Location	Equipment Description	Manufacturer and Type No.	Serial No.	Calibration Due Date
ML1	Sound level meter	B&K 2250	3007834	21/03/2025
	Calibrator	B&K 4231	3001377	30/01/2025
ML2	Sound level meter	B&K 2250	3006183	23/03/2025
	Calibrator	B&K 4231	3001377	30/01/2025
P1 – P9	Sound level meter	01dB-METRAVIB Blue Solo	61331	10/10/2025
	Calibrator	Norsonic Type 1251	31460	10/10/2025

14A.3 Noise Survey Results

Long-Term Measurements

14A.3.1 A summary of measured sound levels is provided in **Table 14A.3**.

Table 14A.3: Summary of measured sound levels at long-term unattended locations

Monitoring Location	Description of Acoustic Environment	Start Date/Time	End Date/Time	Period	L _{Aeq,T} dB Logarithmic Average	L _{A90,T} dB
ML1	Dominated by traffic noise from the A617 direction	13 August 2024 10:45am	23 August 2024 10:00am	Daytime (07:00am – 11:00pm)	51	41
				Night-time (11:00pm – 07:00am)	46	34*
ML2	Dominated by traffic noise from the A617 direction. Distant transformer / humming sound from the existing National Grid Chesterfield Substation was also noted.			Daytime (07:00am – 11:00pm)	54	38**
				Night-time (11:00pm – 07:00am)	41	34*

*Based on the frequency of occurrence of L90 values as shown in **Image 14A.1** and **Image 14A.2**, but also takes into account observations and background levels obtained in the attended night-time survey

**Modal values adopted.

14A.3.2 Histograms of the night-time background sound levels at ML1 and ML2 are provided in **Image 14A.1** and **Image 14A.2** respectively. Background sound levels are generally lower at night than during the day, making the night-time period a worst-case for selecting a representative background level. Consequently, this report presents only the statistical analysis for the night-time period.

Image 14A.1: Histogram showing number of occurrences of LA_{90,15min} during the night-time at ML1

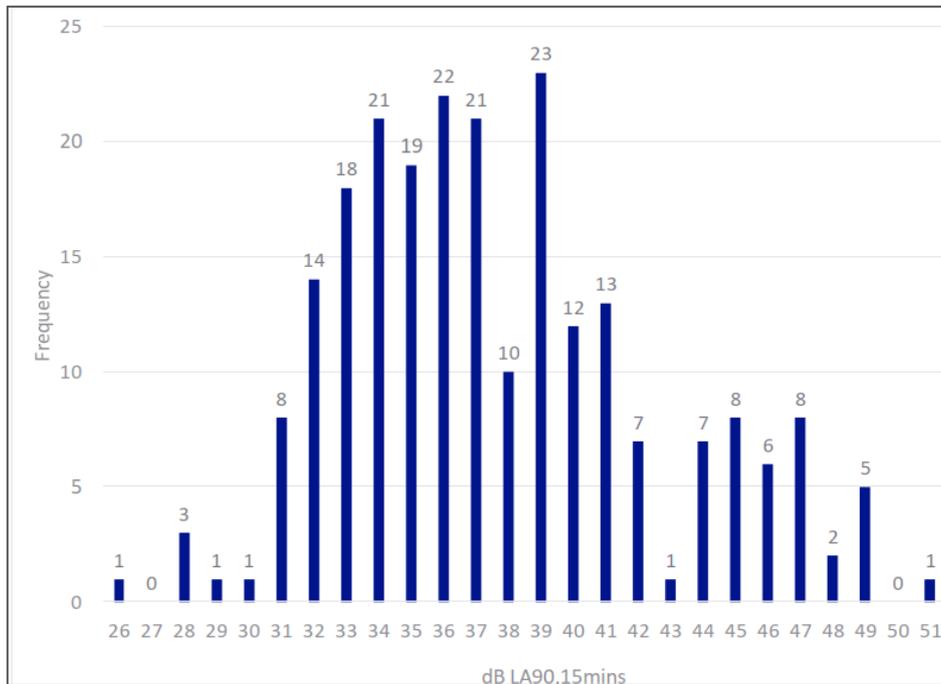
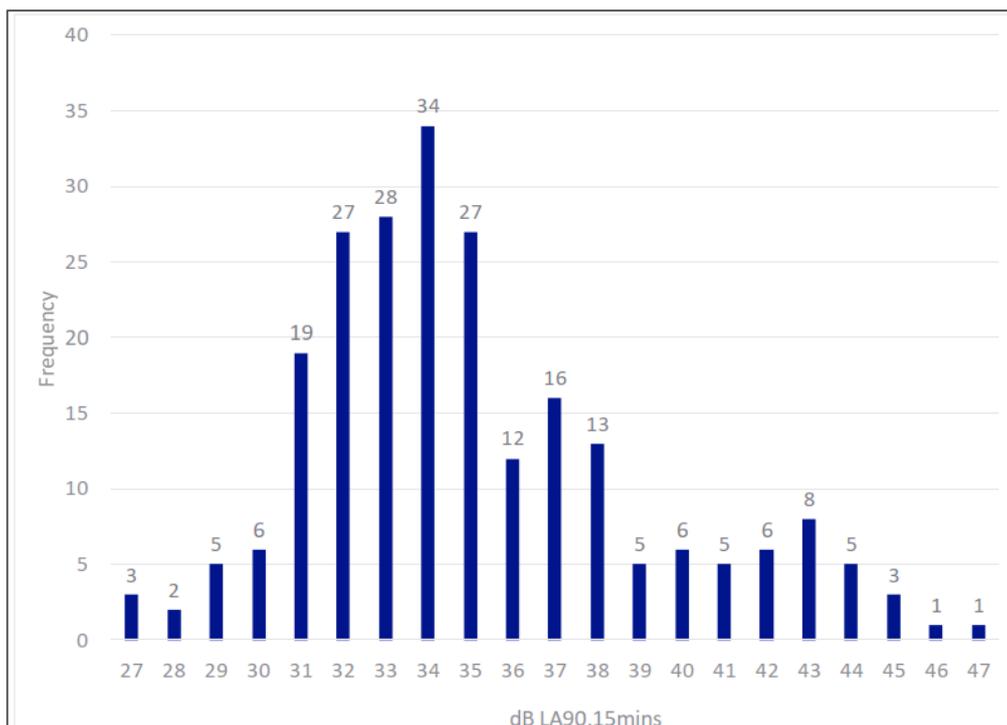


Image 14A.2: Histogram showing number of occurrences of LA_{90,15min} during the night-time at ML2



14A.3.3 A summary of measured sound levels is provided in **Table 14A.4** and the locations are illustrated in **Figure 14.1 Baseline Monitoring Locations and Study Area**.

Table 14A.4: Summary of measured sound levels at short-term attended locations

Monitoring Location	Description of Acoustic Environment	Start Date/Time	End Date/Time	L_{Aeq,T} dB	L_{A90,T} dB
P1 (BNG: 443922, 366391)	Main source of ambient sound was road traffic on A6175 Heath Road to the south. There were also contributions from vehicles parking up outside the school and aircraft flyovers.	09 June 2025 4:24pm	09 June 2025 5:24pm	60	55
P2 (BNG: 443255, 362807)	Main source of ambient sound was road traffic on Hardstoft Road to the south. There were also contributions from aircraft flyovers and birdsong.	09 June 2025 2:59pm	09 June 2025 3:59pm	60	41
P3 (BNG: 443344, 360350)	Main source of ambient sound was road traffic on B6014 further north. There were also contributions from children playing at Tibshelf school to the north, aircraft flyovers and birdsong.	09 June 2025 12:59pm	09 June 2025 1:59pm	49	42
P4* (BNG: 442186, 358273)	Main source of ambient sound was children playing at the neighbouring Westhouses Primary School. There were also contributions from aircraft flyovers and distant road traffic noise.	09 June 2025 12:14pm	09 June 2025 12:44pm	49	37
		09 June 2025 2:09pm	09 June 2025 2:39pm	49	40
P5 (BNG: 438202, 351509)	Main source of ambient sound was distant road traffic on the A610 to the north. There were also contributions from vehicle movements on Main Road and aircraft flyovers.	09 June 2025 10:39am	09 June 2025 11:39am	49	42
P6 (BNG: 442829, 334523)	Main source of ambient sound was road traffic noise along B5010 and A52.	10 June 2025 2:28pm	10 June 2025 3:28pm	61	47
P7 (BNG: 442905, 332392)	Main sources of ambient sound included occasional vehicle passbys and aircraft flyovers.	10 June 2025 1:03pm	10 June 2025 2:03pm	48	41

Monitoring Location	Description of Acoustic Environment	Start Date/Time	End Date/Time	L _{Aeq,T} dB	L _{A90,T} dB
P8 (BNG: 438675, 329463)	Main source of ambient sound included road traffic noise on the A50 to the south. Other noise sources included some distant construction noise and car vehicle movements on local roads.	10 June 2025 11:37am	10 June 2025 12:37pm	57	54
P9 (BNG: 429764, 328824)	Main source of ambient sound included road traffic noise on Findern Lane to the south. Other noise sources included train passbys (including horn) and aircraft flyovers.	10 June 2025 10:07am	10 June 2025 11:07am	55	49

* Split into two half hour measurements due to noise from outdoor play at the school.

Photographs of Short-Term Locations

14A.3.4 Photographs of the short-term survey locations P1 to P9 are provided in **Image 14A.3** to **Image 14A.11**.

Image 14A.3: Survey location P1 – Heath Road, Heath, Chesterfield (North East Derbyshire District Council)



Image 14A.4: Survey location P2 – Hardstoft Road, Pilsley, Chesterfield (North East Derbyshire District Council)



Image 14A.5: Survey location P3 – Kestrel Close, Tibshelf, Alfreton, Derbyshire (Bolsover District Council)



Image 14A.6: Survey location P4 – Alport Terrace, Westhouses, Alfreton (Bolsover District Council)



Image 14A.7: Survey location P5 – Main Road, Lower Hartshay, Ripley (Amber Valley Borough Council)



Image 14A.8: Survey location P6 – Nottingham Road, Borrowash, Derby (Erewash Borough Council)



Image 14A.9: Survey location P7 – Main Street, Ambaston, Derby (South Derbyshire District Council)



Image 14A.10: Survey location P8 – Portland Lane, Chellaston, Derby (South Derbyshire District Council)



Image 14A.11: Survey location P9 – Findern Lane, Willington, Derby (South Derbyshire District Council)



Summary

- 14A.3.5 This appendix presents the methodology and results of the noise survey conducted as part of the Project.
- 14A.3.6 A noise survey has been conducted at nine locations representative of NSRs for use within the construction noise assessment for the Project. The survey has been conducted in accordance with current guidance and good practice, including BS 7445.
- 14A.3.7 In addition, noise monitoring data from two locations representative of NSRs near the proposed new Chesterfield Substation are included, obtained in 2024. This was for the purpose of an application for a separate National Grid project (Chesterfield to High Marnham), distinct from this Project.
- 14A.3.8 **Table 14A.5** presents a summary of representative ambient and background sound levels measured during the daytime periods at the survey locations.

Table 14A.5: Summary of ambient and background sound levels

Monitoring Location	Local Authority	Start Date / Time	End Date / Time	L _{Aeq,T} dB	L _{A90,T} dB
ML1	North East Derbyshire District Council	13 August 2024	23 August 2024	51	41 (daytime)
				46	34 (night-time)
ML2	North East Derbyshire District Council	13 August 2024	23 August 2024	54	38 (daytime)
				41	34 (night-time)
P1	North East Derbyshire District Council	09 June 2025 4:24pm	09 June 2025 5:24pm	60	55
P2	North East Derbyshire District Council	09 June 2025 2:59pm	09 June 2025 3:59pm	60	41
P3	Bolsover District Council	09 June 2025 12:59pm	09 June 2025 1:59pm	49	42
P4	Bolsover District Council	09 June 2025 12:14pm	09 June 2025 12:44pm	49	37
		09 June 2025 2:09pm	09 June 2025 2:39pm	49	40
P5	Amber Valley Borough Council	09 June 2025 10:39am	09 June 2025 11:39am	49	42
P6	Erewash Borough Council	10 June 2025 2:28pm	10 June 2025 3:28pm	61	47
P7	South Derbyshire District Council	10 June 2025 1:03pm	10 June 2025 2:03pm	48	41
P8	South Derbyshire District Council	10 June 2025 11:37am	10 June 2025 12:37pm	57	54
P9	South Derbyshire District Council	10 June 2025 10:07am	10 June 2025 11:07am	55	49

References

- Ref 14A.1 British Standards Institution (2003). BS 7445-1:2003 Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures.
- Ref 14A.2 British Standards Institution (2019). BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound.
- Ref 14A.3 British Standards Institution (2014). BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise.

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