

The Great Grid Upgrade

Chesterfield to Willington

Preliminary Environmental Information Report

Volume 3: Appendix 13A Baseline Air Quality Monitoring Surveys
and Results

March 2026

nationalgrid

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13A. Baseline Air Quality Monitoring Surveys and Results

- 13A.1.3 A 12-month baseline air quality monitoring survey is currently being undertaken to determine NO₂ concentrations at 20 locations representative of 'worst case' (i.e., roadside) exposure within the draft Order Limits adjacent to routes anticipated to be used by construction and operational vehicles. The locations are shown in **Figure 13.1 Baseline Air Quality and Constraints** and given in **Table 13A.1**. The surveys commenced in June 2025 and tubes have been deployed across the administrative areas of Chesterfield Borough Council, North East Derbyshire District Council, Bolsover District Council, Erewash Borough Council, Derby City Council, Amber Valley Borough Council and South Derbyshire District Council.
- 13A.1.4 Tubes have been deployed consistent with the Department for Environment, Food and Rural Affairs' (Defra) LAQM.TG(22) guidance (Ref 13A.1) considering the rural nature of the study area and other practical constraints such as land access and the availability of suitable street furniture, such as signposts, lamp posts, telegraph poles, etc., on which to secure the tubes. The deployment of diffusion tubes is made up of 19 individual diffusion tubes, one triplicate set of tubes co-located at the Chesterfield Roadside Automatic Urban and Rural Network (AURN) continuous automatic monitoring station and a travel blank.
- 13A.1.5 Measurements representative of exposure within 200 m of routes that could be used by construction traffic have been undertaken at:
- 13 no. residential receptors: site IDs 2, 5, 6, 7, 9, 11, 12, 14, 16, 17, 18, 19 and 20 (given in **Table 13A.1**);
 - four schools: site ID 4 (Heath Primary School), site ID 8 (Tibshelf Community School), site ID 10 (Wessington Primary School) and site ID 15 (Morley Primary School); and
 - three non-statutory designated sites: site ID 3 (Grassmoor Country Park Local Wildlife Site (LWS)), site ID 10 (Wessington Green LWS) and site ID 13 (Buckland Hollow Disused Railway LWS).
- 13A.1.6 A review of monitoring data was undertaken to determine the type of diffusion tube used by each local authority. Six of the seven local authorities use diffusion tubes coated with a 50 per cent triethanolamine (TEA) in acetone. Only Erewash Borough Council uses tubes coated with 20 per cent TEA in water. Therefore, to reflect this local variation, and to ensure that the data can be compared with measurements collected by the respective local authorities, 20 per cent TEA diffusion tubes have been deployed at the two monitoring locations (15 and 17) within the administrative area of Erewash Borough Council (as shown in **Figure 13.1 Baseline Air Quality and Constraints**) while diffusion tubes coated in 50 per cent TEA in acetone have been used at all other monitoring locations.
- 13A.1.7 The diffusion tubes have been deployed approximately 2 m above ground level and secured to existing street furniture using zip ties and tube clips. The coordinates and distance to the road of each tube was recorded following deployment. Tubes are

exposed for about four to five weeks in accordance with Defra's NO2 Diffusion Tube Monitoring Calendar (Ref 13A.2). This ensures that the exposure periods follow those used by the respective local authorities. Following exposure, the exposed tubes have been collected and replaced with 'fresh' tubes. Exposed tubes have been returned to the supplying laboratory (Gradko Environmental, UKAS No. 2187) for analysis each month. A full chain of custody has been maintained throughout.

- 13A.1.8 Where collected tubes were found on the floor or containing insects, including spider webs, the results have been rejected. This approach is consistent with Defra Guidance (Ref 13A.3). A summary of the baseline monitoring data collected between June and October 2025 is given in **Table 13A.1**.

Table 13A.1: Summary of monthly baseline monitoring survey data

Site ID	Site Location	Approximate Distance from Draft Order Limits (km)	Height (m)	Uncorrected Monthly Mean NO ₂ Concentration (µg/m ³)				
				J	J	A	S	O
1	Chesterfield AURN, Chatsworth Road	4.1	2.2	10.1	10.3	11.6	12.6	13.5
2	Spital Lane	0.3	2.2	ND [†]	9.2	ND [†]	11.5	11.8
3	Mansfield Road (B6039)	0.2	2.2	6.2	7.8	ND [†]	10.7	ND [†]
4*	Slack Lane	0.1	2.2	ND	ND	14.0	ND	ND
5	Williamthorpe Road	1.4	2.2	10.7	14.3	ND [†]	ND [†]	14.5
6	Little Morton Road	1.8	2.2	7.8	8.0	ND [†]	10.3	ND [†]
7	Chesterfield Road	0.3	2.1	12.3	14.3	ND [†]	13.5	16.0
8	Doe Hill Lane (B6014), Tibshelf	0.1	2.2	9.5	13.3	13.7	16.5	15.2
9	A61	2.7	2.2	9.4	9.0	12.3	13.6	15.1
10	Wessington, Matlock Road (A615)	2.4	2.2	9.4	ND [†]	ND [†]	11.6	13.3
11	Wingfield Road (A615)	0.5	2.1	20.6	24.3	23.9	21.4	24.1
12	Chesterfield Road (B6013), Oakerthorpe	0.4	2.2	8.1	10.2	ND [†]	13.8	ND [†]
13	A610	0.4	2.2	21.5	19.9	ND [†]	ND [†]	ND [†]
14	Belper Road (A609)	0	2.1	16.0	17.5	ND [†]	18.0	20.4
15	Main Road (A608)	0.1	2.1	10.3	ND [†]	ND [†]	16.7	15.3
16	Dale Road	0.4	2.2	15.0	11.4	ND [†]	19.6	ND [†]

Site ID	Site Location	Approximate Distance from Draft Order Limits (km)	Height (m)	Uncorrected Monthly Mean NO ₂ Concentration (µg/m ³)				
				J	J	A	S	O
17**	254 Nottingham Road (B5010)	0.2	ND	ND	ND	ND	ND	ND
18	London Road	1.2	2.2	10.5	11.6	13.0	14.6	15.0
19	55 Swarkestone Road (A5132)	0.6	2.0	13.3	14.3	14.6	ND [†]	15.4
20	170 Twyford Road (A5132), Willington	0.1	2.2	6.0	11.4	ND [†]	ND [†]	14.1

Notes:
 ND[†] denotes data rejected as collected tube found on floor, containing spider web, and so on.
 ND denotes no data.
 * Diffusion tube ID 4 was installed at this location in June 2025, however, with the exception of August, the tube was found to be missing at the end of each month when the tubes were collected.
 ‡ The street furniture (lamp post) used for installing diffusion tube ID 13 was found to be missing along with the diffusion tube in August 2025; consequently, diffusion tube ID 13 was not installed in September 2025. It was redeployed on an adjacent piece of street furniture in November 2025.
 ** Following the initial baseline air quality site survey in June 2025, it was found that the location selected for tube 17 could not be safely accessed; consequently, a revised location was selected (X = 442699 m, Y = 334495 m). At the time of writing, attempts are being made to update the permission to install a tube at the revised location.

References

- Ref 13A.1 Defra (2022). Local Air Quality Management Technical Guidance LAQM.TG (22) [online]. Available at: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf> [Accessed 18 June 2025].
- Ref 13A.2 Defra (2025). NO2 Diffusion Tube Monitoring Calendar [online]. Available at: <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-monitoring-calendar/> [Accessed 18 June 2025].
- Ref 13A.3 Defra (2009). Diffusion Tubes for Ambient NO2 Monitoring: Practical Guidance for Laboratories and Users [online]. Available at: https://laqm.defra.gov.uk/documents/0802141004_NO2_WG_PracticalGuidance_Isue1a.pdf [Accessed 18 June 2025].

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