East Midlands Gateway
Phase 2 (EMG2)

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ENVIRONMENTAL STATEMENT

Volume 2 Technical Appendices

Appendix 8E

Diffusion Tube Monitoring Programme

July 2025

The East Midlands Gateway Phase 2
and Highway Order 202X and The East Midlands Gateway
Rail Freight and Highway (Amendment) Order 202X

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Appendix 8e – NO_2 Monitoring Programme

This Appendix sets out the results of an NO_2 monitoring survey carried out at roadside locations in the vicinity of the EMG2 Project.

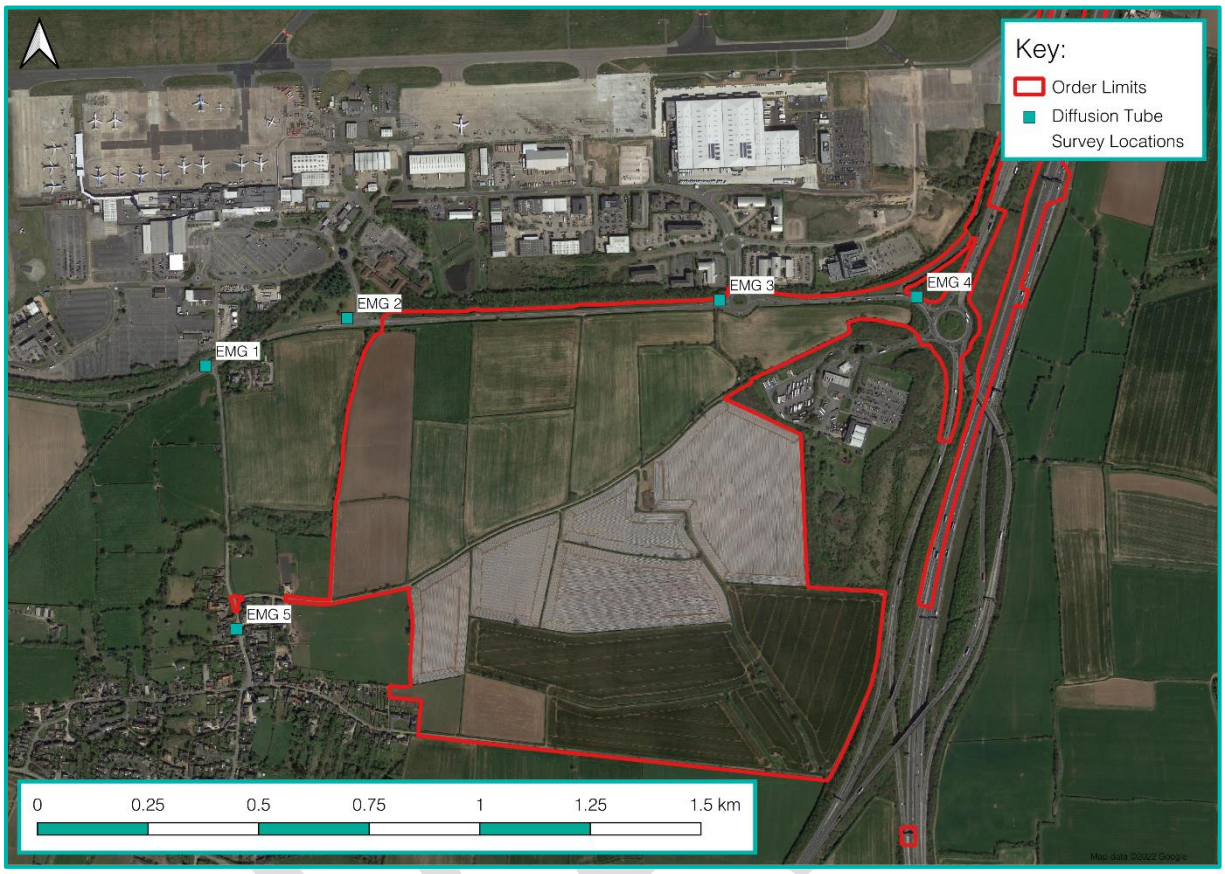
The NO_2 monitoring survey was undertaken from the 6th June 2024 for a period of 6 months. The survey consisted of four duplicate locations along the A453 and one additional monitoring location in Diseworth, along Grimes Gate, as illustrated in Figure 8e.1 and set out below:

- EMG1: A453 Roadside, near the junction with Grimes Gate;
- EMG2: A453 Roadside, near the junction for access to the Leonardo Hotel East Midlands Airport;
- EMG3: A453 Roadside, near the roundabout with Beverley Road;
- EMG4: A453 Roadside near the Finger Farm Roundabout; and
- EMG5: Adjacent to the Diseworth Church of England Primary School

Table 8e.1: Diffusion Tube Survey Locations

Site ID	X	Y	Z
EMG1	445247.2	325285.9	2
EMG2	445567.8	325393.8	2
EMG3	446409.0	325433.0	2
EMG4	446855.2	325440.4	2
EMG5	443509.2	322258.2	2

Figure 8e.1: Diffusion Tube Survey Locations



The diffusion tubes were prepared using a solution of 50% tri-ethanolamine (TEA) in acetone and were supplied and analysed by SOCOTEC. These details are consistent with those tubes that were deployed by NWLDC in 2022.

The diffusion tubes were changed on a monthly basis in accordance with Defra's national diffusion tube calendar and returned to the supplier for analysis.

One tube was used as a travel blank in accordance with the guidance documentation.

The results of the diffusion tube survey are presented below in **Table 8e.2**. The second column presents the average NO_2 concentrations over the monitoring period, as provided from the analysis laboratory.

The third column presents the 2023 annualised NO2 concentrations, following an annualisation process using the following closest AURN sites:

- Burton-on-Trent Horninglow;
- Leicester University;
- Nottingham Kenmore; and
- Stoke-on-Trent Centre.

The fourth column shows the bias adjusted NO_2 concentrations. A secondary correction has been applied to the results to adjust for 'bias', which accounts for the potential differences between data collected using automated and non-automated techniques.

A nationally derived Bias Adjustment Factor (BAF) of 0.80 was used to correct the raw results. To note, this factor was taken from the DEFRA National Bias Adjustment Factors[1] webpage for the relevant diffusion tube laboratory (SOCOTEC Didcot) and Method (50% TEA in acetone). This process was undertaken when the latest revision of the factors were the March 2025 issue. It is noted that since the March 2025 issue, the SOCOTEC laboratories diffusion tube bias adjustment factors have been revised due to "*abnormally low results for tubes exposed in December*", providing a new factor of 0.78. It is considered that this change is largely immaterial when considering the results of the diffusion tube survey. Furthermore, it should be noted that the diffusion tube survey undertaken did not extend into December therefore the data abnormality would not have affected this survey.

The fifth column shows the concentrations with a back-calculation factor applied to generate a result for 2023, an appropriate verification year in line with the latest results from the local authorities considered for the verification processes.

Table 8e.2: NO_2 Concentrations at Diffusion Tube Survey Locations (µg/m^3)

Site ID	Monitoring Period Average	Annualised	Annualised and Bias Adjusted	Back-calced to 2023
EMG1	24.4	24.6	19.6	20.9
EMG2	22.6	22.8	18.2	19.3
EMG3	31.5	31.6	25.3	26.9
EMG4	43.8	44.1	35.3	37.4
EMG5	11.8	11.9	9.5	10.1
Travel Blank	< 0.06			
Objective	40			

The results from the diffusion tube survey indicated that typical NO_2 concentrations at various strategic locations around the ranged from 10.1 to 37.4 µg/m^3. This indicated that all NO_2 concentrations complied with the NO_2 annual mean objective.

According to DEFRA's LAQM TG (22)[2] guidance, exceedance of the one-hour NO_2 mean objective is generally unlikely to occur where annual mean concentrations do not exceed 60 µg/m^3. Annual mean NO_2 concentrations at all monitoring locations fall below 60 µg/m^3 and therefore it is anticipated that there will not be any exceedance of the one-hour mean NO_2 mean objective.

[1] DEFRA, 2025. National Bias Adjustment Factors. Available at: National Bias Adjustment Factors | LAQM

[2] Department for Environment Food & Rural Affairs, 2025. Local Air Quality Management Technical Guidance (TG22).