

Air quality monitoring results

2025

This document provides the results of air quality monitoring undertaken at and near to Manchester Airport in 2025. It also explains where and how we monitor air quality. Information is also provided about Government's health-based air quality objectives.

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Air quality monitoring at Manchester Airport

Overview

We provide information about air quality and airport-related emissions on our website www.manchesterairport.co.uk/emissionsinfo. Here you can find our Emissions Information Pack which gives information on emissions from activities associated with Manchester Airport and how they contribute to local air quality. More information about air quality is also provided in our Sustainable Development Plan. The Sustainable Development Plan sets the airport's air quality objective which is to "closely monitor local air quality and seek ways to reduce emissions from our operations".

This document summarises the results of air quality monitoring undertaken at and near to Manchester Airport in 2025. It compares measured concentrations of air pollutants against health-based air quality objectives which are set by Government.

Methodology

We have been measuring air quality at the airport since the 1990's. We do this in two ways:

Continuous monitoring

Automatic analysers continuously measure real-time concentrations of air pollutants. These monitors are complex to install and operate, but allow detailed analysis of air quality, where this is required. Analysers are visited by service engineers at least once a month, and are independently calibrated twice a year. We undertake continuous air quality monitoring in partnership with Manchester City Council.

The [UK-Air](#) and [Air Quality England](#) websites provide near to real-time measurements of the following pollutants:

- nitrogen dioxide (NO₂)
- sulphur dioxide (SO₂)
- ozone (O₃)
- Particulate matter (PM₁₀ and PM_{2.5})

We used continuous monitoring equipment to measure air quality at Styal Road (Site 10) until January 2016, when the equipment moved to Daisy Bank Lane (Site 14) due to redevelopment at the old location.

Diffusion tubes

Diffusion tubes measure the average concentration of pollutants over longer periods of time. Pollutants are collected in an absorbent material within diffusion tubes which are chemically analysed at a laboratory to calculate the average concentration during the time that the tube was exposed.

Diffusion tubes are quick and easy to install compared to continuous air quality monitors. They are useful for cost effective monitoring of air quality over a long period of time. We use diffusion tubes to measure indicative concentrations of nitrogen dioxide (NO₂).

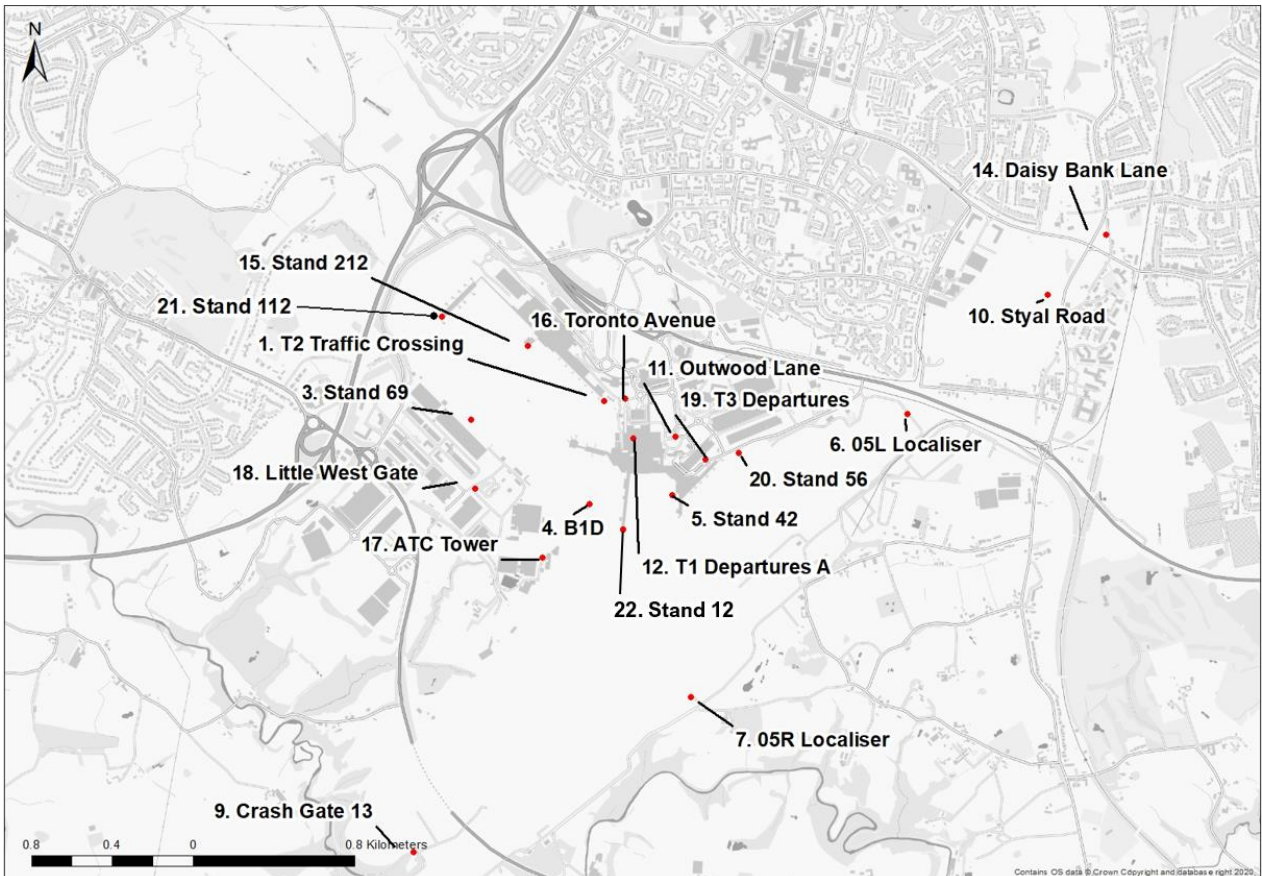
We have followed Government guidance and 'bias adjusted' the diffusion tube monitoring results we publish. This means that the results can be compared to other locations. We calculate our 'local bias adjustment factor' by co-locating three diffusion tubes at the independently calibrated Daisy Bank Lane continuous monitor. The bias adjustment factor is then applied to the results of our diffusion tube monitoring. The local bias adjustment has been compared against the most recent 'national bias adjustment factor' released by the Government's Department for Environment, Food and Rural Affairs (Defra) in March 2026. This step compares the laboratory's national diffusion tube performance against diffusion tubes co-located at the Daisy Bank Lane continuous monitoring site. The local bias adjustment resulted in a factor of 0.668 and the national bias adjustment is 0.78. In 2025, four of the diffusion tube triplicates located at Daisy Bank Lane showed a variation coefficient greater than 20%, where there is shown to be significant variation between the co-located diffusion tube triplicate results during the exposure period, and the data capture for the Daisy Bank Lane continuous monitoring site had a low data capture in January and February. Therefore, this year the national bias adjustment factor has been applied as the results are considered more representative compared to those using the local bias adjustment factor.

Following Government guidance, we also remove monitoring results which are unusually high or low. Removing 'outliers' in this way avoids annual air quality results from being skewed by unrepresentative results. All monitoring locations except one had sufficient data capture for the year for the results to be representative of the entire year ($\geq 75\%$). Due to a lack of data collected at T2 Traffic Crossing monitoring location, data has been annualised to account for seasonal variation. This process compares diffusion tubes with automatic continuous monitoring to remove any seasonal bias due to partial data collection of diffusion tubes. Whilst annualisation has improved the short-term monitoring period's representativeness of annual concentrations, this has increased uncertainty associated with the annual result compared to the prior year therefore these results should be used with caution.

In January 2025, the exposure period for eleven of the diffusion tubes were less than the recommended 3 to 5 week exposure period and in June, the exposure period for all diffusion tubes were also less than the recommended exposure period. Furthermore, in May, all diffusion tube locations exceeded the recommended exposure period of 3 to 5 weeks. As a result, a time weighted annual mean was calculated for each monitoring location to account for the reduced and extended diffusion tube exposure periods. The bias adjustment factor was then applied to the time weighted annual mean. The results for these diffusion tubes that were deployed outside the Defra schedule, some being underexposed and some overexposed should be used with caution.

Where we measure air quality

The locations where we currently monitor air quality are shown below. Diffusion tubes are used to monitor nitrogen dioxide (NO₂) at all locations. Both continuous monitoring and diffusion tubes are used at Site 14, Daisy Bank Lane.



Air quality objectives

The Government has set health-based air quality objectives. Local authorities have a responsibility to monitor air quality and put plans in place to meet health-based objectives in areas where members of the public may spend a significant amount of time. These locations are generally homes or care homes for example. Air quality objectives do not necessarily apply in a workplace, or at the airport itself as people only spend short times here.

Air quality objectives are set individually for different air pollutants. They apply to a calendar year, running from January to December. Some types of air pollution have more than one objective, although all must be met, these are often reported individually - for example:

- long-term averages which must be met over a whole year.
- short-term averages, such as hourly or daily averages, which cannot be exceeded more than a certain number of times a year.

What are $\mu\text{g}/\text{m}^3$?

Air quality is measured in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This is a measure of the weight of a pollutant in a space of air.

There are a thousand micrograms (μg) in a gram, or a billion micrograms in a kilogram.

A cubic meter (m^3) is a thousand liters of air.

One microgram per cubic ($1\mu\text{g}/\text{m}^3$) meter of pollutant is a billionth of a kilogram in a thousand liters of air.

Below are the air quality objectives for the pollutants we monitor.

Pollutant	Long-term annual objective (limit as an annual average)	Short term objective(s)
Nitrogen dioxide (NO_2)	$40 \mu\text{g}/\text{m}^3$	No more than 18 cases of an hourly average $> 200 \mu\text{g}/\text{m}^3$ each year
Particulate matter (PM_{10})	$40 \mu\text{g}/\text{m}^3$	No more than 35 cases of a daily average $> 50 \mu\text{g}/\text{m}^3$ each year
Particulate matter ($\text{PM}_{2.5}$)	$20 \mu\text{g}/\text{m}^3$	-
Sulphur dioxide (SO_2)	-	No more than 35 cases of a 15-minute average $> 266 \mu\text{g}/\text{m}^3$ each year No more than 24 cases of an hourly mean $> 350 \mu\text{g}/\text{m}^3$ each year No more than 3 cases of a daily mean $> 125 \mu\text{g}/\text{m}^3$ each year
Ozone (O_3)	-	Cases of 8hr mean $> 100 \mu\text{g}/\text{m}^3$, not to be exceeded on more than 10 days each year

Air quality monitoring results

Air quality recorded this year

The results of our air quality monitoring during 2025 are outlined below. The results also show whether health-based air quality objectives apply at that location, and if the objectives have been met at the relevant locations where objectives apply.

A comparison between concentrations measured in 2024 and 2025 show concentrations decreased at sixteen of the nineteen diffusion tube monitoring locations between 0.3% and 33.1%. Annual mean NO₂ concentrations increased at three diffusion tube monitoring locations between 1.4% and 1.8%. Manchester Airport served over 32 million passengers in 2025, which is an increase of 4.2% compared to the total number of passengers in 2024. The long-term air quality monitoring record indicates that NO₂ concentrations at nine diffusion tube monitoring locations were between 3.1% and 33.1% lower than concentrations measured during the COVID-19 Pandemic (2020). The remaining ten sites showed increases in NO₂ concentrations between 3.4% and 48.0% in 2025 compared to the COVID-19 Pandemic. However, when compared to NO₂ concentrations measured prior to the COVID-19 pandemic in 2019, annual mean NO₂ concentrations in 2025 are between 24.0% and 60.2% lower than the pre-COVID peak.

Results of nitrogen dioxide (NO₂) monitoring using diffusion tubes:

Monitoring location	Recorded annual average (µg/m ³)	Air quality objectives apply?	Air quality objectives met?
1. T2 Traffic Crossing	22.5*	No	-
3. Stand 69	20.6**	No	-
5. Stand 42	22.7**	No	-
6. 05L Localiser	11.9**	No	-
7. 05R Localiser	11.5**	No	-
8. 05R Glidepath	7.2**	No	-
9. Crash Gate 13	12.4**	No	-
10. Styal Road	10.7**	No	-
11. Outwood Lane	25.1**	No	-
12. T1 Departures A	31.5**	No	-
14. Daisy Bank Lane	10.8**	Yes	Yes
15. Stand 212	20.5**	No	-
16. Toronto Avenue	27.3**	No	-
17. ATC Tower	22.5**	No	-
18. Little West Gate	18.2**	No	-
19. T3 Departures	21.6**	No	-
20. Stand 56	20.8**	No	-
21. Stand 112	24.3**	No	-
22. Stand 12	22.3**	No	-

* Annualised and time weighted annual mean NO₂ concentration due to data capture less than 75% and diffusion tube exposure periods less than or greater than recommended exposure period of three to five weeks.

** Time weighted annual mean NO₂ concentration calculated due to diffusion tube exposure periods less than or greater than recommended exposure period of three to five weeks.

Results of continuous air quality monitoring at Manchester Sharston':

	Recorded annual average ($\mu\text{g}/\text{m}^3$)	Air quality objectives apply?	Short term objective exceedances	Air quality objectives met?
Nitrogen dioxide (NO_2)	13.8	Yes	Hourly Means > $200 \mu\text{g}/\text{m}^3 = 0$	Yes
Particulate matter (PM_{10})	12.9	Yes	Daily Means > $50 \mu\text{g}/\text{m}^3 = 0$	Yes
Particulate matter ($\text{PM}_{2.5}$)	7.8	Yes	N/A	Yes
Sulphur dioxide (SO_2)	1.2	Yes	15min Means > $266 \mu\text{g}/\text{m}^3 = 0$ Hourly Means > $350 \mu\text{g}/\text{m}^3 = 0$ Daily Means > $125 \mu\text{g}/\text{m}^3 = 0$	Yes
Ozone (O_3)	51.5	Yes	8hr Means > $100 \mu\text{g}/\text{m}^3$ (on more than 10 days) = 22 days	No

Long term air quality monitoring results

Previous years monitoring data can be downloaded from our website. Using this information, you can see how air quality has changed over time.

Our website also provides links to websites where you can see detailed results of continuous air quality monitoring in Manchester and the rest of the UK. Please be aware that these websites use different names to describe our monitoring sites: Styal Road (our monitoring site 10) is called 'Manchester South'; and Daisy Bank Lane (our monitoring site 14) is called 'Manchester Sharston'.

Want to know more?

Our website (www.manchesterairport.co.uk/emissionsinfo) provides more information in a range of formats. These include information sheets, progress reports and useful internet links.

Sign up for our Community newsletter to receive regular updates on our community and noise management activity <https://forms.office.com/r/r9kP56nekc>

If you would like to talk to us you could:

- phone our Freephone number (08000 967 967);
- send an email to community.relations@manairport.co.uk;