
Dublin Airport Air Quality Monitoring Annual Report 2025

Sustainability

March 2026



Dublin Airport Air Quality Monitoring Annual Report 2025



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Glossary

Abbreviation Definition

AQG	Air Quality Guidelines
DAP	Dublin Airport
CAFE	Cleaner Air for Europe
EPA	Environmental Protection Agency
NO	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
PM ₁₀	Airborne Particulate Matter, particle size less than 10 micron.
PM _{2.5}	Airborne Particulate Matter, particle size less than 2.5 micron.
The Regulations	Ambient Air Quality Standards Regulations 2011
WHO	World Health Organisation

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Executive Summary

daa undertakes a programme of air quality monitoring at Dublin Airport (DAP) and in surrounding communities. Monitoring is undertaken using a stationary continuous air monitoring station located within the DAP boundary. Air quality is also monitored at 11 locations within and outside the airport boundary using passive diffusion tube sampling.

This report provides an overview of the results of air quality monitoring undertaken by daa at DAP and environs in 2025. Air monitoring locations are listed in Table 2 and presented as Figure 1 of this report.

The Ambient Air Quality Standards Regulations 2011 (the Regulations), S.I. No. 739/2022, implement EU Directive 2008/50/EC on Cleaner Air for Europe (CAFE). The Regulations are referred to in this report for comparison purposes only. There is no requirement under the Regulations for individual companies or operators to carry out air monitoring. In Ireland, compliance with the Regulations is the responsibility of the Environmental Protection Agency (EPA), which is deemed to be the competent authority for the purpose of Directive 2008/50/EC. The EPA is required to submit an annual Air Quality report to the Minister of the Environment, Climate and Communications and to the European Commission. The latest EPA Report entitled “Air Quality in Ireland 2024” was published in September 2025 and is available on the [EPA Website](#).

World Health Organisation (WHO) published updated Air Quality Guidelines (AQG) in 2021 based on the impact of air pollutants on health. The 2023 [Clean Air Strategy for Ireland](#) commits Ireland to meeting WHO AQGs by 2040 and outlines interim targets towards achieving final AQG levels to be met by 2026 and 2030. A revised CAFE Directive (EU 2024/2881) was published in 2024 introducing new regulatory limit values to be achieved by 2030. The WHO targets and upcoming regulatory limit values are included on graphs displaying air quality monitoring results within this report.

This report highlights the air quality levels around Dublin Airport from January to December 2025. The results of the NO₂, PM₁₀ and PM_{2.5} concentrations using the online analyser indicate concentrations are below the relevant annual limit values of 40µg/m³ and 20µg/m³ respectively and within the allowed criteria of short-term limit values. The diffusion tube results for NO₂ and benzene (C₆H₆) are within the annual limit values of 40µg/m³ and 5µg/m³ respectively. The highest average NO₂ concentrations were recorded at the Dublin Airport bus depot (Location A11) which experiences significant vehicular activity.

Intermittent analyser performance issues affecting the continuous monitor occurred during

2025. While maintenance and corrective actions were undertaken, these issues may have influenced some NO₂ measurements and should be considered when interpreting the results.

1.0 Introduction

1.1 Background

Dublin Airport (DAP) is located approximately 10 km north of Dublin city. The areas to the west of the airport are predominantly rural in nature. The airport is surrounded by Swords Village to the north and Santry to the south. The airport is bounded on two sides by the two busiest motorways in the country: the M1 and the M50. The M1 motorway is approximately 1km east of the current location of the airport's onsite air quality monitoring station and the M50 motorway is approximately 2.5 km south of the monitoring location.

1.2 Purpose

The purpose of this report is to present an overview of the results of air quality monitoring conducted onsite at DAP and at 11 monitoring locations in the vicinity of the airport in 2025. The Ambient Air Quality Standards Regulations 2022, S.I. No. 739 of 2022 (the Regulations), implement EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe. This report compares the data collected during the daa monitoring programme with limit values contained in the Regulations to assess air quality at each monitoring location. Since 2023 the latest World Health Organisation (WHO) Air Quality Guidelines (AQGs) and interim targets outlined in the Clean Air Strategy for Ireland are also presented in this report.

In 2024, a revised CAFE Directive (EU 2024/2881) entered into force which introduces new air quality limit standards to be achieved by 2030 that align more closely with the WHO AQG. The revised CAFE Directive has not yet been transposed into Irish Legislation. Upcoming EU limit values and WHO target values for NO₂, PM_{2.5}, and PM₁₀ are presented in Table 1.

Pollutant	Averaging time	unit	Current EU limit value	2030 EU limit value	WHO interim and final targets (IT)		
					IT3 (2026)	IT4 (2030)	Final AQG (2040)
NO ₂	Annual	µg/m ³	40	20	20	20	10
PM ₁₀	Annual	µg/m ³	40	20	30	20	15
PM _{2.5}	Annual	µg/m ³	20	10	15	10	5
Benzene	Annual	µg/m ³	5	3.4	-	-	-

Table 1 EU and WHO Air Quality limits and target values

The Regulations, revised CAFE Directive and Ireland's Clean Air Strategy are referred to in this report for comparison and reference purposes only. There is no requirement under the Regulations that companies or operators shall carry out air quality monitoring. In Ireland, compliance with the Regulations is the responsibility of the Environmental Protection Agency (EPA), which is deemed to be the competent authority.

A range of parameters are recorded at DAP's continuous on-site monitoring station as follows:

- Sulphur dioxide (SO₂);
- Oxides of nitrogen NO_x (NO and NO₂);
- Carbon monoxide (CO);
- Ozone (O₃);
- Particulate Matter (PM₁₀).
- Particulate Matter (PM_{2.5})

Diffusion tube samplers located in communities surrounding the airport monitor the following parameters:

- Sulphur dioxide (SO₂);
- Nitrogen Dioxide (NO₂);
- Benzene;
- Ethylbenzene;
- m- and p-Xylene;
- o-Xylene;
- Toluene;
- Ozone.

The results of air quality monitoring for all the above parameters are reviewed by daa on a continuous basis.

To date and in line with air quality reporting at many airports, daa has focused reporting on the most important parameters:

- Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀ & PM_{2.5}) at the DAP automatic station; and
- Nitrogen dioxide (NO₂) and Benzene using diffusion tubes at 11 offsite locations.

2.0 Monitoring Locations

A list of the ambient air quality sampling locations is presented in Table 2. Sampling locations are presented as Figure 1.

Ref	Location	Method	Parameters
On-site	Dublin Airport	Continuous analyser	NO₂ PM₁₀ PM_{2.5}
A1	Forrest Little Golf Club	Passive Tubes	NO₂ Benzene
A2	Kilreesk Lane, St. Margaret's	Passive Tubes	
A3	Ridgewood Estate West, Swords	Passive Tubes	
A4	St. Margaret's School and Parish House	Passive Tubes	
A5	Fire Station, Huntstown, Dublin Airport	Passive Tubes	
A6	Southern Boundary Fence, Dublin Airport	Passive Tubes	
A7	Western Boundary Fence, Dublin Airport	Passive Tubes	
A8	St. Nicholas of Myra School, Malahide Road	Passive Tubes	
A9	Naomh Mearnóg GAA Club, Portmarnock.	Passive Tubes	
A10	Oscar Papa Site, Portmarnock.	Passive Tubes	
A11	Airport Bus Depot	Passive Tubes	

Table 2 Community ambient air quality monitoring locations



Figure 1: Air Quality Monitoring Locations

3.0 Parameters and Sampling Methodology

3.1 Offsite Passive Sampling

3.1.1 Nitrogen Dioxide (NO₂) and Benzene (C₆H₆)

daa has installed a network of passive diffusion tube samplers in areas surrounding the airport. Monitoring locations are shown on Figure 1 and listed in Table 2. The diffusion tubes are exposed for approximately 4-week intervals and record monthly mean concentrations. Monthly mean concentrations are averaged to give an annual mean, presented in Figure 2. The tubes are analysed using UV Spectrophotometry at a United Kingdom Accreditation Service (UKAS) accredited laboratory. Results are expressed in µg/m³ (micrograms per cubic metre).

3.2 Onsite Sampling

3.2.1 Equipment Calibration

An external expert service provider undertakes routine servicing of the DAP air quality monitoring equipment. During routine visits, air filters are replaced, and the instruments are calibrated to EPA gas standards. The technician also inspects the functionality of the station and sampling system. An emergency call out service is also provided by the service provider. The routine calibration process takes approximately 24 hours, data collection resumes after this 24-hour period.

The dates of calibration and maintenance of the air monitoring equipment in 2024 were as follows:

- 8th - 9th January
- 24th February
- 26th March
- 30th April
- 5th June
- 7th July
- 7th August
- 30th October
- 1st December

In 2025, approximately 68% of NO₂, and 87% of PM₁₀ and PM_{2.5} data, respectively, was captured. The continuous air quality monitoring station experienced intermittent downtime and equipment performance issues during the year, including faults affecting the NO₂ analyser. Some elevated NO₂ concentrations may have been influenced by these issues and

should therefore be interpreted with caution. Equipment performance and data quality will continue to be monitored as part of routine maintenance and calibration activities.

3.2.2 Nitrogen Dioxide (NO₂)

Onsite monitoring of NO₂ is carried out on a continuous basis at the continuous airport monitoring station. Measurement of NO₂ is carried out using a Horiba APNA-370 ambient NOx monitor which employs a crossflow modulated chemiluminescence method. The results are expressed in µg/m³.

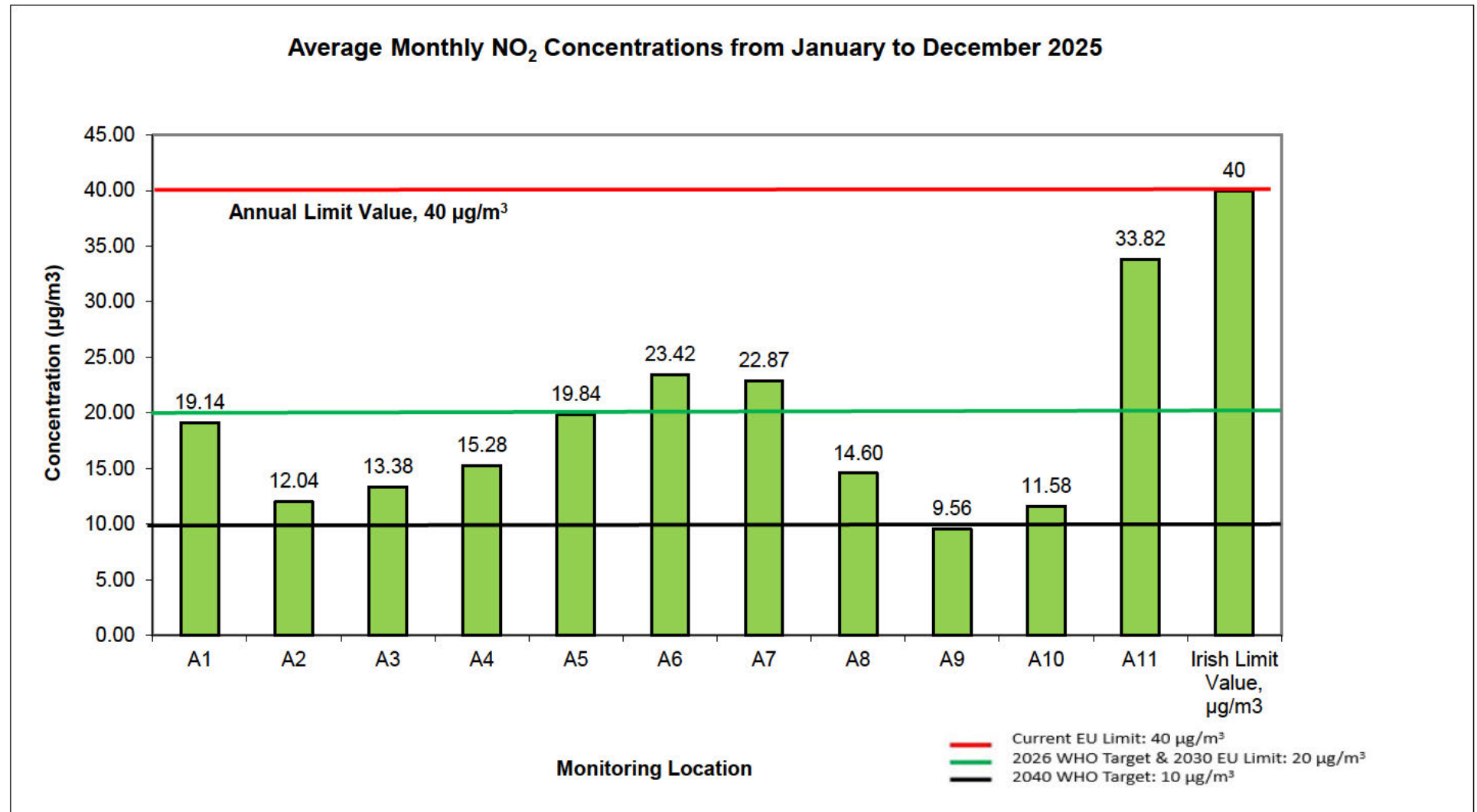
3.2.3 Particulate Matter (PM₁₀) and (PM_{2.5})

PM₁₀ and PM_{2.5} are defined as airborne particulate matter with an aerodynamic diameter equal to or less than 10µm and 2.5µm, respectively. PM₁₀ and PM_{2.5} are monitored on a continuous basis at the airport monitoring station. The PM₁₀ and PM_{2.5} instruments automatically measure and record airborne particulate concentration levels using the principle of beta ray attenuation. The sampler monitors the PM₁₀ and PM_{2.5} content of air by drawing a measured volume of air through a chamber containing a pre-conditioned and pre-weighed filter in accordance with the internationally accepted US EPA protocol for PM₁₀ and PM_{2.5} sampling. The results are expressed in µg/m³.

4.0 Monitoring Results

4.1 Offsite NO₂ Monitoring Results

Figure 2 presents the annual mean NO₂ concentration for each location based on the monthly passive tube sampling. The Regulations mandate an annual mean limit value of 40 µg/m³ for NO₂. Upcoming 2030 regulatory limits and WHO AQGs interim and final targets are also included in the graph below. As can be seen from Figure 2, the mean NO₂ levels including at the bus depot sampling point A11 are currently below the annual regulatory limit. The monthly average for A11 for parameter NO₂ during 2025 was calculated at 33.82 µg/m³. The higher level of NO₂ compared to other sites is related to the volume of vehicular traffic at this location.



*A11 is the bus depot

Figure 2: Average NO₂ Concentrations by location in 2025

4.2 Offsite Benzene (C₆H₆) Monitoring Results

Figure 3 presents the annual mean Benzene concentration for each location, based on the monthly passive tube sampling in 2025. The Regulations mandate an annual average limit value of 5 µg/m³ for Benzene. As can be seen from Figure 3, the annual average values were well below the limit value of 5 µg/m³ at all monitoring locations.

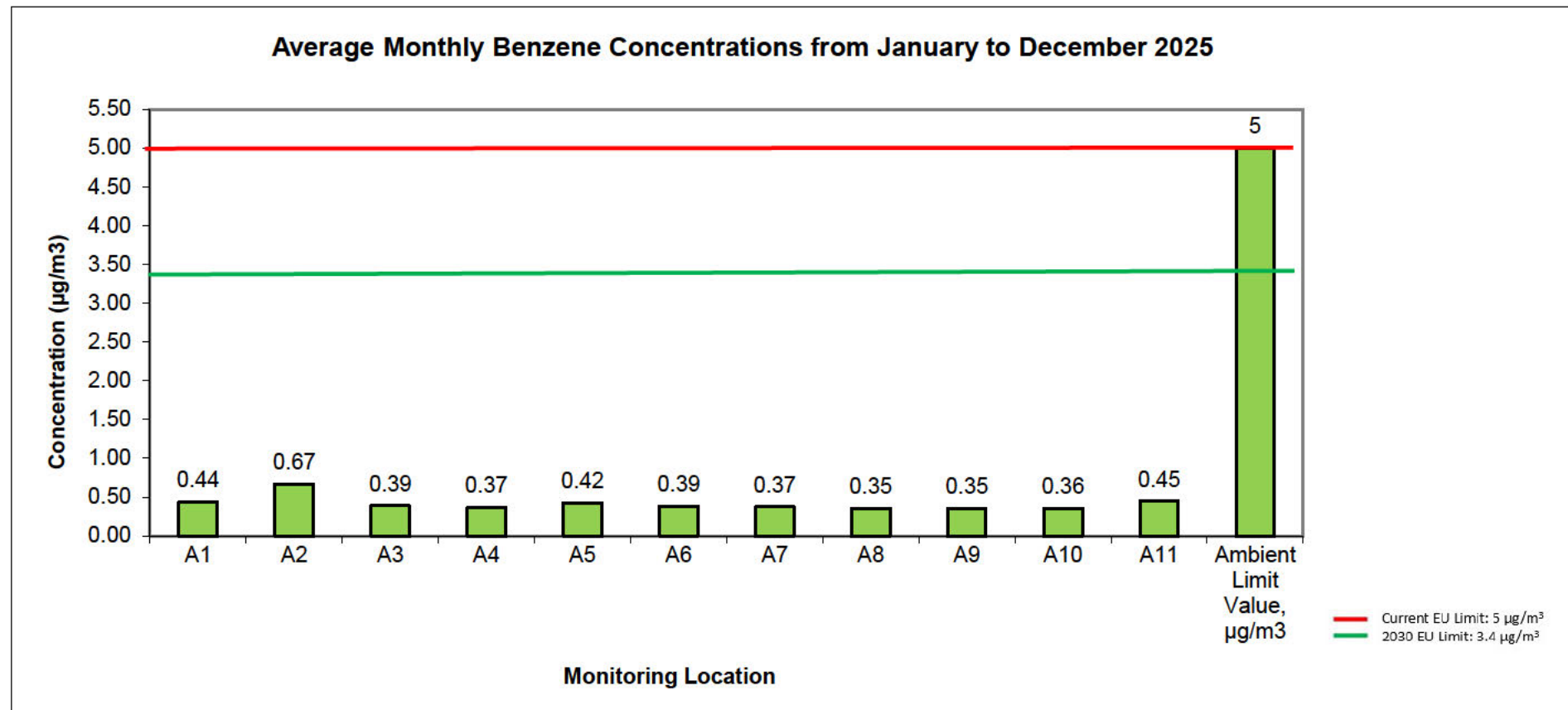
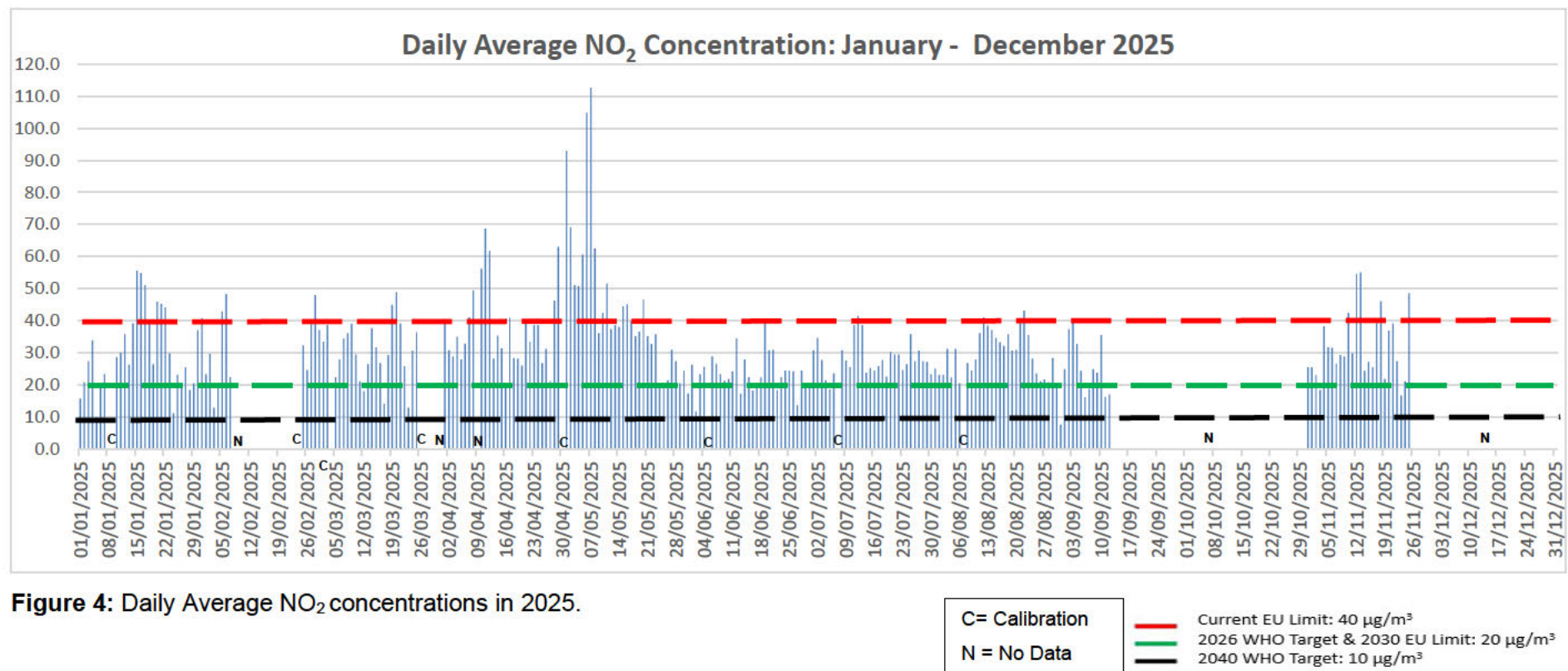


Figure 3: Average Benzene (C₆H₆) Concentrations by location in 2025.

5.0 On-site Airport Monitoring Station Results

5.1 On-site Airport Monitoring Station Results: Daily Average NO₂

NO₂ concentrations are measured at the automatic station at Dublin Airport. Figure 4 presents the daily average NO₂ concentrations measured during 2025. The equivalent daily average was calculated as 31.82 µg/m³. The continuous monitoring station recorded occasional elevated NO₂ concentrations during 2025. However, intermittent faults affecting the NO₂ analyser occurred during the reporting year and should be considered when interpreting these results.



5.2 On-site Airport Monitoring Station Results: PM₁₀

Daily average PM₁₀ concentrations recorded at the automatic station in Dublin Airport in 2025 are presented in Figure 5. The average PM₁₀ was calculated as 12.4 µg/m³.

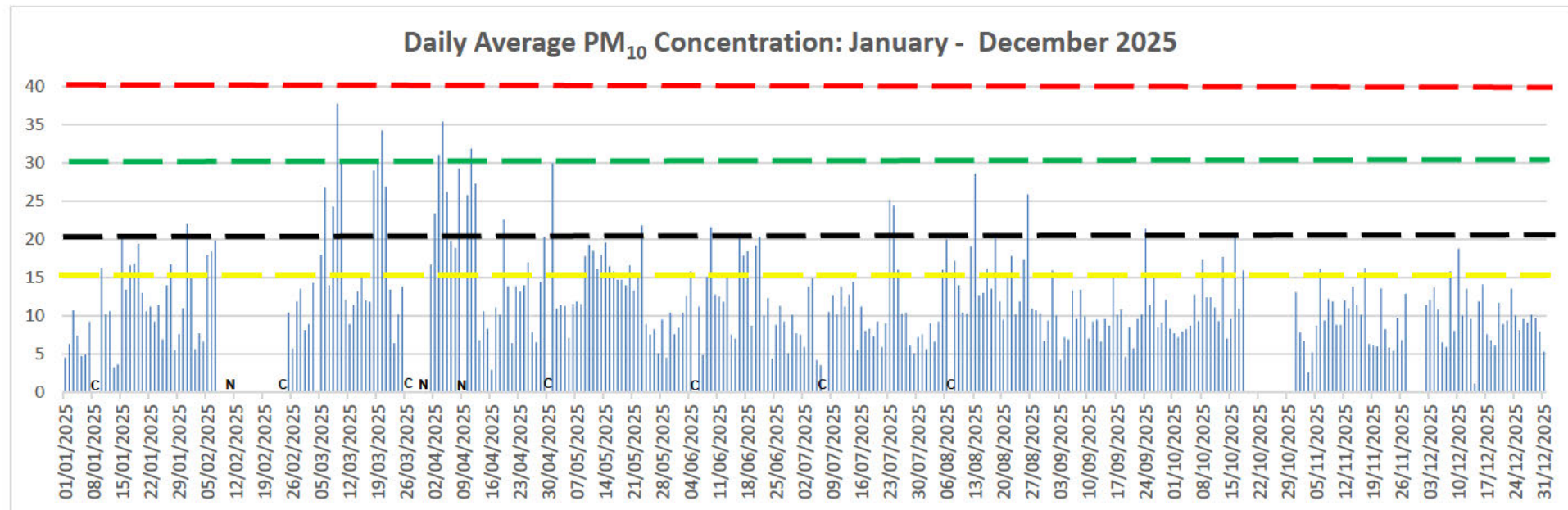


Figure 5: Daily Average PM₁₀ concentrations in 2025.

C = Calibration

N = No Data

Current EU Limit: 40 µg/m³

2026 WHO Target: 30 µg/m³

2030 EU Limit: 20 µg/m³

2040 WHO Target: 15 µg/m³

5.3 On-Site Airport Monitoring Station Results: Daily Average PM_{2.5}

Daily average PM_{2.5} concentrations recorded at the automatic station in Dublin Airport in 2025 are presented in Figure 6. The average PM_{2.5} was calculated as 6.5 µg/m³.

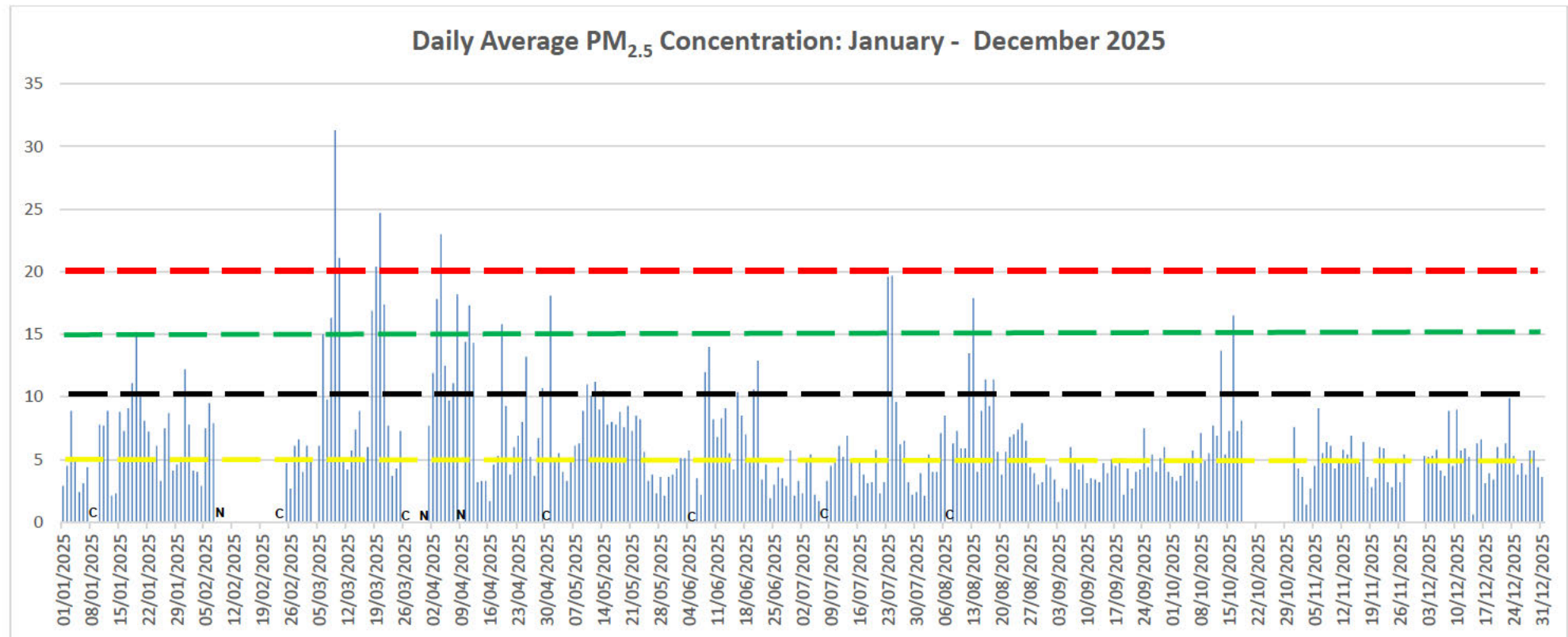


Figure 6: Daily Average PM_{2.5} Concentration in 2025.

C = Calibration
N = No Data

— Current EU Limit: 20 µg/m³
— 2026 WHO Target: 15 µg/m³
— 2030 EU Limit: 10 µg/m³
— 2040 WHO Target: 5 µg/m³

The Regulations set a 24-hour PM₁₀ limit value of 50 µg/m³ and an annual mean limit value of 40 µg/m³ as shown in Table 3. There is no 24-hour limit value for PM_{2.5} set in the Regulations. The annual mean limit for PM_{2.5} is 20 µg/m³.

Objective	Averaging Period	Limit or Threshold Value (µg/m ³)	No. of Allowed Exceedances	No. of Exceedances (Year to date)
PM ₁₀ Limit Value	24 hour	50	Not to be exceeded on more than 35 days per year	0
PM ₁₀ Limit Value	Calendar Year	40	NA	NA
PM _{2.5} Limit Value	Calendar Year	20	NA	NA

Table 3 PM₁₀ and PM_{2.5} Limit Values

6.0 Onsite: Annual Average NO₂ and PM₁₀ and PM_{2.5} (2012- 2025)

Annual average NO₂, PM₁₀ and PM_{2.5} are presented in Table for the automatic station onsite at DAP. The trends over the last 13 years are shown in Figure 7. For all parameters, annual limits are below the threshold limits outlined in the Regulations.

Location	Year	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
Dublin Airport Station	2025	32	12	6
	2024	18	12	7
	2023	21	12	6
	2022	19	12	NA
	2021	19	11	NA
	2020	22	16	NA
	2019	28	18	NA
	2018	28	20	NA
	2017	20	21	NA
	2016	23	23	NA
	2015	22	20	NA
	2014	22	21	NA
	2013	19	23	NA
	2012	19	20	NA
Annual Limit Value		40	40	20

Table 4 Annual average NO₂, PM₁₀ and PM_{2.5} Concentrations at Dublin Airport

Notes

1. Values rounded to the nearest number.

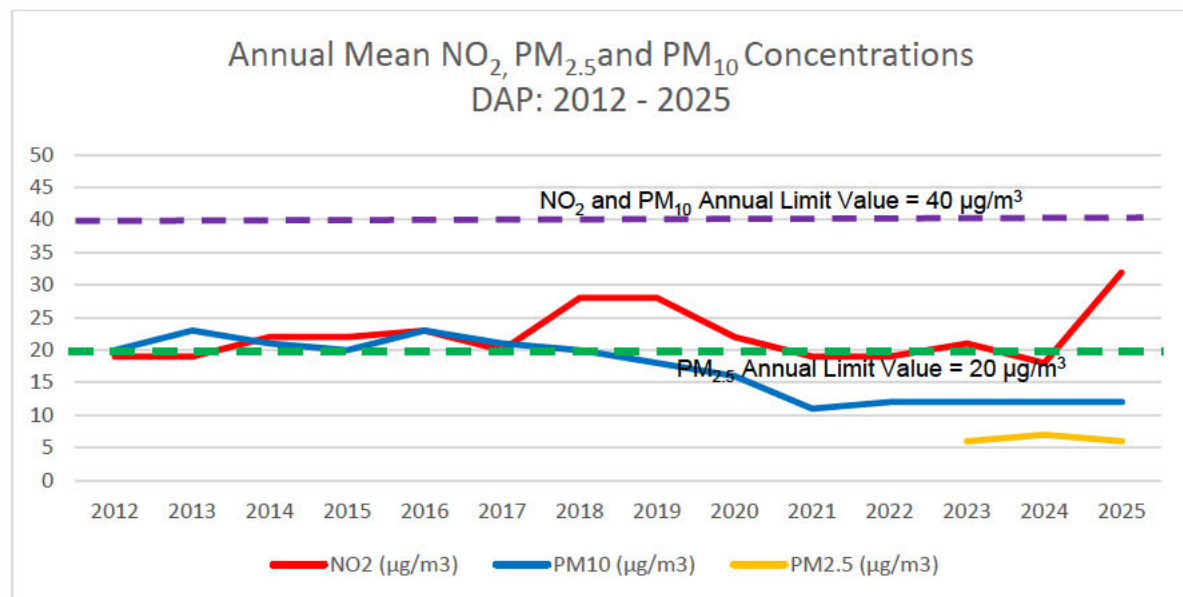


Figure 7: Annual Average NO₂, PM₁₀ and PM_{2.5} Concentrations at Dublin Airport

PM₁₀, PM_{2.5} and NO₂ results monitored at DAP remained below current regulatory limits in 2025.

7.0 Results Summary

The EPA is the designated Competent Authority in Ireland for the coordination of ambient air quality monitoring in accordance with the Regulations and undertakes monitoring throughout the country. The tables below compare DAP's annual NO₂, PM₁₀ and PM_{2.5} average concentrations with the EPA national network stations records for years 2013 - 2024.

Location	NO ₂ (µg/m ³)												
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Winetavern St.	31	31	31	37	27	29	28	15	24	19	19	15	
Rathmines	19	17	18	20	17	20	22	13	22	14	15	13	
Swords	15	14	15	16	14	16	15	11	13	12	10	10	
Blanchardstown	29	31	25	30	26	25	31	12	34	24	25	29	
Dublin Airport Station	19	22	22	23	20	28*	28*	22	23	20	21	18	32
Annual Limit Value	40												

**elevated readings linked to construction activity*

Table 5 NO₂ comparisons with EPA national network stations (2013 – 2024)

Location	PM ₁₀ (µg/m ³)												
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Winetavern St.	14	14	14	14	13	14	15	13	12	14	13	12	
Rathmines	17	14	15	15	13	15	14	11	12	15	15	13	
Phoenix Park	14	12	12	11	9	11	11	10	10	11	9	10	
Blanchardstown	20	18	17	18	15	17	19	15	14	15	13	13	
Ennis	20	21	18	17	16	16	18	20	19	20	16	16	
Dublin Airport Station	23	21	20	23	21	20	18	16	11	12	12	12	12
Annual Limit Value	40												

Table 6 PM₁₀ comparisons with EPA national network stations (2013 – 2024)

Location	PM2.5 (µg/m ³)												
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Winetavern St.	NA	NA	NA	NA	NA	14	NA	NA	NA	NA	NA	6	
Rathmines	NA	NA	NA	NA	NA	15	8	8	9	8	7	7	
Phoenix Park	NA	NA	NA	NA	NA	11	8	6	6	6	6	8	
Blanchardstown	NA	NA	NA	NA	NA	17	NA	8	8	8	7	7	
Ennis	NA	NA	NA	NA	NA	16	14	16	15	16	12	12	
Dublin Airport Station ²	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	7	6
Annual Limit Value	20												

Table 7 PM_{2.5} comparisons with EPA national network stations (2013 – 2024)

8.0 Conclusion

8.1 Onsite Monitoring

The results of the NO₂, PM₁₀ and PM_{2.5} concentrations measured at the continuous monitoring station indicate concentrations were below the relevant limit values. Intermittent analyser performance issues affecting NO₂ monitoring were identified during the year and were investigated through routine servicing, fault diagnosis and recalibration activities.

While these issues do not alter the overall conclusions of the assessment, they should be considered when interpreting the continuous NO₂ monitoring results.

8.2 Offsite Monitoring

Diffusion tube results for NO₂ indicate that the highest concentrations are recorded at the bus depot (A11) at the airport in line with previous years' reporting. The bus depot at the airport is Ireland's busiest bus depot. The elevated readings are related to the volume of vehicular activity that occurs in the area. Diffusion tube results for benzene indicate that concentrations at all locations are well below the annual average limit value.