Belfast City Council

2025 Air Quality Progress Report

In fulfilment of Environment (Northern Ireland) Order 2002

Local Air Quality Management

30 June 2025

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Executive Summary

Belfast City Council has completed this 2025 Progress Report in accordance with the provisions of Part III of The Environment (Northern Ireland) Order 2002 and the Northern Ireland Local Air Quality Management Policy Guidance document LAQM.PGNI (09).

In undertaking this report, council Air Quality Officers have completed a review of recent ambient air quality monitoring data across the city in order to identify locations where new or existing exceedances of Air Quality Strategy Objectives and European Commission Limit Values are occurring. The review has also identified those locations where ambient air quality has improved, and exceedances are no longer occurring.

In addition, a Detailed Assessment for the city was completed during 2023. This project was undertaken mainly to address the emerging pollutant of concern, fine particulate matter ($PM_{2.5}$), but it also considered nitrogen dioxide (NO_2) and particulate matter (PM_{10}) concentrations, all in terms of national and European air quality standards and objectives, and the 2021 World Health Organisation (WHO) 'Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide' publication.

There are four Air Quality Management Areas (AQMAs) presently declared across the city for a combination of exceedances of the nitrogen dioxide (NO_2) annual and hourly mean Air Quality Strategy objectives, associated principally with emissions from road transport. A review of monitoring data for these Air Quality Management Areas, and for the city generally, indicates that there have been further improvements in ambient nitrogen dioxide concentrations across Belfast over recent years, notwithstanding the residual impacts of the Covid-19 pandemic on transport and other emissions.

Moreover, the conclusions of the council's 2023 Detailed Assessment confirmed that based upon predicted / modelled annual mean nitrogen dioxide (NO_2) and particulate matter (PM_{10}) concentrations for a 2028 forward projection year, all annual mean and shorter-term average concentrations are predicted to be below the UK AQOs for nitrogen dioxide (NO_2) and

particulate matter (PM_{10}) at locations of relevant human health exposure within the Belfast City Council area.

For a base year of 2019 (pre-Covid), there were no predicted exceedances of UK AQO for particulate matter throughout the city; the only exceedances of UK AQOs were predicted in relation to annual mean nitrogen dioxide concentrations at sensitive receptor locations within, or near to the boundaries of the existing Air Quality Management Areas (AQMAs) along the M1 Motorway / A12 Westlink corridor (AQMA 1) and East Bridge Street / Cromac Street (AQMA 2).

The Detailed Assessment's conclusion was therefore that consideration should be given to revocation of the Ormeau Road AQMA (AQMA No. 4) and the Upper Newtownards Road AQMA (AQMA No. 3). More information concerning the detailed assessment was provided within our 2023 Progress Report and 2024 Updating and Screening Report.

In addition, the council has noted DAERA's recommendations, included within its appraisal letter of 20th November 2024, in relation to the outcome and conclusions of the council's 2024 Updating and Screening Assessment (USA). The Department recommended that the council should progress with the revocation of AQMA No. 2, Cromac Street and Albertbridge Road, AQMA No. 3 Upper Newtownards Road and AQMA No. 4 Ormeau Road, due to continual compliance with the 40 μgm^{-3} NO_2 annual mean objective. DAERA additionally highlighted that the M1 Motorway / A12 Westlink corridor AQMA No. 1 could be amended to revoke the designation for the 200 μgm^{-3} 1-hour mean NO_2 objective, as compliance has been achieved for the past 5 years. The council was recommended to consider these actions prior to the next Progress Report.

At this stage, however, the council has decided not to move to revoke any of its Air Quality Management Areas, and instead to continue to monitor within its AQMAs and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication.

Monitored levels of benzene (C_6H_6) and sulphur dioxide (SO_2) remain well below the respective objective concentrations and show no reason for concern at this time. There have been no monitored exceedances of Air Quality Strategy objectives for any pollutant other the nitrogen dioxide (only within AQMA 1) in recent years across the city, and no new emission sources have been identified that would have the potential to alter this position.

Numerous new developments have commenced throughout Belfast during 2024. These developments were identified as an aspect of the planning process and where necessary, Air Quality Impact Assessments were requested. The air quality impacts for these developments were then assessed, and any necessary development specific ambient air quality mitigation measures were identified and requested by way of planning conditions, as part of the planning process.

Additionally, the council, its competent authority partners, Translink, Belfast Harbour and other significant transport organisations and partners from across the city continue working towards implementation of the various air quality improvement measures detailed within the Belfast City Air Quality Action Plan 2021-2026.

The aim of the current Air Quality Action Plan is to continue to reduce nitrogen dioxide (NO_2) emissions from transport sources and to promote and enable a shift towards more sustainable modes of transport in order to achieve compliance with UK Air Quality Strategy objectives for NO_2. Where necessary, an additional aim of the Action Plan is to identify, develop and implement mitigation measures to address concentrations of fine particulate matter ($PM_{2.5}$) across the city. Chapter 8 (Table 8.1) provides information on progress with the 2021-2026 Belfast Air Quality Action Plan.

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1 Introduction

1.1 Description of Local Authority Area

Belfast is the capital city of Northern Ireland and as such, the city, and its wider metropolitan area, is the largest settlement in the region and the second largest city on the island of Ireland with an estimated population in 2025 of around 348,005. The city lies at the head of Belfast Lough in the lower reaches of the Lagan Valley and is flanked by the Black Mountain to the west and the Castlereagh Hills to the east. The Belfast City Council district area sits at the heart of the growing population of the wider Belfast Metropolitan Urban Area, which also comprises part of the surrounding areas of Lisburn and Castlereagh City Council, North Down and Ards District Council, Antrim and Newtownabbey District Council and Mid and East Antrim District Council.

In terms of historical ambient air quality issues, Belfast used to experience sustained elevated levels of sulphur dioxide (SO_2) and particulate matter (PM_{10}), associated principally with the widespread use of solid fuel for domestic heating. However, through the introduction of the Council's smoke control programme in the late 1960s, the Clean Air (Northern Ireland) Order 1981 and more recent availability of natural gas to domestic, commercial and industrial sectors, concentrations of particulate matter (PM_{10}) and sulphur dioxide (SO_2) have declined substantially to the extent that we do not experience exceedances of any air quality strategy objectives, or indeed European Commission limit values, for either of these pollutants. Accordingly, the number of locations where we monitor these ambient pollutants has been reduced over recent years in accordance with the government's risk and exposure-based approach to local air quality management.

Although Belfast city does not experience exceedances of any air quality strategy objectives for particulate matter (PM_{10}), we are aware of growing concerns around the effects of fine particulate matter ($PM_{2.5}$) on human health. Therefore, although not included within regulations at present for Northern Ireland councils, Belfast City Council has proactively opted to report $PM_{2.5}$ monitoring data as part of this Progress Report. Moreover, we are aware of the recent evidence from national studies showing that domestic solid fuel burning contributes more than previously thought to particulate emissions. At the end of 2017, Defra

issued a practical guide on open fires and wood burning stoves. This guide (updated in April 2022) provides steps that should be taken to reduce the health impacts of burning solid fuel. This guidance can be found on the Defra smoke control webpage: https://uk-air.defra.gov.uk/library/reports?report_id=948.

The contribution from solid fuel combustion to fine particulate matter ($PM_{2.5}$) concentrations has been also recognised within the UK Clean Air Strategy 2019 and the Clean Air Strategy NI Public Discussion Document, DAERA, November 2020. Therefore, Belfast City Council decided to undertake a detailed assessment for the city, for particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$) and nitrogen dioxide (NO_2) pollutants. This project commenced in February 2021 and was concluded in March 2023. It comprised additional ambient air quality monitoring (using Zephyr small sensor air quality monitors), development of an emissions inventory database for the city and detailed atmospheric dispersion modelling. The outcomes of this detailed assessment were presented within 2023 Progress Report and 2024 Updating and Screening Report and are variously referred to within this 2025 Progress Report.

Over recent years, emissions of nitrogen oxides, associated principally with road transport, have become more prominent. This is a similar situation to that experienced in many other major cities and conurbations across the United Kingdom. Accordingly, as a result of the first round of the review and assessment process, which was completed in 2004, Belfast City Council opted to declare four Air Quality Management Areas across the city. We published our first Air Quality Action Plan for the city back in 2006 and it was completed substantially in 2010, with around 90% of planned actions delivered to schedule. Of the outstanding 10% of actions, it was considered that the majority of these would have had limited additional impact within our Air Quality Management Areas.

In order to address the remaining ‘hot spot’ areas of elevated nitrogen dioxide, the council along with relevant partners developed a 2015-2020 Air Quality Action Plan (AQAP) for the city that contained a manageable number of proven air quality mitigation measures. This AQAP concluded at the end of 2020. A final review of the implementation of the various mitigation measures included within the 2015-2020 AQAP was undertaken and reported by the council to the Department of Agriculture Environment and Rural Affairs (DAERA) as part of the council’s 2023 Progress Report, submitted to DAERA in June 2023.

Whilst previous AQAPs have delivered continuing improvements in ambient air quality across the city, a limited number of nitrogen dioxide (NO_2) hotspots still remain. Moreover, fine particulate matter ($PM_{2.5}$) has emerged as an additional ambient air pollutant of concern for the city.

Accordingly in 2021, the council, competent authorities and other partner organisations developed a new Air Quality Action Plan for the city; the Plan was approved by DAERA and Defra's independent technical appraisers in February 2022 and may be viewed on the Belfast City Council website as follows:
https://www.belfastcity.gov.uk/documents/belfast-city-air-quality-action-plan-2021-2026

The aim of the Belfast City Air Quality Action Plan 2021-2026 is to continue to reduce nitrogen dioxide emissions from transport sources and to promote and enable a shift towards more sustainable modes of transport in order to achieve compliance with UK Air Quality objectives for nitrogen dioxide. Where necessary, an additional aim of this Action Plan is to identify, develop and implement mitigation measures to address concentrations of fine particulate matter ($PM_{2.5}$) across the city.

Chapter 8 (Table 8.1 Action Plan Progress) of this 2025 Progress Report provides information on progress with the 2021-2026 Belfast Air Quality Action Plan.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process, as set out within Part III of The Environment (Northern Ireland) Order 2002, the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Northern Ireland Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess ambient air quality within their areas, and to determine whether or not air quality objectives are being achieved or are likely to be achieved by the respective 'to be achieved' date. Where exceedances are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures that it and competent authorities intend to put in place in pursuit of the objectives.

For Local Authorities in Northern Ireland, Progress Reports continue to be required in the intervening years between three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the LAQM process. They are not, however, intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if a Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority should undertake a detailed assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in Northern Ireland are set out in the Air Quality Regulations (Northern Ireland) 2003, Statutory Rules of Northern Ireland 2003, No. 342, and are detailed in the following Table 1.1. This table shows the objectives in units of micrograms per cubic metre (μg/m^3), and milligrams per cubic metre (mg/m^3) for carbon monoxide, with the number of exceedances in each year that are permitted (where applicable).

Table 1.1 – Air Quality Objectives included in Regulations for the purpose of LAQM in Northern Ireland.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	3.25 µg/m^3	Running annual mean	31.12.2010
1,3-butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate matter (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

As part of its continuing review and assessment process, Belfast City Council completed a 2nd and 3rd stage review and assessment of air quality throughout the city in early 2004. This assessment concluded that modelled and monitored exceedances of short and longer-term objectives for both nitrogen dioxide (NO_2) and particulate matter (PM_{10}) were occurring in the city and would be likely to continue to do so in some locations beyond 2010. Consequently, in August 2004, the council, in consultation with other relevant and competent authorities, declared four Air Quality Management Areas (AQMA), comprising of the M1 Motorway and A12 Westlink corridor; Cromac Street to the junction of Short Strand, Woodstock Link and the Albertbridge Road; the Upper Newtownards Road; and the Ormeau Road.

The M1 Westlink / A12 Westlink corridor AQMA was declared on the basis that annual and hourly-mean nitrogen dioxide concentrations would exceed 31st December 2005 Air Quality Strategy objectives. In addition, particulate matter (PM_{10}) annual and 24-hour mean concentrations were predicted also to exceed relevant objectives at this location. The three other Air Quality Management Areas were declared on the grounds that the annual mean nitrogen dioxide (NO_2) objective would be exceeded at these locations during 2005 and beyond. A subsequent source apportionment study, completed for each of the Air Quality Management Areas, indicated that the principal source of the exceedances was emissions associated with road transport.

Current Air Quality Management Areas are described and depicted in more detail as follows:

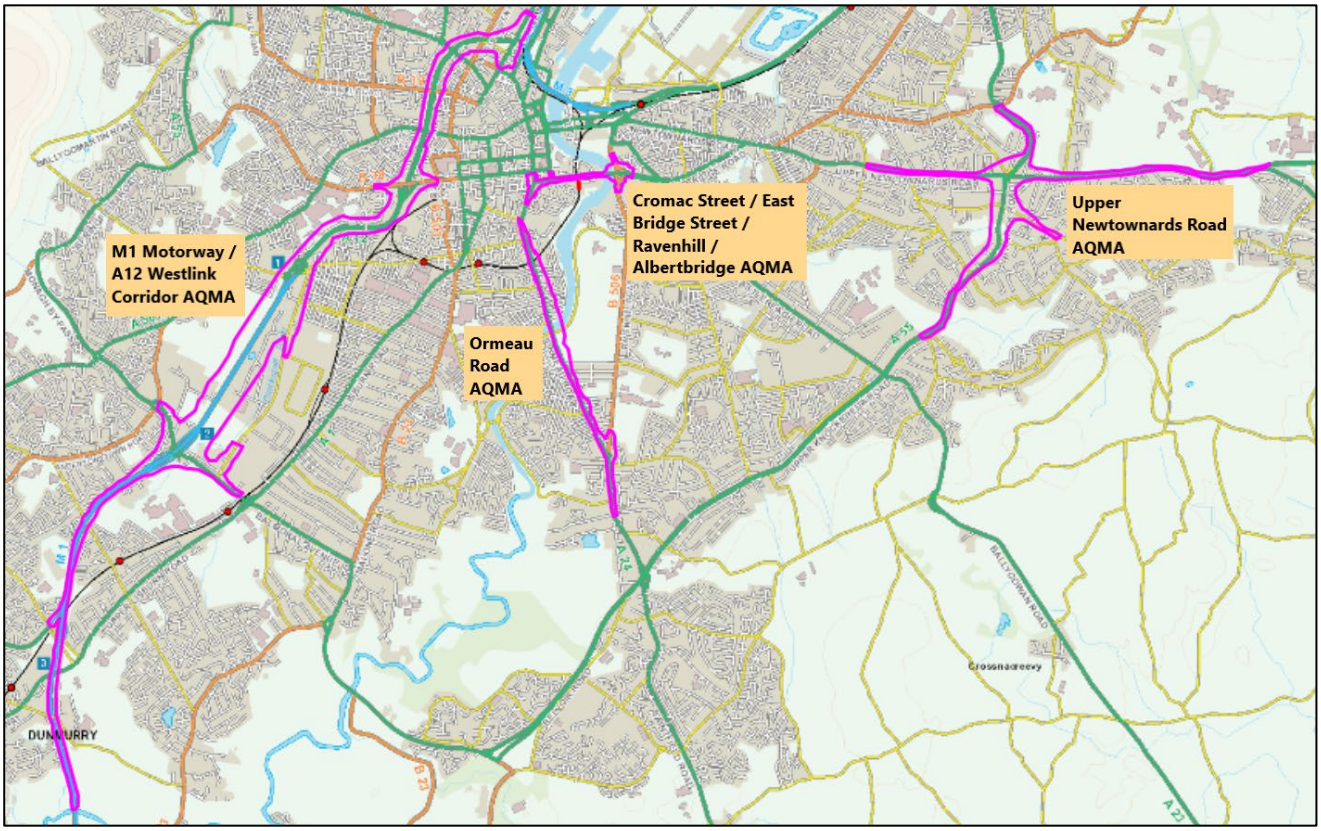
1. The M1 / Westlink corridor from the Belfast City boundary at Sir Thomas and Lady Dixon Park to the end of the Westlink at the junction with Great George's Street and York Street including Stockman's Lane and Kennedy Way. This area was declared for predicted exceedances of both the nitrogen dioxide and particulate material annual mean air quality strategy objectives, as well as exceedances of the particulate matter 24-hour mean objective and the nitrogen dioxide 1-hour mean objective. This AQMA was revoked for exceedances of particulate matter objectives in September 2015, but remains of concern in respect of the annual mean air quality objective for nitrogen dioxide.

2. Cromac Street to the junction with East Bridge Street and then from East Bridge Street to the junction with the Ravenhill and Albertbridge Roads and Short Strand. This AQMA was declared for predicted exceedances of the nitrogen dioxide annual mean Air Quality Strategy objective.
3. The Upper Newtownards Road from the North Road junction to the Belfast City boundary at the Ulster Hospital, incorporating the Knock Road to the City boundary at Laburnum Playing Fields and Hawthornden Way. This AQMA was declared for predicted exceedances of the nitrogen dioxide annual mean Air Quality Strategy objective.
4. The Ormeau Road from the junction with Donegall Pass to the city boundary at Galwally. This area was declared for predicted exceedances of the nitrogen dioxide annual mean Air Quality Strategy objective.

The boundaries of these Air Quality Management Areas are denoted in pink in the following Figure 1.1 and have been set to take account of atmospheric dispersion modelling uncertainties.

Please note that the Belfast City Council boundary was revised in 2015 as a consequence of the reform of local government in Northern Ireland. The above-mentioned AQMAs were declared on the basis of the previous council boundary.

Figure 1.1– Map(s) of AQMA Boundaries



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A further detailed air quality review and assessment was completed by Belfast City Council in 2010, informed by the outcome of the 2009 Updating and Screening Assessment. Accordingly, the 2010 Detailed Assessment considered the potential for exceedances of nitrogen dioxide objectives at a number of further locations across the city, including at the junction of the Sydenham Bypass with the Lower Newtownards Road, Shaftesbury Square, Donegall Road and Albertbridge Road, and at locations throughout the city centre. Although atmospheric dispersion modelling studies, undertaken as part of the detailed review and assessment process, did suggest exceedances of the nitrogen dioxide annual mean objective at some the of above-mentioned locations, the review and assessment identified that there was no relevant public exposure at these locations during 2010. As a result, the 2010 Detailed Air Quality Review and Assessment for Belfast City Council concluded that there was no need to declare further Air Quality Management Areas or to expand or revoke the existing AQMAs. This conclusion was accepted by DAERA.

Ambient air quality monitoring results, as presented in previous annual progress and updating and screening assessment reports, had identified sustained improvements in particulate matter (PM_{10}) concentrations within the M1 Motorway / A12 Westlink Air Quality Management Area, confirming that it had been in compliance with the particulate matter (PM_{10}) objectives for a number of years. This resulted in the M1 Motorway / A12 Westlink AQMA being revoked for exceedances of particulate matter 24-hour and annual mean objectives in September 2015.

The current stage (Round 9) of the Review and Assessment process requires that a Progress Report be completed for submission by 30th June 2025. This report therefore addresses the requirements of the August 2022 Defra LAQM.TG(22) technical guidance publication in identifying any significant changes that have occurred since the previous round of Review and Assessment, which may have the potential to adversely affect local ambient air quality.

For reference and additional background information, historical Belfast City Council air quality review and assessment reports are listed in the following table, and are also available to download from the Department of Agriculture, Environment & Rural Affairs (DAERA) for Northern Ireland 'Northern Ireland Air' website via the follow weblink:

https://www.airqualityni.co.uk/reports/district-council-reports-1

Table 1.2 – Historical Belfast City Council Air Quality Reports

• Belfast - Updating and Screening Assessment - 2024 - Published: 10th September 2024
• Belfast City Council 2023 Air Quality Progress report - Published: 10th January 2024
• Belfast City Council 2022 Air Quality Progress Report - Published: 15th February 2023
• 2021 Updating and Screening Assessment for Belfast City Council - Published: 1st October 2021
• Belfast - Progress Report - 2020 - Published: 11th November 2020
• Belfast - Progress Report - 2019 - Published: 11th November 2020
• Belfast - Updating and Screening Assessment - 2018 - Published: 17th December 2018
• Belfast - Progress Report - 2017 - Published: 17th November 2017
• Belfast - Progress Report - 2016 - Published: 21st October 2016
• Belfast - Updating and Screening Assessment - 2015 - Published: 21st October 2016
• Belfast - LAQM Progress Report - 2014 - Published: 14th November 2014
• Belfast - LAQM Progress Report - 2013 - Published: 1st April 2013
• Belfast - Updating and Screening Assessment report - 2012 - Published: 3rd October 2012
• Belfast - Progress Report - 2011 - Published: 30th April 2011
• Belfast - Detailed Assessment - September 2010 - Published: 30th September 2010
• Belfast - Progress Report - 2010 - Published: 30th April 2010
• Belfast - Updating and Screening Assessment - 2009 - Published: 30th April 2009
• Belfast - Joint Air Quality Progress and Action Plan Progress Report - 2007 - Published: 30th April 2007
• Belfast - Detailed Assessment - April 2007 - Published: 30th April 2007
• Belfast - Joint Air Quality Progress and Action Plan Progress Report - 2008 - Published: 10th June 2008
• Belfast - Updating and Screening Assessment - 2006 Appendix - Published: 31st July 2006
• Belfast - Updating and Screening Assessment - 2006 - Published: 31st July 2006
• Belfast - Health Impact Assessment of the Draft Air Quality Action Plan for Belfast - Published: 1st May 2006
• Belfast - Progress Report - Published: 1st September 2005

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Belfast City Council operates four automatic monitoring stations across the city in order to help inform its air quality management processes and to provide real time information to the public in relation to air pollution levels across the city centre and within our Air Quality Management Areas.

Accordingly, to ensure that the data from our sites is both accurate and representative, the monitors at each site are calibrated on a bi-weekly (Stockman's Lane AURN site) or on a four-weekly basis by the council's technical staff, in accordance with the procedures detailed in the Defra Automatic Urban and Rural Network (AURN) local site operators' manual. In addition, data management, quality assurance and quality control and service and maintenance support are provided by appointed contractors. The data from our sites is made available to the Department of Agriculture, Environment and Rural Affairs (DAERA) and is reported on the 'Northern Ireland Air' website in near real time (https://www.airqualityni.co.uk/). Under the current LAQM regime, and for the purpose of LAQM reporting, pollutant concentrations should be reported to an accuracy of 1 decimal place; automatic monitoring data presented in this report relates to the calendar year (i.e. January – December). 2024 data capture levels exceeded the Department's 75% data capture threshold for the calculation of annual statistics at all council sites. Further information regarding our QA/QC procedures and processes has been provided in Appendix A to this report.

In addition to the council's automatic monitoring sites, the UK Environment Agency and DAERA operate an AURN urban background monitoring site at Lombard Street in Belfast City Centre. Unfortunately, during 2024, data capture levels at the Belfast Centre site were below the Department's 75% data capture threshold for the calculation of indicator statistics for nitrogen dioxide (60%); consequently, it was necessary to annualise the data from this

monitoring site as per the requirements of Box 7-9 of LAQM.TG (22). For measurements made in UK automatic networks, a data capture target of 90% is applied.

In relation to correction of our automatic monitoring data, this process is generally of principal concern with regard to the treatment of particulate matter monitoring data. In 2019, the Belfast Centre site employed Filter Dynamics Measurement System (FDMS) equipped Tapered Element Oscillating Microbalances (TEOMs) for particulate matter (PM_{10}) monitoring up until September 2019, whereupon the FDMS equipped TEOMs were replaced by a Palas Fidas 200, which complies with Defra's UK PM Pollution Climate standard. Government equivalence tests have determined that both of types of equipment meet the equivalence criteria, and on that basis, no correction factors need to be applied to this monitoring data.

The Stockman's Lane site is equipped with a Beta Attenuation Monitor (BAM) with a heated inlet for monitoring particulate matter (PM_{10}). Government technical guidance highlights that a BAM, equipped with a heated inlet, also meets the equivalence criteria for PM_{10} monitoring, provided that the results are corrected for slope. This correction involves dividing measured concentrations by a factor of 1.035. It should be noted that the data presented on the DAERA Northern Ireland Air website and in this report have already been corrected to the reference equivalent.

During 2019, Belfast City Council replaced ageing NOx API M200A analysers at two of its monitoring sites, namely the Upper Newtownards Road and Stockman's Lane with more modern T200 variants. In addition, the unheated BAM 1020 particulate matter (PM_{10}) analyser at Stockman's Lane was also replaced with a heated inlet variant in order to continue to collect high quality data and to achieve >90% data collection rates throughout the year. In 2020, the council also replaced a further aged API M200 NOx analyser at the Ormeau Road site.

During 2022, we progressed with the upgrade of our analyser communication systems (including modems) at our four monitoring sites. AQMSs were consequently updated from GSM modems to 4G IP Routers and the T200 analysers were converted to use NumaView software.

A location map showing automatic monitoring site locations across the Belfast City Council area is presented in the following Figure 2.1, with further site-specific monitoring details provided in Table 2.1.

Figure 2.1 – Map of Automatic Monitoring Sites

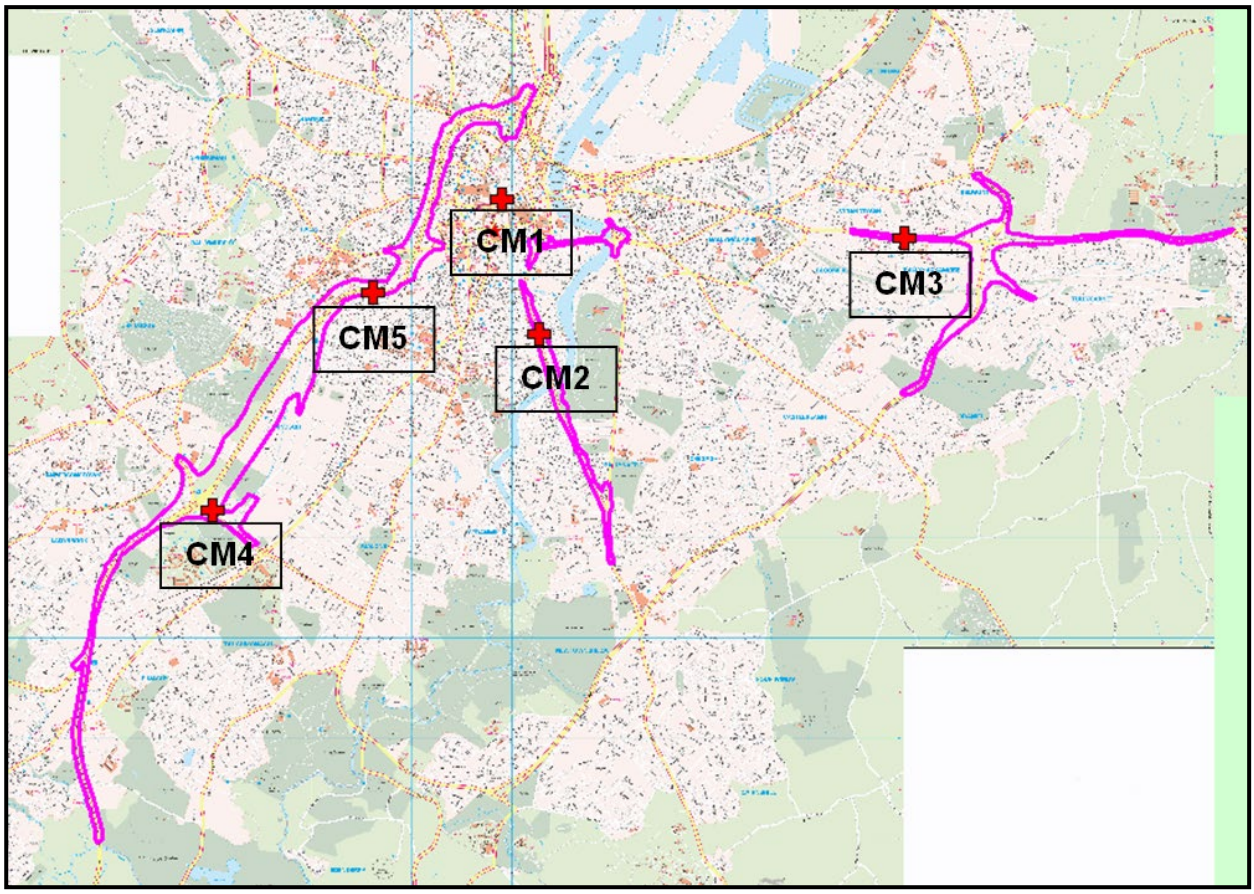


Table 2.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CM1	Belfast Centre AURN site Lombard Street	Urban Background	333898	374358	4.0	Nitrogen dioxide, sulphur dioxide, carbon monoxide, ozone and particulate matter (PM_{10} and $PM_{2.5}$)	N	Chemiluminescence, UV Fluorescence, IR Absorption, UV Absorption, Light-Scattering Monitor (Palas Fidas 200)	Y (Monitoring site is located in a city centre pedestrian precinct)	26 m	Y
CM2	Belfast Ormeau Road	Roadside	334272	373012	1.3	Nitrogen dioxide	Y	Chemiluminescence	Y (6 m)	3 m	Y
CM3	Belfast Upper Newtownards Road	Roadside	337911	373972	1.3	Nitrogen dioxide	Y	Chemiluminescence	Y (7 m)	2 m	Y
CM4	Belfast Stockman's Lane	Roadside	331010	371252	3.0	Nitrogen dioxide and particulate matter (PM_{10})	Y	Chemiluminescence Beta Attenuation Monitor	Y (10 m)	3 m	Y
CM5	Belfast Westlink Roden Street	Roadside	332609	373434	2.6	Nitrogen dioxide	Y	Chemiluminescence	Y (17 m)	5 m	Y

2.1.2 Non-Automatic Monitoring Sites

The government's risk and exposure-based approach to local air quality management means that Belfast City Council's principal focus has been on addressing citywide ambient nitrogen dioxide (NO_2) levels over recent years. Accordingly, in order to understand how nitrogen dioxide levels are varying across the city and in addition to our automatic analysers, the council operates a range of passive diffusion tubes for nitrogen dioxide at a range of both background and roadside locations across the city.

The NOx diffusion tube monitoring network has changed considerably since the declaration of the Air Quality Management Areas in 2004. In 2024, the extensive council monitoring network comprised 80 diffusion tubes throughout the city at 72 locations, which generate annual mean NO_2 data to assist in the review and assessment process and to aid developers in conducting air quality impact assessments, where deemed necessary.

The council regularly reviews its monitoring locations and relocates or discontinues tubes from areas of sustained low nitrogen dioxide concentrations. In 2024, we removed 8 tubes (Nos. 28, 86, 91, 93, 94, 110, 113 and 116) from the network, due to consistently low concentrations recorded or changes to 'relevant exposure' locations; and we added 4 new tubes (Nos. 117, 118, 119 and 120) close to busy roads with relevant exposure (residential properties). All locations are detailed in Figure 2.2 and Table 2.2.

Nitrogen dioxide diffusion tubes comprise a small clear plastic tube containing a chemical reagent supported on stainless steel grids that absorb the pollutant directly from the surrounding ambient air. In this case, triethanolamine is used as the reagent to monitor levels of ambient nitrogen dioxide. Belfast City Council's diffusion tubes are exposed for successive four or five-week periods, in general accordance with the Defra Diffusion Tube Monitoring Calendar (https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-monitoring-calendar/) and, as a result, they provide a good general indication of average nitrogen dioxide concentrations, thereby allowing a comparison with the annual mean objective.

To ensure that experimental error is minimised in the preparation and analysis of its nitrogen dioxide diffusion tubes, Belfast City Council has appointed Gradko International Ltd. to supply, analyse and report data for its diffusion tubes. Gradko employs a 20%

triethanolamine (TEA) solution for monitoring ambient nitrogen dioxide and adheres to the requirements of the government's 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users' publication.

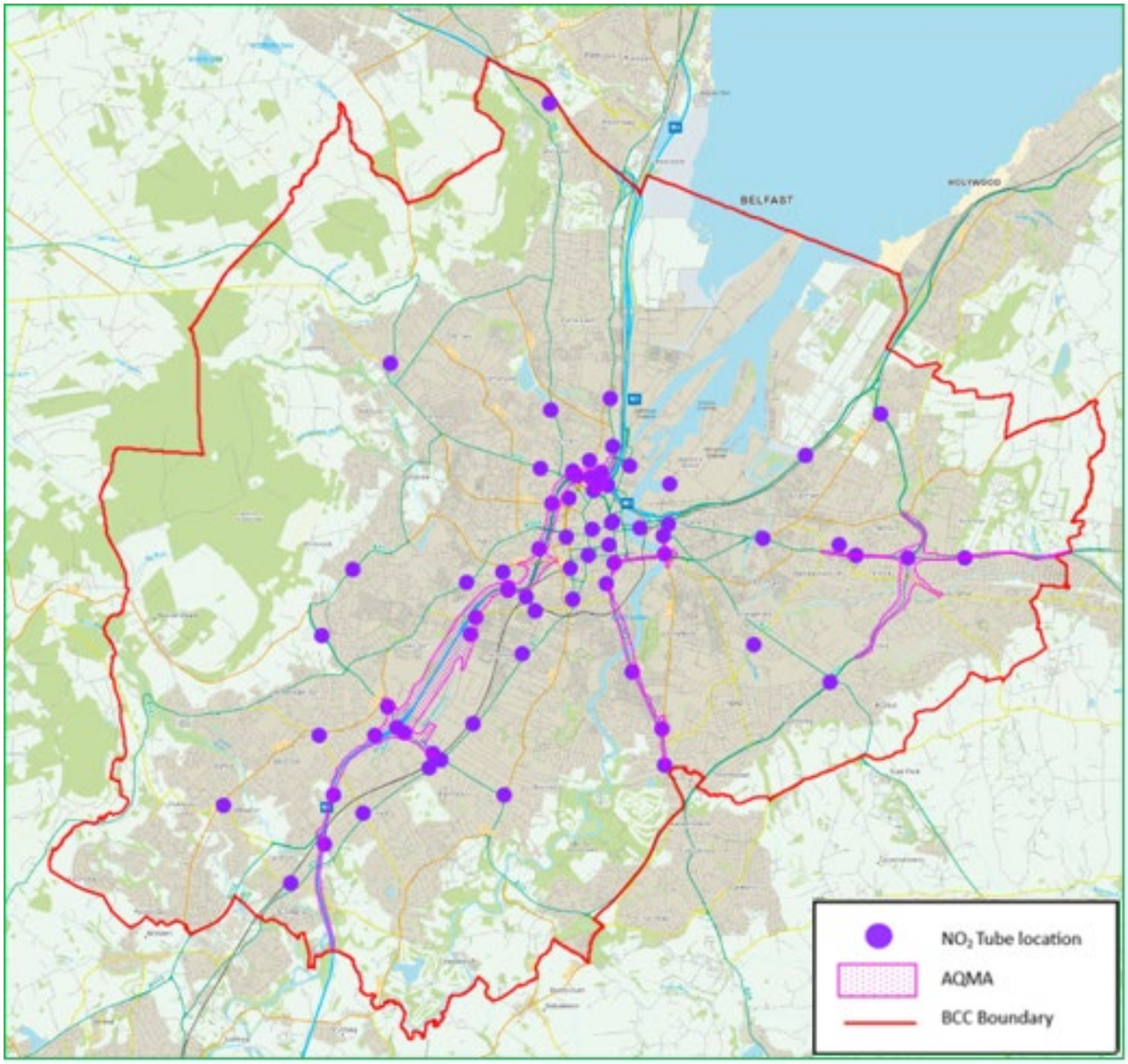
To further ensure that its diffusion tube monitoring data is as accurate as possible, the council co-locates a number of diffusion tubes with reference method compliant chemiluminescent nitrogen dioxide analysers at the Lombard Street, Upper Newtownards Road, Westlink/Roden Street and Stockman's Lane monitoring sites. This process allows a bias adjustment factor (with a 95% confidence interval as an estimate of the uncertainty on the bias adjustment factor) to be calculated and used to correct the diffusion tube monitoring data.

In the case of the diffusion tube data presented in this report, the monitoring data has been corrected using a local bias adjustment factor derived from three of the above-mentioned co-location studies (Upper Newtownards Road, Westlink / Roden Street and Stockman's Lane monitoring sites). The Lombard Street site (Belfast Centre) was unable to be considered as part of the 2024 co-location study due to the relatively low nitrogen dioxide automatic data capture rate (60%).

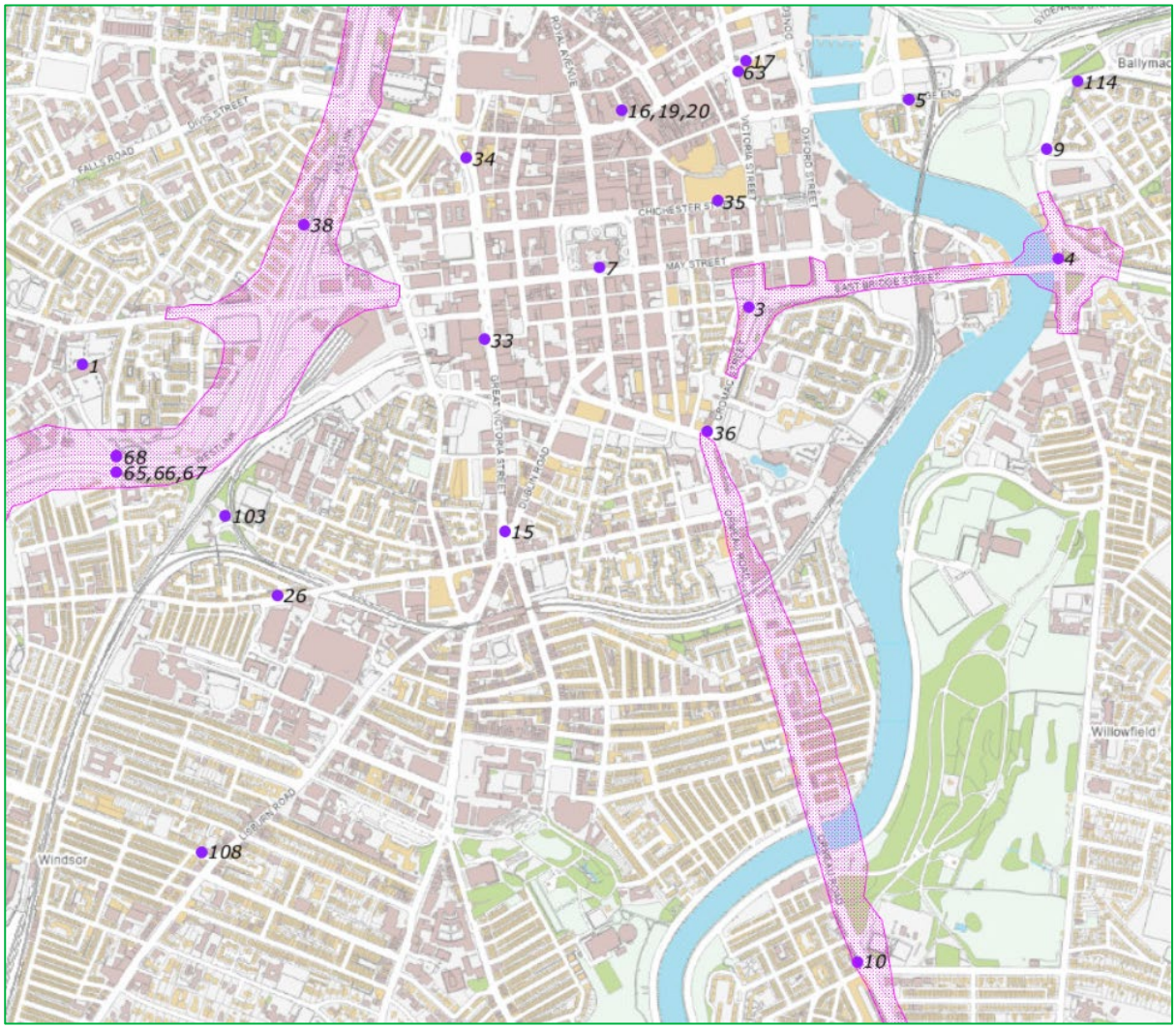
The bias calculation and data scaling were undertaken using Defra's new Diffusion Tube Data Processing Tool. Outputs from the spreadsheet for treatment of Belfast City Council's 2024 diffusion tube monitoring data are included in Appendix A to this report.

Figure 2.2 – Maps of Non-Automatic Monitoring Sites

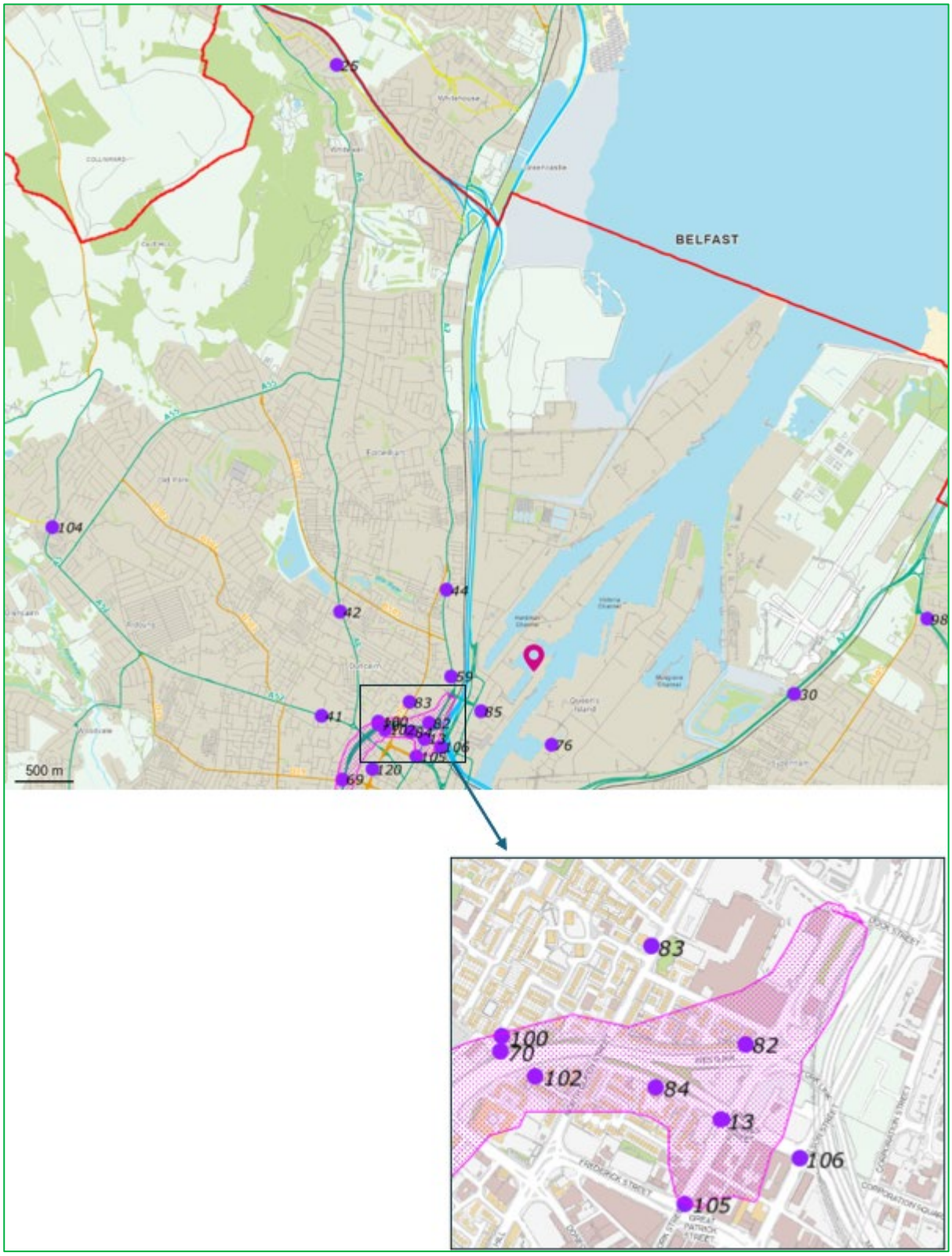
Belfast City Boundary



Belfast City Centre



North Belfast



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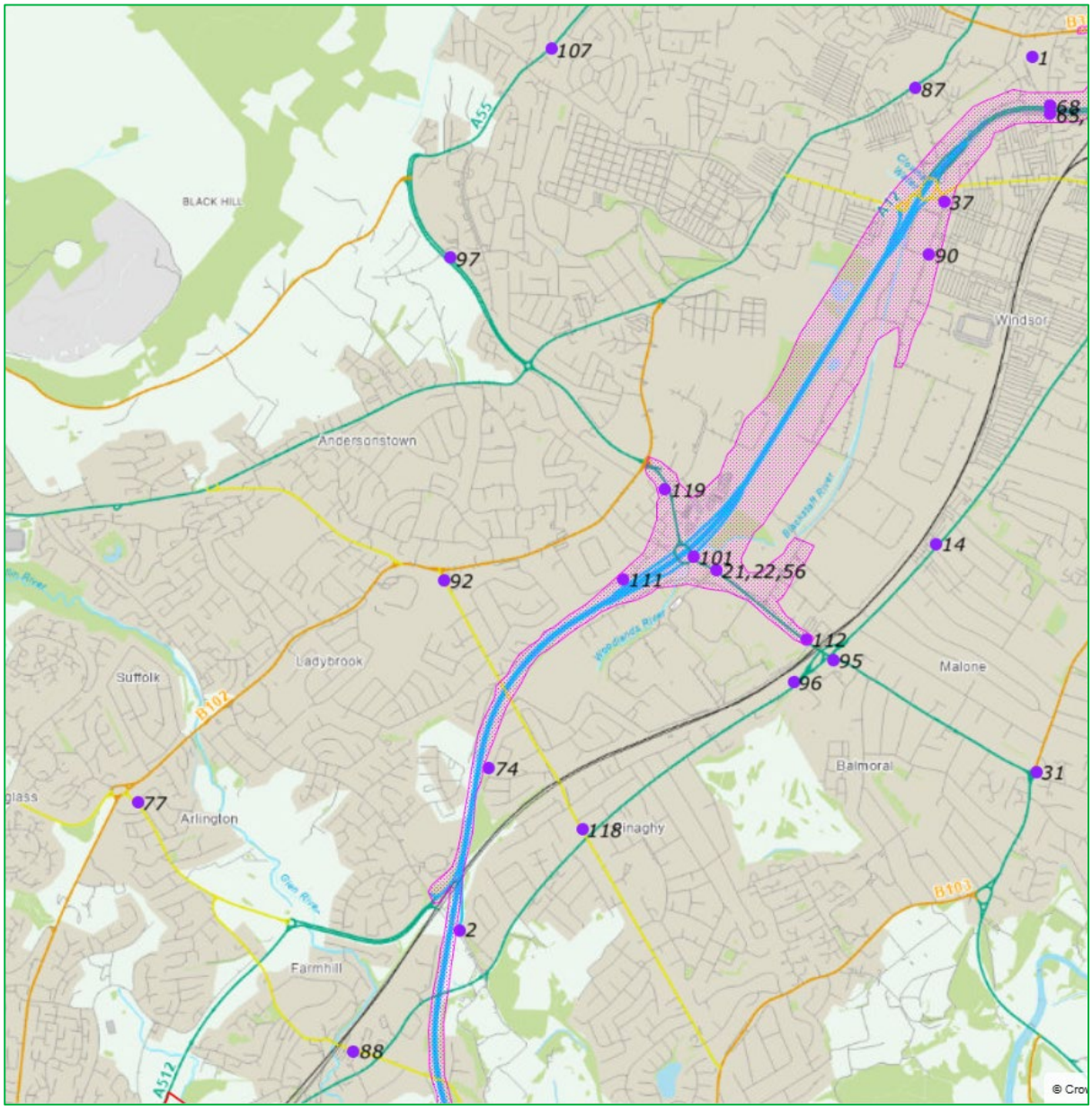
Southwest Belfast



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East Belfast

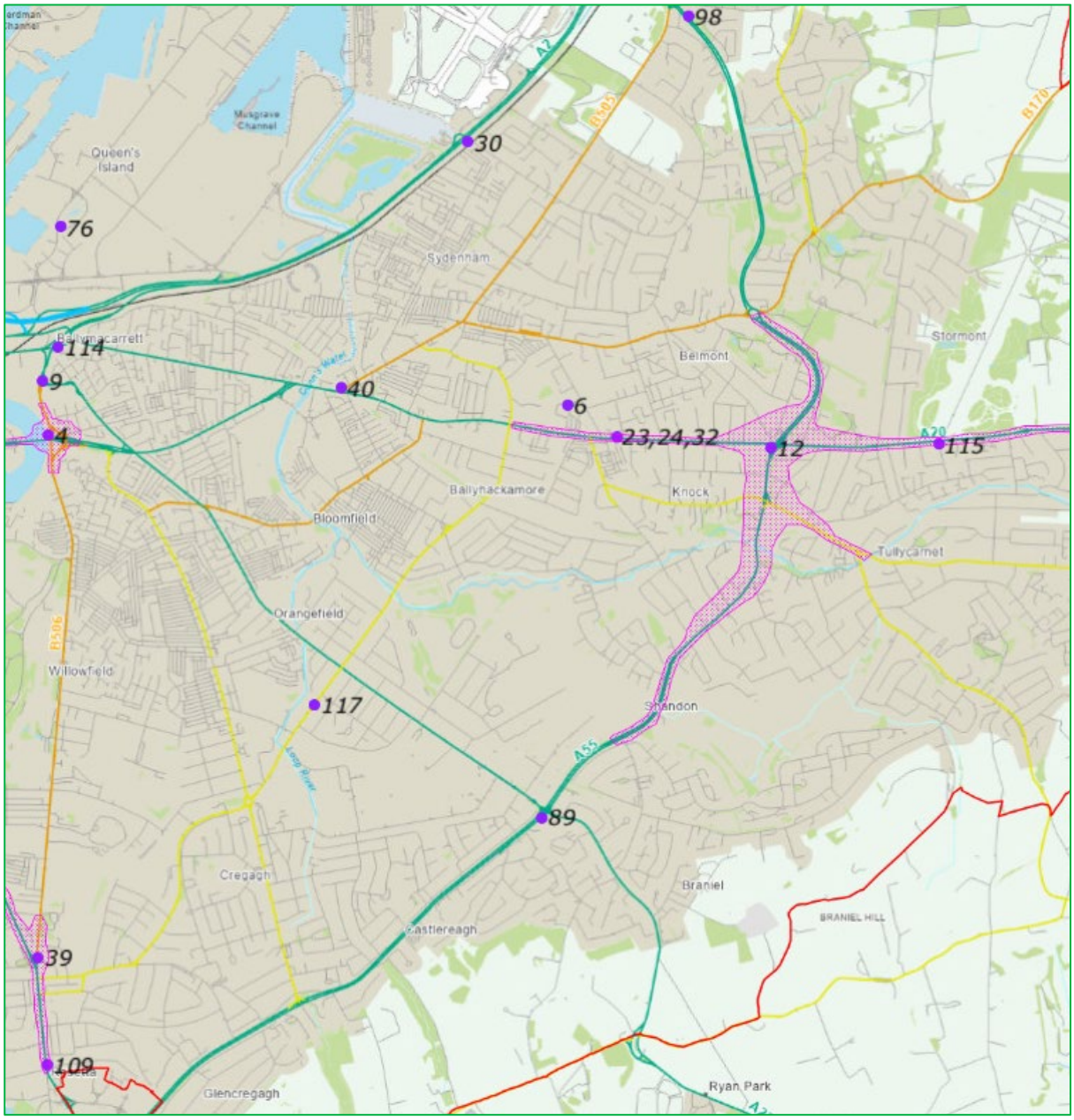


Table 2.2 – Details of Non-Automatic Monitoring Sites

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
1	Royal Victoria Hospital	Urban Background	332522	373708	NO_2	No	68.0	82.0	No	3.2
2	Black's Road	Roadside	329780	369528	NO_2	Yes - AQMA 1	26.0	2.0	No	2.7
3	61 Cromac Street	Roadside	334220	373853	NO_2	Yes - AQMA 2	12.0	2.5	No	3.0
4	Albertbridge Road	Roadside	335013	373979	NO_2	Yes - AQMA 2	10.0	1.5	No	3.0
5	Queen's Bridge	Roadside	334630	374385	NO_2	No	10.0	1.5	No	3.0
6	58 Earlswood Road	Urban Background	337681	374133	NO_2	No	3.0	65.0	No	3.0
7	Donegall Square South	Roadside	333840	373956	NO_2	No	173.0	6.0	No	3.0
9	Short Strand	Roadside	334983	374260	NO_2	No	24.0	1.0	No	3.0
10	301 Ormeau Road	Roadside	334499	372186	NO_2	Yes - AQMA 4	0.1	7.5	No	3.0
12	Knock Road	Roadside	338718	373918	NO_2	Yes - AQMA 3	17.0	1.5	No	2.5
13	Great George's Street	Kerbside	333981	375102	NO_2	Yes - AQMA 1	9.0	0.5	No	3.0

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
14	Lisburn Road	Roadside	332063	371376	NO_2	No	3.0	3.5	No	2.7
15	Shaftesbury Square	Kerbside	333600	373283	NO_2	No	10.0	1.0	No	2.7
16, 19, 20	Lombard Street	Urban Background	333898	374358	NO_2	No	167.0	26.0	Yes	4.0
17	Albert Clock	Roadside	334213	374485	NO_2	No	3.0	3.0	No	3.1
21, 22, 56	Stockmans Lane	Roadside	331009	371251	NO_2	Yes - AQMA 1	14.0	2.5	Yes	3.0
23, 24, 32	Ballyhackamore	Roadside	337930	373972	NO_2	Yes - AQMA 3	35.0	2.0	Yes	3.0
25	Whitewell Road	Roadside	333230	380877	NO_2	No	5.0	2.0	No	2.7
26	Donegall Road	Kerbside	333018	373120	NO_2	No	2.5	1.0	No	2.7
30	Station Road	Roadside	337168	375485	NO_2	No	19.0	2.0	No	2.7
31	Upper Malone Road	Roadside	332544	370283	NO_2	No	12.0	2.5	No	3.0
33	Great Victoria Street	Roadside	333548	373772	NO_2	No	210.0	1.5	No	3.2
34	College Square East	Roadside	333501	374236	NO_2	No	3.0	3.0	No	3.0
35	Chichester Street	Roadside	334140	374126	NO_2	No	3.0	3.0	No	3.5

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
36	Cromac Street / Ormeau Avenue	Kerbside	334114	373536	NO_2	Yes - AQMA 2	3.0	0.5	No	2.5
37	Broadway	Roadside	332100	373015	NO_2	Yes - AQMA 1	6.0	1.0	No	3.0
38	Albert Street	Roadside	333085	374065	NO_2	Yes - AQMA 1	6.0	16.0	No	3.0
39	Ormeau Road (junction with Ravenhill Road)	Roadside	334957	371298	NO_2	Yes - AQMA 4	5.5	3.0	No	3.0
40	Upper Newtownards Road / Holywood Road	Roadside	336516	374226	NO_2	No	24.0	2.0	No	3.0
41	Crumlin Road	Roadside	333101	375295	NO_2	No	20.0	3.0	No	3.0
42	246 Antrim Road	Roadside	333258	376186	NO_2	No	6.0	2.0	No	2.7
44	Shore Road (Ivan Street)	Roadside	334177	376375	NO_2	No	2.5	5.0	No	3.0
59	York Street	Roadside	334214	375638	NO_2	No	5.0	3.5	No	2.7
63	Queen's Square / Victoria Street	Roadside	334193	374457	NO_2	No	0.1	7.0	No	2.7
65, 66, 67	Westlink AQMS	Roadside	332610	373434	NO_2	Yes - AQMA 1	22.0	5.0	Yes	2.6
68	Opposite Westlink AQMS	Kerbside	332610	373474	NO_2	Yes - AQMA 1	74.0	1.0	No	2.5

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
69	Peter's Hill	Kerbside	333281	374755	NO_2	Yes - AQMA 1	48.0	1.0	No	3.5 (above the canyon)
70	Henry Place	Kerbside	333588	375224	NO_2	Yes - AQMA 1	17.0	1.0	No	3.5 (above the canyon)
74	Ardmore Park	Roadside	329923	370300	NO_2	No	7.0	2.0	No	2.7
76	Titanic Quarter	Roadside	335073	375049	NO_2	No	5.0	1.5	No	2.7
77	Poleglass (Cloona Park)	Roadside	328237	370138	NO_2	No	5.0	3.0	No	2.7
82	Molyneaux Street	Roadside	334023	375238	NO_2	Yes - AQMA 1	2.5	11.0	No	2.7
83	North Queen Street	Roadside	333857	375412	NO_2	No	9.5	3.0	No	2.7
84	Great George's Street / Portland Place	Roadside	333866	375160	NO_2	Yes - AQMA 1	5.5	4.0	No	2.7
85	Sailor Town / Dock Street	Roadside	334468	375340	NO_2	No	15.0	4.0	No	2.7
87	RVH Falls Road	Roadside	331964	373558	NO_2	No	6.0	3.0	No	2.7
88	Dunmurry Lane	Roadside	329273	368947	NO_2	No	4.0	2.0	No	2.7

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
89	Upper Knockbreda Road	Kerbside	337547	372019	NO_2	No	23.0	0.5	No	2.5
90	Tates Avenue / Glenmachan Street	Roadside	332028	372759	NO_2	Yes - AQMA 1	8.0	2.5	No	2.5
92	Andersonstown Road	Roadside	329707	371200	NO_2	No	10.0	2.0	No	2.5
95	Balmoral Avenue	Roadside	331568	370818	NO_2	No	8.5	2.5	No	2.7
96	Upper Lisburn Road (Kings Hall)	Roadside	331379	370712	NO_2	No	4.5	3.5	No	2.7
97	Monagh Bypass	Roadside	329737	372743	NO_2	No	6.5	3.0	No	2.7
98	Knocknagoney (2 Garnerville Park)	Roadside	338297	376131	NO_2	No	7.0	2.0	No	2.7
100	Henry Place 2	Roadside	333589	375251	NO_2	Yes - AQMA 1	-9.0	27.0	No	2.5
101	Stockmans Lane Roundabout	Roadside	330900	371316	NO_2	Yes - AQMA 1	4.5	3.0	No	2.5
102	North Queen Park	Roadside	333650	375180	NO_2	Yes - AQMA 1	-7.0	15.0	No	2.5
103	Blythefield Park (Bentham Drive)	Urban Background	332885	373323	NO_2	No	40.0	15.0	No	2.5
104	Ligoniel Crossroads	Roadside	330800	376914	NO_2	No	13.0	1.5	No	3.0

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
105	Ulster University	Kerbside	333918	374952	NO_2	Yes - AQMA 1	6.5	1.0	No	2.5
106	M3 (student accommodation)	Kerbside	334120	375033	NO_2	No	6.0	1.0	No	2.5
107	Springfield Road	Roadside	330220	373746	NO_2	No	5.0	2.5	No	2.5
108	Lisburn Rd and Tates Avenue Junction	Roadside	332825	372465	NO_2	No	2.7	2.5	No	2.5
109	444 Ormeau Road	Roadside	335005	370749	NO_2	Yes - AQMA 4	7.0	3.0	No	2.5
111	73a Owenvarragh Park	Roadside	330562	371205	NO_2	Yes - AQMA 1	3.0	2.0	No	2.5
112	1 Stockmans Lane	Roadside	331440	370918	NO_2	Yes - AQMA 1	8.0	2.0	No	2.5
114	Strand Walk	Kerbside	335061	374433	NO_2	No	11.0	1.0	No	2.5
115	Stormont	Roadside	339583	373935	NO_2	Yes - AQMA 3	8.0	2.5	No	2.5
117	52 Ladas Drive	Roadside	336378	372596	NO_2	No	7.0	1.5	No	2.5
118	Finaghy Road North	Roadside	330367	370009	NO_2	No	7.0	1.5	No	2.7
119	28 Kennedy Way	Roadside	330763	371636	NO_2	Yes - AQMA 1	20.0	1.5	No	2.7

Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
120	Carrick Hill	Roadside	333539	374844	NO_2	No	-2.0	5.0	No	2.5

** Please note that the various site IDs relate to current monitoring locations across the city. Over the preceding years, some sites may have relocated or monitoring discontinued. For these reasons, site IDs may be non-sequential.*

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

Tables 2.3 and 2.4 summarise recent monitoring data from the council's nitrogen dioxide automatic analysers for 2024 and preceding years from 2020. In all cases, exceedances of the Air Quality Strategy Objectives are highlighted in bold. In addition, trends in annual mean monitoring data for nitrogen dioxide are summarised in Figure 2.3.

All automatic monitoring sites in Belfast measured NO_2 annual mean concentration below 40 µg/m^3 during 2024. Moreover, there were no NO_2 1-hour means above 200 µg/m^3 recorded in Belfast during 2024.

Belfast Centre (Lombard Street) AQMS

The Belfast Centre AURN site is an urban centre / urban background site situated in a substantially pedestrianised area of Belfast City Centre. Urban background sites are located such that the pollution levels monitored are not influenced significantly by any single source or street, but rather by the integrated contribution from all sources upwind of the station e.g. by all traffic, combustion sources etc. Accordingly, there were no exceedances of any nitrogen dioxide air quality objectives recorded at the Belfast Centre AURN during 2024, with the annual mean being 18 µg/m^3; less than half of the 40 µg/m^3 annual mean objective value. As 2024 automatic data capture levels at the Belfast Centre site were however below the Department's 75% data capture threshold for nitrogen dioxide (60%), annualisation of data from this site was required and undertaken in accordance with LAQM.TG(22) guidance. The highest nitrogen dioxide hourly mean in 2024 was 90 µg/m^3; substantially less than the 200 µg/m^3 AQO value (18 exceedances permitted per annum).

Ormeau Road AQMS

The Belfast Ormeau Road monitoring site experienced extensive problems with air conditioning during 2012 and 2013, which prevented the monitoring equipment from working to full capacity. As this was a recurring problem, a decision was made towards the end of 2013 to upgrade the site infrastructure. Taking account of procurement requirements and

liaison with NIE, this upgrade took a considerable length of time, to the point that data capture from this site was such that it was considered unreliable to report for 2013. In addition, we would express some reservations about the reliability of the 2012 monitoring data, as it does not appear to follow established trends. Following the site upgrade however, the annual mean concentrations have remained reasonably constant at 27 µg/m^3 in 2014, 27 µg/m^3 in 2015, 28 µg/m^3 in 2016, 25 µg/m^3 in 2017, 26 µg/m^3 in 2018 and 24 µg/m^3 in 2019. Since the Covid-19 pandemic (2020), the annual mean results (including 2024 – 17.5 µg/m^3) at this location are markedly lower when compared to preceding years. However, they still appear to be representative, given that all nitrogen dioxide monitoring sites have demonstrated a similar downward trend, due to behavioural changes caused by the pandemic.

The above monitoring data demonstrates that nitrogen dioxide concentrations at the Ormeau Road monitoring site have been significantly below the annual mean air quality objective since 2014. Moreover, dispersion modelling undertaken as part of Belfast City Council Detailed Assessment for the city (finalised in 2023) predicted that 2019 (base year) and 2028 (future year) annual mean NO_2 concentrations within AQMA 4, which covers Ormeau Road from the junction with Donegall Pass to the Belfast City boundary at Galwally, would be below the UK AQO level at all locations of relevant human health exposure.

At this stage, however, the council has decided not to move to revoke the Ormeau Road Air Quality Management Area, and instead to continue to monitor within this AQMA and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication.

Upper Newtownards Road AQMS

From the data presented in Table 2.3, it can be seen that annual mean concentrations of nitrogen dioxide along the Upper Newtownards Road have remained in the range 20 – 27 µg/m^3 since 2019, meaning that the nitrogen dioxide annual mean objective is being consistently achieved along the Upper Newtownards Road. As noted above, and since 2020, there has been a marked reduction in nitrogen dioxide concentrations, again due to significant reductions in traffic numbers, as a result of the Covid-19 pandemic restrictions.

2024 nitrogen dioxide annual mean results (20.6 µg/m^3) are lower than pre-pandemic annual mean data and significantly below the 40 µg/m^3 annual mean objective level.

In addition, the Knock Road non-automatic roadside diffusion tube, located at the junction of the Upper Newtownards Road, Hawthornden Way and the Knock Road (Upper Newtownards Road AQMA worst case location) recorded exceedances of the annual mean objective in previous years up until 2016. The 2017 calendar year was the first year when the annual mean concentration at the Knock Road junction fell below the air quality objective (36 µg/m^3), which was still the case in 2024 (23.4 µg/m^3). Consequently, there have not been any monitored exceedances of the air quality objectives for NO_2 identified within this AQMA over the last eight monitoring years.

Moreover, it should be noted that the Belfast Rapid Transit Glider commenced operation along this route from September 2018. In order to facilitate operation of the Glider, a bus lane was established on the Upper Newtownards Road, Albertbridge Road and East Bridge Street, which operates from 07.00 to 19.00, Monday to Saturday inclusive. Glider operations together with introduction of the associated bus lane are likely to have had a beneficial impact on traffic movements and pollution levels along the Upper Newtownards Road, Albertbridge Road and East Bridge Street.

The abovementioned nitrogen dioxide monitoring data for this Upper Newtownards Road AQMA No. 3, and the outcome of the council's detailed assessment, which also confirmed that modelled 2019 (base year) and 2028 (future year) annual mean NO_2 concentrations within AQMA No. 3 would be below the annual mean objective, indicate that this AQMA may be revoked.

At this stage, however, the council has decided not to move to revoke the Upper Newtownards Road Quality Management Area, and instead to continue to monitor within this AQMA and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication.

Stockman's Lane AQMS

Unfortunately, despite completion of significant structural improvements to the M1 Motorway and A12 Westlink corridor, nitrogen dioxide concentrations at Stockman's Lane have historically remained high. 2020 was the first year however, when the annual mean concentration (33 µg/m^3) fell below the objective level of 40 µg/m^3, likely due to Covid-19 travel restrictions. Whilst reductions in nitrogen dioxide annual mean concentrations at the Stockman's Lane site had been following a relatively consistent declining trend (the 2019 nitrogen dioxide annual mean was 45 µg/m^3, which is a ~8% reduction from the 2018 annual mean of 49 µg/m^3), the Covid-19 pandemic had an obvious impact on the 2021 and 2022 annual mean concentrations. The 2021 annual mean (36 µg/m^3) and 2022 annual mean (36.4 µg/m^3) nitrogen dioxide concentrations were about 20% lower than the 2019 (pre-pandemic) levels. The 2023 annual mean (35.6 µg/m^3) and 2024 annual mean (33 µg/m^3) concentrations continue this downward trend. Although concentrations recorded at this automatic station are now much lower than the 40 µg/m^3 annual mean objective, one roadside diffusion tube (Diffusion tube No 101 - Stockman's Lane Roundabout), located near to the Stockman's Lane AQMS, recorded a 2024 NO_2 annual mean concentration of 36.2 µg/m^3. The 2024 nitrogen dioxide annual mean concentration at this diffusion tube monitoring location was therefore marginally above the 36 µg/m^3 (i.e. within 10% of the NO_2 annual mean objective for NO_2 passive diffusion tube monitoring) threshold, established in Box 3-2 AQMA Process Diagram of LAQM.TG(22) for revocation of an AQMA.

Despite these welcome and declining nitrogen dioxide annual mean monitoring results in the area of Stockmans Lane, modelling results from the council's Detailed Assessment have also suggested elevated nitrogen dioxide levels at this location. Therefore, the council will continue its monitoring at this location (within the M1 Motorway / A12 Westlink Corridor Air Quality Management Area) to identify any potential further exceedances and to better establish nitrogen dioxide concentrations and trends.

There were no NO_2 1-hour mean concentrations above 200 µg/m^3 recorded at this AQMS location during 2024; the maximum hourly mean nitrogen dioxide concentration in 2024 was 137 µg/m^3.

A12 Westlink / Roden Street AQMS

The 2024 nitrogen dioxide annual mean (27.1 µg/m^3) monitored at the A12 Westlink / Roden Street site has not changed significantly since 2021. Although slightly higher than in 2020

(24 µg/m^3), it is still noticeably lower than the 2019 pre-pandemic level (34 µg/m^3) and comfortably below the annual mean objective of 40 µg/m^3. Also, there were no NO_2 1-hour means above 200 µg/m^3 recorded at this AQMS location during 2024; the maximum hourly mean nitrogen dioxide concentration in 2024 was 114 µg/m^3.

The nitrogen dioxide annual mean air quality objective has not been exceeded at the A12 Westlink / Roden Street monitoring site since 2011. However, one roadside diffusion tube, located at Henry Place, further along the Westlink corridor, has recorded exceedances of the annual mean objective over the last few years, including during 2023 (43.0 µg/m^3). 2024 was the first year when the monitored annual mean concentration (39.1 µg/m^3) was slightly below the objective level at this location, although still above the 36 µg/m^3 threshold, established in Box 3-2 AQMA Process Diagram of LAQM.TG(22) for revocation of an AQMA. The council will therefore continue monitoring within the Westlink Corridor / M1 Air Quality Management Area (AQMA 1) to identify further improvements in nitrogen dioxide concentrations.

Historically, modelled and monitored exceedances of the 1-hour mean objective for nitrogen dioxide were encountered only in the vicinity of the M1 Motorway / A12 Westlink corridor. As a result, this is the only Air Quality Management Area within Belfast that has been declared on the basis of exceedances of the 1-hour objective.

From ambient nitrogen dioxide monitoring data for the Stockman's Lane and A12 Westlink / Roden Street monitoring sites, as summarised in Table 2.4, it can be seen that the number of exceedances of the hourly mean objective has substantially decreased over recent years, both now demonstrating compliance with the 200 µg/m^3 objective, not to be exceeded more than 18 times per year - since 2013. In fact, there have been no recorded nitrogen dioxide 1-hour mean concentrations greater than 200 µg/m^3 at either monitoring site since 2019.

DAERA, in their letter of 20th November 2024, concerning the appraisal of the council's 2024 Updating and Screening Assessment highlighted that there have been no exceedances of the 1-hour NO_2 objective recorded within any declared AQMA for the last five years presented within the 2024 USA. DAERA and their technical assessors therefore advised the Council to consider revocation of the 1-hour NO_2 designation for the M1 Motorway / A12 Westlink AQMA.

At this stage, however, the council has decided not to move to revoke the M1 Motorway and A12 Westlink corridor Air Quality Management Area (No. 1) for exceedances of the nitrogen dioxide 1-hour mean objective, and instead to continue to monitor within this AQMA and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication. The council notes that the WHO air quality guidelines for nitrogen dioxide that were not re-evaluated and remain valid include the 200 $\mu g/m^3$ guideline value that is assessed over a 1-hour averaging time period.

Table 2.3 – Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site Name	Site Type	Within AQMA? Which AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2024 % b	Annual Mean Concentration (µg/m^3)				
					2020*	2021*	2022*	2023*	2024 [c]
Belfast Centre (Lombard Street)	Urban Background	N	60%	60%	19[c]	21	21.1	18.8[c]	18.1[c]
Belfast Ormeau Road	Roadside	Y (CM2)	99%	99%	17	18	18.8	18.0	17.5
Belfast Upper Newtownards Road	Roadside	Y (CM3)	99%	99%	20	21	22.2	21.0	20.6
Belfast Stockman's Lane	Roadside	Y (CM4)	99%	99%	33	36	36.4	35.6	33.3
Belfast Westlink / Roden Street	Roadside	Y (CM5)	99%	99%	24	28	27.9	28.5	27.1

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" as in Boxes 7.9 and 7.10 of LAQM.TG(22), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Figure 2.3 – Trends in Annual Mean NO_2 Concentrations Measured at Automatic Monitoring Sites

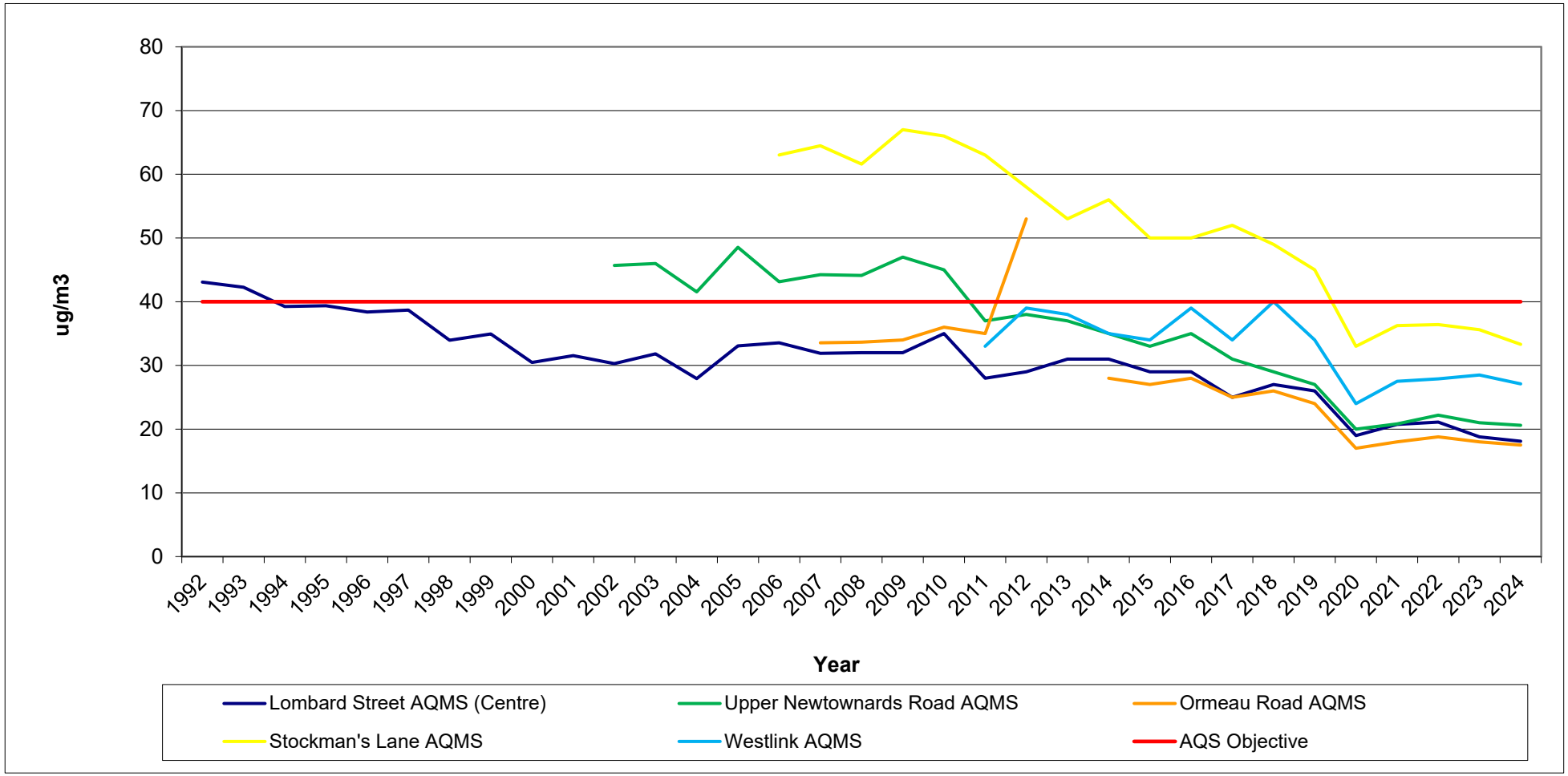


Table 2.4 – Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2024 % [b]	Number of Hourly Means > 200µg/m^3				
					2020* [c]	2021* [c]	2022* [c]	2023* [c]	2024 [c]
Belfast Centre (Lombard Street)	Urban Background	N	60%	60%	0 (86)[c]	0	0(93)[c]	0(84)[c]	0(82)[c]
Belfast Ormeau Road	Roadside	Y	99%	99%	0	0	0	0	0
Belfast Upper Newtownards Road	Roadside	Y	99%	99%	0	0	0	0	0
Belfast Stockman's Lane	Roadside	Y	99%	99%	0	0	0	0	0
Belfast Westlink / Roden Street	Roadside	Y	99%	99%	0	0	0	0	0

In bold, exceedance of the NO_2 hourly mean AQS objective (200 µg/m^3 – not to be exceeded more than 18 times per year)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] If the data capture for full calendar year is less than 85%, include the 99.8th percentile of hourly means in brackets

* Number of exceedances for previous years is optional

Diffusion Tube Monitoring Data

In order to obtain a better understanding of how concentrations of nitrogen dioxide are varying across the city over time, and to investigate those locations where previous rounds of the review and assessment process have highlighted areas of concern, Belfast City Council has placed 80 diffusion tubes at 72 relevant receptor locations across the city. Data from these diffusion tubes for 2024 have been summarised in Table 2.5 alongside historical data, where it is available, in Table 2.6.

In terms of the outcome of the 2024 nitrogen dioxide diffusion tube monitoring, it is noted that concentrations at most locations are broadly comparable to, or slightly lower in comparison to 2022 and 2023 results. Moreover, they are still significantly lower than 2019 pre-pandemic concentrations.

Since the 2024 Updating and Screening Assessment Report, council officers have removed 8 tubes (Nos. 28, 86, 91, 93, 94,110, 113 and 116) from the network, due to sustained low concentrations or changes to 'relevant exposure' locations; and we have added 4 new tubes (Nos. 117, 118, 119 and 120) close to busy roads with relevant exposure (residential properties). All locations are detailed in Figure 2.2 and Table 2.2.

Only one exceedance (41.3 µg/m^3) of the 40 µg/m^3 annual mean air quality objective was recorded during 2024, at a location next to the junctions of the M3 Motorway / M2 Motorway / Nelson Street and the A12 Westlink (Diffusion tube No. 106).

Diffusion tube monitoring site No. 106 is located immediately next to a dominant road transport NO_2 pollution source and at a worst-case location (complex junction), adjacent to recently completed residential premises. Nevertheless, the Diffusion Tube Processing Tool has predicted an annual mean NO_2 concentration of 31.4 µg/m^3 at the façade of the residential premises, indicating that no exceedance of the 40 µg/m^3 annual mean objective was likely at this relevant receptor location during the 2024 monitoring year. The distance adjustment has been calculated using the Diffusion Tube Data Processing Tool and presented in Appendix A.

In addition, for the 2024 monitoring year, there were only three diffusion tube sites (DT70 Henry Place, DT106 M3, and DT101 Stockman's Lane Roundabout) located at roadside / kerbside locations, where annual mean nitrogen dioxide concentrations were above the

36µg/m^3 (within 10% of the annual mean objective of 40µg/m^3) threshold for revocation of an AQMA.

A summary of fall-off with distance calculations from the Diffusion Tube Data Processing Tool are presented in Table A.4 (Appendix A)

Table 2.5 – Annual Results Summary

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m³)												Simple Annual Mean (µg/m³)			Comment
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure	
1	332522	373708	20.5			16.4	16.0	9.9	12.4	15.0	18.1	23.2	24.2	20.5	17.6	14.4	-	
2	329780	369528		41.2	31.6	36.8	31.2	33.3	32.1	33.9	32.7	37.2	40.0	41.4	35.6	29.0	-	
3	334220	373853	27.0	34.4	32.2	30.8	31.0	23.0	24.2	23.5	33.2	29.8	34.8	29.6	29.5	24.0	-	
4	335013	373979	24.7	28.8	28.7		27.3	20.1	20.2	19.2	28.9		30.3	28.7	25.7	20.9	-	
5	334630	374385	25.3	26.6	30.3	30.0	30.8	20.8	24.3	20.1	33.9	27.9	30.7	31.1	27.7	22.5	-	
6	337681	374133		18.2	12.7	12.3	11.1	8.1	8.4	8.2	11.3	12.7	18.3	16.1	12.5	10.2	-	
7	333840	373956	25.9	33.8	32.0	31.2	34.8	22.2	23.5	22.9	36.0	31.6	33.3	31.5	29.9	24.4	-	
9	334983	374260	34.9	40.9	37.1	42.3	36.9	33.0	33.6	29.3	40.2	39.2	41.0	36.6	37.1	30.2	-	
10	334499	372186	27.3	32.2	25.3	27.7	23.1	22.7	22.1	22.7	25.4	28.7	29.4	28.1	26.2	21.4	-	
12	338718	373918	30.9	32.7	31.2	28.6	27.9	23.7	25.0	24.2	28.6	26.0	36.0	29.3	28.7	23.4	-	
13	333981	375102		43.1	51.8		50.2	32.0	37.4	29.0	46.1	46.5	41.2	35.5	41.3	33.7	-	

14	332063	371376	26.9	33.9	27.9	26.6	25.4	19.5	19.2		27.9	26.4	29.8	31.6	26.8	21.9	-	
15	333600	373283		34.5	33.2	31.4	31.8	21.7	26.2	24.6	34.9	33.5	34.9		30.7	25.0	-	
16	333898	374358	26.3	26.7	24.2	21.3	21.3		17.1	15.2	26.3	24.2	25.1	23.9	-	-	-	Triplicate Co-location Site with 16, 19 and 20 - Annual data provided for 20 only
19	333898	374358	22.8	28.4	25.7	18.5	23.1		16.6	17.2	26.0	23.5	26.4	26.2	-	-	-	Triplicate Co-location Site with 16, 19 and 20 - Annual data provided for 20 only
20	333898	374358	25.8	27.7	26.0	21.0	24.0		17.0	16.1	24.0	25.4	24.4	25.1	23.1	18.8	-	Triplicate Co-location Site with 16, 19 and 20 - Annual data provided for 20 only

17	334213	374485	26.7	33.8	36.6	32.3	35.0	21.6		30.4	33.9	40.6	42.9	36.3	33.7	27.4	-	
21	331009	371251	42.9	43.3	41.8	44.1	42.4	42.5	41.7	39.8	43.0	46.4	50.0	41.6	-	-	-	Triplicate Co-location Site with 21, 22 and 56 - Annual data provided for 56 only
22	331009	371251	39.0	43.5	42.4	44.8	42.4	45.6	42.5	42.1	46.0	49.5	48.1	36.8	-	-	-	Triplicate Co-location Site with 21, 22 and 56 - Annual data provided for 56 only
56	331009	371251	38.1	44.2	39.8	44.9	40.5	44.1	40.5	42.5	42.6	48.6	47.8	39.1	43.2	35.2	-	Triplicate Co-location Site with 21, 22 and 56 - Annual data provided for 56 only
23	337930	373972	24.8	27.5	20.9	23.9	22.1	18.7	17.0	19.1	25.8	26.1	28.8	23.3	-	-	-	Triplicate Co-location

																	Site with 23, 24 and 32 - Annual data provided for 32 only
24	337930	373972	27.6	27.5	21.2	23.8	22.2	14.6	18.2	16.4	26.4	24.7	29.1	26.3	-	-	-	Triplicate Co-location Site with 23, 24 and 32 - Annual data provided for 32 only
32	337930	373972	44.9	27.6	21.3	23.9		20.1	18.4	19.1	24.9	21.8	28.6	25.8	23.7	19.4	-	Triplicate Co-location Site with 23, 24 and 32 - Annual data provided for 32 only
25	333230	380877	20.2	21.0		21.8	26.1	16.6	18.7	13.1	23.9	25.6	27.1	17.9	21.1	17.2	-	
26	333018	373120	28.0	32.5	31.9	29.9	30.3	23.6	25.0	20.6	32.2	31.3	34.7	29.0	29.1	23.7	-	
30	337168	375485	23.5	24.0	16.7	19.4	18.5	16.2	15.8	12.0	21.3	15.9	24.3	20.8	19.0	15.5	-	
31	332544	370283	30.9	34.2	35.9	30.2	31.2			21.5	32.3	31.4	33.3	23.2	30.4	24.8	-	

33	333548	373772	37.3	42.1	34.0	39.7	35.6	36.0	36.5	27.5	38.6	36.9	42.3	39.4	37.2	30.3	-	
34	333501	374236	31.7	35.3	37.7	32.9	34.8	22.0	27.9	24.3	36.0	36.9	36.6	30.2	32.2	26.2	-	
35	334140	374126	32.9	39.5	40.6	38.1	38.6		30.7	29.2	39.7	38.0	43.4	36.5	37.0	30.2	-	
36	334114	373536	30.2	34.4	32.4	36.1	32.6	26.7	27.4	22.6	35.7	35.5			31.4	25.6	-	
37	332100	373015	42.3	41.5	35.8		33.3	33.2	33.1	23.9	35.2	41.9	42.5	35.5	36.2	29.5	-	
38	333085	374065	29.1	31.2	40.0	34.4	35.7	15.8	25.6		37.9	36.5	32.9	26.2	31.4	25.6	-	
39	334957	371298	26.6	32.1	23.3	28.7	23.2	22.8	21.0	25.4	26.0	26.9	31.9	32.1	26.7	21.8	-	
40	336516	374226	26.7	34.5	22.4	20.7	20.5	15.5	18.4	17.3	24.3	27.7	32.9	25.7	23.9	19.5	-	
41	333101	375295	29.2	29.2	31.0	25.9	26.0	20.8	19.6	19.9	26.0	29.4	32.4	26.3	26.3	21.4	-	
42	333258	376186	27.1	34.3	33.8		30.5	19.8	24.1	23.2	21.8	27.4	29.5		27.2	22.1	-	
44	334177	376375	23.1	30.3		52.8	26.3	14.5	22.0	21.1	28.0	34.9	33.0	25.2	28.3	23.1	-	
59	334214	375638	32.0				36.6	20.7		26.6	33.9	40.5	36.6	32.4	32.4	26.2	-	
63	334193	374457	31.5	31.9	35.6	31.7	33.9	24.7	26.8	22.5	37.3	32.8	34.0	31.4	31.2	25.4	-	
65	332610	373434	36.1	36.4	41.5	37.3	39.3	26.4	28.7	22.8	43.8	30.5	34.0	30.9	-	-	-	Triplicate Co-location Site with 65, 66 and 67 -

																	Annual data provided for 67 only
66	332610	373434	36.6	37.9	45.9	39.0	40.0	25.9	30.2	23.0	40.6	33.1	32.6	30.5	-	-	-	Triplicate Co-location Site with 65, 66 and 67 - Annual data provided for 67 only
67	332610	373434	35.3	34.9	43.7	38.2	39.7	26.6	31.8	21.3	45.5	32.2	31.6	28.4	34.2	27.9	-	Triplicate Co-location Site with 65, 66 and 67 - Annual data provided for 67 only
68	332610	373474	42.2	45.3	38.8	36.0	36.2	30.9	34.8	28.2	33.6	23.4	45.3		35.9	29.3	-	
69	333281	374755		38.3	50.3	41.7	40.2	23.5	31.5	28.2	41.9	46.2	38.4	39.6	38.2	31.1	-	
70	333588	375224	49.1	63.9	53.6	44.5	37.6		36.6	40.9	33.3	64.1	49.4	54.9	48.0	39.1	24.5	
74	329923	370300	28.2	34.9	26.5	29.1	22.5	22.6	21.0	22.1	25.1	30.7	32.1	32.0	27.2	22.2	-	
76	335073	375049	25.7	26.2	21.9	23.3	22.1	16.1	17.0	16.6	25.7	23.7	26.2		22.2	18.1	-	

77	328237	370138	26.2	26.9	22.0	21.3	18.6	19.2	17.2	17.0	19.0	22.5	26.1	23.8	21.6	17.6	-	
82	334023	375238	34.9	37.5	41.3	31.7	34.4	22.2	25.1	26.5	33.4	35.4	36.8	31.7	32.6	26.5	-	
83	333857	375412		44.9	38.2	31.2	29.2	21.4	26.2	25.1	30.5		39.8	39.8	32.6	26.6	-	
84	333866	375160	54.1	34.1	36.2	32.3	32.5	22.8	25.2	20.8	37.8	30.9	32.8	28.3	32.3	26.3	-	
85	334468	375340	30.2	32.2	31.9	30.5	29.4	21.6	23.6	20.1	29.7	28.0	31.9	28.4	28.1	22.9	-	
87	331964	373558	32.5	34.2		28.7	30.4	23.2		21.8	26.1	32.7	37.9	30.9	29.8	24.3	-	
88	329273	368947	24.8	24.8	24.4	19.3	21.0	14.1	13.1	13.7	21.6	25.8	25.9	21.6	20.8	17.0	-	
89	337547	372019	31.2	29.8	24.7	29.5	27.2	23.2	20.2	19.7	29.5	26.1	29.1	25.6	26.3	21.5	-	
90	332028	372759	45.4	46.9	37.6	36.4	34.0	30.0	30.4	35.2	35.2	46.6	44.1	39.4	38.4	31.3	-	
92	329707	371200	30.5	30.6	30.3	27.2	26.4	20.1	20.5	21.2	27.3	32.0	34.3		27.3	22.3	-	
95	331568	370818	34.9	34.3	39.3		37.8	30.3	26.7	25.4	37.5	37.5	37.3	32.9	34.0	27.7	-	
96	331379	370712	27.2	27.2	23.2	20.5	20.3	15.3		16.5	26.2	23.6	25.2	24.5	22.7	18.5	-	
97	329737	372743	21.9	24.9	23.1	21.0	24.3	19.2	20.4	20.7	21.3	27.5	27.3	21.0	22.7	18.5	-	
98	338297	376131	39.6	41.1	31.7	41.9	37.8	36.6	34.4	30.8	39.7	34.6	41.2	37.0	37.2	30.3	-	
100	333589	375251		36.8	34.0	27.3	27.7	19.7	21.2	27.6	24.5	40.7	38.9	29.9	29.8	24.3	26.8	

101	330900	371316	44.6	51.8	43.9	47.1	41.1	45.6	36.4	39.2	47.6	45.9	44.7	44.7	44.4	36.2	30.9	
102	333650	375180	35.1	34.9	33.0	31.7	28.4		11.6	20.6	33.3	30.0	33.9	29.0	29.2	23.8	26.6	
103	332885	373323	29.2	27.4	27.0	23.1		18.2	17.4	11.9	22.5	22.6	27.7	23.8	22.8	18.6	-	
104	330800	376914	19.1	17.3	17.9	14.3	15.4	11.3			16.9	17.1	19.4	14.2	16.3	13.3	-	
105	333918	374952	32.6	36.2	39.0	32.8	38.3	22.0	28.6	25.2	45.5	30.3			33.1	26.9	-	
106	334120	375033	48.7	50.9	50.2	56.2	56.9	48.5	46.6	31.3	60.8	56.4			50.6	**41.3**	31.4	
107	330220	373746		26.1	26.0	21.0	24.4	15.2	16.8	17.8	23.5		26.6	20.3	21.8	17.8	-	
108	332825	372465	37.8	36.1	38.3	37.5	39.4	29.5		21.7	44.1	28.4	33.6	33.0	34.5	28.1	-	
109	335005	370749	33.9	34.0	29.6	31.2	30.7	22.5	24.7	20.9	36.5	29.9	31.2	31.8	29.7	24.2	-	
111	330562	371205	30.0	28.4	27.4	21.3	22.3	13.0	17.6	17.9	22.5	28.4	28.8		23.4	19.1	-	
112	331440	370918	44.0	44.3	36.1	42.1	39.1	36.3	33.6	32.4	43.9	46.0	45.8	37.7	40.1	32.7	-	
114	335061	374433	23.8	47.8	44.2		47.6	37.0	40.6	37.9	43.5	45.6	44.9	41.2	41.3	33.6	-	
115	339583	373935			14.6	14.4	12.9	11.4	10.7	9.4	14.8	14.0	17.3	19.6	13.9	11.3	-	
117	336378	372596	29.8	28.3	18.0	18.4		15.1	13.4	13.4	21.5	21.7	25.1	25.5	20.9	17.1	-	
118	330367	370009		35.0	33.8	31.8	69.5	21.2		22.8	33.8	34.5	37.6	29.4	34.9	28.5	-	

119	330763	371636		40.3	36.3	38.1	39.9		29.8	24.3	35.4	38.2	40.9	33.4	35.6	29.1	-	
120	333539	374844		33.4	30.8	25.7	27.4	16.2	20.3	14.5	29.1	29.9	29.6	26.2	25.7	21.0	21.9	

In bold, exceedance of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60 µg/m^3, indicating a potential exceedance of the NO_2 hourly mean AQS objective

[a] Means should be "annualised" as in Boxes 7.9 and 7.10 of LAQM.TG(22), if full calendar year data capture is less than 75%

[b] If an exceedance is measured at a monitoring site not representative of public exposure, NO_2 concentration at the nearest relevant exposure should be estimated based on the NO_2 fall-off with distance calculator, and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.82 to 7.85 of LAQM.TG(22)

Table 2.6 – Results of NO_2 Diffusion Tubes (2020 to 2024)

Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration (µg/m³) - Adjusted for Bias [a]				
				2020 (Bias Adjustment Factor = 0.79)	2021 (Bias Adjustment Factor = 0.79)	2022 (Bias Adjustment Factor = 0.81)	2023 (Bias Adjustment Factor = 0.80)	2024 (Bias Adjustment Factor = 0.82)
1	Royal Victoria Hospital	Urban Background	No	17.6	18.1	16.6	15.9	14.4
2	Black's Road	Roadside	Yes - AQMA 1	33.3	30.7	31.5	30.5	29.0
3	61 Cromac Street	Roadside	Yes - AQMA 2	22.4	24.5	26.2	25.1	24.0
4	Albertbridge Road	Roadside	Yes - AQMA 2	20.5	20.8	21.0	20.5	20.9
5	Queen's Bridge	Roadside	No	20.7	23.1	24.4	23.0	22.5
6	58 Earlswood Road	Urban Background	No	10.8	12.3	10.7	10.8	10.2
7	Donegall Square South	Roadside	No	22.8	23.4	25.5	26.8	24.4
9	Short Strand	Roadside	No	30.5	32.8	31.7	30.7	30.2
10	301 Ormeau Road	Roadside	Yes - AQMA 4	21.6	23.5	23.2	23.3	21.4
12	Knock Road	Roadside	Yes - AQMA 3	24.8	26.0	25.2	25.8	23.4
13	Great George's Street	Kerbside	Yes - AQMA 1	32.8	36.3	35.1	36.5	33.7
14	Lisburn Road	Roadside	No	23.5	22.4	23.1	22.6	21.9
15	Shaftesbury Square	Kerbside	No	25.1	26.4	26.7	27.1	25.0
16, 19, 20	Lombard Street	Urban Background	No	19.5	21.1	21.0	20.9	18.8
17	Albert Clock	Roadside	No	26.5	28.1	28.7	28.6	27.4
21, 22, 56	Stockmans Lane	Roadside	Yes - AQMA 1	29.9	33.4	37.8	36.4	35.2

Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2020 (Bias Adjustment Factor = 0.79)	2021 (Bias Adjustment Factor = 0.79)	2022 (Bias Adjustment Factor = 0.81)	2023 (Bias Adjustment Factor = 0.80)	2024 (Bias Adjustment Factor = 0.82)
23, 24, 32	Ballyhackamore	Roadside	Yes - AQMA 3	18.9	19.8	19.8	19.7	19.4
25	Whitewell Road	Roadside	No	16.1	19.0	18.6	19.0	17.2
26	Donegall Road	Kerbside	No	21.9	24.8	24.0	24.7	23.7
30	Station Road	Roadside	No	16.6	17.2	17.1	16.6	15.5
31	Upper Malone Road	Roadside	No	22.8	26.3	23.9	25.5	24.8
33	Great Victoria Street	Roadside	No	24.9	28.3	29.5	30.8	30.3
34	College Square East	Roadside	No	22.1	27.5	27.9	28.0	26.2
35	Chichester Street	Roadside	No	27.8	32.1	33.2	30.2	30.2
36	Cromac Street / Ormeau Avenue	Kerbside	Yes - AQMA 2	21.4	23.4	24.1	23.9	25.6
37	Broadway	Roadside	Yes - AQMA 1	27.9	30.2	33.1	32.6	29.5
38	Albert Street	Roadside	Yes - AQMA 1	20.8	22.8	24.5	26.3	25.6
39	Ormeau Road (junction with Ravenhill Road)	Roadside	Yes - AQMA 4	26.0	26.7	27.1	22.1	21.8
40	Upper Newtownards Road / Holywood Road	Roadside	No	18.9	20.2	20.0	18.5	19.5
41	Crumlin Road	Roadside	No	20.6	23.2	22.7	22.4	21.4
42	246 Antrim Road	Roadside	No	25.1	26.5	25.9	26.1	22.1
44	Shore Road (Ivan Street)	Roadside	No	21.3	23.9	23.2	23.2	23.1
59	York Street	Roadside	No	26.8	29.7	30.8	30.1	26.2

Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2020 (Bias Adjustment Factor = 0.79)	2021 (Bias Adjustment Factor = 0.79)	2022 (Bias Adjustment Factor = 0.81)	2023 (Bias Adjustment Factor = 0.80)	2024 (Bias Adjustment Factor = 0.82)
63	Queen's Square / Victoria Street	Roadside	No	25.3	34.3	32.4	26.3	25.4
65, 66, 67	Westlink AQMS	Roadside	Yes - AQMA 1	27.8	30.1	28.8	29.4	27.9
68	Opposite Westlink AQMS	Roadside	Yes - AQMA 1	33.6	31.8	36.0	35.2	29.3
69	Peter's Hill	Kerbside	Yes - AQMA 1	30.6	32.3	30.5	30.7	31.1
70	Henry Place	Kerbside	Yes - AQMA 1	**41.1**	**45.7**	**42.0**	**43.0**	39.1
74	Ardmore Park	Roadside	No	24.3	23.3	25.7	23.4	22.2
76	Titanic Quarter	Roadside	No	18.1	17.2	18.3	17.5	18.1
77	Poleglass (Cloona Park)	Roadside	No	18.3	18.1	19.3	18.2	17.6
82	Molyneaux Street	Roadside	Yes - AQMA 1	26.7	28.3	29.6	29.4	26.5
83	North Queen Street	Roadside	No	26.5	28.8	26.7	28.4	26.6
84	Great George's Street / Portland Place	Roadside	Yes - AQMA 1	25.5	26.9	26.7	26.9	26.3
85	Sailor Town / Dock Street	Roadside	No	22.9	23.9	23.2	24.2	22.9
87	RVH Falls Road	Roadside	No	24.1	28.1	27.2	26.3	24.3
88	Dunmurry Lane	Roadside	No	17.7	19.2	18.8	18.4	17.0
89	Upper Knockbreda Road	Kerbside	No	23.0	24.2	24.3	23.3	21.5
90	Tates Avenue / Glenmachan Street	Roadside	Yes - AQMA 1	20.5	21.0	27.8	33.0	31.3

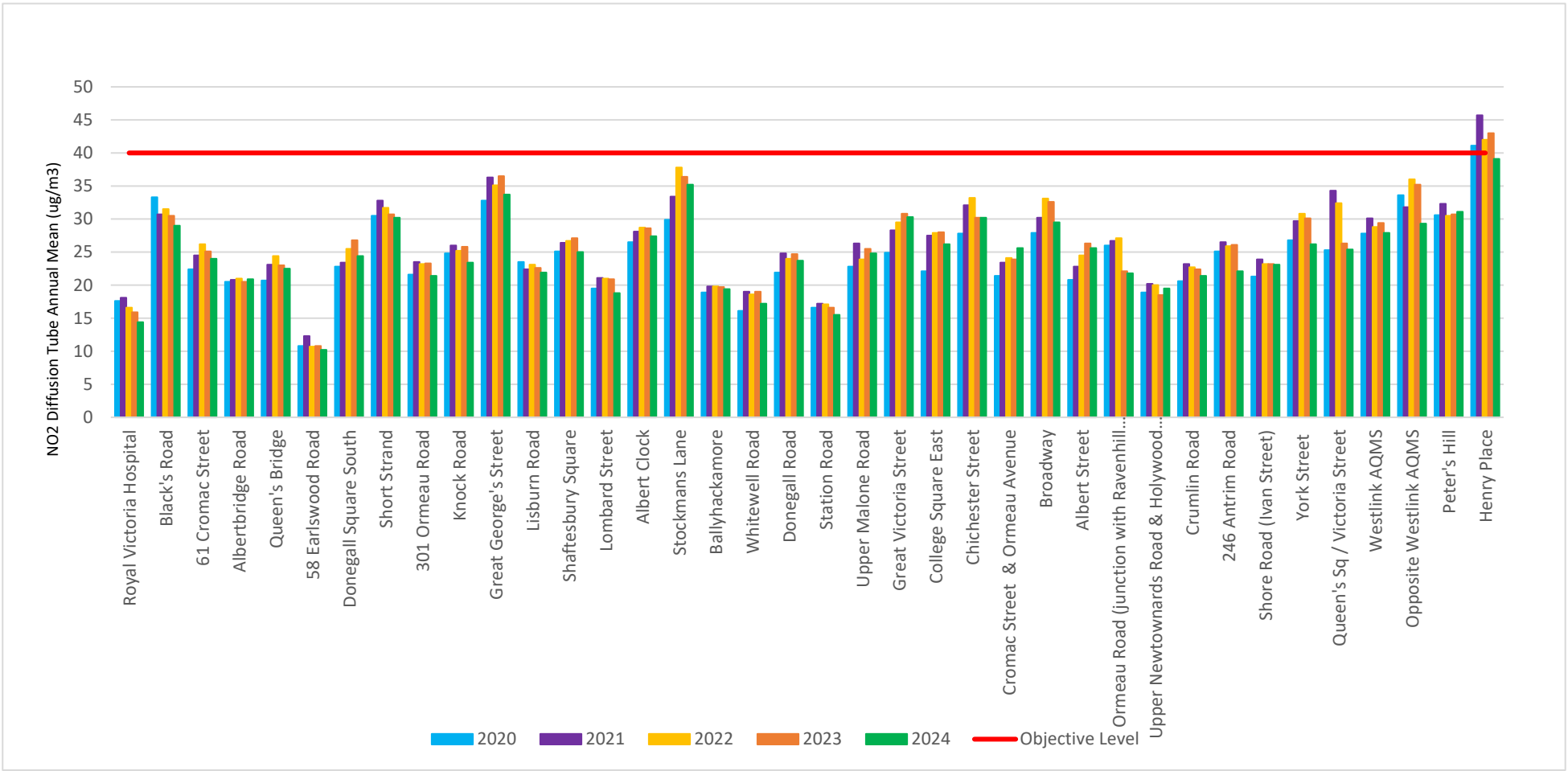
Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2020 (Bias Adjustment Factor = 0.79)	2021 (Bias Adjustment Factor = 0.79)	2022 (Bias Adjustment Factor = 0.81)	2023 (Bias Adjustment Factor = 0.80)	2024 (Bias Adjustment Factor = 0.82)
92	Andersonstown Road	Roadside	No	22.5	25.0	22.8	22.0	22.3
95	Balmoral Avenue	Roadside	No	25.5	28.1	28.9	28.6	27.7
96	Upper Lisburn Road (Kings Hall)	Roadside	No	20.1	20.3	19.5	18.4	18.5
97	Monagh Bypass	Roadside	No	16.4	18.0	18.4	19.1	18.5
98	Knocknagoney (2 Garnerville Park)	Roadside	No	31.4	33.5	32.0	31.1	30.3
100	Henry Place 2	Roadside	Yes - AQMA 1	**N/A**	26.9	28.8	26.0	24.3
101	Stockmans Lane Roundabout	Roadside	Yes - AQMA 1	**N/A**	32.6	39.2	36.3	36.2
102	North Queen Park	Roadside	Yes - AQMA 1	**N/A**	28.3	25.4	24.9	23.8
103	Blythefield Park (Bentham Drive)	Roadside	No	**N/A**	20.2	19.8	19.2	18.6
104	Ligoniel Crossroads	Roadside	No	**N/A**	**N/A**	13.5	13.0	13.3
105	Ulster University	Kerbside	Yes - AQMA 1	**N/A**	**N/A**	29.8	30.3	26.9
106	M3 (student accommodation)	Kerbside	No	**N/A**	**N/A**	**45.8**	**42.3**	**41.3**
107	Springfield Road	Roadside	No	**N/A**	**N/A**	20.8	19.6	17.8
108	Lisburn Rd and Tates Avenue Junction	Roadside	No	**N/A**	**N/A**	31.7	29.2	28.1
109	444 Ormeau Road	Roadside	Yes - AQMA 4	**N/A**	**N/A**	**N/A**	24.2	24.2
111	73a Owenvarragh Park	Roadside	Yes - AQMA 1	**N/A**	**N/A**	**N/A**	19.5	19.1
112	1 Stockmans Lane	Roadside	Yes - AQMA 1	**N/A**	**N/A**	**N/A**	32.8	32.7

Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2020 (Bias Adjustment Factor = 0.79)	2021 (Bias Adjustment Factor = 0.79)	2022 (Bias Adjustment Factor = 0.81)	2023 (Bias Adjustment Factor = 0.80)	2024 (Bias Adjustment Factor = 0.82)
114	Strand Walk	Kerbside	No	**N/A**	**N/A**	**N/A**	35.6	33.6
115	Stormont	Roadside	Yes - AQMA 3	**N/A**	**N/A**	**N/A**	17.6	11.3
117	52 Ladas Drive	Roadside	No	**N/A**	**N/A**	**N/A**	**N/A**	17.1
118	Finaghy Road North	Roadside	No	**N/A**	**N/A**	**N/A**	**N/A**	28.5
119	28 Kennedy Way	Roadside	Yes - AQMA 1	**N/A**	**N/A**	**N/A**	**N/A**	29.1
120	Carrick Hill	Roadside	No	**N/A**	**N/A**	**N/A**	**N/A**	21.0

In bold, exceedance of the NO_2 annual mean AQS objective of 40 µg/m^3

[a] Means should be “annualised” as in Boxes 7.9 and 7.10 of LAQM.TG(22), if full calendar year data capture is less than 75%

Figure 2.4 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



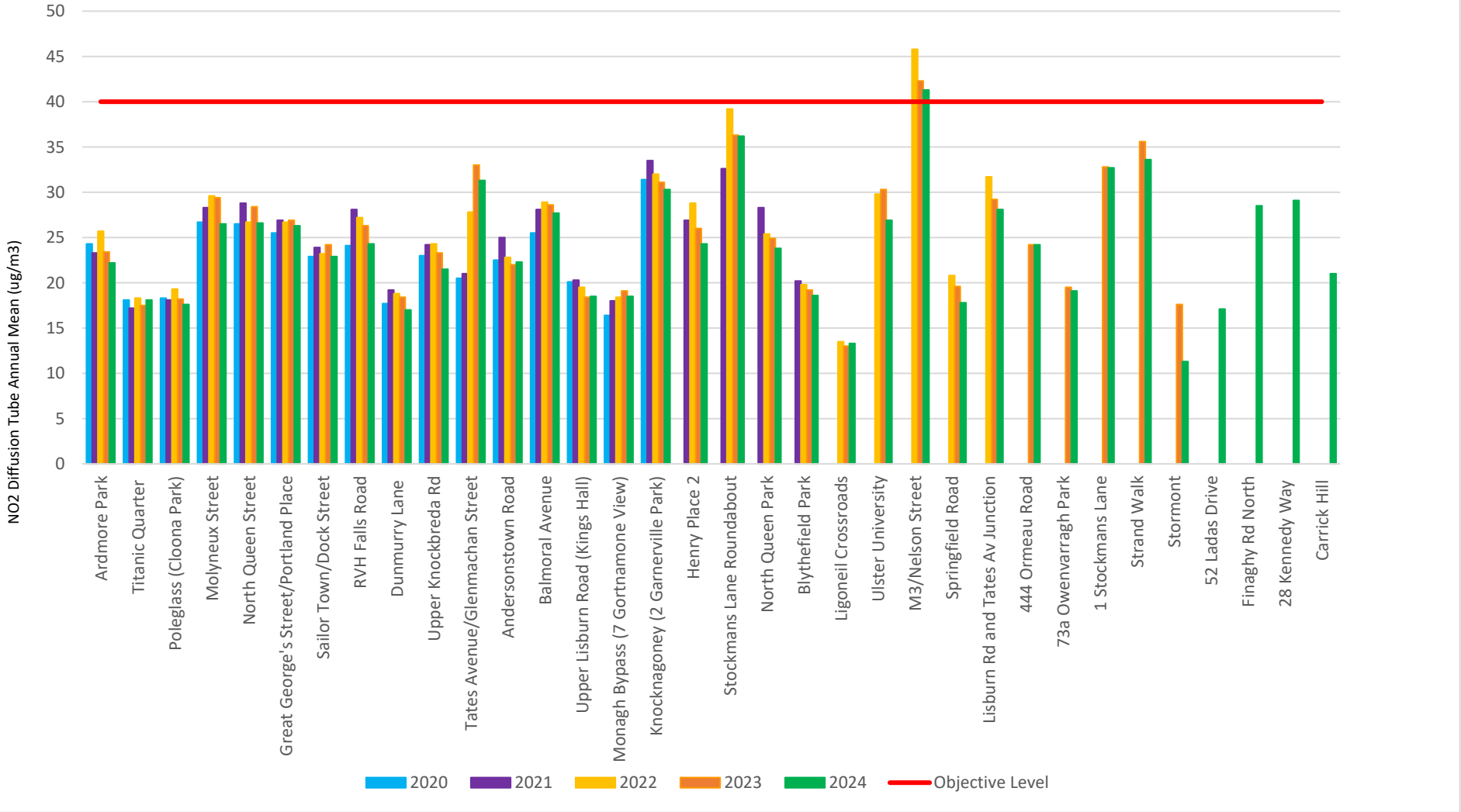
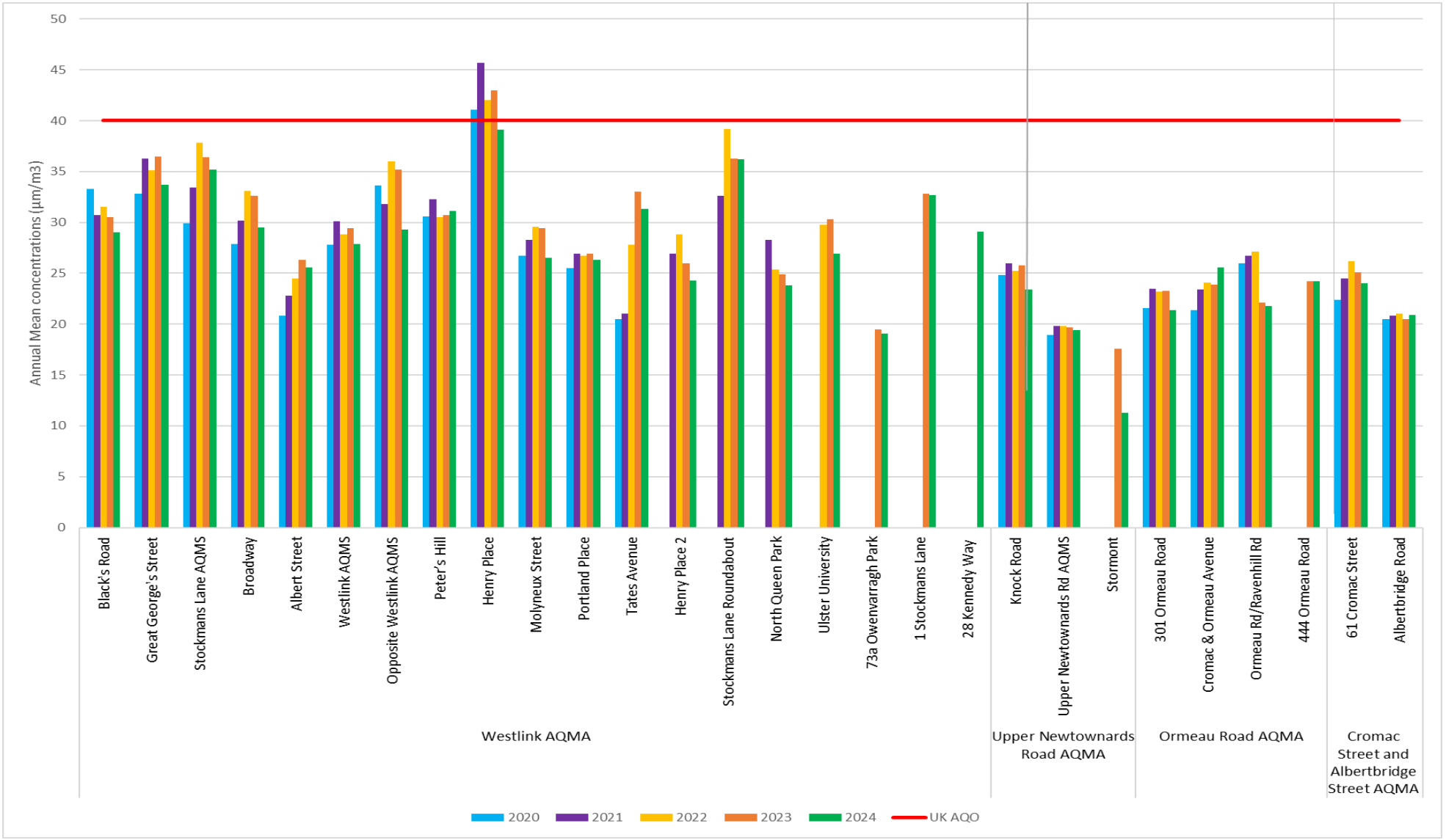

NO2 Diffusion Tube Annual Mean (ug/m3)
50
45
40
35
30
25
20
15
10
5
0
Ardmore Park
Titanic Quarter
Poleglass (Cloona Park)
Molyneux Street
North Queen Street
Great George's Street/Portland Place
Sailor Town/Dock Street
RVH Falls Road
Dunmurry Lane
Upper Knockbreda Rd
Tates Avenue/Glenmachan Street
Andersonstown Road
Balmoral Avenue
Upper Lisburn Road (Kings Hall)
Monagh Bypass (7 Gortnamone View)
Knocknagoney (2 Garnerville Park)
Henry Place 2
Stockmans Lane Roundabout
North Queen Park
Blythefield Park
Ligoneil Crossroads
Ulster University
M3/Nelson Street
Springfield Road
Lisburn Rd and Tates Av Junction
444 Ormeau Road
73a Owenvarragh Park
1 Stockmans Lane
Strand Walk
Stormont
52 Ladas Drive
Finaghy Rd North
28 Kennedy Way
Carrick Hill
2020
2021
2022
2023
2024
Objective Level

Figure 2.5 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites within AQMAs



2.2.2 Particulate Matter (PM_{10})

As a result of a historic reliance upon solid fuel for domestic heating, Belfast used to experience frequent exceedances of the 24-hour and annual mean objectives for particulate matter (PM_{10}) across the city. However, with completion of the city's smoke control programme and the widespread availability of natural gas to all sectors, emissions of particulate matter have decreased significantly since around 2000. As a result, the council was able to decommission its Belfast Clara Street particulate matter monitoring site in east Belfast in 2007.

However, as domestic and industrial emissions were addressed, so emissions of particulate matter from road transport along the M1 Motorway and A12 Westlink corridor gained in prominence. Upon completion of the council's first review and assessment of air quality in 2004, it was concluded that the M1 Motorway and A12 Westlink corridor should be declared as an Air Quality Management Area on the basis of modelled and monitored exceedances of the 24-hour and annual mean objectives for particulate matter.

As highlighted in the subsequent 2006 Air Quality Action Plan for Belfast, a range of structural improvements, designed to relieve traffic congestion, were completed for the M1 Motorway and A12 Westlink corridor. As a result, monitored levels of particulate matter began to decline within this Air Quality Management Area (Figure 2.6)

In terms of exceedances of the 40 $\mu g/m^3$ particulate matter annual mean objective, there have been no exceedances of the annual mean objective within this AQMA since 2008. Monitoring data from the Belfast Westlink site at Roden Street, which was established in 2010 and is located within the M1 Motorway / A12 Westlink Air Quality Management Area, indicated no exceedances of particulate matter objectives up until 2014 whereupon PM_{10} monitoring was discontinued at this site. Particulate matter monitoring continues however at the Stockman's Lane site.

Reflecting upon the particulate matter 24-hour mean objective data, as summarised in Table 2.8, the data has remained comfortably below the objective at all monitoring sites during recent years.

On the basis of historical monitoring data, which demonstrated sustained improvements in particulate matter, the council revoked the M1 Motorway / A12 Westlink Air Quality Management Area for exceedances of the particulate matter annual and 24-hour mean objectives in September 2015.

2024 results, with an annual mean of 18.0 µg/m^3 recorded at the Stockman's Lane site are similar to previous several years' results - with and without Covid-19 restrictions. It is considered that more information is required to accurately investigate the impact of the Covid-19 lockdowns on particulate matter concentrations; the consistency in annual means recorded at the Stockman's Lane could be due to increased levels of 'working from home' during the pandemic, which may have resulted in increased domestic combustion processes, replacing commercial combustion particulate matter emissions, which are likely to have been reduced due to Covid-19 restrictions.

Nevertheless Figure 2.6 shows that the 2024 levels of PM_{10} recorded at Stockman's Lane (18.0 µg/m^3) and Belfast Centre (12.8 µg/m^3) sites are similar to several previous years. Overall, there were no exceedances of the 24-hour and annual mean objectives for particulate matter (PM_{10}) in Belfast.

Moreover, during 2023, Belfast City Council completed a Detailed Assessment for the city, for PM_{10}, $PM_{2.5}$ and NO_2 pollutants. Detailed atmospheric dispersion modelling was undertaken for a 2019 base year and for a 2028 forward projection year for PM_{10}.

The outcome of the detailed assessment for PM_{10} indicated that there were no predicted exceedances of the relevant PM_{10} AQOs in either the 2019 base year or 2028 forward projection year. The outcome and conclusions of this 2023 Detailed Assessment are in accordance with the conclusions of previous Updating and Screening Assessments, Progress Reports and Detailed Assessments undertaken by the council in respect of PM_{10}.

Table 2.7 – Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2024 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m^3)				
						2020* [c]	2021* [c]	2022* [c]	2023* [c]	2024 [c]
CM1 Belfast Centre (Lombard Street)	Urban Background	N	100	100	Y	12	13	13.9	12.6	12.8
CM4 Belfast Stockman's Lane	Roadside	Y (Westlink)	97	97	Y	17	19	18.2	16.6	18.0

In bold, exceedance of the PM_{10} annual mean AQS objective of 40 µg/m^3

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" as in Boxes 7.9 and 7.10 of LAQM.TG(22), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Figure 2.6 – Trends in Annual Mean PM_{10} Concentrations

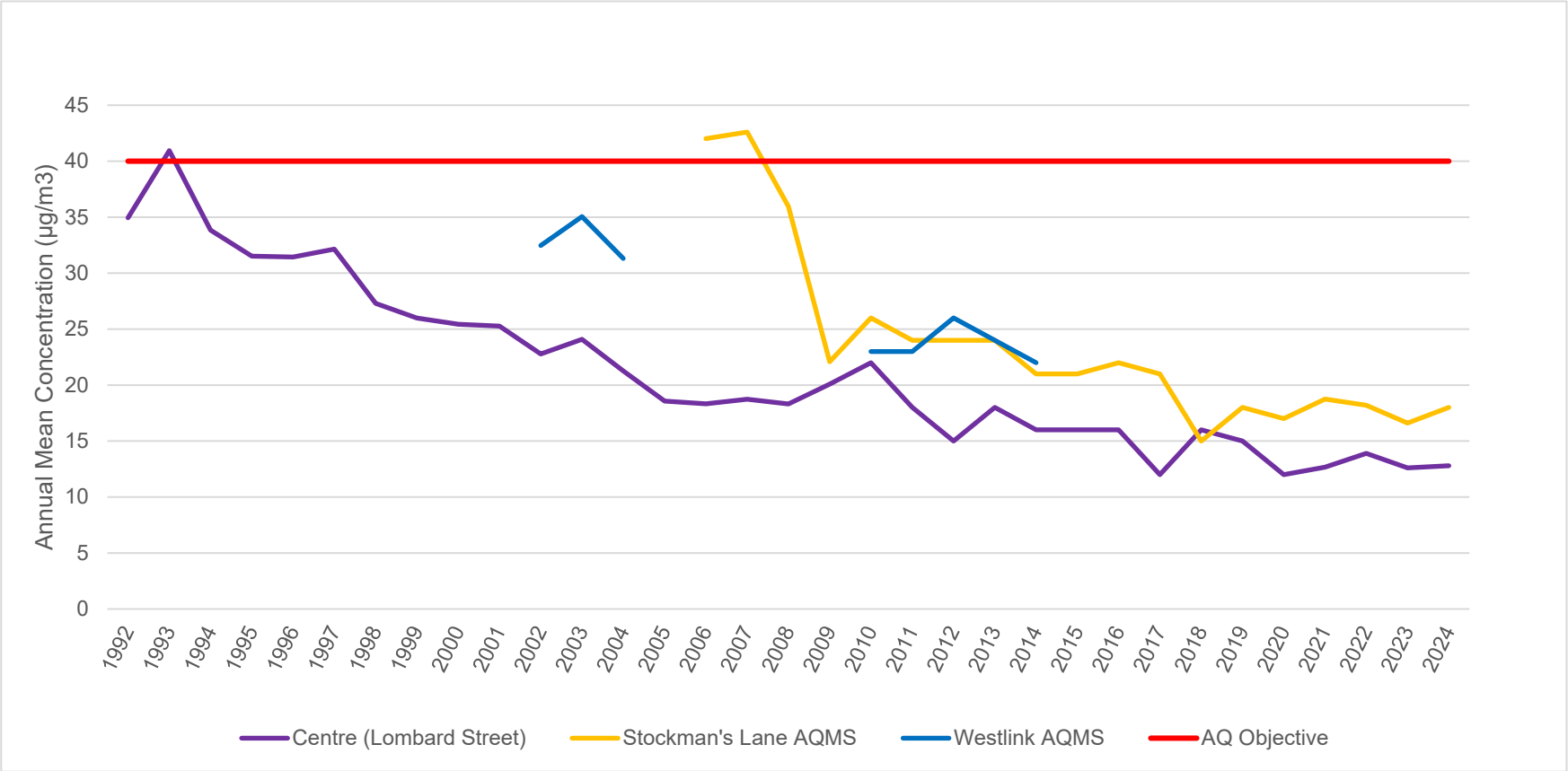


Table 2.8 – Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2024 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m^3				
						2020* [c]	2021* [c]	2022* [c]	2023* [c]	2024 [c]
CM1 Belfast Centre (Lombard Street)	Urban Background	N	100	100	Y	1	0	4	1	0
CM4 Belfast Stockman's Lane	Roadside	Y (Westlink)	97	97	Y	1	1	7	0	1

In bold, exceedance of the PM_{10} daily mean AQS objective (50 µg/m^3 – not to be exceeded more than 35 times per year)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] if data capture for full calendar year is less than 85%, include the 90.4th percentile of 24-hour means in brackets

* Number of exceedances for previous years is optional

2.2.3 Sulphur Dioxide (SO_2)

As a result of a historic reliance upon solid fuel for domestic heating, Belfast City used to experience frequent and widespread exceedances of the 15-minute, 1-hour and 24-hour mean objectives for sulphur dioxide (SO_2). However, with completion of the city's smoke control programme and the widespread availability of natural gas to all sectors, levels of sulphur dioxide have decreased dramatically since 2000. There have been no exceedances of any sulphur dioxide objective within the city since 2002. Sustained low levels of sulphur dioxide have meant that the council, in consultation with Defra, has been able to terminate ambient monitoring at all locations with the exception of the Belfast Centre AURN site at Lombard Street. No Air Quality Management Areas have been declared for sulphur dioxide across Belfast.

Recent sulphur dioxide monitoring data from the Belfast Centre site is summarised in Table 2.9. As indicated, no exceedances of any objective were observed during 2024.

Table 2.9 – Results of Automatic Monitoring for SO_2: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2024 % [b]	Number of: [c]		
					15-minute Means > 266 µg/m³	1-hour Means > 350 µg/m³	24-hour Means > 125 µg/m³
Belfast Centre (Lombard Street)	Urban Background	N	97	97	0	0	0

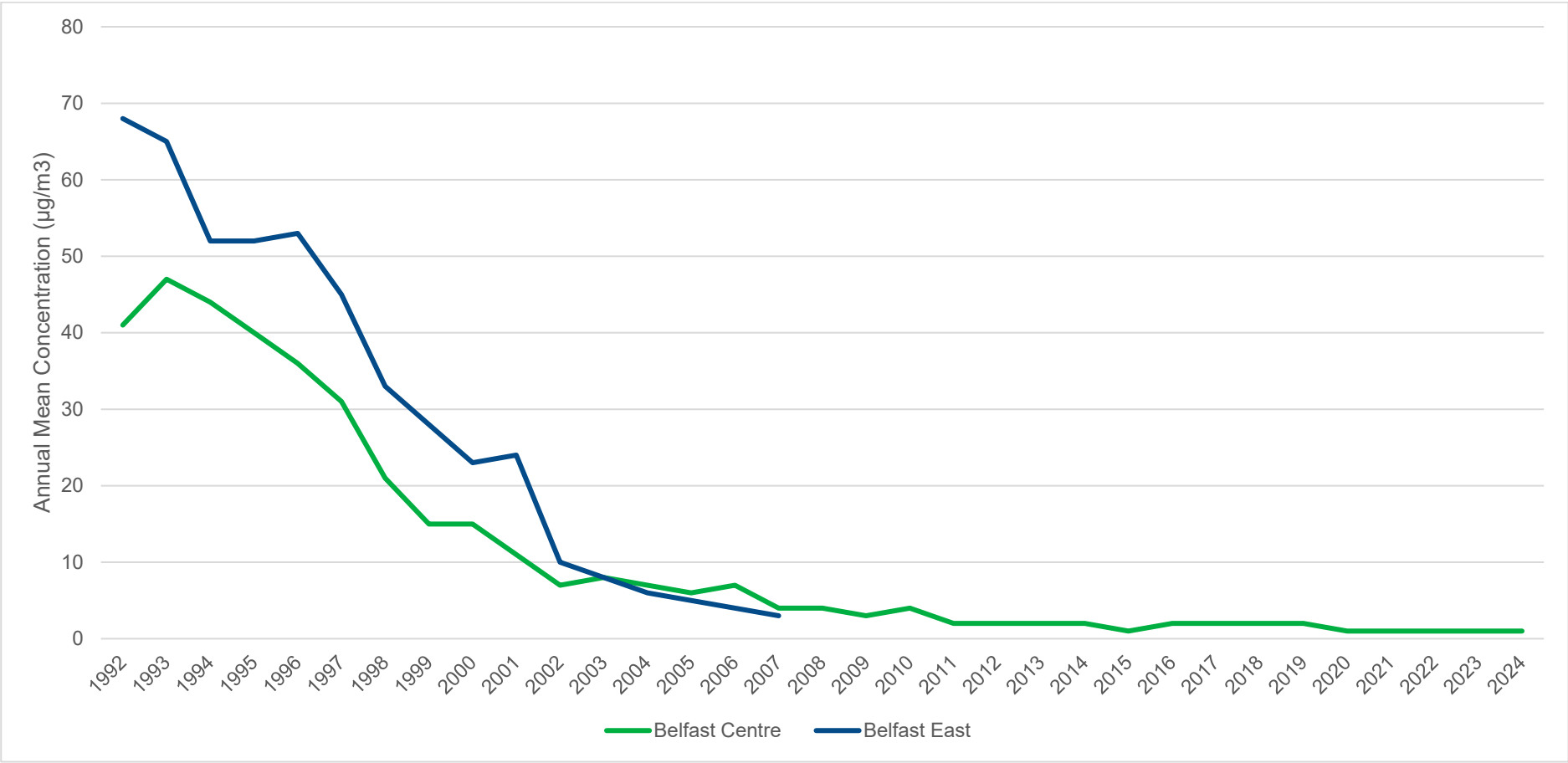
In bold, exceedance of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] if data capture for full calendar year is less than 85%, include the relevant percentile in bracket (in µg/m³): 15-min mean = 99.9th; 1-hour mean = 99.7th; 24-hour mean = 99.2th percentile.

Figure 2.7 – Trends in Annual Mean Sulphur Dioxide (SO_2) Concentrations



2.2.4 Benzene

Benzene concentrations have been monitored at the Belfast Centre Lombard Street and Belfast Roadside sites since 2002. The Belfast Centre site monitors benzene exposure for the City Centre, whilst the Belfast Roadside site monitored benzene concentrations on the Upper Newtownards Road. Whilst monitoring concluded at the Belfast Upper Newtownards Road site in October 2007, no exceedances of the 2010 Air Quality Strategy objective (3.25 µg/m^3 running annual mean) nor the 2010 EU Limit Value (5 µg/m^3 annual mean) for benzene have been recorded in Belfast since 2002.

Previous rounds of review and assessment and monitoring results going back to 2018, and provided in Table 2.10 below, confirm that there have been no exceedances of the running annual mean of 3.25 µg/m^3 for benzene within Belfast over recent years.

Table 2.10 – Benzene Annual Mean Concentrations for the Belfast Centre Site 2020 – 2024

Site ID	Site type	Within AQMA? Which AQMA?	Valid Data Capture 2024 %	Running annual mean concentrations (µg/m^3)				
				2020	2021	2022	2023	2024
Belfast Centre (Lombard Street)	Urban Background	N	96	0.37	0.39	0.38	0.42	0.39

2.2.5 Other Pollutants Monitored

Fine Particulate Matter ($PM_{2.5}$)

Fine particulate matter ($PM_{2.5}$) concentrations have been monitored at the Belfast Centre AURN site since 2008. Although it is not a statutory requirement for NI local authorities to report on $PM_{2.5}$ levels, as this pollutant is not in scope of LAQM regulations, Belfast City Council has nevertheless included $PM_{2.5}$ results for 2024 within this progress report - Table 2.11 and Figure 2.8 below.

The annual mean for this pollutant in 2024 was 7.4 µg/m^3, which is substantially below the UK air quality annual mean objective of 20 µg/m^3, to be achieved by 2020.

Although Belfast does not experience monitored exceedances of any air quality strategy objectives, we are aware of growing concerns around the effects of the $PM_{2.5}$ fraction on human health. Therefore, although not included in Regulations at present for Northern Ireland councils, Belfast City Council has proactively opted to monitor and assess ambient $PM_{2.5}$ concentrations within Belfast.

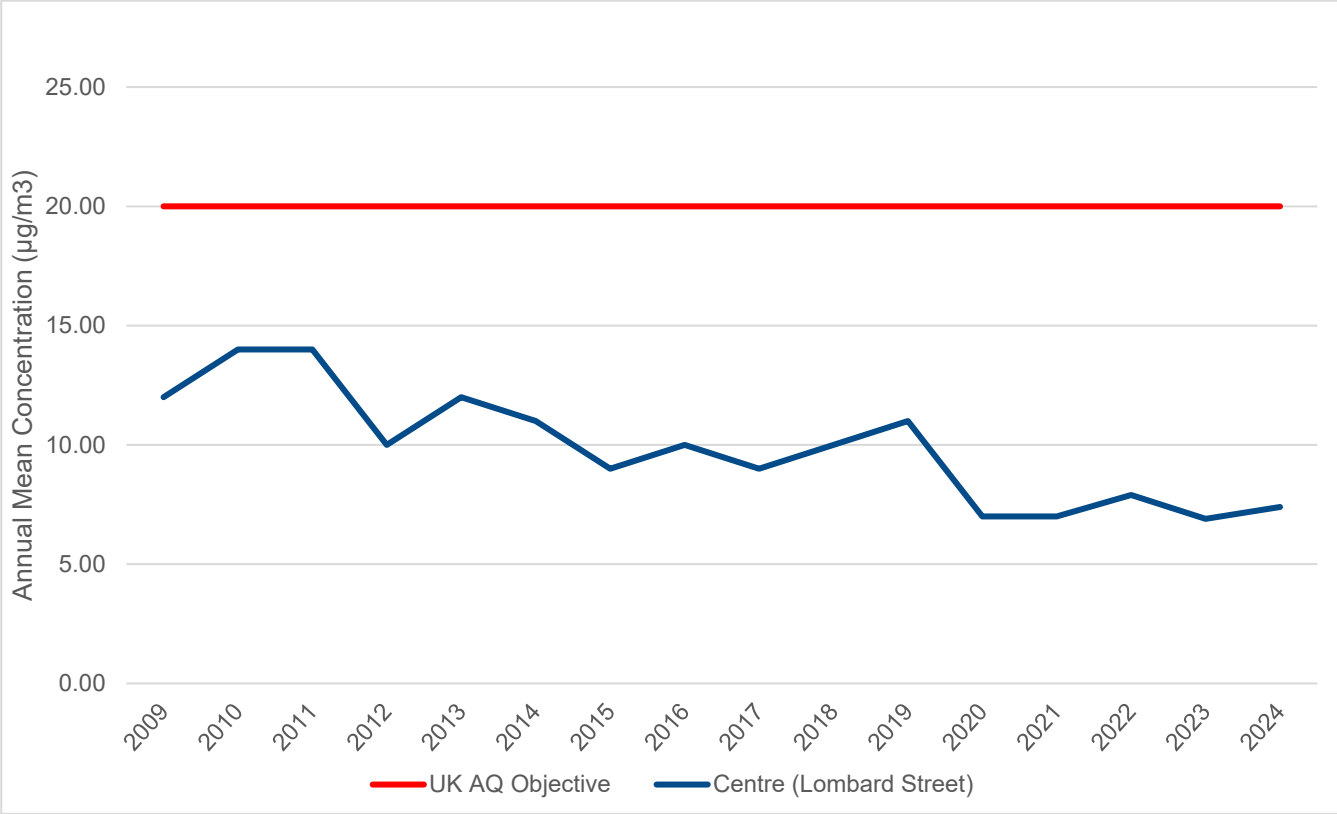
Moreover, Belfast City Council has recently completed a Detailed Assessment for the city, for PM_{10}, $PM_{2.5}$ and NO_2 pollutants. Detailed atmospheric dispersion modelling was undertaken for a 2019 base year and for a 2028 forward projection year for $PM_{2.5}$. The dispersion modelling was validated, verified and adjusted using data from Belfast City Council various automatic particulate monitors as well as additional $PM_{2.5}$ monitoring undertaken by Zephyr small sensor air quality monitors.

The detailed atmospheric dispersion modelling indicated that there were no sensitive receptor locations where predicted 2019 annual mean $PM_{2.5}$ concentrations were greater than 20µg/m^3. The highest predicted annual mean $PM_{2.5}$ concentration in 2019 was 14.1µg/m^3, at a non-residential location. For 2028, there are similarly no predicted annual mean $PM_{2.5}$ concentrations greater than 20µg/m^3 and therefore unlikely to be locations of exceedance of the UK annual mean $PM_{2.5}$ AQO.

Table 2.11 – $PM_{2.5}$ Annual Mean Levels for the Belfast Centre Site 2020-2024

Site ID	Site type	Within AQMA? Which AQMA?	Valid Data Capture 2024%	Annual mean concentrations (µg/m^3)				
				2020	2021	2022	2023	2024
Belfast Centre (Lombard Street)	Urban Background	N	100%	7.0	7.0	7.9	6.9	7.4

Figure 2.8 – Trends in Annual Mean $PM_{2.5}$ Concentrations at Belfast Centre Monitoring Site.



Additional ambient air quality monitoring

Since 2021, Belfast City Council has also carried out an additional monitoring, using Earthsense Zephyr air quality monitors, across the city as part of the Detailed Assessment and School Streets Monitoring projects. The Zephyr monitor is an indicative grade air quality analyser and is used to monitor NO_2 using electrochemical sensors, and PM_{10} and $PM_{2.5}$ using optical particle counting sensors giving real-time results every minute. This additional non-LAQM monitoring methodology and results are summarised within Appendix B.

2.2.6 Summary of Compliance with AQS Objectives

Belfast City Council has examined the results from monitoring within its district. Concentrations of ambient pollutants, as prescribed in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland, outside of existing Air Quality Management Areas, are all below the respective objectives at relevant receptor locations. It is therefore the council's considered view that there is no need to proceed to a Detailed Assessment at this time.

Moreover, a Detailed Assessment for the city for NO_2, PM_{10} and $PM_{2.5}$ concluded in March 2023, indicated that there were no predicted exceedances of any AQOs in relation to particulate matter (PM_{10} and $PM_{2.5}$) for a 2019 base year and for a 2028 forward assessment year. In relation to NO_2, there were no predicted exceedances of the nitrogen dioxide UK annual mean objective for the 2028 (forward assessment year) however, there were some predicted exceedances of the 40 $\mu g/m^3$ nitrogen dioxide annual mean objective at a number of sensitive receptor locations during 2019. However, all of these receptors are located within, or near to the boundaries of the existing Air Quality Management Areas (AQMAs) along the M1 Motorway / A12 Westlink corridor (AQMA 1) and East Bridge Street / Cromac Street (AQMA 2).

During 2023, new diffusion tube monitoring sites were established in order to investigate the detailed assessment predicted exceedances of the annual mean nitrogen dioxide objective. On the basis of this additional monitoring (no exceedances recorded in 2023), the conclusions of the Detailed Assessment, and new 2024 monitoring described in this Progress Report, Belfast City Council is content that there is no requirement to extend / amend the boundary of any AQMA at this time.

The council will however continue to monitor ambient conditions across the city in order to confirm that recent improvements in air quality are sustained and that those locations where poorer air quality persist are identified and addressed.

3 New Local Developments

3.1 Road Traffic Sources

The following road traffic sources, which may have an impact on air quality, have been considered since the last Updating and Screening Assessment:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

Belfast City Council confirms that as there have been no significant changes to any of the above-mentioned sources since the 2024 Updating and Screening Assessment, and there is no need to proceed to a Detailed Assessment.

We would advise, however, that the new Belfast Transport Hub, located adjacent to Great Victoria Street, is now operational, although the Department for Infrastructure and Translink are continuing to finalise construction works at the Hub. Known as Grand Central Station (https://www.translink.co.uk/bgcs), the new transport hub provides a new integrated public transport interchange for Belfast comprising a new station concourse, 26 bus stands, 8 railway platforms, bus maintenance and parking, a bus access bridge, cycle and taxi provision, car parking, a new public square, public realm improvements, highway improvements and infrastructure improvements.

Belfast City Council confirms that the abovementioned development (LA04/2017/1388/F) was considered through the Department for Infrastructure's strategic planning consultation process; an Air Quality Impact Assessment, submitted for the proposed station development, as an aspect of a wider Environmental Statement, demonstrated that the development will not have a significant adverse impact on ambient air quality and relevant human health receptors.

3.2 Other Transport Sources

The following additional transport sources, which may have an impact on air quality, have been considered since the Updating and Screening Assessment:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

Belfast City Council confirms that as there have been no significant changes to any of the above-mentioned sources since the 2024 Updating and Screening Assessment, there is no need to proceed to a Detailed Assessment.

3.3 Industrial Sources

The following industrial sources, which may have an impact on air quality, have been considered since the 2024 Updating and Screening Assessment:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially, or new relevant exposure has been introduced.
- Industrial installations: new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

Within Northern Ireland, the permitting of prescribed industrial activities under The Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013, as amended, is undertaken by both local authorities and the Industrial Pollution and Radiochemical Inspectorate (IPRI) of the Department of Agriculture, Environment and Rural

Affairs. IPRI has responsibility for the permitting of what are defined as Part A and B processes whereas district councils permit Part C processes for emissions into the air.

IPRI have confirmed that there were no new or substantial changes to emissions for 2024 for the Belfast City Council area from those sites regulated by the Inspectorate.

Belfast City Council therefore confirms that there have been no other changes to any of the above-mentioned sources since the 2024 Updating and Screening Assessment, and there is consequently no need to proceed to a Detailed Assessment.

3.4 Commercial and Domestic Sources

The following commercial and domestic sources, which may have an impact on ambient air quality, have been considered since the last Updating and Screening Assessment:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.
- Combined Heat and Power (CHP) plant.

Belfast City Council confirms that the above installations are considered as a part of the council's planning process. Where necessary, an Air Quality Impact Assessment is requested to demonstrate that the development proposal will not have an unacceptable adverse impact on local ambient air quality or on relevant human health receptors. Further information on planning applications, which have required an Air Quality Impact Assessment, is provided in Section 4 of this report.

The Assessments submitted to date have demonstrated that the proposed developments will not have a significant adverse impact on ambient air quality in the vicinity of the development sites. Moreover, domestic background sources (which include domestic, commercial, and institutional space heating) were estimated as part of BCC Detailed Assessment, which was concluded in 2023, and reported in the last year's Updating and Screening Assessment.

Accordingly, it is considered that there is no need to proceed to a new Detailed Assessment for commercial and domestic sources.

3.5 New Developments with Fugitive or Uncontrolled Sources

The following new developments with fugitive or uncontrolled sources, which may have an impact on air quality, have been considered since the last Updating and Screening Assessment:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc.
- Other potential sources of fugitive particulate matter emissions.

Belfast City Council confirms that as there have been no significant changes to any of the above-mentioned sources or any new sources since the 2024 Updating and Screening Assessment, there is no need to proceed to a Detailed Assessment for fugitive or uncontrolled sources.

Belfast City Council confirms that there are no new or newly identified local developments, which may have an impact on air quality, within the Local Authority area. Belfast City Council further confirms that all the following sources have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Planning Applications.

During 2024, Belfast City Council considered numerous planning applications for developments that had the potential to negatively impact upon ambient air quality.

Detailed or screening ambient air quality impact assessments were requested for all of the following proposed developments that in the council's view had the potential to have a negative impact on ambient air quality or to introduce new human health receptors into an area of existing poor ambient air quality. A summary of Planning Applications and Air Quality Impact Assessments (AQIA) submitted or requested during 2024, in support of larger or more significant developments is presented in Table 4.1.

Table 4.1 - Major New Developments which had the potential to have a negative impact on ambient air quality in the 2024 period.

Location	Development Description	Actions Taken
15-16 Donegall Square South and 2-14 Bedford Street; and No. 7 James Street South, Belfast	Conversion of existing buildings into hotel, comprising of 102 no. bedrooms with public bars and restaurants. Development includes ground floor extension, staff and service elevator, interior and exterior alterations and all associated works. Ref: LA04/2024/0126/f	An AQIA was submitted and reviewed; based on the information provided in relation to combustion sources and the Environmental Protection UK and the Institute of Air Quality Management, Land-use Planning & Development Control: Planning for Air Quality (January 2017) guidance, this Service had no concerns in relation to the ambient air quality impact of the operational phase of this development proposal. However, It was noted that construction phase was not considered as part of Air Quality Screening Assessment. The following informative was applied to the response: • **Construction dust management measures shall be developed in accordance with the provisions of the Institute of Air Quality Management publication Guidance on the Assessment of Dust from Demolition and Construction (v2.2 2024). These dust management measures shall be implemented throughout the duration of the construction phase of the development.** The proposal is under consideration.
Lands west of Donegall Quay, east of Tomb Street, south of Corporation Square	Proposed building ranging between 5 - 10 storeys (20.60m - 42.35m) including offices (Class B1a), ground floor retail (Class A1), community and cultural (Class D1) and restaurant uses, and licensed restaurant at upper level with external terrace, rooftop plant area, landscaping, servicing, public realm improvements, and all associated site works. LA04/2023/4613/F	An AQIA was submitted and revised; this Service advised: '*estimated road transport emissions, as a result of the proposed development, are likely to have a 'negligible' impact on nitrogen dioxide and particulate matter concentrations in the local area.* However, the following advice was applied to the response: • **in the event that any centralised combustion sources (boilers, CHP, generators or biomass) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service would request that updated Air Quality Impact Assessment will be required.** The proposal was granted on 24/07/2024.
Lands at Former Monarch Laundry site, and Broadway Hall Site, No's 451 - 457 Donegall Road, Belfast, BT12 6HD.	Proposed Specialist Nursing and Residential Care Facility comprising approximately 158 no. beds, day/dining rooms, treatment rooms, staff rooms, office / storerooms, including car parking provision, cycle parking, refuse storage, landscaping, and associated site and access works. Ref: LA04/2024/0369/F	An AQIA was submitted and reviewed; the assessment demonstrated that the proposed development will not have adverse impact on air quality in the vicinity of the site and that future occupants of the development will not be exposed to air quality concentrations exceeding UK Air Quality Objectives' The following condition was applied to the response: • in the event that any substantial centralised combustion sources (boilers, CHP, generator or biomass) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service would request that an updated Air Quality Impact Assessment will be required. The assessment shall include details of the combustion plant to be installed, to include emission rates and flue termination heights of the proposed combustion systems and it must demonstrate that there will be no exceedances of Air Quality Strategy objectives at relevant human receptor locations. A Construction Environmental Management Plan (CEMP) was also requested by this Service. The proposal is under consideration

Lands to the northeast of Olympic House, east of Queen's Road and south of Belfast Metropolitan College, Belfast.	Erection of Purpose-Built Managed Student Accommodation development with additional use of accommodation by further or higher education institutions outside term time, comprising 4 no. blocks of accommodation with building heights ranging from 5 to 9 storeys and up to 35,850 sqm gross external floorspace, café, associated communal facilities including landscaped courtyards, internal bin stores and cycle stores, PV array, disabled parking, public realm provision, associated site works and extension of Titanic Boulevard to form new junction with Hamilton Road. Ref: LA04/2024/0681/F	An AQIA was submitted and reviewed, with a response provided on 02/09/2024. It was concluded that estimated transport emissions, as a result of the proposed development, are likely to have a negligible impact on nitrogen dioxide and particulate matter concentrations in the local area. The AQIA additionally advised that 'the heating and cooling systems and associated emissions for the Proposed Development are not likely to be significant'. The following condition was applied to the response: • In the event that any centralised combustion sources (boilers, CHP, generator or biomass) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service requires that an updated Air Quality Impact Assessment to be submitted to planning service for review and approval in writing. The proposal was granted on 02/12/2024.
Location: Lands at, 13 Barrack Street, Belfast, BT12 4AH	4No. townhouses. (Amended Site location and drawings). Ref: LA04/2022/0777/O	The proposed residential development lies adjacent to the Westlink corridor, where transport related pollutants' concentrations are of principal concern. Therefore, this Service initially advised that this development has a potential to introduce new receptors into an area of poor air quality. The submitted AQIA has sufficiently demonstrated that the proposed development will not have adverse impact on air quality in the vicinity of the site and that future occupants of the development and nearby receptors will not be exposed to air quality concentrations exceeding UK Air Quality Objectives. Outline planning permission was granted on 16/09/2024
14 Dublin Road, Belfast	Proposed 14 storey (plus basement) purpose-Built Grade A Office premises with retail/restaurant unit at ground floor, including external landscaped terrace areas, public realm works, and all associated site works Ref: LA04/2023/4366/F	An AQIA was submitted and reviewed, with a response provided on NIPP dated 13/02/2024 stating, *hat estimated transport emissions, as a result of the proposed development, are likely to have a negligible impact on nitrogen dioxide and particulate matter concentrations in the local area.* Moreover, *the proposal is unlikely to include any substantial centralised combustion system.* *However, no information concerning heating and hot water provisions has been provided/confirmed within the submitted AQA* The following conditions were applied to the response: • In the event that any centralised combustion sources (boilers, CHP, generator or biomass) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017),this Service would request that an updated Air Quality Impact Assessment be submitted in writing to the Planning authority for review and approval. Where the Air Quality Impact Assessment indicates exceedances of air quality objectives, appropriate mitigation measures shall be presented, and these mitigation measures shall be installed and retained thereafter. A Construction Environmental Management Plan (CEMP) was also requested by this Service. Planning permission was granted on 13/05/2024
14 Dublin Road, Belfast, BT2 7HN	Erection of 17 storey Purpose Built Managed Student Accommodation (PBMSA) with additional use of accommodation outside term time comprising 459 no. units with communal facilities, internal and external communal amenity space and ancillary accommodation Ref: LA04/2023/4373/F	An AQIA was submitted and reviewed, with a response provided on NIPP dated 13/02/2024; this Service was able to conclude that estimated transport emissions, as a result of the proposed development, were likely to have a negligible impact on nitrogen dioxide and particulate matter concentrations in the local area. However, the AQA assessment has seemingly considered mostly the impact from road transport emissions on human health receptors; consequently, the following conditions were applied to the response: • In the event that any centralised combustion sources (boilers, CHP, generator or biomass) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017),this Service would request that an updated Air Quality Impact Assessment be submitted in writing to the Planning authority for review and approval. Where the Air Quality Impact Assessment indicates exceedances of air quality objectives, appropriate mitigation measures shall be presented, and these mitigation measures shall be installed and retained thereafter. The proposal was granted on 10/05/2024
18-50 Shankill Road, Belfast, BT13 2BD	Demolition of existing structure on site and construction of 24hr Petrol Filling Station (6no. pump) with associated canopy; 1no. control room/store; service facilities (air/water/AdBlue pump); tanker stand; 1no. pump house; car wash (drive thru and manual facilities);	An AQIA and other supportive information provided was reviewed by the AQO. This Service was able to conclude that the proposed petrol station development was unlikely to give rise to a significant adverse impact on local air ambient quality or give rise to exceedances of relevant objectives. Planning permission was granted on 06/09/2024

	new 1.2-3m block wall to the rear and side of the site; alteration of existing entrance; creation of a new exit and all other associated site and access works. (amended plans and description) Ref: LA04/2023/4201/F	
38 Boucher Road, Belfast, BT12 6HR	Proposed development to create a private medical facility (a hospital within Class C3) comprising of the change of use of part of retail warehouse and the extension of the building to create a private medical facility with a significant element of overnight residential care together with all associated ancillary development. LA04/2024/0714/F	The submitted AQIA advised that there is a significant reduction in vehicles' number predicted as a result of this proposal. Moreover, Transport Assessment submitted as part of this application confirms that the proposed development will result in less trips upon the surrounding road network than the extant approval. However, a standby generator was proposed as part of this development; consequently, the following condition was applied to the response: • In the event that any centralised combustion sources (boilers, CHP, biomass or generators) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service would request that an updated Air Quality Impact Assessment be submitted to and approved in writing by the Planning Authority prior to the installation of the plant. The assessment shall include details of the combustion plant to be installed, to include emission rates and flue termination heights of the proposed combustion systems and must demonstrate that there will be no exceedances of the Air Quality Strategy objectives at relevant human receptor locations, associated with operation of the proposed combustion plant and with the overall development. Planning permission was granted on 11/03/2025.
Lands comprising existing Fanum House, Norwood House and adjacent lands, No's 96-110 Great Victoria Street, Belfast, BT2 7BE	Demolition of the existing buildings on the site and construction of a new Purpose-Built Managed Student Accommodation development across 4 blocks of 6 to 18 stories in height, comprising of 560 student rooms, including landscaped roof terraces, associated amenity, site and access works Ref: LA04/2024/0664/F	Based on information presented in the AQIA, Transport Assessment, and reflecting upon the council's monitoring in the proposed development vicinity, this Service was able to conclude that estimated transport emissions associated with the proposed development in combination with existing local road traffic are unlikely to give rise to a significant adverse impact on local air ambient quality or give rise to exceedances of relevant objectives. However, AQIA assessment has seemingly considered mostly the impact from road transport emissions on human health receptors; development.' Accordingly, this Service recommended the following condition: • In the event that any substantial centralised combustion sources (boilers, CHP, generator or biomass) are proposed and there is a risk of impact at relevant receptor locations, as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning &Development Control: Planning For Air Quality (January 2017), an updated Air Quality Impact Assessment shall be submitted to the Planning Authority, for approval in writing, which includes details of the combustion plant to be installed, emission rates and flue termination heights of the proposed combustion systems. The assessment must demonstrate that there will be no exceedances of Air Quality Strategy objectives at relevant human receptor locations. Planning permission was granted on 13/12/2024
Havelock House Havelock Place, Ormeau, Belfast, BT7 1EB	Erection of 104no. social rented residential units (comprising a mix of General Social Housing and Category 1 over 55's accommodation) across two detached blocks [ranging between 3 and 5 storeys], landscaping, communal and private amenity space, ancillary cycle and car parking provision, and other associated site works Ref: LA04/2024/0626/F	Based on information presented in the AQIA, Transport Assessment, and reflecting upon the council's monitoring in the proposed development vicinity, this Service had no ambient air quality concerns regarding the operational phase of the proposed 1 Havelock House residential redevelopment. EH response dated 21.1024. Under consideration
Lands including and to the rear of 24-54 Castle Street, 2-6 Queen Street, 1-7 & 21 Fountain Street, Belfast.	Demolition of existing buildings and construction of Purpose Built Multi Storey Managed Student Accommodation (821no. rooms) with additional Short Term use outside of term time. Proposed heights of between 6-9 storeys and associated shared/ancillary spaces with ground floor retail/retail service units, resident's gym/cinema and ancillary development/uses. (Amended Description) Ref: LA04/2023/4281/O	A simple assessment of operational phase emissions has been undertaken by comparing the development against the screening criteria outlined in *Environmental Protection UK and the Institute of Air Quality Management, Land use Planning & Development Control*: *Planning for Air Quality (January 2017)* guidance. Based on information presented within the AQIA this Service was able to conclude that the proposed development will not have adverse impact on air quality in the vicinity of the site and that future occupants of the development will not be exposed to air quality concentrations exceeding UK Air Quality Objectives. However, the following condition was requested in relation to construction phase: • Prior to commencement of development on site, including demolition, site clearance or site preparation, a Construction Environmental Management Plan (CEMP) shall be produced by any appointed main contractor. The CEMP shall include measures t o control noise, dust and vibration during the demolition and construction phase, demonstrating the use of 'best practicable means' (BPM). The CEMP shall include a rationale for, and details of, the chosen piling methodology and demonstrate that

		noise and vibration levels will not have an adverse impact on nearby premises. The CEMP must also have due regard to Parts 1 and 2 of BS 5228:2009+A1:2014 Code of practice for construction hours of work, noise and vibration control measures on construction and open sites. The CEMP shall include the dust management measures, as detailed within Chapter 5 (Table 21) of Crestwood Environmental Ltd Air Quality Assessment, Queen Street PBSA, Belfast, 11 October 2024 and have regard to the IAQM, 'Guidance on the assessment of dust from demolition and construction version 12.1', dated August 2023. The CEMP shall include arrangements for communication and liaison with nearby sensitive receptors throughout the construction phase. Planning permission was granted on 30/05/2025
Royal Victoria Hospital 274 Grosvenor Road, Belfast, BT12 6BA	New 2 storey regional radiopharmaceutical facility, with associated single storey ancillary services accommodation, bin store, and emergency generator and oil tank storage. Amendment to existing car parking layout. Ref: LA04/2023/3649/F	This Service reiterated the following condition which was suggested in its previous response: • In the event that any combustion sources (including centralised combustion plants: boilers, CHP, biomass or generators) are proposed and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service would request that an Air Quality Impact Assessment be submitted to and approved in writing by the Planning Authority prior to the installation of the plant. The assessment shall include details of the combustion plant to be installed, to include emission rates and flue termination heights of the proposed combustion systems and must demonstrate that there will be no exceedances of the Air Quality Strategy objectives at relevant human receptor locations, associated with operation of the proposed combustion plant and with the overall development. Planning permission was granted on 07/11/2024
Stormont Hotel, 587 Upper Newtownards Road BT4 3LP and adjacent properties at Castleview Road (nos. 2, 4, 6, 16, 18, 20, 22, 24, 26, 28 & 30), Summerhill Parade (nos. 18, 20 & 22), and Summerhill Park (nos. 37 & 39).	LA04/2024/0570/F: Change of use of from hotel, conference centre and offices (sui generis) to a 97-bed care home (Use Class C3(b)) and 1,559sqm diagnostic medical facility (Use Class D1(a)), associated access, car parking, landscaping and open space. LA04/2024/0569/O: Outline planning permission for assisted living retirement apartments.	AQIA and TA were submitted in support of these applications; both air quality and transport assessments advised that the proposed change of use will result in a nett decrease in traffic volumes at the proposed development site when compared with the extant site uses. Furthermore, consultants advised that In terms of space heating, the outline proposal is to utilise direct electric heating for both hot water (hot water cylinder with an immersion) and heating. Consequently, the proposal is unlikely to include a substantial centralised combustion system. However, the following condition was requested in relation LA04/2024/0570/F: • In the event that any substantial centralised combustion sources (generators, boilers, CHP or biomass) are proposed as part of this development and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service may request that an updated Air Quality Impact Assessment be submitted to and approved in writing by the Planning Authority prior to the installation of the plant. The assessment shall include details of the combustion plant to be installed, to include emission rates and flue termination heights of the proposed combustion systems and it must demonstrate that there will be no exceedances of Air Quality Strategy objectives at relevant human receptor locations. Under consideration
The Royal Belfast Academical Institution College Square East, Belfast, BT1 6DL	Construction of a new South Wing of the RBAI Campus to include multi-purpose dining hall, 15 general classrooms, a drama suite, a 25m swimming pool, a Board Room suite, living accommodation for the School Steward with PV panels on roof and new, small extension to the Soane Building, to provide improved accessibility and upgraded WC facilities, with associated refurbishment and re-modelling of first and second floor classrooms to the southern end of the Soane Building, the development of landscaped zones including the under-croft area at the Common Hall and new boundary treatment at Durham Street and demolition of the existing dining hall, swimming pool, school steward's house and W-Block.	Based on AQIA, Transport Assessment and Design and Access Statement this Service was able to conclude that estimated transport emissions, as a result of the proposed development, are likely to have a negligible impact on nitrogen dioxide and particulate matter concentrations in the local area. Moreover, the proposals will not involve the use of fossil fuels (oil and gas); consequently, heating/hot water systems emissions for the Proposed Development are not likely to have a significant impact. Planning permission was granted on 22/11/2024
Former Belfast Metropolitan College Campus, Whiterock Road, Belfast, BT12 7PG	Proposed mixed use development comprising of 62No. social housing units (mix of dwellings and apartments) and a new children's	Based on AQIA and TA submitted as part of this application this Service was able to conclude that estimated transport emissions, as a result of the proposed development, are likely to have a negligible impact on nitrogen dioxide and particulate matter concentrations in the local area. However, no information regarding heating or hot water provisions was provided. Consequently, this Service requested that consideration is given to the following condition:

	centre, car parking, landscaping, open space and all associated site and access works.	• In the event that any substantial centralised combustion sources (generators ,boilers, CHP or biomass) are proposed as part of this development and there is a risk of impact at relevant receptor locations as per the criteria detailed within the Environmental Protection UK and Institute of Air Quality Management, Land-use Planning & Development Control: Planning For Air Quality (January 2017), this Service may request that an Air Quality Impact Assessment be submitted to and approved in writing by the Planning Authority prior to the installation of the plant. The assessment shall include details of the combustion plant to be installed, to include emission rates and flue termination heights of the proposed combustion systems and it must demonstrate that there will be no exceedances of Air Quality Strategy objectives at relevant human receptor locations. Planning permission was granted on 25/03/2025

5 Air Quality Planning Policies

Most developments across the city are subject to the local development planning and the planning process, which provides an opportunity to identify and prevent potential air quality problems from arising in the first place.

In June 2009, and in view of the need for a consistent approach to air quality management as part of the planning process, Belfast City Council launched its *'Air quality and land use planning: A Belfast specific guidance note for developers and air quality consultants*' document. The document outlines what the council's Environmental Protection Unit, as an internal consultee to the Belfast Planning Service, will look for in forming its opinion on a proposed development and its potential impact on ambient air quality.

Since production of this Belfast specific guidance document, Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have produced their 2017 guidance document entitled, '*Land-Use Planning & Development Control: Planning For Air Quality Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes'*. The council's Environmental Protection Unit now refers to the qualifying criteria set out in this document in order to determine when an Air Quality Impact Assessment is required.

Belfast Local Development Plan (LDP)

Belfast City Council is currently developing its Local Development Plan (LDP) that outlines how land across the city will be used and developed in the future. The LDP is comprised of two development plan documents - the Plan Strategy and the Local Policies Plan.

The LDP Plan Strategy was adopted in May 2023 and includes a clear commitment to enhance environmental quality, where possible, and in assessing development proposals, it will ensure the consideration of a wide range of environmental factors including ambient air quality. The Council has also published a suite of Supplementary Planning Guidance (SPG) documents which seek to support, clarify and / or illustrate by example policies within the LDP. Where relevant to a particular development proposal, SPG can be taken into account as a material consideration when determining planning applications. New SPG on

Environmental Quality may be prepared during the plan period (up to 2035) – this will be dependent on business need and whether any new regional policy or guidance is published in due course.

In terms of ambient air quality, one of the Plan Strategy's visions is for '*Building a smart connected and resilient place'*. The Plan therefore encourages the expansion of green infrastructure networks for walking and cycling to encourage active travel and improve air quality and promote increased use of public transport, whilst retaining appropriate provision for cars.

In terms of strategic policies, **SP3 – Improving health and wellbeing** advises that the council will support development that maximises opportunities to improve health and wellbeing, and that development will not be permitted where it will result in significant harm to life, human health or wellbeing. Justification and amplification include that the provision of good quality green open space, linked to a green and blue infrastructure network, will help to improve ambient air quality and provide respite beneficial for enhancing mental health. Improving connectivity between residential and employment areas, which are well served by a range of sustainable travel modes, would encourage active travel and reduce air pollution. This will deliver significant community health benefits.

SP6 - Environmental resilience states that the council will support development where it helps to reduce greenhouse gas emissions and is adaptable in a changing climate to build environmental resilience. Justification and amplification include that the policy aims to build environmental resilience and support the transition to a low carbon future. It embeds the Regional Development Strategy (RDS) policy to reduce our carbon footprint and facilitate mitigation and adaptation to climate change, whilst improving ambient air quality.

SP7 – Connectivity states that the council will support connectivity to and within the city by sustainable transport modes, such as public transport, walking and cycling. Land for sustainable transport infrastructure projects will be safeguarded and opportunities to protect and enhance existing provision will be maximised. Justification and amplification include that Belfast has a major transport challenge due to a large 'travel to work' catchment area. A significant number of commuters using private vehicles cause congestion on the key city corridors, leading to increasing air pollution and resulting in the designation of four Air Quality Management Areas, where pollution levels exceed EU standards. There is

consequently a need to improve sustainable transport links with commuter towns and the strategic transport routes shall be protected, as important trade links that contribute to the economic health of the city.

SP8 – Green and blue infrastructure network states that the council will support the development of a green and blue infrastructure network, designating and safeguarding sites and accesses required for the green and blue infrastructure network across the plan area. Justification and amplification include that this policy recognises the opportunity to plan for a green and blue infrastructure network across the plan area, to address the significant challenges of poor health due to an inactive lifestyle, poor connectivity, air pollution and climate change.

Moreover, **Plan Policy ENV1 – Environmental quality** states that planning permission will be granted for development that will maintain and, where possible, enhance environmental quality, and protects communities from materially harmful development. Development must not result in an unacceptable adverse impact on the environment, including the following considerations:

- Ground contamination;
- **Air quality;**
- Water quality;
- Noise; and
- Light pollution.

The Policy further advises that the council will also require development to address the following:

a) Existing land contamination and ensuring that development does not cause contaminated land or pollute water;
b) Local air quality, particularly nitrogen dioxide and particulates (including in Air Quality Management Areas);
c) Protection of the city's designated quiet areas and quiet times of day for businesses (daytime) and residents (night-time); and
d) The need to limit the city's contribution to light spillage and 'sky glow'.

Justification and amplification in respect of ambient air quality includes that the presence of air pollution can lead to an adverse impact on human health. Air pollution is also known to

adversely affect ecosystems such as water quality, soils, plants and animals. The RDS acknowledges that there is a need to reduce air pollution from transport by the use of more energy efficient transport. The planning system also positively contributes to improving air quality and minimising its harmful impacts. Belfast City Council has declared four Air Quality Management Areas where there are exceedances of nitrogen dioxide and particulate matter objectives. These are: the M1 Motorway / A12 Westlink corridor; Cromac Street / Albertbridge Road; the Upper Newtownards Road; and the Ormeau Road.

Any ambient air quality issue that relates to land use and development is a material planning consideration and factors to be considered include:

- The severity of impacts on ambient air quality;
- Ambient air quality in the area surrounding the proposed development;
- The likely use of the development, i.e. the length of time that people are likely to be exposed at that location; and
- The positive benefits provided through other material considerations.

The Belfast City Council Adopted Plan Strategy documents may be accessed via the following weblink:

https://www.belfastcity.gov.uk/Planning-and-building-control/Planning/Local-development-plan-(1)/Local-development-plan/Adoption-of-Plan-Strategy-documents

The LDP Local Policies Plan is currently being prepared and it will set out the Council's local policies and site-specific proposals in relation to development and use of land in Belfast. It will contain local policies, including site specific proposals, designations and land use zonings required to deliver the council's vision, objectives and strategic policies, as set out in the Plan Strategy.

6 Local Transport Plans and Strategies

The Department for Infrastructure are currently preparing a new transport plan which will set the framework for making transport policy and investment decisions up until 2035. The Eastern Transport Plan (ETP) 2035, previously known as the Belfast Metropolitan Transport Plan (BMTP), covers five council areas and will also support the preparation of the Local Development Plans for these councils.

The new ETP encompasses the following 'five councils':

- Antrim and Newtownabbey Borough Council (ANBC);
- Ards and North Down Borough Council (ANDBC);
- Belfast City Council (BCC);
- Lisburn and Castlereagh City Council (LCCC); and
- Mid and East Antrim Borough Council (MEABC)

ETP 2035 aims to ensure that the transport network meets the needs of the people and businesses living, working and visiting the ETP area, both now and into the future.

To date key deliverables such as the Vision, Objectives and Guiding Principles have been developed in collaboration with stakeholders. Also, public engagement exercise to launch the ETP, which sought feedback on the draft vision and objectives, took place between 4 September 2023 and 30 October 2023.

Following consideration of the responses from the public engagement exercise and through wider feedback, the vision and objectives have been agreed as:

Deliver an integrated and re-balanced transport network in favour of sustainable, efficient modes, which connects communities creating an accessible, inclusive, safe and prosperous economic region by delivering carbon reduction, improving air quality, enhancing the built and natural environment and facilitating healthy and sustainable travel choices over unnecessary private car travel.

More information on the Eastern Transport Plan (ETP) 2035 can be found here: https://www.infrastructure-ni.gov.uk/articles/eastern-transport-plan-etp-2035

Work on testing schemes, proposed measures and associated evaluation has progressed throughout 2024 and 2025 for the City Centre, and the wider Metropolitan Area.

A draft of the Belfast City Centre Chapter and the Metropolitan Area Chapter of the ETP is anticipated to be available in advance of the LDP Local Policies Plan publication for Belfast City Council with public consultation anticipated to commence in Autumn 2025 (subject to Ministerial approval)

7 Climate Change Strategies

Belfast City Council declared a climate emergency in 2019 and established an All Party Working Group on the Climate Crisis, now replaced by a Climate and City Resilience Committee to provide political leadership. In 2021, Belfast City Council appointed a Belfast Climate Commissioner within the organisation who heads up a Climate Team. The Climate Commissioner co-chairs the city's Our Planet Board which provides community oversight of the commitment in the Belfast Agenda to create a sustainable, nature-positive city and delivery of an associated programme of work. The programme of work covers three key areas:

- Re-naturing the city and increasing resilience to climate change
- Creating a sustainable circular economy
- Innovating to net zero

In 2024, the Belfast Local Area Energy Plan (LAEP), was launched to provide a roadmap for Belfast to achieve net-zero carbon emissions and transition to a sustainable, affordable energy system. It outlines pathways and steps for decarbonisation, supporting wider socio-economic goals like job creation and prosperity for residents. The LAEP is a key tool for prioritising and driving energy and heat projects within the city.

Within Council, a Climate Programme Board oversees the delivery of the 2025 Climate Action Plan and a £1 million climate fund. The Climate Action Plan aims to close the gap between BCC's current climate action and its ambition to be a net zero and resilient Council. it sets out a range of actions that will be undertaken by Belfast City Council to build resilience and reduce emissions across its estate and operations. The plan is informed by a climate

risk assessment and annual emission monitoring which is reported on annually and via the Council's public body reporting obligation. All short-term actions have been mainstreamed into the Corporate Annual Delivery Plan for 2025-26. Going forward, the plan will be reviewed annually with priority actions brought forward by Departments for inclusion in the Council's Annual Delivery Plan Ensures that the Climate Action Plan supports the delivery of the Annual Delivery Plan and that climate actions are resourced as part of the annual planning cycle.

Highlighted Council action to date includes:

- Implementation of phase 1 of the Belfast One Million Trees Programme, which sets a target of planting one million trees in the city by 2035.
- Delivery of the Upsurge demonstrator.
- The Belfast Retrofit Delivery Hub in 2022.
- Development of a (draft) Low Emission Vehicle (LEV) Strategy, with the aim of assisting elected members and Council officers in procuring public charge points to enable residents, visitors, and businesses to transition to electric vehicles (and to shift away from private car use to alternative modes of travel) to reduce emissions (2024).
- Delivery of 22 internal climate projects including energy audits, installation of metering and monitoring in our buildings and the development of a digital twin for City Hall, recycling pilots, baselining of species rich grasslands and other initiatives.
- Annual disclosure to the Carbon Disclosure Project, the UK Scorecards, Global Sustainable Destination Index etc have consistently resulted in high scores which has established Belfast as a climate leader globally. For example, Belfast has retained an A-grade in the global Carbon Disclosure Project framework, recognition for the work undertaken to date in the city (2024). Belfast is also accredited as a Sustainable Food Place.
- Development of a single use plastics policy for the Council.
- Development of an accessible climate data platform to track progress on delivering climate adaptation and mitigation actions.
- Completion of a feasibility study, market readiness assessment, business model development, route to market, for a low carbon heat network.

Current development work strands include delivering the Council's Climate Action Plan, the Belfast Local Energy Action Plan, the One Million Trees project, the UPSURGE project, and

the Pathfinders project. The Council is also supporting and facilitating the development of a sustainable food strategy, and preparation of mandatory Public Bodies Duties Report, which will commence in October 2025. A climate data platform has been developed and we are developing a portal to encourage the uptake of solar across the city and installation of solar PV and battery systems in the Markets area. We are also developing a partnership approach to a cross tenure neighbourhood retrofit pilot (and are part of a twinning project with Galway) and we continue support the creation of an exemplar net zero park to develop, test and commercialise green technology. A detailed overview of our current work is provided below.

- **Public body reporting, benchmarking and public disclosure**
  - Preparing departments for data collection required for Public Body Reporting under the Climate Change Act.
  - Preparing a mitigation report (Oct 2025) and adaptation report (March 2026) for submission to DAERA in line with Public Body Reporting requirements.
  - Collating climate data for annual disclosure to the Carbon Disclosure Project.
  - Project and Council Climate Action Scorecards and Northern Ireland Business in the Community Environmental Bench Marking Survey (NIBItC).
- **Managing a £1m Climate Fund**
  - Coordinating, monitoring and evaluating existing climate projects and conducting a stage review of the Council's Climate fund.
- **Building capacity of Council to respond to climate change across its estates and operations**
  - Delivering the CAP.
  - Commissioning training for Council staff and elected members on climate, sustainability and related specialist topics.
  - Reviewing the Business Travel Policy and develop the Sustainable Staff Travel Plan to encourage modal shift, active travel and more fuel-efficient driving for Council staff.
  - Updating the BCC Climate Risk Assessment in line with the new mandatory Public Body Reporting requirements (under the UK Climate Change Act).
  - Developing the scope for a climate risks and opportunities assessment for Belfast.
  - Facilitating the coordination of the delivery of LGD programme requirements under NICCAP3.
- **Testing and demonstrating nature-based solutions**

- Developing a demonstrator site at Botanic Gardens and testing nature-based solutions through the UPSURGE project and identifying and target funding opportunities to scale up nature-based solutions across the city, targeting areas most in need and using UPSURGE as a Living Lab through the TalX Project

- **Making the City's food system more sustainable**
  - Developing a city-wide Sustainable Food Strategy, with associated delivery and monitoring arrangements
  - Developing a sustainable food policy for the Council that addresses waste, sourcing, packaging, emissions measurement and an events protocol
  - Continuing to coordinate the climate elements of the Belfast sustainable food partnership and participating in the UK and NI Sustainable Food Places initiative
  - Working with community based groups to develop an urban growing and an urban greening project to demonstrate opportunities for biodiverse cities.
- **Delivering the LAEP**
  - Commissioning Community opportunities assessment of a heat network and preparing an Impact assessment
  - Initiating pre-procurement market engagement for a low carbon Heat Network for Belfast City Centre
  - Developing and carrying out an engagement plan with potential heat network off takers. Ensuring 'the city' is informed of the potential for a Belfast Heat Network & future phase
  - Supporting the development of a neighbourhood retrofit pilot (led by social housing providers) through the Belfast Retrofit Delivery Hub
  - Developing a Solar Portal for the City
  - Completing a supply chain analysis for Solar PV within Belfast to understand the market ability to respond to PV demand at scale
  - Installing Solar PV on Donegall Pass Community centre (DBP)
  - Developing a pipeline of investable local energy projects arising from the Local Area Energy Plan, with a focus on a heat network and solar PV
- **Developing a net zero neighbourhood framework**
  - Completing the Horizon Europe funded UP2030 project which aims to embed net zero in urban planning

- **Promoting a whole system, integrated approach to delivery through stakeholder engagement and partnerships**
    - Providing regular updates to elected members through Council Committees (SP&R, Climate and City Resilience etc.) and respond to NOM.
    - Providing regular updates to CMT, City Regeneration and Development Programme Board.
    - Providing updates and secretariat services to the Climate Programme Board, the Our Planet Board / Strategic Oversight Group, the Net Zero Delivery Group, the Retrofit Hub / Retrofit Steering Group, the BCC Heat Network Working Group, the Sustainable Food Partnership, and the Data group

The council is also an active member of the Local & Central Government Climate Change Working Group led by DAERA and SOLACE, the Sustainable Development Forum, Local Government Climate Action Network, the Stormont All Party Working Group Climate, Belfast Emergency Planning Group, Greening the City Advisory Group, Green Arts Collective, Healthy Cities and the Resilient Cities Network, and regularly speaks at conferences and events. We routinely engage with a range of Cities on climate issues including Cork, Galway, Liverpool, Manchester, Birmingham, Newcastle, Fife, etc.). We also provide inputs into a range of cross departmental initiatives including Culture 2024, Grey to Green, Belfast Stories and the Belfast Business Promise.

8 Implementation of Action Plans

In 2006, Belfast City Council, along with relevant partner organisations, launched its first Air Quality Action Plan (AQAP) for the city, designed to address areas of air quality concern, safeguard good air quality and to achieve national air quality strategy objectives and EU limit values by 2010. Around 90 percent of that action plan was completed by the 2010 deadline but, although the air quality limit values and objectives for particulate matter have now been achieved across the city, limit values and objectives for nitrogen dioxide continue to be exceeded and give cause for concern in a few remaining ‘hot spot’ locations.

In mid-2012, the Council commenced development of a new Air Quality Action Plan for the city to address the remaining NO_2 hotspots. Concentrations of PM_{10} were complying with annual and daily mean objectives at this time within the M1 Motorway / A12 Westlink corridor AQMA.

The Council published a second AQAP for the city in 2015, which concluded at the end of 2020. A final review of the implementation of various mitigation measures included within the 2015-2020 AQAP was undertaken and reported by the Council to the Department of Agriculture Environment and Rural Affairs (DAERA) as part of the Council's 2020 Air Quality Progress Report, submitted to DAERA in June 2020.

Whilst the second AQAP continued to deliver improvements in ambient air quality within our AQMAs and across the city, a limited number of transport related nitrogen dioxide (NO_2) hotspots remained. Moreover, fine particulate matter ($PM_{2.5}$) had emerged as an additional air pollutant of concern. Consequently, in 2021, the Council with partner organisations developed a new 5-year Air Quality Action Plan 2021-2026 for the city.

The aim of this new AQAP is to continue reducing emissions from transport sources and to promote and enable a shift onto more sustainable modes of transport to achieve compliance with the air quality objectives for nitrogen dioxide. An additional aim of the Plan is to identify, develop and implement mitigation measures, where necessary, to address concentrations of $PM_{2.5}$ across the city.

A summary of mitigation measures proposed as part of the new AQAP is provided within Table 8.1 of this Progress Report. Belfast City Council monitors implementation of the Air Quality Action Plan 2021-2026 via annual meetings of the Action Planning Steering Group and reports on its progress via Progress Reports and / or Annual Status Reports.

Table 8.1 – Action Plan Progress

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
1.	Zero Emission Public Transport	Promoting Low Emission Transport / Public Vehicle Procurement	Translink	Introduce circa 100 new zero-emission buses to the Greater Belfast area.	Nov 2020 to April 2022	Dec 2022	Replaces circa 100 diesel buses with zero emission vehicles.	Roll out of 103 Zero Emission Vehicles for the Belfast Metro has been completed.
2.	Zero Emission Public Transport	Promoting Low Emission Transport / Public Vehicle Procurement	Translink	Develop Programme to decarbonise the bus fleet in the Greater Belfast area.	Nov 2022 to Dec 2025	Dec 2030	To remove all diesel buses in Belfast Metro and replace with a zero-emission fleet by 2030.	Zero Emission bus fleet replacement programme is on course for completion by 2030. Circa 1/3 of all Belfast Metro services are now operated by zero emission buses.
3.	Bus Fleet Improvement	Vehicle Fleet Efficiency / Vehicle Retrofitting Programmes	Translink	Through vehicle modification, deliver minimum Euro 6 emission standards for all buses and coaches operating in Belfast.	Oct 2020 to Dec 2022	Dec 2022	Significant reduction in NOx and particulate matter emissions.	Euro 6 emission upgrade project has been completed for Goldline services and the Belfast Metro.
4.	Decarbonisation of the rail network	Promoting Low Emission Transport / Public Vehicle Procurement	Translink	Transition of all rail rolling stock to a net-zero traction power by 2040.	New Trains 4 – 2030 New Trains 5 – 2035 New Trains 5 - 2040	Dec 2040	Ultimately, zero emission on the rail network by end of 2040.	Initial Technical Study and Rail Decarbonisation Strategy completed in 2023. Detailed feasibility study for Belfast to border route completed in 2024.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								New Trains 4 Feasibility Study due for completion in mid-2025.
5.	Future Ticketing System	Transport Planning and Infrastructure / Public Transport Improvements	Translink	Contactless payment on all bus and rail services by 2024. Account-based ticketing on all bus and rail services by 2026.	2018	2026	Provide greater ease of use, improved integration and best value for customers, thereby encouraging modal shift to public transport and a reduction in emissions from cars.	Contactless payment rolled out on all Metro services in 2022. Installation of ticket vending machines with contactless payment acceptance at all rail stations completed in 2024. Roll out of contactless payment on all Ulsterbus services completed in 2024. Next steps are to implement account-based ticketing on Ulsterbus, Glider and NI Railways services by 2026.
6.	Belfast Transport Hub (Belfast Grand Central Station)	Transport Planning and Infrastructure / Public Transport Improvements	Translink	Major new multi-modal transport hub for Belfast.	Main works construction commenced in Q1 2022.	June 2026	Provide a new integrated transport hub, including facilities for active travel to encourage and facilitate increased modal shift towards sustainable transport.	Belfast Grand Central Station is now operational for both bus and rail services. Construction works are ongoing in the surrounding street works and public realm areas, supporting the

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								enhancement of Active Travel infrastructure in Belfast.
7.	Promote Public Transport	Promoting Travel Alternatives / Other – Promoting Public Transport	Translink All BCC stakeholders	Undertake engagement across companies, organisations and agencies to incentivise reduced use of the private car and greater use of public transport. Provide information at our stations, on Personalised Travel Planning, Corporate Commuter Initiatives (CCIs), providing best value fares information and promotional activity to attract modal switch onto public transport. Promote the use of low and zero emission buses with the development of new branding and messaging to highlight their benefits.	Nov 2020	Ongoing	Modal shift from car use to public transport/active travel will reduce emissions.	Engagement ongoing throughout 2024 and 2025 to date across a broad range of stakeholders promoting benefits of public transport, encouraging active, sustainable travel and modal shift from the private car. Programme of Personalised Travel Planning, Best Value Fares and Corporate Commuter Initiatives delivered. Ongoing promotion during 2024 and 2025 of low and zero emission buses, including branding and marketing / communications campaigns.
8.	Belfast Rapid Transit (BRT) Phase 2	Transport Planning and Infrastructure / Public Transport Improvements	A Belfast Region City Deal (BRCD) Infrastruct	The Belfast Rapid Transit Phase 2 (BRT2) project is the further development of the Belfast Rapid Transit system north to Antrim and	Utilising the £35m from Belfast Region	Delivery of the remainder of the project, and the	BRT will have a beneficial impact on modal shift, traffic movements and direct pollution levels along the	Dfl Minister Kimmins made an announcement on 25th February 2025 outlining

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
			ure project being developed by DfI	Newtownabbey and south to Lisburn and Castlereagh and an extension of the existing CITI route to serve Queen's University and City Hospital – bus priority measures, enhanced facilities & new vehicles. One of 3 infrastructure projects being taken forward by DfI as part of BRCD	City Deal, alongside an additional £13m of departmental funding, it is hoped to deliver the first phase of works, as outlined in the Minister's Assembly statement of 25th February 2025, by the 2027/28 financial year.	associated timescales for this work, would be dependent on securing the necessary funding to address the £100m shortfall.	route. For example, the Glider vehicles are demonstrating a 90% reduction in NO_2 and particulate matter emissions relative to the oldest vehicles in the Metro fleet.	the next steps for the Belfast Rapid Transit Phase 2 project with a particular focus on those elements that are being taken forward with the £35 million funding from Belfast Region City Deal along with the additional investment of £13 million for the O'Neill Road Park and Ride. Once the OBC has been approved by the Department of Finance, we will move to the detailed design stage of the project.
9.	Bus & Rail based Park & Ride / Interchange	Alternatives to Private Vehicle Use / Bus and Rail based Park & Ride	DfI Translink	1500 additional Bus & Rail Park and Ride spaces by 2023 across NI. Promotion of active travel links.	April 2018	2025	Modal shift from car use to Public Transport / Active Travel will reduce GHG emissions.	• Newtownards P&R - 450 spaces. Planning application submitted; land acquired. Delivery dependant on business case approval and full funding. • Moira P&R – additional 460 spaces. Planning permission granted; funding profiled within

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Translink Capital Plan. Opening by 2027. • Ballymena P&R - 390 additional spaces. Planning permission granted. Awaiting revised Letter of Offer for funding. Opening by 2027 dependant on funding. • Mossley West P&R - 255 spaces in addition to existing site at the train station, to replace overflow at Tannery. Planning permission granted. Awaiting revised Letter of Offer for funding. Opening by 2027 dependant on funding. • Tillysburn Park & Ride (450-500 spaces) Officials are currently considering appropriate delivery mechanisms for Park & Ride sites, including Tillysburn and these considerations are still ongoing.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								• Cairnshill extension (358 spaces) now on hold due to reduced P&R usage and uncertainty of future demand. It is deemed more appropriate to reconsider the Departments requirements in the context of the BRT2 Project, the development of which will assess the projected future demand for P&R in this vicinity. • Sprucefield Park & Ride new access and (40 spaces) extension delayed. Due to delay in gaining planning permission the Business Case has expired, and costs have risen significantly. This will need to be reviewed before taking this scheme forward.
10.	Bus Route Improvements	Transport Planning and	DfI Translink	Bus priority on all key Metro corridors in Belfast equivalent	April 2020	March 2025	By converting general traffic lanes to bus	The aim is to have bus priority measures

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
		Infrastructure / Bus Route Improvements		to that provided on the BRT Glider corridors. Bus stop 'balancing' to reduce stop/start.			lanes, journey times are reduced and consequently fuel consumption and emissions are reduced. By better balancing the location and number of bus stops, dwell times are reduced, reducing idling, stop/start and associated emissions.	introduced on routes to complement the roll-out of the zero-emission vehicles. Castlereagh Road extended bus lanes were delivered in March 2023. Additional bus lanes installed on Howard St, Great Victoria St, Bruce St, Dublin Rd and North St as part of BGCS construction phase mitigation. Monitoring data on impacts being collected by DfI / Translink to inform case for retention. Officials are currently undertaking a study of the Shore Road, Belfast corridor with a view to providing enhanced bus priority measures.
11.	Park and Ride	Alternatives to Private Vehicle Use / Bus and Rail based Park & Ride	DfI Translink	The current Park & Ride Strategic Delivery Programme aims to deliver circa 2,000 additional spaces by 2025 (dependent on budget allocation)	2013	2025	This extension to the programme will have positive impacts on improving air quality for Belfast by providing alternative transportation for commuters travelling	DfI progressing business cases for Comber, Downpatrick, Dungiven and Tillysburn park and rides. Delivery is dependent upon

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
							into the city rather than relying upon the private car.	statutory approvals and funding. Tillysburn Park & Ride (450-500 spaces) Officials are currently considering appropriate delivery mechanisms for Park & Ride sites, including Tillysburn and these considerations are still ongoing.
12.	Improved walking and cycling connectivity to public transport interchanges	Transport Planning and Infrastructure / Other - Active Travel Network Improvements	DfI Translink	Enhance walking and cycling infrastructure to bus and rail stations, halts and Park and Ride sites.	2021	Ongoing	Improve infrastructure to make it easier and more attractive to walk and cycle to and from public transport interchanges, thereby reducing car usage and associated emissions.	Translink and DfI are working in partnership to improve integration between Active Travel and Public Transport. Secure cycle shelters have been introduced at some train stations. Translink will deliver additional cycle storage at 21 halts / stations by end 2025.
13.	Bicycle Strategy for NI Belfast Cycling Network	Transport Planning and Infrastructure / Cycle Network	DfI Sustrans	The Bicycle Strategy will be followed with a Belfast Cycling Network to guide the development and operation of cycling infrastructure across the city for the next 10 years.	2017	Published 2022	Increased levels of cycling could reduce congestion, improved air quality, reduce noise pollution and contribute to a cleaner environment.	Delivery plan published in March 2022. Implementation ongoing.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
				A public consultation on the draft Belfast Cycling Network was held in early 2017. A consultation report was published in 2018.				
14.	Blue / Green Infrastructure Funding	Transport Planning and Infrastructure / Other – Blue and Green Infrastructure	DfI	Capital grant funding for Councils to construct greenways. The following greenway projects have been allocated a grant over the 2020/21 and 2021/22 period: - Lagan Gateway greenway (BCC) - Forth Meadow greenway (BCC) - Strathfoyle greenway (DC&SDC) - Strabane North greenway (DC&SDC) - Banbridge Riverside lighting (ACB&CBC)	2020-2022 depending on available Budget allocation	March 2022	Greenways have the potential to bring significant benefits to us all in terms of more physically active lifestyles, active travel, improved mental and physical health and wellbeing, social inclusion, tackling climate change, the strengthening of the local economy and tourism.	The Blue Green Infrastructure Fund concluded in 2023. 50% capital funding towards council led greenway delivery is available through the Department's Greenways and Active Travel enabling measures grant scheme
15.	Green Recovery	Traffic Management / Strategic Highway Improvements	DfI	Temporary reallocation of road space to aid social distancing and active travel: - Pedestrianisation of Hill Street/Gordon Street - Reallocation of parking spaces for extended footway use - Pop-up cycle lanes to connect main hospitals for key workers – Dublin Road, Donegall Road and Grosvenor Road	2020/21	Ongoing	Increased levels of walking and cycling could reduce congestion, improved air quality, reduce noise pollution and contribute to a cleaner environment.	**Pedestrianisation of Hill Street / Gordon Street** – Officials are currently preparing for further engagement with key stakeholders to aid the development of a suitable proposal for Hill Street / Gordon Street in advance of formal consultation.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Further progress on this matter will be subject to the satisfactory completion of the legislative process. **Reallocation of parking spaces for extended footway use** – the reallocation of road space for sustainable and active travel will be considered as part of the Eastern Transport Plan **Pop-up cycle lanes to connect main hospitals for key workers (Dublin Road, Donegall Road and Grosvenor Road)** - the Department has reviewed the use of pop-up cycle lanes and published its findings, which has shown support for the concept. Work is now being undertaken to develop designs suitable for taking forward to consultation with the

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								intention of formalising the current arrangements.
16.	Belfast Multi-Modal Transport Model	Traffic Management / Other	DfI	It is expected that the Multi-Modal Transport Model will be enhanced and updated as part of the development of the Belfast Metropolitan Transport Plan (now Eastern Transport Plan) in conjunction with the Belfast City Council Local Development Plan. However, this is currently 'in abeyance' in light of the COVID emergency and the programming of work for the Transport Plans. A key use of the model will be in transport and land-use option generation and testing. The transport model will provide forecasts of traffic flows and speeds to enable the estimation of air quality using separate detailed atmospheric dispersion modelling software held by Belfast City Council.	2022	Complete. Potential for future update.	This model will provide the capability to estimate the likely changes in air quality arising from changes in population and employment (BCC Planning inputs) and different transport investment options (DfI). Note that the decision to develop this model is currently 'in abeyance' in light of the COVID pandemic and the continuing impact on travel patterns.	Update of the Belfast Multi-Modal Strategic Transport Model (BSTM2) has progressed in line with the development of the Eastern Transport Plan (formerly termed the Belfast Metropolitan Transport Plan) from mid-2022 to the present date. As part of this progress, the Transport Model has been augmented with input supply and demand data; updated to a 2019 base year with an additional 2023 Present Year Validation update; and integrated growth forecasts from TEMProNI tool and the BCC local development plan zonings. Investment in BSTM2 allows for future scenarios to be modelled and tested as

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								part of the Eastern Transport Plan.
17.	Belfast Metropolitan Transport Plan (BMTP) Ministerial decision taken in 2023 to change name from BMTP to Eastern Transport Plan (ETP)	Transport Planning and Infrastructure / Other	DfI	A new ETP will be prepared to integrate with the Belfast City Council LDP. The ETP will assess total transport demands arising from planned developments and the achievement of a range of agreed objectives. The new ETP will become the extant Transport Plan and will include a range of schemes covering road, rail, bus, cycling and pedestrian networks. Whilst the contents of the new ETP cannot be assumed in advance, it is expected to include substantial demand management measures to restrict the use of private cars in the city centre and for commuting purposes in particular. These measures are expected to complement and reinforce any measures delivered as part of the Belfast City Council Parking Strategy and Action Plan.	2023 estimated in line with LDP programme	2030 in line with LDP assumed	It is expected that the balance of measures in the ETP will impact positively on ambient air quality.	Work on the ETP has progressed since 2023 in line with Local Development Plan (LDP) timetables. Key deliverables such as the Vision, Objectives and Guiding Principles have been produced. Progress has included wide council and stakeholder engagement with the project publicly launched in September 2023. Work on testing schemes, proposed measures and associated evaluation has progressed throughout 2024 and 2025 for the City Centre, and the wider Metropolitan Area. A draft of the Belfast City Centre Chapter and the Metropolitan Area Chapter of the

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								ETP is anticipated to be available in advance of the LDP Local Policies Plan publication for Belfast City Council with public consultation anticipated to commence in Autumn 2025 (subject to Ministerial approval)
18.	Electric Vehicles	Promoting Low Emission Transport / Procuring Alternative Refuelling Infrastructure to Promote LEV, EV recharging, gas fuel recharging	DfI	DfI is assisting the current public charge point network operator as it seeks to replace approx. 60 charge points i.e. 30 charge posts and a further 5 Rapid charge points to upgrade and improve the reliability of the existing public network. • Department officials are engaging with OZEV and the Energy Saving Trust (EST), who administer the On-street Residential Charge Point Scheme (ORCS), in particular, with reference to councils in Northern Ireland. • As part of the work being carried out on the transport elements of the Executive Energy Strategy the Department is considering how to chart a pathway to support vehicle electrification and seek to	2015	Ongoing	There are significant benefits to both the environment and to the driver in the use of electric vehicles.	Of the six priority actions the Department set out in its EV Infrastructure Task plan, four have now been completed, or are in the implementation phase. This improves the network of EV charging infrastructure. The remaining two actions have been amalgamated into the Department's plans for the needs of the strategic road network. Northern Ireland joined the Vehicle Emissions Trading Schemes in January 2025. A consultation on flexibilities for

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
				address financial and non-financial barriers to the uptake of EVs in Northern Ireland, taking into account the wider UK policy, legislative and funding environment as part of a wider clean transport strategy. The Department is developing a charging infrastructure plan, in partnership with key stakeholders from government, public, private and third sectors to develop the charging network.				manufacturers was held in early 2025 and legislative changes will be made over the course of the year. These will allow greater flexibilities for manufacturers to meet the annual targets set within the Vehicle Emission Trading Schemes.
19.	Lagan Pedestrian and Cycle Bridge	Transport Planning and Infrastructure / Cycle Network	A Belfast Region City Deal (BRCD) Infrastructure project being developed by DfI	If confirmed in the final Belfast Region City Deal, the proposed bridge, is one of 3 infrastructure projects being taken forward by DfI as part of BRCD. It will span the River Lagan from the Gasworks to the Ormeau Embankment aiming to improve accessibility to the city centre for residents and communities east of the River Lagan. The Bridge also aims to encourage both people from the city centre and local communities to use Ormeau Park for recreational use.	Procurement commenced June 2024	2027	Increased levels of walking and cycling could reduce congestion, improve air quality, reduce noise pollution, and contribute to a cleaner environment.	An Outline Business Case has been approved, with planning permission and other statutory approvals in place. Technical consultants were appointed in October 2022 to complete the preliminary design, prepare procurement documents, and manage the procurement competition. The procurement competition to complete

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								the detailed design and construct the bridge was advertised on the 4 June 2024 with construction planned to commence in autumn 2025 Completing the work is then expected to take up to 24 months from date of contract award.
20.	Promoting travel alternatives: Behavioural change programmes	Promoting Travel Alternatives / Promotion of Cycling, Walking, Schools and Workplace Travel Plans	PHA, DfI and DAERA, Belfast City Council, EU Interreg (delivered by Sustrans) Cycling UK/ Sustrans/ European	Sustrans works in a range of settings: • Schools with the Active School Travel Programme; • Workplaces with the Leading the Way Programme; • Communities – to promote walking and cycling as a mode of transport. In addition: • Active Travel Hub in CS Lewis Square, east Belfast and more recently Whiterock Community Centre in west Belfast – provides a base for range of interventions with community groups, individuals and workplaces. • Project to encourage walking and cycling in new Forthmeadow Greenway	Ongoing 2015 2016 2017	Ongoing – Currently, all these programmes are underway, with a review of extension. The Communities ' project was ceased by PHA in 2023	Changing people's travel habits – swapping the car for walking, cycling and public transport. Active Travel Hubs are visible in the community to provide info & encourage travel alternatives.	Sustrans continues to deliver the Active School Travel Programme, which is co-funded by the PHA and DfI. Active Travel Challenge - annual month-long initiative in June promotes all forms of sustainable transport – walking, cycling and public transport. The Challenge is delivered by Sustrans and partners with Translink, DFI and PHA. More

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
			Cycling Federation Sustrans	• Applied to run Active Travel Hub at Cathedral Gardens **Cycle-friendly Employer Accreditation Scheme** – Cycling UK run this in N. Ireland with support from Sustrans. **Pedal Perks** cycling discount scheme offered by range of businesses to encourage cycling to premises.	2018 2017		Provide facilities to encourage active travel e.g. cycle parking; changing facilities; mileage incentives. Incentivises active travel to shops and facilities.	workplaces have signed up than ever. There is no government funding for the Active Travel Hub in east Belfast. Whiterock Hub in west Belfast (opened in March 2023) has been closed. There is a Plan to open a Hub at Grand Central Station but there is currently no resource funding. Forthmeadow Greenway project has been completed. DAERA's Air and Environmental Quality Team (AEQ) delivered Clean Air Day presentations to primary schools across NI in May/June 2024. Belfast City Council also carries out an air quality awareness campaign every June as part of the Clean Air Day initiative.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
21.	Transport planning and infrastructure: Build safe protected cycling infrastructure	Transport Planning and Infrastructure / Cycle Network	DfI Sustrans	**Walking and Cycling Index, Belfast** – produced every 2 years in collaboration with DfI. Provides evidence of support for cycling and progress to date, includes a public survey of attitudes to cycling. **Belfast Cycling Network** – published in June 2021, the Strategy sets out government plans to develop cycle routes in Belfast. The Bicycle Strategy will be followed with a Cycling Network for Belfast to guide the development and operation of cycling infrastructure in the city for the next 10 years. A public consultation on the draft Belfast Cycling Network was held in January 2017 and in early 2018, a consultation report was published. **Safe Routes to School campaign** – to enable children to walk and cycle rather than being driven. **Strategic plan for Greenways** – Paths for Everyone. Funding pot for Councils to develop	2015 2017 Ongoing Part of Active School Travel Programme/ lobbying work 2016	Ongoing Report published June 2021 Ongoing Ongoing	Safety is biggest barrier to people cycling. Traffic-free greenways enable more people to walk or cycle. Urban greenways used by commuters as well as leisure trips.	Walking and Cycling Index continues to be funded by DfI. Most of the funding is provided through the Freshfield Foundation via Sustrans. Implementation of Belfast Cycling Network is covered under item 13. Greenway delivery is covered under item 14. Consultation on a draft Active Travel Delivery Plan (ATDP), including network plans for every settlement in NI with a population greater than 5,000 and prioritised routes within those towns and cities, closed on 28th February 2025. DfI is reviewing consultation responses with the aim of presenting a final plan for Ministerial consideration in the autumn. Routes to schools are one of the

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
				greenways. Sustrans can assist Councils with community consultation and feasibility plans.				key destinations prioritised within the draft ATDP.
22.	Traffic management	Traffic Management / Strategic Highways Improvements, reduction of speed limits, 20 mph zones	DfI Sustrans	Introduction of 20 mph speed limits **School Streets** – closing area around schools to traffic. This is a proposed pilot scheme, which has proved successful and popular in GB. **Low Traffic Neighbourhoods** – implement car-free areas.	2019 TBC	Ongoing	As above, as we saw in lockdown less traffic encourages people to walk or cycle. Traffic restraint measures necessary to reduce volume of traffic and polluting vehicles.	Schemes to reduce *'rat running'*, and to promote sustainable travel will be considered more fully in the Eastern Transport Plan, which is being developed in conjunction with council's Local Policies Plans. **Update on 20 mph speed limits**: A DfI review of the part time 20mph initiative has recommended a modest and targeted third tranche of schemes. This will supplement the 233 schemes already in place at schools across NI.
23.	Dust monitoring	Other / Air Quality Monitoring and Assessment	Belfast Harbour Commissioners	Monitor particulate matter from bulk cargoes in Port operational areas of Belfast Harbour Estate and implement mitigation measures.	Commenced	Ongoing	Identify areas of high concentration for action.	Monitoring ongoing. High concentration areas identified.

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Operational controls in place.
24.	AQ Modelling	Other / Air Quality Monitoring and Assessment	Belfast Harbour Commissioners	Complete Baseline Air Quality Modelling of the Belfast Harbour Estate.	Commenced	2022	Establish theoretical baseline & identify areas for attention.	Completed.
25.	NO_2 Monitoring	Other / Air Quality Monitoring and Assessment	Belfast Harbour Commissioners	Conduct monthly diffusion tube monitoring of NO_2 at 18 sites within the Belfast Harbour Estate.	Commenced	Ongoing	Establish baseline of NO_2 levels & identify areas for attention.	Completed. Monitoring ongoing
26.	Real Time AQ Monitoring stations	Other / Air Quality Monitoring and Assessment	Belfast Harbour Commissioners	Implement real time Air Quality Monitoring for air pollution at 5 locations within the Belfast Harbour Estate.	2021	Ongoing	Accessible Air Quality information/ potential link to SMART traffic controls.	Completed. 5 real time AQ sensors installed. Ongoing data validation for NO_2 and particulate matter (PM_{10} and $PM_{2.5}$). New sensor procured in 2025 for co-location monitoring and validation.
27.	Strategy	Policy Guidance and Development Control/Other	Belfast Harbour Commissioners	Publish a Harbour Air Quality Strategy.	2021	Ongoing	Public commitment to improve Air Quality.	Completion of AQ Strategy will be informed by CACHE Project outcomes. CACHE project concluded early 2025, Air Quality Strategy now under development, aligned to 2025-2029 Advance Regional

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Prosperity Strategy and pending Port Masterplan.
28.	Low / zero carbon fuels	Promoting Low Emission Transport / Company Vehicle Procurement	Belfast Harbour Commissioners	Replace the light vehicle fleet with electric/alternative fuels.	2021	2027	Reduced air emissions from vehicles.	30% of fleet has been electrified. Capital provisions are in place to complete transition by 2027. Residual ground fleet included in HVO transition plan.
29.	EV Charging	Promoting Low Emission Transport / Procuring Alternative Refuelling Infrastructure to Promote LEV, EV recharging, gas fuel recharging	Belfast Harbour Commissioners	Work with tenants to encourage installation of EV charging points.	2021	2025	Reduced air emissions from vehicles.	Continue to facilitate connections from tenants that have provided requests. Completed strategic EV scaling review with Royal Haskoning DHV to inform future direction (BHC). Partnered with Weev for first phase of installation works at Harbour Office which is now complete. Second phase planned for July 2025.
30.	Car sharing	Alternatives to Private Vehicle Use / Car & Lift Sharing Schemes	Belfast Harbour Commissioners	Introduce a Car Sharing Scheme for tenants.	2021	Ongoing	Reduced air emissions from vehicles (subject to relaxation of Covid-19 restrictions).	Re-focused on autonomous last-mile connectivity at Queens Island, aligned to

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Queens Island Strategic Transport Master Plan.
31.	Active Travel	Promoting Travel Alternatives / Promotion of cycling and walking	Belfast Harbour Commissioners	Encourage active travel, including walking and cycling to; from and within the estate for local journeys.	2021	Ongoing	Reduced air emissions from vehicles.	Being considered as a part of the Queens Island Strategic Transport Master Plan.
32.	SMART traffic control	Traffic Management / Other	Belfast Harbour Commissioners	Queens Road Mobility project / SMART traffic system.	2021	2023	Reduced air emissions from vehicles.	Completed
33.	Integrated commuter plans	Promoting Travel Alternatives / Workplace Travel Planning	Belfast Harbour Commissioners	Integrated commuter plans to reduce private car use including first and last mile connectivity.	2022	2025	Reduced air emissions from vehicles.	Being considered as a part of the Queens Island Strategic Transport Master Plan.
34.	Cycle lanes	Transport Planning and Infrastructure / Cycle Network	Belfast Harbour Commissioners	Additional cycle lanes and crossing points.	2020	2025	Reduced air emissions from vehicles.	Integrated into all future infrastructure projects.
35.	Green corridors	Transport Planning and Infrastructure / Other – Blue and Green Infrastructure	Belfast Harbour Commissioners	Introduce Green spaces and screening / corridors.	2021	Ongoing	Absorb vehicle emissions.	Biodiversity Action Plan being updated to include expansion of screening and corridors. City Quays Gardens completed.
36.	Shore-side power	Promoting Low Emission Plant / Shift to installations using low emission fuels for	Belfast Harbour Commissioners	Assess feasibility of shore power – cruise/ferry vessels.	2021	Ongoing	Reduced air and GHG emissions from vessels.	Feasibility assessment continuing, based on vessel operator requirements. Targeting cruise ships, aligned to new

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
		stationary and mobile sources						deepwater quay construction - starting in financial year 2025.
37.	Decarbonise port cranes & HGV's	Promoting Low Emission Plant / Shift to installations using low emission fuels for stationary and mobile sources	Belfast Harbour Commissioners	Substitute hydrocarbon fuels with low carbon alternatives – cranes/plant & HGV's.	2021	Ongoing	Reduced air and GHG emissions from port plant & equipment.	HVO transition into landside asserts began on 31st March 2025 and is being phased over two years.
38.	Decarbonise work & pilot boats	Promoting Low Emission Plant / Shift to installations using low emission fuels for stationary and mobile sources	Belfast Harbour Commissioners	Trial alternative marine fuels - Work and Pilot Boats.	2022	2025	Reduced air and GHG emissions from vessels.	Completed – all pilot, work and police boats running on HVO.
39.	Commercial incentive	Promoting Low Emission Plant / Other - Feasibility Study	Belfast Harbour Commissioners	Assess feasibility of Clean Vessel Incentive Scheme.	2022	2023	Reduced air and GHG emissions from vessels.	Initial assessment carried out. No immediate plans to implement.
40.	Ship planning	Other – Vessel Management	Belfast Harbour Commissioners	Optimise Vessel Passage Plans & Berth Utilisation.	2020	Ongoing	Reduced air emissions from vessels.	Completed. Port Management Information Systems (PMIS) in use.
41.	Zero carbon vessel	Promoting Low Emission Plant / Shift to installations using low emission fuels for	Belfast Harbour Commissioners	Introduce electric/hybrid workboat.	2021	Ongoing	Reduced air emissions from vessels.	Ongoing collaboration with Artemis Technologies on development of electric foiling workboat / pilot boat. Pilot boat,

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
		stationary and mobile sources.						Hibernia, introduced in April 2024, running hybrid engines and HVO for near-zero emissions in interim.
42.	Driver ECO Skills	Vehicle Fleet Efficiency / Driver Training and ECO Driving Aids	Belfast City Council	Driver ECO Training & Refresher Driver ECO Training & Monitoring by GPS.	From 2020/21 onward	Ongoing	Reduced fuel consumption. Reduced air emissions.	All new Drivers are trained in ECO Driving techniques as part of the induction process and during refresher training as undertaken were deemed appropriate.
43.	Promoting Cleaner commercial vehicles	Promoting Low Emission Transport / Company Vehicle Procurement- Prioritising uptake of low emission vehicles	Belfast City Council	Replacing older commercial EU4 / EU5 vehicles above 3.5 tonnes with EU6 cleaner standard.	From 2020/21 onward	Ongoing	Reduced fuel consumption. Reduced air emissions.	We continue to replace EU4-EU5 above 3.5 tonnes weight with EU6 cleaner standard vehicles. We replaced 84 vehicles in 2024 / 25 to EU6 standard and have plans to replace a further 23 vehicles in 2026/27 to EU6 standard. From January 2023, some 200 vehicles have been transitioned to HVO cleaner bio bulk fuel (50% of the fleet size) based at the

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								Duncrue Complex. In terms of HVO consumed, this would equate to approximately 80% of all fuel purchased. Fuel Sense software fitted to EU6 RCVs to prevent harsh acceleration and enhance fuel efficiency.
44.	Vehicle Emission Testing	Vehicle Fleet Efficiency / Testing Vehicle Emissions	Belfast City Council	All fleet vehicles tested annually to manufacturers approved EU standard.	From 2020/21 onward	Ongoing	Ensuring vehicles meet their EU approved Standard.	All 255 vehicles in 2024 / 25, presented for their Annual GVC Test, have passed their emission test criteria.
45.	Promoting Electric Commercial panel vans	Promoting Low Emission Transport / Company Vehicle Procurement	Belfast City Council	Replacing older commercial panel vans up to 3.5 ton with Electric.	From 2020/21 onward	Ongoing	Reduction in the commercial panel van fleet carbon footprint.	Some 31 light vehicles under 3.5 tonne weight have been replaced with electric models up until 31-03-25.
46.	Promoting Vehicle Electric Bin-lifts	Promoting Low Emission Transport / Company Vehicle Procurement	Belfast City Council	Replacing Refuse Collection Vehicles with rear electric bin-lifts.	From 2020/21 onward	Ongoing	Refuse Collection Vehicle fuel consumption reduction.	There are currently some 31 RCVs narrow tracks fitted with OmniDEL rear electric twin bin-lifts. A further 4 are due to be received by 31-03-26, making 35 in total, with a further 28 RCVs with standard rear twin-bin lifts to be

No.	Measure	Category / Classification	Lead Authority	Description		Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
									replaced with OmniDEL rear electric twin-bin lift models, as and when capital funding becomes available.
47.	Frank and Honest Belfast Bikes scheme.	Transport Planning and Infrastructure / Public Cycle Hire Scheme	Belfast City Council	Public bike hire scheme in Belfast city centre – 300 bikes and 30 docking sites originally in 2015 in public places, including Titanic Quarter, the Gasworks, Queen's University and York Street. This has now increased to circa 60 docking stations.		From 2015 onward	Ongoing	Cutting congestion and improving air quality.	Expansion of further eight stations delivered. New operator appointed. New scheme including 100 e-bikes will go live in late summer 2025. The current operator, NSL Ltd, will continue to operate the Belfast Bikes scheme until Beryl takes over later this year. Beryl will replace the infrastructure for the 60 on-street docking stations in a phased approach to accommodate an initial suite of 400 new bikes.
48.	Local Development Plan	Policy Guidance and Development Control / Other Policy	Belfast City Council	Number of planning permissions granted on zoned Open Space. Policy: OS1	Belfast City Council Planning decisions and liaising with CNS.	From 2023 onwards	2035	To limit the net loss of zoned open space for uses other than those ancillary or compatible with open space use.	The LDP Plan Strategy was adopted on 2nd May 2023 and its policies have taken effect from that date.

No.	Measure	Category / Classification	Lead Authority	Description		Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
			Belfast City Council	Number of planning permissions that secure Green and Blue Infrastructure improvements, including through Developer Agreements. Policy: SP8 GB1	Belfast City Council through Major Planning decisions (BCC) and S76 Agreements.		2035	75% of major permissions contributing to G & B Infrastructure improvements.	Monitoring of the Plan Strategy is underway, and the outcomes will be published in an Annual Monitoring Report submitted to the Department for Infrastructure once the LDP Local Policies Plan has been adopted.
			Belfast City Council	The number of applications granted for renewable energy development. Policy: ITU4	BCC monitoring major planning decisions with Development Management		2035	Increase in number of renewable energy schemes.	
			Belfast City Council	Proportion of journeys by sustainable modes– active travel, bus rail & BRT. Policy: TRAN1 TRAN3 TRAN4 TRAN5 TRAN9	Travel survey for Northern Ireland (TSNI) (DfI).		2035	An increase in the proportion of journeys made by sustainable modes	

No.	Measure	Category / Classification	Lead Authority	Description		Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
			Belfast City Council	Number of new dwellings permitted annually outside settlement limits. Policy: DC policies	Housing Monitor and Planning decisions (BCC).		2035	To sustainably manage the number of new dwellings in the countryside.	
			Belfast City Council	Number of non-residential proposals permitted annually outside settlement limits. Policy: DC policies	Planning decisions (BCC).		2035	To sustainably manage the amount of new non-residential development in the countryside.	
49.	Additional Air Quality Monitoring	Other / Air Quality Monitoring and Assessment	Belfast City Council	Additional NO_2 and particulate matter monitoring using Small Sensors and Diffusion Tube Technologies to assess air quality within Belfast City Council area.		Ongoing	Ongoing	To provide more detailed and real time information on ambient air pollution levels across the city.	Eight small scale air quality sensors (Earthsense Zephyr) monitor NO_2, PM_{10} and $PM_{2.5}$ throughout the city. There are also currently 80 diffusion tubes installed across the city to specifically monitor NO_2. Council officers continue to review air quality monitoring data, to determine where new diffusion tube or other sensors may need to be

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								installed to fill any monitoring information gaps. Monitoring results are reported as part of the council's annual Progress or Updating and Screening Assessment Reports.
50.	Detailed Air Quality Assessment for Fine Particulate Matter ($PM_{2.5}$) and Nitrogen Dioxide (NO_2) for the Belfast City Council area	Other / Air Quality Monitoring and Assessment	Belfast City Council/ DAERA	The purpose of this project is to generate, through the application of ambient monitoring and atmospheric dispersion modelling, detailed information on fine particulate matter ($PM_{2.5}$) and nitrogen dioxide (NO_2) concentrations within the city boundary in order to ascertain whether UK air quality objectives, European Commission limit values or WHO guideline values are being achieved in relevant human health receptor locations.	February 2021	March 2023	The outcome of the modelling study may serve to assist in the development of mitigation policies and measures to better address $PM_{2.5}$ and NO_2 concentrations across the city.	The Detailed Assessment project was finalised in March 2023. Outcomes of the project were summarised and reported within the 2023 Progress Report, 2024 Updating and Screening Assessment and have been referred to within the 2025 Progress Report. The various Detailed Assessment project reports were formally considered by the People and Communities Committee at agenda item 12 of its meeting of 13th June 2023.
51.	Enforcement within Smoke Control areas and	Other / Enforcement Charges and	Belfast City Council	Belfast City Council will undertake greater enforcement within the city's smoke control	Ongoing	Ongoing	Reduced smoke emissions and greater levels of compliance	Enforcement within Smoke Control Areas is

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
	education concerning the use of polluting fuels.	Public Awareness		areas, and it will develop and deliver an awareness campaign to educate Belfast residents of the adverse air quality impacts of using polluting fuels within their homes.			within Smoke Control Areas	continuously monitored. Belfast City Council also provides information on its website in relation to Smoke Control Areas within Belfast City: https://www.belfastcity.gov.uk/bins-and-environment/pollution/pollution#143-4 A public information initiative concerning smoke control areas was delivered in autumn 2022 through the council's social and other media channels. A recent awareness campaign was carried out on 19th June 2025 (Clean Air Day), publicising Smoke Control Areas within Belfast, as well as other measures that individuals can take to improve ambient air quality in the city. The campaign also provided links to air quality
					Awareness Campaign August 2022	Ongoing	Greater awareness about polluting fuels and their adverse ambient impacts on air quality.	

No.	Measure	Category / Classification	Lead Authority	Description	Implementation Date	Estimated Completion Date	Air Quality Benefits	Progress to Date
								information on the council's website.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Belfast City Council has presented a range of monitoring data within this 2025 Progress Report that addresses a range of pollutants prescribed within the UK Air Quality Strategy. Although these pollutants are routinely measured across the city, the council's focus remains principally upon addressing the existing Air Quality Management Areas and those areas of the city centre where traffic volumes and congestion might lead to further exceedances of the nitrogen dioxide annual mean and hourly objectives. There were no monitored exceedances for any of the Air Quality Strategy objectives for sulphur dioxide, benzene and particulate matter during 2024.

Nevertheless, 2024 monitoring data for nitrogen dioxide confirms continued elevated concentrations within the M1 Motorway / A12 Westlink corridor Air Quality Management Area (AQMA 1) and one exceedance of the annual mean objective at a diffusion tube (DT 106) monitoring location, next to the M3 Motorway off-slip junction with Nelson Street and the A12 Westlink (directly adjacent to the boundary for AQMA 1), and beside a recently completed residential development. Defra NO_2 distance correction calculations for this location (DT 106) have however, predicted a nitrogen dioxide annual mean concentration of 31.4 µg/m^3 at the building façade, which indicates that no exceedance of the 40 µg/m^3 annual mean objective is likely at this relevant residential receptor location (Appendix A).

There were no other exceedances of nitrogen dioxide objectives recorded within or adjacent to AQMA 1. Moreover, the 2024 nitrogen dioxide annual mean concentration (27.1 µg/m^3) monitored at the A12 Westlink / Roden Street automatic monitoring site (within AQMA 1) has not changed significantly since 2021 and remains comfortably below the annual mean objective of 40µg/m^3. In addition, nitrogen dioxide concentrations recorded at the Stockman's Lane automatic monitoring site, also situated within AQMA 1, have decreased significantly since 2020 and are now below the annual mean objective level of 40 µg/m^3. The current 2024 annual mean (33.3 µg/m^3) has not significantly varied when compared to the 2020 annual mean (33.0 µg/m^3). (2020 - 33 µg/m^3, 2021 – 36 µg/m^3, 2022 – 36 µg/m^3, 2023 – 36 µg/m^3 and 2024 – 33 µg/m^3).

Although concentrations recorded within AQMA 1 are lower than 40 µg/m^3, they are still considered to be elevated. Two roadside diffusion tube monitoring locations, both situated within AQMA 1, recorded a NO_2 annual mean concentration of 36.2 µg/m^3 (DT101 - Stockman's Lane Roundabout); and 39.1 µg/m^3 (DT70 - Henry Place) – both within 10% of the annual mean NO_2 objective. We note the LAQM.TG(22) comment at Section 3.53 Amendment and Revocation of AQMAs, which advises that where NO_2 monitoring is completed using diffusion tube, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36 µg/m^3 (i.e. within 10% of the annual mean NO_2 objective).

Moreover, results from the council's Detailed Assessment, finalised in 2023, also suggested localised monitored (by small sensor air quality monitor) and modelled exceedances of the annual mean objective along the A12 Westlink corridor. We note the LAQM.TG(22) comment that due to the inherent uncertainties of dispersion modelling, consideration should be given to predicted concentrations being 10% below the relevant objective before an amendment or revocation of an AQMA is completed.

As a consequence, the council will continue its monitoring within the M1 Motorway / A12 Westlink corridor Air Quality Management Area (AQMA 1) to identify any further exceedances of the nitrogen dioxide objectives and nitrogen dioxide concentrations and trends.

Ambient monitoring data for the Stockman's Lane and A12 Westlink / Roden Street monitoring sites, as summarised in Table 2.4, demonstrate that the number of exceedances of the hourly mean objective (NO_2) has substantially decreased over recent years, both demonstrating compliance with the 200 µg/m^3 objective, not to be exceeded more than 18 times per year - since 2013. In fact, there have been no recorded 1-hour mean concentrations greater than 200 µg/m^3 at either monitoring site since 2019. As a consequence, DAERA included recommendations, within its appraisal letter (20th November 2024), concerning the council's 2024 Updating and Screening Assessment, to revoke this AQMA 1 in relation to 1-hour mean NO_2 objective.

There were no other monitored exceedances of Air Quality Strategy objectives for nitrogen dioxide within the council area, including other AQMAs, during 2024.

Monitoring data for the Ormeau Road site (AQMA 4) demonstrates that nitrogen dioxide concentrations have been significantly below the annual mean air quality objective since 2014. Moreover, dispersion modelling undertaken as part of 2023 Detailed Assessment predicts that annual mean NO_2 concentrations within this AQMA 4, which covers the Ormeau Road from the junction with Donegall Pass to the Belfast City boundary at Galwally, are below the UK AQO level at all locations of relevant exposure during the 2019 assessment base year and 2028 forward projection year.

The magnitude of the decrease in nitrogen dioxide levels along the Upper Newtownards Road (AQMA 3) has been beyond the year-on-year reductions that might have been reasonably predicted using Defra's forward projection factors; even before Covid-19. Moreover, from the monitoring data in Table 2.3, it can be seen that annual mean concentrations of nitrogen dioxide along the Upper Newtownards Road have remained in the range 20 – 22.3 µg/m^3 since 2020, meaning that the nitrogen dioxide annual mean objective is being consistently achieved along the Upper Newtownards Road. 2024 annual mean results (20.6 µg/m^3) recorded at the automatic monitoring site are lower than pre-pandemic annual mean concentrations and significantly below the 40 µgm^{-3} objective level. Moreover, there have not been any monitored exceedances of air quality objectives for NO_2 identified within this AQMA for the last eight years and dispersion modelling (2019-base year and 2028-future year) undertaken as part of the 2023 Detailed Assessment predict that annual mean NO_2 concentrations within AQMA 3, are below the UK AQO level at all locations of relevant exposure.

The council also notes DAERA's recommendations, in relation to AQMA 2: *the council should also 'consider the revocation of the Cromac Street and Albertbridge Road AQMA due to continual compliance with the NO_2 annual mean objective.* Annual mean NO_2 monitoring concentrations recorded within AQMA 2, have been below 36 µg/m^3 since 2020.

At this stage, however, the council has decided not to move to revoke any of its Air Quality Management Areas, and instead to continue to monitor within its AQMAs and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication.

Moreover, although Belfast city has not experienced exceedances of any air quality strategy objectives for particulate matter (PM_{10} and $PM_{2.5}$) for many years, to address growing concerns around the effects of fine particulate matter ($PM_{2.5}$) on human health we undertook a Detailed Assessment for the city. This project was finalised in 2023. The Detailed Assessment (using additional monitoring data and dispersion modelling) indicated that the annual mean PM_{10} and $PM_{2.5}$ AQOs were achieved at all monitoring locations, including at an additional six small sensor air quality monitoring locations. Moreover, modelled annual mean PM_{10} and $PM_{2.5}$ concentrations for the 2019 (base year) and 2028 (future year) are predicted to be well below the UK AQO concentrations at locations of relevant exposure throughout the city.

Finally, Belfast City Council confirms that no new Air Quality Management Areas need to be declared for the city at this time.

9.2 Conclusions relating to New Local Developments

Of the planning applications and various air quality impact assessments received and reviewed during 2024, it was concluded that the proposed developments would have no significant adverse impact on existing local ambient air quality. In addition, no significant changes in local circumstances have been identified within Belfast, which would require detailed consideration. As a consequence, it is not considered necessary to proceed to a 'Detailed Assessment' based on new local developments or potential sources.

9.3 Proposed Actions

In conclusion, this 2025 Progress Report has not identified the need to proceed to a Detailed Assessment for any ambient pollutant under consideration.

However, the council would advise that a Detailed Assessment for the city, for particulate matter (PM_{10}, $PM_{2.5}$) and nitrogen dioxide (NO_2) pollutants was undertaken and finalised in spring 2023. The decision to undertake a Detail Assessment was based on recent evidence from national studies confirming that domestic solid fuel burning contributes more than previously thought to particulate emissions. The project also allowed the council to investigate fine particulate matter ($PM_{2.5}$) concentrations across the city as this pollutant is not currently in regulation for the purposes of local air quality management. The project commenced in February 2021 and was finalised in March 2023; its key outcomes were

presented within our 2023 Progress Report, 2024 Updating and Screening Report and have been referred to within this 2025 Progress Report.

Furthermore, Belfast City Council has already highlighted that it operates an expansive air quality monitoring network across the city, predominantly for nitrogen dioxide. In 2023, we added a further seven diffusion tubes to the network to address the outcomes of 2023 Detailed Assessment, and to confirm modelled NO_2 concentrations within and in the vicinity of our existing AQMAs.

In 2024, we amended our NOx tube monitoring network; 8 tubes were removed from the network, due to sustained low annual mean nitrogen dioxide concentrations or changes to 'relevant exposure' locations; and 4 new tubes were installed close to busy roads with relevant exposure (residential properties).

Overall, in 2024 there were only three diffusion tube monitoring sites (DT 70 Henry Place, DT 106 M3, and DT 101 Stockman's Lane Roundabout), all located at roadside/kerbside locations, where annual mean nitrogen dioxide concentrations were above 36 $\mu g/m^3$ (within 10% of the annual mean objective of 40 $\mu g/m^3$).

The council is therefore content that current monitoring locations provide an appropriately detailed representation of pollution levels for the city and, as a consequence, we consider that the network does not to be expanded further at this time. We will however continue, on an annual basis, to review our monitoring locations and to relocate monitoring sites to better capture relevant exposure, and we will discontinue monitoring from areas of continued low concentrations, significantly below air quality objective levels.

Moreover, as part of the council's Detailed Assessment project for particulate matter and nitrogen dioxide, five new monitoring locations, employing small sensor air quality monitoring equipment, were installed in July 2021, providing a more detailed analyses of particulate matter and nitrogen dioxide concentrations across the city. The council took over ownership and operation of the monitors in May 2022 and has added further monitors in the

intervening time period. 2024 monitoring data and sensor locations are presented within Appendix B.

In 2024, we relocated some of these small sensor monitors for the purposes of a new School Streets monitoring project. The purpose of this project is to undertake ambient monitoring in the vicinity of schools, with a view to helping to inform the designation of 'school streets'. The designation of 'school streets' has been proposed as Action 22 of the Belfast City Air Quality Action Plan 2021-2026 by DfI and Sustrans.

(https://www.belfastcity.gov.uk/documents/belfast-city-air-quality-action-plan-2021-2026). We are continuing with the 'school streets' monitoring project through 2025 and beyond as required and as informed by the associated monitoring data.

To ensure that we continue to collect high quality air quality monitoring data, we maintain and update, where necessary, our ambient air quality monitoring equipment. In 2019 / 2020, Belfast City Council replaced its ageing API NOx analysers at three monitoring sites with T200 variants: the Upper Newtownards Road, Stockman's Lane and Ormeau Road. The non-heated Met One Instruments BAM 1020 PM_{10} particulate matter analyser, located at the Stockman's Lane site, was also upgraded to a new heated inlet instrument. The only analyser, which has not been yet replaced, is the API Model 200E NOx analyser, located at Westlink/Roden Street site, which still continues to perform satisfactorily and remains supported by the manufacturer.

During 2022, we updated the communication system (including modems) to 4G at all four of our monitoring sites. Moreover, the T200 analysers at the Upper Newtownards Road, Stockman's Lane and Ormeau Road monitoring sites were converted over to operate NumaView software.

With regard to our four Air Quality Management Areas, a review of the monitoring data within the AQMAs and for the city in general indicates that there have been improvements in annual mean nitrogen dioxide levels across the city over recent years.

Moreover, the detailed assessment for the city, for particulate matter (PM_{10}, $PM_{2.5}$) and nitrogen dioxide (NO_2) pollutants was concluded in March 2023. It is considered that the detailed atmospheric dispersion modelling, in addition to monitoring data, provides sufficient evidence to give consideration to revocation of AQMA2, AQMA3 and AQMA4.

At this stage, however, the council has decided not to move to revoke any of its Air Quality Management Areas, and instead to continue to monitor within its AQMAs and in other city locations in order to work towards further improving ambient air quality, having regard to air quality guidelines for ambient air quality as recommended by the World Health Organisation, in its 2021 Global Air Quality Guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide publication.

In terms of forward actions, the council will continue to monitor implementation of the Air Quality Action Plan 2021-2026 via at least annual meetings of the Air Quality Action Planning Steering Group, and we will report progress to the Department of Agriculture, Environment and Rural Affairs (DAERA) via our various Action Plan Progress Reports and via submission of our 2026 Progress Report.

The primary aim of the current Air Quality Action Plan is to continue to reduce NO_2 emissions from transport sources and to promote and enable a shift towards more sustainable modes of transport in order to achieve compliance with UK Air Quality Objectives for NO_2. Where necessary, an additional aim of this Action Plan is to identify, develop and implement mitigation measures to address concentrations of fine particulate matter ($PM_{2.5}$) across the city.

In addition, the recommendations of the 2023 Detailed Assessment, with regard to nitrogen dioxide, are that local actions aimed at road traffic are likely to remain the most effective action for reducing ambient concentrations at nitrogen dioxide hotspot locations in the city. Fleet composition projections indicate that the next few years will see accelerated uptake of low-emissions / zero-emissions vehicles and that efforts should continue to be made to support the improvement of the vehicle fleet alongside the continued incentivisation of other transport modes and active travel options.

For PM_{10} and $PM_{2.5}$, the Detailed Assessment recommended that targeted actions to reduce public exposure to PM_{10} and $PM_{2.5}$ should focus on those sources that contribute to the domestic background sector, as source apportionment has indicated that this sector accounts for more than 25% of the total modelled particulate matter concentrations across the city.

These above-mentioned recommendations are consistent with the objectives of the Belfast City Air Quality Action Plan 2021-2026.

We anticipate therefore that the current Air Quality Action Plan 2021-2026 will continue to deliver improvements in ambient air quality within our AQMAs and across the city until its conclusion in 2026. Nevertheless, it is our intention, during late 2026, to engage with competent authorities and our city partner organisations concerning development of a new 5-year Air Quality Action Plan for the city covering the period 2027 – 2032.

10 References

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The Environment (Northern Ireland) Order 2002. https://www.legislation.gov.uk/nisi/2002/3153/contents/made

DAERA Northern Ireland Air – Air Quality in Northern Ireland website https://www.airqualityni.co.uk/

PAS 4023:2023 Selection, deployment and quality control of low-cost air quality sensor systems in outdoor ambient air – Code of practice https://www.bsigroup.com/siteassets/pdf/en/insights-and-media/insights/brochures/pas-4023.pdf

11 Appendices

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Appendix B: Non-LAQM Monitoring (Zephyrs) Results 2024

Appendix A: QA/QC Data

QA/QC Diffusion Tube Monitoring

The council's 2024 passive nitrogen dioxide monitoring network comprises 80 diffusion tubes situated throughout the city at 72 locations. The monitoring has been completed in accordance with Defra's *Local Air Quality Management Technical Guidance document LAQM.TG(22)* and Defra's 2024 Diffusion Tube Monitoring Calendar.

In 2024, Belfast City Council appointed Gradko International Ltd. to supply, analyse and report data for its diffusion tubes. Gradko employs a 20% triethanolamine solution for monitoring ambient nitrogen dioxide and adheres to the requirements of the government's '*Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users'* publication.

Government provides an additional layer of surety for local authorities operating nitrogen dioxide diffusion tubes through the independent analytical proficiency-testing scheme, the AIR PT scheme.

AIR PT is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a scheme, commenced in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme. As part of this scheme, laboratories are provided with a number of test samples that are designed to test their proficiency in undertaking chemical analyses of diffusion tubes.

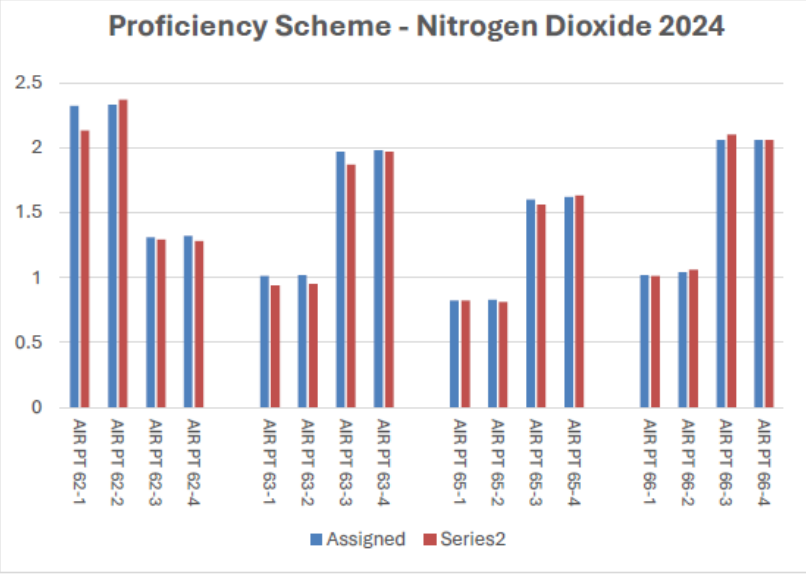
For the 2024 sampling period, Gradko's analytical performance was assessed as follows:

(A division of Gradko International Ltd.)
St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH
tel.: 01962 860331 fax: 01962 841339 email:diffusion@gradko.com

AIR PT Nitrogen Dioxide Proficiency Scheme Results 2024

Methods: GLM 7 – CARY 60 Spectrophotometer

AIR PT Proficiency Scheme - Nitrogen Dioxide 2024					
Date	Round	Assigned value	Procedure GLM 7		
			Measured concentration	z-Score	% Bias
Feb-24	AIR PT 62-1	2.32	2.13	-0.94	-8.2%
Feb-24	AIR PT 62-2	2.33	2.37	0.22	1.7%
Feb-24	AIR PT 62-3	1.31	1.29	-0.2	-1.5%
Feb-24	AIR PT 62-4	1.32	1.28	-0.4	-3.0%
Jun-24	AIR PT 63-1	1.01	0.94	-0.92	-6.9%
Jun-24	AIR PT 63-2	1.02	0.95	-0.92	-6.9%
Jun-24	AIR PT 63-3	1.97	1.87	-0.68	-5.1%
Jun-24	AIR PT 63-4	1.98	1.97	-0.07	-0.5%
Aug-24	AIR PT 65-1	0.82	0.82	0.00	0.0%
Aug-24	AIR PT 65-2	0.83	0.81	-0.32	-2.4%
Aug-24	AIR PT 65-3	1.6	1.56	-0.33	-2.5%
Aug-24	AIR PT 65-4	1.62	1.63	0.12	0.6%
Oct-24	AIR PT 66-1	1.02	1.01	-0.13	-1.0%
Oct-24	AIR PT 66-2	1.04	1.06	0.26	1.9%
Oct-24	AIR PT 66-3	2.06	2.10	0.26	1.9%
Oct-24	AIR PT 66-4	2.06	2.06	0	0.0%



Diffusion Tube Annualisation

Based on 2024 monitoring data, annualisation was required only for one non-automatic diffusion tube monitoring sites: DT59 -York Road (67% data capture). This tube was annualised using automatic monitoring data from Derry Rosemount and Ballymena Ballykeel automatic monitoring stations, both of which had >85% required data capture. The Belfast Centre (Lombard Street) AURN background site had only 60% data capture for nitrogen dioxide during 2024.

The annualisation was undertaken using the Defra Diffusion Tube Processing Tool. Calculations are provided Table A.4.

Diffusion Tube Bias Adjustment Factors

Belfast City Council has applied a local bias adjustment factor of 0.82 to its 2024 diffusion tube monitoring data. A summary of bias adjustment factors used by Belfast City Council over the past five years is presented in Table A.1.

The council co-locates a number of diffusion tubes with reference method compliant chemiluminescent nitrogen dioxide analysers at the Lombard Street, Newtownards Road, Westlink/Roden Street and Stockman's Lane monitoring sites. This process allows a bias adjustment factor (with a 95% confidence interval as an estimate of the uncertainty on the bias adjustment factor) to be calculated and used to correct the diffusion tube monitoring data. In the case of the diffusion tube data presented in this report, the monitoring data has been corrected using a local bias adjustment factor derived from three co-location studies: Newtownards Road, Westlink / Roden Street and Stockman's Lane. As highlighted above, the Belfast Centre (Lombard Street) AURN site had only 60% data capture (DC) in 2024; consequently, this monitoring data was considered to be poor overall data capture and excluded from the local bias adjustment calculation.

The local bias adjustment factor was calculated using the Defra Diffusion Tube Processing Tool. Calculations are presented within Table A.4.

For those local authorities that do not wish or are unable to undertake a triplicate diffusion tube colocation study, government publishes a database of bias adjustment factors derived

from other local authority co-location studies throughout the United Kingdom. These factors are used subsequently to calculate a combined bias adjustment factors for a range of nitrogen dioxide diffusion tube laboratories.

The latest factors were published in March 2025 and the 2024 derived bias adjustment factor for Gradko Laboratories for a 20% solution of triethanolamine is 0.84. This factor is only slightly higher than the council's 2024 locally derived bias adjustment factor of 0.82. The council therefore considers the locally derived factor to be acceptable and of the good precision; consequently, Belfast City Council has applied a local bias adjustment factor of 0.82 to its 2024 monitoring data.

Table A.1 - Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	-	0.82
2023	Local	-	0.80
2022	Local	-	0.81
2021	Local	-	0.79
2020	Local	-	0.79

NO_2 Fall-off with Distance from the Road

Only one nitrogen dioxide annual mean exceedance was recorded during 2024 at a location next to the M3 Motorway off slip / A12 Westlink at Nelson Street (41.3 µg/m^3). This M3 Motorway off slip / Nelson Street diffusion tube was added to the councils' monitoring network in 2022 due to the introduction of new relevant human health exposure at a residential development. This monitoring site is located next to a dominant strategic network road transport pollution source and situated at a worst-case exposure location.

Defra NO_2 distance calculations have been applied to the above location to predict annual mean concentrations at the nearest human health receptor location. The Diffusion Tube Processing Tool has predicted an annual mean concentration of 31.4 µg/m^3, which indicates that no exceedance was likely at this relevant human health receptor location (Table A.2) during 2024.

Also, as distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36 µg/m^3, and the monitoring site is not located at a point of relevant exposure, diffusion tubes: 70, 100-102, 106 and 120 also required a distance correction to their 2024 monitoring data. A summary of fall-off with distance calculations from the Diffusion Tube Data Processing Tool is presented below in Table A.2.

Table A.3 - Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
70	1.0	18.0	39.1	14.0	24.5	
100	27.0	18.0	24.3	14.0	26.8	*Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.*
101	3.0	7.5	36.2	14.0	30.9	
102	15.0	8.0	23.8	14.0	26.6	*Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.*
106	1.0	7.0	41.3	16.0	31.4	
120	5.0	3.0	21.0	15.0	21.9	

QA/QC of Automatic Monitoring

Belfast City Council operates four automatic monitoring stations across the city in order to help inform its air quality management processes and to provide real time information to the public in relation to air pollution levels across the city centre and within our Air Quality Management Areas.

Accordingly, to ensure that the data from our sites is both accurate and representative, the monitors at each site are calibrated on a biweekly (Stockman's Lane AURN site) or on a four-weekly basis by the council's technical staff in accordance with the procedures detailed in the Defra Automatic Urban and Rural Network (AURN) local site operators' manual.

For our automatic nitrogen dioxide analysers, we complete a two-point calibration using internal zero and a nitric oxide span gas of certified concentration. We obtain our calibration gases under contract from BOC Ltd. who also provide similar gases to government operated AURN monitoring stations. By considering instrument operating parameters and the results of successive calibrations, we can make a determination regarding the ongoing performance of our analysers.

Where an instrument is found not to be operating within normal parameters, we would refer the matter promptly to *Enviro Technology*, who provided service and maintenance support for our equipment throughout 2024. In addition, data management support, including data collection, scaling, reporting and ratification, was provided by *AQDM.*

The data from our sites is made available to the Department of Agriculture, Environment and Rural Affairs and is reported via the 'Northern Ireland Air' website in near real time.

Finally, in 2024 Ricardo provided quality assurance and quality control support (QAQC) for the council's monitoring equipment to ensure compliance with the requirements of the National Air Quality Strategy as detailed within the Defra Technical Guidance Document LAQM.TG(22). Ricardo engineers visited our sites on an approximately six-monthly basis and compared the performance of our analysers against a range of laboratory grade standards. Ricardo subsequently provided a series of calibration and scaling factors that were used to correct our 2024 automatic monitoring data.

Automatic data presented within this report relates to the calendar year (i.e. January – December). 2024 ratified data capture levels exceeded the Department's 75% data capture threshold for the calculation of annual statistics at all council operated sites.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

Particulate matter is monitored at two AURN monitoring sites within Belfast: Belfast Centre (PM_{10} and $PM_{2.5}$) and Stockman's Lane (PM_{10}).

The Belfast Centre site employs a Palas Fidas 200, which complies with Defra's UK PM Pollution Climate standard. Government equivalence tests have determined that this type of equipment meets the equivalence criteria, and on that basis, no correction factor needs to be applied to this monitoring data.

The Stockman's Lane site is equipped with a Met One Instruments Beta Attenuation Monitor (BAM) with a heated inlet for monitoring particulate matter (PM_{10}). Government technical guidance highlights that a BAM, equipped with a heated inlet, meets the equivalence criteria for PM_{10} monitoring, provided that the results are corrected for slope. This correction involves dividing measured concentrations by a factor of 1.035. It should be noted however that the data presented on the Defra and Northern Ireland Air websites, and included within this Progress Report, has already been corrected to the reference equivalent.

Automatic Monitoring Annualisation

Defra operates an urban background monitoring site (Belfast Centre) at Lombard Street. Unfortunately, in 2024, data capture levels at the Belfast Centre site were below the Department's 75% data capture threshold for nitrogen dioxide (60%). Annualisation of data from this site was therefore required.

In order to complete the annualisation process, councils are required to identify two to four nearby, long-term background continuous monitoring sites for nitrogen dioxide. The data capture for each of these sites should ideally be at least 85%.

Apart from Belfast Centre site, there are only two other long-term, continuous, urban background monitoring sites in Northern Ireland, which measure nitrogen dioxide; namely Ballymena Ballykeel and Derry Rosemount. Both sites achieved the required 85% data capture in 2024 and as the result, were identified as acceptable sites to be used in ''annualisation process'' for the Belfast Centre site nitrogen dioxide data.

Two individual adjustment ratios and average ratios have been calculated and the results are provided in in Table A.3.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Belfast City Council required distance correction during 2024.

Table A.4 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Ballymena Ballykeel	Annualisation Factor Derry Rosemount	Annualisation Factor <Site 3 Name>	Annualisation Factor <Site 4 Name>	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT59	0.9977	0.9894			0.9935	32.39	**32.18**	-
Belfast Centre	0.8987	0.8655			0.8821	20.46	**18.05**	-

Table A.5 – Local Bias Adjustment Calculations

	STEP 3a Local Bias Adjustment Input 1	STEP 3b Local Bias Adjustment Input 2	STEP 3c Local Bias Adjustment Input 3
Periods used to calculate bias	11	12	12
Bias Adjustment Factor A	0.88 (0.84 - 0.94)	0.8 (0.76 - 0.84)	0.77 (0.74 - 0.81)
Diffusion Tube Bias B	13% (6% - 20%)	25% (20% - 31%)	30% (23% - 36%)
Diffusion Tube Mean (µg/m³)	22.9	34.2	43.2
Mean CV (Precision)	4.5%	3.6%	3.3%
Automatic Mean (µg/m³) (for periods used to calcul	20.3	27.3	33.3
Data Capture (for periods used to calculate bias)	100%	99%	99%
Overall Data Capture	100%	99%	99%
Adjusted Tube Mean (µg/m³)	20 (19 - 22)	27 (26 - 29)	33 (32 - 35)
Overall Diffusion Tube Precision	Good Overall Precision	Good Overall Precision	Good Overall Precision
Overall Continuous Monitor Data Capture	Good Overall Data Captur	Good Overall Data Captur	Good Overall Data Captur
Combined Local Bias Adjustment Factor	0.82		

Notes:

A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results.

Appendix B: Non-LAQM Monitoring (Zephyrs) Results 2024

During 2024, Belfast City Council carried out nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) monitoring using Earthsense Zephyr air quality monitors at eight locations, four of which are permanently sited, and four, which are being utilised for an ongoing primary school 'school streets' project in collaboration with Sustrans and DfI. The four permanent monitors are located at the A2 Sydenham By-Pass adjacent to George Best Belfast City Airport; at Clara Street in East Belfast; at Lombard Street in the City Centre (for the proposes of collocation with reference grade analyses) and at the A12 Westlink at Henry Place, which was in place up until 17th July 2024 whereupon it was removed for maintenance and has since been relocated at a monitoring site further along the A12 Westlink corridor adjacent to Barrack Street.

Figures B.1 to B.4 show the location of each Zephyr monitor in local grid co-ordinates and list the duration of monitoring completed during 2024.

Figure B.1 – City Airport Zephyr Location

1. City Airport: X: 337112, Y: 375535. 11 months, 26 days of monitoring.

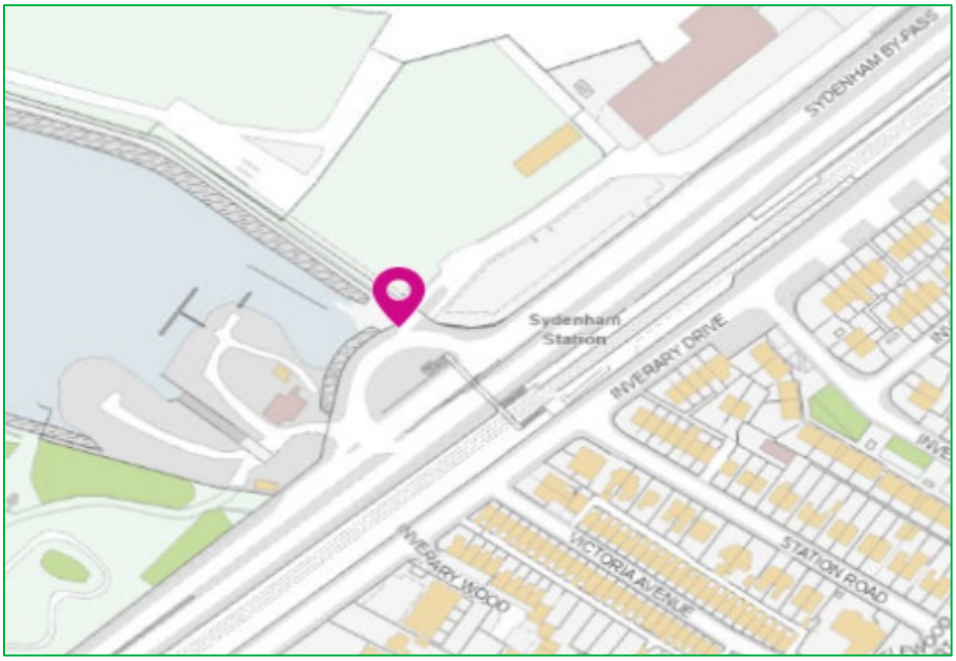


Figure B.2 – Clara Street Zephyr Location

2. Clara Street: X: 336032, Y: 373469. Full calendar year of monitoring.

Figure B.3 – Westlink Zephyr Location

3. Westlink: Henry Place location, X: 333590, Y: 375223. 7 months 16.5 days of monitoring

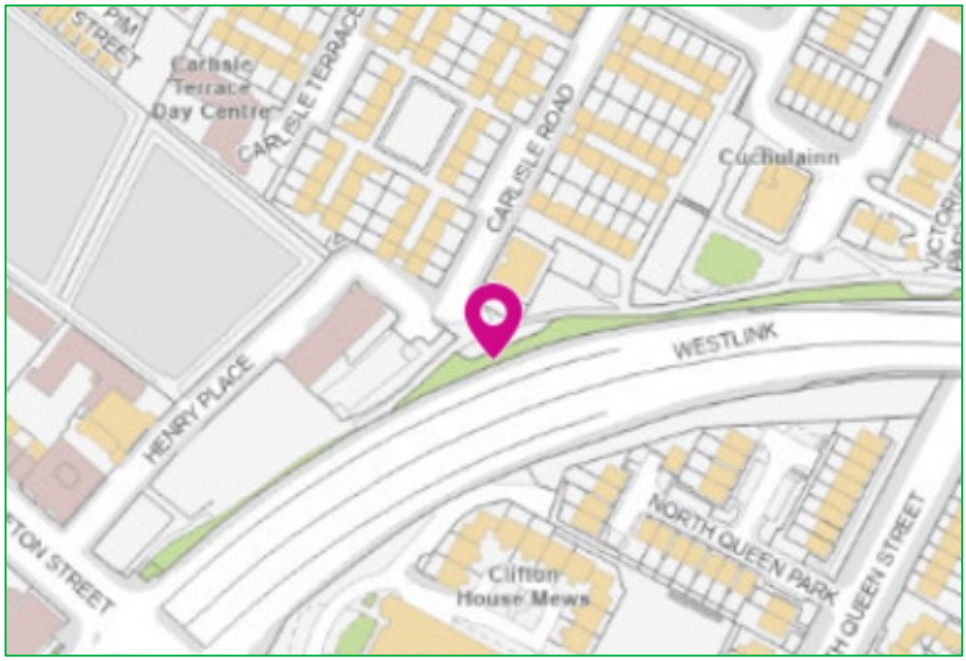
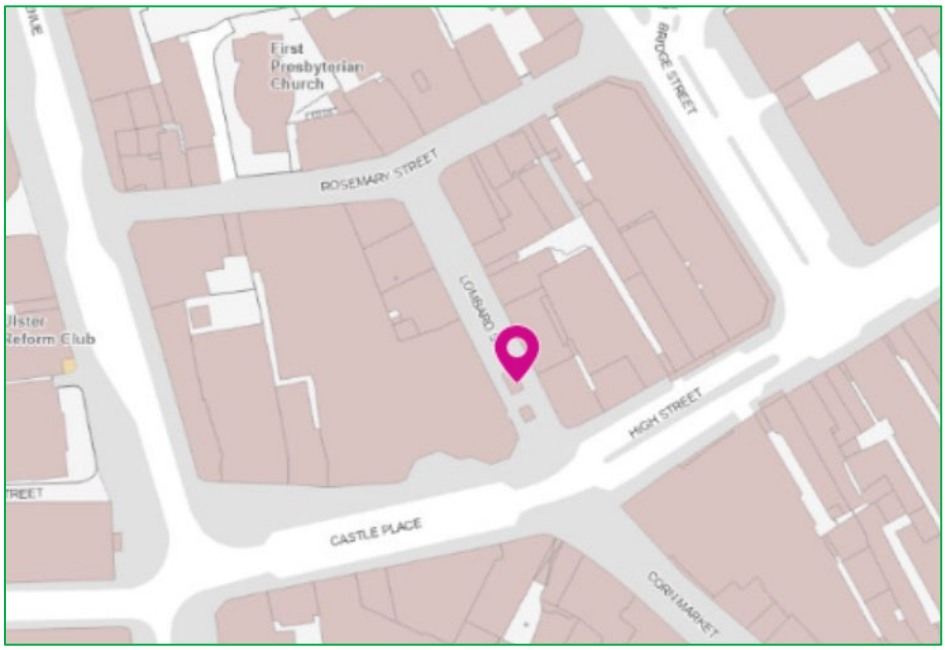


Figure B.4 – Lombard Street Zephyr Location

4. Lombard Street: X: 333902, Y: 374502. 11 months, 26 days of monitoring.



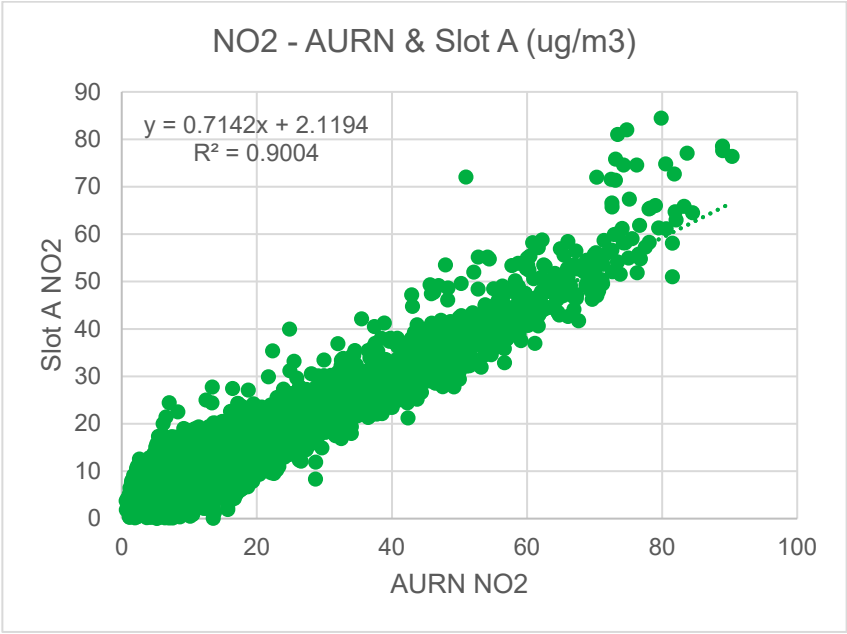
The Zephyr analyser is an active indicative grade analyser and is used to monitor NO_2 using electrochemical sensors, and PM_{10} and $PM_{2.5}$ using optical particle counting sensors giving real-time results every minute. Zephyr monitors recently obtained MCERTS Performance Standards as an Indicative Ambient Particulate Monitor, which gives additional confidence in the performance of the monitors.

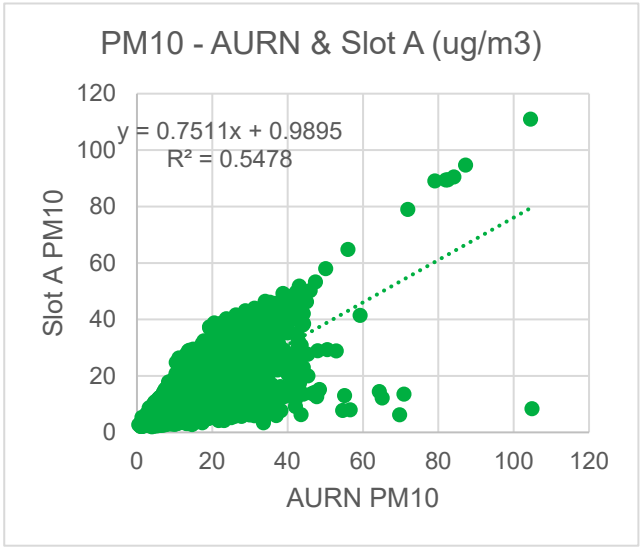
In the absence of a standardised QA/QC methodology, council officers have followed the US Environment Protection Agency guidance available on Defra's website: https://www.epa.gov/air-sensor-toolbox/how-use-air-sensors-air-sensor-guidebook#pane-1

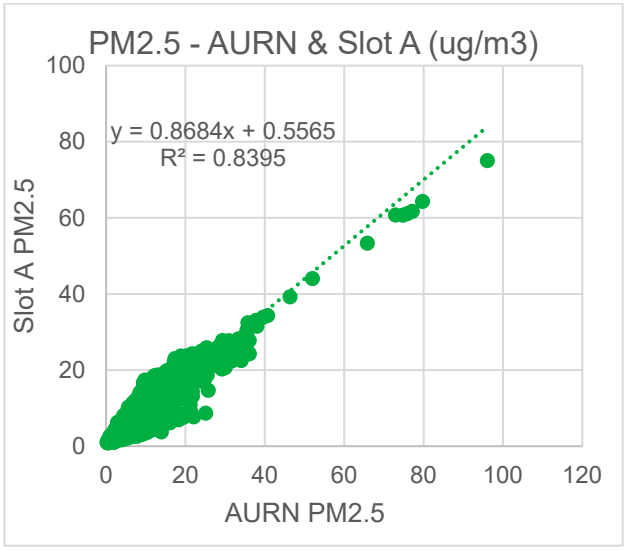
Moreover, we have also followed recommendations for the selection, deployment, maintenance and quality assurance processes contained within the following document: *PAS 4023:2023 Selection, deployment and quality control of low-cost air quality sensor systems in outdoor ambient air – Code of practice (*December 2023).

Prior to installation, all our Zephyr monitoring units were tested by the manufacturer against EU reference analyser standards. In addition, and in order to validate the performance of the abovementioned units for NO_2, PM_{10} and $PM_{2.5}$, council officers have co-located a Zephyr sensor with reference grade analysers at Belfast Centre AURN site. The raw data produced by the Earthsense Zephyr analysers has been corrected using data from the respective reference grade analysers. The correction process helps to account for known bias and unknown interferences from weather and other pollutants. The calculated adjustment factors for 2024 have been applied to all Zephyr analysers. Figure B.5 below presents linear regression corrections calculated using Zephyr and reference grade analyser data.

Figure B.5 - Linear regression equation (NO_2, PM_{10}, $PM_{2.5}$) - Zephyr (Slot A) and Belfast Centre AURN reference monitor for the 2024 monitoring year.







Annual scaled 2024 Zephyr monitoring results are presented in the following Table B.1 and Figure B.5.

Overall, there were no monitored exceedances of statutory AQS objectives during 2024 at any Zephyr monitoring site, with the exception of the A12 Westlink / Henry Place site, where monitored NO_2 concentrations were in excess of 40 µg/m^3 annual mean objective: 41.8 µg/m^3. We would note however, that this sensor is located on the fence directly adjacent to the carriageway (worst case exposure scenario); moreover, diffusion tube (DT70), situated also at this location, monitored an annual mean concentration of 39.1 µg/m^3 in 2024, slightly below the objective level.

Table B.1 - 2024 Annual Scaled Zephyrs Results

Site ID	Site Name	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
ZAURN	AURN (Lombard Street)	18.82	12.90	7.41
Z211	City Airport	21.27	10.05	5.5
Z748	Westlink (Henry Place)	41.08	11.16	5.86
Z793	Clara Street	15.09	13.93	6.95

Figure B.6 - 2024 Annual Scaled Zephyr Results