

2024 UPDATING AND SCREENING ASSESSMENT FOR

LISBURN & CASTLEREAGH CITY COUNCIL

**IN FULFILLMENT OF ENVIRONMENT
(NORTHERN IRELAND) ORDER 2002
LOCAL AIR QUALITY MANAGEMENT**

JUNE 2024



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|--------------------------------|--|
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Executive Summary

The Air Quality Strategy has established the framework for air quality management in the UK. Local Authorities have a duty under the Environment Act 1995 and subsequent regulations to review and assess air quality in their areas on a periodic basis to identify all areas where the air quality objectives are being or are likely to be exceeded. A phased approach has been adopted for the review and assessment process so that the level of assessment undertaken is commensurate with the risk of an exceedance of an air quality objective.

An Updating and Screening Assessment (USA) is required to be prepared every three years by all local authorities in the UK with two interim progress reports. The last updating and screening assessment of air quality was undertaken in 2021, this followed with a progress report in 2022 and 2023. This is the 2024 USA report for Lisburn and Castlereagh City Council (LCCC) and has been completed using the recommended template. The report is fully compliant with the applicable policy and technical guidance.

This report identified no exceedances with relevant exposure, of the Air Quality Strategy objectives during 2023 for any of the pollutants assessed. PM₁₀ results remained low, additional monitoring of PM_{2.5} has been carried out alongside the PM₁₀ as solid fuel use is still popular as a secondary source of heating in the LCCC area. NO₂ levels due to vehicle emissions remain the main source of concern within LCCC which is one of the main commuter belts of Greater Belfast. LCCC has one Air Quality Management Area (AQMA) at Normandy Court, Dundonald, and in 2023 an updated action plan was submitted through the Local Air Quality Management Portal.

The automatic monitoring site in Dundonald next to the AQMA has shown a continuous reduction in monitored NO₂, as illustrated in Figure 2.17. This is attributed to the completion of the Park & Ride west of this site in 2014, and the completion of the new road layout and hybrid Glider bus service in 2018. Levels here have now stabilised since the COVID pandemic and the 2023 NO₂ annual mean of 20 ug/m³, is well below the objective of 40 ug/m³. These results are reflected within the AQMA, where triplicate diffusion tubes monitoring NO₂ were located on the façade of

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Normandy Court, and although they needed to be relocated to the kerbside at Normandy Court (AQMA) in 2023, the results remain below the objective as seen in table 2.5. As a result of this reduction in NO₂ within the AQMA and at the automatic site in Dundonald, LCCC will produce a detailed assessment with the intention of revoking the AQMA. In 2023 all NO₂ diffusion tube monitoring sites located within the council area were below the objective as detailed in table 2.5.

LCCC launched a new initiative in 2019 in primary schools entitled “Engine off Prevent the Cough”, educating pupils and parents on the harm from emissions from vehicles while the engine is left idling.

Blaris Green Way, accessible from Sprucefield Shopping Centre and the M1 Park & Ride, and the Lagan towpath in Lisburn give great access to Belfast, the Comber Greenway is another great route through LCCC area of Dundonald to Belfast, both these are now very popular with both walkers and cyclists.

LCCC continues to promote electric charging points and have installed 5 at the council offices.

Monitoring shall continue within the AQMA in 2024 and throughout the Council area using automatic monitoring stations and NO₂ diffusion tubes to ascertain further trends.

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QA/QC of Diffusion Tube Monitoring

1 Introduction

1.1 Description of Local Authority Area

LCCC has a population of 149,106 and an area of approximately 200 square miles. The area is of urban rural character and the predominant wind direction is from the Southwest. It is bounded by a number of other council areas and has the largest boundary with Belfast City Council. This has made LCCC a very popular residential area due to the ease of the commute to Belfast City Centre. There are several main arterial routes into Belfast City centre through LCCC, and the Council was located within Belfast Metropolitan Transport plan (www.infrastructure-ni.gov.uk/publications/belfast-metropolitan-transport-plan).

Dundonald to the East fell within the New Belfast Rapid transport network, this was completed in September 2018, introducing a designated bus lane through Dundonald Village into Belfast City and a new hybrid Glider Bus. The network is now established as a popular source of transport to the city centre from the Park & Ride facility in Dundonald. Road transport remains the main source of air pollution, however solid fuel use as a secondary fuel is still quite common in the Lisburn area.

Figure 1.1 Map showing position of Lisburn & Castlereagh within Northern Ireland



Figure 1.2 Map of Rapid Transport route (glider bus) from Dundonald



1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in the Environment (Northern Ireland) Order 2002, the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. 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 it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment (USA) is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

If an USA has not been submitted in accordance with the dates set in the DEFRA Local Air Quality Management Technical Guidance (currently LAQM TG22), DAERA will be unable to pay staff costs offered under the conditions of the LAQM Grant.

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 shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu\text{g}/\text{m}^3$ (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 | 10.0 mg/m ³ | Running 8-hour mean | 31.12.2003 |
| Lead | 0.5 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 |
| Particles (PM₁₀) (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

The following reports have previously been submitted by LCCC and can be found on the DAERA website [District Council Reports - Northern Ireland Air \(airqualityni.co.uk\)](https://airqualityni.co.uk)

2015 - Update and Screening Assessment

2016 - Progress report

2017 - Progress report

2018 - Update and Screening Assessment

2019 - Progress report (not presently on website)

2020 - Progress report

2021 - Update and Screening Assessment

2022 - Progress report

2023 – Progress report

All the above reported no exceedances of the objectives, and therefore a detailed assessment was not necessary and no amendments were required to the AQMA.

MAPS of AIR QUALITY MANAGEMENT AREA (AQMA)

No's 2,6,10,1,5,7 Normandy Court Dundonald BT16 2LA

Figure 1.3 Map showing position of Dundonald Village within LCCC

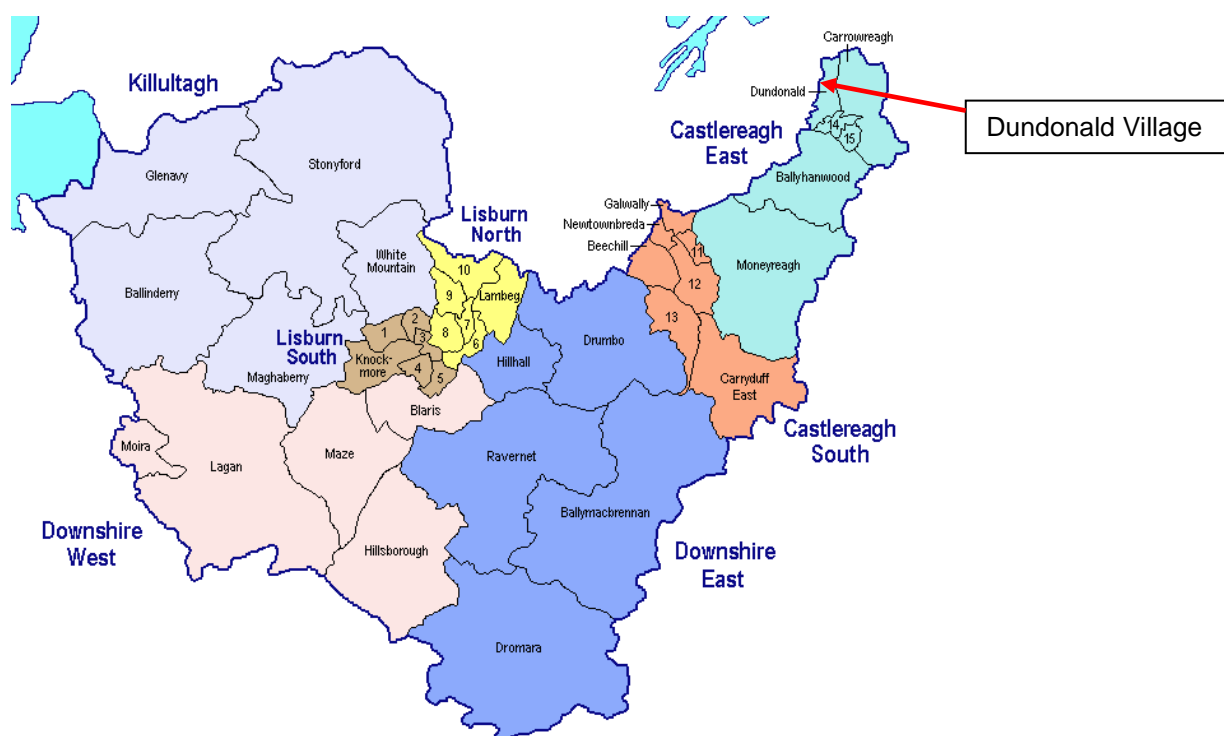


Figure 1.4 Map showing position of AQMA in Dundonald Village

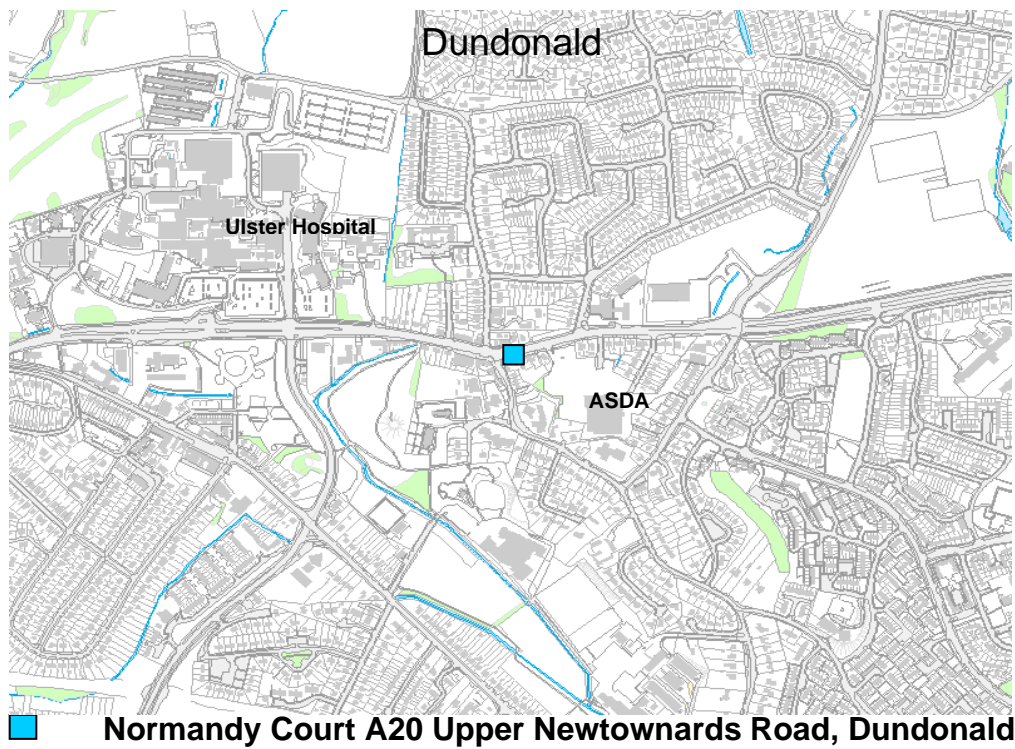
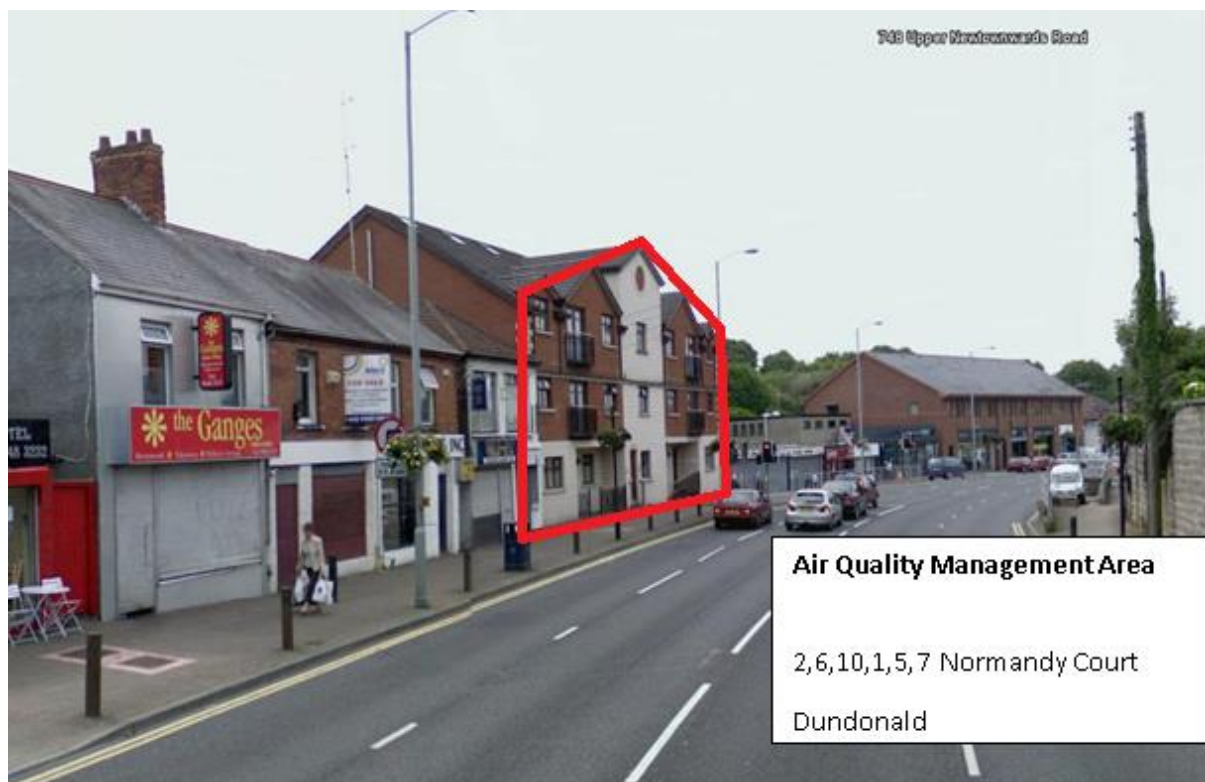


Figure 1.5 Ariel photograph showing position of the AQMA in Dundonald Village



Figure 1.6 Photograph showing position of Normandy Court within the AQMA



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Lisburn & Castlereagh City Council has two automatic monitoring sites.

Kilmakee Activity Centre Seymour Hill

Measuring SO₂ and PM₁₀, PM_{2.5} this site also houses a DEFRA network PAH and black carbon monitor and therefore meets the requirements for the AURN specifications, in May 2022 this site was also chosen for a TOMPS monitor extending the UK network into Northern Ireland. The available data is included in this report.

Dundonald

Measuring NO_x using a chemiluminescence analyser, this site is within 30m of the AQMA. A co-location study for the NO₂ diffusion tubes is also carried out at this site. The 2023 results from this study were submitted to the March 2024 national data base. Manual calibrations are carried out every two weeks by the Local Air Quality officer. Air Quality Data Management (AQDM) are employed to ratify and validate the data. A specialist engineer is employed to service and maintain the site as required. Results and correction factors are detailed in Appendix A

Figure 2.1 Position of the two air monitoring sites within LCCC



**Figure 2.2 Position of Air monitoring site ASPM1 Kilmakee Activity Centre
Seymour Hill Dunmurry**



▲ Kilmakee Activity Centre Seymour Hill

**Figure 2.3 Position of Automatic Monitoring ASPM1 Site at Kilmakee Activity
Centre**



■ Air Monitoring Station

Figure 2.4 Picture of Automatic Monitoring Stations ASPM1 at Kilmakee Activity Centre



Figure 2.5 Position of automatic monitoring site AN1 in Dundonald Village

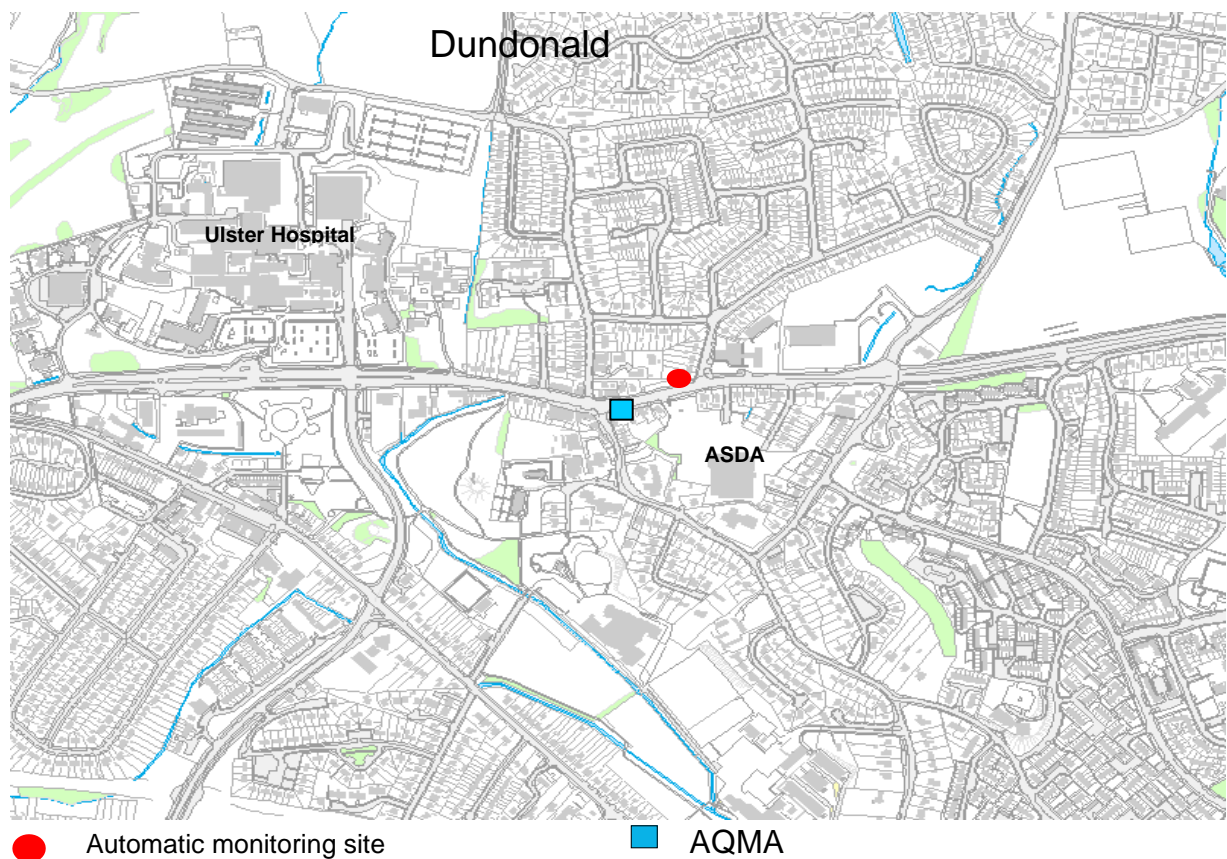


Figure 2.6 Picture of Automatic Monitoring Station AN1 in Dundonald Village



Table 2.1 Details of Automatic Monitoring Sites

| Site ID | Site Name | Site Type | Irish Grid Reference | Irish 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? |
|----------------|--------------------------|------------------|-----------------------------|-----------------------------|-------------------------|---|-----------------|-----------------------------|---|---|--|
| ASPM1 | Kilmakee Activity Centre | Urban Background | E328956 | N367973 | 2.5 | PM ₁₀ , PM _{2.5} SO ₂ | NO | FIDAS 200 UV Analyser | YES 10m | N/A | YES |
| AN1 | Dundonald | Roadside | E342016 | N374041 | 2.5 | NOX | NO | Chemiluminescence | YES 22m | 3M | YES (30m from AQMA) |

2.1.2 Non-Automatic Monitoring Sites

In 2023 LCCC had 25 passive monitoring NO₂ diffusion tubes, at 18 roadside and background sites and a co-location study at the automatic station in Dundonald. Most are positioned along the main arterial routes into Belfast, with triplicate tubes at the co-location site in Dundonald. To provide further accuracy triplicate tubes are also positioned within the AQMA Normandy Court, Dundonald and the Newtownbreda Road site where the highest results have been recorded within the council area.

The triplicate tubes (1) on the façade of Normandy Court had to be relocated as LCCC no longer had permission to have them attached to the property. It was preferable to keep them on the façade, however, no other suitable site was obtained and rather than lose valuable data the tubes were relocated to the nearest post (1a, kerbside) two meters from the façade in January 2023.

In 2019 the following sites were identified, through previous monitoring and forthcoming planning applications, and established to assist in future air quality assessments.

1. Blaris Road/Green/Drive – A number of new houses have been built in this area adjacent to the M1 motorway with future plans for further mixed-use development and a link road to a new train halt.
2. Knockmore Road – A new road layout completed in 2022 also linked to the proposed new train halt.
3. A new site was also established in 2020 at Cairnshill Park & Ride as there were plans to extend the facility.

Results from the co-location study at the automatic station in Dundonald, are submitted into the national data base. The diffusion tube studies for the past five years do not show any specific trends outside the AQMA (see Figure 2.18).

All NO₂ diffusion tubes were supplied and analysed by Gradko Environmental.

Details of the QA/QC for the diffusion tubes and the reason for the use of the bias adjustment factor can be found in Appendix A

Figure 2.7 – 2.16 below show the location of the diffusion tube sites, and the new sites identified in 2019 and 2020.

Figure 2.7 Map of Non-Automatic Monitoring Sites

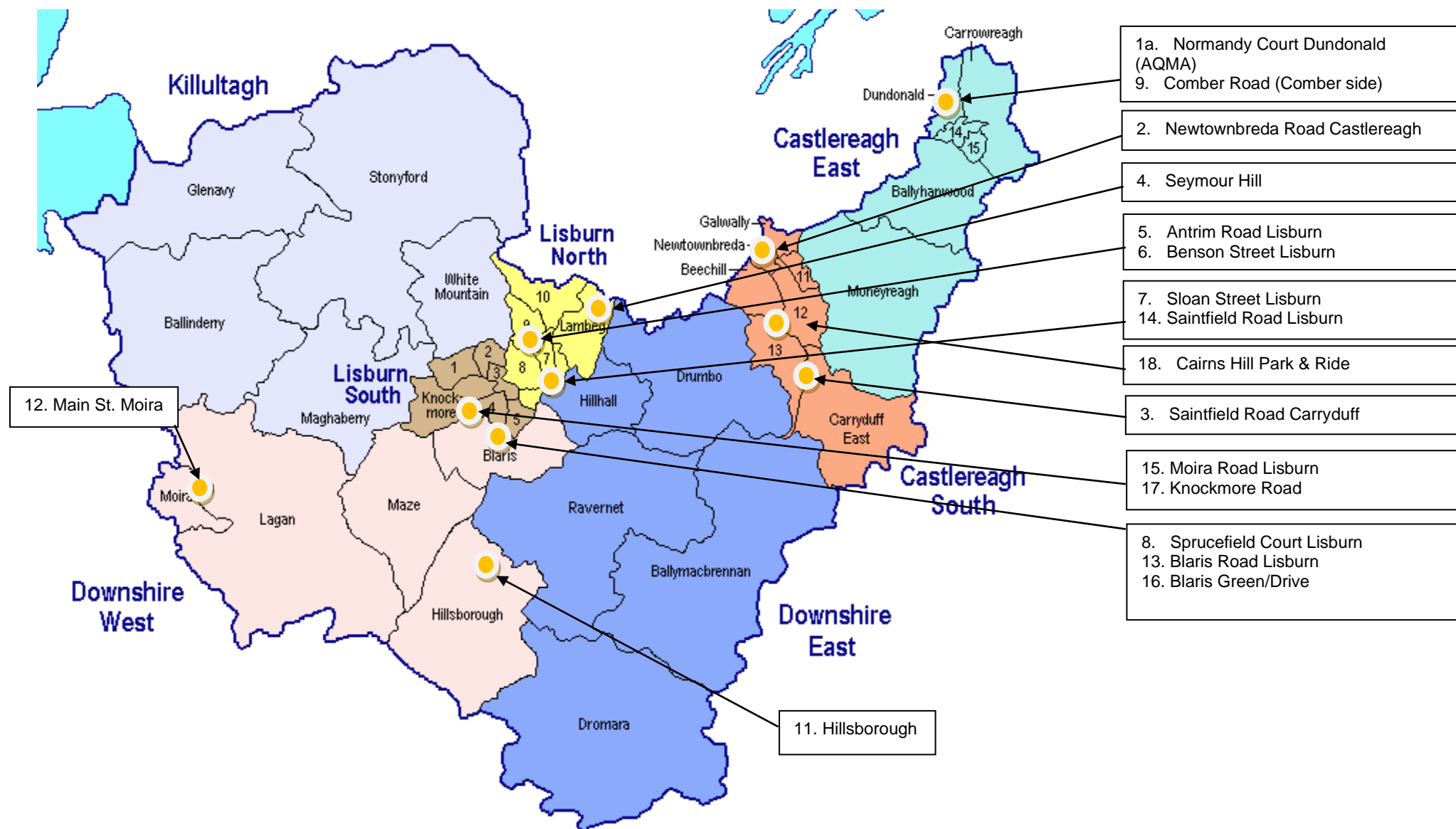


Figure 2.8 Position of tube 1a. in Dundonald village AQMA (Normandy Court), and tubes on Comber Road Dundonald



Figure 2.9 Position of NO₂ Tubes 1 and 1a , AQMA Normandy Court Dundonald

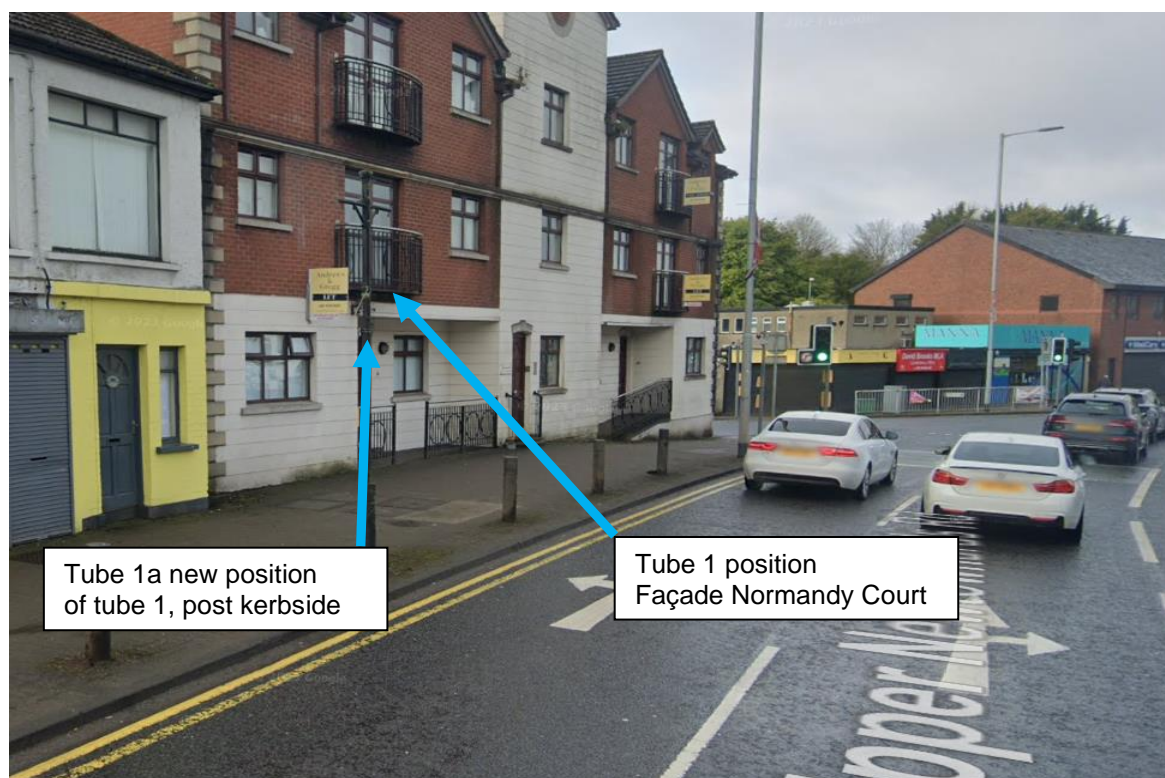


Figure 2.10 Position of tube 2 Castlereagh area (Newtownbreda)

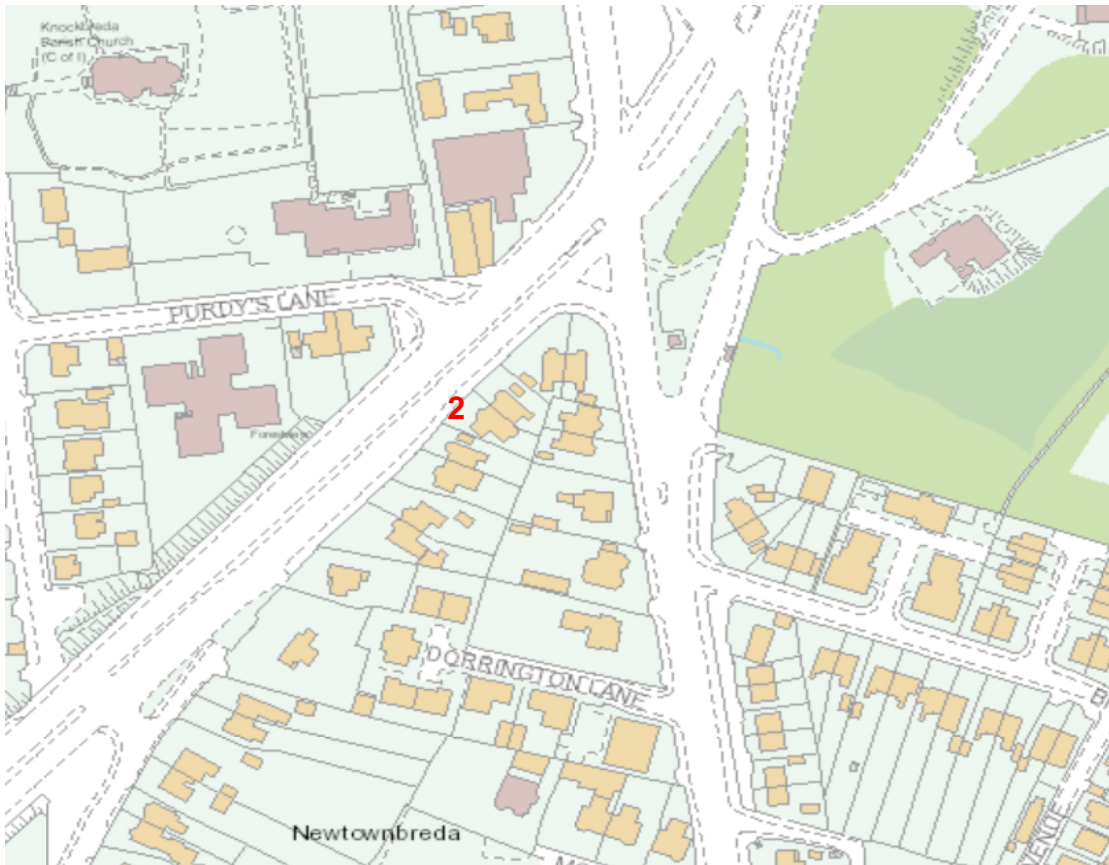


Figure 2.11 Position of tube 3 Saintfield Road, Carryduff



Figure 2.12 Position of tube 4 Seymour Hill

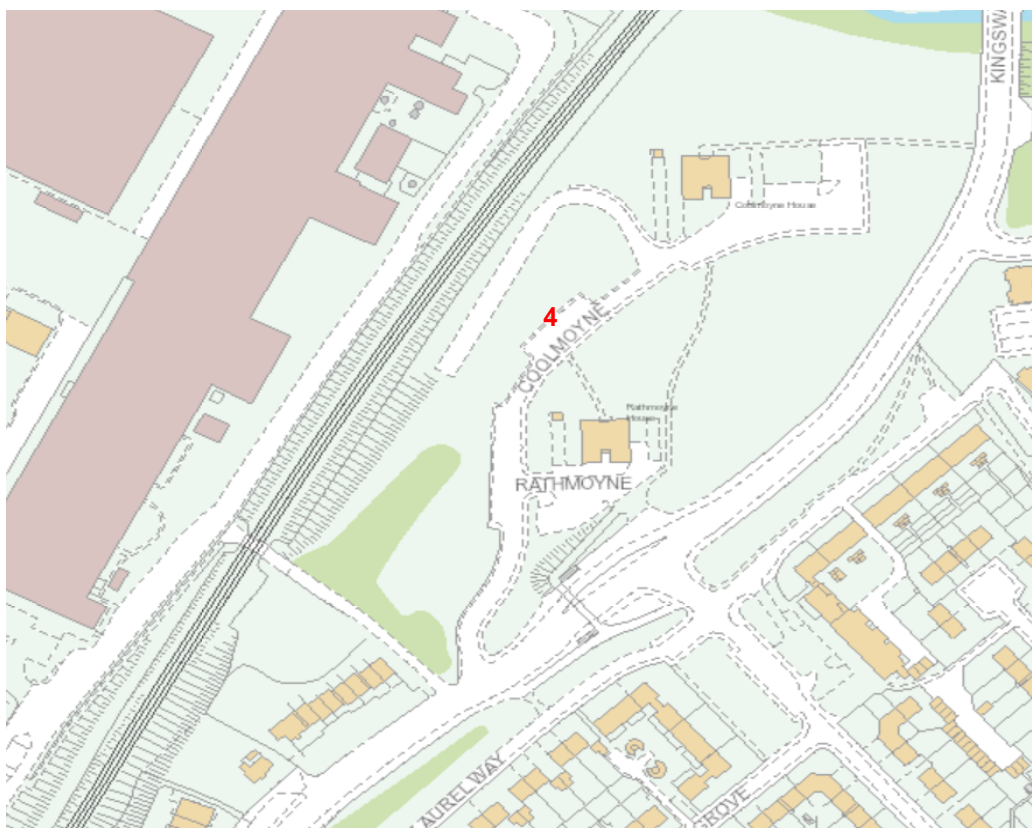


Figure 2.13 Position of tubes 5, 6, 7, 8, 13, 14, 15, 16 and 17 in Lisburn City

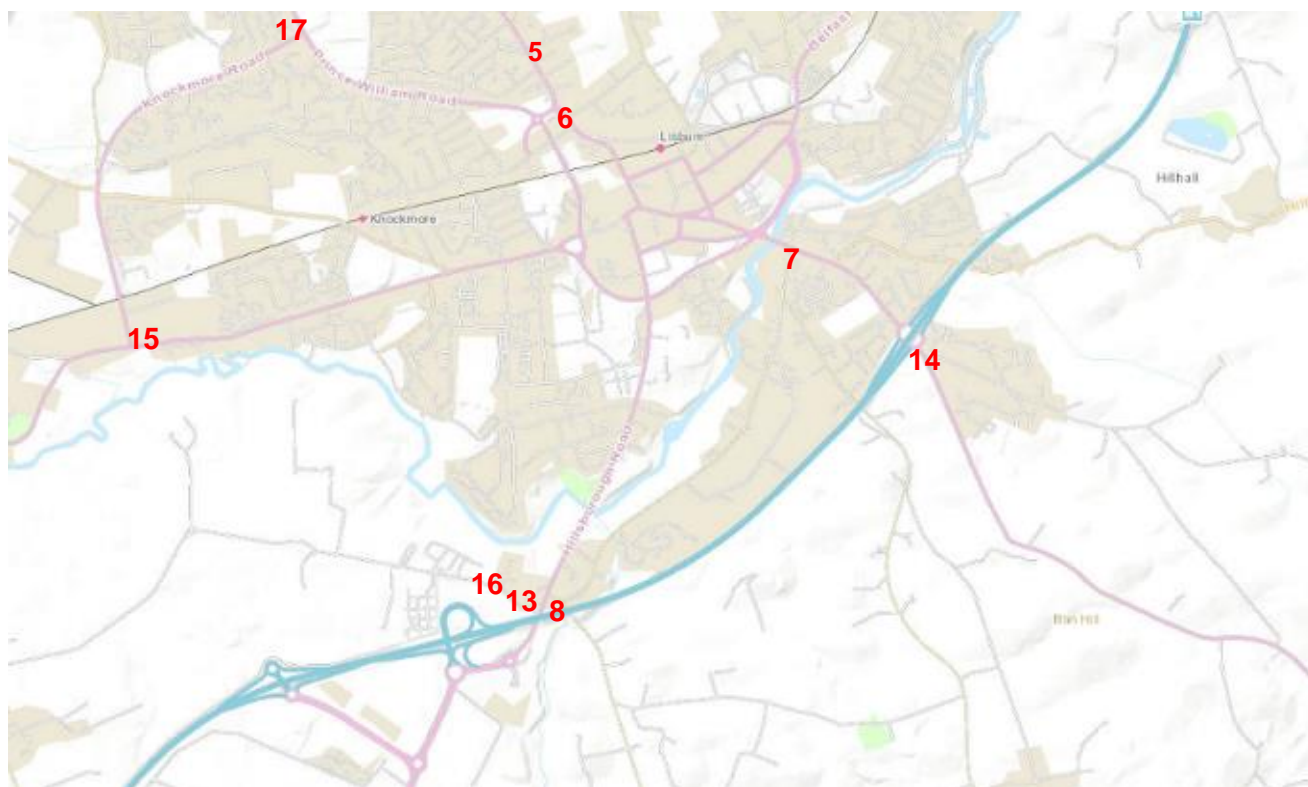


Figure 2.13.1 Position of tubes 5 and 6 (Antrim Rd and Benson St.) in Lisburn City



Figure 2.13.2 Position of tube 7 (Sloan Street) in Lisburn City



Figure 2.13.3 Position of tubes 8, 13, and 16 (Sprucefield Ct. Blaris Road, Blaris Green/Drive) in Lisburn City

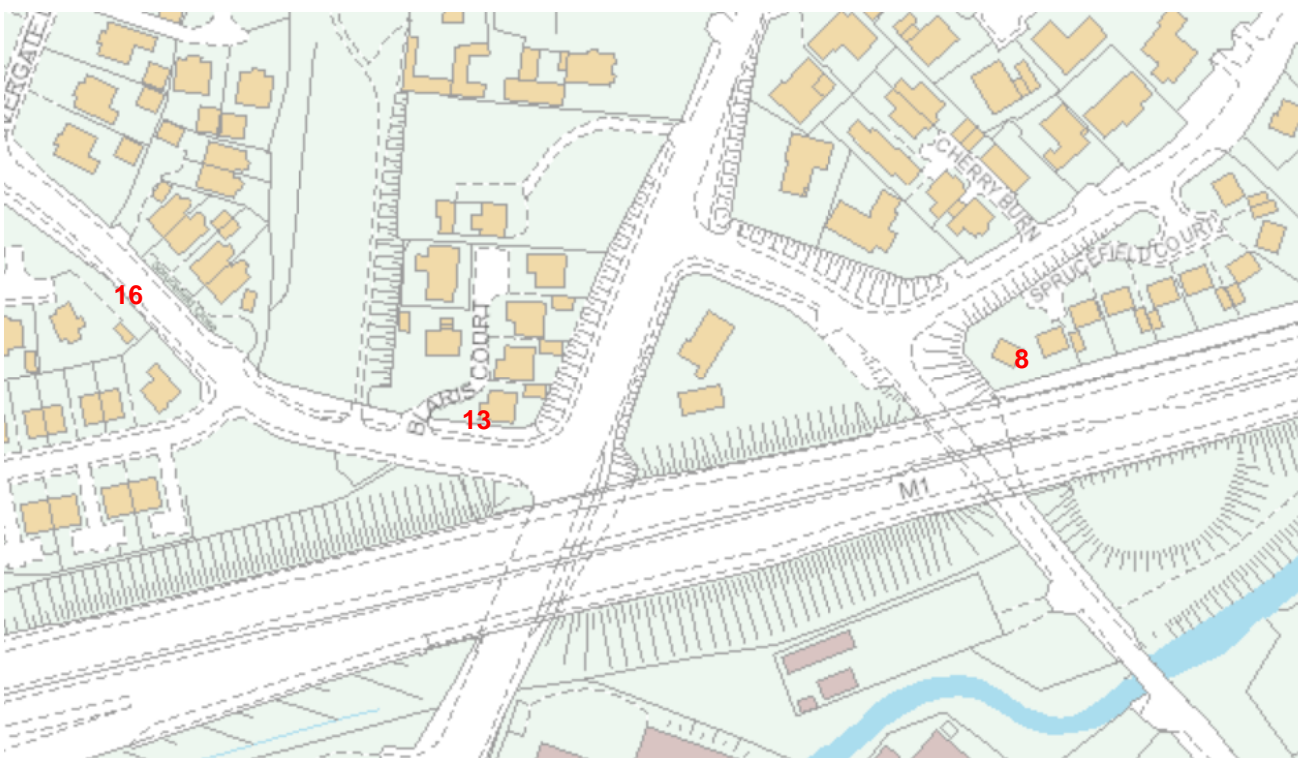


Figure 2.13.4 Position of tube 14 (Saintfield Road) in Lisburn City

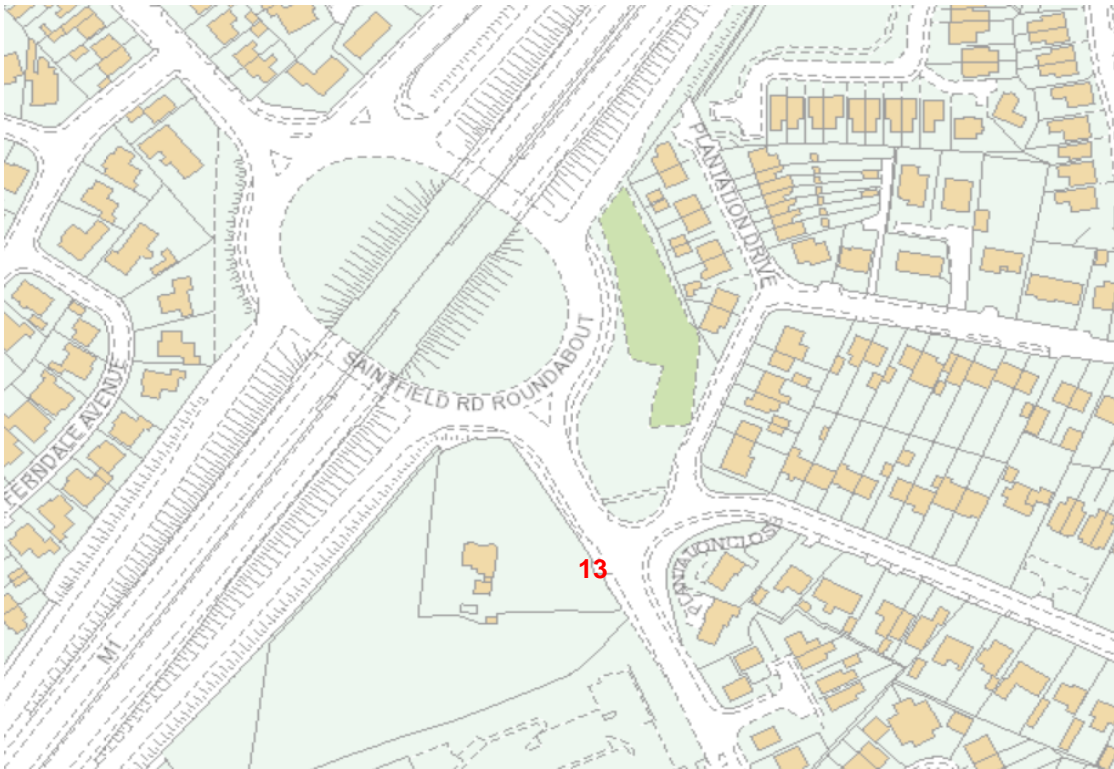


Figure 2.13.5 Position of tube 15 (Moira Road) in Lisburn City

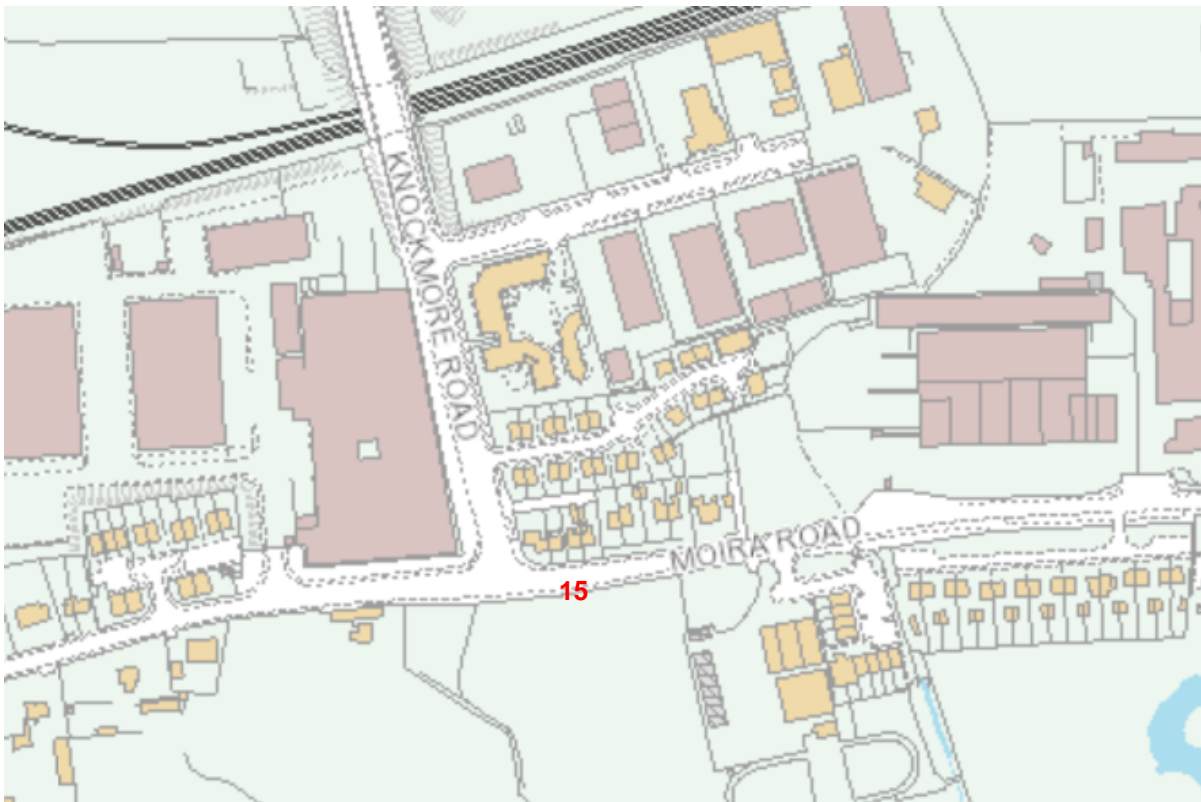


Figure 2.13.6 Position of tubes 17 (Knockmore Road junction) in Lisburn City



Figure 2.14 Position of tube 11 (Ballynahinch St.) in Hillsborough



Figure 2.15 Position of tube 12 (Main St.) in Moira



Figure 2.16 Position of tube 18 Cairnshill Park & Ride

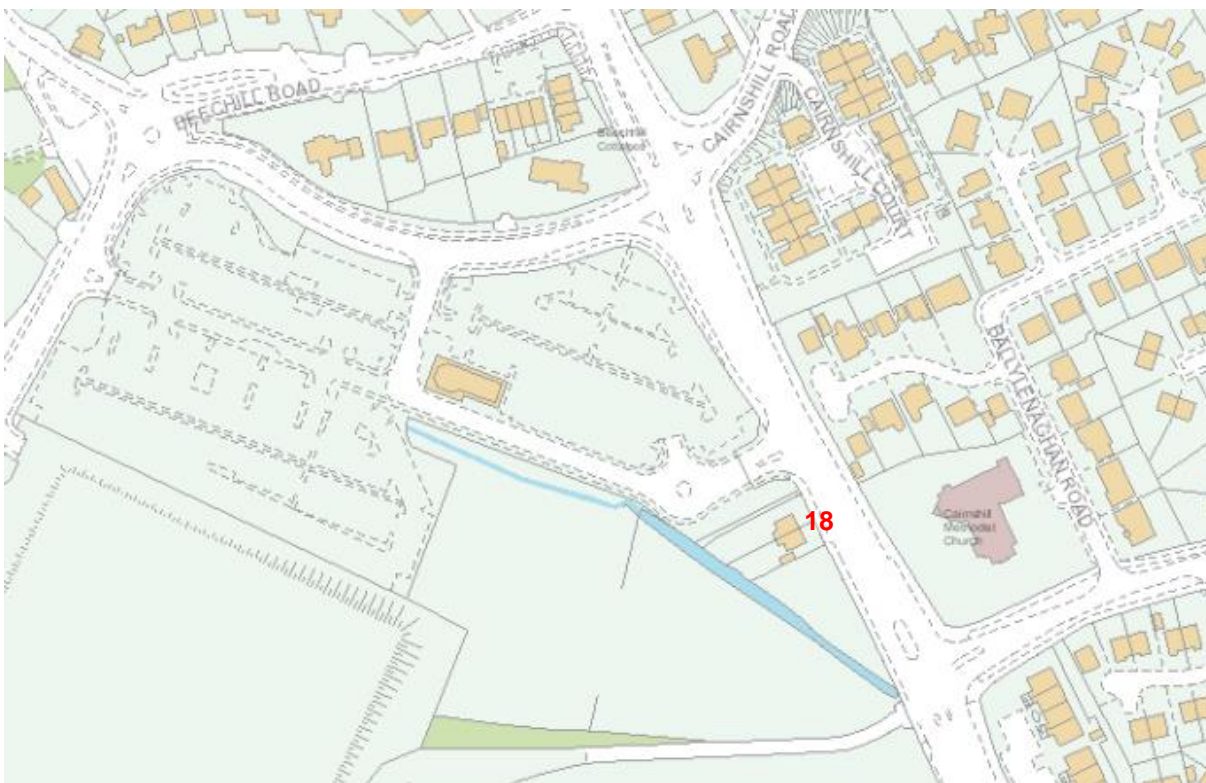


Table 2.2 Details of Non-Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Reference | Y OS Grid Reference | Site Height (m) | Pollutants Monitored | In AQMA? | Is Monitoring Co-located with a Continuous Analyser (Y/N) | 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? |
|---------|--|------------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| 1 | Normandy Court façade Dundonald (AQMA) | Roadside | 341991 | 374013 | 3m | NO ₂ | Yes | No | Yes (0m) | 2.5m | Yes |
| 1a | Normandy Court Dundonald (AQMA) | Kerbside | | | 2.5m | NO ₂ | Yes | No | Yes (2m) | 0.5m | Yes |
| 2 | Newtownbreda Road Castlereagh | Roadside | 335246 | 370061 | 2.5m | NO ₂ | No | No | Yes (7m) | 2.5m | Yes |
| 3 | Saintfield Road Carryduff | Roadside | 336832 | 365625 | 2m | NO ₂ | No | No | Yes (70m) | 10m | Yes |
| 4 | Seymour Hill | Background | 328585 | 368117 | 2.5m | NO ₂ | No | No | No (50m) | 100m | No |
| 5 | Antrim Rd Lisburn | Roadside | 326313 | 364621 | 2.5m | NO ₂ | No | No | Yes (7m) | 1m | Yes |
| 6 | Benson Street Lisburn | Roadside | 326090 | 364619 | 2m | NO ₂ | No | No | Yes (0.1m) | Yes | Yes |
| 7 | Sloan Street Lisburn | Roadside | 327236 | 364102 | 2.5m | NO ₂ | No | No | Yes (1.5m) | 2m | Yes |

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| Site ID | Site Name | Site Type | X OS Grid Reference | Y OS Grid Reference | Site Height (m) | Pollutants Monitored | In AQMA? | Is Monitoring Co-located with a Continuous Analyser (Y/N) | 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? |
|---------|----------------------------|-----------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| 8 | Sprucefield Court Lisburn | Roadside | 327586 | 363586 | 2m | NO ₂ | No | No | Yes (1m) Façade of garage adjacent to house from road | 15m | Yes |
| 9 | Comber Road (Comber side) | Roadside | 341731 | 373666 | 2.5m | NO ₂ | No | No | Yes (4m) | 1.5m | Yes |
| 10 | Comber Road (Belfast side) | Roadside | 341622 | 373759 | 2.5m | NO ₂ | No | No | Yes (4m) | 1.5m | Yes |
| 11 | Hillsborough | Roadside | 324404 | 358876 | 2m | NO ₂ | No | No | Yes (0.1m) | 1m | Yes |
| 12 | 58-62 Main Street, Moira | Roadside | 314994 | 360589 | 3m | NO ₂ | No | No | Yes (4m) | 1.5m | Yes |
| 13 | Blaris Road Lisburn facade | Roadside | 325993 | 362462 | 2m | NO ₂ | No | No | Yes (0m) | 5.5m | Yes |
| 14 | Saintfield Road Lisburn | Roadside | 327810 | 363609 | 2.5m | NO ₂ | No | No | Yes (4m) | 1.5m | Yes |
| 15 | Moira Road Lisburn | Roadside | 324169 | 363671 | 2.5m | NO ₂ | No | No | Yes (4m) | 1.5m | Yes |
| 16. | Blaris Green/Drive | Roadside | 325883 | 362501 | 2.5m | NO ₂ | No | No | Yes (7m) | 1m | Yes |
| 17. | Knockmore Road | Roadside | 324883 | 365180 | 2.5m | NO ₂ | No | No | Yes (19m) | 1.5m | Yes |
| 18. | Cairnshill Park & Ride | Roadside | 335702 | 368362 | 2.5m | NO ₂ | No | No | Yes (7m) | 1.5m | Yes |

Lisburn & Castlereagh City Council

| Site ID | Site Name | Site Type | X OS Grid Reference | Y OS Grid Reference | Site Height (m) | Pollutants Monitored | In AQMA? | Is Monitoring Co-located with a Continuous Analyser (Y/N) | 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? |
|--------------------|--|-----------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| 19 (triplicate) | Co-located tubes at Dundonald Automatic site | Roadside | 342016 | 374041 | 2.5m | NO ₂ | No | Yes | Yes (22m) | 3m | Yes |

(Site listed in orange was new in 2020)

(Sites listed in purple were new in 2019)

(Site listed pink is Normandy Court site within AQMA moved to kerbside 2023)

(Site listed green is new kerbside site within AQMA, Normandy Court)

2.2 Comparison of Monitoring Results with Air Quality Objectives

The monitoring data collected since the last progress report did not identify any exceedances of the AQS objectives. All monitored pollutant concentrations outside of the AQMA have been below their respective air quality objective limits at relevant exposure. In the following section results are presented for NO₂ at the automatic and diffusion tube sites and compared with the objective.

2.2.1 Nitrogen Dioxide (NO₂)

In the following section results are presented for NO₂ at the automatic and diffusion tube sites and compared with the objective. There was a significant reduction in monitored NO₂ results in 2020 due to the COVID pandemic and reduced traffic. In 2023 there was a steady increase but they have not returned to pre-pandemic levels as shown in Figure 2.17. At the end of 2022, the Monitor Europe NO₂ analyser at the Dundonald site was deemed to be at end of life and was replaced in March 2023 by an Enviro Technology T200, there was no loss of data. All sites were below the AQS objective.

Automatic Monitoring Data

Table 2.3 presents the annual mean concentrations of NO₂ determined at the automatic site in 2023 from the hourly measurements.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 % ^b | Annual Mean Concentration (µg/m ³) | | | | |
|---------------|-----------|----------------|---|--|--|------|------|------|------|
| | | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| AN1 Dundonald | Roadside | N (within 30M) | N/A | 99.8% | 22 | 17 | 19 | 19 | 20 |

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 % ^b | Number of Hourly Means > 200µg/m ³ | | | | |
|---------------|-----------|----------------|---|--|---|------|------|------|------|
| | | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| AN1 Dundonald | Roadside | N (within 30M) | N/A | 99.8% | 0 | 0 | 0 | 0 | 0 |

In bold, exceedence of the NO₂ annual mean AQS objective of 40µg/m³

^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%)

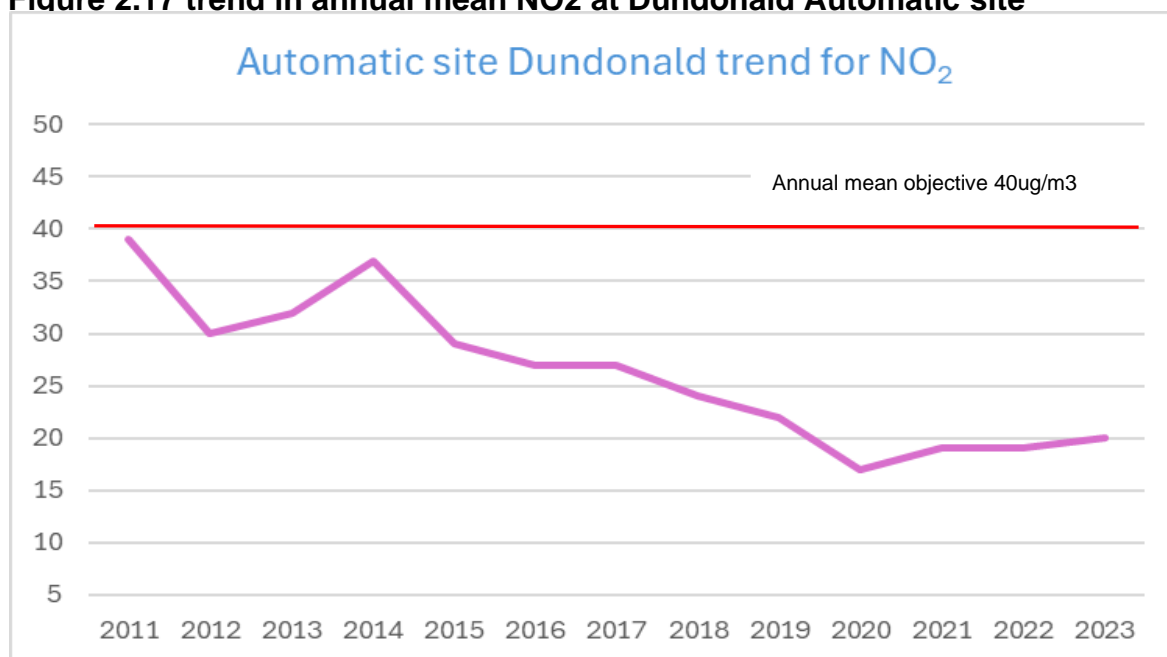
^c Means should be “annualised” as in Boxes 7.9 and 7.10 of LAQM.TG16, if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

2.17 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Automatic Monitoring Sites

The automatic station on the Upper Newtownards Road in Dundonald was installed by Castlereagh Borough Council in 2008, as a result of high results from NO₂ tubes at the Upper Newtownards Road site (Normandy Court). In 2015 councils in Northern Ireland amalgamated and the Dundonald Automatic monitoring site fell within Lisburn & Castlereagh City Council and results have shown a steady reduction since 2015. This has been primarily due to the success of the Park & Ride in 2014 west of Dundonald village and the completion of the new Rapid Transport System in 2018 through the village. The pandemic in 2020 also significantly contributed to the reduction of NO₂ at Normandy Court, Dundonald, and levels have not returned to pre pandemic figures.

Figure 2.17 trend in annual mean NO₂ at Dundonald Automatic site



Diffusion Tube Monitoring Data

Results at the NO₂ diffusion tube sites, situated within the council area are shown below in Table 2.5. They are sited in accordance with the technical guidance LAQM.TG (22). A diffusion tube co-location study has been undertaken at the Dundonald automatic monitoring station site. The results of this study have been submitted to the national database. The 2023 local bias was **0.82**. As in previous years a decision has been made to apply the national bias adjustment factor of **0.81**, as each year this is based on a number of studies and LCCC has deemed this to be a more realistic figure. All diffusion tube sites have been found to be below the objective at relevant exposure. Monitoring has continued at the new sites identified in 2019 at Blaris Road/Green due to new residential developments now completed next to the M1 motorway, and at Knockmore Road where a new road junction has been constructed. A new site was established in 2020 at the entrance of Cairnshill Park & Ride next to residential properties as plans to extend this site were under discussion. Although there has been no further development, the monitoring site will remain here until sufficient data has been collated.

The Normandy Court façade, Dundonald NO₂ tube site no.1 within the AQMA continued to show a reduction since the completion of the Park & Ride in Dundonald 2014, and the new Glider Rapid Transport Network completed in September 2018. There was also a significant reduction in monitored NO₂ results in 2020 due to reduced traffic volumes during the COVID pandemic, this correlates with the automatic site 30M west. Monitoring at site 1 ceased at the end of 2022 as we no longer had permission to locate these tubes on the façade of the building, and the tubes were relocated in January 2023 to the nearest post kerbside no.1a, shown in Figure 2.9. Due to this new site being kerbside, results are elevated from those of the previous location, however they are still well below the objective and therefore the data has not been distance calculated. The 2023 levels have increased very slightly at this location but have still not returned to pre-pandemic levels. All NO₂ diffusion tube sites were below the AQS objective.

Trends for the 18 diffusion tube sites within the Council area are shown in Figure 2.18

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2023

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2023 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.81) |
|---------|---------------------------------|------------|--------------|-------------------------------|---|--|---|---|
| | | | | | | | | 2023 ($\mu\text{g}/\text{m}^3$) |
| 1 | Normandy Court Dundonald (AQMA) | Roadside | Y | triplicate | | N/A | N | N/A |
| 1a | Normandy Court Dundonald (AQMA) | Kerbside | Y | triplicate | 11 months | | N | 29 |
| 2 | Newtownbreda Road Castlereagh | Roadside | N | triplicate | 11 months | N/A | Y | 29 |
| 3 | Saintfield Road Carryduff | Roadside | N | single | 11 months | N/A | N | 13 |
| 4 | Seymour Hill | Background | N | single | 11 months | N/A | N | 12 |
| 5 | Antrim Rd Lisburn | Roadside | N | single | 11 months | N/A | N | 21 |
| 6 | Benson Street Lisburn | Roadside | N | single | 9 months | N/A | N | 18 |
| 7 | Sloan Street Lisburn | Roadside | N | single | 9 months | N/A | N | 24 |
| 8 | Sprucefield Court Lisburn | Roadside | N | single | 11 months | N/A | N | 27 |
| 9 | Comber Road (Comber side) | Roadside | N | single | 11 months | N/A | N | 18 |
| 10 | Comber Road (Belfast side) | Roadside | N | single | 11 months | N/A | N | 20 |

Lisburn & Castlereagh City Council

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2023 (Number of Months or %) | Data with less than 9 months has been annualised (Y/N) | Confirm if data has been distance corrected (Y/N) | Annual mean concentration (Bias Adjustment factor = 0.81) |
|---------|--|-----------|--------------|-------------------------------|---|--|---|---|
| | | | | | | | | 2023 (µg/m³) |
| 11 | Hillsborough | Roadside | N | single | 11 months | N/A | N | 18 |
| 12 | 58-62 Main Street Moira | Roadside | N | single | 11 months | N/A | N | 20 |
| 13a | Blaris Road Lisburn facade | Roadside | N | single | 10 months | N/A | Y | 29 |
| 14 | Saintfield Road Lisburn | Roadside | N | single | 11 months | N/A | N | 31 |
| 15 | Moir Road Lisburn | Roadside | N | single | 11 months | N/A | N | 17 |
| 16. | Blaris Green/Drive | Roadside | N | single | 11 months | N/A | N | 29 |
| 17. | Knockmore Road | Roadside | N | single | 10 months | N/A | N | 29 |
| 18 | Cairnshill Park & Ride | Roadside | N | single | 11 months | N/A | N | 23 |
| 19 | Co-located tubes at Dundonald Automatic site | Roadside | N | triplicate | 11 months | N/A | N | 24 |

Sites in purple were new in 2019

Sites in orange were new in 2020

(Site listed pink is Normandy Court site within AQMA moved to kerbside 2023)

(Site listed green is new kerbside site within AQMA, Normandy Court)

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2019 to 2023)

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$ | | | | |
|---------|---------------------------------|--------------|--|---|---|---|---|
| | | | 2019 (Bias Adjustment Factor = 0.92) | 2020 (Bias Adjustment Factor = 0.81) | 2021 (Bias Adjustment Factor = 0.84) | 2022 (Bias Adjustment Factor = 0.83) | 2023 (Bias Adjustment Factor = 0.81) |
| 1 | Normandy Court Dundonald (AQMA) | Roadside | 31 | 23 | 26 | 24 | |
| 1a | Normandy Court Dundonald (AQMA) | Kerbside | | | | | 29 |
| 2 | Newtownbreda Road Castlereagh | Roadside | 37 | 33 | 30 | 29 | 29 |
| 3 | Saintfield Road Carryduff | Roadside | 17 | 11 | 14 | 12 | 13 |
| 4 | Seymour Hill | Roadside | 17 | 17 | 15 | 14 | 12 |
| 5 | Antrim Rd Lisburn | Roadside | 27 | 20 | 21 | 21 | 21 |
| 6 | Benson Street Lisburn | Roadside | 26 | 18 | 19 | 20 | 18 |
| 7 | Sloan Street Lisburn | Roadside | 28 | 23 | 25 | 25 | 24 |
| 8 | Sprucefield Court Lisburn | Roadside | 34 | 26 | 29 | 28 | 27 |
| 9 | Comber Road (Comber side) | Roadside | 24 | 18 | 18 | 20 | 18 |
| 10 | Comber Road (Belfast side) | Roadside | 23 | 17 | 18 | 19 | 20 |
| 11 | Hillsborough | Roadside | 25 | 20 | 19 | 19 | 18 |

Lisburn & Castlereagh City Council

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$ | | | | |
|--------------------|--|--------------|--|--|--|--|--|
| | | | 2019 (Bias Adjustment Factor = 0.92) | 2020 (Bias Adjustment Factor = 0.81) | 2021 (Bias Adjustment Factor = 0.84) | 2022 (Bias Adjustment Factor = 0.83) | 2023 (Bias Adjustment Factor = 0.81) |
| 12 | 58-62 Main Street Moira | Roadside | 26 | 20 | 21 | 20 | 20 |
| 13 | Blaris Road Lisburn facade | Roadside | 31 | 24 | 30 | 30 | 29 |
| 14 | Saintfield Road Lisburn | Roadside | 29 | 23 | 26 | 28 | 31 |
| 15 | Moirs Road Lisburn | Roadside | 23 | 17 | 20 | 17 | 17 |
| 16 | Blaris Green/Drive | Roadside | 27 | 23 | 29 | 30 | 29 |
| 17 | Knockmore Road | Roadside | 32 | 24 | 30 | 29 | 29 |
| 18 | Cairnshill Park & Ride | Roadside | | 20 | 25 | 23 | 23 |
| 19 (triplicate) | Co-located tubes at Dundonald Automatic site | Roadside | 26 | 19 | 21 | 24 | 24 |

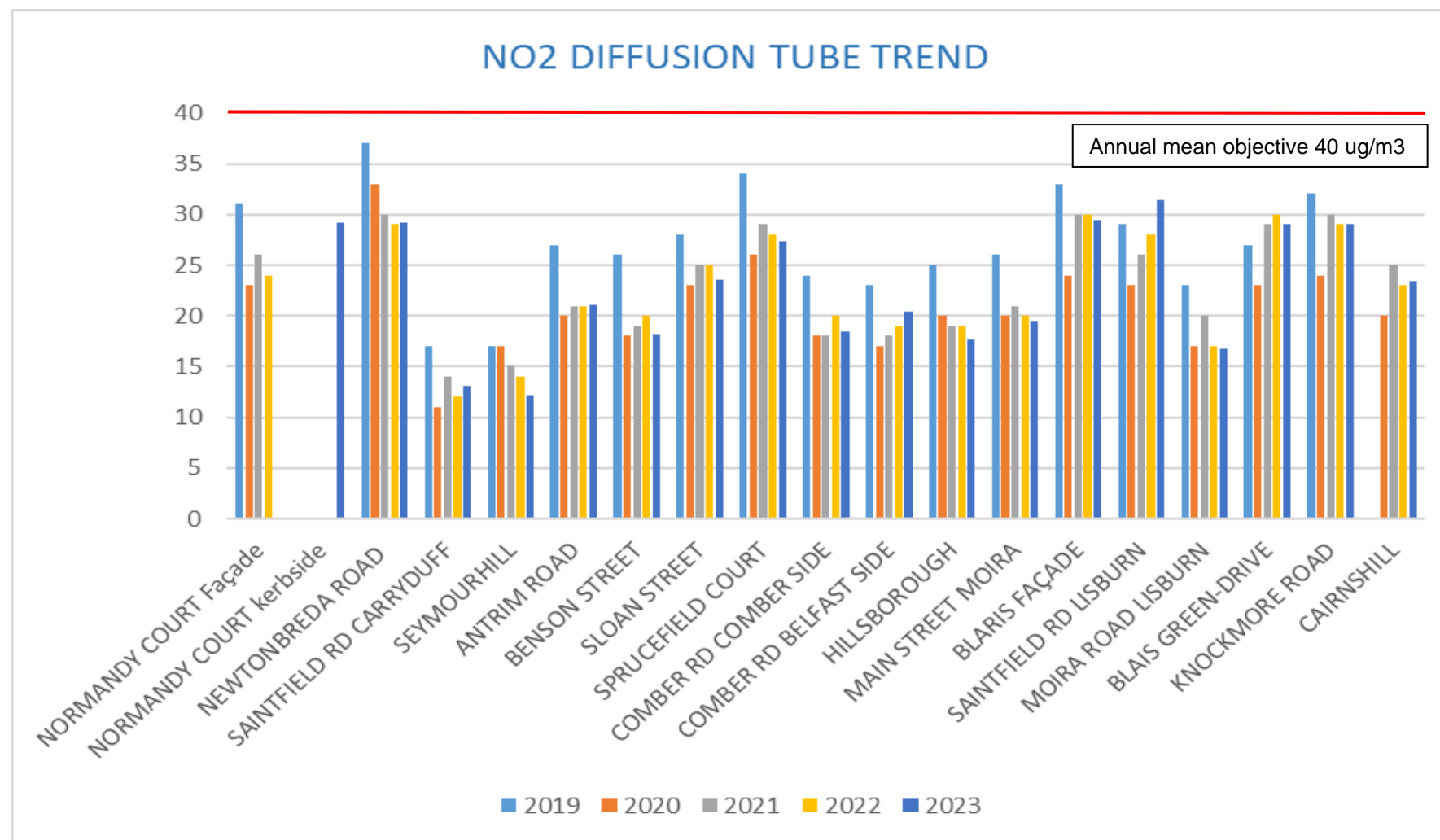
Sites in purple were new in 2019

Sites in orange were new in 2020

Site listed pink is Normandy Court site within AQMA moved to kerbside 2023

Site listed green is new kerbside site within AQMA, Normandy Court

Figure 2.18 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



2.2.2 PM₁₀

In 2023, automatic monitoring of PM₁₀ was undertaken at Kilmakee Activity Centre, Rowan Drive, Seymour Hill situated between Lisburn City and Belfast City.

This location is also the site for the AURN PAH, and Black Carbon monitors and a new TOMPS monitor. This site was chosen due to the high use of secondary solid fuel use.

Before 2021 PM₁₀ measurements were recorded using a TEOM instrument, but in 2021 this instrument was upgraded to a FIDAS 200 which also measures PM_{2.5}. The results are ratified and adjusted accordingly by AQDM, the data management company, and a specialist engineer is also contracted to service and maintain the equipment. Summaries of this data, with regard to annual and hourly mean objectives, are presented in Table 2.7 and Table 2.8.

All results remain below the AQS objective.

Table 2.7 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 % ^b | Confirm Gravimetric Equivalent (Y or N/A) | Annual Mean Concentration (µg/m ³) | | | | |
|---|------------------|---------------|---|--|---|--|------|------|------|------|
| | | | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| ASPM1 Kilmakee Activity Centre (PM ₁₀) | Urban Background | N | N/A | 99.5% | Y | 14 | 12 | 14 | 12 | 10.3 |

Table 2.8 – Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour Mean Objective

^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 is less than 90%, include the 90th percentile of 24-hour means in brackets

* Optional

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 % ^b | Confirm Gravimetric Equivalent (Y or N/A) | Number of Daily Means > 50µg/m ³ | | | | |
|---|------------------|--------------|---|--|---|---|------|------|------|------|
| | | | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| ASPM1 Kilmakee Activity Centre (PM ₁₀) | Urban Background | N | N/A | 99.5% | Y | 0 | 0 | 0 | 0 | 0 |

Trends in Annual Mean PM₁₀ Concentrations

PM₁₀ has remained consistently low in Dunmurry

2.2.3 Sulphur Dioxide

In 2012 LCCC installed an automatic SO₂ monitor at Kilmakee Activity Centre alongside the particulate and PAH monitors. This site was chosen due to high PAH results in the area and across Northern Ireland compared to the rest of the UK, secondary high solid fuel use in the area, and as it is adjacent to relevant exposure. Data capture for 2023 was 79.2%, the Monitor Europe SO₂ analyser at Kilmakee failed at the end of 2022 due to end of life, this resulted in loss of data at the beginning of 2023 until a new Enviro Technology T100 analyser was installed in March 2023, there were no exceedances of the AQS objective in 2023. The data has been fully ratified by AQDM.

Details of the QA/QC are available in Appendix A

Table 2.9 Results of Automatic Monitoring of SO₂: Comparison with Annual Mean Objectives 2023

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 ^b | Number of exceedances: | | |
|---|---------------------|--------------|---|--------------------------------------|--|-------------------------------------|--------------------------------------|
| | | | | | 15-minute Means > 266µg/m ³ | 1-hour Means > 350µg/m ³ | 24-hour Means > 125µg/m ³ |
| ASPM1 Kilmakee Activity Centre | Urban Background | N | 79.2% | 72.9% | 0(0) | 0(0) | 0(0) |

^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 is less than 90%, include the relevant percentile in brackets

Trends in SO₂ Concentrations

Results have remained consistently very low at this site.

2.2.4 Benzene

Benzene monitoring was not undertaken in 2023. LCCC review all relevant planning applications and all air quality assessments received, no major changes have been identified requiring a further assessment of Benzene. LCCC borders Belfast City Council with the largest population and traffic flows within Northern Ireland, Benzene has been monitored in Belfast since 2002 and remains well below the objective of 3.25 ug/m³.

Table 2.10 Results of monitoring from benzene: Annual Mean Concentrations for the Belfast Centre 2018 – 2022

| Site ID | Site type | Within AQMA? Which AQMA? | Valid Data Capture 2022% | Running annual mean concentrations (µg/m ³) | | | | |
|---------------------------------|------------------|-----------------------------|--------------------------|---|------|------|------|------|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 |
| Belfast Centre (Lombard Street) | Urban Background | N | 100 | 0.45 | 0.44 | 0.37 | 0.39 | 0.38 |

2.2.5 Other pollutants monitored

Particulate Matter (PM_{2.5})

At the beginning of 2021 a new FIDAS 200 monitoring PM₁₀ and PM_{2.5} was installed at the Kilmakee site in Lisburn, the annual mean results for PM_{2.5} are listed in Table 2.11 below, the results are below the UK limit value of 20 ug/m³.

Table 2.11 Results of Automatic Monitoring of PM_{2.5} 2021-2023 compared with the annual mean objective

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for Monitoring Period % ^a | Valid Data Capture 2023 % ^b | Confirm Gravimetric Equivalent (Y or N/A) | Annual Mean Concentration (µg/m ³) | | |
|--|------------------|---------------|---|--|---|--|------|------|
| | | | | | | 2021 | 2022 | 2023 |
| ASPM1 Kilmakee Activity Centre (PM _{2.5}) | Urban Background | N | N/A | 99.5% | Y | 7 | 8 | 6.4 |

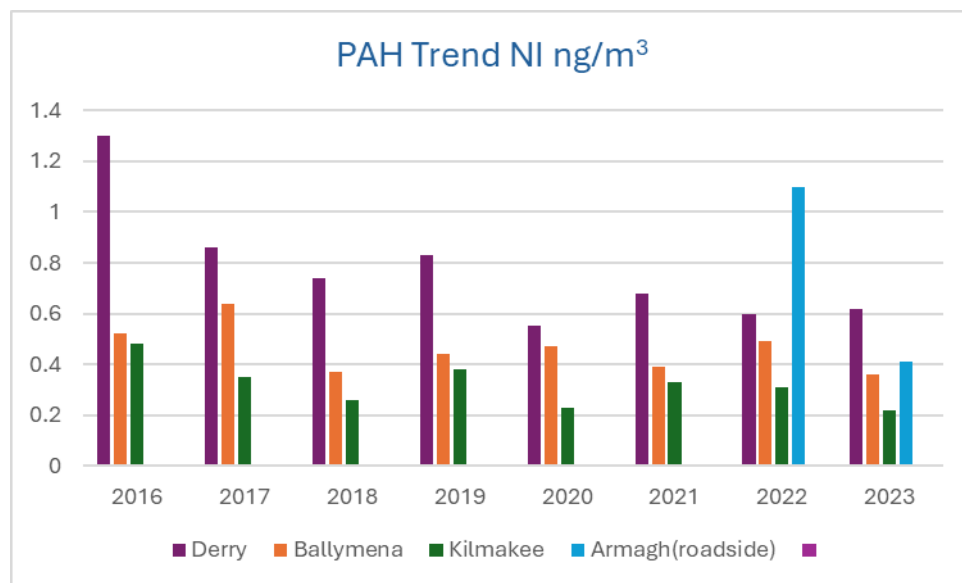
Polycyclic aromatic hydrocarbons (PAH)

The national network monitoring for PAH includes four monitoring sites in Northern Ireland, one of which is Kilmakee Activity Centre, Seymour Hill in LCCC. The UK National Air Quality Objective for PAH is an annual average of 0.25 ng /m³, the EU limit value for PAH is an annual average of 1ng BaP/m³. The Kilmakee site is below the EU objective and in 2023 below the UK non-mandatory objective.

Table 2.12 PAH results 2015 - 2020.

| Site | 2016 ng/m ³ annual mean | 2017 ng/m ³ annual mean | 2018 ng/m ³ annual mean | 2019 ng/m ³ annual mean | 2020 ng/m ³ annual mean | 2021 ng/m ³ annual mean | 2022 ng/m ³ annual mean | 2023 ng/m ³ annual mean |
|-----------------------------|--|--|--|--|--|--|--|--|
| Derry | 1.3 | 0.86 | 0.74 | 0.83 | 0.55 | 0.68 | 0.6 | 0.62 |
| Ballymena | 0.52 | 0.64 | 0.37 | 0.44 | 0.47 | 0.39 | 0.49 | 0.36 |
| Kilmakee Activity Centre | 0.48 | 0.35 | 0.26 | 0.38 | 0.23 | 0.33 | 0.31 | 0.22 |
| Armagh (roadside) | | | | | | | 1.1 | 0.41 |

Figure 2.19 Trends in PAH Northern Ireland



2.2.6 Summary of Compliance with AQS Objectives

Lisburn and Castlereagh City Council has examined the results from monitoring in the council area. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Lisburn and Castlereagh City Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Lisburn and Castlereagh City Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Lisburn and Castlereagh City Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Lisburn and Castlereagh City Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Lisburn and Castlereagh City Council confirms that there are no new/proposed roads meeting the criteria in Table 7.1 of Chapter 7 of LAQM.TG22

3.6 Roads with Significantly Changed Traffic Flows

Lisburn and Castlereagh City Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Lisburn and Castlereagh City Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Lisburn and Castlereagh City confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Lisburn and Castlereagh City Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Lisburn and Castlereagh City Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Lisburn and Castlereagh City Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Lisburn and Castlereagh City Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been introduced

Lisburn and Castlereagh City Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Lisburn and Castlereagh City Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Lisburn and Castlereagh City Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Lisburn and Castlereagh City Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Lisburn and Castlereagh City Council confirms that there are no biomass combustion plant in the Local Authority area.

All planning application are examined by LCCC Environmental Health Department and an air quality assessment requested if necessary and assess compliance with LAQM TG22

6.2 Biomass Combustion – Combined Impacts

Lisburn and Castlereagh City Council confirms that there are no biomass combustion plant in the Local Authority area.

All planning application are examined by LCCC Environmental Health Department and an air quality assessment requested if necessary and assess compliance with LAQM TG22

6.3 Domestic Solid-Fuel Burning

Lisburn and Castlereagh City Council confirms that there are no areas of significant domestic fuel use in the Local Authority area. Solid fuel use is predominantly secondary.

7 Fugitive or Uncontrolled Sources

Lisburn and Castlereagh City Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

This 2024 USA has identified there are no exceedances at monitoring location, and no new sites have been identified. Therefore, there is no need to proceed to a detailed assessment for any of the pollutants.

The NO₂ levels in Dundonald AQMA have remained low post COVID, LCCC shall move forward to produce a detailed assessment with the intention of revoking the AQMA.

8.2 Conclusions from Assessment of Sources

Following the assessment, no new sources were identified.

8.3 Proposed Actions

LCCC is focused on improving air quality as a whole, therefore all existing monitoring sites shall remain in 2024.

LCCC jointly with Ards and North Down Borough Council initiated a no idling outside schools campaign in 2019, this initiative shall remain available to all schools in the area, and a view to extending the initiative will be examined in 2024 along with continued support of Clean Air Day.

The Action Plan published in 2013 has been updated and was submitted in 2023.

Levels of NO₂ within the AQMA have remained low for over five years, LCCC shall move forward to produce a detailed assessment with the intention of revoking the AQMA.

LCCC shall submit an Air Quality Progress report in 2025.

9 References

- Guidance LAQM.TG(22).
- Local Air Quality Management Guidance prepared by the Department for Environment, Food and Rural Affairs, August 2022
- Part IV of the Environment Act 1995 as amended by the Environment Act 2021
- Environment (Northern Ireland) Order Part III

Appendices

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

QA/QC Data of automatic sites

Lisburn City & Castlereagh City Council commissioned AQDM Technology to provide the QA/QC of the automatic measurements of NO₂, SO₂, PM₁₀, for the Kilmakee, Seymour Hill and Dundonald A20 sites. Local authority staff act as the local site operator and visit the sites on a weekly basis carrying out any manual calibration or filter changes required. The sites were repaired as necessary and ESU1 were contracted to service the sites.

Automatic station reports produced by data management company

Produced by AQDM on behalf of Lisburn

Air Quality Report

Produced by AQDM on behalf of Lisburn
LISBURN DUNMURRY SEYMOUR HILL 2023

Fully ratified by AQDM to the LAQM TG22 standards using the AURN methodology

Site Environment and Description

Kilmakee Activity Centre

URBAN BACKGROUND

[Map](#)

[Photo](#)

[Dashboard](#)

Statistical Summary Report

This 2023 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Air Quality in Northern Ireland website
<https://www.airqualityni.co.uk>

Gravimetric PM_{2.5}

The Gravimetric PM_{2.5} is the FIDAS PM_{2.5} / 1.06

Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI).
The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|--------------------------------------|--------------|------|-----------|
| PM ₁₀ Particulate Matter | 0 days | 0 | 0 |
| PM _{2.5} Particulate Matter | 0 days | 0 | 0 |
| Sulphur Dioxide | 0 15-minutes | 0 | 0 |

Air Quality Exceedances of the AQS Objectives

Gravimetric PM₁₀ - annual data capture was 99.5 %

The annual mean was 10.3 µg m⁻³ which did not exceed the 40 µg m⁻³ Objective.

The maximum daily mean was 36.2 µg m⁻³ so there were no exceedances of the PM₁₀ daily limit of 50 µg m⁻³. There is an annual allowance of 35 days so the Objective was not exceeded.

Gravimetric PM_{2.5} - annual data capture was 99.5 %

The annual mean was 6.4 µg m⁻³ which did not exceed the 20 µg m⁻³ Objective.

SO₂ - annual data capture was 79.2 %

The maximum 15-minute mean was 8.8 µg m⁻³ so there were no exceedances of the SO₂ 15-minute limit of 266 µg m⁻³. There is an annual allowance of 35 15-minute means so the Objective was not exceeded.

The maximum hourly mean was 8.0 µg m⁻³ so there were no exceedances of the SO₂ 1-hour limit of 350 µg m⁻³. There is an annual allowance of 24 hours so the Objective was not exceeded.

The maximum daily mean was 3.4 µg m⁻³ so there were no exceedances of the SO₂ daily limit of 125 µg m⁻³. There is an annual allowance of 3 days so the Objective was not exceeded.

The annual mean was 1.7 µg m⁻³ which did not exceed the 20 µg m⁻³ Objective.

Air Quality Report

LISBURN DUNMURRY SEYMOUR HILL 2023

Air Quality Statistics

| Pollutant | Grav PM ₁₀ [*] | Grav PM _{2.5} [*] | PM ₁ [†] | SO ₂ |
|--|------------------------------------|-------------------------------------|------------------------------|------------------------|
| Number Very High # | 0 | 0 | - | 0 |
| Number High # | 0 | 0 | - | 0 |
| Number Moderate # | 0 | 0 | - | 0 |
| Number Low # | 361 | 361 | - | 27305 |
| Maximum 15-min mean | - µg m ⁻³ | - µg m ⁻³ | 163.0 µg m ⁻³ | 8.8 µg m ⁻³ |
| Maximum hourly mean | 98.8 µg m ⁻³ | 89.8 µg m ⁻³ | 92.8 µg m ⁻³ | 8.0 µg m ⁻³ |
| Maximum running 8-hr mean | 61.2 µg m ⁻³ | 53.8 µg m ⁻³ | 54.9 µg m ⁻³ | 5.3 µg m ⁻³ |
| Maximum running 24-hr mean | 38.9 µg m ⁻³ | 31.0 µg m ⁻³ | 31.4 µg m ⁻³ | 6.8 µg m ⁻³ |
| Maximum daily mean | 36.2 µg m ⁻³ | 31.0 µg m ⁻³ | 31.4 µg m ⁻³ | 3.4 µg m ⁻³ |
| 99.9 th percentile of 15-min means [‡] | - µg m ⁻³ | - µg m ⁻³ | - µg m ⁻³ | 5.9 µg m ⁻³ |
| 99.7 th percentile of hourly means [‡] | - µg m ⁻³ | - µg m ⁻³ | - µg m ⁻³ | 4.8 µg m ⁻³ |
| 99.2 nd percentile of daily means [‡] | - µg m ⁻³ | - µg m ⁻³ | - µg m ⁻³ | 3.0 µg m ⁻³ |
| Average | 10.3 µg m ⁻³ | 6.4 µg m ⁻³ | 5.0 µg m ⁻³ | 1.7 µg m ⁻³ |
| Data capture | 99.5 % | 99.5 % | 99.5 % | 79.2 % |

Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013

[†] Percentile required for annual data capture < 85%

^{*} Gravimetric PM₁₀ as measured by a FIDAS instrument using 1 gravimetric factor

^{*} Gravimetric PM_{2.5} as measured by a FIDAS instrument using 0.94 gravimetric factor

[‡] PM₁ as measured by a FIDAS instrument

Mass units for the gases are at 20°C and 1013mb

Air Quality Exceedances

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|--|---|-------------------------|--------|------|------------|----------|
| PM ₁₀ Particulate Matter (Gravimetric) | Annual mean > 40 µg m ⁻³ | 10.3 µg m ⁻³ | 0 | - | - | No |
| PM ₁₀ Particulate Matter (Gravimetric) | Daily mean > 50 µg m ⁻³ | 36.2 µg m ⁻³ | 0 | 0 | 35 days | No |
| PM _{2.5} Particulate Matter (Gravimetric) | Annual mean > 20 µg m ⁻³ | 6.4 µg m ⁻³ | 0 | - | - | No |
| Sulphur Dioxide | 15-minute mean > 266 µg m ⁻³ | 8.8 µg m ⁻³ | 0 | 0 | 35 15 mins | No |
| Sulphur Dioxide | Hourly mean > 350 µg m ⁻³ | 8.0 µg m ⁻³ | 0 | 0 | 24 hours | No |
| Sulphur Dioxide | Daily mean > 125 µg m ⁻³ | 3.4 µg m ⁻³ | 0 | 0 | 3 days | No |
| Sulphur Dioxide | Annual mean > 20 µg m ⁻³ | 1.7 µg m ⁻³ | 0 | - | - | No |

Air Quality Report

LISBURN DUNMURRY SEYMOUR HILL 2023

Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------------|-------|-------|------|------|-------|-------|-------|-------|-------|------|-------|-------|
| Grav PM ₁₀ | 100.0 | 100.0 | 99.9 | 96.5 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 97.2 | 100.0 | 100.0 |
| Grav PM _{2.5} | 100.0 | 100.0 | 99.9 | 96.5 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 97.2 | 100.0 | 100.0 |
| PM ₁ | 100.0 | 100.0 | 99.9 | 96.5 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 97.2 | 100.0 | 100.0 |
| Sulphur Dioxide | 0.0 | 0.0 | 53.0 | 96.5 | 99.5 | 100.0 | 99.7 | 99.7 | 99.9 | 97.2 | 99.7 | 99.7 |

Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|------|------|-----|------|------|------|-----|-----|------|-----|------|------|
| Grav PM ₁₀ µg m ⁻³ | 10.8 | 11.0 | 9.0 | 11.3 | 11.9 | 13.4 | 6.8 | 6.8 | 11.0 | 9.8 | 12.5 | 10.2 |
| Grav PM _{2.5} µg m ⁻³ | 7.3 | 7.1 | 5.6 | 7.2 | 6.8 | 7.9 | 3.7 | 3.5 | 6.5 | 5.6 | 8.6 | 7.0 |
| PM ₁ µg m ⁻³ | 5.8 | 5.5 | 4.2 | 5.8 | 4.9 | 6.7 | 2.6 | 2.4 | 5.1 | 4.0 | 7.3 | 5.7 |
| Sulphur Dioxide µg m ⁻³ | - | - | 1.8 | 1.6 | 1.1 | 0.6 | 2.4 | 2.6 | 2.4 | 1.5 | 1.3 | 1.5 |

Air Quality Report

Produced by AQDM on behalf of Castlereagh
CASTLEREAGH DUNDONALD 2023

Fully ratified by AQDM to the LAQM TG22 standards using the AURN methodology

Site Environment and Description

Upper Newtownards Road

ROADSIDE [Map](#) [Photo](#) [Dashboard](#)

Statistical Summary Report

This 2023 report contains all the statistics required for the LAQM reporting.

The full results and statistics are available from the Air Quality in Northern Ireland website
<https://www.airqualityni.co.uk>.

Daily Air Quality Index (DAQI)

The table below shows the duration within the bands of the Daily Air Quality Index (DAQI).
The DAQI was introduced by Defra in January 2012 and revised April 2013.

| DAQI Pollutant | Moderate | High | Very High |
|------------------|----------|------|-----------|
| Nitrogen Dioxide | 0 hours | 0 | 0 |

Air Quality Exceedances of the AQS Objectives

NO₂ - annual data capture was 99.8 %

The annual mean was 20.0 µg m⁻³ which did not exceed the 40 µg m⁻³ Objective.

The maximum hourly mean was 104.6 µg m⁻³ so there were no exceedances of the NO₂ hourly limit of 200 µg m⁻³. There is an annual allowance of 18 hours so the Objective was not exceeded.

Air Quality Report

CASTLEREAGH DUNDONALD 2023

Air Quality Statistics

| Pollutant | NO ₂ | NO | NO _x |
|----------------------------|--------------------------|--------------------------|--------------------------|
| Number Very High # | 0 | - | - |
| Number High # | 0 | - | - |
| Number Moderate # | 0 | - | - |
| Number Low # | 8746 | - | - |
| Maximum 15-min mean | 127.0 µg m ⁻³ | 387.9 µg m ⁻³ | 707.2 µg m ⁻³ |
| Maximum hourly mean | 104.6 µg m ⁻³ | 322.1 µg m ⁻³ | 582.2 µg m ⁻³ |
| Maximum running 8-hr mean | 81.7 µg m ⁻³ | 164.3 µg m ⁻³ | 333.8 µg m ⁻³ |
| Maximum running 24-hr mean | 58.7 µg m ⁻³ | 99.2 µg m ⁻³ | 210.6 µg m ⁻³ |
| Maximum daily mean | 57.6 µg m ⁻³ | 98.2 µg m ⁻³ | 208.2 µg m ⁻³ |
| Average | 20.0 µg m ⁻³ | 12.6 µg m ⁻³ | 39.3 µg m ⁻³ |
| Data capture | 99.8 % | 99.8 % | 99.8 % |

Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
Mass units for the gases are at 20°C and 1013mb
NO_x mass units are NO_x as NO₂ µg m⁻³

Air Quality Exceedances

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|------------------|---|--------------------------|--------|------|----------|----------|
| Nitrogen Dioxide | Annual mean > 40 µg m ⁻³ | 20.0 µg m ⁻³ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg m ⁻³ | 104.6 µg m ⁻³ | 0 | 0 | 18 hours | No |

Air Quality Report

CASTLEREAGH DUNDONALD 2023

Monthly Data Captures %

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------|-------|-------|------|------|------|-------|------|------|------|------|-------|------|
| Nitrogen Dioxide | 100.0 | 100.0 | 99.7 | 99.9 | 99.9 | 100.0 | 99.9 | 99.9 | 99.2 | 99.9 | 100.0 | 99.9 |

Monthly Means

| Pollutant | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Nitrogen Dioxide µg m ⁻³ | 22.8 | 20.7 | 20.8 | 21.4 | 15.8 | 19.8 | 14.2 | 15.3 | 19.3 | 22.0 | 27.3 | 21.1 |

QA/QC of Diffusion Tube Monitoring

In 2023 the NO₂ tubes were supplied, prepared, and analysed by Gradko International Limited, using the preparation method 20%TEA/Water

Diffusion Tube Bias Adjustment Factors

Factor from Local Co-location Studies

A co-location study was carried out at the Dundonald site, and the data submitted to the national data base.

<https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | Spreadsheet Version Number: 03/24 | | | | | | | |
|--|--|---|--|--|--|--|--|---|---|--|----------|-----------------------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies | | | | | | | | This spreadsheet will be updated at the end of June 2024 LAQM Helpdesk Website | | | | | |
| Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods | | | | | | | | | | | | | |
| Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet | | | | | | | | | | | | | |
| This spreadsheet will be updated every few months, the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | | | | | | | |
| The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory. | | | | | | Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd. | | | | | | | |
| Step 1: | | Step 2: | | Step 3: | | Step 4: | | | | | | | |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List | | Select a Preparation Method from the Drop-Down List | | Select a Year from the Drop-Down List | | Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ² shown in blue at the foot of the final column. | | | | | | | |
| If a laboratory is not shown, we have no data for this laboratory. | | If a preparation method is not shown, we have no data for this method at this laboratory. | | If a year is not shown, we have no data ² | | If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953 | | | | | | | |
| Analysed By ¹ | | Method ² | | Year ² | | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m ³) | Automatic Monitor Mean Conc. (Cm) (µg/m ³) | Bias (B) | Tube Precision ³ | Bias Adjustment Factor (A) (Cm/Dm) |
| ▼ | | To undo your selection, choose (All) from the pop-up list. | | ▼ | | ▼ | | | | | | | |
| Gradko | | 20% TEA in water | | 2023 | | R | Dudley Mbc | 12 | 27 | 23 | 17.1% | G | 0.85 |
| Gradko | | 20% TEA in water | | 2023 | | UB | Dudley Mbc | 12 | 19 | 13 | 45.4% | G | 0.69 |
| Gradko | | 20% TEA in water | | 2023 | | R | Dudley Mbc | 12 | 40 | 37 | 7.7% | G | 0.93 |
| Gradko | | 20% TEA in water | | 2023 | | R | Gateshead Council | 12 | 23 | 20 | 17.7% | G | 0.85 |
| Gradko | | 20% TEA in water | | 2023 | | R | Gateshead Council | 11 | 23 | 18 | 26.9% | G | 0.79 |
| Gradko | | 20% TEA in water | | 2023 | | R | Gateshead Council | 12 | 27 | 22 | 20.7% | G | 0.83 |
| Gradko | | 20% TEA in water | | 2023 | | R | Gateshead Council | 12 | 29 | 23 | 25.9% | G | 0.79 |
| Gradko | | 20% TEA in water | | 2023 | | R | Gateshead Council | 12 | 30 | 33 | -7.8% | G | 1.08 |
| Gradko | | 20% TEA in water | | 2023 | | KS | Marylebone Road Intercomparison | 11 | 45 | 38 | 20.3% | G | 0.83 |
| Gradko | | 20% TEA in water | | 2023 | | B | South Holland District Council | 10 | 8 | 7 | 12.4% | G | 0.89 |
| Gradko | | 20% TEA in water | | 2023 | | R | Worcestershire | 12 | 12 | 11 | 17.4% | G | 0.85 |
| Gradko | | 20% TEA in Water | | 2023 | | R | Ards And North Down Borough Council | 12 | 33 | 21 | 60.2% | G | 0.62 |
| Gradko | | 20% TEA in Water | | 2023 | | R | Lisburn & Castlereagh City Council | 11 | 24 | 20 | 22.1% | G | 0.82 |
| Gradko | | 20% TEA in water | | 2023 | | | Overall Factor ² (23 studies) | | | | | Use | 0.81 |

The local bias adjustment figure was **0.82**, this was calculated using the DEFRA precision & accuracy calculation tool. As in previous years a decision was made not to use the local factor but the national bias adjustment figure of **0.81** to maintain consistency and therefore producing a more accurate trend. Comparisons are shown in the table below.

| Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---------------------------------|------|------|------|------|------|------|
| Local Bias adjustment factor | 0.76 | 0.78 | 0.75 | 0.76 | 0.81 | 0.82 |
| National Bias Adjustment factor | 0.93 | 0.92 | 0.81 | 0.84 | 0.83 | 0.81 |