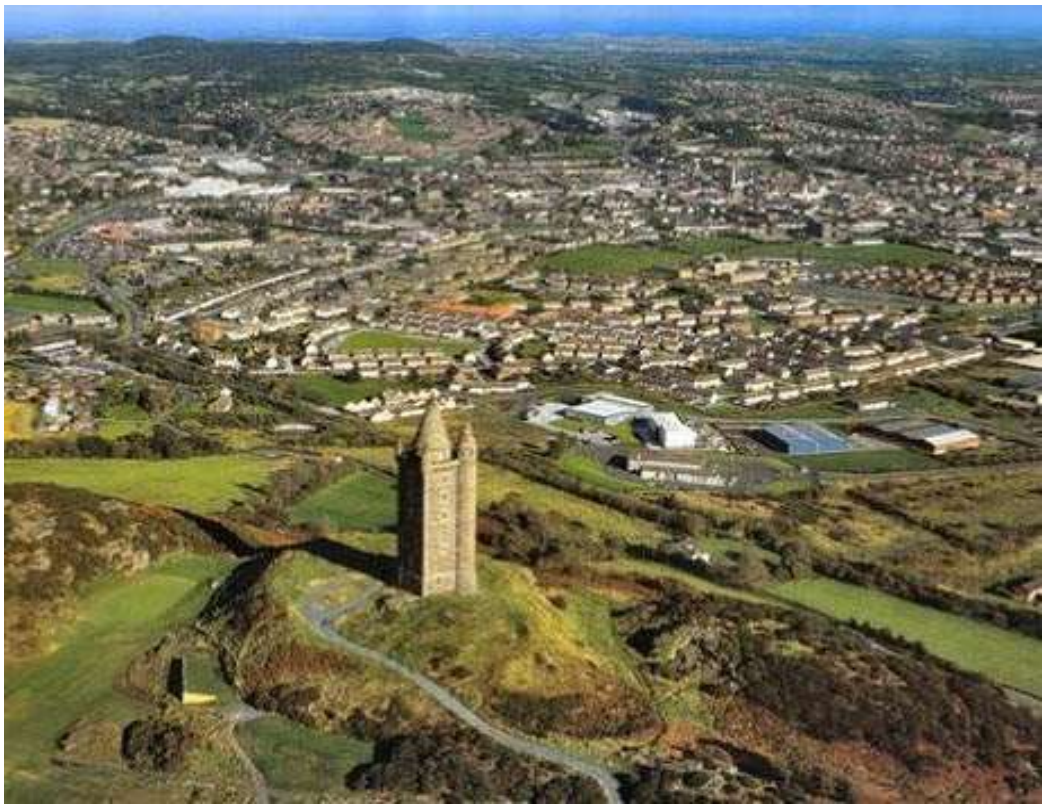
# Ards and North Down Borough Council

## 2020 Air Quality Progress Report

In fulfillment of Environment (Northern Ireland) Order 2002
Local Air Quality Management
September 2020



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| **Report Reference number** | ANDBC PR2020 |
| **Date** | September 2020 |

# 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.

It is a requirement for all local authorities in the UK to prepare an updating and screening assessment (USA). The last updating and screening assessment of air quality was undertaken in 2018.

This report is the 2020 Progress Report for Ards and North Down Borough Council (ANDBC) and has been completed using the recommended template. The assessment is fully compliant with the applicable policy and technical guidance.

This Progress Report identified no exceedances of the Air Quality Strategy objectives for 2019 for any of the pollutants assessed with relevant exposure.

Monitoring will continue in 2020 on the main arterial route into Belfast City and hot spots around the Borough where traffic congestion is common at rush hour. A large housing development in the Movilla area of Newtownards commenced in 2016, the first phase is completed and phase two has commenced and a new development and road layout on the Rathgael Road, Bangor commenced in 2018 and is now near completion. This and other planned housing developments have been examined by the Environmental Health Department and were found to have no significant impact on air quality in relation to the Air Quality Strategy objectives for 2019, an $NO_2$ diffusion tube was sited on the outer ring in Bangor in 2018 next to new houses built close to the main road where congestion occurs during rush hour. A new apartment block was completed at the end of 2018 (36 Shore Road, Holywood), due to the proximity to the A2 in Holywood and increased traffic diverting from the A20 (Newtownards to Belfast Road) after the completion of the Rapid Transport System in Dundonald, two new diffusion tube sites were identified and commenced in 2019.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Ards and North Down Borough Council is one of the new 11 councils in Northern Ireland, with a population of 160,864. The Borough is of mixed urban and rural character situated east of Belfast City and the two largest towns Bangor and Newtownards are popular residential areas due to the ease of commute to Belfast City. It is an area of outstanding natural beauty and special scientific interest bounded by over 100 miles of coastline and the prevailing wind direction is south-westerly.

Air Quality in ANDBC is generally good as there is good ventilation from sea breezes. There are few industrial processes in the area that are significantly detrimental to air quality and heavy fuel oil is not widely used for heat generation, solid fuel is still very popular as a secondary fuel. However, there are a number of very busy trunk roads in the area and four main arterial routes into Belfast with a combined traffic flow of approximately 66500, the busiest being the A2 commuter route from Bangor to Belfast with average daily traffic flows of approximately 44,000 vehicle movements per day at Holywood, this remains the main area of concern with relation to Air Quality, for Nitrogen Dioxide and $PM_{10}$. Several monitoring sites are located at relevant exposure along this main arterial route to Belfast and two new ones added in 2019. Other sites are located at congested points throughout Newtownards, Bangor, and Comber town centers. All present monitoring within the Borough indicates that the objectives in the air quality strategy are not currently being exceeded at relevant exposure.

**Figure 1.1 Map of Ards and North Down Borough Council within Northern Ireland**


**Figure 1.2 Ards and North Down Borough Council area**

## 1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 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.

For Local Authorities in Northern Ireland, Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the LAQM process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedance of an Air Quality Objective, the Local Authority (LA) 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 shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre μg/$m^3$ (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 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

Local authorities in Northern Ireland amalgamated on 1st April 2015 creating 11 new councils. Ards and North Down Borough Council (ANDBC) is one of the new 11 councils.

In December 2015 ANDBC submitted an Update and Screening Assessment, reference was made in this report of the new boundaries and previous relevant reports. A progress report was submitted in 2016, 2017 and 2019, and an Update and Screening Assessment in 2018.

# 2 New Monitoring Data

## 2.1 Summary of Monitoring Undertaken

### 2.1.1 Automatic Monitoring Sites

ANDBC has one automatic monitoring site on the A2 in Holywood, monitoring $NO_2$ and $PM_{10}$. Manual calibrations are carried out every two weeks by the Local Air Quality officer. AQDM (Air Quality Data Management) 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.

A co-location study for the $NO_2$ diffusion tubes is also carried out at this site. Results from this study were submitted to the national data base for 2019 to be included in the June 2020 data sheet.

Results and correction factors are detailed in Appendix A.

**Figure 2.1 Position of the automatic air monitoring site within ANDBC**

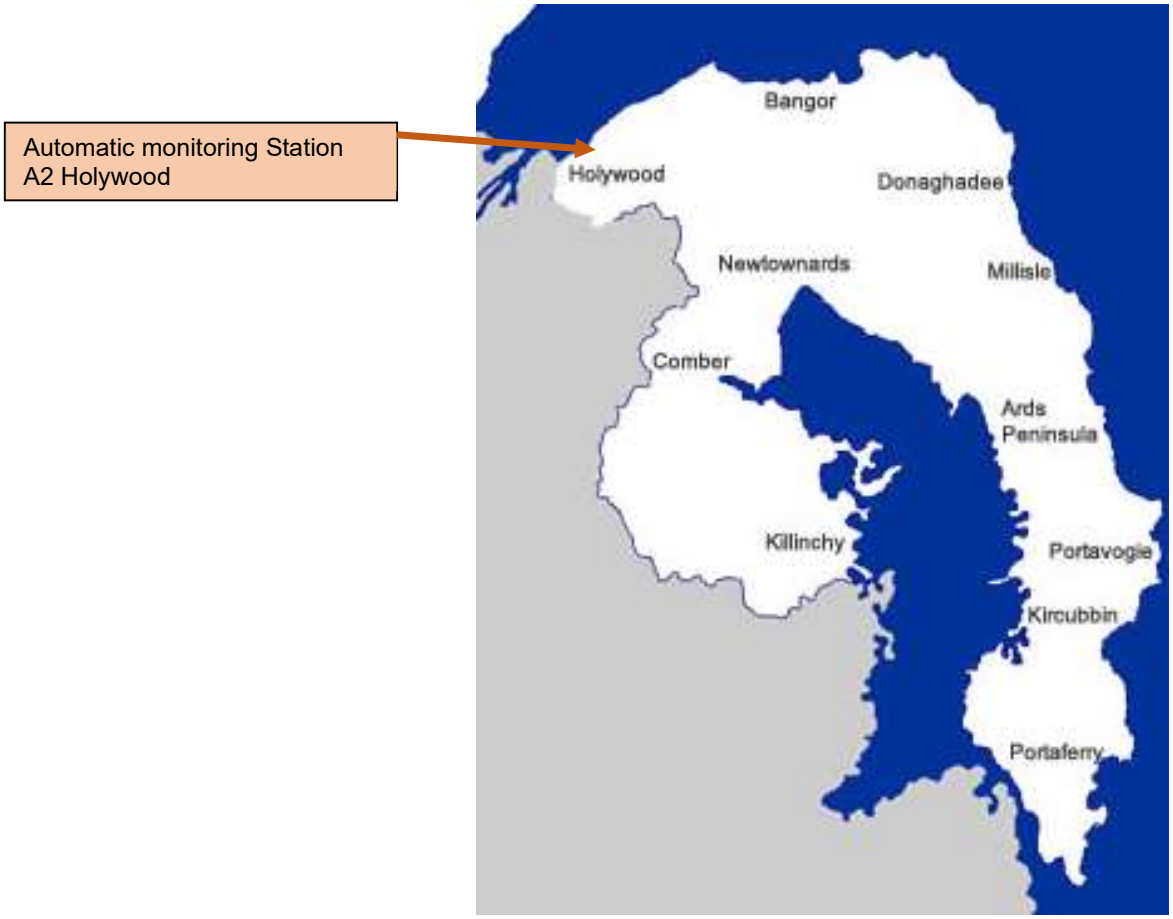


**Figure 2.2 Position of Automatic Monitoring Site on the A2 Holywood**

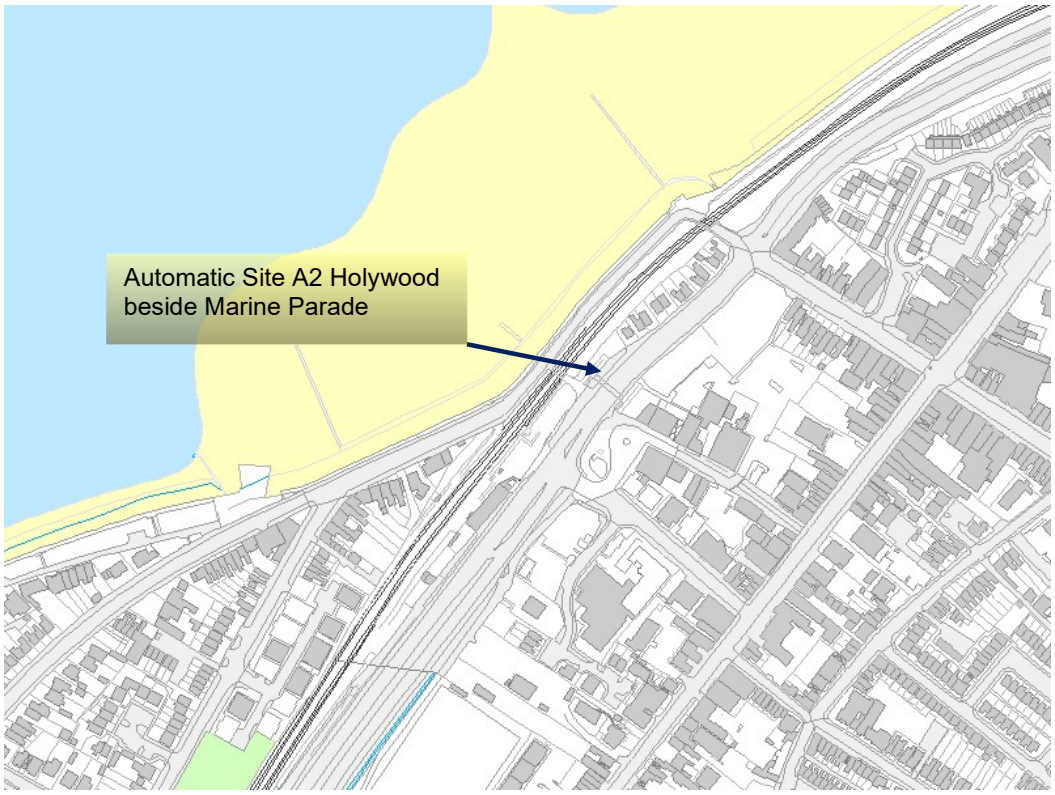



**Figure 2.3 Aerial photo of Automatic Monitoring Station A2 Holywood**

**Table 2.1 – Details of Automatic Monitoring Sites**

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|
| Marine Parade Holywood A2 | Roadside | X339481 | Y379328 | 2 | $PM_{10}$, $NO_2$ | N | TEOM Chemiluminescence | YES 30m | 4.6M | YES |

### 2.1.2 Non-Automatic Monitoring Sites

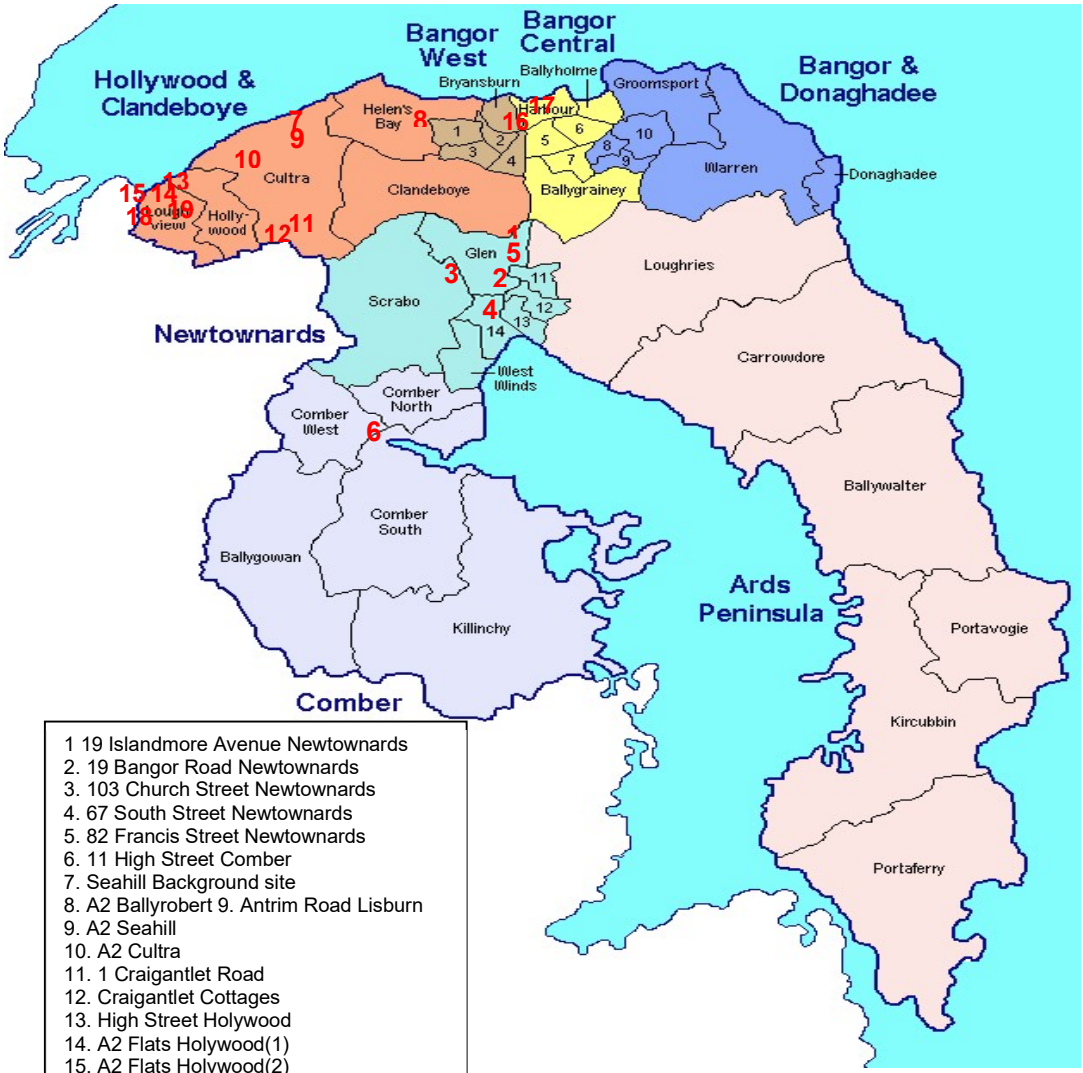
Ards and North Down Borough Council has 15 $NO_2$ diffusion tubes at roadside and background sites. Seven are positioned along the A2 main arterial route into Belfast at roadside and on facades of the closest dwellings, the remainder of the tubes are at relevant exposure at various hotspots where there is traffic congestion at rush hour in Newtownards, Comber and Holywood. In 2018 the two background sites at Islandmore Avenue and Seahill were discontinued as a large amount of data had been collated from these sites, they were re-located to the Outer Ring in Bangor where new houses had been built close to the road and where congestion occurs during peak times, and the other on Grays Hill leading to Bangor Seafront to collate data prior to an extensive re-development of Bangor Seafront which will increase traffic and may cause some traffic congestion in Grays Hill after completion. In 2019 as maintaining the tube on the façade of the property at Cultra was no longer possible it was re-located to roadside and distance calculated to the façade. Also, in 2019 the two sites at Craigantlet had remained below the objective so they were re-located to the new apartment block (36 Shore Road, Holywood) where traffic flow was at its highest on this section of the A2.
A co-location study is carried out at the automatic site in Holywood The results of the co-located study were submitted into the national data base for 2019 to be included in the June 2020 data sheet. The diffusion tube studies for the past five years do not show any trends (See Fig. 2.17) and all remain below the national objectives, although the roadside sites on the A2 in Holywood were high they also remain below the objective when distance calculated to relevant exposure. Annual variation is more likely to be as a result of climatic conditions rather than changes in emissions.

The $NO_2$ diffusion tubes were supplied and analysed by Gradko Environmental.

The bias adjustment factor from the co-location study is **0.76.** This was calculated using the R&A support precision and accuracy spread sheet. A decision was made to apply the national figure of **0.92** as 30 studies were included and was deemed to be a more realistic figure.
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

Below are maps of the diffusion tube sites.

**Figure 2.4 Map(s) of Non-Automatic Monitoring Sites** previous and current




1 19 Islandmore Avenue Newtownards
2. 19 Bangor Road Newtownards
3. 103 Church Street Newtownards
4. 67 South Street Newtownards
5. 82 Francis Street Newtownards
6. 11 High Street Comber
7. Seahill Background site
8. A2 Ballyrobert 9. Antrim Road Lisburn
9. A2 Seahill
10. A2 Cultra
11. 1 Craigantlet Road
12. Craigantlet Cottages
13. High Street Holywood
14. A2 Flats Holywood(1)
15. A2 Flats Holywood(2)
16. Outer Ring Bangor
17. Grays Hill Bangor
18. Apartments 36 on3
19. Apartments 36 two

**Figure 2.5 Position of Diffusion tube sites 1-5 in Newtownards**

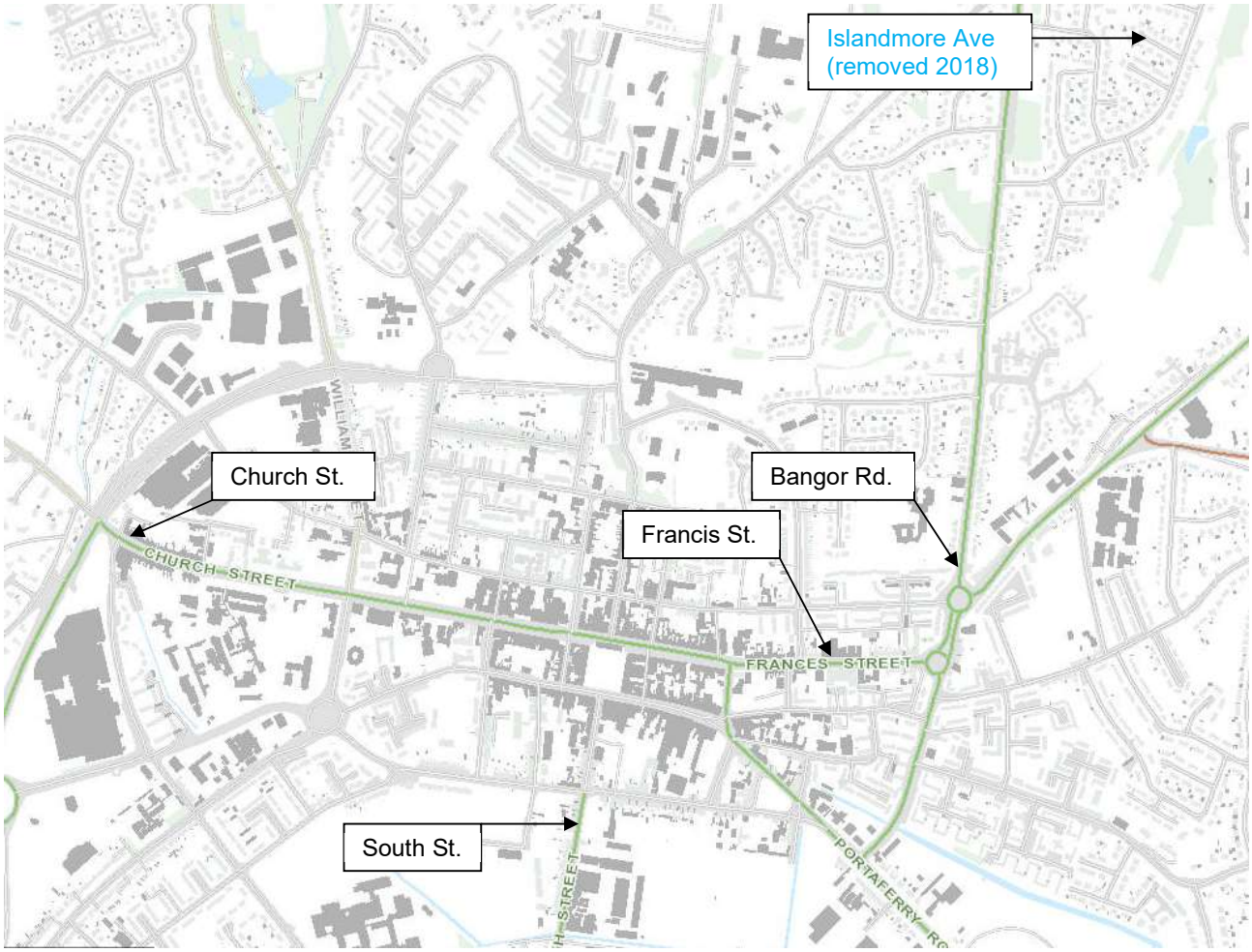
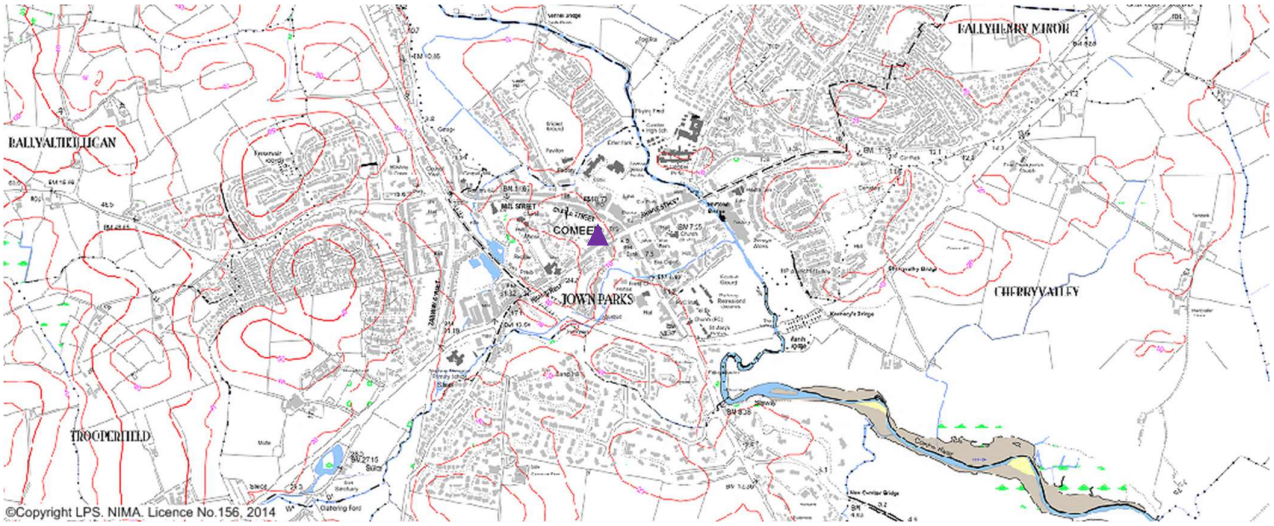



**Figure2.7 Position of tube 6 in Comber village**

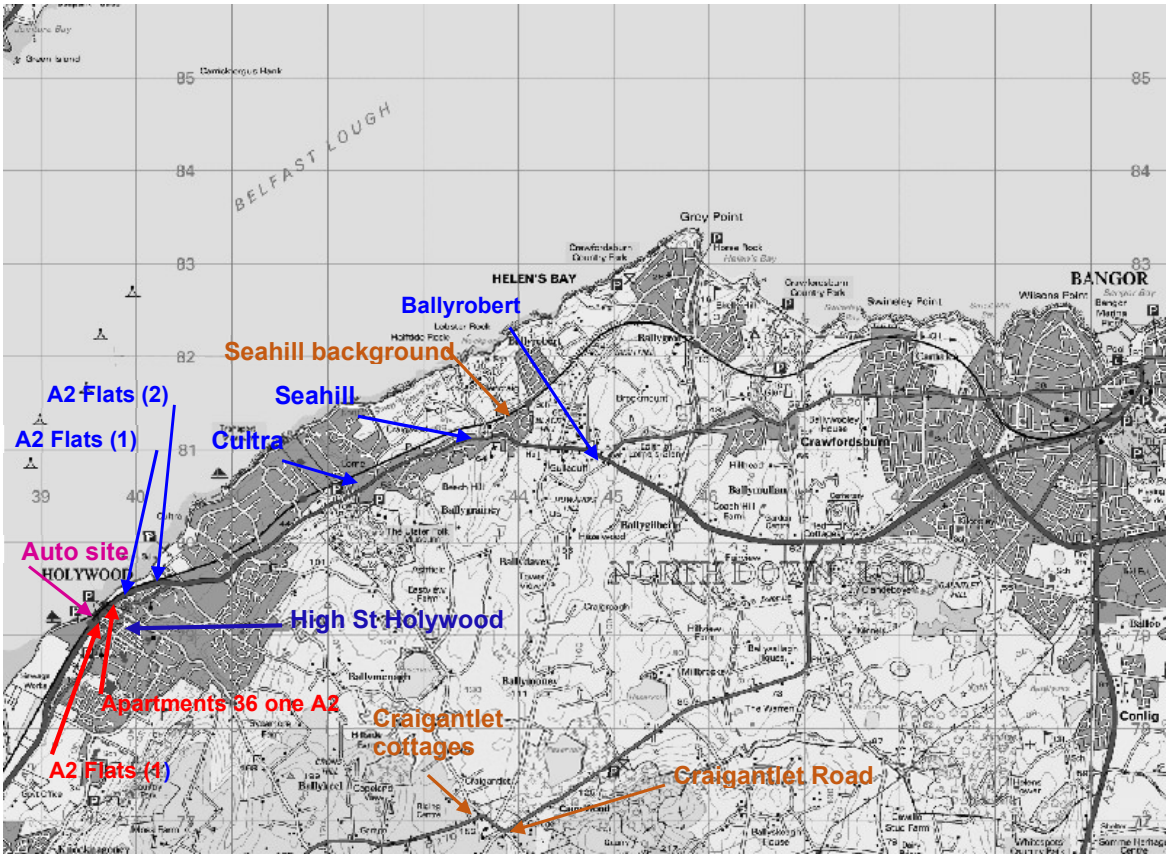



▲ Position of diffusion tube in Comber Village Centre

**Figure2.8 Position of tube 6 on High Street in Comber village**


Position of diffusion tube 6 - High Street Comber

**Figure2.9 Position of tubes 7-15,18,19 on and near A2**




Sites discontinued in 2018, 2019

New sites in 2019

**Figure 2.10 Position of Diffusion tube sites 7-9 on A2**

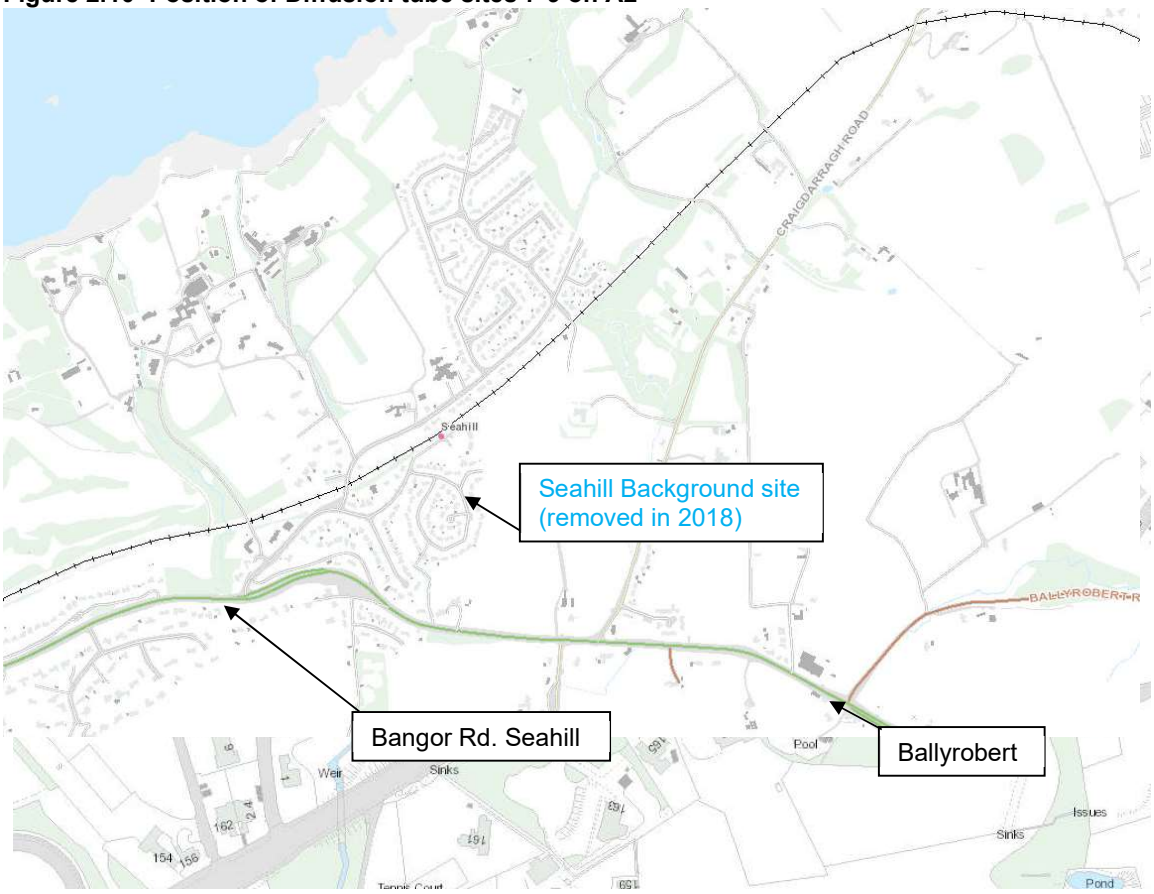
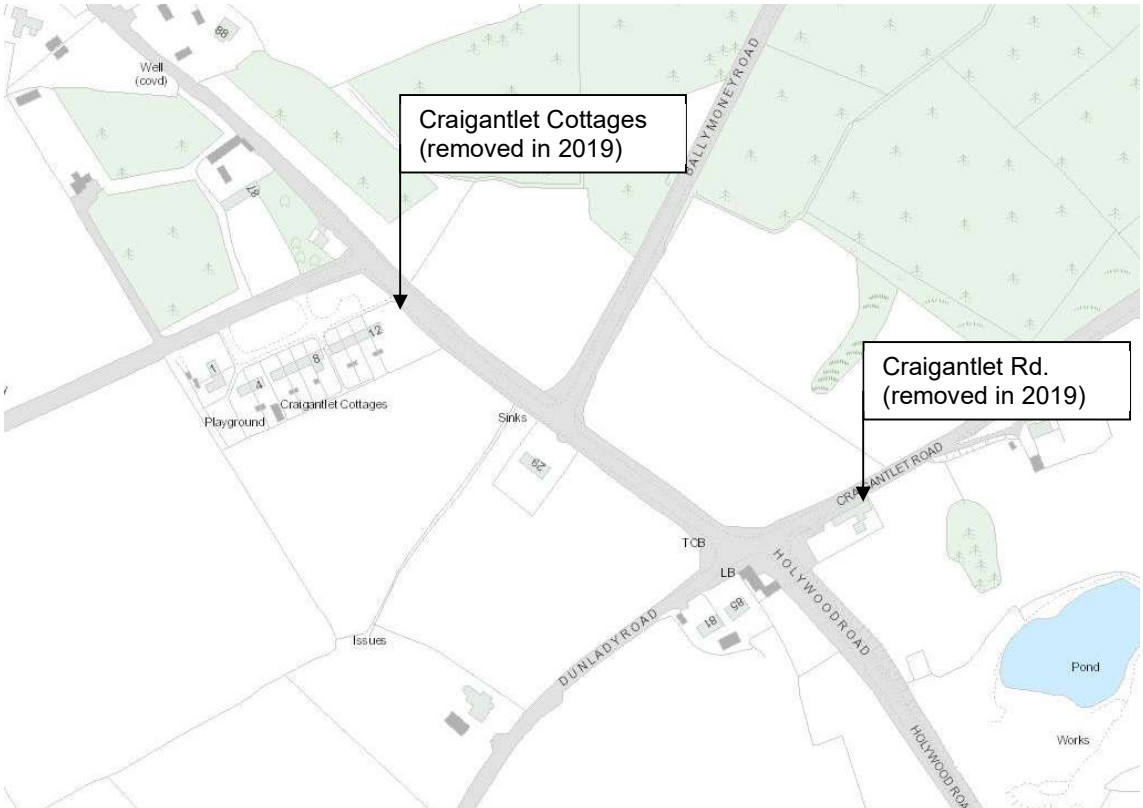
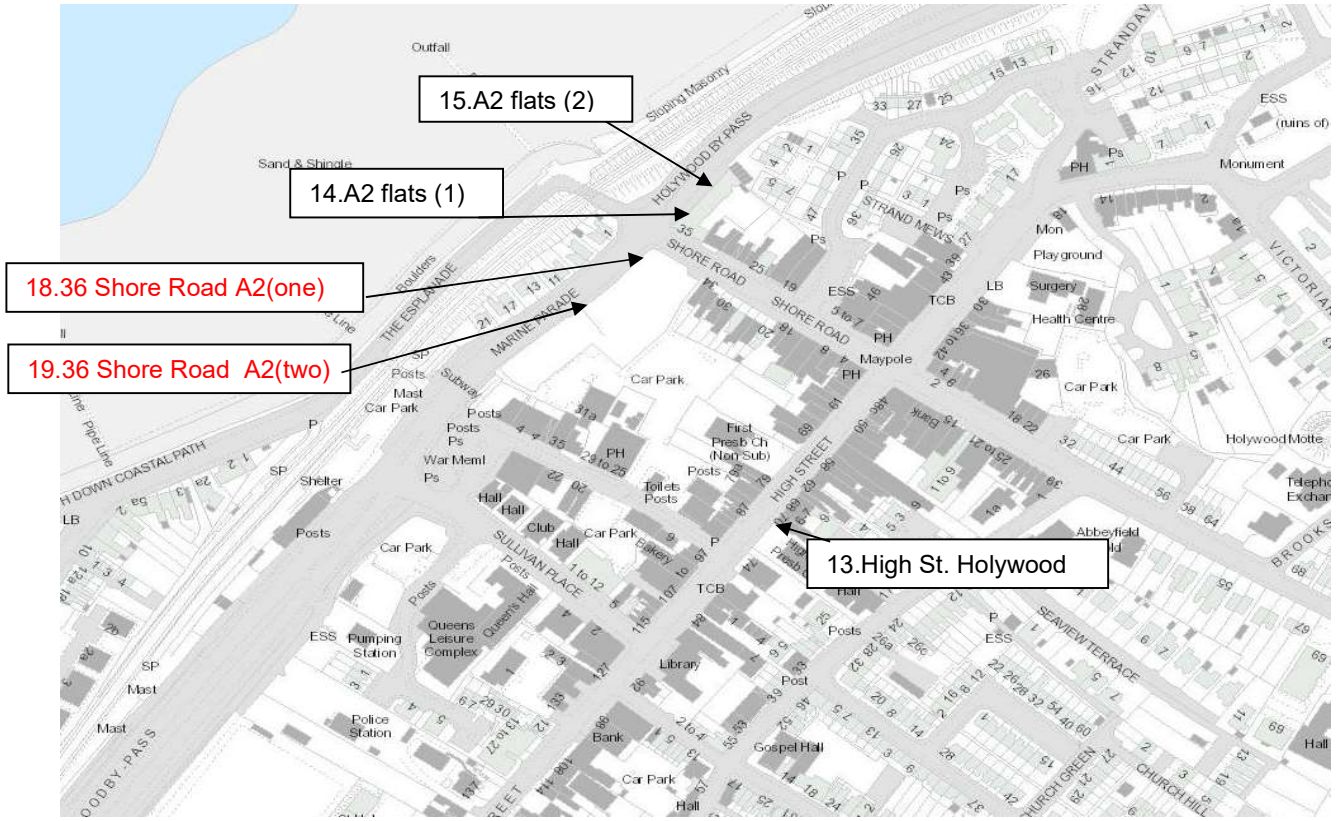



**Figure 2.12 Position of Diffusion tube sites 11,12 in Craigantlet discontinued in 2019**



**Figures 2.13 Position of Diffusion tube sites 13-15 and the two new sites in 2019 at Apartments 36 Shore Road Holywood on theA2**




36 Shore Road Holywood new apartment block pictured from A2


**Tubes 14, 15 A2 flats Holywood** **Tubes 18, 19 36 Shore Road A2**

**Figure 2.14 Position of Diffusion Tube site 16 Outer Ring Bangor (new tube 2018)**

**Position of new tube**


**Figure 2.15 Position of Diffusion Tube site - 17 Grays Hill Bangor (new tube 2018)**


**Position of new tube**

**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 | 19 Islandmore Avenue Newtownards | Background | 349847 | 375132 | 2.5 | $NO_2$ | No | No | N/A | >50m from busy road | N |
| 2 | 19 Bangor Rd Newtownards | Roadside | 349687 | 374267 | 2.5 | $NO_2$ | No | No | Y (1.5m) | 1.5m | Y |
| 3 | 103 Church St Newtownards | Roadside | 348994 | 374364 | 2 | $NO_2$ | No | No | Y (2.5m) | 1.5m | Y |
| 4 | 67 South St. Newtownards (b) | Roadside | 348238 | 373590 | 2.5 | $NO_2$ | No | No | Y (0.5m) | 1.5m | Y |
| 5 | 82 Frances St. Newtownards | Roadside | 349324 | 369201 | 2 | $NO_2$ | No | No | Y (0.5) | 1.5m | Y |
| 6 | 11 High St Comber | Roadside | 345827 | 369201 | 2.5 | $NO_2$ | No | No | Y (0.5) | 1.5m | Y |
| 7 | Seahill Background site | Background | 344128 | 381294 | 2 | $NO_2$ | No | No | N\A | 250m | N |
| 8 | A2 Ballyrobert | Roadside | 345002 | 380823 | 2 | $NO_2$ | No | No | Y (<1m) | 3m | Y |

| 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | A2 Seahill | Roadside | 343545 | 381102 | 2 | $NO_2$ | No | No | Y (<1m) | 10m | Y |
| 10 | A2 Station Rd Cultra facade | Roadside | 342475 | 380672 | 2 | $NO_2$ | No | No | Y (<1m) | 6.3m | Y |
| 10a | A2 Station Rd Cultra roadside | Roadside | | | 2 | $NO_2$ | No | No | Y (5m) | 1.3m | Y |
| 11 | 1 Craigantlet Road | Roadside | 343929 | 376920 | 2 | $NO_2$ | No | No | Y (<1m) | 1.5m | Y |
| 12 | Craigantlet Cottages | Roadside | 343632 | 377049 | 2 | $NO_2$ | No | No | Y (20m) | 0.5m | Y |
| 13 | High Street Holywood | Roadside | 339785 | 379119 | 2.5 | $NO_2$ | No | No | Y (20m) | 1.5 | Y |
| 14 | A2 Flats Holywood(1) | Roadside | 339756 | 379330 | 2 | $NO_2$ | No | No | Y (0.5m) | 2.9m | Y |
| 15 | A2 Flats Holywood(1) | Roadside | 339774 | 379351 | 2 | $NO_2$ | No | No | Y (0.5m) | 2.9m | Y |
| 16 | Outer Ring Bangor | Roadside | 349578 | 380087 | 2 | $NO_2$ | No | No | Y (2m) | 2m | Y |
| 17 | Grays Hill Bangor | Roadside | 350195 | 381781 | 2 | $NO_2$ | No | No | Y (11m) | 2m | Y |
| 18 | Apartment 36 A2 one | Roadside | | | 2 | $NO_2$ | No | No | Y (5.1) | 2.9m | Y |

| 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** | Apartment 36 A2 two | Roadside | | | 2 | $NO_2$ | No | No | Y (5.1) | 2.9m | Y |

The sites in green were new in 2018

The sites in blue were discontinued in 2018 and 2019

The sites in orange were new in 2019

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

No exceedances of the AQS objectives have been identified from the monitoring data collected since the last Update and Screening Assessment. All monitored pollutant concentrations have been below their respective air quality objective limits at relevant exposure. In the following section results are presented for $NO_2$ at the automatic and diffusion tube sites and compared with the objective.

### 2.2.1 Nitrogen Dioxide ($NO_2$)

In the following section results are presented for $NO_2$ at the automatic and diffusion tube sites and compared with the objective.

All sites meet the objective at relevant exposure.

**Automatic Monitoring Data**

Table 2.3 presents the annual mean concentrations of $NO_2$ determined at the automatic site in 2019 from the hourly measurements.

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

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period % [a] | Valid Data Capture 2019 % [b] | Annual Mean Concentration (µg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015* [c] | 2016* [c] | 2017* [c] | 2018* [c] | 2019 [c] |
| A2 Holywood | Roadside | NO | N/A | 99.7 | 26 | 30 | 25 | 29 | 26 |

**In bold**, exceedance of the $NO_2$ annual mean AQS objective of 40µg/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.TG16, if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

**Figure 2.16 – Trends in Annual Mean $NO_2$ Concentrations Measured at Automatic Monitoring Sites**

Results have been consistent since installation of the automatic station; any variation was most probably due to climatic conditions. There have been no exceedances of the hourly mean.

**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 2019 % [b] | Number of Hourly Means > 200µg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015* [c] | 2016* [c] | 2017* [c] | 2018* [c] | 2019 [c] |
| A2 Holywood | Roadside | NO | N/A | 99.7 | 0 | 0 | 0 | 0 | 0 |

**In bold**, exceedance of the $NO_2$ hourly mean AQS objective (200µg/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 99.8$^{th}$ percentile of hourly means in brackets

* Number of exceedances for previous years is optional

**Diffusion Tube Monitoring Data**

Results of the $NO_2$ diffusion tube sites, situated within the borough are shown below in Table 2.5.

They are sited in accordance with the technical guidance LAQM.TG (16)

A diffusion tube co-location study in 2019 was carried out at the Holywood automatic site, the results of this study were submitted into the national data base, the 2018 local bias is **0.76,** a decision was made to apply the national figure of **0.92** as 30 studies were included and therefore deemed to be a more accurate representation.

All diffusion tube sites are below the annual mean objective of 40 ug/$m^3$. The two sites in Holywood established in 2015 at the apartment block on the A2 (tubes 14,15, shown in figure 2.13), show the highest levels along this main route to Belfast. Tubes 14,15 were established due to a shopping and residential complex planned on this busy route to commence in 2017, construction was completed at the end of 2018 and a further two tubes were located at the new complex (Apartments 36 Shore road Holywood) in 2019, to ascertain if levels remain below the objective as there is a possibility traffic flows may increase due to traffic diverting from the A20 Dundonald to the A2 in Holywood after the completion of the Rapid Transport System on the A20 in 2018. Levels at the new location were high, as they are roadside sites all tubes on the A2 at Holywood have been distance calculated to the nearest relevant exposure.

Details of the QA/QC for the diffusion tubes and the reason for the use of the bias adjustment factor **0.92** can be found in Appendix A

Trends for the existing 15 diffusion tube sites and previous sites within the Council area in 2019 are shown in figure 2.17

**Table 2.5 – Results of $NO_2$ Diffusion Tubes 2019**

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Co-located Tube | Full Calendar Year Data Capture 2019 (Number of Months) | 2019 Annual Mean Concentration (µg/m$^3$) - Bias Adjustment factor = 0.92 |
|---|---|---|---|---|---|---|
| **1** | 19 Islandmore Av Newtownards | Background | N | single | | |
| **2** | 19 Bangor Rd Newtownards | Roadside | N | single | 12 | 28 |
| **3** | 103 Church St Newtownards | Roadside | N | single | 12 | 23 |
| **4** | 67 South St. Newtownards (b) | Roadside | N | single | 12 | 26 |
| **5** | 82 Frances St. Newtownards | Roadside | N | single | 12 | 25 |
| **6** | 11 High St Comber | Roadside | N | single | 12 | 31 |
| **7** | Background site Seahill | Roadside | N | single | | |
| **8** | A2 Ballyrobert | Background | N | single | 12 | 28 |
| **9** | A2 Seahill | Roadside | N | single | 12 | 11 |
| **10** | A2 Station Rd Cultra facade | Roadside | N | single | | |
| **10a** | A2 Station rd Cultra roadside | | | | 12 | (39) 29[b] |
| **11** | 1 Craigantlet Road Craigantlet | Roadside | N | single | | |
| **12** | The Cottages Craigantlet | Roadside | N | single | | |

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Co-located Tube | Full Calendar Year Data Capture 2019 (Number of Months) | 2019 Annual Mean Concentration (µg/m$^3$) - Bias Adjustment factor = 0.92 |
|---|---|---|---|---|---|---|
| **13** | High Street Holywood | Roadside | N | single | 10 | 26 |
| **14** | A2 Flats (1) Holywood | Roadside | N | single | 12 | (35) 34[b] |
| **15** | A2 Flats (2) Holywood | Roadside | N | single | 12 | (32) 31[b] |
| **16** | Outer Ring Bangor | Roadside | N | single | 11 | 22 |
| **17** | Grays Hill Bangor | Roadside | N | single | 12 | 19 |
| **18** | Apartment 36 shore Road A2 one | Roadside | | | 11 | (42) 34[b] |
| **19** | Apartment 36 Shore Road A2 two | Roadside | | | 11 | (33) 27[b] |

These sites were new in 2018

These sites were new in 2019

These sites were discontinued in 2018, 2019

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

Underlined, annual mean > 60µg/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.TG16, 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 (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.77 to 7.79 of LAQM.TG16.

**Table 2.6 – Results of $NO_2$ Diffusion Tubes (2014 to 2018)**

| Site ID | Site Type | Within AQMA? | Annual Mean Concentration (µg/m³) - Adjusted for Bias [a] | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2015 (Bias Adjustment Factor = 0.88) | 2016 (Bias Adjustment Factor = 0.92) | 2017 (Bias Adjustment Factor = 0.89) | 2018 (Bias Adjustment Factor = 0.93) | 2019 (Bias Adjustment Factor = 0.92) |
| 1 | 19 Islandmore Av Newtownards | N | 11 | 11 | 12 | | |
| 2 | 19 Bangor Rd Newtownards | N | 26 | 28 | 28 | 29 | 28 |
| 3 | 103 Church St Newtownards | N | 24 | 23 | 24 | 23 | 23 |
| 4 | 67 South St. Newtownards (b) | N | 24 | 26 | 26 | 25 | 26 |
| 5 | 82 Frances St. Newtownards | N | 24 | 24 | 25 | 24 | 25 |
| 6 | 11 High St Comber | N | 30 | 32 | 32 | 31 | 31 |
| 7 | Background site Seahill | N | 10 | 11 | 11 | | |
| 8 | A2 Ballyrobert | N | 26 | 31 | 28 | 29 | 28 |
| 9 | A2 Seahill | N | 12 | 15 | 13 | 13 | 11 |
| 10 | A2 Cultra | N | 20 | 23 | 21 | 22 | |
| 10a | A2 Station rd Cultra roadside | | | | | | 29[b] |
| 11 | 1 Craigantlet Road Craigantlet | N | 23 | 25 | 25 | 20 | |
| 12 | The Cottages Craigantlet | N | 15 | 19 | 19 | 25 | |

| Site ID | Site Type | Within AQMA? | Annual Mean Concentration (µg/m$^3$) - Adjusted for Bias [a] | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2015 (Bias Adjustment Factor = 0.88) | 2016 (Bias Adjustment Factor = 0.92) | 2017 (Bias Adjustment Factor = 0.89) | 2018 (Bias Adjustment Factor = 0.93) | 2019 (Bias Adjustment Factor = 0.92) |
| **13** | High Street Holywood | N | 23 | 21 | 21 | 21 | 26 |
| **14** | A2 Flats (1) Holywood | N | 32[b] | 36[b] | 35[b] | 37[b] | 34[b] |
| **15** | A2 Flats (2) Holywood | N | 31[b] | 32[b] | 36[b] | 36[b] | 31[b] |
| **16** | Outer Ring Bangor | N | | | | 23 | 22 |
| **17** | Grays Hill Bangor | N | | | | 19 | 19 |
| **18** | Apartment 36 shore Road A2 one | N | | | | | 34[b] |
| **19** | Apartment 36 Shore Road A2 two | N | | | | | 27[b] |

These sites were new in 2018

These sites were new in 2019

These sites were discontinued in 2018, 2019

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

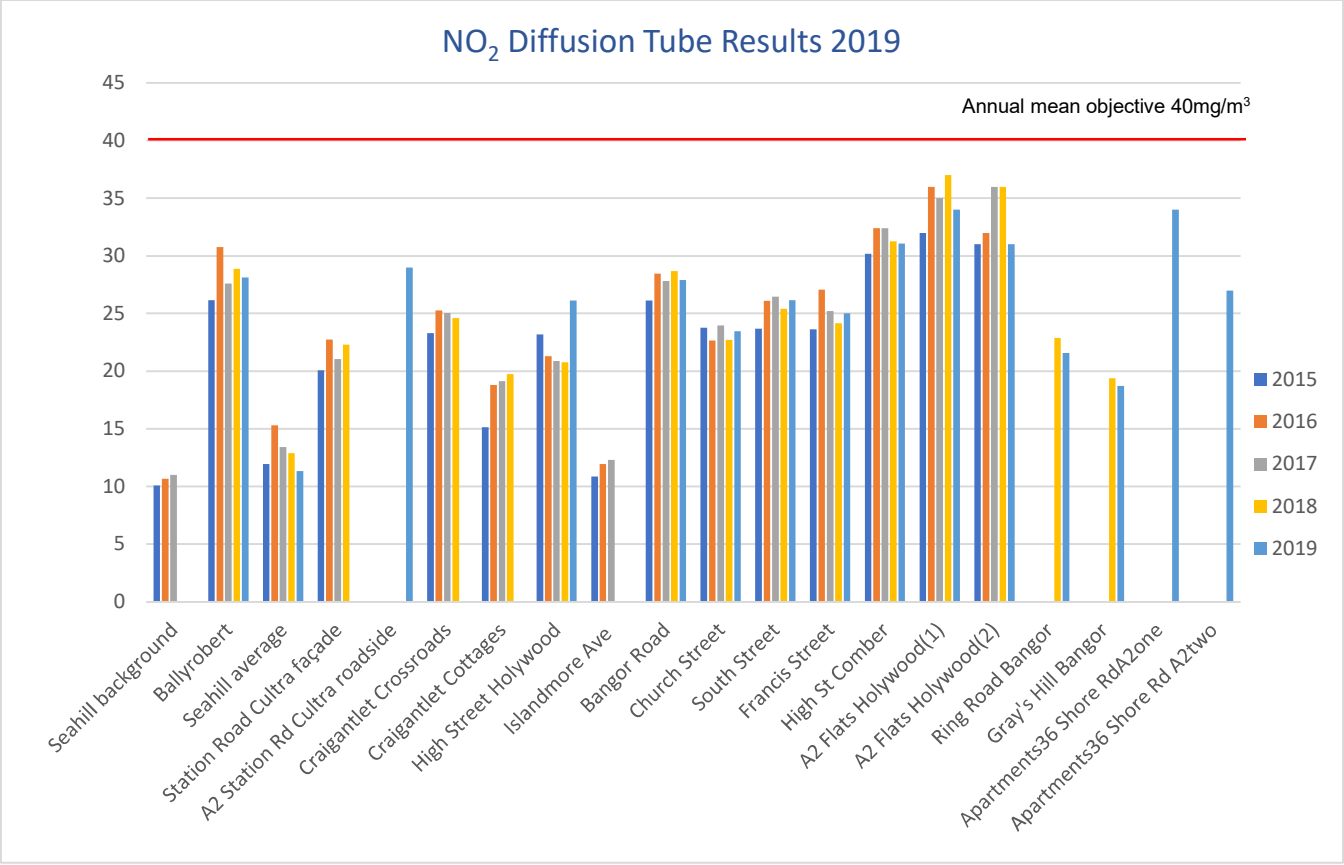
Underlined, annual mean > 60µg/m$^3$, indicating a potential exceedance of the $NO_2$ hourly mean AQS objective

[a] Means should be "annualised" as in Boxes 7.9 and 7.10 of LAQM.TG16, 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 (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html), and results should be discussed in a specific section. The procedure is also explained in paragraphs 7.77 to 7.79 of LAQM.TG16.

**Figure 2.17 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites**

$NO_2$ diffusion tube results have remained consistent any annual variation is more likely to be as a result of climatic conditions rather than changes in emissions.



### 2.2.2 Particulate Matter ($PM_{10}$)

Automatic monitoring of $PM_{10}$ using a TEOM was carried out at the Holywood site, results continued in 2019 to be below the air quality objective. AQDM were contracted to carry out the QA/QC for the site and ratify the data. Environmental Monitoring Systems were employed to service and maintain the site. Summaries of this data, regarding annual and hourly mean objectives, are presented below. The TEOM data has been corrected using Volatile Correction Model

The data was downloaded onto the NI Air Quality web site, providing real-time data for the Daily Air Quality Index (DAQI) which has been developed to provide advice on expected levels of air pollution. www.airqualityni.co.uk

Reports from the ratified data and the QA/QC applied can be found in appendix A.

**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 2019 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration μg/m³ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2015 | 2016 | 2017 | 2018 | 2019 |
| A2 Holywood | Roadside | N | N/A | 99.1% | Y | 18 | 16 | 14 | 18 | 17 |

**In bold**, exceedance of the $PM_{10}$ 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

**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 2019 %[b] | Confirm Gravimetric Equivalent | Number of Daily Means > 50µg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2015 | 2016 | 2017 | 2018 | 2019 |
| A2 Holywood | Roadside | N | N/A | 99.1% | Y | 4 | 0 | 1 | 0 | 4 |

**In bold**, exceedance of the $PM_{10}$ daily mean AQS objective (50µg/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 90.4$^{th}$ percentile of 24-hour means in brackets

* Number of exceedances for previous years is optional

**Figure 2.18 – Trends in Annual Mean $PM_{10}$ Concentrations**

$PM_{10}$ has remained consistently low in Holywood

### 2.2.3 Sulphur Dioxide ($SO_2$)

Ards and North down Borough Council did not carry out any monitoring of $SO_2$ in 2019

### 2.2.4 Benzene

No monitoring of Benzene was carried out in 2019.

### 2.2.5 Other Pollutants Monitored

In 2019 Nitrogen Dioxide and $PM_{10}$ were the only pollutants monitored

### 2.2.6 Summary of Compliance with AQS Objectives

Ards and North Down Borough Council has examined the results from monitoring in the Borough. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

# 3 New Local Developments

Ards and North Down Borough 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 resulting in exceedances of the Air Quality Objectives.

Ards and North Down Borough council confirms that all the following 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

A number of planning applications were examined by the Environmental Department and no air quality impact assessments were required.

# 5 Conclusions and Proposed Actions

## 5.1 Conclusions from New Monitoring Data

No monitoring sites at relevant exposure within the Council Area have shown exceedances of the air quality objectives. Although below the objective the two $NO_2$ diffusion tube sites at the apartment block on the A2 (14,15) in Holywood established in 2015, have consistently remained the highest levels recorded along this main route to Belfast. They were established due to a shopping and residential complex planned on this busy route to commence in 2017; this was completed at the end of 2018 and therefore in 2019 monitoring was extended at this location to include both sides of this busy junction. Levels at the automatic site opposite this location have remained consistent and below the objective.

## 5.2 Conclusions relating to New Local Developments

There are no new local developments that will require more detailed consideration in the next Updating and Screening Assessment.

## 5.3 Proposed Actions

This 2020 Progress Report for Ards and North Down Borough Council has identified there is no need to proceed to a detailed assessment for any of the pollutants. Ards and North Down Borough is focused upon improving air quality as a whole, therefore all existing monitoring sites shall continue in 2020, and the existing TEOM $PM_{10}$ monitor will be replaced with a new dust monitoring system capable of analysing both $PM_{10}$ and $PM_{2.5}$ so that we may be reliably informed of continuing trends.

Ards and North Down Borough Council initiated a no idling outside schools campaign in 2019 and hope to extend this in the future.

# 6 References

TG (2003) Part IV of the Environment Act 1995. Local Air Quality Management: Technical Guidance LAQM.TG(03). Guidance prepared by the Department for Environment, Food and Rural Affairs and the Devolved Administrations, January 2003.

TG (2016) Part IV of the Environment Act 1995. Local Air Quality Management: Technical

# Appendices

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

### QA/QC Data of automatic sites

Ards and North Down Borough Council commissioned AQDM Technology to provide the QA/QC of the automatic measurements of $NO_2$ and $PM_{10}$ for the A2 Holywood site. 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.

Enviro Technology Services were employed to service and maintain the analyser.

**Automatic station reports produced by data management company**

# Produced by AQDM on behalf of North Down

# NORTH DOWN HOLYWOOD A2 2019

**These data have been fully ratified by AQDM to the LAQM TG(16) standards**

## Site Environment and Description

ROADSIDE: Marine Highway

## Statistical Summary Report

This 2019 report contains all the statistics required for the LAQM reporting.

The Volatile Correction Model (VCM) has been run on the TEOM data to calculate the *EU Reference Equivalent* $PM_{10}$ required for the LAQM reports. This uses data from nearby FDMS instruments http://www.volatile-correction-model.info.

**First table – Air Quality Statistics.**
The gravimetric $PM_{10}$ is shown in the 2nd column while the uncorrected TEOM $PM_{10}$ is in the 3rd.

The top four lines show the duration within the bands of the Daily Air Quality Index (DAQI). This was introduced by Defra on January 2012 and revised April 2013. The number of occasions within each band is summarised as follows.

| DAQI Pollutant | Moderate | High | Very High |
|---|---|---|---|
| Gravimetric $PM_{10}$ | 4 days | 0 | 0 |
| $NO_2$ | 0 hours | 0 | 0 |

Gravimetric PM10 was moderate on 26th 27thFeb, 18th 19th Apr with a daily mean reaching 57 ug/$m^3$

**Data captures**
The annual data captures are shown on the bottom line. These were above the 85% target.

**Second table – Air Quality Exceedances.**

***Gravimetric $PM_{10}$ –data capture was 99.1%***
The maximum daily mean was 57 µg $m^{-3}$ so the daily mean limit value of 50 µg $m^{-3}$ was exceeded on 4 days. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 17 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

***$NO_2$ – data capture 99.7%***
The annual mean was 26 µg $m^{-3}$ which did not exceed the 40 µg $m^{-3}$ Objective.

The maximum hourly mean was 142 µg $m^{-3}$ so there were no exceedances of the $NO_2$ hourly limit of 200 µg $m^{-3}$. There is an annual allowance of 18 hours so this Objective was not exceeded.

# NORTH DOWN HOLYWOOD A2 2019

## Air Quality Statistics

| Pollutant | $PM_{10}$+ | $PM_{10}$* | $NO_2$ | NO | $NO_X$ |
|---|---|---|---|---|---|
| Number Very High # | 0 | - | 0 | - | - |
| Number High # | 0 | - | 0 | - | - |
| Number Moderate # | 4 | - | 0 | - | - |
| Number Low # | 357 | - | 8734 | - | - |
| Maximum 15-min mean | - | 340 µg $m^{-3}$ | 151 µg $m^{-3}$ | 388 µg $m^{-3}$ | 711 µg $m^{-3}$ |
| Maximum hourly mean | 120 µg $m^{-3}$ | 119 µg $m^{-3}$ | 142 µg $m^{-3}$ | 318µg $m^{-3}$ | 629 µg $m^{-3}$ |
| Maximum running 8-hr mean | 75 µg $m^{-3}$ | 71 µg $m^{-3}$ | 108 µg $m^{-3}$ | 183 µg $m^{-3}$ | 378 µg $m^{-3}$ |
| Maximum running 24-hr mean | 62 µg $m^{-3}$ | 45 µg $m^{-3}$ | 69 µg $m^{-3}$ | 116 µg $m^{-3}$ | 245 µg $m^{-3}$ |
| Maximum daily mean | 57 µg $m^{-3}$ | 42 µg $m^{-3}$ | 68 µg $m^{-3}$ | 115 µg $m^{-3}$ | 243 µg $m^{-3}$ |
| Average | 17 µg $m^{-3}$ | 16 µg $m^{-3}$ | 26 µg $m^{-3}$ | 20 µg $m^{-3}$ | 56 µg $m^{-3}$ |
| Data capture | 99.1 % | 99.1 % | 99.7 % | 99.7 % | 99.7 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
+ $PM_{10}$ as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent
* $PM_{10}$ as measured by a TEOM
Mass units for the gases are at 20'C and 1013mb
$NO_X$ mass units are $NO_X$ as $NO_2$ µg $m^{-3}$

## Air Quality Exceedances

| Pollutant | Air Quality Regulations (Northern Ireland) 2003 | Max Conc | Number | Days | Allowed | Exceeded |
|---|---|---|---|---|---|---|
| $PM_{10}$ Particulate Matter (Gravimetric) | Daily mean > 50 µg $m^{-3}$ | 57 µg $m^{-3}$ | 4 | 4 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 17 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 26 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 142 µg $m^{-3}$ | 0 | 0 | 18 hours | No |

### QA/QC of Diffusion Tube Monitoring

In 2019 the $NO_2$ tubes were prepared and supplied by Gradko International Limited, using the preparation method 20%TEA/Water. Gradko International Ltd. participates in the AIR-PT/WASP scheme; Quarterly summaries of participating laboratories' performance can be found here:
https://laqm.defra.gov.uk/assets/laqmno2performancedatauptofebruary2019v1.pdf

## Diffusion Tube Bias Adjustment Factors

### Factor from Local Co-location Studies

A co-location study was carried out at the Holywood site and the data submitted to the national data base http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html
The local bias adjustment figure was **0.76.**

## Decision to use the bias adjustment factor 0.92

The results of the local co-location study at the Holywood site were submitted to the national data base, the Holywood local bias adjustment factor was calculated at **0.76,** this co-location study is on one of the main arterial routes into Belfast City centre. Ards and North Down Borough Council has confidence in the data from the automatic site, with 99.7% data capture.
The June 2020 National bias adjustment figure for Gradko in 2019 is **0.92.**
A decision was made to apply the national figure of **0.92** as 30 studies were included in this and therefore deemed to be a more realistic figure.

A copy of the National bias adjustment spread sheet can be found below:

**National Diffusion Tube Bias Adjustment Factor Spreadsheet** — Spreadsheet Version Number: 06/20

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
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.

This spreadsheet will be updated at the end of September 2020

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:** Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

**Step 2:** Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

**Step 3:** Select a Year from the Drop-Down List

If a year is not shown, we have no data

**Step 4:** 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[3] shown in blue at the foot of the final column.

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 | Year | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m³) | Automatic Monitor Mean Conc. (Cm) (µg/m³) | Bias (B) | Tube Precision[4] | Bias Adjustment Factor (A) (Cm/Dm) |
|---|---|---|---|---|---|---|---|---|---|---|
| Gradko | 20% TEA in water | 2019 | R | Dudley MBC | 12 | 33 | 32 | 4.5% | G | **0.96** |
| Gradko | 20% TEA in water | 2019 | R | Dudley MBC | 12 | 44 | 42 | 3.9% | G | **0.96** |
| Gradko | 20% TEA in water | 2019 | UB | Dudley MBC | 12 | 23 | 19 | 19.8% | G | **0.83** |
| Gradko | 20% TEA in water | 2019 | UB | Eastleigh Borough Council | 12 | 24 | 26 | -7.1% | G | **1.08** |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 12 | 34 | 27 | 23.7% | P | **0.81** |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 11 | 40 | 44 | -10.5% | G | **1.12** |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 10 | 32 | 34 | -7.2% | G | **1.08** |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 12 | 30 | 25 | 18.1% | G | **0.85** |
| Gradko | 20% TEA in water | 2019 | R | Thurrock Borough Council | 12 | 29 | 24 | 21.6% | G | **0.82** |
| Gradko | 20% TEA in water | 2019 | R | Brighton & Hove City Council | 11 | 45 | 46 | -1.3% | G | **1.01** |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 40 | 33 | 21.0% | G | **0.83** |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 44 | 45 | -2.2% | G | **1.02** |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 28 | 26 | 5.4% | G | **0.95** |
| Gradko | 20% TEA in water | 2019 | UB | Southampton City Council | 12 | 30 | 28 | 8.6% | G | **0.92** |
| Gradko | 20% TEA in water | 2019 | UB | Liverpool City Council | 12 | 20 | 19 | 1.7% | G | **0.98** |
| Gradko | 20% TEA in water | 2019 | R | Ards and North Down Borough Council | 12 | 33 | 25 | 31.1% | G | **0.76** |
| Gradko | 20% TEA in water | 2019 | R | Eastleigh Borough Council | 12 | 25 | 26 | -3.3% | G | **1.03** |
| Gradko | 20% TEA in water | 2019 | R | Lisburn & Castlereagh City Council | 12 | 28 | 22 | 28.3% | G | **0.78** |
| Gradko | 20% TEA in water | 2019 | | **Overall Factor[3] (30 studies)** | | | | **Use** | | **0.92** |

The following tool was used to distance calculate $NO_2$ levels on the A2 where they were not on the façade of the nearest relevant exposure.

http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html