Ards and North Down Borough Council

# 2015 Updating and Screening Assessment for

# Ards and North Down Borough Council

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

December 2015

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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 so as 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. The last updating and screening assessment of air quality was undertaken in 2012 with two interim progress reports.

This report is the 2015 USA 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.

Ards Borough Council was situated east of Belfast on the shores of Strangford Lough and an area of outstanding natural beauty, it covered 140 square miles, bounded by 90 miles of coastline, with a population of approximately 78,600. North Down Borough Council also situated east of Belfast was geographically one of the smallest Council areas in Northern Ireland, but was regarded as economically one of the wealthiest, with a population of approximately 79,500**.** 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, with a population of 156,672. It has been made up from the previous borough council areas of Ards and North Down with minimal changes to the boundaries.

This USA report identified no exceedances with relevant exposure, of the Air Quality Strategy objectives for 2014 for any of the pollutants assessed. Monitoring will continue in 2015 on the main arterial route into Belfast city and hot spots around the borough, a number of new planning applications are presently pending and a large housing development in Bangor and a mixed shopping development in Newtownards approved.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Local authorities in Northern Ireland amalgamated on 1st April 2015 creating 11 new councils. Ards and North Down Borough Council is one of the new 11 councils, with a population of 156,672, it has been predominately made up from the previous council areas of Ards Borough Council and North Down Borough Council with minimal changes to the boundaries.

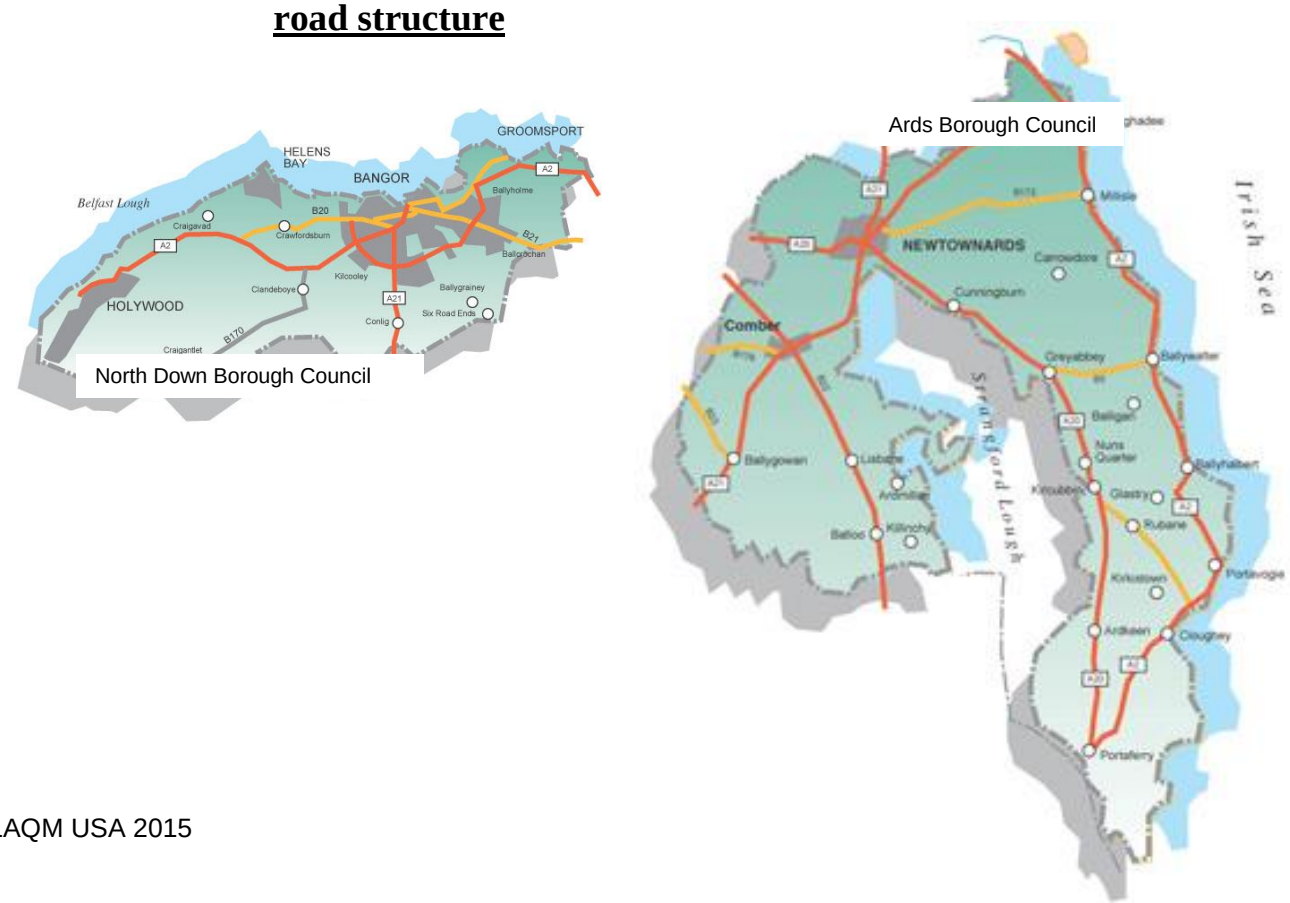
Ards Borough Council was situated east of Belfast on the shores of Strangford Lough, which is designated as an area of outstanding natural beauty and special scientific interest. The Borough comprised of 140 square miles, bounded by 90 miles of coastline. Ards remained one of the fastest growing boroughs with the Northern Ireland Statistics and Research Agency Mid 2012 population estimates standing at 78,600 representing 4.3% of the total population of Northern Ireland. The Borough was of mixed urban and rural character. The main town of Newtownards is located at the northern end of Strangford Lough and is a natural basin surrounded by hills. The prevailing wind direction is south-westerly. The other main centres of population include Comber, Donaghadee and Portaferry.

North Down Borough Council, was geographically one of the smallest Council areas in Northern Ireland, but was regarded as economically one of the wealthiest. Population had increased steadily over recent years. Northern Ireland Statistics and Research Agency Mid 2012 population estimates standing at 79,500.

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 44,000 vehicle movements per day at Holywood
The A2 has now been identified as 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 at several hotspots throughout Newtownards, Holywood and Comber town centers. All present monitoring within the Borough indicates that the objectives in the air quality strategy are not currently being exceeded.

## Figure 1.1 Map of the 11 new Council areas


## Figure 1.2 Ards Borough Council and North Down Borough Council road structure



## 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 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.

## 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 $\mu g/m^3$ (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 ($PM_{10}$) (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

The two tables below show a summary of previous reviews and assessments of air quality for Ards Borough Council and North Down Borough Council before they amalgamated on 1st April 2015.

**Table 1.2 Previous reports submitted by Ards Borough Council**

| ***Stages Completed*** | ***Exceedances Identified / Predicted*** | ***Areas Affected*** | ***AQMA's Declared*** |
|---|---|---|---|
| Stage 1 Report 2000 | CO2,NO2,SO2,PM10 | Newtownards | NO |
| Stage 2 & 3 Report 2004 | PM10 | Newtownards | YES |
| Progress report 2008 | None | Newtownards | NO |
| USA 2009 | None | Newtownards | NO |
| Progress report 2010 | None | Newtownards | NO |
| Progress report 2011 | None | Newtownards | NO |
| Update and Screening report 2012 | None | Newtownards | NO |
| Progress report 2013 | None | Newtownards | NO |
| Progress report 2014 | None | Newtownards | NO |

**Table 1.3 Previous reports submitted by North Down Borough Council**

| ***Stages Completed*** | ***Exceedances Identified / Predicted*** | ***Areas Affected*** | ***AQMA's Declared*** |
|---|---|---|---|
| Stage 1 2001 | PM10, SO2, NO2 | A2 Bangor to Belfast Road, Clandeboye Road Area. | No |
| Stage 2&3 2004 | PM10, SO2, NO2 | A2 Bangor to Belfast Road, Clandeboye Road Area. | No |
| Progress Report 2005 | None | A2 Bangor to Belfast Road, Clandeboye Road Area. | No |
| USA 2006 | None | A2 Bangor to Belfast Road, Clandeboye Road Area | No |
| Progress Report 2007 | None | A2 Bangor to Belfast Road, Clandeboye Road Area | No |
| Progress Report 2008 | NO2 | A2 Bangor to Belfast Road, | No |
| USA 2009 | None | A2 Bangor to Belfast Road, | No |
| Progress Report 2010 | None | A2 Bangor to Belfast Road, | No |
| Progress Report 2011 | None | A2 Bangor to Belfast Road, | No |
| USA 2012 | None | A2 Bangor to Belfast Road, | No |
| Progress Report 2013 | None | A2 Bangor to Belfast Road, | No |
| Progress Report 2014 | None | A2 Bangor to Belfast Road, | No |

# 2 New Monitoring Data

## 2.1 Summary of Monitoring Undertaken

### 2.1.1 Automatic Monitoring Sites

Ards and North Down Borough Council (ANDBC) has one automatic monitoring site on the A2 Holywood, monitoring $NO_2$ and $PM_{10}$. Air Quality Data Management (AQDM) were contracted to carry out the QA/QC data management for the site and the site audits were carried out by National Physical Laboratory (NPL). This includes data handling, ratification of data and 6 monthly site audits. The Air Quality technical officer visits the site on a weekly basis and calibrates the equipment on a fortnightly programme.
A co-location study for the $NO_2$ diffusion tubes is also carried out at this site. Results from this study were not submitted to the national data base in 2014 due to the analytical lab changing mid-year

See Appendix A: Details of Quality Assurance and Quality Control

**Figure 2.1 Position of the air monitoring sites within ANDBC**

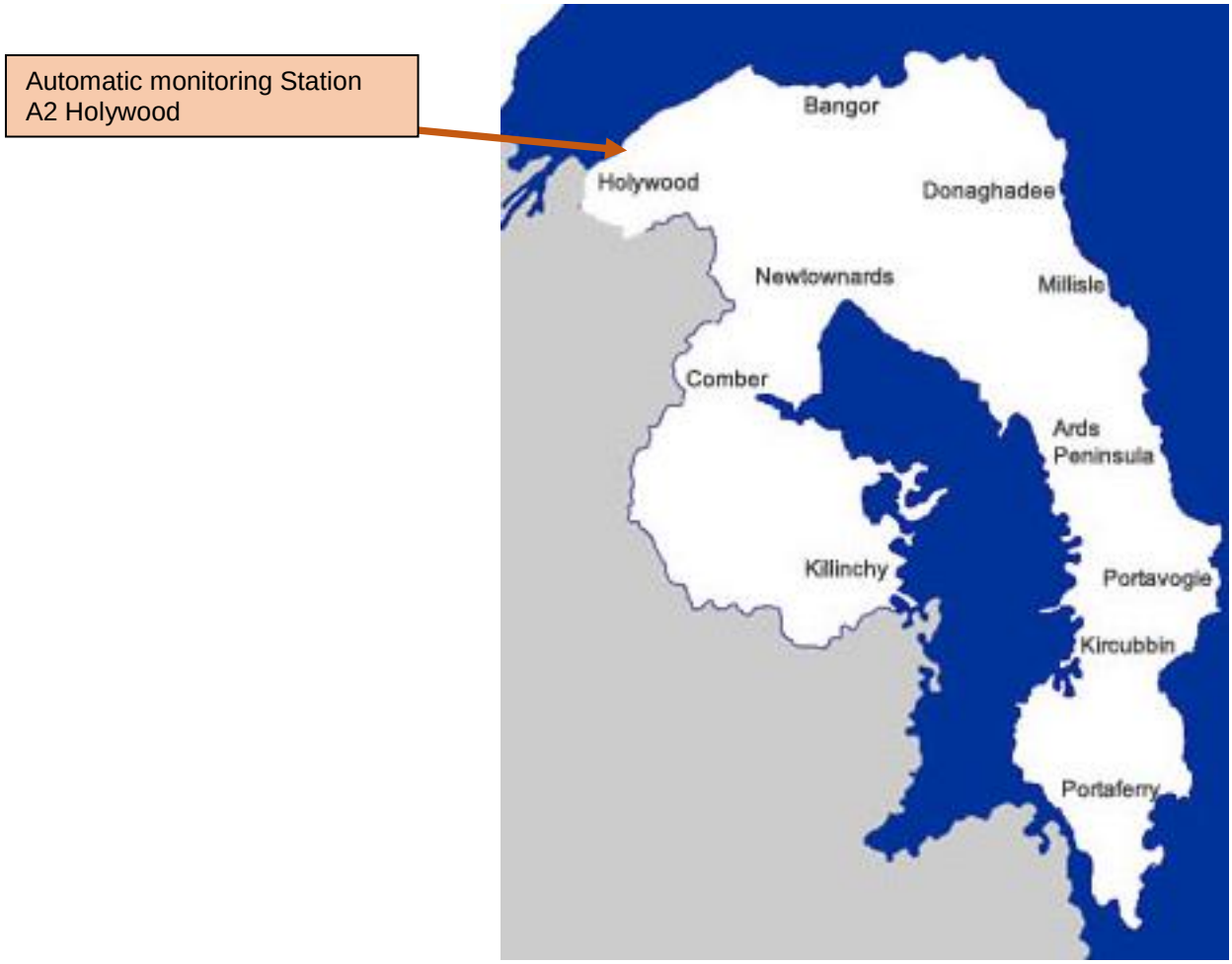


**Figure 2.2 Position of Automatic Monitoring Site on the A2 Holywood**

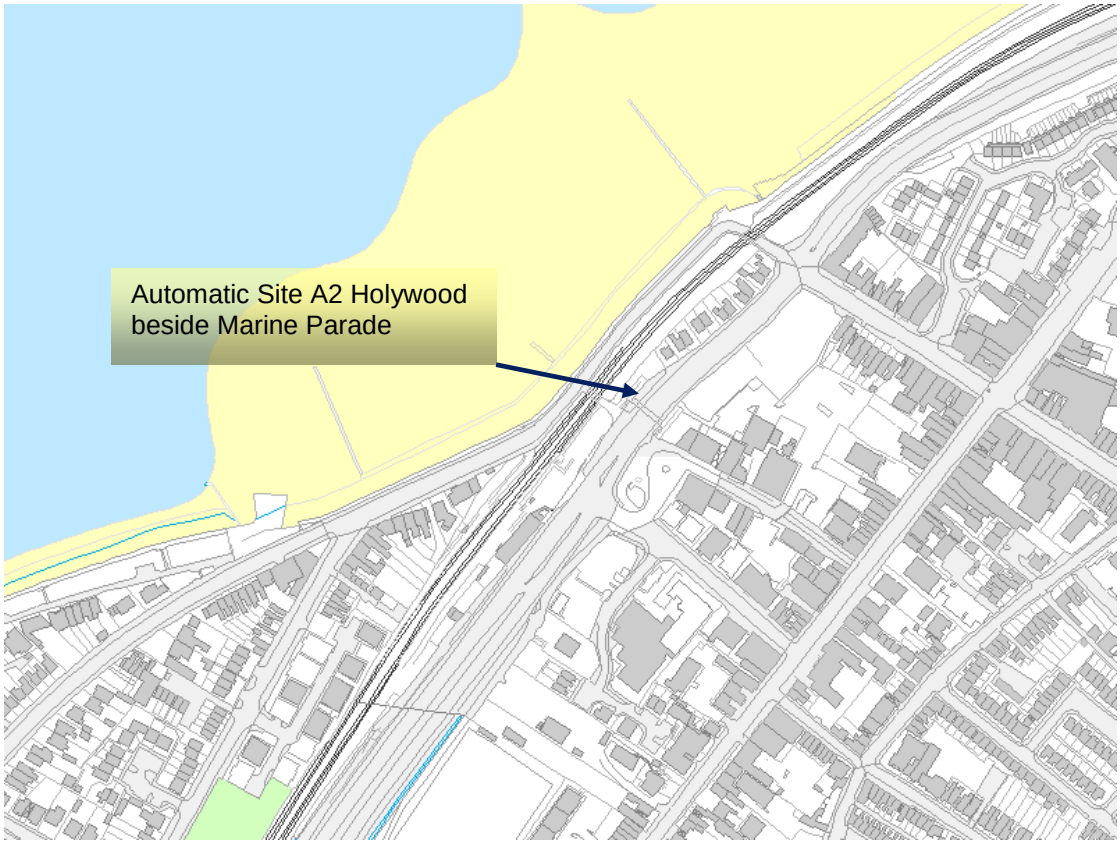



**Figure 2.3 Picture of Automatic Monitoring Station A2 Holywood**

**Table 2.1 Details of Automatic Monitoring Sites**

| Site Name | Site Type | Irish Grid Ref | Irish Grid Ref | Pollutants Monitored | In AQMA? | Monitoring Technique | Relevant Exposure? *(Y/N with distance (m) to relevant exposure)* | Distance to kerb of nearest road *(N/A if not applicable)* | Does this location represent worst-case exposure? |
|---|---|---|---|---|---|---|---|---|---|
| Marine Parade Holywood A2 | Roadside | X339481 | Y379328 | $PM_{10}$, $NO_2$ | NO | TEOM Chemiluminescence | YES 30m | 4.6M | YES |

### 2.1.2 Non-Automatic Monitoring Sites

Ards and North Down Borough Council has 13 $NO_2$ diffusion tubes at roadside and background sites. Five are positioned along the A2 main arterial route into Belfast on facades of the closest dwellings to the roadside, the remainder of the tubes are a relevant exposure at various hotspots in Newtownards, Holywood and Comber. A co-location study is carried out at the automatic site in Holywood and a background site is monitored from the A2 and Newtownards. The results of the co-located study were unable to be submitted into the national data base as the analytical lab changed mid-year. The diffusion tube studies for the past five years do not show any particular trends. (See Fig. 2.9. Annual variation is more likely to be as a result of climatic conditions rather than changes in emissions. All other monitoring has shown results within the objectives.

The $NO_2$ diffusion tubes were supplied by Eurofins Public Analyst Scientific Services and analysed by ESG (Environmental Scientifics Group) for the first six month in 2014. From the 1st July 2014 the tubes were supplied by Worcestershire Scientific Services and analysed by Gradko Environmental.

The bias adjustment factor from the co-location study is **0.73.** This was calculated using the R&A support precision and accuracy spread sheet. A decision was made to apply this figure rather than the national average bias adjustment figure of 0.80. 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**

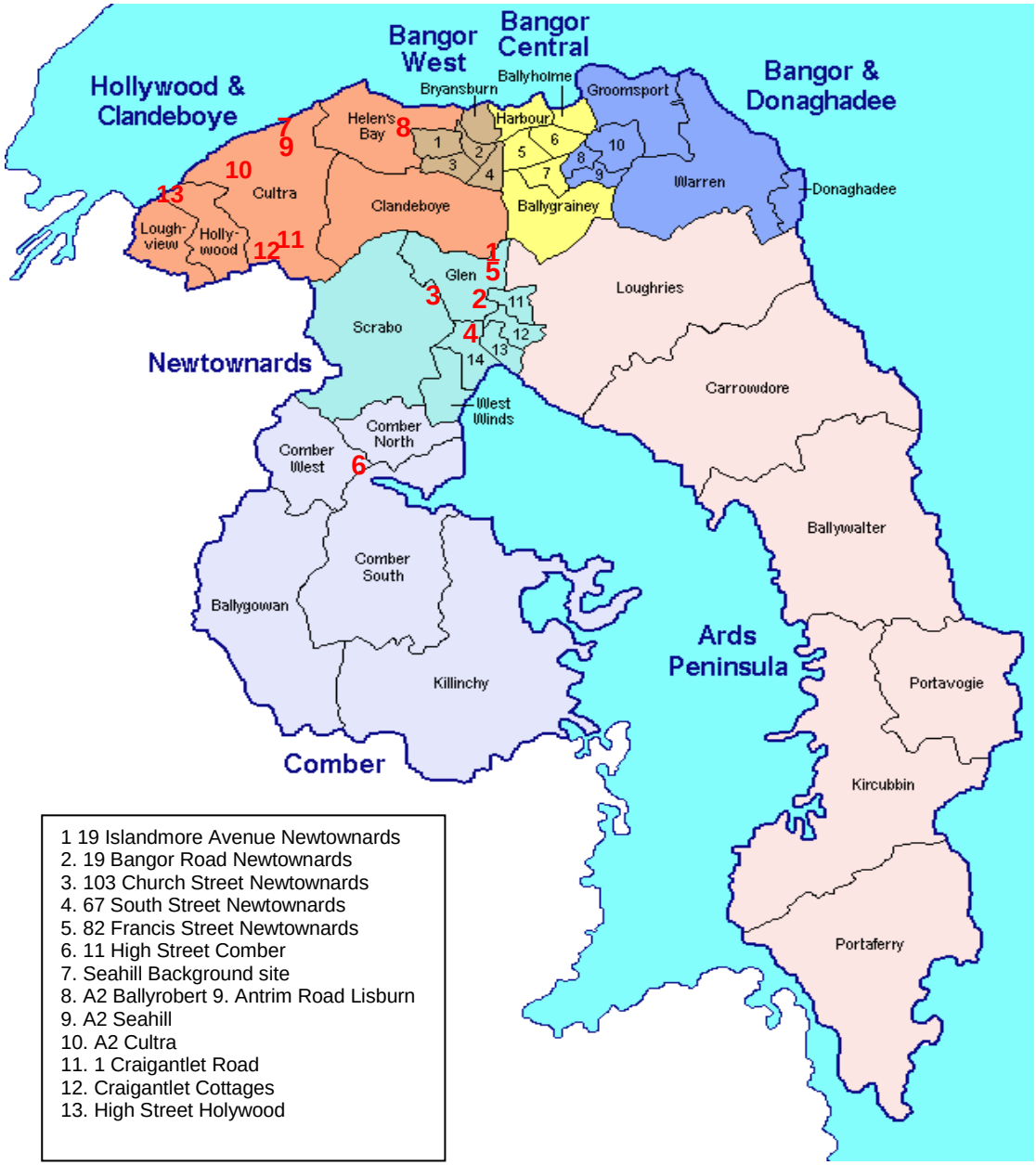


**Figure 2.5 Position of Diffusion tube sites 1-5 Newtownards**

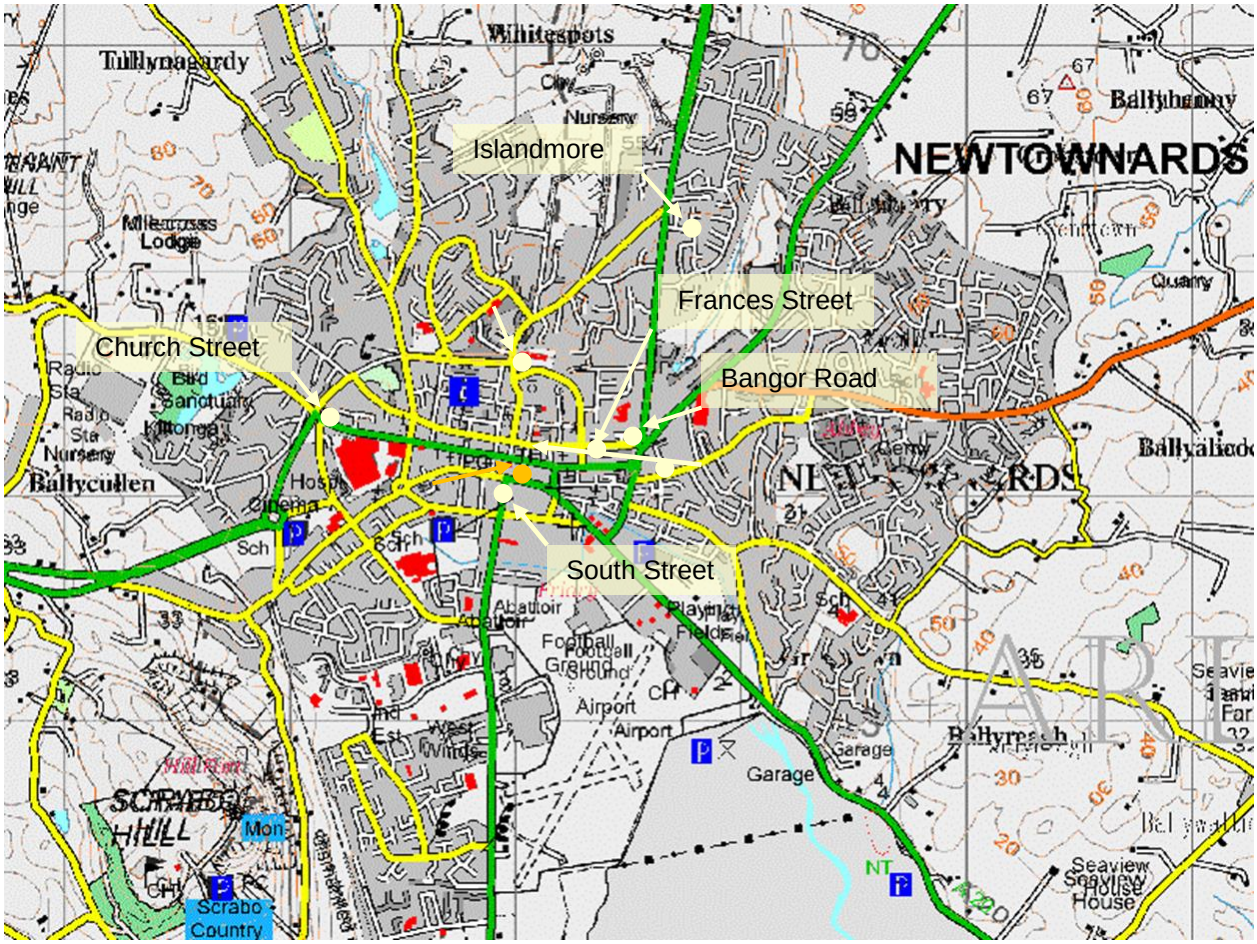
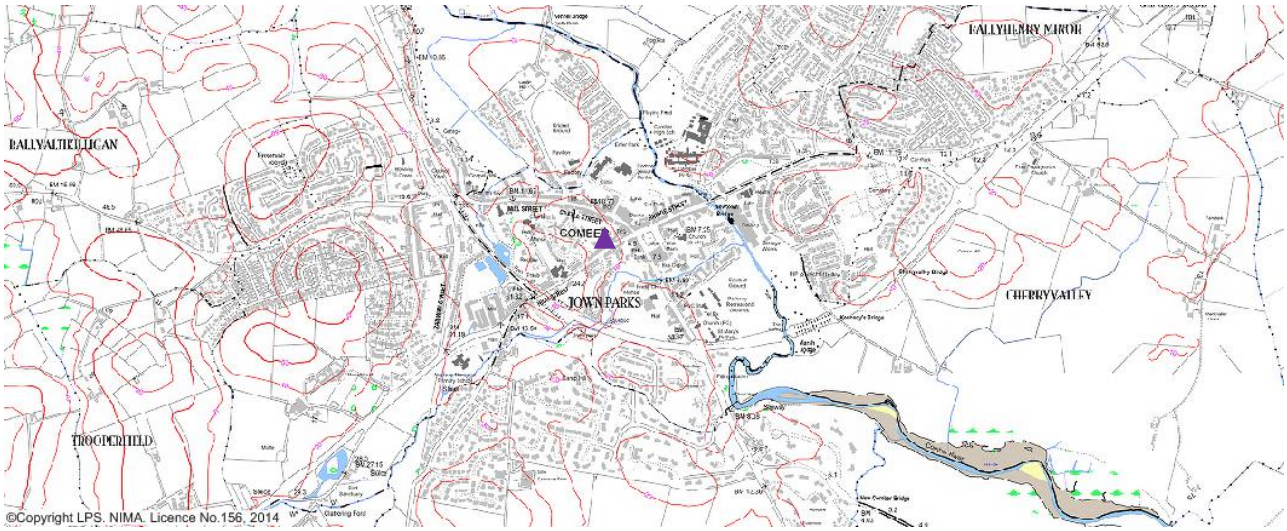
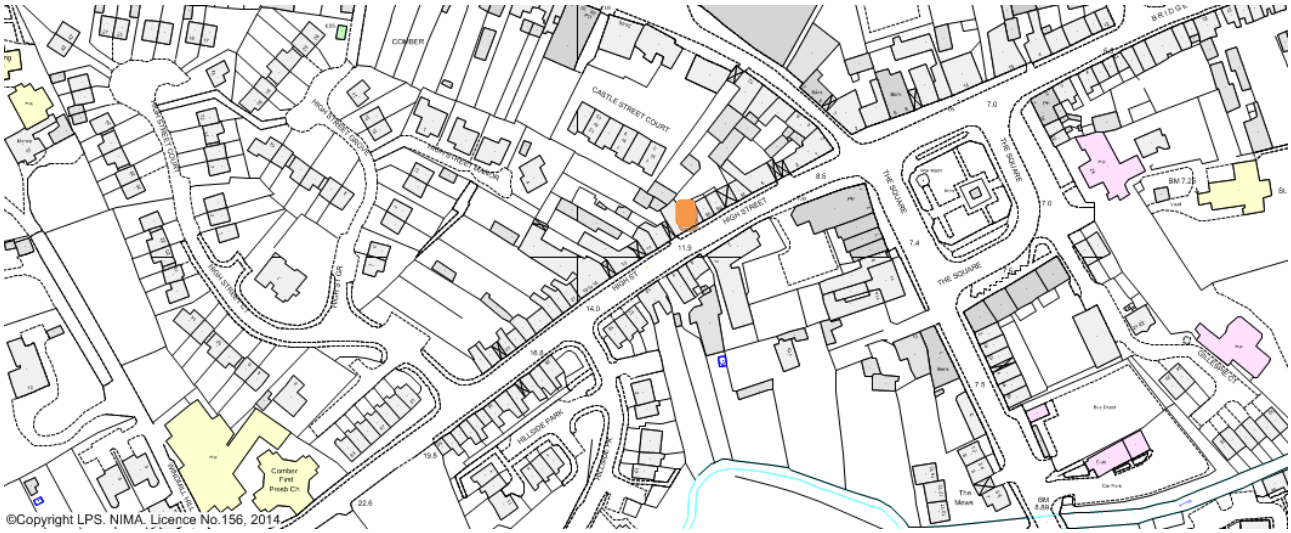



**Figure 2.6 Diffusion tube 6 in Comber**



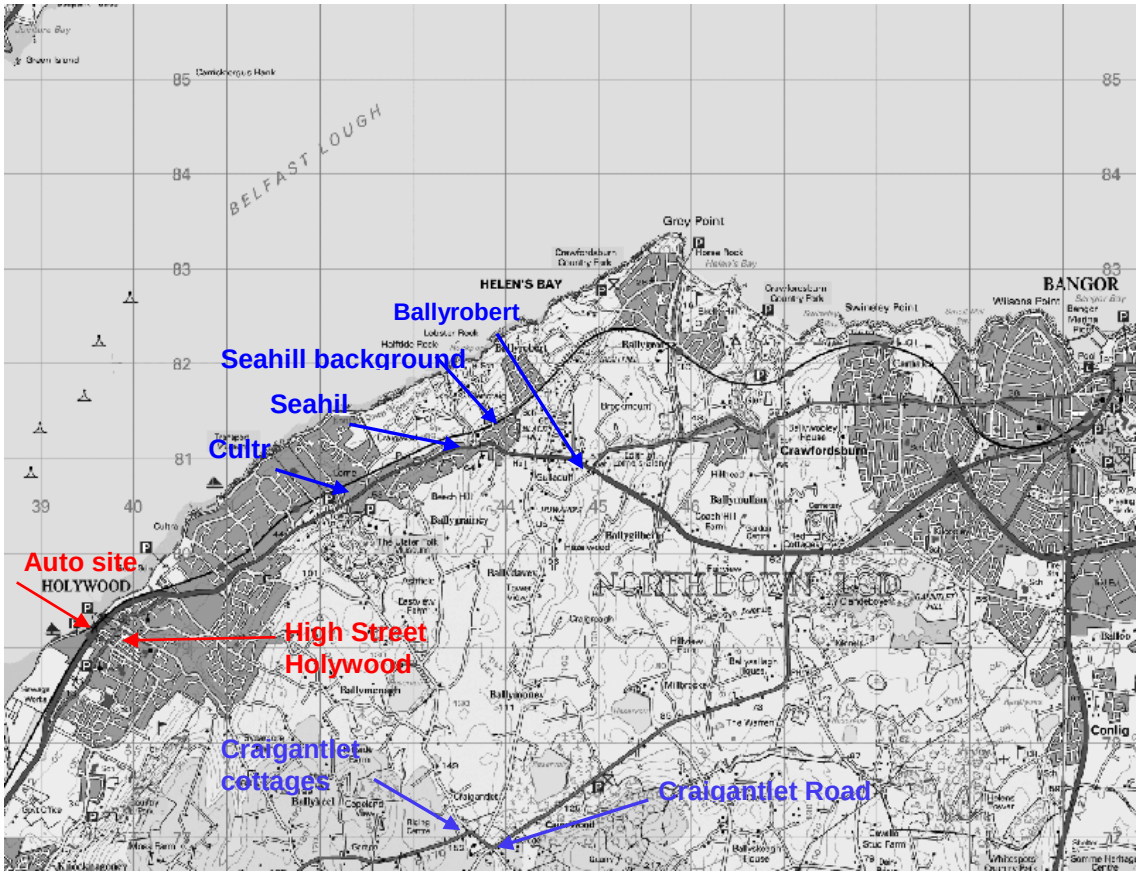

▲ Position of diffusion tube in Comber Village Centre

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




Position of diffusion tube High Street Comber

**Figure2.8 Position of tubes 7-13 on and near A2**



## Table 2.2 Details of Non-Automatic Monitoring Sites

| | Site Name | Site Type | Irish Grid Ref East | Irish Grid Ref North | Pollutants Monitored | In AQMA? | Is monitoring collocated with a Continuous Analyser (Y/N) | Relevant Exposure? *(Y/N with distance (m) to relevant exposure)* | Distance to kerb of nearest road *(N/A if not applicable)* | Does this location represent worst-case exposure ? |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 19 Islandmore Av Newtownards | Urban Background | 349847 | 375132 | $NO_2$ | N | N | N/A | >50m from busy road | N |
| **2** | 19 Bangor Rd Newtownards | Roadside | 349607 | 374267 | $NO_2$ | N | N | Y (1.5m) | 1.5m | Y |
| **3** | 103 Church St Newtownards | Roadside | 348123 | 374364 | $NO_2$ | N | N | Y (2.5m) | 1.5m | Y |
| **4** | 67 South St. Newtownards (b) | Roadside | 348238 | 373590 | $NO_2$ | N | N | Y (0.5m) | 1.5m | Y |
| **5** | 82 Frances St. Newtownards | Roadside | 349321 | 369201 | $NO_2$ | N | N | Y (0.5) | 1.5m | Y |
| **6** | 11 High St Comber | Roadside | 345827 | 369201 | $NO_2$ | N | N | Y (0.5) | 1.5m | Y |
| **7** | Seahill Background site | Urban Background | 344128 | 381294 | $NO_2$ | N | N | N\A | 250m | N |
| **8** | A2 Ballyrobert | Roadside | 345002 | 380823 | $NO_2$ | N | N | Y (<1m) | 3m | Y |
| **9** | A2 Seahill | Roadside | 343545 | 381102 | $NO_2$ | N | N | Y (<1m) | 10m | Y |
| **10** | A2 Cultra | Roadside | 342475 | 380672 | $NO_2$ | N | N | Y (<1m) | 6.3m | Y |
| **11** | 1 Craigantlet Road | Roadside | 343929 | 376920 | $NO_2$ | N | N | Y (<1m) | 1.5m | Y |
| **12** | Craigantlet Cottages | Roadside | 343632 | 377049 | $NO_2$ | N | N | Y(20m) | 0.5m | Y |
| **13** | High Street Holywood | Roadside | 339785 | 379119 | $NO_2$ | N | N | Y(20) | 1.5 | Y |

## 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 well 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

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 2014 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 Captu for period of monitoring %[a] | Valid Data Capture 2014 | Annual Mean Concentration μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010 | 2011 | 2012 | 2013 | 2014 |
| A2 Holywood | Roadside | NO | N/A | 88.2% | 34 | 31 | 33 | 29 | 30 |

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

Results have been consistent since installation of the automatic station. There were a small number of exceedances of the hourly mean in previous years, this was consistent of periods of unsettled weather. A high number of exceedances of the hourly mean were recorded in 2012, due to severe weather conditions a number of cars parked around the monitoring station during this period to gain access to the train, it is believed this contributed to the high hourly means.

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

| Site ID | Site Type | Within AQMA ? | Valid Data Captu for period of monitoring %[a] | Valid Data Capture 2014 | Number of Exceedances of Hourly Mean (200 μg/m$^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2010 | 2011 | 2012 | 2013 | 2014 |
| A2 Holywood | Roadside | NO | N/A | 88.2% | 8 | 0 | 18 | 8 | 0 |

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**Diffusion Tube Monitoring Data**

Results of the $NO_2$ diffusion tube sites, situated within the borough are shown below in Table 2.5. This includes new sites established in 2013, following proposed new road structure, by local residents had concerns of increased use of HGV traffic.
They are sited in accordance with the technical guidance LAQM.TG (09)
A diffusion tube co-location study has been carried out at the Dundonald automatic site. The results of this study were unable to be submitted into the national data base as the analytical lab changed mid-year. The 2014 local bias was **0.73**. A decision was made to apply this local figure, rather than the national figure of **0.80.**
All diffusion tube sites are below the objective.
Details of the QA/QC for the diffusion tubes and the reason for the use of the bias adjustment factor **0.73** can be found in Appendix A

Trends for the 13 diffusion tube sites within the Council area are shown in figure 2.9

**Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014**

| Site ID | Location | Site Type | Within AQMA? | Triplicate or Collocated Tube | Data Capture 2014 (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 = 0.73) 2014 (μg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| **1** | 19 Islandmore Av Newtownards | Background | N | single | 12 months | N/A | N | 9 |
| **2** | 19 Bangor Rd Newtownards | Roadside | N | single | 12 months | N/A | N | 23 |
| **3** | 103 Church St Newtownards | Roadside | N | single | 11 months | N/A | N | 22 |
| **4** | 67 South St. Newtownards (b) | Roadside | N | single | 12 months | N/A | N | 22 |
| **5** | 82 Frances St. Newtownards | Roadside | N | single | 12 months | N/A | N | 22 |
| **6** | 11 High St Comber | Roadside | N | single | 11 months | N/A | N | 27 |
| **7** | Seahill Background site | Roadside | N | single | 11 months | N/A | N | 8 |
| **8** | A2 Ballyrobert | Background | N | single | 11 months | N/A | N | 24 |
| **9** | A2 Seahill | Roadside | N | single | 11 months | N/A | N | 10 |
| **10** | A2 Cultra | Roadside | N | single | 11 months | N/A | N | 17 |
| **11** | 1 Craigantlet Road | Roadside | N | single | 11 months | N/A | N | 21 |
| **12** | Craigantlet Cottages | Roadside | N | single | 11 months | N/A | N | 15 |
| **13** | High Street Holywood | Roadside | N | single | 11 months | N/A | N | 23 |

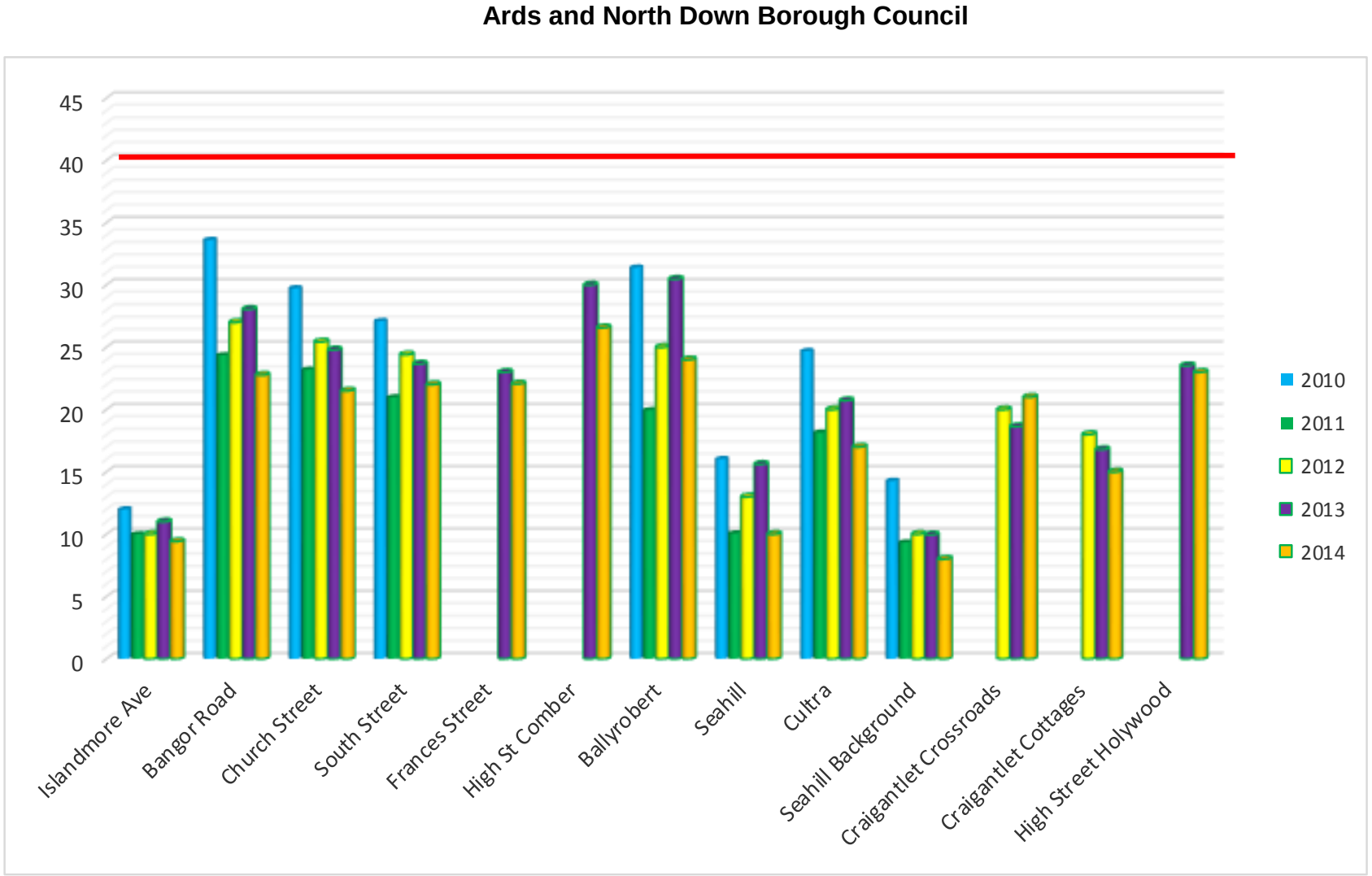
**Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)**

| Site ID | Site Type | Within AQMA? | Annual mean concentration (adjusted for bias) μg/m$^3$ | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2010 (Bias Adjustment Factor = 0.84) | 2011 (Bias Adjustment Factor = 0.71) | 2012* (Bias Adjustment Factor = 0.75) | 2013* (Bias Adjustment Factor = 0.80) | 2014 (Bias Adjustment Factor = 0.73) |
| **1** | 19 Islandmore Av Newtownards | Background | 12 | 10 | 10 | 11 | 9 |
| **2** | 19 Bangor Rd Newtownards | Roadside | 34 | 24 | 27 | **28** | 23 |
| **3** | 103 Church St Newtownards | Roadside | 30 | 23 | 25 | 25 | 22 |
| **4** | 67 South St. Newtownards (b) | Roadside | 27 | 21 | 24 | 24 | 22 |
| **5** | 82 Frances St. Newtownards | Roadside | | | | 23(a) | 22 |
| **6** | 11 High St Comber | Roadside | | | | 30(a) | 27 |
| **7** | Seahill Background site | Background | 14 | 9 | 10 | 10 | 8 |
| **8** | A2 Ballyrobert | Roadside | 31 | 20 | 25 | 30 | 24 |
| **9** | A2 Seahill | Roadside | 16 | 10 | 13 | 16 | 10 |
| **10** | A2 Cultra | Roadside | 25 | 18 | 20 | 21 | 17 |
| **11** | 1 Craigantlet Road | Roadside | | | 20 | 19 | 21 |
| **12** | Craigantlet Cottages | Roadside | | | 18 | 17 | 15 |
| **13** | High Street Holywood | Roadside | | | | 24 | 23 |

**(a)** These sites were new in 2013 and had short term data periods and therefore the results have be annualised in accordance with **LAQM.TG(09)**

**Figure 2.9 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 $PM_{10}$

Automatic monitoring of $PM_{10}$ using a TEOM carried out at the Holywood site, continued in 2014 to be below the air quality objective. . AQDM were contracted to carry out the QA/QC for the site and ratify the data. Site audits were carried out by NPL and Supportingu were employed to service and maintain the site. Summaries of this data, with regard to 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 of $PM_{10}$: Comparison with Annual Mean Objective**

| Site ID | Site Type | Within AQMA ? | Valid Data Capture for monitoring Period %[a] | Valid Data Capture 2014 %[b] | Confirm Gravimetric Equivalent (Y or NA) | Annual Mean Concentration μg/m³ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2010 | 2011 | 2012 | 2013 | 2014 |
| A2 Holywood | Roadside | N | N/A | 99.2% | Y | 28.7 | 26.3 | 19 | 21 | 19 |

**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 2014 %[b] | Confirm Gravimetric Equivalent | Number of Exceedences of 24-Hour Mean (50 μg/m³) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2010 | 2011 | 2012 | 2013 | 2014 |
| A2 Holywood | Roadside | N | N/A | 99.2% | Y | 8 | 6 | 6 | 7 | 2 |

**Figure 2.5 Trends in Annual Mean $PM_{10}$ Concentrations**

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

### 2.2.3 Sulphur Dioxide

Ards and North down Borough Council did not carry out any monitoring of $SO_2$ in 2014

### 2.2.4 Benzene

No monitoring of Benzene was carried out in 2014.

### 2.2.5 Other pollutants monitored

In 2014 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 area. Concentrations are all below the objectives; 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

Ards and North Down Borough 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

Ards and North Down Borough 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.

Ards and North Down Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

## 3.4 Junctions

Ards and North Down Borough 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

Ards and North Down Borough that there are no new/proposed roads.

## 3.6 Roads with Significantly Changed Traffic Flows

Ards and North Down Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

## 3.7 Bus and Coach Stations

Ards and North Down Borough confirms that there are no relevant bus stations in the Local Authority area.

# 4 Other Transport Sources

## 4.1 Airports

Ards and North Down Borough confirms that there are no airports in the Local Authority area.

## 4.2 Railways (Diesel and Steam Trains)

### 4.2.1 Stationary Trains

Ards and North Down Borough 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

Ards and North Down Borough 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)

Ards and North Down Borough 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

Ards and North Down Borough 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

Ards and North Down Borough 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

Ards and North Down Borough 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

Ards and North Down Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

## 5.4 Poultry Farms

Ards and North Down Borough Council confirms that there are no poultry farms meeting the specified criteria.

# 6 Commercial and Domestic Sources

## 6.1 Biomass Combustion – Individual Installations

Ards and North Down Borough Council confirms that there are no biomass combustion plant in the Local Authority area.

## 6.2 Biomass Combustion – Combined Impacts

Ards and North Down Borough Council confirms that there are no biomass combustion plant in the Local Authority area.

## 6.3 Domestic Solid-Fuel Burning

Ards and North Down Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

# 7 Fugitive or Uncontrolled Sources

Ards and North Down Borough 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

No monitoring sites at relevant exposure within the Council Area have shown exceedances of the air quality objectives, although ANDBC intend siting $NO_2$ diffusion tubes in 2015 on the façade of an apartment block built roadside near the A2 automatic site. A large development is in the proposal stage of planning for a mixed commercial and residential use on ground opposite the monitoring site and within 4M of the roadside. Planning has also been approved for approximately1200 new residual properties in the Rathgael area of Bangor which may contribute to a higher traffic flow on the A2 to Belfast.

## 8.2 Conclusions from Assessment of Sources

No new sources were identified.

## 8.3 Proposed Actions

This 2015 Update and Screening Assessment 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.
Monitoring sites are sited in accordance with the guidance and at relevant exposure, no new significant sites have been identified, although there is a new large residential develop site planned in the Bangor area and a new mixed commercial development site planned in the Newtownards area.
A new road is proposed in the Craigantlet area and a new supermarket proposed in the Newtownards area therefore Ards and North Down Borough Council intends to continue monitoring $NO_2$ and $PM_{10}$ in 2015 and submit a progress report in 2016.

# 9 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 (2009) Part IV of the Environment Act 1995. Local Air Quality Management: Technical
Guidance LAQM.TG(09). Guidance prepared by the Department for Environment, Food and Rural Affairs and the Devolved Administrations, February 2009

# Appendix A:

## QA/QC Data of automatic sites

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. Audits of the site were carried out by NPL on a six monthly basis.
Supportingu 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 2014

**These data have been fully ratified by AQDM to LAQM TG(09) standards**

## Air Quality Statistics (A2 Holywood)

| Pollutant | $PM_{10}$+ | $PM_{10}$* | $NO_2$ | NO | NOx |
|---|---|---|---|---|---|
| Number Very High # | 0 | | 0 | | |
| Number High # | 0 | | 0 | | |
| Number Moderate # | 2 | | 0 | | |
| Number Low # | 359 | | 7723 | | |
| Maximum 15-minute mean | - | 190 µg $m^{-3}$ | 172 µg $m^{-3}$ | 453 µg $m^{-3}$ | 825 µg $m^{-3}$ |
| Maximum hourly mean | 98 µg $m^{-3}$ | 91 µg $m^{-3}$ | 143 µg $m^{-3}$ | 373 µg $m^{-3}$ | 695 µg $m^{-3}$ |
| Maximum running 8-hour mean | 74 µg $m^{-3}$ | 65 µg $m^{-3}$ | 109 µg $m^{-3}$ | 197 µg $m^{-3}$ | 390 µg $m^{-3}$ |
| Maximum running 24-hour mean | 58 µg $m^{-3}$ | 39 µg $m^{-3}$ | 78 µg $m^{-3}$ | 119 µg $m^{-3}$ | 260 µg $m^{-3}$ |
| Maximum daily mean | 57 µg $m^{-3}$ | 36 µg $m^{-3}$ | 76 µg $m^{-3}$ | 107 µg $m^{-3}$ | 233 µg $m^{-3}$ |
| 99.8th percentile of hourly means† | | | 118 µg $m^{-3}$ | - | |
| Average | 19 µg $m^{-3}$ | 17 µg $m^{-3}$ | 30 µg $m^{-3}$ | 25 µg $m^{-3}$ | 68 µg $m^{-3}$ |
| Data capture | 99.2 % | 99.3 % | 88.2% | 88.2 % | 88.2 % |

# Daily Air Quality Index (DAQI) as defined by COMEAP January 2012 and revised April 2013
† Percentile required for data capture < 90%
+ $PM_{10}$ 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 Exceedences (A2 Holywood)

| 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 $m^{-3}$ | 2 | 2 | 35 days | No |
| $PM_{10}$ Particulate Matter (Gravimetric) | Annual mean > 40 µg $m^{-3}$ | 19 µg $m^{-3}$ | 0 | - | - | No |
| Nitrogen Dioxide | Annual mean > 40 µg $m^{-3}$ | 30 µg $m^{-3}$ | 0 | | | No |
| Nitrogen Dioxide | Hourly mean > 200 µg $m^{-3}$ | 143 µg $m^{-3}$ | 0 | 0 | 18 hours | No |

## QA/QC of Diffusion Tube Monitoring

From 1st January 2014 until the 30th June 2014 the $NO_2$ tubes were supplied by ESG (Environmental Scientific Group) in Didcot Oxfordshire, for Ards Borough Council and North Down Borough Council. Their preparation method is listed below.

### Nitrogen Dioxide Diffusion Tube Analysis Report

The samples have been analysed in accordance with ESG's standard operating procedure HS/WI/1015 issue 15. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient $NO_2$ Monitoring: Practical Guidance.'

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection. In the WASP intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, Scientifics is currently ranked as a Category Good laboratory.This result can be found on the LAQM Support Web site
http://laqm.defra.gov.uk/diffusion-tubes/precision.html

## Diffusion Tube Bias Adjustment Factors

### Factor from Local Co-location Studies

A co-location study was carried out at the Holywood site and a decision was made to apply this bias adjustment factor **0.73** to all the $NO_2$ diffusion tubes. The bias adjustment factor calculation of these is shown below.
They were calculated using the R&A support precision and accuracy spreadsheet.

http://laqm.defra.gov.uk/bias-adjustment-factors/co-location-data.html
The lab changed mid-year therefore two separate calculations were calculated and an average of these taken.

| Laboratory | Dates | Bias |
|---|---|---|
| Environmental Scientific Group | !st January 2014-<br>1st July2014 | 0.73 |
| Worcestershire Scientific Services | 1st July 2014-<br>30th December 2014 | 0.73 |
| | **Average** | **0.73** |

## Eurofins 2014

### Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

| Diffusion Tubes Measurements | | | | | | | | | | Automatic Method | | Data Quality Check | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period | Start Date dd/mm/yyyy | End Date dd/mm/yyyy | Tube 1 µgm$^{-3}$ | Tube 2 µgm$^{-3}$ | Tube 3 µgm$^{-3}$ | Triplicate Mean | Standard Deviation | Coefficient of Variation (CV) | 95% CI of mean | Period Mean | Data Capture (% DC) | Tubes Precision Check | Automatic Monitor Data |
| 1 | 07/02/2014 | 04/03/2014 | 42.1 | 46.6 | 51.2 | 47 | 4.6 | 10 | 11.3 | 30.1 | 99.8 | Good | Good |
| 2 | 04/03/2014 | 08/04/2014 | 37.1 | 37.3 | 38.9 | 38 | 1.0 | 3 | 2.5 | 30.7 | 98.1 | Good | Good |
| 3 | 08/04/2014 | 29/04/2014 | 39.2 | 38.0 | 35.8 | 38 | 1.7 | 5 | 4.3 | 25 | 42.9 | Good | or Data Capture |
| 4 | 29/04/2014 | 27/05/2014 | 39.1 | 39.5 | 38.7 | 39 | 0.4 | 1 | 1.0 | 28.9 | 86.9 | Good | Good |
| 5 | 27/05/2014 | 01/07/2014 | 26.5 | 29.1 | 29.8 | 28 | 1.7 | 6 | 4.3 | 27 | 52.9 | Good | or Data Capture |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Poor Overall DC

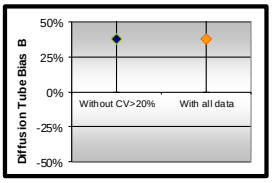
Site Name/ ID:

Precision: 5 out of 5 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

**Accuracy (with 95% confidence interval) without periods with CV larger than 20%**
Bias calculated using 3 periods of data
Bias factor A: 0.73 (0.57 - 1)
Bias B: 38% (0% - 76%)
Diffusion Tubes Mean: 41 µgm$^{-3}$
Mean CV (Precision): 4
Automatic Mean: 30 µgm$^{-3}$
Data Capture for periods used: 95%
Adjusted Tubes Mean: 30 (23 - 41) µgm$^{-3}$

**Accuracy (with 95% confidence interval) WITH ALL DATA**
Bias calculated using 3 periods of data
Bias factor A: 0.73 (0.57 - 1)
Bias B: 38% (0% - 76%)
Diffusion Tubes Mean: 41 µgm$^{-3}$
Mean CV (Precision): 4
Automatic Mean: 30 µgm$^{-3}$
Data Capture for periods used: 95%
Adjusted Tubes Mean: 30 (23 - 41) µgm$^{-3}$




Jaume Targa, for AEA
Version 04 - February 2011

## Worcestershire

### Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

| Diffusion Tubes Measurements | | | | | | | | | | Automatic Method | | Data Quality Check | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period | Start Date dd/mm/yyyy | End Date dd/mm/yyyy | Tube 1 µgm$^{-3}$ | Tube 2 µgm$^{-3}$ | Tube 3 µgm$^{-3}$ | Triplicate Mean | Standard Deviation | Coefficient of Variation (CV) | 95% CI of mean | Period Mean | Data Capture (% DC) | Tubes Precision Check | Automatic Monitor Data |
| 1 | 01/07/2014 | 01/08/2014 | 30.9 | 30.9 | 32.6 | 31 | 1.0 | 3 | 2.4 | 27.2 | 73.5 | Good | or Data Captu |
| 2 | 01/08/2014 | 02/09/2014 | 25.7 | 25.9 | 25.5 | 26 | 0.2 | 1 | 0.5 | 16.9 | 99.9 | Good | Good |
| 3 | 02/09/2014 | 30/09/2014 | 36.2 | 39.1 | 40.2 | 39 | 2.1 | 5 | 5.1 | 33 | 99 | Good | Good |
| 4 | 30/09/2014 | 28/10/2014 | 43.3 | 40.2 | 43.7 | 42 | 1.9 | 5 | 4.8 | 29.6 | 94.2 | Good | Good |
| 5 | 28/10/2014 | 02/12/2014 | 42.6 | 53.8 | 55.4 | 51 | 7.0 | 14 | 17.3 | 35 | 99.9 | Good | Good |
| 6 | 02/12/2014 | 30/12/2014 | 49.0 | 44.0 | 40.0 | 44 | 4.5 | 10 | 11.2 | 33 | 99 | Good | Good |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Good Overall DC

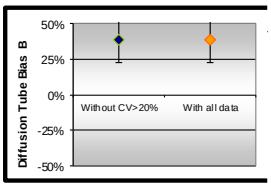
Site Name/ ID:

Precision: 6 out of 6 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

**Accuracy (with 95% confidence interval) without periods with CV larger than 20%**
Bias calculated using 5 periods of data
Bias factor A: 0.73 (0.65 - 0.82)
Bias B: 37% (21% - 53%)
Diffusion Tubes Mean: 40 µgm$^{-3}$
Mean CV (Precision): 7
Automatic Mean: 29 µgm$^{-3}$
Data Capture for periods used: 98%
Adjusted Tubes Mean: 29 (26 - 33) µgm$^{-3}$

**Accuracy (with 95% confidence interval) WITH ALL DATA**
Bias calculated using 5 periods of data
Bias factor A: 0.73 (0.65 - 0.82)
Bias B: 37% (21% - 53%)
Diffusion Tubes Mean: 40 µgm$^{-3}$
Mean CV (Precision): 7
Automatic Mean: 29 µgm$^{-3}$
Data Capture for periods used: 98%
Adjusted Tubes Mean: 29 (26 - 33) µgm$^{-3}$




Jaume Targa, for AEA
Version 04 - February 2011

The national bias adjustment factor was also calculated taking an average from the two labs, Environmental Scientific Group and Worcestershire scientific services resulting in a figure of **0.80**

This figures can be found on the LAQM support web site
http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

**Discussion of Choice of Factor to Use**

The national bias adjustment factor for Environmental Scientific Group/Worcestershire scientific services.is **0.80**
A decision was made to apply the local average bias adjustment figure of the two labs **0.73**

As Ards and North Down borough Council has confidence in the QA/QC of the local study and the lab changed mid-year this was deemed to be the more realistic figure, if the higher national figure was used all the monitoring sites would have been below the objective.