



# Ards and North Down Borough Council

## 2016 Air Quality Progress Report

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

October 2016



**Ards and North Down Borough Council**

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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 2015 with two interim progress reports 2013 and 2014.

This report is the 2016 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 2015 for any of the pollutants assessed with relevant exposure.

Monitoring will continue in 2016 on the main arterial route into Belfast City and hot spots around the Borough, a number of new planning applications are presently pending including a large housing development in Bangor and two in Newtownards. These have been examined by the Environmental Department and were found to have no significant impact on air quality. A mixed shopping development in Newtownards which planning was previously approved for has not continued to the development stage.

# Table of Contents

<b>Executive Summary .....</b>	<b>i</b>
<b>1 Introduction .....</b>	<b>1</b>
1.1 Description of Local Authority Area.....	1
1.2 Purpose of Progress Report .....	3
1.3 Air Quality Objectives .....	3
1.4 Summary of Previous Review and Assessments.....	5
<b>2 New Monitoring Data .....</b>	<b>6</b>
2.1 Summary of Monitoring Undertaken .....	6
2.2 Comparison of Monitoring Results with Air Quality Objectives .....	15
<b>3 New Local Developments .....</b>	<b>25</b>
<b>4 Planning Applications .....</b>	<b>26</b>
<b>5 Conclusions and Proposed Actions .....</b>	<b>27</b>
5.1 Conclusions from New Monitoring Data.....	27
5.2 Conclusions relating to New Local Developments .....	27
5.3 Proposed Actions.....	27
<b>6 References .....</b>	<b>28</b>

## List of Tables

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

Table 1.2 Previous reports submitted by Ards Borough Council

Table 1.3 Previous reports submitted by North Down Borough Council

Table 2.1 Details of Automatic Monitoring Sites

Table 2.2 Details of Non-Automatic Monitoring Sites

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

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

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2015

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2011 to 2015)

Table 2.7 Results of Automatic Monitoring of PM<sub>10</sub>: Comparison with Annual Mean Objective

Table 2.8 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour mean Objective

### List of Figures

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

Figure 1.2 Ards and North Down Borough Council area

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

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

Figure 2.7 Position of tube 6 in Comber village

Figure 2.8 Position of tubes 7-13 on and near A2

Figure 2.9 Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Sites

Figure 2.10 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

### Appendices

Appendix A QA/QC Data of automatic sites

QA/QC of Diffusion Tube Monitoring

# **1 Introduction**

## **1.1 Description of Local Authority Area**

Local authorities in Northern Ireland amalgamated on 1<sup>st</sup> 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. 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.

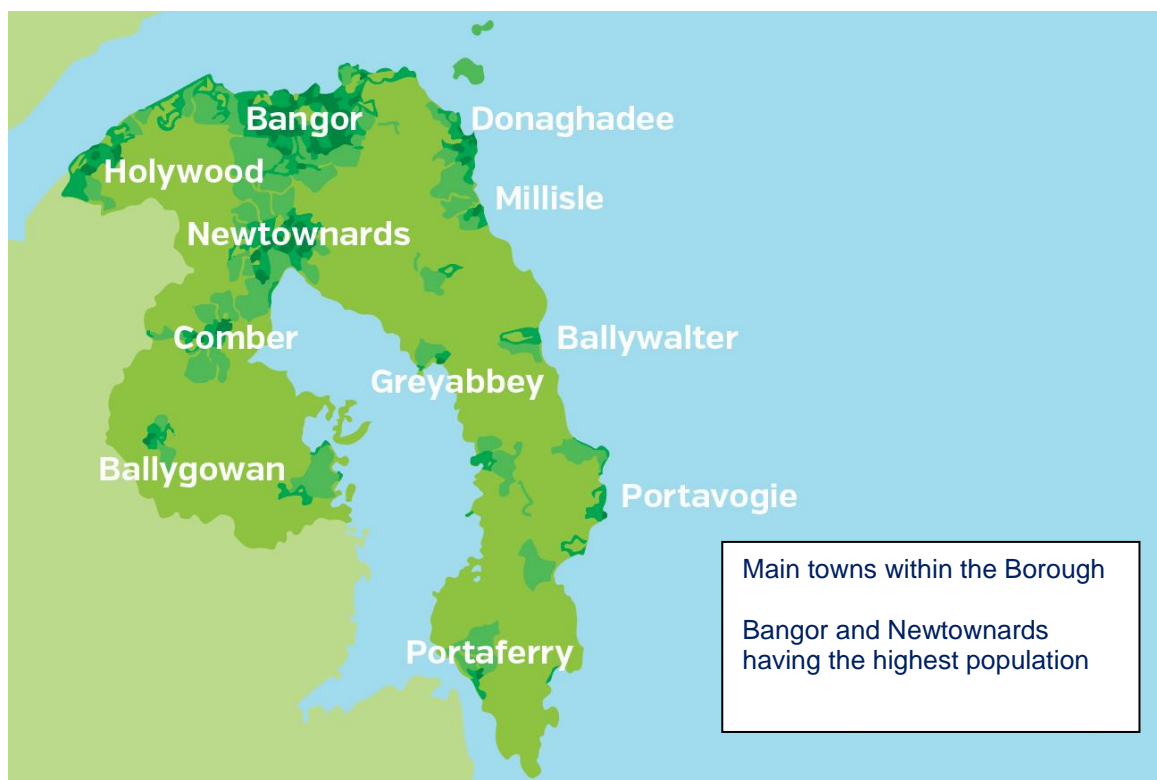
Air Quality in ANDBC is generally good as there is good ventilation from sea breezes. There are few industrial processes in the area that are significantly detrimental to air quality and heavy fuel oil is not widely used for heat generation, solid fuel is still very popular as a secondary fuel. However, 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 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<sub>10</sub>. 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 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 or not the air quality objectives are likely to be achieved. Where exceedences 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 exceedence 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 microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedences 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 <sup>3</sup>	Running annual mean	31.12.2003
	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3-butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m <sup>3</sup>	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m <sup>3</sup>	Annual mean	31.12.2004
	0.25 µg/m <sup>3</sup>	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate matter (PM <sub>10</sub> ) (gravimetric)	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m <sup>3</sup>	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , 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 1<sup>st</sup> 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.

## 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 Hollywood, monitoring NO<sub>2</sub> and PM<sub>10</sub>. 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<sub>2</sub> diffusion tubes is also carried out at this site. Results from this study were submitted to the national data base in 2015.

Results and correction factors are detailed in Appendix A.

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

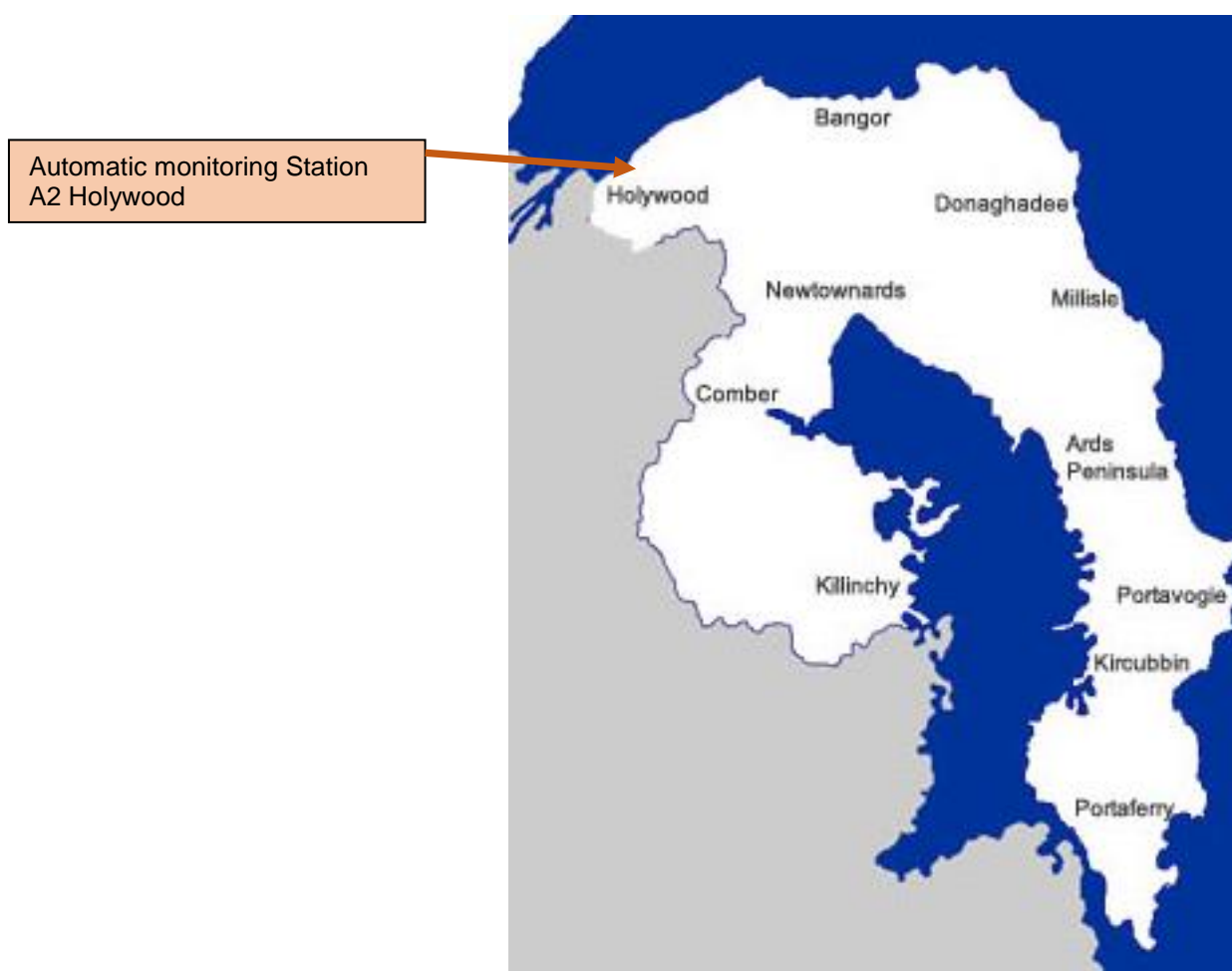


Figure 2.2 Position of Automatic Monitoring Site on the A2 Hollywood

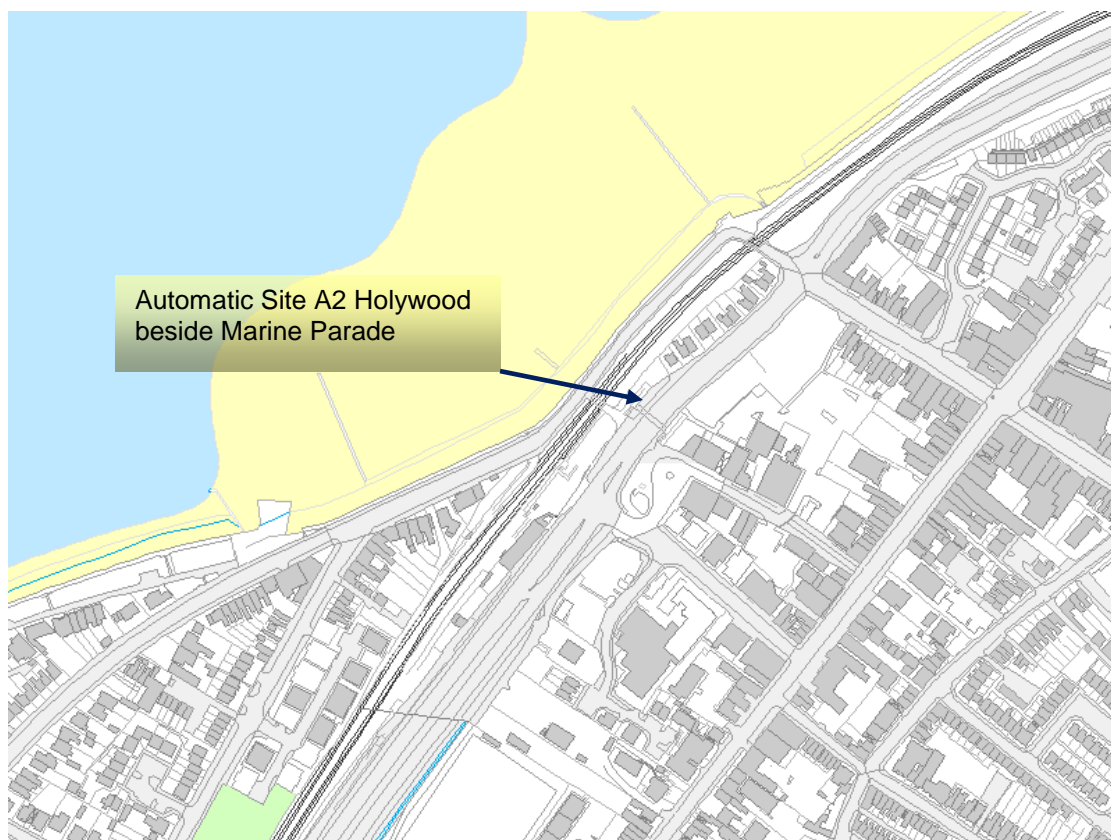


Figure 2.3 Picture of Automatic Monitoring Station A2 Hollywood



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

<b>Site Name</b>	<b>Site Type</b>	<b>Irish Grid Reference</b>	<b>Irish Grid Reference</b>	<b>Inlet Height (m)</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Monitoring Technique</b>	<b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b>	<b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b>	<b>Does this Location Represent Worst-Case Exposure?</b>
Marine Parade Holywood A2	Roadside	X339481	Y379328	2	PM <sub>10</sub> , NO <sub>2</sub>	N	TEOM Chemiluminescence	YES 30m	4.6M	YES

### 2.1.2 Non-Automatic Monitoring Sites

Ards and North Down Borough Council has 15 NO<sub>2</sub> 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 into the national data base in 2015. 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<sub>2</sub> diffusion tubes were supplied by Worcestershire Scientific Services and analysed by Gradko Environmental.

The bias adjustment factor from the co-location study is **0.67**. This was calculated using the R&A support precision and accuracy spread sheet. A decision was made to apply the national figure of **0.88** as 27 studies were included and therefore a more accurate 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

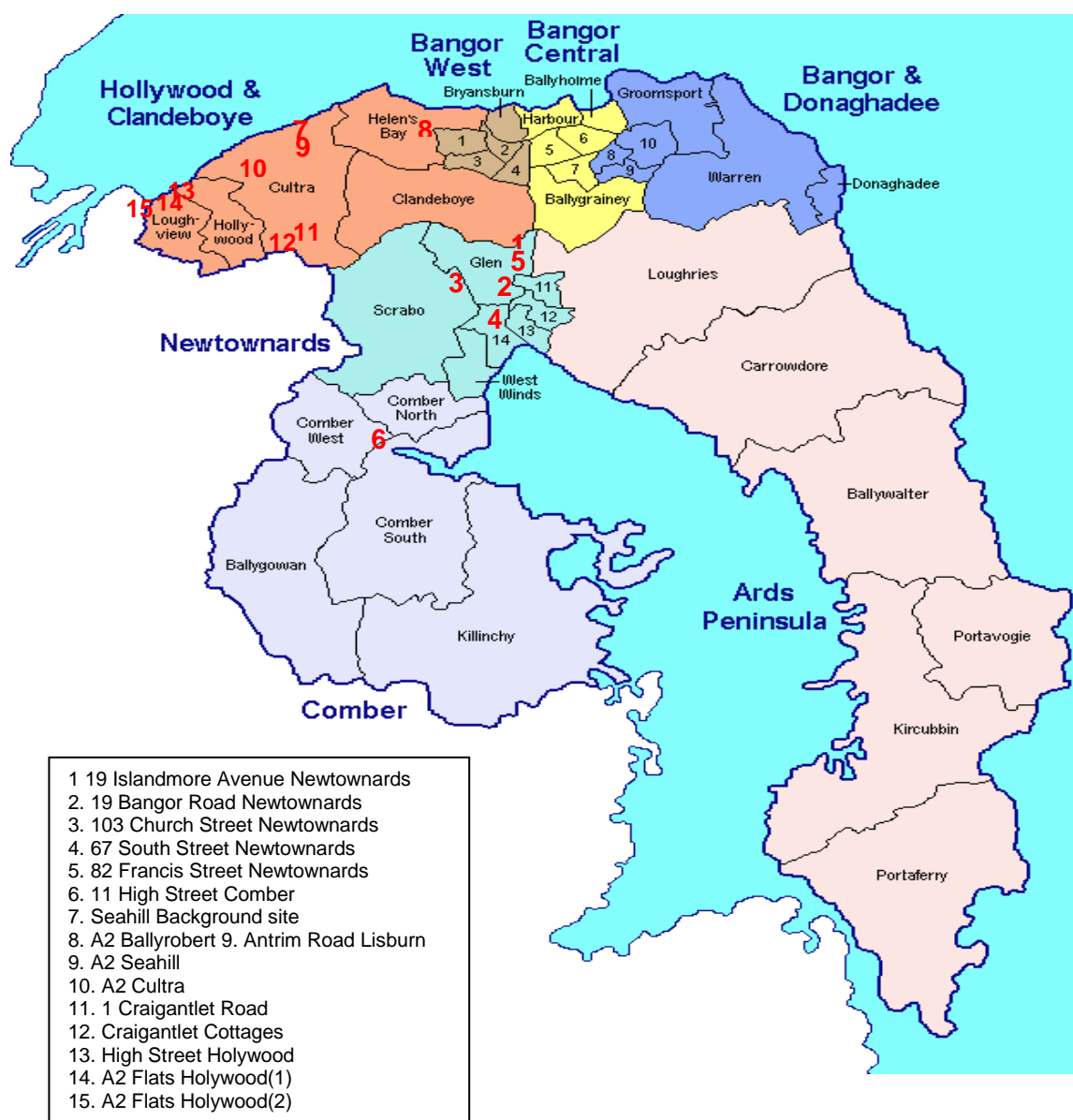




Figure 2.5 Position of Diffusion tube sites 1-5 Newtownards

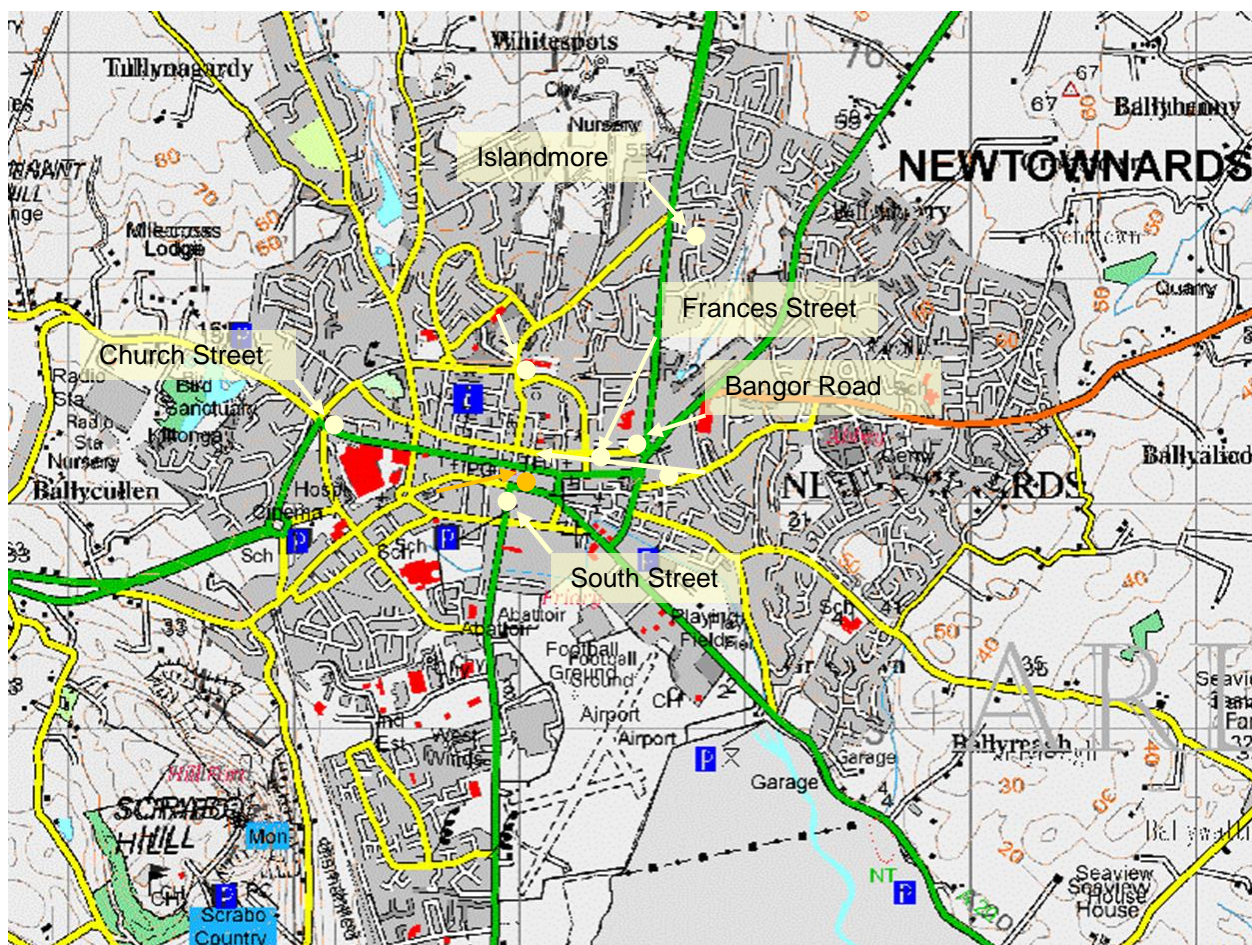
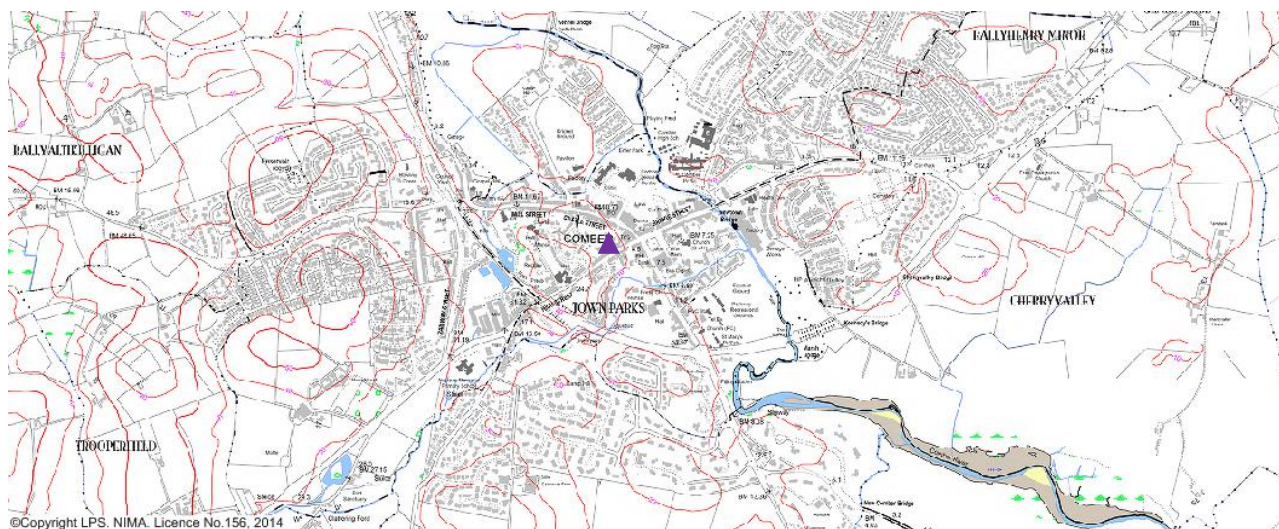


Figure 2.6 Diffusion tube 6 in Comber



▲ Position of diffusion tube in Comber Village Centre



Figure2.7 Position of tube 6 in Comber village

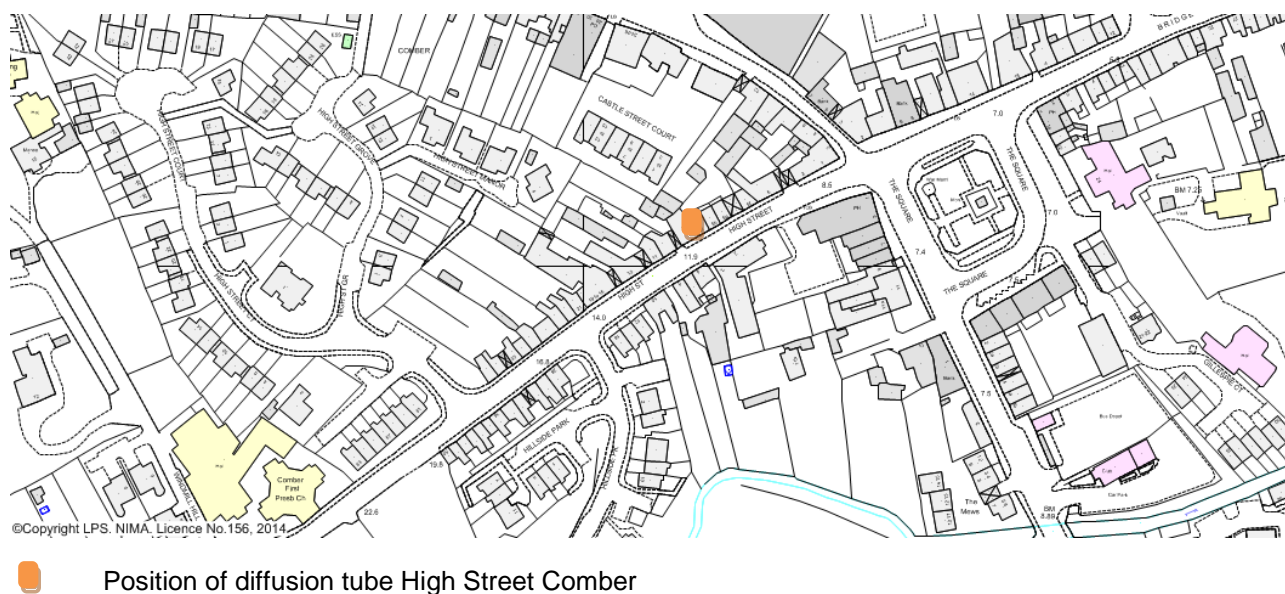


Figure2.8 Position of tubes 7-15 on and near A2

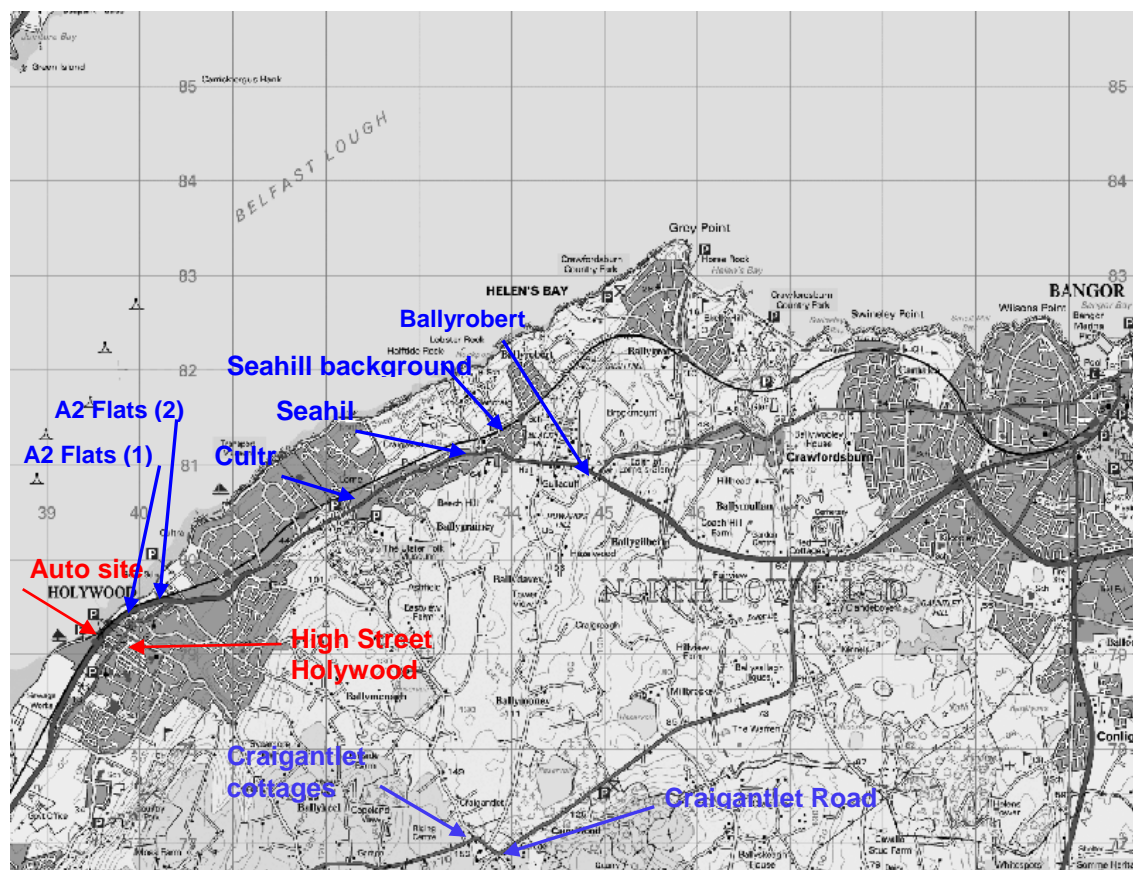


Table 2.2 – Details of Non- Automatic Monitoring Sites

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

**Ards and North Down Borough Council**

<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Reference</b>	<b>Y OS Grid Reference</b>	<b>Site Height (m)</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b>	<b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b>	<b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b>	<b>Does this Location Represent Worst-Case Exposure?</b>
<b>9</b>	A2 Seahill	Roadside	343545	381102	2	NO <sub>2</sub>	No	No	Y (<1m)	10m	Y
<b>10</b>	A2 Cultra	Roadside	342475	380672	2	NO <sub>2</sub>	No	No	Y (<1m)	6.3m	Y
<b>11</b>	1 Craigantlet Road	Roadside	343929	376920	2	NO <sub>2</sub>	No	No	Y (<1m)	1.5m	Y
<b>12</b>	Craigantlet Cottages	Roadside	343632	377049	2	NO <sub>2</sub>	No	No	Y(20m)	0.5m	Y
<b>13</b>	High Street Hollywood	Roadside	339785	379119	2.5	NO <sub>2</sub>	No	No	Y(20)	1.5	Y
<b>14</b>	A2 Flats Hollywood(1)	Roadside	339756	379330	2	NO <sub>2</sub>	No	No	Y (<1m)	1m	Y
<b>15</b>	A2 Flats Hollywood(1)	Roadside	339774	379351	2	NO <sub>2</sub>	No	No	Y (<1m)	1m	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<sub>2</sub> at the automatic and diffusion tube sites and compared with the objective.

### **2.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

In the following section results are presented for NO<sub>2</sub> 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<sub>2</sub> determined at the automatic site in 2015 from the hourly measurements.

**Table 2.3 – Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2015 % <sup>b</sup>	Annual Mean Concentration (µg/m <sup>3</sup> )				
					2011* <sup>c</sup>	2012* <sup>c</sup>	2013* <sup>c</sup>	2014* <sup>c</sup>	2015 <sup>c</sup>
A2 Hollywood	Roadside	NO	N/A	97.7	31	33	29	30	26

**Figure 2.3 – Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Sites**

Results have been consistent since installation of the automatic station, there was a slight decrease in 2015 though this was most probably due to climatic conditions. There were a small number of exceedances of the hourly mean in previous years, this was consistent of periods of unsettled weather.

**Table 2.4 – Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2015 % <sup>b</sup>	Number of Hourly Means > 200µg/m <sup>3</sup>				
					2011* <sup>c</sup>	2012* <sup>c</sup>	2013* <sup>c</sup>	2014* <sup>c</sup>	2015 <sup>c</sup>
A2 Hollywood	Roadside	NO	N/A	97.7	0	18	8	0	0

## Diffusion Tube Monitoring Data

Results of the NO<sub>2</sub> diffusion tube sites, situated within the borough are shown below in Table 2.5. This includes two new sites established in 2015 at an apartment block (Shoreside Apartments) on the A2 at Holywood, a shopping and residential complex is proposed opposite on this busy arterial route to Belfast City centre.

They are sited in accordance with the technical guidance LAQM.TG (09)

A diffusion tube co-location study in 2015 was carried out at the Holywood automatic site, the results of this study were submitted into the national data base, the 2015 local bias is **0.67**. A decision was made to apply the national figure of **0.88** as 27 studies were included and therefore deemed to be a more accurate figure.

All diffusion tube sites are below the annual mean objective of 40 ug/m<sup>3</sup>.

Details of the QA/QC for the diffusion tubes and the reason for the use of the bias adjustment factor **0.88** can be found in Appendix A

Trends for the 15 diffusion tube sites within the Council area are shown in figure 2.9

Table 2.5 – Results of NO<sub>2</sub> Diffusion Tubes 2015

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2015 (Number of Months)	2015 Annual Mean Concentration (µg/m <sup>3</sup> ) - Bias Adjustment factor = 0.88 <sup>b</sup>
1	19 Islandmore Av Newtownards	Background	N	single	12	11
2	19 Bangor Rd Newtownards	Roadside	N	single	12	26
3	103 Church St Newtownards	Roadside	N	single	12	24
4	67 South St. Newtownards (b)	Roadside	N	single	12	24
5	82 Frances St. Newtownards	Roadside	N	single	12	24
6	11 High St Comber	Roadside	N	single	12	30
7	Background site Seahill	Roadside	N	single	12	10
8	A2 Ballyrobert	Background	N	single	12	26
9	A2 Seahill	Roadside	N	single	12	12
10	A2 Cultra	Roadside	N	single	12	20
11	1 Craigantlet Road Craigantlet	Roadside	N	single	12	23
12	The Cottages Craigantlet	Roadside	N	single	11	15
13	High Street Hollywood	Roadside	N	single	10	23
14	A2 Flats (1) Hollywood	Roadside	N	single	11	33
15	A2 Flats(2) Hollywood	Roadside	N	single	11	32

Table 2.6 – Results of NO<sub>2</sub> Diffusion Tubes (2011 to 2015)

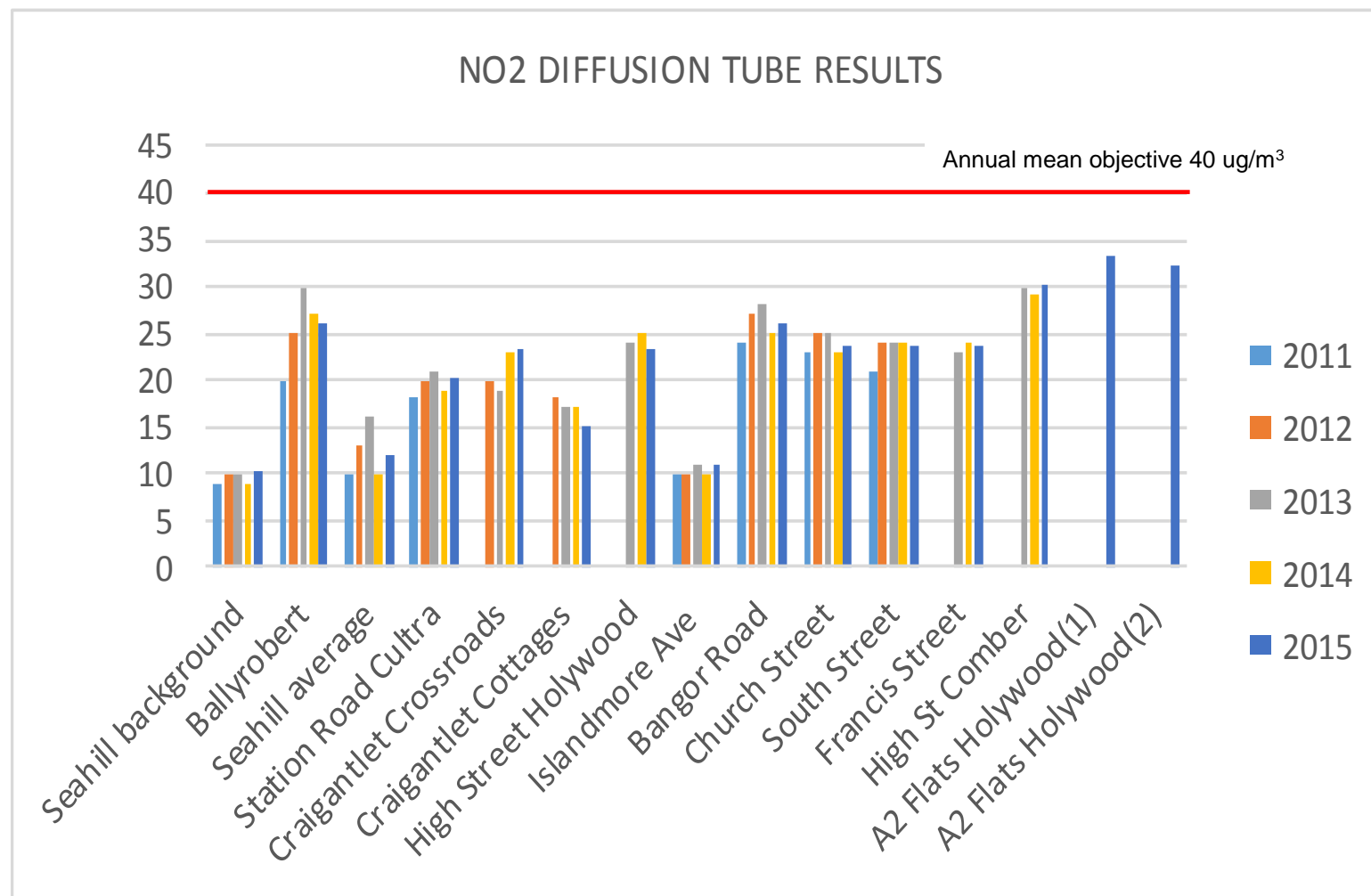
Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m <sup>3</sup> ) - Adjusted for Bias <sup>a</sup>				
			2011 (Bias Adjustment Factor = 0.71)	2012 (Bias Adjustment Factor = 0.75)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.73)	2015 (Bias Adjustment Factor = 0.88)
1	19 Islandmore Av Newtownards	N	10	10	11	9	11
2	19 Bangor Rd Newtownards	N	24	27	28	23	26
3	103 Church St Newtownards	N	23	25	25	22	24
4	67 South St. Newtownards (b)	N	21	24	24	22	24
5	82 Frances St. Newtownards	N			23(a)	22	24
6	11 High St Comber	N			30(a)	27	30
7	Background site Seahill	N	9	10	10	8	10
8	A2 Ballyrobert	N	20	25	30	24	26
9	A2 Seahill	N	10	13	16	10	12
10	A2 Cultra	N	18	20	21	17	20
11	1 Craigantlet Road Craigantlet	N		20	19	21	23
12	The Cottages Craigantlet	N		18	17	15	15
13	High Street Hollywood	N			24	23	23
14	A2 Flats (1) Hollywood	N					33
15	A2 Flats(2) Hollywood	N					32

(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 2.10 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites**

NO<sub>2</sub> 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<sub>10</sub>)**

Automatic monitoring of PM<sub>10</sub> using a TEOM was carried out at the Holywood site, results continued in 2015 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, 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](http://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<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2015 % <sup>b</sup>	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m <sup>3</sup>				
						2011	2012	2013	2014	2015
A2 Hollywood	Roadside	N	N/A	99.5%	Y	26.3	19	21	19	18

**Table 2.8 – Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2015 % <sup>b</sup>	Confirm Gravimetric Equivalent	Number of Daily Means > 50µg/m <sup>3</sup>				
						2011	2012	2013	2014	2015
A2 Hollywood	Roadside	N	N/A	99.2%	Y	6	6	7	2	4

**Figure 2.11 – Trends in Annual Mean PM<sub>10</sub> Concentrations**

PM<sub>10</sub> has remained consistently low in Hollywood

### **2.2.3 Sulphur Dioxide (SO<sub>2</sub>)**

Ards and North down Borough Council did not carry out any monitoring of SO<sub>2</sub> in 2015

### **2.2.4 Benzene**

No monitoring of Benzene was carried out in 2015.

### **2.2.5 Other Pollutants Monitored**

In 2015 Nitrogen Dioxide and PM<sub>10</sub> 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.

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 were found to have no significant impact on air quality. A mixed shopping development in Newtownards which planning was previously approved for has not continued to the development stage.

## **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, ANDBC sited two new NO<sub>2</sub> diffusion tubes in 2015 on the façade of an apartment block (Shoreside Apartments) built roadside near the A2 automatic site, due to further development proposed, results from these new sites were below the objective in 2015.

### **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 2016 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.

Monitoring sites are sited in accordance with the guidance and at relevant exposure, no new significant sites have been identified, although a new mixed commercial residential site planned in Holywood will be commented on by the Environmental Health Department at the planning stage.

A new road is proposed in the Craigantlet area, a new supermarket proposed in the Newtownards area and a number of residential developments that may have an impact on traffic numbers and flow, therefore Ards and North Down Borough Council intends to continue monitoring NO<sub>2</sub> and PM<sub>10</sub> in 2016 and submit a progress report in 2017.



## 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 (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

# 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<sub>2</sub> and PM<sub>10</sub> 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.

Environmental Monitoring Systems 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 2015**

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

**Site Environment and Description**

ROADSIDE: Marine Highway

**Statistical Summary Report**

This 2015 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<sub>10</sub> required for the LAQM reports. This uses data from at least two nearby FDMS instruments <http://www.volatile-correction-model.info>.

**First table – Air Quality Statistics.**

The gravimetric PM<sub>10</sub> is shown in the 2<sup>nd</sup> column while the uncorrected TEOM PM<sub>10</sub> is in the 3<sup>rd</sup>.

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 <sub>10</sub>	4 days	0	0
NO <sub>2</sub>	0 hours	0	0

The gravimetric PM<sub>10</sub> was Moderate on 19<sup>th</sup> Jan, 17<sup>th</sup> to 19<sup>th</sup> Mar with a daily mean reaching 60 µg m<sup>-3</sup>.

The annual data captures are shown on the bottom line. These were above the 90% target.

**Second table – Air Quality Exceedences.**

**Gravimetric PM<sub>10</sub>**

The maximum daily mean was 60 µg m<sup>-3</sup> so the daily mean limit value of 50 µg m<sup>-3</sup> was exceeded on 4 days. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 18 µg m<sup>-3</sup> which did not exceed the 40 µg m<sup>-3</sup> Objective.

**NO<sub>2</sub>**

The annual mean was 26 µg m<sup>-3</sup> which did not exceed the 40 µg m<sup>-3</sup> Objective.

The maximum hourly mean was 176 µg m<sup>-3</sup> so there were no exceedences of the NO<sub>2</sub> hourly limit of 200 µg m<sup>-3</sup>. There is an annual allowance of 18 hours so this Objective was not exceeded.

**NORTH DOWN HOLYWOOD A2 2015****Air Quality Statistics**

Pollutant	PM <sub>10</sub> <sup>+</sup>	PM <sub>10</sub> <sup>*</sup>	NO <sub>2</sub>	NO	NO <sub>x</sub>	Wind Dir	Wind Speed
Number Very High #	0	-	0	-	-	-	-
Number High #	0	-	0	-	-	-	-
Number Moderate #	4	-	0	-	-	-	-
Number Low #	360	-	8561	-	-	-	-
Maximum 15-min mean	-	167 µg m <sup>-3</sup>	199 µg m <sup>-3</sup>	493 µg m <sup>-3</sup>	951 µg m <sup>-3</sup>	-	44.0 m/sec
Maximum hourly mean	151 µg m <sup>-3</sup>	144 µg m <sup>-3</sup>	176 µg m <sup>-3</sup>	415 µg m <sup>-3</sup>	810 µg m <sup>-3</sup>	-	42.8 m/sec
Maximum running 8-hr mean	101 µg m <sup>-3</sup>	94 µg m <sup>-3</sup>	125 µg m <sup>-3</sup>	230 µg m <sup>-3</sup>	476 µg m <sup>-3</sup>	-	41.6 m/sec
Maximum running 24-hr mean	62 µg m <sup>-3</sup>	59 µg m <sup>-3</sup>	88 µg m <sup>-3</sup>	133 µg m <sup>-3</sup>	291 µg m <sup>-3</sup>	-	25.2 m/sec
Maximum daily mean	60 µg m <sup>-3</sup>	49 µg m <sup>-3</sup>	79 µg m <sup>-3</sup>	128 µg m <sup>-3</sup>	274 µg m <sup>-3</sup>	-	25.2 m/sec
Average	18 µg m <sup>-3</sup>	17 µg m <sup>-3</sup>	26 µg m <sup>-3</sup>	23 µg m <sup>-3</sup>	61 µg m <sup>-3</sup>	-	6.3 m/sec
Data capture	99.5 %	99.6 %	97.7 %	97.7 %	97.7 %	99.6 %	99.6 %

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

+ PM<sub>10</sub> as measured by a TEOM using the VCM for Indicative Gravimetric Equivalent

\* PM<sub>10</sub> as measured by a TEOM

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

NO<sub>x</sub> mass units are NO<sub>x</sub> as NO<sub>2</sub> µg m<sup>-3</sup>

**Air Quality Exceedences**

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Max Conc	Number	Days	Allowed	Exceeded
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	60 µg m <sup>-3</sup>	4	4	35 days	No
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	18 µg m <sup>-3</sup>	0	-	-	No
Nitrogen Dioxide	Annual mean > 40 µg m <sup>-3</sup>	26 µg m <sup>-3</sup>	0	-	-	No
Nitrogen Dioxide	Hourly mean > 200 µg m <sup>-3</sup>	176 µg m <sup>-3</sup>	0	0	18 hours	No

**QA/QC of Diffusion Tube Monitoring**

In 2015 the NO<sub>2</sub> tubes were supplied by Worcestershire Scientific Services, prepared and analysed 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:

[http://laqm.defra.gov.uk/documents/LAQM-AIR-PT-Rounds-1-12-\(April-2014-February-2016\)-NO2-report.pdf](http://laqm.defra.gov.uk/documents/LAQM-AIR-PT-Rounds-1-12-(April-2014-February-2016)-NO2-report.pdf)

## Diffusion Tube Bias Adjustment Factors

### Factor from Local Co-location Studies

A co-location study was carried out at the Hollywood 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 **0.67**.

A decision was made to apply the national figure of **0.88** to all the NO<sub>2</sub> diffusion tubes as 27 studies were included in the study and therefore a more accurate figure.

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 06/16				
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										This spreadsheet will be updated at the end of September 2016 <a href="#">LAQM Helpdesk Website</a>
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 <sup>2</sup> 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 <sup>2</sup> .	If you have your own co-location study then see footnote <sup>4</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at <a href="mailto:LAQMHelpdesk@uk.bureauveritas.com">LAQMHelpdesk@uk.bureauveritas.com</a> or 0800 0327953						
Analysed By <sup>1</sup>	Method <sup>2</sup> To add your selection, choose (All) from the pop-up list	Year <sup>3</sup> To add your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>5</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2015	R	Ards and North Down Borough Council	12	38	26	48.6%	G	0.67
Gradko	20% TEA in water	2015	UC	Breckland Council	12	30	29	1.5%	G	0.99
Gradko	20% TEA in water	2015	R	Cheltenham Borough Council	12	35	35	2.7%	G	0.97
Gradko	20% TEA in water	2015	R	Lisburn & Castlereagh City Council	10	36	29	24.8%	G	0.80
Gradko	20% TEA in water	2015	R	Luton Borough Council	12	46	44	6.0%	G	0.94
Gradko	20% TEA in water	2015	R	Monmouthshire County Council	12	41	37	11.0%	G	0.90
Gradko	20% TEA in water	2015	B	Pembrokeshire Council	10	4	3	36.7%	G	0.73
Gradko	20% TEA in water	2015	R	City of Lincoln Council	12	39	33	17.9%	G	0.85
Gradko	20% TEA in water	2015	R	Borough Council of King's Lynn and West Norfolk	12	29	22	32.5%	G	0.75
Gradko	20% TEA in water	2015	R	Cheshire West and Chester	10	38	40	-5.2%	G	1.06
Gradko	20% TEA in water	2015	R	Dudley MBC	12	47	50	-5.9%	G	1.06
Gradko	20% TEA in water	2015	R	Dudley MBC	12	40	35	14.0%	G	0.88
Gradko	20% TEA in water	2015	R	Dudley MBC	12	34	31	10.0%	G	0.91
Gradko	20% TEA in water	2015	UB	Dudley MBC	11	23	19	20.9%	G	0.83
Gradko	20% TEA in water	2015	KS	Marylebone Road Intercomparison	12	102	81	26.2%	G	0.79
Gradko	20% TEA in water	2015	UB	Liverpool	12	20	22	-9.0%	G	1.10
Gradko	20% TEA in water	2015	R	Preston City Council	12	29	27	8.9%	G	0.92
Gradko	20% TEA in water	2015	R	Thurrock Borough Council	12	28	23	22.5%	G	0.82
Gradko	20% TEA in water	2015	R	Gateshead Council	11	33	34	-1.2%	G	1.01
Gradko	20% TEA in water	2015	R	Gateshead Council	12	28	27	3.9%	G	0.96
Gradko	20% TEA in water	2015	R	Gateshead Council	10	36	32	11.5%	G	0.90
Gradko	20% TEA in water	2015	KS	New Forest DC	11	47	36	31.1%	P	0.76
Gradko	20% TEA in water	2015	R	New Forest DC	11	33	25	31.7%	G	0.76
Gradko	20% TEA in water	2015	UC	Southampton City Council	12	28	29	-3.5%	G	1.04
Gradko	20% TEA in water	2015	R	Wokingham Borough Council	11	36	33	7.9%	G	0.93
Gradko	20% TEA in water	2015	R	Brighton & Hove City Council	9	47	38	24.1%	G	0.81
Gradko	20% TEA in water	2015	R	NOTTINGHAM CITY COUNCIL	12	40	39	4.3%	G	0.96
Gradko	20% TEA in water	2015	Overall Factor <sup>2</sup> (27 studies)						Use	0.88