Ards and North Down Borough Council

2017 Air Quality Progress Report

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

July 2017

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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 a progress report carried out in 2016.

This report is the 2017 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 2016 for any of the pollutants assessed with relevant exposure.
Monitoring will continue in 2017 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. This and other planned housing developments have been examined by the Environmental Department and were found to have no significant impact on air quality.

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1 Introduction

1.1 Description of Local Authority Area

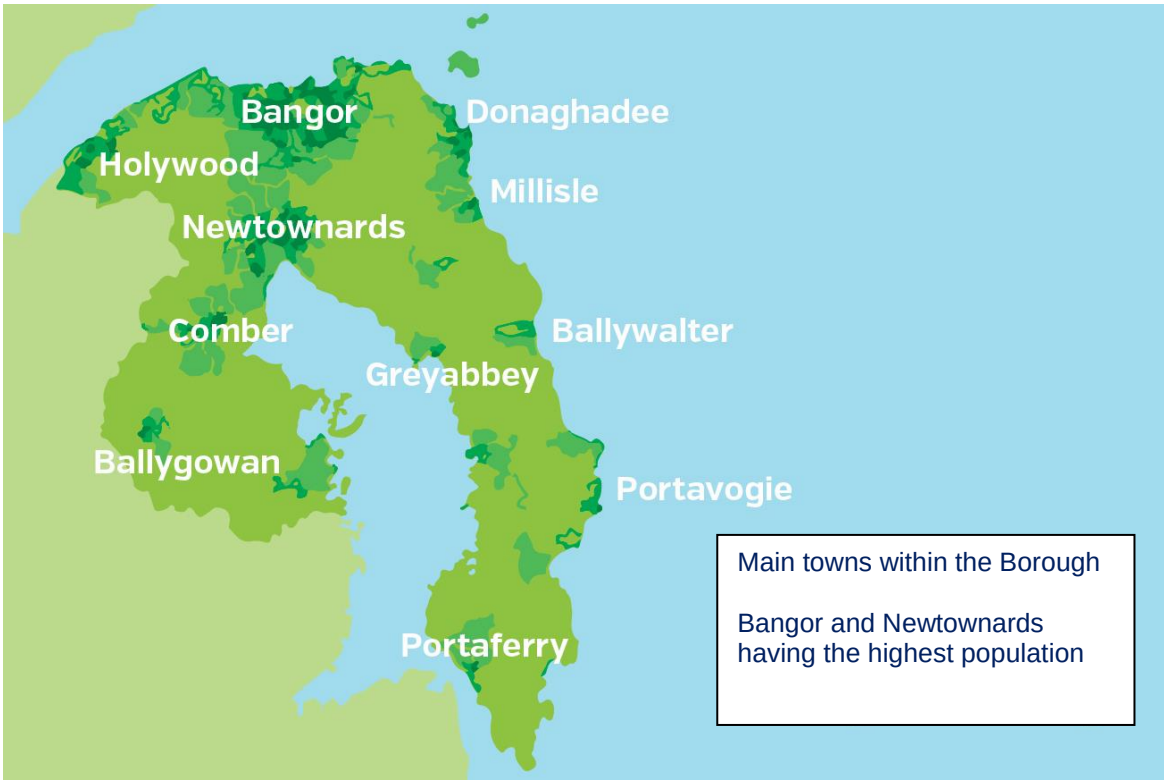
Local authorities in Northern Ireland amalgamated on 1st April 2015 creating 11 new councils. Ards and North Down Borough Council is one of the new 11 councils, with a population of 156,672. The Borough is of mixed urban and rural character situated east of Belfast City and the two largest towns Bangor 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_{10}. Several monitoring sites are located at relevant exposure along this main arterial route to Belfast and at several congested points 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 ans 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 micrograms per cubic metre µg/m^3 (milligrammes per cubic metre, mg/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^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 further progress report was submitted in 2016.

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 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 2016.

Results and correction factors are detailed in Appendix A.

Figure 2.1 Position of the automatic air monitoring site within ANDBC

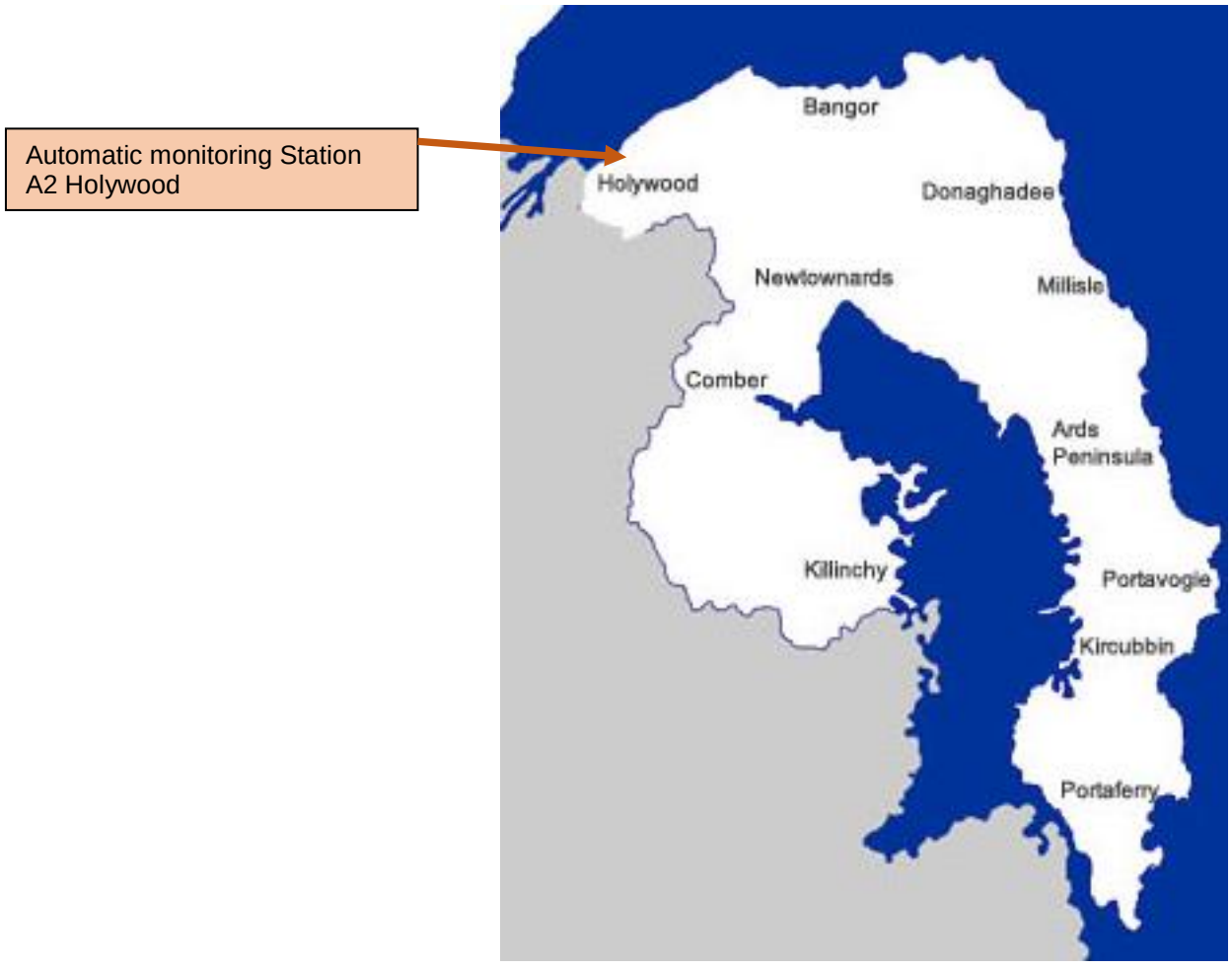


Figure 2.2 Position of Automatic Monitoring Site on the A2 Holywood

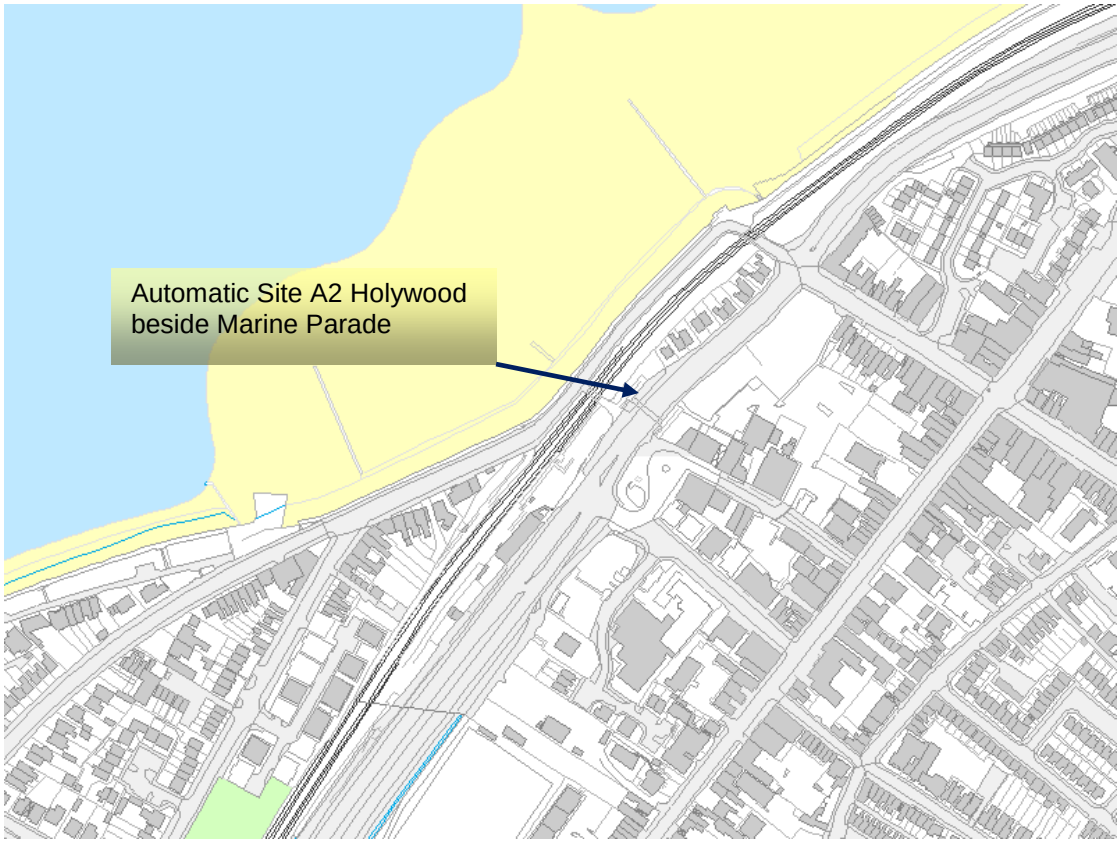


Figure 2.3 Picture of Automatic Monitoring Station A2 Holywood

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

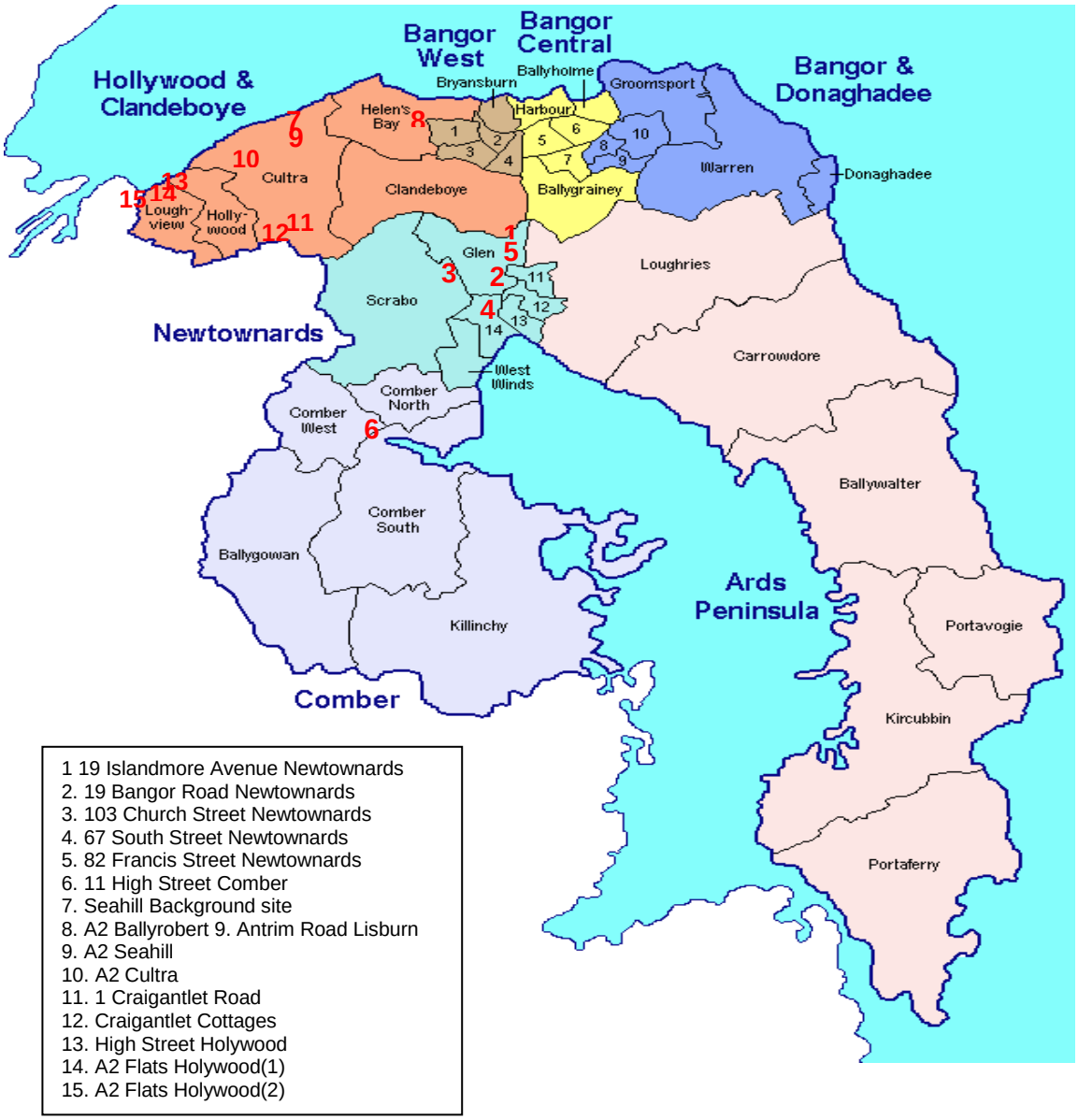
Ards and North Down Borough Council has 15 NO_2 diffusion tubes at roadside and background sites. Five are positioned along the A2 main arterial route into Belfast on facades of the closest dwellings to the roadside, the remainder of the tubes are at relevant exposure at various hotspots where there is traffic congestion at rush hour in Newtownards, Comber and Holywood . 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 submitted into the national data base for 2016. 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 and analysed by Gradko Environmental.

The bias adjustment factor from the co-location study is **0.78.** 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 27 studies were included and therefore a more accurate figure, although this figure was unusually high for the analytical laboratory. 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



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)

Figure 2.5 Position of Diffusion tube sites 1-5 Newtownards

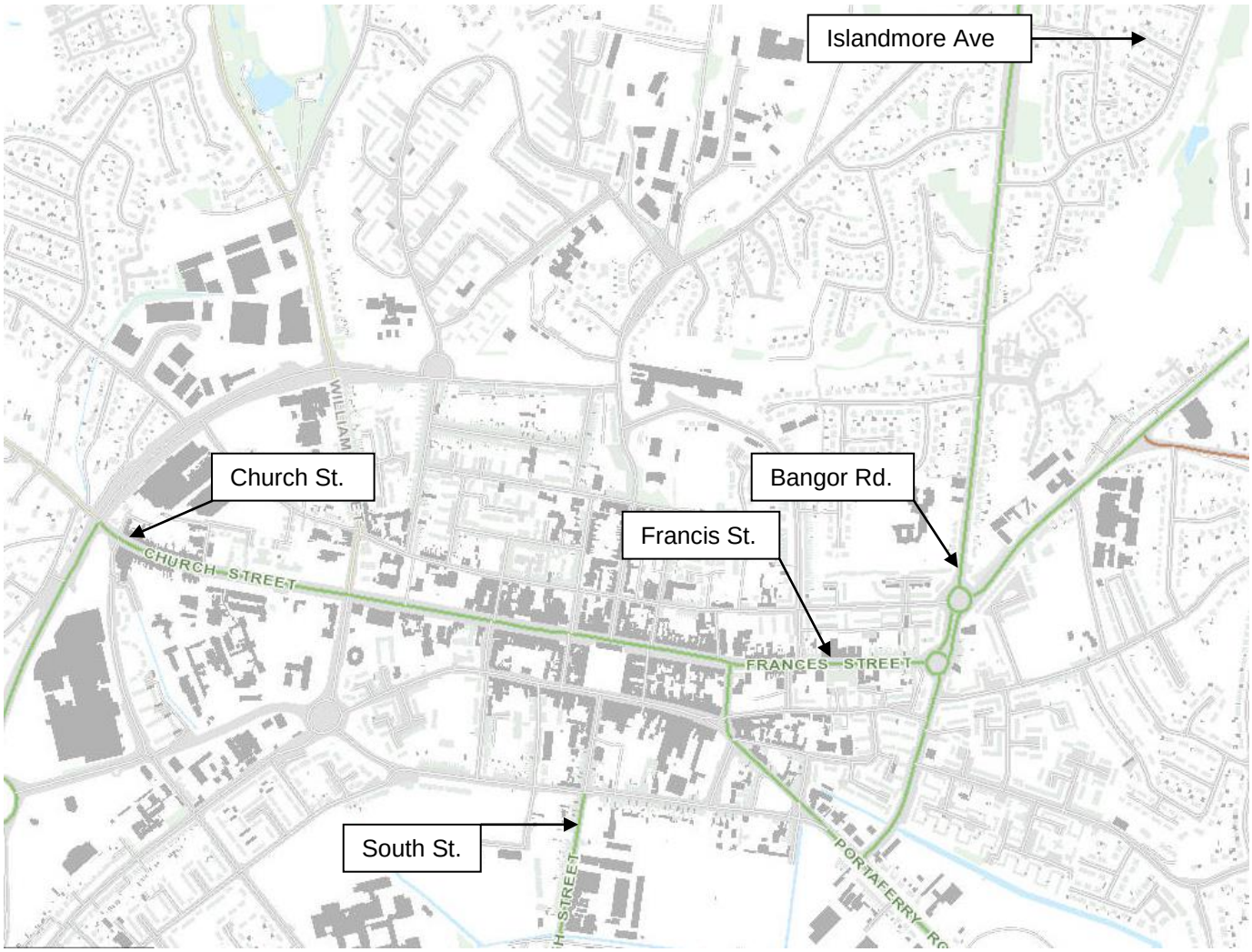
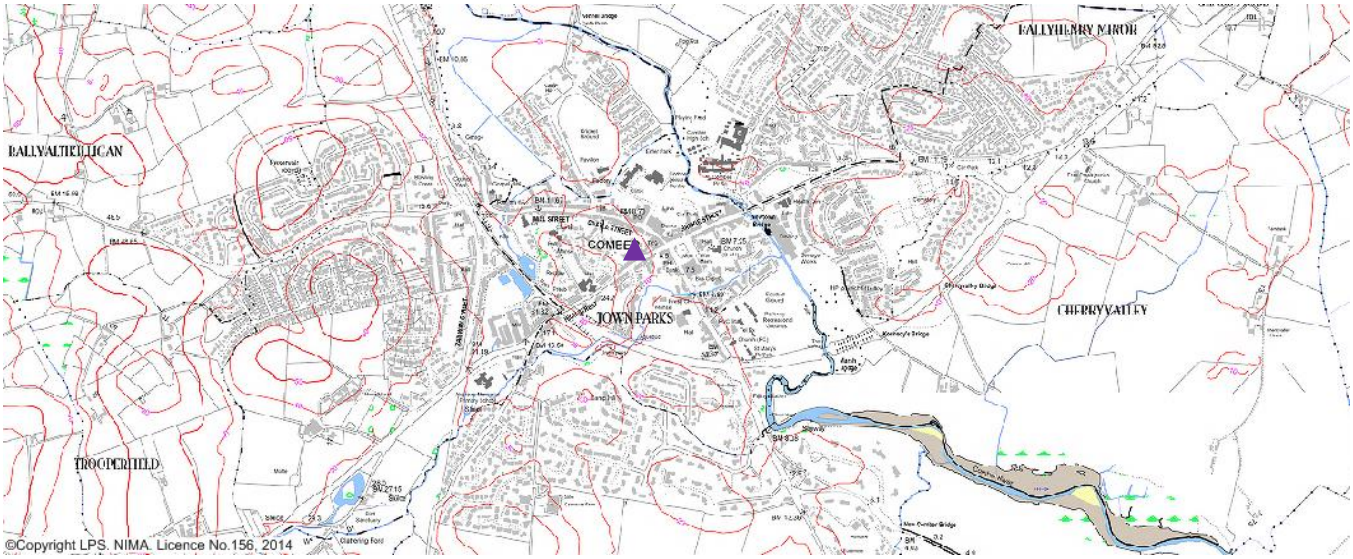
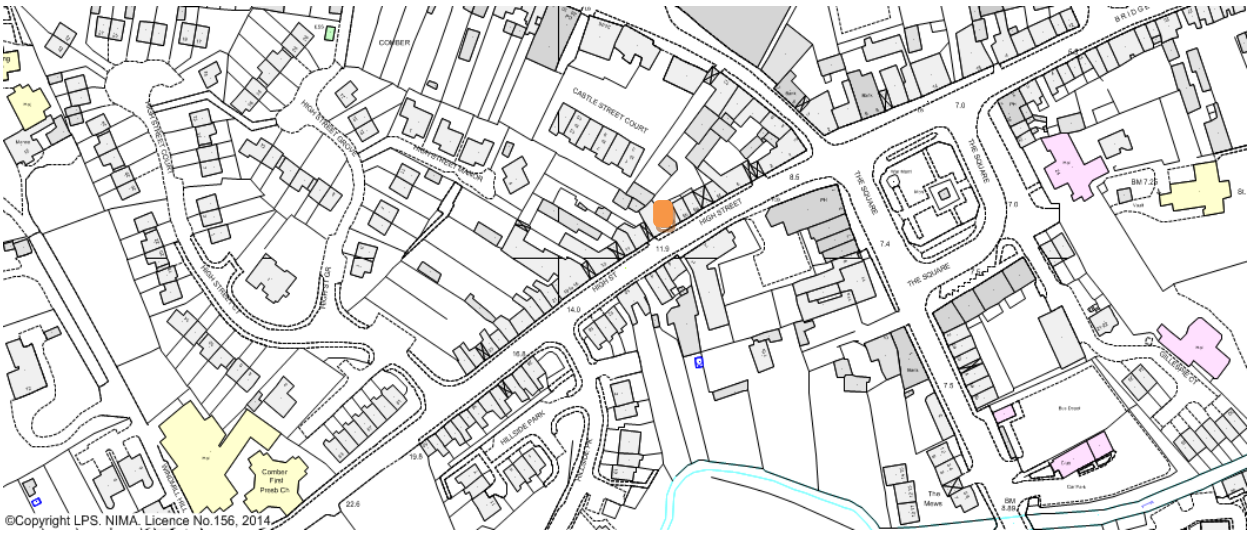


Figure2.7 Position of tube 6 in Comber village



▲ 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 on and near A2

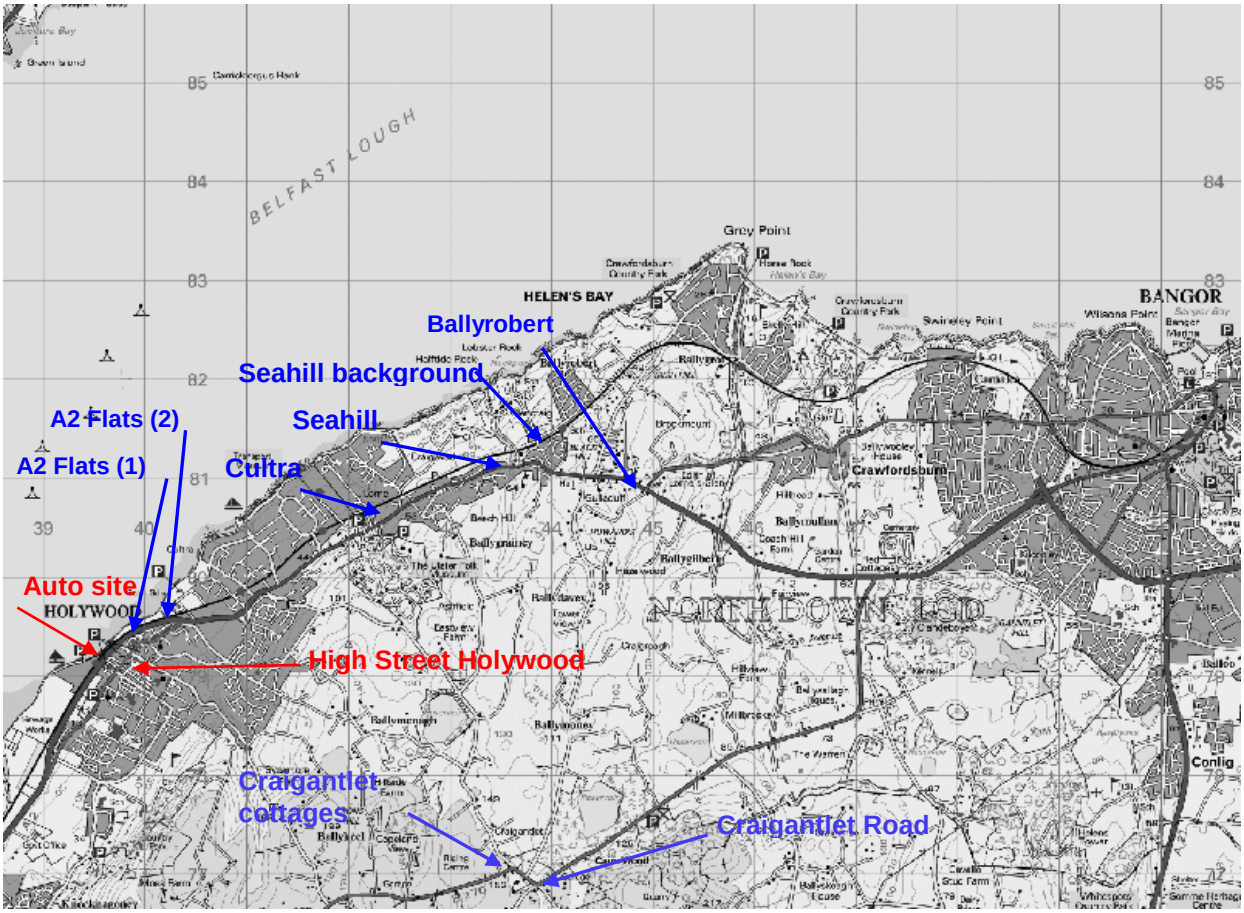


Figure 2.10 Position of Diffusion tube sites 7-9 on A2

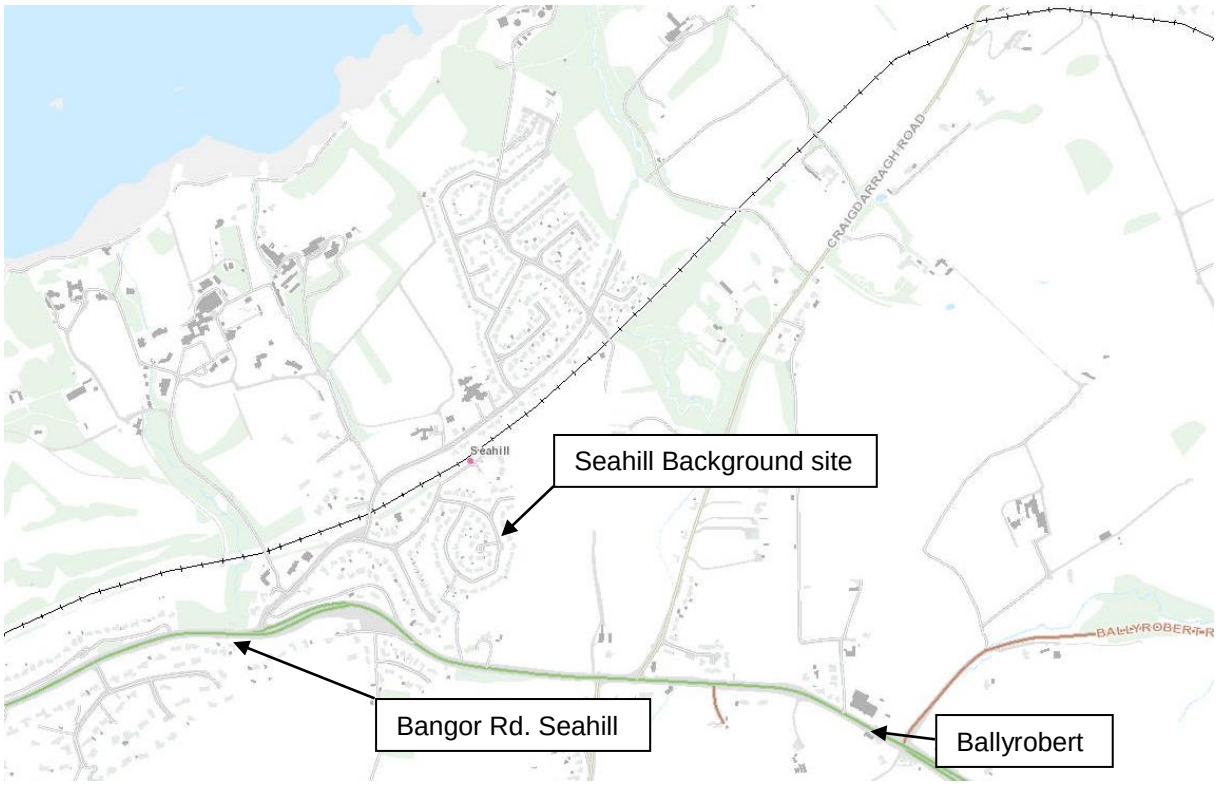


Figure 2.11 Position of Diffusion tube site 10 on A2

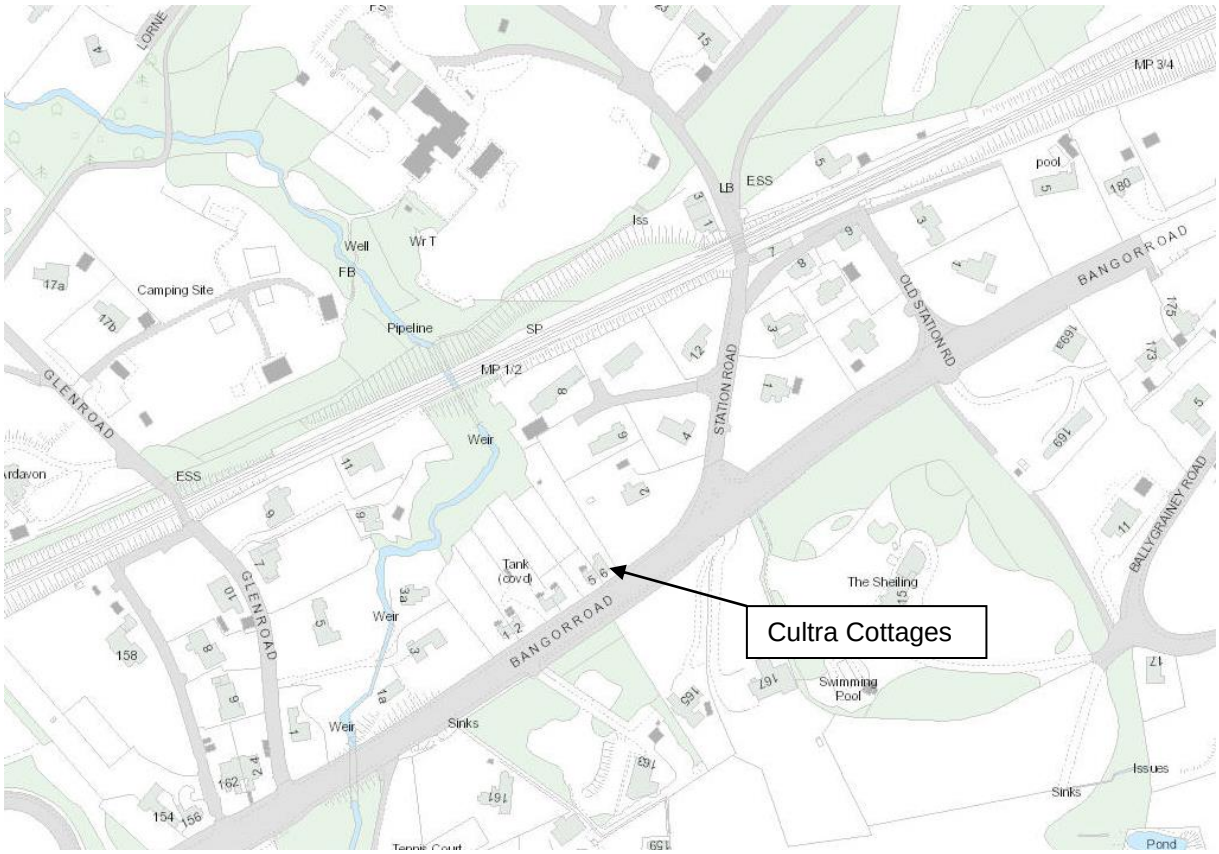


Figure 2.12 Position of Diffusion tube sites 11,12 in Craigantlet

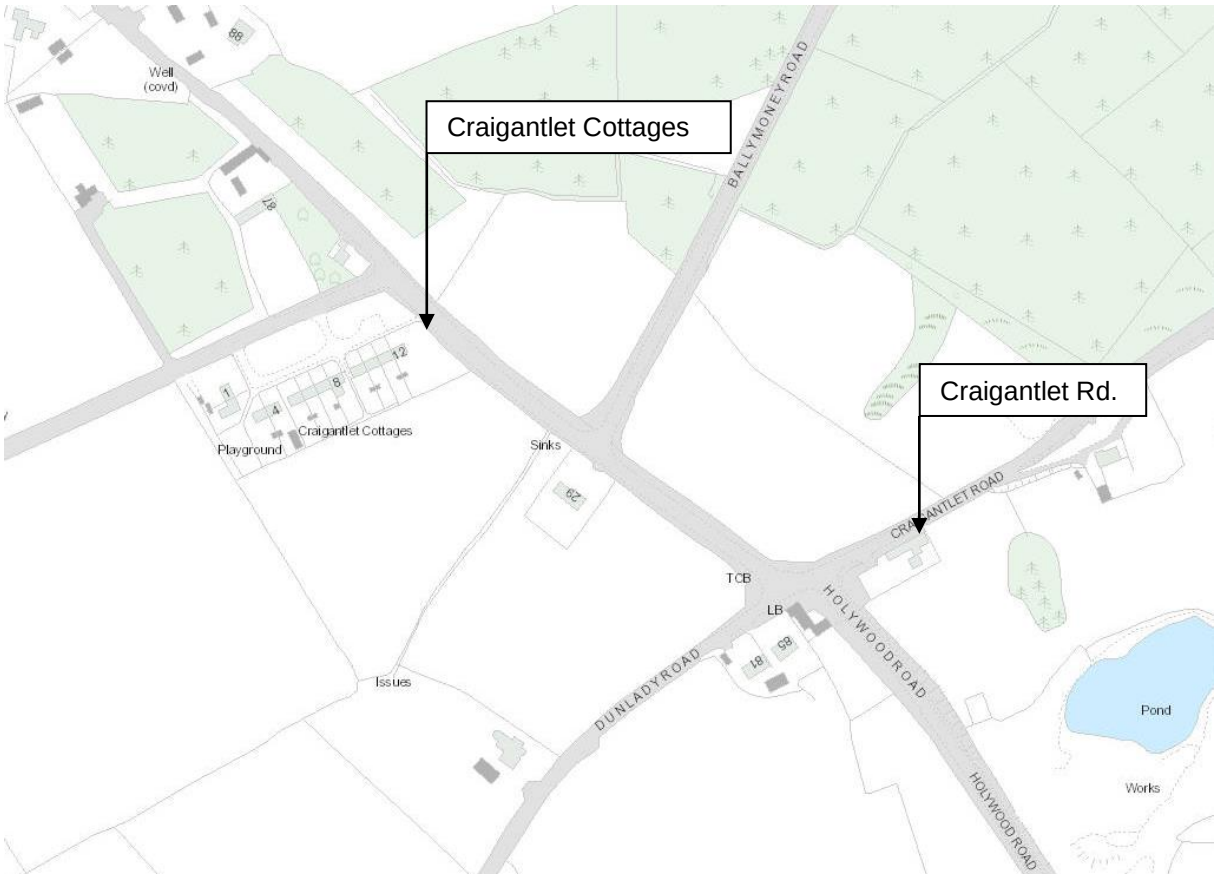


Figure 2.13 Position of Diffusion tube sites 13-15 on A2

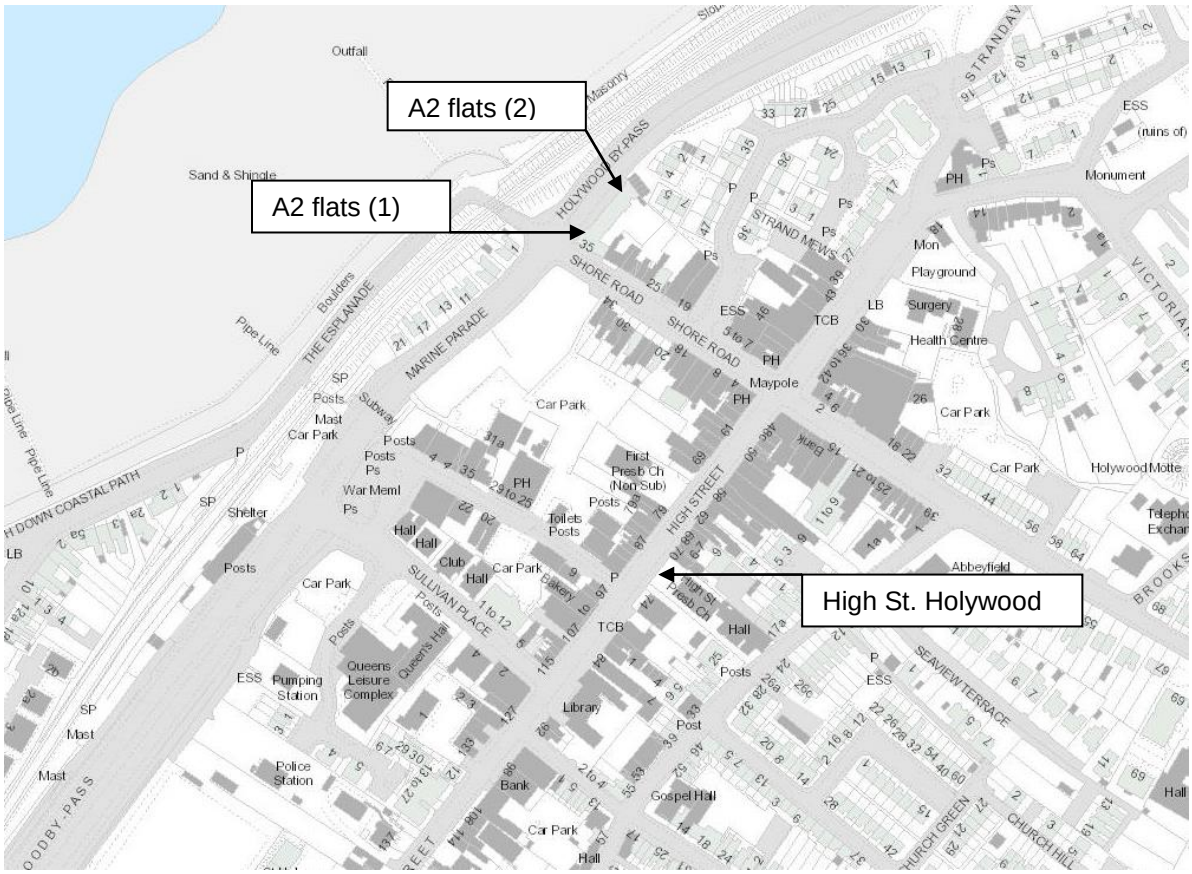


Table 2.2 – Details of Non- Automatic Monitoring Sites

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_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 Cultra	Roadside	342475	380672	2	NO_2	No	No	Y (<1m)	6.3m	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(20)	1.5	Y
14	A2 Flats Holywood(1)	Roadside	339756	379330	2	NO_2	No	No	Y (<1m)	1m	Y
15	A2 Flats Holywood(1)	Roadside	339774	379351	2	NO_2	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. And Progress report. 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 (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 2016 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 2016 % [b]	Annual Mean Concentration (µg/m^3)				
					2012* [c]	2013* [c]	2014* [c]	2015* [c]	2016 [c]
A2 Holywood	Roadside	NO	N/A	92.6	33	29	30	26	30

In bold, exceedence 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 2.14 – Trends in Annual Mean NO_2 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_2: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2016 % [b]	Number of Hourly Means > 200µg/m^3				
					2012* [c]	2013* [c]	2014* [c]	2015* [c]	2016 [c]
A2 Holywood	Roadside	NO	N/A	92.6	18	8	0	0	0

In bold, exceedence 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 99.8th percentile of hourly means in brackets

* Number of exceedences 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 (09)
A diffusion tube co-location study in 2016 was carried out at the Holywood automatic site, the results of this study were submitted into the national data base, the 2016 local bias is **0.78,** although the national figure for the analytical laboratory is unusually high a decision was made to apply the national figure of **0.92** as 27 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 new sites in Holywood established in 2015 at an apartment block on the A2 (tubes 14,15 shown in figure 2.13), show the highest levels 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, ANDBC shall continue to monitor at this location to ascertain if levels remain below the objective when buiding work is completed.
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 15 diffusion tube sites within the Council area are shown in figure 2.15

Table 2.5 – Results of NO_2 Diffusion Tubes 2016

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2016 (Number of Months)	2016 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.92[b]
1	19 Islandmore Av Newtownards	Background	N	single	12	11
2	19 Bangor Rd Newtownards	Roadside	N	single	12	28
3	103 Church St Newtownards	Roadside	N	single	10	23
4	67 South St. Newtownards (b)	Roadside	N	single	12	26
5	82 Frances St. Newtownards	Roadside	N	single	12	24
6	11 High St Comber	Roadside	N	single	12	32
7	Background site Seahill	Roadside	N	single	11	11
8	A2 Ballyrobert	Background	N	single	12	31
9	A2 Seahill	Roadside	N	single	12	15
10	A2 Cultra	Roadside	N	single	12	23
11	1 Craigantlet Road Craigantlet	Roadside	N	single	11	25
12	The Cottages Craigantlet	Roadside	N	single	11	19
13	High Street Holywood	Roadside	N	single	12	21

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2016 (Number of Months)	2016 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.92[b]
14	A2 Flats (1) Holywood	Roadside	N	single	12	37
15	A2 Flats(2) Holywood	Roadside	N	single	12	33

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

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence 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 exceedence 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 (2012 to 2016)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2012 (Bias Adjustment Factor = 0.75)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.73)	2015 (Bias Adjustment Factor = 0.88)	2016 (Bias Adjustment Factor = 0.92)
1	19 Islandmore Av Newtownards	N	10	11	9	11	11
2	19 Bangor Rd Newtownards	N	27	**28**	23	26	28
3	103 Church St Newtownards	N	25	25	22	24	23
4	67 South St. Newtownards (b)	N	24	24	22	24	26
5	82 Frances St. Newtownards	N		23(a)	22	24	24
6	11 High St Comber	N		30(a)	27	30	32
7	Background site Seahill	N	10	10	8	10	11
8	A2 Ballyrobert	N	25	30	24	26	31
9	A2 Seahill	N	13	16	10	12	15
10	A2 Cultra	N	20	21	17	20	23
11	1 Craigantlet Road Craigantlet	N	20	19	21	23	25
12	The Cottages Craigantlet	N	18	17	15	15	19
13	High Street Holywood	N		24	23	23	21

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2012 (Bias Adjustment Factor = 0.75)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.73)	2015 (Bias Adjustment Factor = 0.88)	2016 (Bias Adjustment Factor = 0.92)
14	A2 Flats (1) Holywood	N				33	37
15	A2 Flats(2) Holywood	N				32	33

(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)**

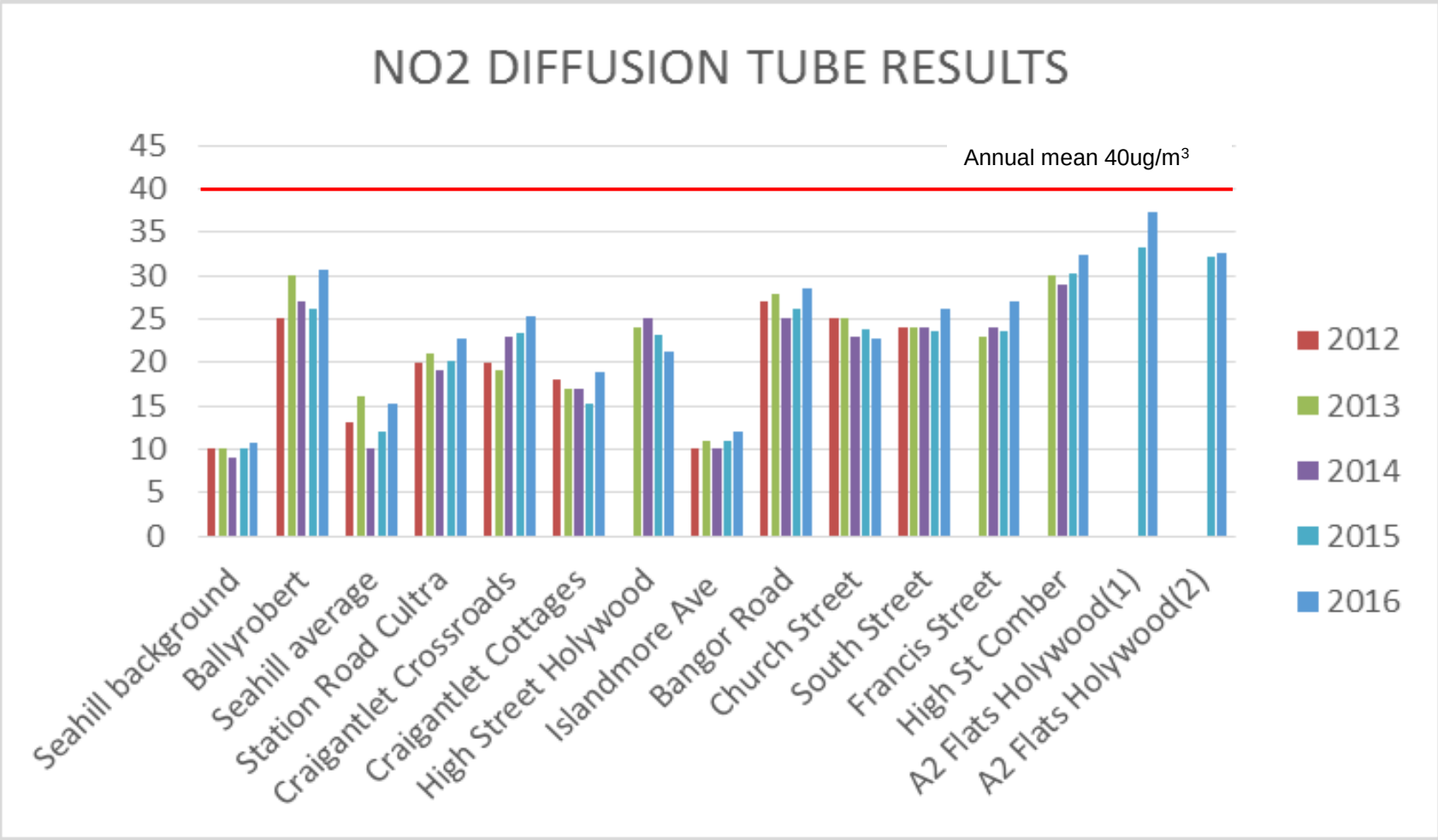
In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence 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%

Figure 2.15 – 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 2016 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

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 2015 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2012	2013	2014	2015	2016
A2 Holywood	Roadside	N	N/A	97.1%	Y	19	21	19	18	16

In bold, exceedence of the PM_{10} 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

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 2015 %[b]	Confirm Gravimetric Equivalent	Number of Daily Means > 50µg/m^3				
						2012	2013	2014	2015	2016
A2 Holywood	Roadside	N	N/A	99.2%	Y	6	7	2	4	0

In bold, exceedence 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 90.4th percentile of 24-hour means in brackets

* Number of exceedences for previous years is optional

Figure 2.11 – 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 2016

2.2.4 Benzene

No monitoring of Benzene was carried out in 2016.

2.2.5 Other Pollutants Monitored

In 2016 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.

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 an air quality impact assessment was requested for the following development:

AQ Impact assessment submitted – Deemed no significant impact

-

LA06/2016/0596/F Date Received: 03/08/2016

Former Juvenile Justice Services Centre Site (169 Rathgael Road) and surrounding lands

Development of 351 residential units (321 dwellings and 30 apartments), landscaping, car parking, access arrangements and highway infrastructure improvements comprising widening of the Rathgael Road along the site frontage, construction of a right hand turning into the site, capacity improving works to the Newtownards/ Rathgael Road roundabout and all associated site works. Reduction in density from the 690 units approved under W/2008/0740/O

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. The two new sites in Holywood established in 2015 at an apartment block on the A2, although below the objective levels increased in 2016 showing the highest levels 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. Levels at the automatic site opposite this location have remained consistent, there was a decrease in 2015 but this was more likely due to climatic conditions rather than a reduction in NO2 levels.

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, the NO_2 diffusion tube sites 14 and 15 on the A2 shall remain to closely monitor levels at this location when building commences in 2017.

DAERA are presently consulting Northern Ireland Councils with regard to a new Air Quality Action Plan (AQAP). It is this Council's view that any new air quality action plan for nitrogen dioxide for Northern Ireland should not solely focus upon delivering limit values within existing Air Quality Management Areas but it should also focus upon improving ambient air quality as a whole.

Therefore ANDBC proposes to continue with automatic and passive monitoring of NO_2 so as to reliably inform the AQAP for Northern Ireland.

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_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.
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 2016

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 2016 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 at least two 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}	0 days	0	0
NO_2	0 hours	0	0

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

Second table – Air Quality Exceedences.
Gravimetric PM_{10} –data capture was 97.1%
The maximum daily mean was 47 µg m^{-3} so the daily mean limit value of 50 µg m^{-3} was not exceeded. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 16 µg m^{-3} which did not exceed the 40 µg m^{-3} Objective.

NO_2 – data capture 92.6%
The annual mean was 30 µg m^{-3} which did not exceed the 40 µg m^{-3} Objective.

The maximum hourly mean was 138 µg m^{-3} so there were no exceedences 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 2016

Air Quality Statistics

Pollutant	PM_{10}^{+}	PM_{10}*	NO_2	NO	NO_X	Wind Dir	Wind Speed
Number Very High #	0	-	0	-	-	-	-
Number High #	0	-	0	-	-	-	-
Number Moderate #	4	-	0	-	-	-	-
Number Low #	355	-	8131	-	-	-	-
Maximum 15-min mean	-	421 µg m^{-3}	168 µg m^{-3}	606 µg m^{-3}	1098 µg m^{-3}	-	71.0 m/sec
Maximum hourly mean	120 µg m^{-3}	125 µg m^{-3}	138 µg m^{-3}	474 µg m^{-3}	853 µg m^{-3}	-	60.8 m/sec
Maximum running 8-hr mean	68 µg m^{-3}	69 µg m^{-3}	109 µg m^{-3}	286 µg m^{-3}	541 µg m^{-3}	-	57.7 m/sec
Maximum running 24-hr mean	48 µg m^{-3}	50 µg m^{-3}	87 µg m^{-3}	184 µg m^{-3}	369 µg m^{-3}	-	54.3 m/sec
Maximum daily mean	47 µg m^{-3}	49 µg m^{-3}	82 µg m^{-3}	163 µg m^{-3}	332 µg m^{-3}	-	53.7 m/sec
Average	16 µg m^{-3}	16 µg m^{-3}	30 µg m^{-3}	26 µg m^{-3}	69 µg m^{-3}	-	8.9 m/sec
Data capture	97.1 %	97.1 %	92.6 %	92.6 %	92.6 %	96.3 %	96.3 %

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 Exceedences

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Max Conc	Number	Days	Allowed	Exceeded
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	47 µg m^{-3}	0	0	35 days	No
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	16 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}	138 µg m^{-3}	0	0	18 hours	No

QA/QC of Diffusion Tube Monitoring

In 2016 the NO_2 tubes were prepared and supplied 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

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 **0.78.**

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

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	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	04/01/2016	01/02/2016	48.0	49.0	52.0	50	2.1	4	5.2	32.5	99.9	Good	Good
2	01/02/2016	29/02/2016	41.0	43.0	41.0	42	1.2	3	2.9	30.6	96.1	Good	Good
3	29/02/2016	31/03/2016	25.0	34.0	32.0	30	4.7	16	11.7	27.9	99.9	Good	Good
4	31/03/2016	28/04/2016	32.0	32.0	34.0	33	1.2	4	2.9	25	93.2	Good	Good
5	28/04/2016	24/05/2016	33.0	35.0	35.0	34	1.2	3	2.9	25	99.8	Good	Good
6	24/05/2016	06/07/2016	31.0	27.0	29.0	29	2.0	7	5.0	30	88.6	Good	Good
7	11/07/2016	05/08/2016	32.0	32.0	31.0	32	0.6	2	1.4	26	91.7	Good	Good
8	05/08/2016	01/09/2016	33.0	37.0	31.0	34	3.1	9	7.6	26	99.8	Good	Good
9	01/09/2016	27/09/2016	38.0	33.0	37.0	36	2.6	7	6.6	26	88.9	Good	Good
10	29/09/2016	25/10/2016	51.0	50.0	48.0	50	1.5	3	3.8	31	44.9	Good	r Data Captu
11	25/10/2016	29/11/2016	47.0	43.0	49.0	46	3.1	7	7.6	37.1	99.8	Good	Good
12	29/11/2016	05/01/2017	50.0	50.0	50.0	50	0.0	0	0.0	36.3	99.7	Good	Good
13													
												Overall survey -->	Good / Good

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

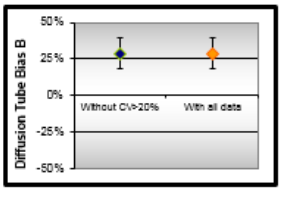
Site Name/ ID:

Precision: 12 out of 12 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 11 periods of data
Bias factor A: 0.78 (0.72 - 0.84)
Bias B: 29% (19% - 39%)
Diffusion Tubes Mean: 38 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 29 µgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 29 (27 - 32) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A: 0.78 (0.72 - 0.84)
Bias B: 29% (19% - 39%)
Diffusion Tubes Mean: 38 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 29 µgm^{-3}
Data Capture for periods used: 96%
Adjusted Tubes Mean: 29 (27 - 32) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

A decision was made to apply the national figure of **0.92** to all the NO_2 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: 06/17

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 2017
LAQM Helpdesk Website

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[2] 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@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method	Year[3]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2016	R	Gateshead Council	12	29	26	10.5%	G	**0.90**
Gradko	20% TEA in water	2016	R	Gateshead Council	11	35	37	-6.0%	G	**1.06**
Gradko	20% TEA in water	2016	R	Gateshead Council	12	37	31	19.0%	G	**0.84**
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	45	41	9.0%	G	**0.92**
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	37	34	9.5%	G	**0.91**
Gradko	20% TEA in water	2016	R	Cheshire West and Chester	12	37	39	-5.3%	G	**1.06**
Gradko	20% TEA in water	2016	R	Thurrock Borough Council	12	29	26	11.0%	G	**0.90**
Gradko	20% TEA in water	2016	R	Borough Council of King's Lynn & West Norf	11	30	25	18.2%	G	**0.85**
Gradko	20% TEA in water	2016	UB	Eastleigh Borough Council	11	29	30	-4.7%	G	**1.05**
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	12	44	42	2.9%	G	**0.97**
Gradko	20% TEA in water	2016	R	Brighton & Hove City Council	12	52	48	8.8%	G	**0.92**
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	11	29	37	-22.0%	G	**1.28**
Gradko	20% TEA in water	2016	KS	Marylebone Road Intercomparison	12	99	79	25.2%	G	**0.80**
Gradko	20% TEA in water	2016	R	Monmouthshire County Council	11	39	34	16.6%	G	**0.86**
Gradko	20% TEA in Water	2016	R	Preston City Council	10	30	27	10.0%	G	**0.91**
Gradko	20% TEA in water	2016	R	Dudley MBC	12	37	34	11.0%	G	**0.90**
Gradko	20% TEA in water	2016	UB	Dudley MBC	12	26	22	18.6%	G	**0.84**
Gradko	20% TEA in water	2016	R	Dudley MBC	11	43	38	12.4%	G	**0.89**
Gradko	20% TEA in water	2016	R	Dudley MBC	12	51	54	-5.6%	G	**1.06**
Gradko	20% TEA in water	2016	B	LB Waltham Forest	12	31	30	2.3%	G	**0.98**
Gradko	20% TEA in water	2016	R	NOTTINGHAM CITY COUNCIL	12	37	39	-5.4%	G	**1.06**
Gradko	20% TEA in water	2016	R	LB Hounslow	9	75	58	28.0%	G	**0.78**
Gradko	20% TEA in water	2016	UB	LB Hounslow	9	33	33	0.1%	G	**1.00**
Gradko	20% TEA in water	2016	R	Lisburn & Castlereagh City Council	12	39	26	46.4%	G	**0.68**
Gradko	20% TEA in water	2016	B	Pembrokeshire Council	11	4	3	27.5%	G	**0.78**
Gradko	20% TEA in water	2016	R	Cheltenham Borough Council	11	32	32	-0.9%	G	**1.01**
Gradko	20% TEA in water	2016	R	Lancaster City Council	11	33	32	2.8%	G	**0.97**
Gradko	20% TEA in water	2016		**Overall Factor[3] (27 studies)**				**Use**		**0.92**