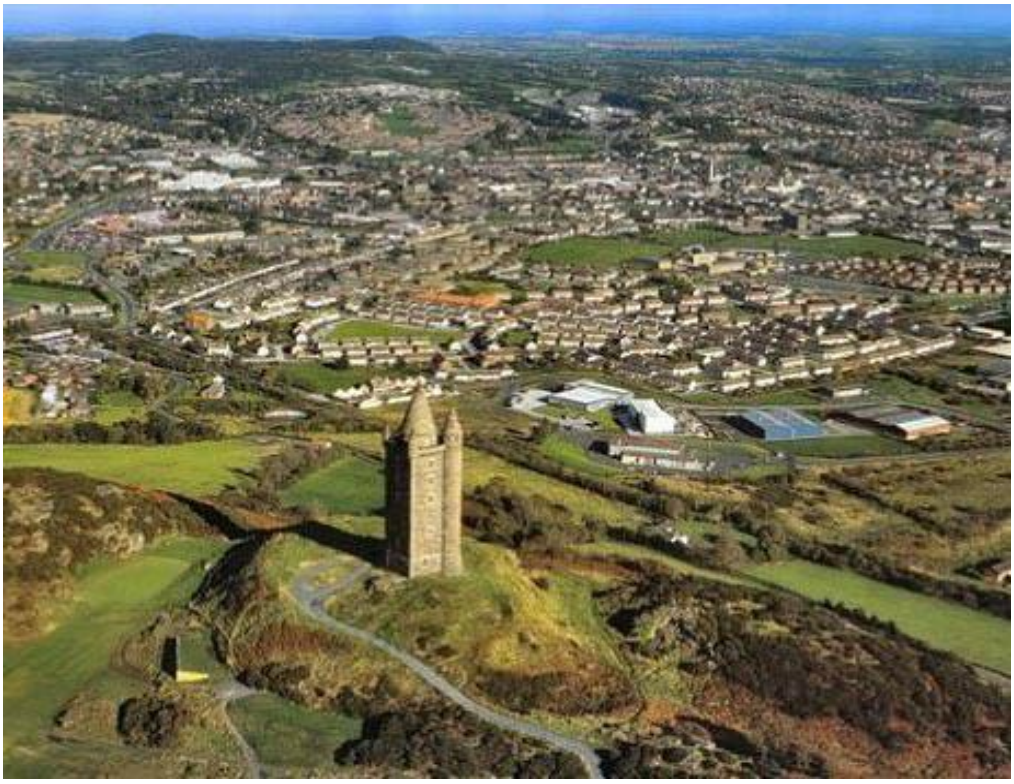
Ards and North Down Borough Council

2018 Updating and Screening Assessment for

Ards and North Down Borough Council

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

June 2018



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Executive Summary

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

An updating and screening assessment (USA) is required to be prepared every three years by all local authorities in the UK. The last updating and screening assessment of air quality was undertaken in 2015 with two progress reports carried out in 2016 and 2017.

This report is the 2018 (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. This Report identified no exceedances of the Air Quality Strategy objectives for 2017 for any of the pollutants assessed with relevant exposure.

Monitoring will continue in 2018 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 completed phase one in 2017. This and other planned housing developments have been examined by the Environmental Department and were found to have no significant impact on air quality. Ards & North Down Borough Council are actively working towards improving Air Quality within the Borough, the Local Development Plan progressed in 2017 and Air Quality will be a consideration within it. In 2017 Council approved plans to extend the Comber Green Way to Newtownards with a possible future extension to Donaghadee, this is a popular cycle and pedestrian route that connects with the Belfast cycle route and will also give easy access to the new Rapid Transport System commencing in 2018 from Dundonald through Belfast City Centre.

https://www.infrastructure-ni.gov.uk/articles/belfast-rapid-transit-glider-introduction

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1 Introduction

1.1 Description of Local Authority Area

Ards and North Down Borough Council (ANDBC) has 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 the position of Ards and North Down Borough Council within Northern Ireland

Figure 1.2 Ards and North Down Borough Council area

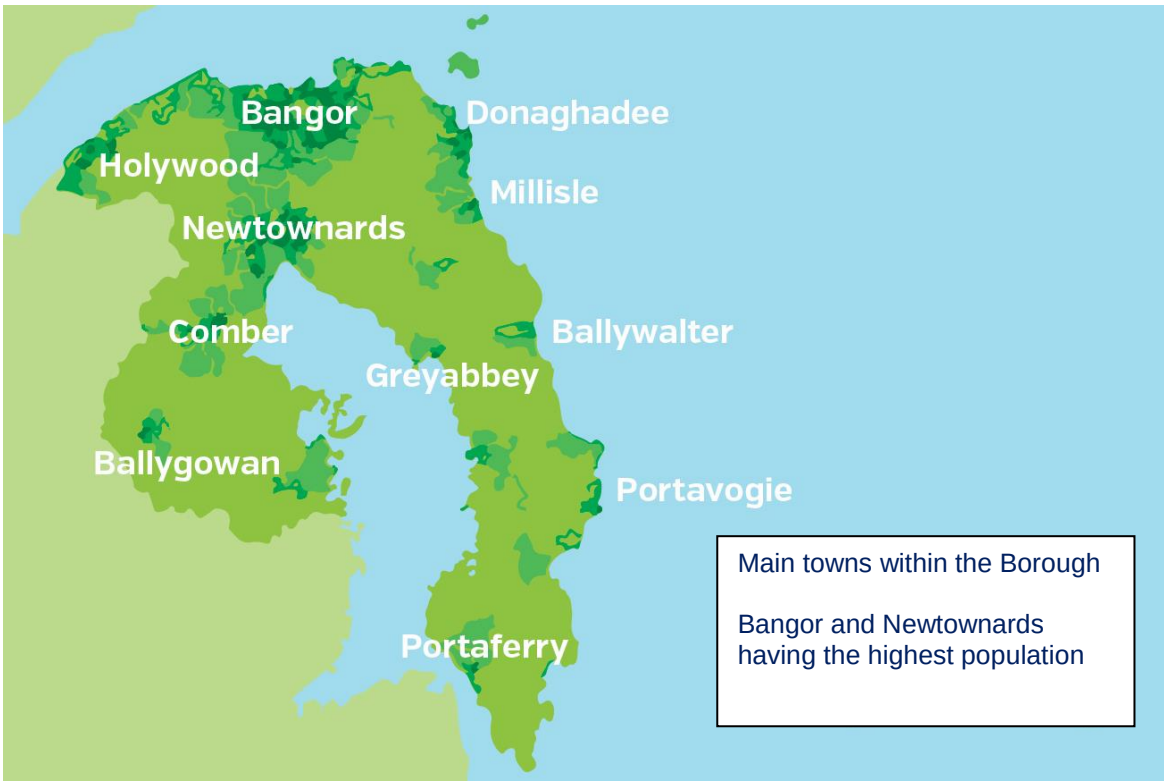


Figure 1.3 Map showing the 3 main arterial routes to Belfast City Centre

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 μg/m^3 (milligrams per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg/m^3	Running annual mean	31.12.2003
	3.25 μg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10.0 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

Local authorities in Northern Ireland amalgamated on 1st April 2015 creating 11 new councils. ANDBC is one of the new Councils.
In December 2015 ANDBC submitted an USA, reference was made in this report of the new boundaries and previous relevant reports. A further progress report was submitted in 2016 and 2017.

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. Air Quality Data Management (AQDM) are employed to ratify and validate the data. A specialist engineer is employed to service and maintain the site as required. Results and correction factors are detailed in Appendix A.

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 2017.

Results and correction factors are detailed in Appendix A.

Figure 2.1 Position of the air monitoring site within ANDBC

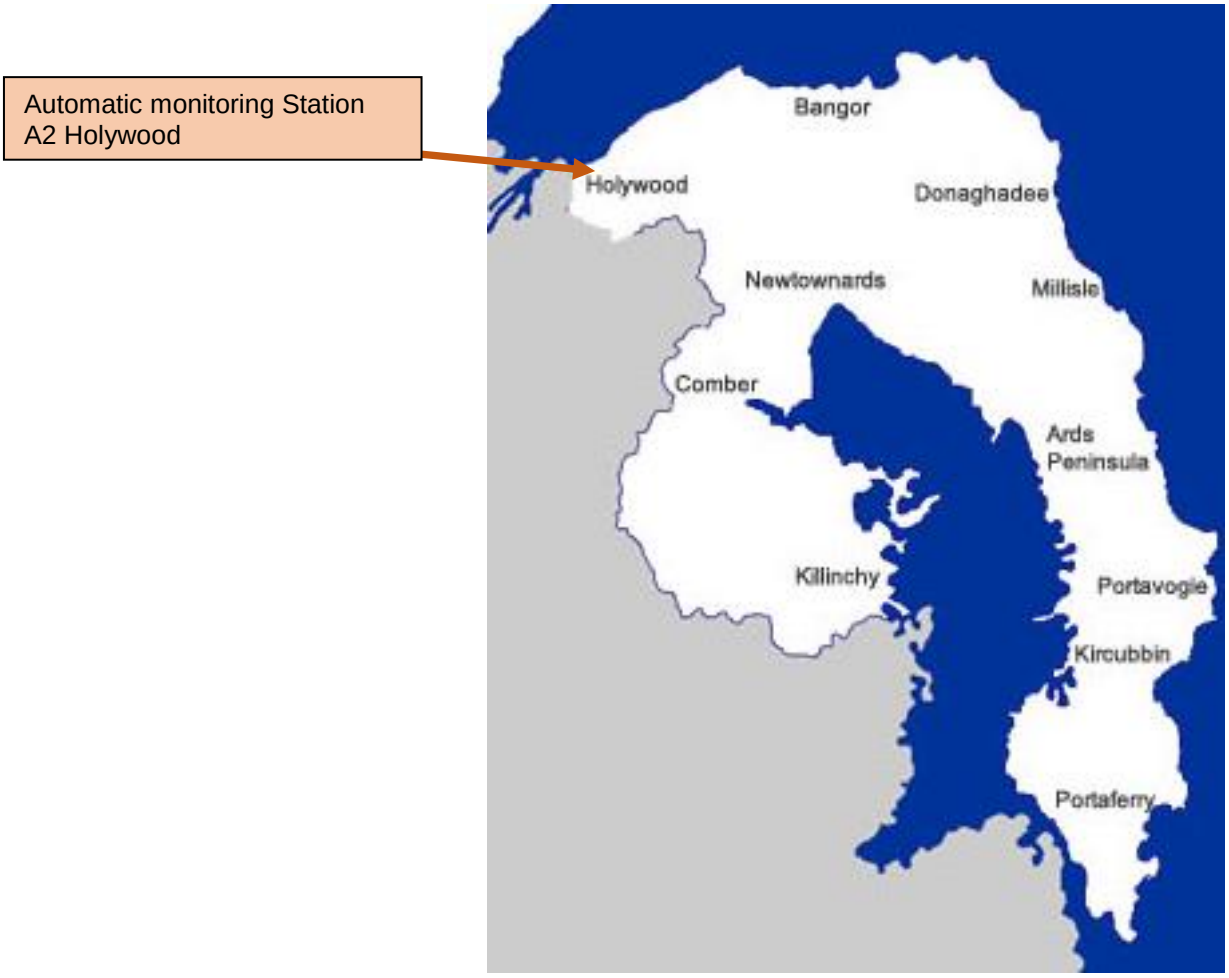


Figure 2.2 Position of Automatic Monitoring Site on the A2 Holywood

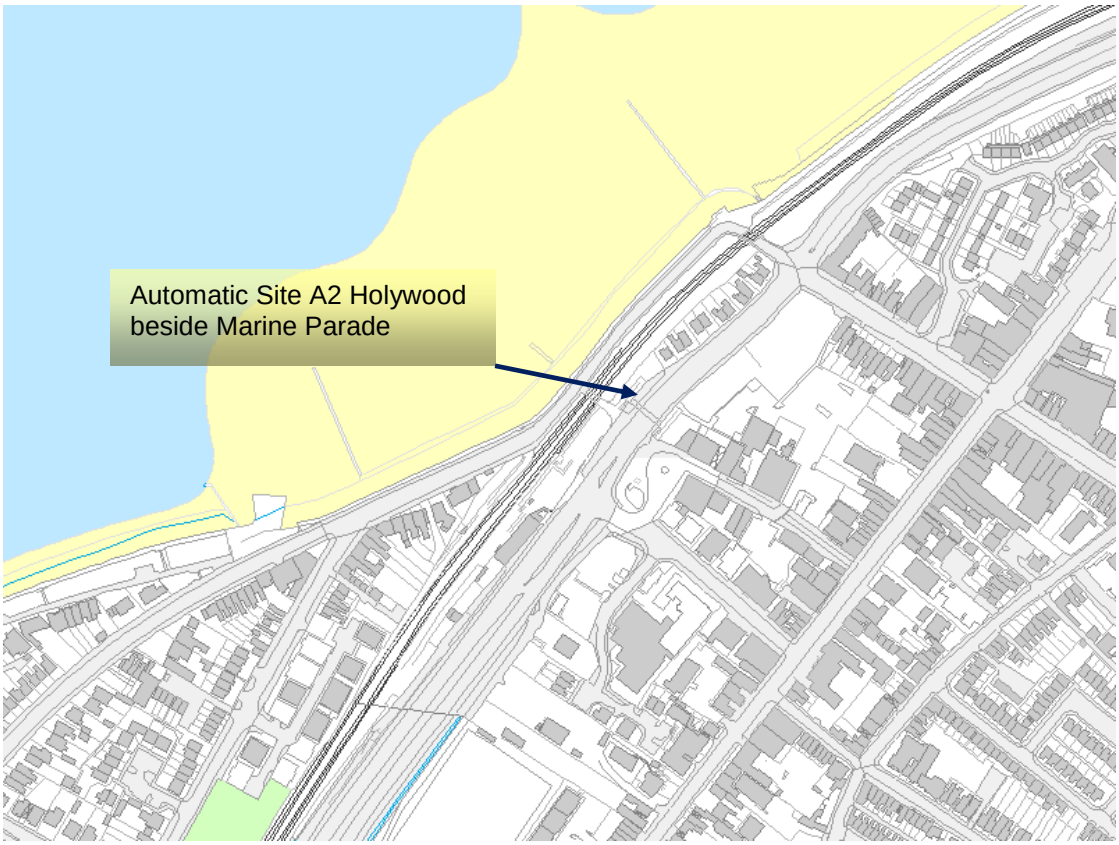


Figure 2.3 Picture of Automatic Monitoring Station A2 Holywood

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	Irish Grid 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

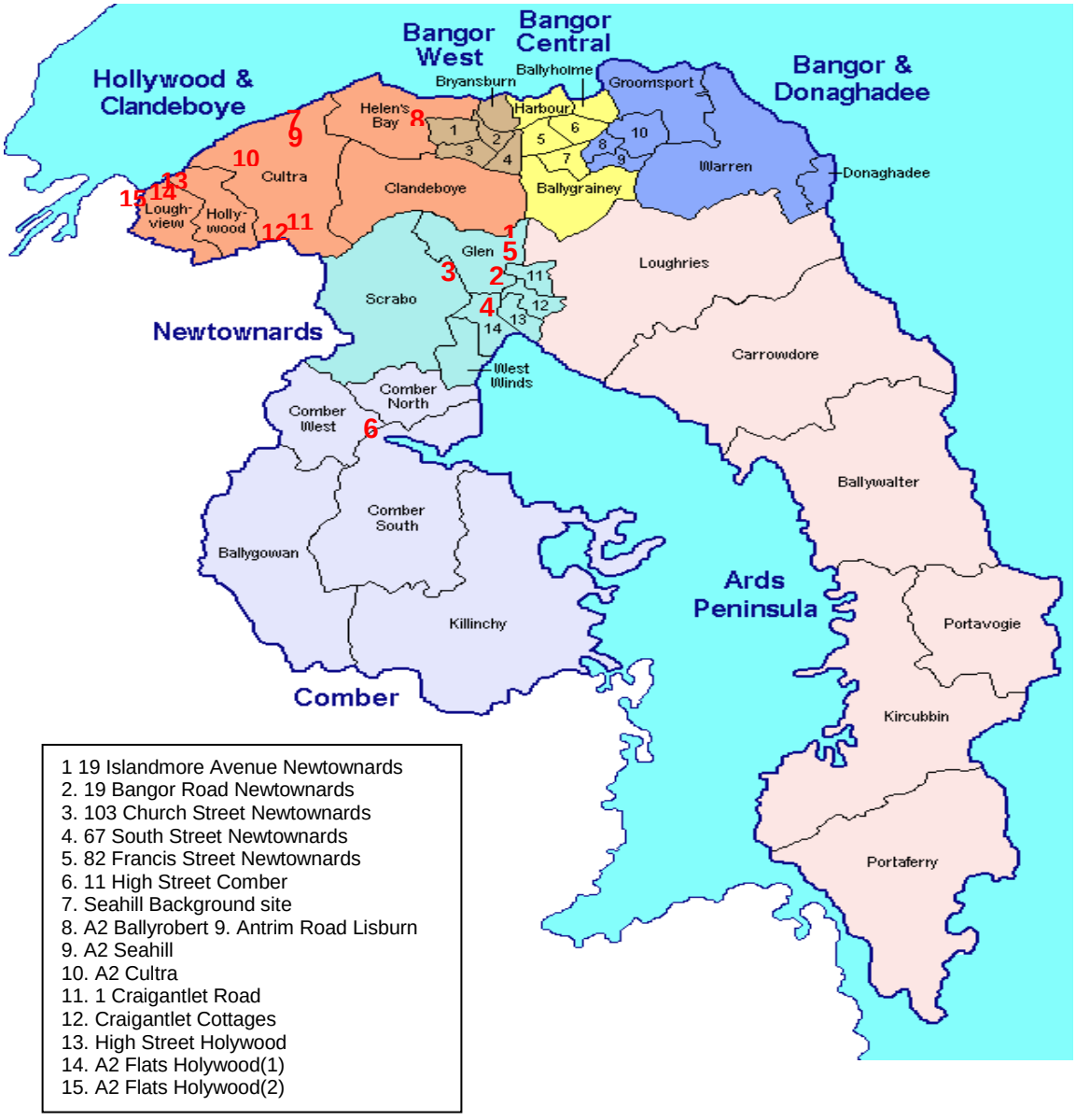
ANDBC has 15 NO_2 diffusion tube sites at roadside and background sites. Five are positioned along the A2 main arterial route into Belfast on facades of the closest dwellings to the roadside, the remainder of the tubes are at relevant exposure at various hotspots where there is traffic congestion at rush hour in Newtownards, Comber and Holywood. A co-location study is carried out at the automatic site in Holywood, the results of the co-located study were submitted into the national data base for 2017. The diffusion tube studies for the past five years do not show any particular trends, and all are showing results within the objective. The two diffusion tubes on the A2 Flats Holywood are close to the objective although the Automatic site within 200M to these is showing a much lower result, this may be due to the close proximity to the road and traffic lights.

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

The bias adjustment factor from the co-location study is **0.63.** This was calculated using the R&A support precision and accuracy spread sheet. A decision was made to apply the national figure of **0.89** as 34 studies were included and therefore a more accurate figure, although somewhere between these two figures is probably more realistic as ANDBC is mainly coastal and breezy.
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

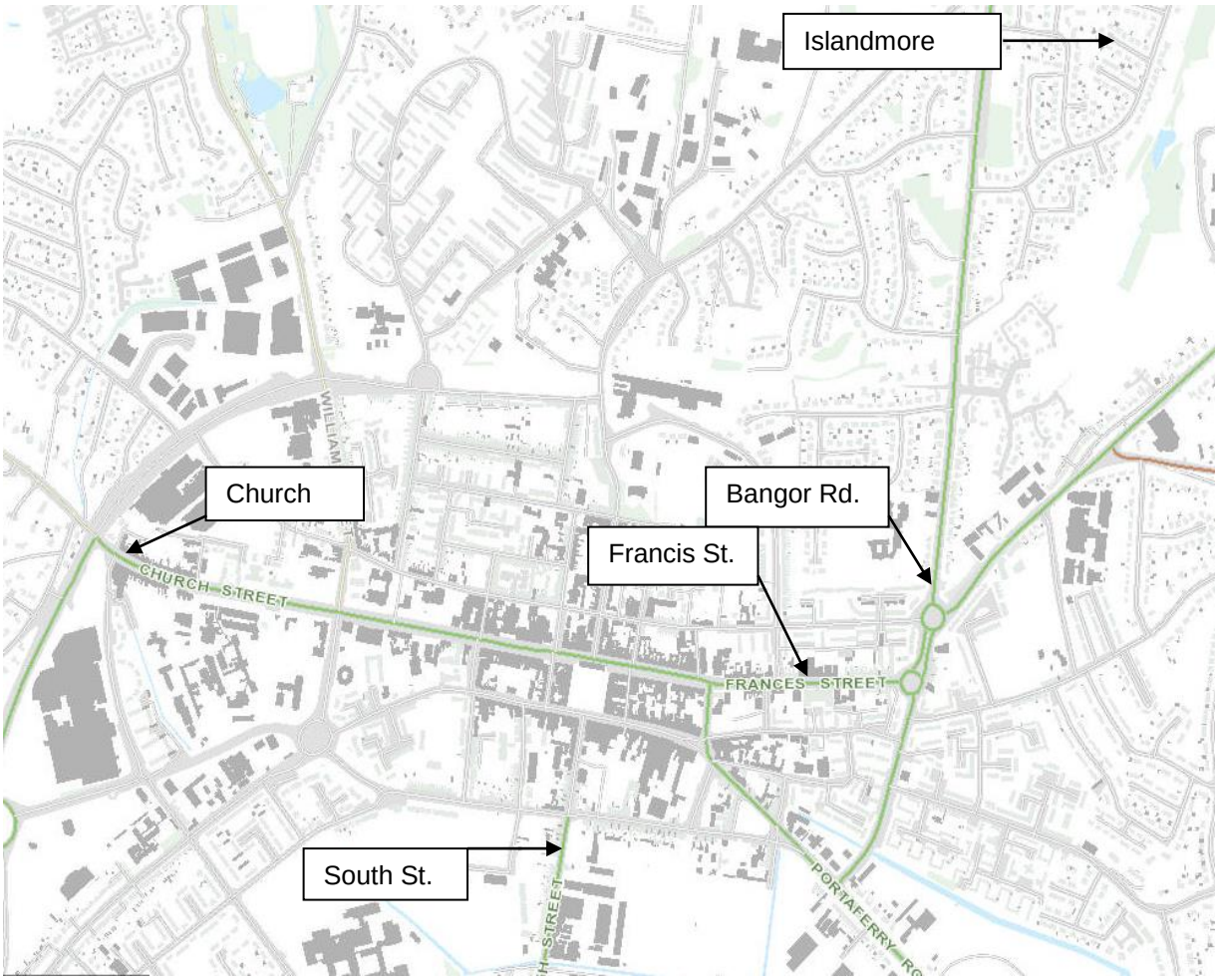
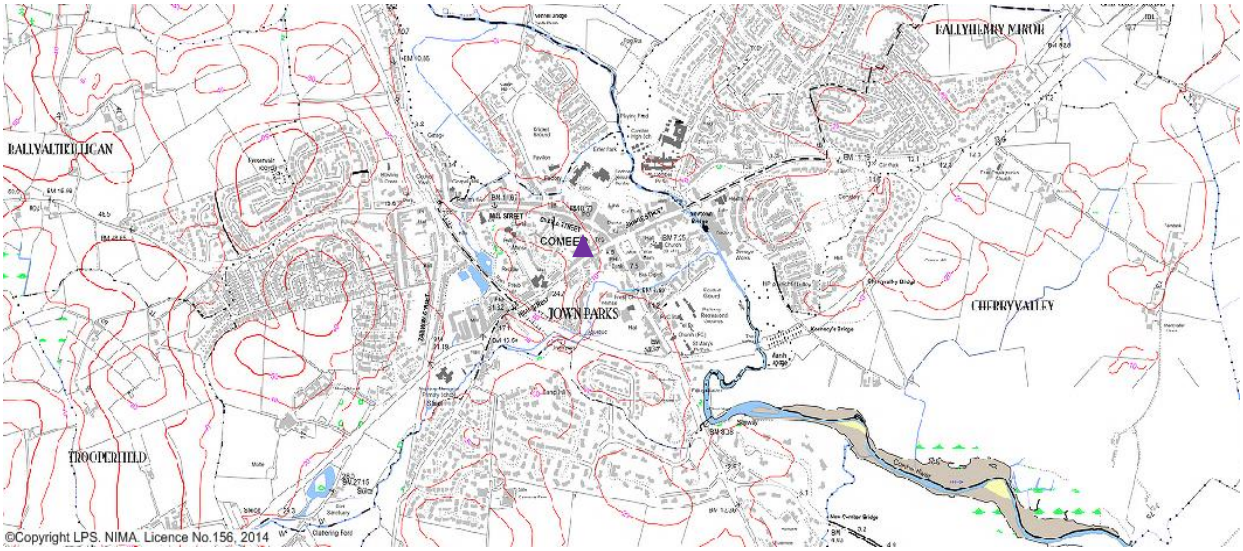
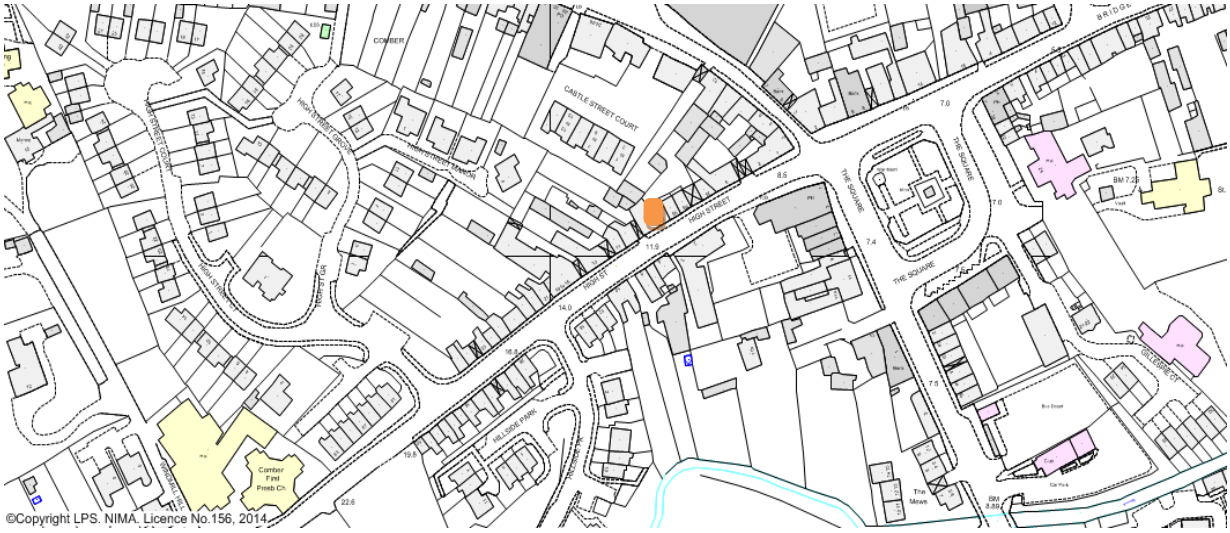


Figure 2.6 Diffusion tube 6 in Comber



▲ Position of diffusion tube in Comber Village Centre

Figure2.7 Position of Diffusion tube 6 in Comber Village



Position of diffusion tube High Street Comber

Figure 2.8 Position of Diffusion tube sites 7-9 on the A2

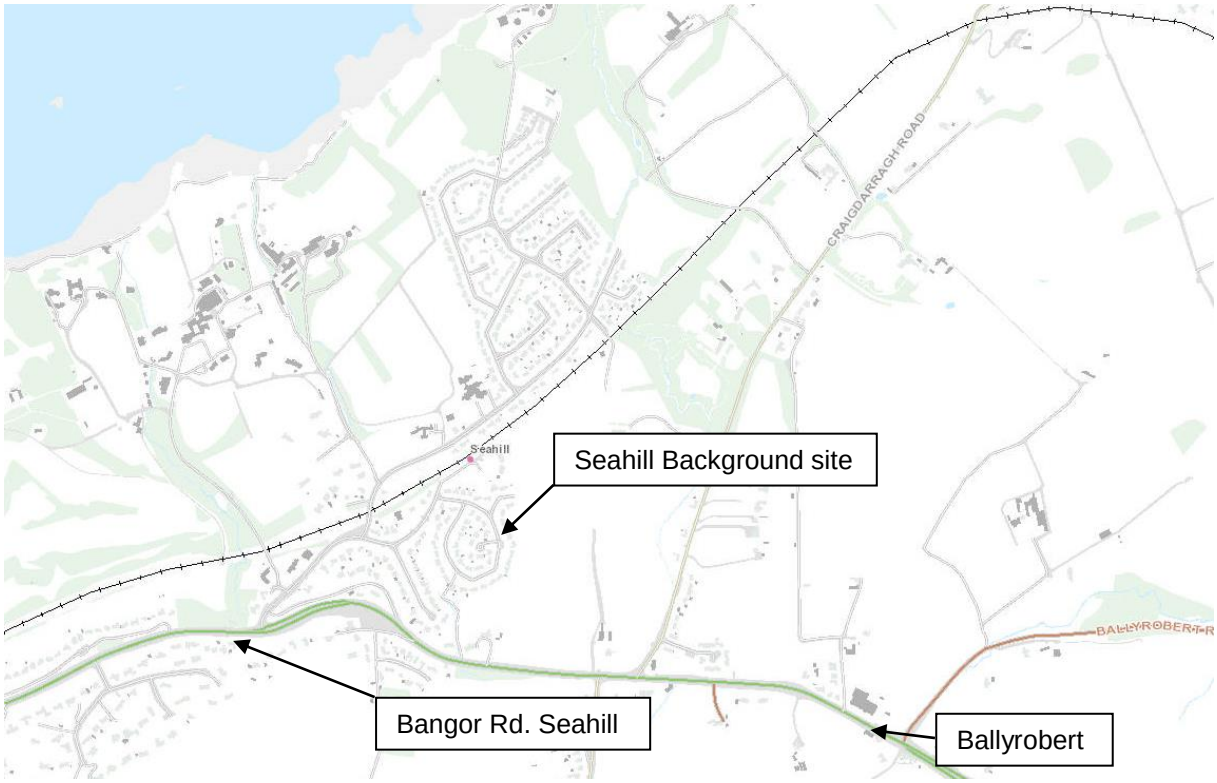


Figure 2.9 Position of Diffusion tube site 10 on A2

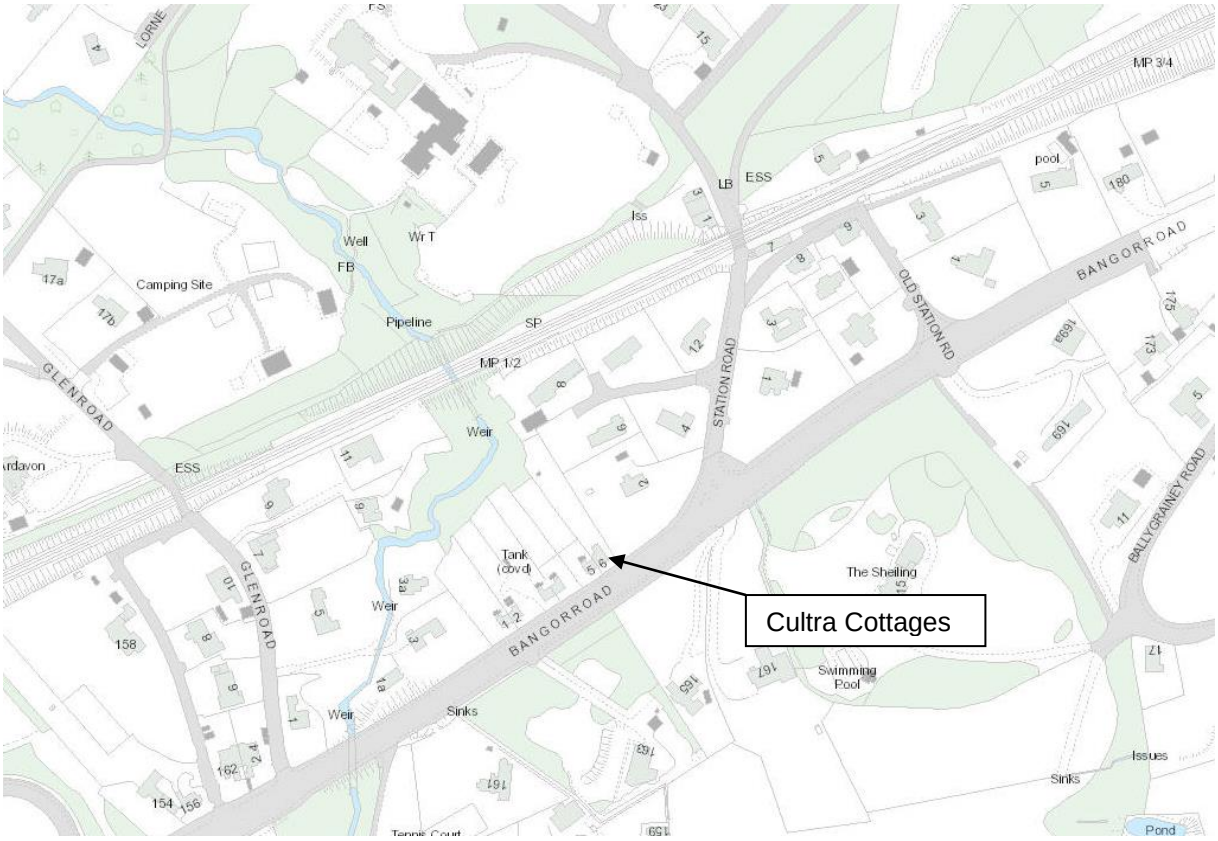


Figure 2.10 Position of Diffusion tube sites 11,12 in Craigantlet

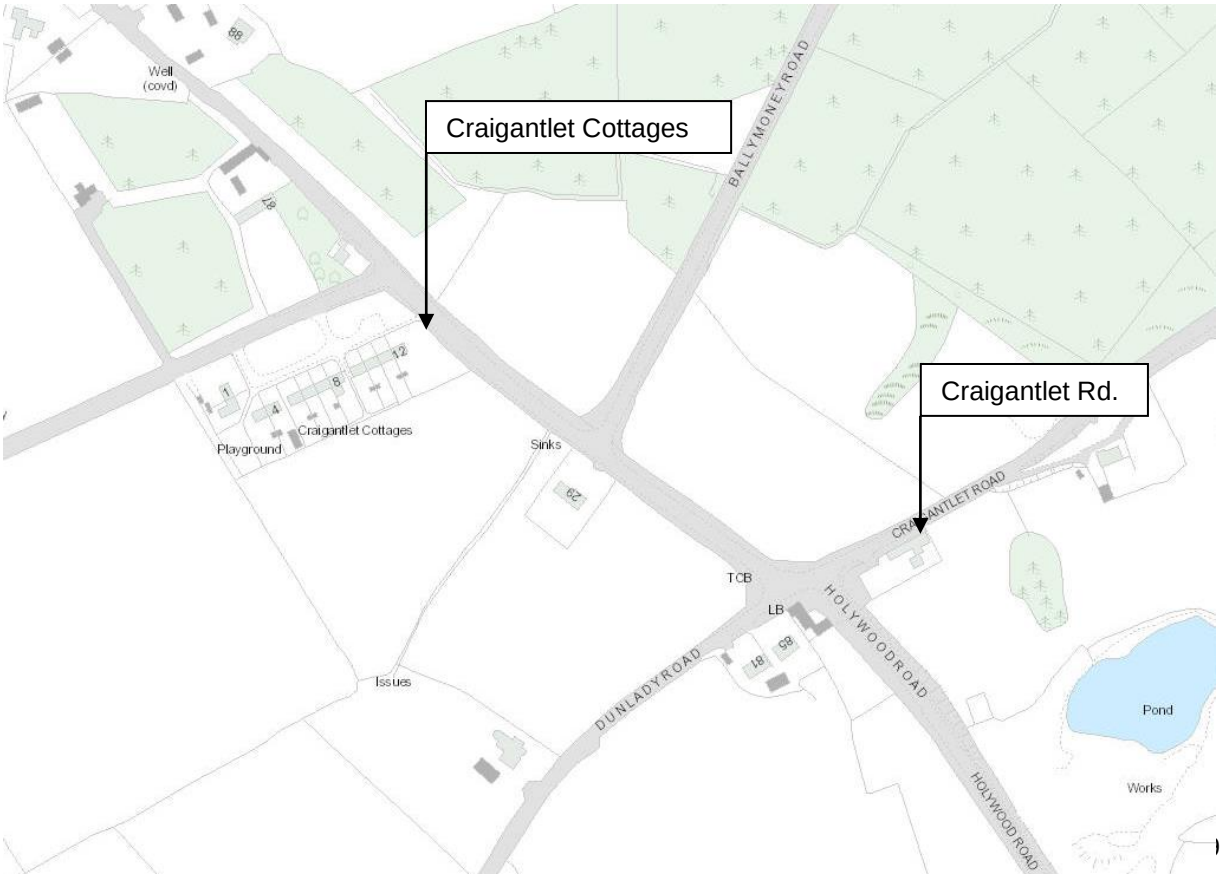


Figure 2.11 Position of Diffusion tube sites 13-15 on A2 (flats) and town centre

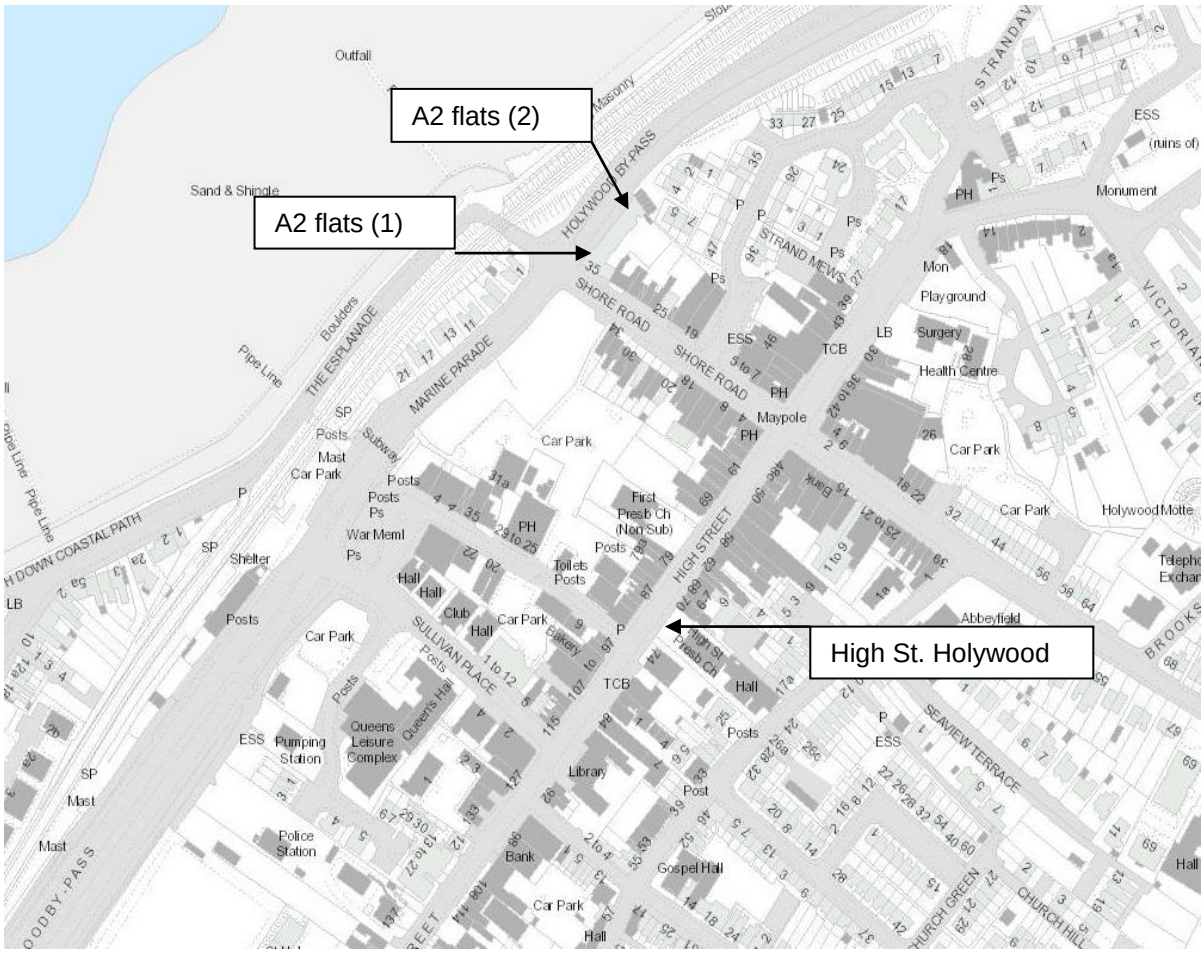


Table 2.2 Details of Non-Automatic Monitoring Sites

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	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

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?
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
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(2)	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. All monitored pollutant concentrations have been below their respective air quality objective limits at relevant exposure. In the following section results are presented for the NO_2 diffusion tube sites and the automatic site in Holywood which monitors NO_2 and PM_{10} and providing real-time data on the NI Air Quality web site.

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 are well below the objective at relevant exposure, except for the two diffusion tube sites on the flats A2 Holywood which were close to the objective in 2017.

2.2.2 Automatic Monitoring Data

Table 2.3 presents the annual mean concentrations of NO_2 determined at the automatic site in 2017 from the hourly measurements.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2017 % [b]	Annual Mean Concentration (µg/m^3)				
					2013* [c]	2014* [c]	2015* [c]	2016 [c]	2017
A2 Holywood	Roadside	NO	N/A	96.8	29	30	26	30	25

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

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 variation more probably due to climatic conditions rather than increased traffic emissions. There were a small number of exceedances of the hourly mean in 2013, 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 2017 % [b]	Number of Hourly Means > 200µg/m^3				
					2013* [c]	2014* [c]	2015* [c]	2016 [c]	2017 [c]
A2 Holywood	Roadside	NO	N/A	96.8	8	0	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 2017 was carried out at the Holywood automatic site, the results of this study were submitted into the national data base, the 2017 local bias is **0.63,** a decision was made to apply the national figure **0.89** as 34 studies were included in this and therefore deemed to be a more accurate representation. However a number of studies are still to be included in June 2018 which may have an effect on the bias figure, a realistic figure for ANDBC diffusion tubes is probably somewhere between these two figures the location in Holywood of the automatic site is well ventilated and there are consistent sea breezes. The two new sites in Holywood established in 2015 near the automatic station at an apartment block on the A2 (tubes 14,15 shown in figure 2.13), are showing results higher than the automatic site they are sheltered due to the height of the apartment block and they're not effected by the sea breezes. They were established due to a shopping and residential complex planned next to them on this busy route to commence in 2017, this will be completed in 2018, ANDBC shall continue to monitor at this location to ascertain if levels remain below the objective. Pictures of these sites can be found in figures 2.12 and 2.13.

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

Details of the QA/QC for the diffusion tubes and the reason for the use of the bias adjustment factor **0.89** can be found in Appendix A

Trends for the 15 diffusion tube sites within the Council area are shown in figure 2.14

Figure 2.12 Position of Diffusion tubes A2 Flats Holywood in relation to the automatic site

Figure 2.13 Position of Diffusion tubes 14 and 15 on A2 Flats Holywood

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2017

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2017 (Number of Months)	2017 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.89[b]
1	19 Islandmore Av Newtownards	Background	N	single	11	12
2	19 Bangor Rd Newtownards	Roadside	N	single	11	28
3	103 Church St Newtownards	Roadside	N	single	12	24
4	67 South St. Newtownards (b)	Roadside	N	single	12	26
5	82 Frances St. Newtownards	Roadside	N	single	12	25
6	11 High St Comber	Roadside	N	single	12	32
7	Background site Seahill	Roadside	N	single	11	11
8	A2 Ballyrobert	Background	N	single	11	28
9	A2 Seahill	Roadside	N	single	11	13
10	A2 Cultra	Roadside	N	single	11	21
11	1 Craigantlet Road Craigantlet	Roadside	N	single	12	25
12	The Cottages Craigantlet	Roadside	N	single	12	19
13	High Street Holywood	Roadside	N	single	11	21

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2017 (Number of Months)	2017 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.89[b]
14	A2 Flats (1) Holywood	Roadside	N	single	12	36
15	A2 Flats(2) Holywood	Roadside	N	single	12	37

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 (2013 to 2017)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.73)	2015 (Bias Adjustment Factor = 0.88)	2016 (Bias Adjustment Factor = 0.92)	2017 (Bias Adjustment Factor = 0.89)
1	19 Islandmore Av Newtownards	N	11	9	11	12	12
2	19 Bangor Rd Newtownards	N	28	23	26	28	28
3	103 Church St Newtownards	N	25	22	24	23	24
4	67 South St. Newtownards (b)	N	24	22	24	26	26
5	82 Frances St. Newtownards	N	23(a)	22	24	24	25
6	11 High St Comber	N	30(a)	27	30	32	32
7	Background site Seahill	N	10	8	10	11	11
8	A2 Ballyrobert	N	30	24	26	31	28
9	A2 Seahill	N	16	10	12	15	13
10	A2 Cultra	N	21	17	20	23	21
11	1 Craigantlet Road Craigantlet	N	19	21	23	25	25
12	The Cottages Craigantlet	N	17	15	15	19	19
13	High Street Holywood	N	24	23	23	21	21

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
			2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.73)	2015 (Bias Adjustment Factor = 0.88)	2016 (Bias Adjustment Factor = 0.92)	2017 (Bias Adjustment Factor = 0.89)
14	A2 Flats (1) Holywood	N			33	37	36
15	A2 Flats(2) Holywood	N			32	33	37

(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

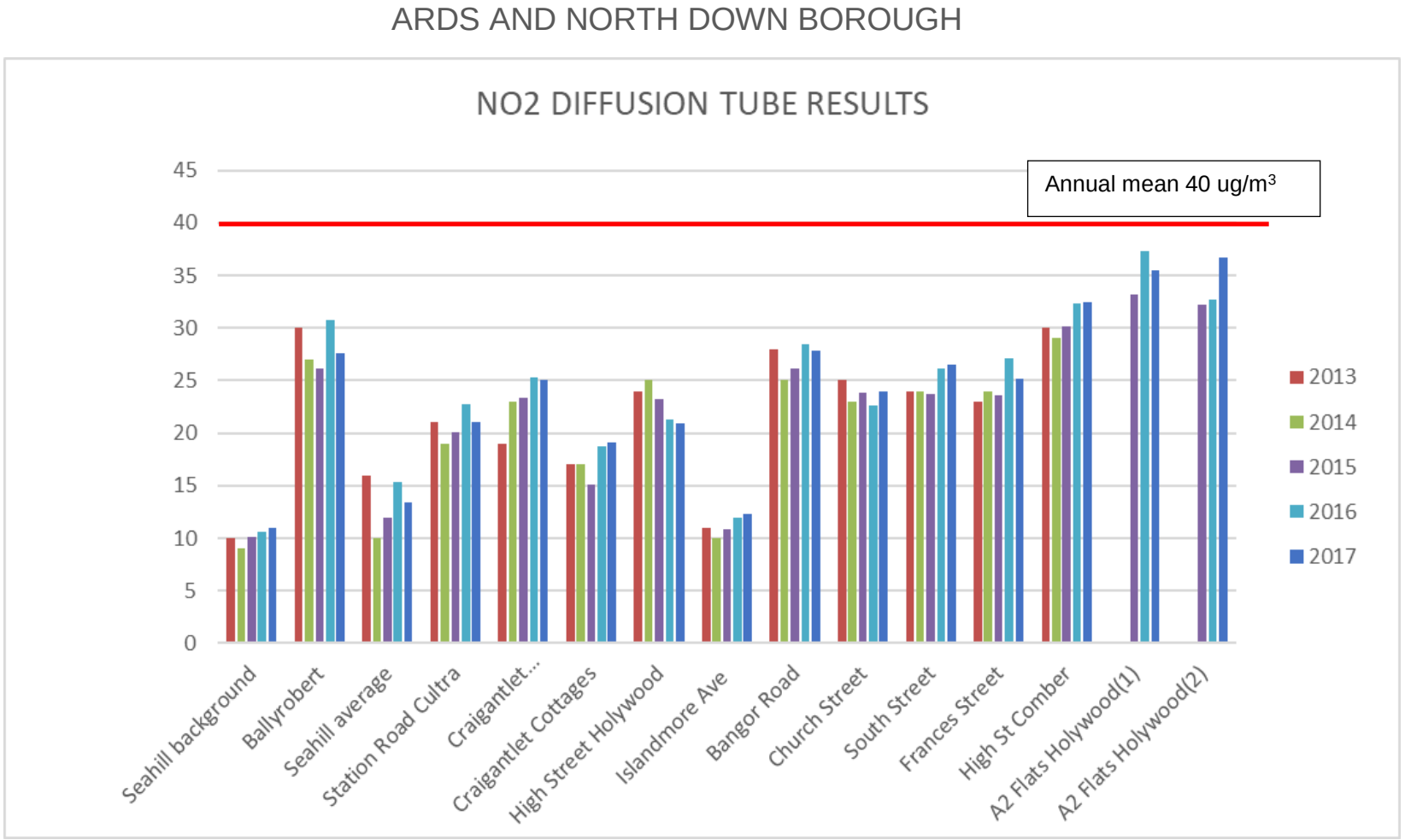
Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

[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%

[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.

Figure 2.14 – 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.



2.2.3 Particulate Matter (PM_{10})

Automatic monitoring of PM_{10} using a TEOM was carried out at the Holywood site, results continued in 2017 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 in Table 2.7.. 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 2017 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration 50 μg/m³				
						2013	2014	2015	2016	2017
A2 Holywood	Roadside	N	99.6%	99.6%	Y	21	19	18	16	14

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 2017 %[b]	Confirm Gravimetric Equivalent	Number of Daily Means > 50µg/m³				
						2013	2014	2015	2016	2017
A2 Holywood	Roadside	N	99.6%	99.6%	Y	7	2	4	0	1

In bold, exceedence of the PM_{10} annual mean AQS objective of 40µg/m³

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

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

* Annual mean concentrations for previous years are optional

Figure 2.5 Trends in Annual Mean PM_{10} Concentrations

PM_{10} has remained consistently low in Holywood

2.2.4 Sulphur Dioxide

Ards and North Down Borough Council did not carry out any monitoring of SO_2 in 2017

2.2.5 Benzene

No monitoring of Benzene was carried out in 2017.

2.2.6 Other pollutants monitored

In 2017 Nitrogen Dioxide and PM_{10} were the only pollutants monitored

2.2.7 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 meeting the specified criteria.

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 meeting the specified criteria.

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. The two NO_2 diffusion tube sites in Holywood established in 2015 at an apartment block on the A2 (tubes 14,15 shown in figure 2.13) although below the objective, levels increased in 2016 showing the highest levels along this main route to Belfast and have remained high in 2017, they are positioned in a sheltered location from the prevailing south westly wind. The building of a shopping and residential complex commenced in 2017 adjacent to the apartment block which may restrict the air flow further therefore monitoring will continue at this location in 2018.

8.2 Conclusions from Assessment of Sources

No new sources were identified.

8.3 Proposed Actions

This 2018 Update and Screening 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 of the adjacent complex is completed in 2018.

Ards and North Down Borough Councils regeneration projects include Bangor Town Centre, Queens Parade in Bangor has been undeveloped for a number of years, developments are now moving forward with planning in 2018. It is intended in 2018 to relocate the one of the background NO_2 diffusion tubes to this location, and to relocate the other background site to the outer ring in Bangor where new houses have been built next to the kerb.

DAERA are presently producing a new Air Quality Action Plan (AQAP). It is this Council's view that the new air quality action plan for nitrogen dioxide for Northern

Ireland will not solely focus upon delivering limit values within existing Air Quality Management Areas, but it will 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.

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(16). Guidance prepared by the Department for Environment, Food and Rural Affairs, February 2016

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.

Air Quality Report

Produced by AQDM on behalf of North Down

NORTH DOWN HOLYWOOD A2 2017

These data have been fully ratified by AQDM to the LAQM (TG16) standards

Site Environment and Description

ROADSIDE: Marine Highway

Statistical Summary Report

This 2017 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 TEOM gravimetric PM_{10} is shown in the 2nd column. 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}	1 day	0	0
NO_2	0 hours	0	0

Gravimetric PM_{10} was Moderate on 22nd Jan with a daily mean reaching 54 µg m^{-3}.

Data Captures

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

Second table – Air Quality Exceedences

Gravimetric PM_{10} – annual data capture was 99.6 %

The maximum daily mean was 54 µg m^{-3} so the daily mean limit value of 50 µg m^{-3} was exceeded on 1 day. The annual allowance is 35 days so this Objective was not exceeded.

The annual mean was 14 µg m^{-3} which did not exceed the 40 µg m^{-3} Objective.

NO_2 – annual data capture was 96.8 %

The annual mean was 25 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.

AQDM
Air Quality Data Management

Air Quality Report

NORTH DOWN HOLYWOOD A2 2017

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 #	1	-	0	-	-	-	-
Number Low #	364	-	8483	-	-	-	-
Maximum 15-min mean	-	168 µg m^{-3}	161 µg m^{-3}	389 µg m^{-3}	706 µg m^{-3}	-	73.0 m/sec
Maximum hourly mean	127 µg m^{-3}	115 µg m^{-3}	138 µg m^{-3}	349 µg m^{-3}	643 µg m^{-3}	-	68.8 m/sec
Maximum running 8-hr mean	94 µg m^{-3}	81 µg m^{-3}	93 µg m^{-3}	197 µg m^{-3}	383 µg m^{-3}	-	66.9 m/sec
Maximum running 24-hr mean	67 µg m^{-3}	53 µg m^{-3}	72 µg m^{-3}	118 µg m^{-3}	251 µg m^{-3}	-	45.2 m/sec
Maximum daily mean	54 µg m^{-3}	42 µg m^{-3}	65 µg m^{-3}	97 µg m^{-3}	209 µg m^{-3}	-	45.2 m/sec
Average	14 µg m^{-3}	15 µg m^{-3}	25 µg m^{-3}	21 µg m^{-3}	57 µg m^{-3}	-	6.2 m/sec
Data capture	99.6 %	99.6 %	96.8 %	96.8 %	96.8 %	96.6 %	96.6 %

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}	54 µg m^{-3}	1	1	35 days	No
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	14 µg m^{-3}	0	-	-	No
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	25 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 2017 the NO_2 tubes were prepared and supplied by Gradko International Limited, using the preparation method 20%TEA/Water. Gradko International Ltd. participates in the AIR-PT/WASP scheme, Quarterly summaries of participating laboratories' performance can be found here:

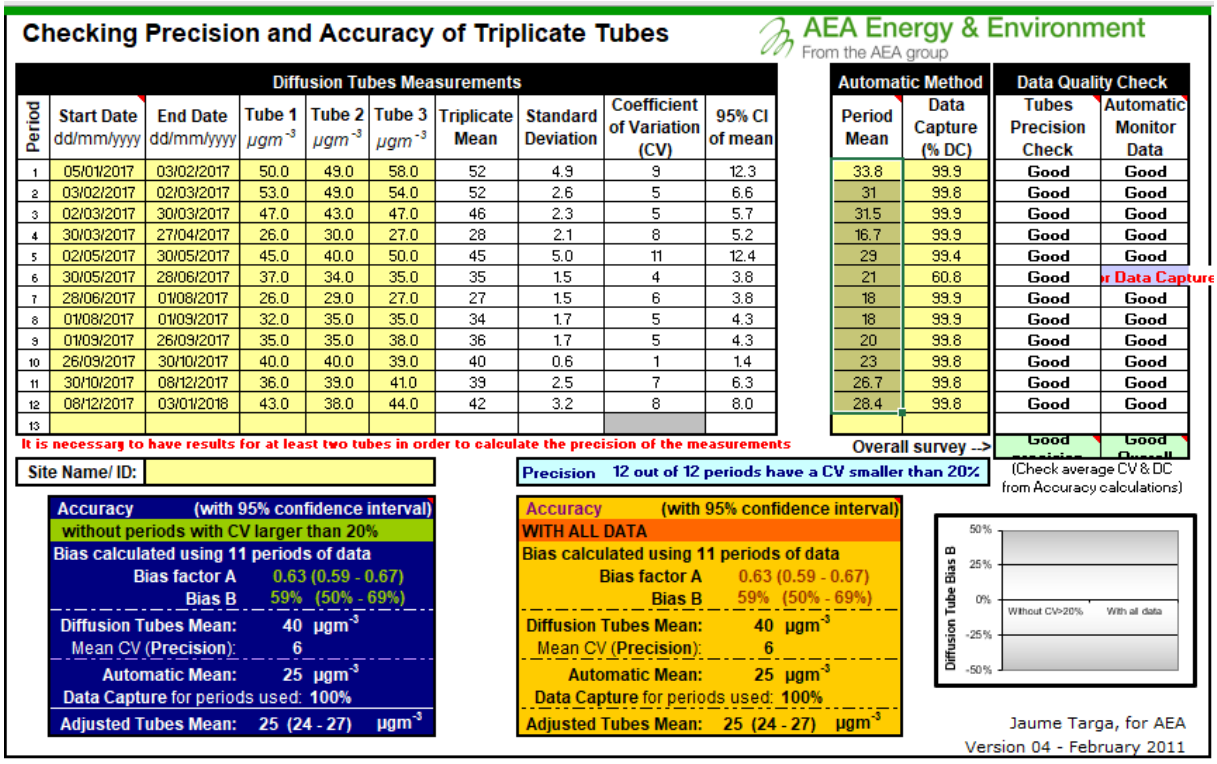
http://laqm.defra.gov.uk/documents/LAQM-AIR-PT-Rounds-1-12-(April-2014-February-2016)-NO2-report.pdf

Diffusion Tube Bias Adjustment Factors

Factor from Local Co-location Studies

A co-location study was carried out at the Holywood site in 2017 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 **0.63**



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	05/01/2017	03/02/2017	50.0	49.0	58.0	52	4.9	9	12.3	33.8	99.9	Good	Good
2	03/02/2017	02/03/2017	53.0	49.0	54.0	52	2.6	5	6.6	31	99.8	Good	Good
3	02/03/2017	30/03/2017	47.0	43.0	47.0	46	2.3	5	5.7	31.5	99.9	Good	Good
4	30/03/2017	27/04/2017	26.0	30.0	27.0	28	2.1	8	5.2	16.7	99.9	Good	Good
5	02/05/2017	30/05/2017	45.0	40.0	50.0	45	5.0	11	12.4	29	99.4	Good	Good
6	30/05/2017	28/06/2017	37.0	34.0	35.0	35	1.5	4	3.8	21	60.8	Good	r Data Capture
7	28/06/2017	01/08/2017	26.0	29.0	27.0	27	1.5	6	3.8	18	99.9	Good	Good
8	01/08/2017	01/09/2017	32.0	35.0	35.0	34	1.7	5	4.3	18	99.9	Good	Good
9	01/09/2017	26/09/2017	35.0	35.0	38.0	36	1.7	5	4.3	20	99.8	Good	Good
10	26/09/2017	30/10/2017	40.0	40.0	39.0	40	0.6	1	1.4	23	99.8	Good	Good
11	30/10/2017	08/12/2017	36.0	39.0	41.0	39	2.5	7	6.3	26.7	99.8	Good	Good
12	08/12/2017	03/01/2018	43.0	38.0	44.0	42	3.2	8	8.0	28.4	99.8	Good	Good
13													

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

Overall survey --> Good Good

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: 0.63 (0.59 - 0.67)
Bias B: 59% (50% - 69%)
Diffusion Tubes Mean: 40 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 25 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 25 (24 - 27) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A: 0.63 (0.59 - 0.67)
Bias B: 59% (50% - 69%)
Diffusion Tubes Mean: 40 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 25 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 25 (24 - 27) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

A decision was made not to use the local factor as it was deemed to be very low and would show a large decrease in the results. The national bias adjustment figure of 0.89 was therefore applied as 34 studies where included in this. Ards and North Down Borough Council is mainly coastal so with natural sea breezes somewhere between these two figures would probably seem more realistic.

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/18

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 spreadhseet 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 June 2018

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[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2017	R	Lancaster City Council	12	35	32	9.7%	G	**0.91**
Gradko	20% TEA in water	2017	R	Thurrock Borough Council	12	54	52	3.3%	S	**0.97**
Gradko	20% TEA in water	2017	R	Thurrock Borough Council	11	35	33	7.0%	G	**0.93**
Gradko	20% TEA in water	2017	R	Thurrock Borough Council	9	33	29	14.3%	G	**0.87**
Gradko	20% TEA in water	2017	UB	Thurrock Borough Council	11	30	28	8.0%	S	**0.93**
Gradko	20% TEA in water	2017	R	Dudley MBC	12	50	50	0.8%	G	**0.99**
Gradko	20% TEA in water	2017	UB	Dudley MBC	12	24	19	26.6%	G	**0.79**
Gradko	20% TEA in water	2017	R	City of Lincoln Council	12	42	31	33.2%	G	**0.75**
Gradko	20% TEA in water	2017	R	Gedling Borough Council	12	35	31	10.1%	G	**0.91**
Gradko	20% TEA in water	2017	R	Gateshead Council	12	36	37	-2.7%	G	**1.03**
Gradko	20% TEA in water	2017	R	Gateshead Council	12	29	25	17.5%	G	**0.85**
Gradko	20% TEA in water	2017	R	Gateshead Council	12	34	35	-5.3%	G	**1.06**
Gradko	20% TEA in water	2017	R	LB Hounslow	12	65	54	22.2%	G	**0.82**
Gradko	20% TEA in water	2017	R	LB Hounslow	12	59	53	10.6%	G	**0.90**
Gradko	20% TEA in water	2017	B	LB Hounslow	11	28	30	-6.0%	G	**1.06**
Gradko	20% TEA in water	2017	R	LB Hounslow	11	43	34	28.8%	G	**0.78**
Gradko	20% TEA in water	2017	B	LB Hounslow	9	38	33	14.9%	G	**0.87**
Gradko	20% TEA in water	2017	R	LB Hounslow	11	52	42	24.4%	G	**0.80**
Gradko	20% TEA in water	2017	UB	Liverpool	11	20	17	15.2%	G	**0.87**
Gradko	20% TEA in water	2017	R	North Ayrshire Council	12	26	21	23.2%	G	**0.81**
Gradko	20% TEA in water	2017	R	South Gloucestershire Council	12	25	23	10.3%	G	**0.91**
Gradko	20% TEA in water	2017	KS	Marylebone Road Intercomparison	12	101	79	28.6%	G	**0.78**
Gradko	20% TEA in water	2017		**Overall Factor[3] (34 studies)**				**Use**		**0.89**