2011 Air Quality Progress Report

Newtownabbey Borough Council

In Fulfillment of the Environment (Northern Ireland) Order 2002 - Local Air Quality Management

June 2011

Newtownabbey
BOROUGH COUNCIL

Local Authority Officer	Vanessa Hodgen

Department	Environmental Health
Address	Mossley Mill, Newtownabbey
Telephone	028 9034 0154
e-mail	vhodgen@newtownabbey.gov.uk

Report Reference number	
Date	June 2011

Formatted Table

Deleted: ¶

Deleted: Page Break

Executive Summary

AQMA 2 Main Street, Ballyclare

There have been no exceedances of the nitrogen dioxide annual mean objective at any of the diffusion tubes located in AQMA 2, Ballyclare over the last 4 years. The annual mean objective was met at the continuous analyser which is located 5m from the nearest relevant location however it is felt that the extreme cold weather conditions experienced in January and December 2010, which produced very still air, may have contributed to this therefore we will continue monitoring during 2011 to ascertain this.

AQMA 3 Antrim Road, Elmfield

This report has identified exceedances of the nitrogen dioxide annual mean and 1 hour objective at the Antrim Road, Elmfield Automatic Analyser site and at the diffusion tubes located at relevant locations in the Antrim Road, Elmfield AQMA. Newtownabbey Borough Council has produced an Action Plan which was ratified in March 2011 and will be implementing measures in the incoming year.

AQMA 4 Sandyknowes

There have been no exceedances of the nitrogen dioxide annual mean objective at the Sandyknowes Automatic Analyser site in 2010 however there were exceedances of the diffusion tubes located in AQMA 4, Sandyknowes. There had not been any exceedances of the diffusion tubes in the previous 3 years however again it is felt that the extreme cold weather conditions experienced in January and December 2010 may have contributed to this and therefore we will continue monitoring during 2011 to ascertain this.

Newtownabbey Borough Council has not seen any significant changes from any pollution sources since the last round of review and assessment and no other sources of pollution have been identified.
Therefore the likely impact from such sources is negligible.

Newtownabbey Borough Council will be submitting its next Progress Report in April 2012.

Table of Contents

Appendices

Deleted: 1 . Add titles of any appendices

Formatted: Font: 10 pt

Formatted: Font: 10 pt, Font color: Auto

Deleted: Appendix 2 Add titles of any appendices¶

List of Tables

Formatted: Font: Not Bold

Deleted:

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: 10 pt

List of Figures

1 Introduction

1.1 Description of Local Authority Area

Newtownabbey is situated on the shore of Belfast Lough reaching north from the City of Belfast and stretching up towards the Glens of Antrim. The Council area is 54 square miles and is bound to the west by Antrim Borough Council, to the north by Larne Borough Council, to the east by Carrickfergus Borough Council and to the south by Belfast City Council.

Newtownabbey Borough Council has a population of approximately 80,000 and is the fifth highest Borough population within Northern Ireland.

The majority of the population of the Borough is in the developed urban area stretching out from Glengormley to include Whiteabbey, Mossley, Monkstown and Mallusk and Ballyclare. There are a number of rural villages including Ballynure, Ballyrobert, Ballyeaston, Doagh and Straid, all of which lie within the commuter belt of Belfast.

The Borough is a prime business location with large industrial centres at Mallusk, Hydepark and Monkstown. Newtownabbey's proximity to Northern Ireland's ports and airports makes these industrial parks an ideal place to locate. The port of Larne, Belfast International Airport and Belfast City Airport are within 30 minutes drive and the area is also well served by major roads linking it to the rest of the province. The Borough is well provided for in terms of major retail outlets and shopping centres at Abbeycentre and Northcott.

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the 3-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management 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 $\mu g/m^3$ (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 Local Air Quality Management in Northern Ireland.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Newtownabbey Borough Council has completed the following review and assessments of air quality:

The first round of local air quality review and assessment has included:

- Stage 1 Review and Assessment of Air Quality (March 2001)
- Stage 2/3 Review and Assessment of Air Quality (August 2004)
- Stage 3 Domestic Fuel Combustion (PM10) (August 2004)
- Declaration of AQMA for PM10 (October 2004)
- Stage 4 Air Quality Review and Assessment PM10 (November 2005)
- Air Quality Progress Report (April 2005)
- Revocation of AQMA for PM10 (November 2006)

The second round of local air quality review and assessment has included:

- Air Quality Updating and Screening Assessment (USA) (May 2006)
- Air Quality Progress Report (August 2007)
- Declaration of 3 Air Quality Management Areas for Nitrogen Dioxide (Jan 2008) (**Appendix B Figure 1-1, Figure 1-2, Figure 1-3)**
- Air Quality Progress Report (August 2008)
- Air Quality Detailed Assessment Nitrogen Dioxide (April 2009)
- Amendment of AQMA, Antrim Road, Elmfield (June 2009) **(Appendix B Figure 1-4)**
- Air Quality USA Report (August 2009) – Exceedances of annual mean and 1 hour objective at Antrim Road, Elmfield; no exceedances at Ballyclare or Sandyknowes
- Progress Report (Sept 2010)
- Draft Action Plan for Antrim Road, December 2010

The Progress Report, September 2010 concluded that there were no exceedances at Ballyclare or Sandyknowes and recommended revoking these two AQMAs if this continued during 2010. Exceedances of the annual mean and 1 hour objective were identified at Antrim Road, Elmfield and it was proposed to prepare a draft Action Plan by December 2010

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Newtownabbey Borough Council has 3 automatic monitoring stations. The locations of the automatic continuous monitoring stations are included in Table 2.1 and Appendix C

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Sandyknowes	Roadside	330542 383012	NO_2	N	N	4m	N
Ballyclare, Main St	Roadside	328851 391134	NO_2	Y	Y (5m)	0.5m	Y
Antrim Road	Roadside	332305 381697	NO_2	Y	Y (2m)	1m	Y

- **Sandyknowes**

This monitor has been located here since 2003. It is located as close to the AQMA as possible as previous attempts to relocate it closer to the relevant locations in the AQMA have failed due to legal reasons.

- **Main Street Ballyclare**

This monitor has been located here since January 2008.

- **Antrim Road, Elmfield**

This monitor has been located here since January 2008. In January 2010 on advice from Review and Assessment Helpdesk we moved the sample inlet to 2m from the façade of the relevant location.

These continuous monitoring stations were part of the Calibration Club managed by AEA in 2010. Data from these sites were quality assured to the AURN standards as part of the Calibration Club. Nitrogen dioxide concentrations are measured by ozone chemiluminescence. Ozone chemiluminescence is the reference method specified by the EU NO_2 Directives.

Routine calibration of the NO_x analyser is undertaken by Newtownabbey Borough Council, fortnightly, using on-site certified calibration gas cylinders provided by Messer UK and traceable to National Calibration Standards. In addition QA/QC audits which include calibration of the analyser using zero and span gas standards, and other tests, including for linearity and NO_x converter efficiency was undertaken by AEA twice in the year. Data was fully ratified by AEA staff using procedures as applied to data from the AURN UK national monitoring network sites.

2.1.2 Non-Automatic Monitoring

Newtownabbey Borough Council operates a network of 21 nitrogen dioxide diffusion tubes across the Borough.

Monitoring at two diffusion tube sites namely Site 5 and Site 52 ceased at end of 2009 due to results well below the annual average over the past number of years.

The diffusion tube Site 43 was relocated from the Antrim Road, Elmfield Analyser to the façade of the relevant location at 196 Antrim Road (now Site 60) and was co-located next to Site 61.

The diffusion tubes are exposed for a 4-5 week period and further site specific details on these tube locations are provided in Table 2.2 and Appendix C. The tube data is presented in Table 2.4a with exceedances of the 40 $\mu g/m^3$ annual mean NO_2 highlighted in bold.

In 2010 the diffusion tubes were analysed by Gradko Services using 20% triethylamine in water.
QA/QC details which include the bias adjustment factor for 2010 is reported in Appendix A

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref X Y	Pollutants Monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Site 1 Main Street, Ballyclare	Roadside	328854 391134	NO_2	Y	Y (located on property)	2m	Y
Site 59 Main Street, Ballyclare	Roadside	328854 391134	NO_2	Y	Y (located on property)	2m	Y
Site 57 7 Sandyholme Way	Roadside	330514 382939	NO_2	Y	Y (located on property)	9m	Y
Site 12 7 Sandyholme Way	Roadside	330514 382939	NO_2	Y	Y (located on property)	9m	Y
Site 8 Braden Heights, Rathcoole	Urban Background	333898 381926	NO_2	N	Y (5m	n/a	N
Site 11 44 Sandyknowes Avenue	Roadside	330675 382586	NO_2	N	Y (7m)	7m	N
Site 16 Doagh Village	Roadside	326136 383539	NO_2	N	Y (8m)	1m	N
Site 20 A8/Motorway at Sandyknowes	Roadside	330499 383141	NO_2	N	Y (located on property)	20m	Y
Site 36 NOx Analyser Antrim Road, Sandyknowes	Roadside	330545 383011	NO_2	N	N	n/a	N
Site 37 NOx Analyser Antrim Road, Sandyknowes	Roadside	330545 383011	NO_2	N	N	n/a	N
Site 38 NOx Analyser Antrim Road, Sandyknowes	Roadside	330545 383011	NO_2	N	N	n/a	N
Site 46 12 Collinbridge Road	Roadside	332193 381666	NO_2	N	Y (located on property)	9m	Y
Site 47 13 Sandyholme Park	Roadside	330554 382848	NO_2	Y	Y (7m)	7m	N
Site 48 24 Sandyknowes Avenue	Roadside	330631 382729	NO_2	N	Y (located on property)	17m	Y
Site 49 6 Sandyknowes Gardens	Urban Background	330641 382771	NO_2	N	Y (located on property)	55m	Y
Site 50 45 Burney's Lane	Roadside	331025 382224	NO_2	N	Y (located on property)	17m	Y
Site 51 196 Shore Road	Roadside	334758 380501	NO_2	N	Y (located on property)	6m	Y
Site 56 5 Sandyholme Park	Roadside	330589 382908	NO_2	N	Y (7m)	68m	N
Site 58 Lamp-post, 198 Antrim Road ,Elmfield	Roadside	332305 381697	NO_2	Y	Y (2m)	1m	N
Site 60 196 Antrim Road	Roadside	332305 381697	NO_2	Y	Y (located on Property	1m	Y
Site 61 196 Antrim Road	Roadside	332305 381697	NO_2	Y	Y (located on property)	1m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Table 2.3a provides all nitrogen dioxide continuous monitoring data collected since 2007 and Table 2.3b compares the results with the 1 hour Mean Objective.

Exceedances of the 40 µg/m^3 annual mean nitrogen dioxide objective and cases where there are more than the permitted 18 exceedances of the 200 µg/m^3 1-hour mean nitrogen dioxide objective are highlighted in bold.

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

Site ID & Location	Within AQMA?	Data Capture for calendar year 2009 %	Annual mean concentrations (µg/m^3)			
			2007	2008	2009	2010
Sandyknowes, Mallusk	N	94.9	34.0	35.0	33.0	38.0
Ballyclare, Main St	Y	97.7	N/A	37.0	34.0	40.0
Antrim Rd, Elmfield	**Y**	**99.7**	**N/A**	**56.0**	**68.0**	**46.0**

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites

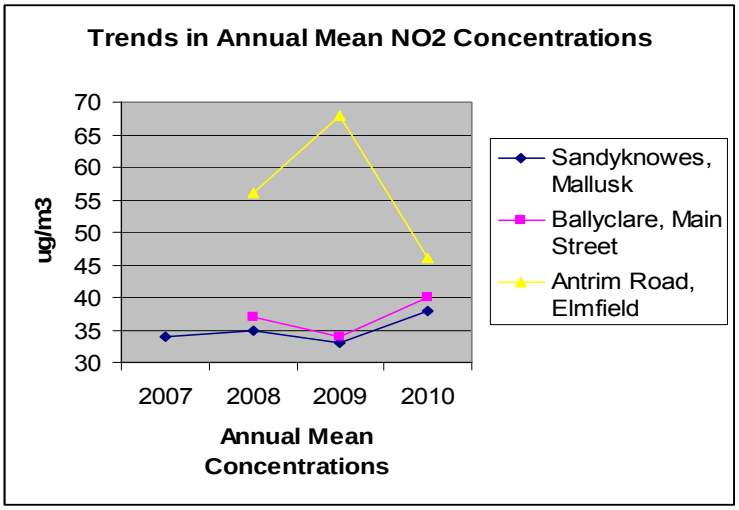


Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID & Location	Within AQMA?	Data Capture for full calendar year 2009 %	Number of Exceedences of hourly mean (200 μg/m^3)		
			2008	2008	2010
Sandyknowes, Mallusk	N	94.9	15	7	3
Ballyclare, Main St	Y	97.7	0	1	2
Antrim Rd, Elmfield	**Y**	**99.7**	**55**	**11**	**29**

Results of Automatic Monitoring for Nitrogen Dioxide for 2010 showed an exceedance of both the annual mean objective and hourly mean objective at the Antrim Road, Elmfield site.

There were no exceedances of the annual mean objective or hourly mean objective for nitrogen dioxide at either of the other two sites although it is noted that the Ballyclare, Main Street met the annual mean objective.

Diffusion Tube Monitoring Data

All diffusion tube monitoring data for 2010 has been bias-adjusted using a local Bias Adjustment Factor from a co-location study and continuous monitor at Sandyknowes, Mallusk. Further details on calculations used to generate adjusted results and information on QA/QC procedures in place are provided in Appendix A.

Table 2.4 shows Nitrogen Dioxide Diffusion Tube Results for 2010

Sites 57, 12 and 11 located in AQMA 4, Sandyknowes met or just exceeded the annual mean objective

Sites 58, 60 and 61 located in AQMA 3, Antrim Road, Elmfield exceeded the annual mean objective

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu g/m^3$) Adjusted for bias				
			2007 National Gradko (0.89)	2008 National Gradko (0.89)	2009 Local (0.9)	2010 uncorrected	2010 Local 0.96
Site 1	Main Street, Ballyclare	Y	32	30	29	33	32
Site 59	Main Street, Ballyclare	Y	29	28	29	32	31
Site 57	**7 Sandyholme Way**	**Y**	39	37	37	**42**	**40**
Site 12	**7 Sandyholme Way**	**Y**	37	36	38	**42**	**40**
Site 8	Braden Heights, Rathcoole	N	21	16	17	20	19
Site 11	**44 Sandyknowes Avenue**	**N**	37	32	35	**43**	**41**
Site 16	Doagh Village	N	26	27	28	32	31
Site 20	A8/Motorway at Sandyknowes	N	31	25	25	33	32
Site 36	NOx Analyser Antrim Road, Sandyknowes	N	37	34	28	39	37
Site 37	NOx Analyser Antrim Road, Sandyknowes	N	39	34	33	39	37
Site 38	NOx Analyser Antrim Road, Sandyknowes	N	36	34	32	37	36
Site 46	12 Collinbridge Road	N	35	34	37	39	37

Site 47	**13 Sandyholme Park**	**Y**	45	37	39	**49**	**47**
Site 48	24 Sandyknowes Avenue	N	31	28	29	36	35
Site 49	6 Sandyknowes Gardens	N	27	24	26	32	31
Site 50	45 Burney's Lane	N	31	29	32	38	36
Site 51	196 Shore Road	N	32	30	31	35	34
Site 56	5 Sandyholme Park	N	32	27	27	33	32
Site 58	**Lamp-post at 198 Antrim Road, Elmfield Analyser**	**Y**	**45**	**45**	**47**	**49**	**47**
Site 60	**196 Antrim Road** (façade of relevant location)	**N**	31	29	32	**44**	**42**
Site 61	**196 Antrim Road** (façade of relevant location)	**N**	32	30	31	**43**	**41**

2.2.2 PM10

Newtownabbey Borough Council does not carry out PM10 Monitoring.

2.2.3 Sulphur Dioxide

Newtownabbey Borough Council does not carry out Sulphur Dioxide Monitoring.

2.2.4 Benzene

Newtownabbey Borough Council does not carry out Benzene Monitoring.

2.2.5 Summary of Compliance with AQS Objectives

It should be noted that all of the monitoring results showed an increase from the 2009 data which we feel was contributable to the extreme cold weather conditions we experienced in January 2010 and December 2010 which led to very still weather.

AQMA 2 Ballyclare

The Nitrogen Dioxide Diffusion Tubes located at Site 1 and Site 59, located on the relevant locations, were well below the annual mean objective however the continuous analyser, located 5m from the relevant locations, had an annual mean of 40 $\mu g/m^3$

AQMA 3 Antrim Road

The annual mean objective was exceeded at both the continuous analyser and all the diffusion tubes (Sites 58, 60, 61) however it should be noted that those tubes (Site 60 & 61) located on the façade of the relevant location only just exceeded the objective level.

AQMA 4 Sandyknowes

The annual mean objective at the continuous analyser was 38 $\mu g/m^3$ however several diffusion tube sites within the AQMA namely Sites 57 and 12 (7 Sandyholme Way), 11 (44 Sandyknowes Avenue) and 47 (13 Sandyholme Park) met or showed exceedances of the annual mean objective.

3 New Local Developments

3.1 Road Traffic Sources

The following road traffic sources which may have an impact on air quality have been identified and considered:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

Newtownabbey Borough Council confirms that there has been no significant change to any of the above sources since the last Progress Report, therefore there is no need to proceed to a Detailed Assessment

3.2 Other Transport Sources

The following additional transport sources which may have an impact on air quality have been identified and considered:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

Newtownabbey Borough Council confirms that there has been no significant change to any of the above sources since the last Progress Report, therefore there is no need to proceed to a Detailed Assessment.

3.3 Industrial Sources

The following industrial sources which may have an impact on air quality have been identified and considered:

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- Industrial installations**:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

Newtownabbey Borough Council confirms that there has been no significant change to any of the above sources since the last Progress Report, therefore there is no need to proceed to a Detailed Assessment

3.4 Commercial and Domestic Sources

The following commercial and domestic sources which may have an impact on air quality have been identified and considered:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.

Newtownabbey Borough Council confirms that there has been no significant change to any of the above sources since the last Progress Report, therefore there is no need to proceed to a Detailed Assessment

3.5 New Developments with Fugitive or Uncontrolled Sources

The following new developments with fugitive or uncontrolled sources which may have an impact on air quality have been identified and considered:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations etc.
- Other potential sources of fugitive particulate emissions.

Newtownabbey Borough Council confirms that there has been no significant change to any of the above sources since the last Progress Report, therefore there is no need to proceed to a Detailed Assessment

Newtownabbey 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.

4 Local Transport Plans and Strategies

Regional Development Strategy

The Regional Development Strategy (RDS) is a strategy to guide the future development of Northern Ireland to 2025. The RDS will influence the future distribution of activities throughout the region and recognises that development policies will have a significant impact on the environment and the health of individuals.

Spatial Development Strategy for Northern Ireland

The Spatial Development Strategy (SDS) guides the physical development of the Region to 2025. The SDS will contribute to meeting a number of key regional challenges emerging from the significant local, national and international forces, which will drive change over the next 25 years, including:

Transport:

- Promote a change in travel culture and particularly manage the effects of a possible 100% growth in the number of vehicles by 2025;
- Contribute to the creation of a modern, sustainable, safe transportation system for the Region, meeting the travel needs of all groups in society;
- Accommodate the growing volume of freight moving to and from the regional gateways; and
- Strengthen the regional gateways to handle the increasing flow of people and goods in and out of the Region.

Environment:

- Accommodate future development growth while protecting and caring for the environment;
- Reduce the consumption of resources;
- Continue to maintain or, where needed, improve the quality of air, water and land resources within the Region;
- Seek to maintain local landscape character and to conserve cultural assets; and
- Take particular care to sustain and, where required, to enhance the biodiversity of the Region, its natural habitats, high quality landscapes and built heritage.

Developing a Regional Transportation System

Creating an upgraded and integrated transport system, built around the Regional Strategic Transport Network of the key transport corridors with their main public transport services providing the framework for future development is recognised as one of the key assets to accommodate growth. Strategic planning guidelines relating to the development of a Regional Transport System (RTS) are as follows:

- **SPG-TRAN 1:** To develop a Regional Strategic Transport Network (RSTN), based on Key Transport Corridors (KTCs), to enhance accessibility to regional facilities and services.

- **SPG-TRAN 2:** To extend travel choice for all sections of the community by enhancing public transport, including the strengthening of the regional bus network (including the promotion of public transport routes and Park and Ride schemes) and the regional rail system;

- **SPG-TRAN 3:** To integrate land use and transportation to provide a much better range of travel choices for all, and reduce the demand for travel; and

- **SPG-TRAN 4:** To change the regional travel culture and contribute to healthier lifestyles, such as giving greater priority to encouraging more walking and cycling.

Regional Transportation Strategy

The Regional Transportation Strategy (RTS) for Northern Ireland 2002- 2012 identifies strategic transportation investment priorities and considers potential funding sources and affordability of planned initiatives. The RTS focuses on 3 geographic areas and one overlying Network. These are as follows:

- Belfast Metropolitan Area (BMA), containing the continuous area comprising Belfast City Council and the built-up areas within the Council areas of Carrickfergus, Castlereagh, Lisburn, Newtownabbey and North Down;

- Other Urban Areas (OUAs): collectively those towns described as main or local hubs in the RDS;

- Rural Area – the remainder of Northern Ireland; and

- Regional Strategic Transport Network (RSTN) comprising the complete rail network and all motorway and trunk road links (including the Key Transport Corridors and Link Corridors).

The RTS is a “daughter document” of the Regional Development Strategy (RDS), which sets out the spatial development framework for Northern Ireland up to 2025. Implementation of the Strategy will be through three Transport Plans covering the Regional Strategic Transport Network (RSTN), the Belfast Metropolitan Area (BMA), and the Sub-Regional Transport Plan (SRTP).

Regional Strategic Transport Network Transport Plan

The Regional Strategic Transport Network (RSTN) Transport Plan prepared by the Department for Regional Development (DRD) covers the complete rail network, 5 Key Transport Corridors (KTCs), 4 Link Corridors, the Belfast Metropolitan Transport Corridors and the remaining trunk network across Northern Ireland. The Plan is based on the guidance set out in the Regional Development Strategy (RDS) and the Regional Transportation Strategy (RTS), as described in Sections 3.1 and 3.2, above.

The RSTN Transport Plan consists of proposals for transport schemes and measures for the maintenance, management and development of the RSTN until 2015. The RSTN Transport Plan also includes a number of measures for rail, bus, roads, walking and cycling.

Sub-Regional Transport Plan 2015

The Sub-Regional Transport Plan (SRTP) was prepared by the Department for Regional Development (DRD) and completed in 2007. The SRTP is based upon the guidance provided by the Regional Development Strategy (RDS) and the Regional Transportation Strategy (RTS).

5 Implementation of Action Plans

Newtownabbey Borough Council submitted for appraisal a final Action Plan for the AQMA in Antrim Road, Elmfield in December 2010 and approval was given from the Appraisor in March 2011. A review of the Action Plan will be submitted as part of the next Progress Report.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

AQMA 2, Main Street, Ballyclare

The Nitrogen Dioxide Analyser is sited 5m from the relevant location in the AQMA 2 Ballyclare.

Results of Automatic Monitoring Data for Nitrogen Dioxide in 2010 showed an annual mean concentration of 40 µg/m^3 and although this has increased from 2009 (34 µg/m^3) it is felt that the extreme cold weather conditions experienced in January and December 2010, which produced very still air, may have contributed to this.

Nitrogen dioxide diffusion tubes 1 and 59 are located on the façade of the relevant location in Ballyclare AQMA. Results from these diffusion tubes both showed annual means of 30 and 31 µg/m^3 which is consistent with the previous two years results.

In order to confirm that the increase in concentrations at the analyser in 2010 was due to the weather we have decided to continue to monitor within this AQMA during 2011 even though all of the diffusion tube monitoring results have shown levels of nitrogen dioxide well below the annual mean objective of 40 µg/m^3 over the last 3 years. We will review the 2011 data with a view to revoking the AQMA in 2012. A Detailed Assessment will be submitted for this purpose.

AQMA 3, Antrim Road, Elmfield

The Nitrogen Dioxide Analyser inlet was reloated in January 2010 and is now located 2m from the relevant location in AQMA 3 Antrim Road, Elmfield.

Results of Automatic Monitoring for nitrogen dioxide in 2010 showed an annual mean concentration of 46 µg/m^3. There were also 29 exceedances of the 1 hour objective.

It is encouraging to see that by moving the sample inlet on the analyser to within 2m of the façade of the relevant location the annual mean objective has decreased from 68 µg/m^3 to 46 µg/m^3

Diffusion tube 58 is located within 2m from the relevant location and showed exceedances of the annual mean concentration showing results of 47 µg/m^3.

Diffusion tubes 60 and 61 are located on the façade of the relevant location and they showed exceedances of the annual mean concentration showing results of 42 and 41 µg/m^3 respectively.

Newtownabbey Borough Council will be progressing the Action Plan measures during 2011.

AQMA 4 Sandyknowes

The Nitrogen Dioxide Analyser is located outside the AQMA in Sandyknowes. Attempts were made to locate the analyser to the garden of the relevant location but due to legal complications this was not able to proceed.

Results of Automatic Monitoring Data for nitrogen dioxide showed an annual mean concentration of 38 µg/m^3 in 2009 which is slightly higher than the previous annual average results.

Diffusion tubes 57 and 12 are located on the façade of one of the relevant locations. Results from these diffusion tubes have been consistently below the Air Quality Objective since 2007 however in 2010 the annual average was 40 µg/m^3.

Diffusion tube 11 is located within 7m of the relevant location and again the results have been below the Air Quality objective since 2007 however in 2010 the annual average was 41 µg/m^3.

Diffusion tube 47 is located within 7m of a relevant location and again the results have been below the Air Quality Objective for the last 2 years however in 2010 the annual average was 47 µg/m^3.

Diffusion tube 48 is located on the façade of a relevant location and the 2010 annual average was 35 µg/m^3

In order to confirm that the increase in concentrations at the diffusion tubes in 2010 was due to the exceptional cold weather conditions we will continue to monitor within this AQMA during 2011 with a view to revoking in 2012 should the results decrease again. A Detailed Assessment will be submitted for this purpose.

6.2 Conclusions Relating to New Local Developments

No new sources with relevant exposure have been identified from the last Progress Report. It is therefore not considered necessary to proceed to a 'Detailed Assessment' based on potential sources.

6.3 Other Conclusions

Newtownabbey Borough Council submitted for appraisal a final Action Plan for the AQMA in Antrim Road, Elmfield in December 2010 and approval was given from the Appraisor in March 2011. A review of the Action Plan will be submitted as part of the next Progress Report.

6.4 Proposed Actions

Newtownabbey Borough Council is proposing to continue another 1 year of monitoring in AQMA 2, Main Street, Ballyclare and AQMA 4, Sandyknowes and to proceed with implementing the Action Plan measures for AQMA 3.

The next Progress Report will be submitted in April 2012.

Appendices

Appendix A: QA/QC Data

Appendix B: Locations of AQMAs

Appendix C: Locations of Monitoring Sites

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors
Diffusion Tube Monitoring

In 2010 the diffusion tubes were analysed by Gradko Services using 20% TEA in water.

The laboratory bias correction factor was calculated using the diffusion tube spreadsheet tool. This diffusion tube spreadsheet tool is published by Air Quality Consultants Ltd on behalf of DEFRA, the Welsh Assembly Government, the Scottish Executive and the Department of the Environment Northern Ireland and it is available on the UWE website.

The bias adjustment factor of 0.92 was calculated from 39 studies from Gradko Services for 2010 using the diffusion tube spreadsheet tool, for the diffusion tubes study.

C8 Step 2:

e Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 04/11

o show the results of **relevant** co-location studies
d are not suitable for correcting individual short-term monitoring periods
ld state the adjustment factor used and the version of the spreadsheet
nths: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated in late June 2011 on the LAQM Helpdesk Website

ra and the Devolved Administrations by Bureau Veritas, in conjunction with cal Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

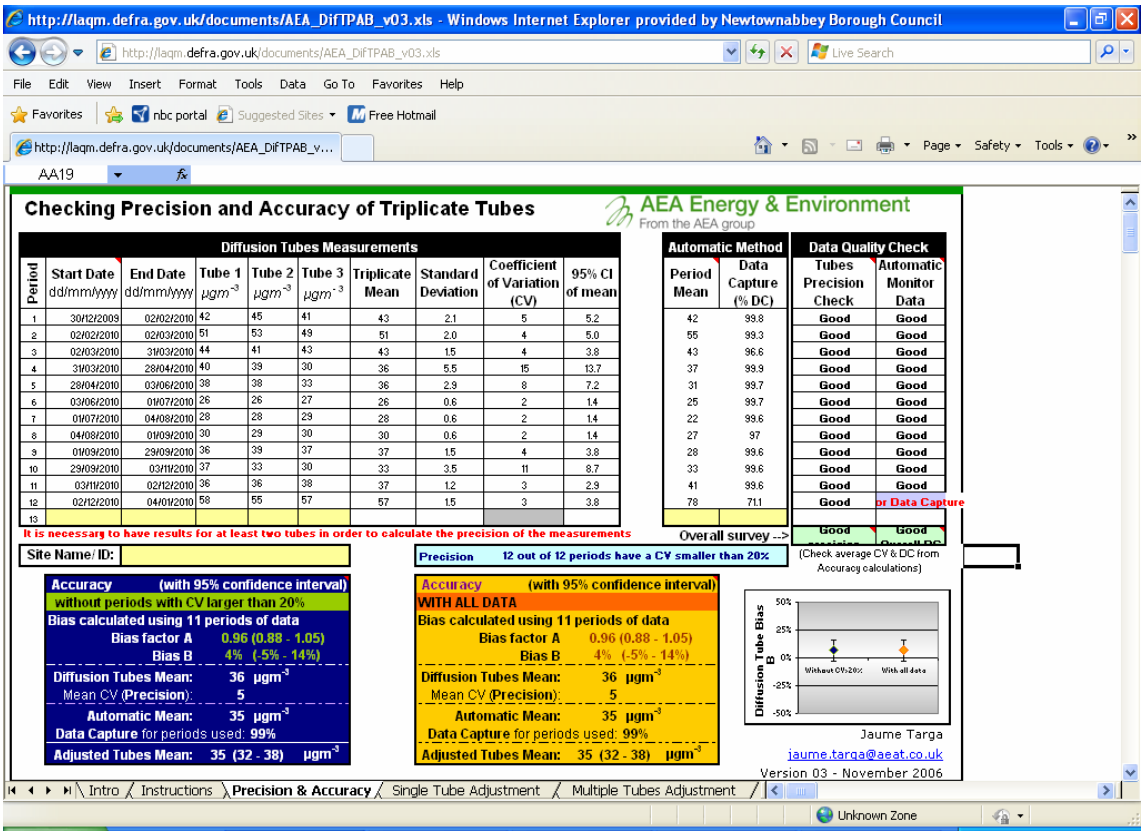
Step 2:	Step 3:	Step 4:							
Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown 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							
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[2]								
Method To undo your selection, choose (All) from the pop-up list	**Year[4]** 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[5]**	**Bias Adjustment Factor (A) (Cm/Dm)**
20% TEA in Water	2010	R	Gateshead Council	9	35	33	6.0%	G	**0.94**
20% TEA in Water	2010	R	Gateshead Council	9	34	34	-0.6%	G	**1.01**
20% TEA in Water	2010	R	Gateshead Council	9	32	35	-9.9%	G	**1.11**
20% TEA in Water	2010	R	Gosport BC	10	31	23	35.3%	na	**0.74**
20% TEA in Water	2010	R	Rhondda Cynon Taf CBC	10	35	35	0.4%	G	**1.00**
20% TEA in Water	2010	O	North Warwickshire BC	9	48	42	13.6%	P	**0.88**
20% TEA in Water	2010	UB	LB Ealing	10	39	41	-3.8%	G	**1.04**
20% TEA in Water	2010	R	South Norfolk Council	9	28	17	63.7%	G	**0.61**
20% TEA in Water	2010	B	Chelmsford BC	11	16	17	-5.3%	G	**1.06**
20% TEA in Water	2010	R	Chelmsford BC	12	33	21	55.0%	G	**0.65**
20% TEA in Water	2010	R	Chelmsford BC	10	37	32	14.6%	G	**0.87**
20% TEA in Water	2010	R	Wokingham BC	10	37	36	4.1%	G	**0.96**
20% TEA in Water	2010	R	West Dunbartonshire Council	9	22	22	0.1%	G	**1.00**
20% TEA in Water	2010	R	Scarborough BC	12	35	29	18.2%	G	**0.85**
20% TEA in Water	2010	UB	Sandwell MBC	11	31	28	11.4%	na	**0.90**
20% TEA in Water	2010	R	Sandwell MBC	11	45	45	-0.9%	na	**1.01**
20% TEA in Water	2010	R	Sandwell MBC	11	37	36	2.0%	na	**0.98**
20% TEA in Water	2010	UB	Sandwell MBC	10	22	21	8.1%	na	**0.93**
20% TEA in Water	2010		**Overall Factor[3] (39 studies)**				**Use**		**0.92**

Chart2 / Chart1 / Collocation Data / Revisions /

Filter Mode

Factor from Local Co-location Studies (if available)

A local co-location study was carried out at Sandyknowes. A bias adjustment factor of 0.96 was calculated from the diffusion tubes co-located within the Sandyknowes site using the AEA Energy and Environments "Spreadsheet for calculating Precision, Accuracy and Bias Adjustment factors of Diffusion Tubes".



Discussion of Choice of Factor to Use

The Bias Adjustment Factor from the local co-location study has been applied to the diffusion tube data because the precision calculated from the results is 5 which is below the accepted value of 10.

PM Monitoring Adjustment

Newtownabbey Borough Council does not monitor for Particulate Matter.

Short-term to Long-term Data Adjustment

No short-term to long-term monitoring adjustments are required.

QA/QC of Automatic Monitoring

In 2010 Sandyknowes, Main Street, Ballyclare and Antrim Road, Elmfield continuous monitoring stations were part of the Calibration Club managed by AEA. Data from these sites is quality assured to the AURN standards as part of the Calibration Club.

Routine calibration of the NO_x analysers is undertaken by Newtownabbey Borough Council fortnightly, using on-site certified calibration gas cylinders provided by Messer UK and traceable to National Calibration Standards. In addition a QA/QC audit which includes calibration of the analyser using zero and span gas standards, and other tests, including for linearity and NO_x converter efficiency is undertaken by AEA twice in the year. Data is fully ratified by AEA staff using procedures as applied to data from the AURN UK national monitoring network sites.

The 2010 summaries and hourly data sets for the three Newtownabbey monitoring locations are provided at the end of Appendix A.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes were analysed by Gradko Services using 20% triethylamine in water.
Gradko have confirmed that their laboratory complies with the procedures detailed in the DEFRA Harmonistaion Practical Guidance and their WASP results for 2010 were satisfactory.

NO2 Field Intercomparison

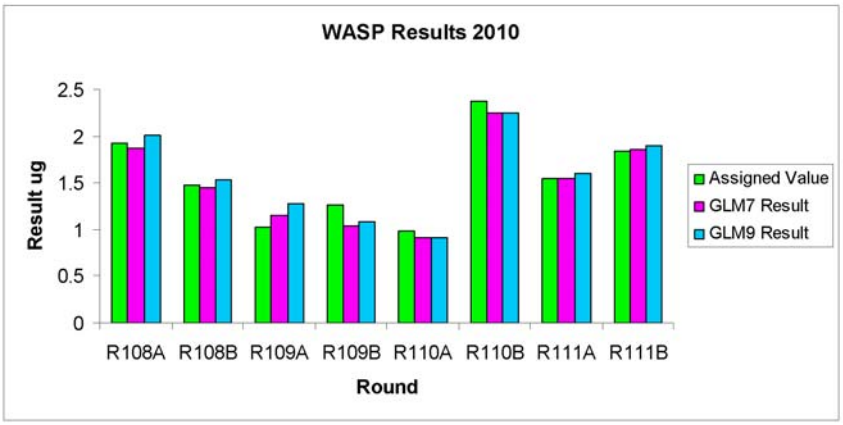
	Bias Correction Factor 'A'		Coefficient of Variation	
Period	W 20%	A 50%	W 20%	A 50%
Jan-09	0.89	0.98	1	5
Feb-09	0.88	1.1	7	5
Mar-09	0.98	1.09	5	12
Apr-09	1.05	1.15	2	0
May-09	1.18	2.05	8	5
Jun-09	1.11	1.37	5	33
Jul-09	1.06	0.94	8	1
Aug-09	0.78	0.74	5	1
Sep-09	0.87	0.91	1	2
Oct-09	0.73	0.8	8	4
Jan-10	0.88	2.02	4	3
Jun-10	0.94	0.95	4	5
Jul-10	0.62	0.63	7	5
Aug-10	0.86	1.05	3	4
Nov-10	0.79	1.08	1	3
Dec-10	0.83	1.01	4	2

St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH
tel.: 01962 860331 fax: 01962 841339 e-mail:diffusion@gradko.co.uk

Nitrogen Dioxide WASP Results 2010

Analysis by UV/Vis spectrophotometry (GLM7) and continuous flow analysis (GLM9)

WASP Round No:-	R108A	R108B	R109A	R109B	R110A	R110B	R111A	R111B
Assigned Value	**1.92**	**1.47**	**1.03**	**1.27**	**0.99**	**2.37**	**1.54**	**1.84**
GLM7	1.862	1.443	1.074	1.022	0.891	2.245	1.57	1.851
GLM7	1.872	1.462	1.236	1.065	0.930	2.240	1.532	1.864
Average	**1.867**	**1.453**	**1.155**	**1.044**	**0.911**	**2.243**	**1.551**	**1.858**
Z Score	-0.3	-0.2	0.2	-1.2	-0.9	-0.7	0.1	0.1
GLM9	1.978	1.521	1.299	1.076	0.901	2.264	1 .590	1.896
GLM9	2.028	1.536	1.252	1.075	0.934	2.243	1.599	1.9
Average	**2.003**	**1.529**	**1.276**	**1.076**	**0.918**	**2.254**	**1.599**	**1.898**
Z Score	0.6	0.5	0.6	0.1	-0.8	-0.6	0.5	0.4
Analyst	E. Bancerz B. Le Ber	S. Facey B. Le Ber	S. Facey B. Le Ber	S. Facey B. Le Ber	L. Dafter B. Le Ber	L. Dafter B. Le Ber	A. Ratcliffe A. Le Ber	A. Ratcliffe A. Le Ber



Produced by AEA on behalf of Newtownabbey BC

NEWTOWNABBEY SANDYKNOWES
01 January to 31 December 2010

These data have been fully ratified by AEA

POLLUTANT	NO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	8558
Maximum 15-minute mean	334 µg m^{-3}
Maximum hourly mean	281 µg m^{-3}
Maximum running 8-hour mean	206 µg m^{-3}
Maximum running 24-hour mean	170 µg m^{-3}
Maximum daily mean	158 µg m^{-3}
Average	38 µg m^{-3}
Data capture	97.7 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	29	12

Produced by AEA on behalf of Newtownabbey

NEWTOWNABBEY ANTRIM ROAD
01 January to 31 December 2010

These data have been fully ratified by AEA

POLLUTANT	NO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	8669
Maximum 15-minute mean	260 µg m^{-3}
Maximum hourly mean	235 µg m^{-3}
Maximum running 8-hour mean	170 µg m^{-3}
Maximum running 24-hour mean	126 µg m^{-3}
Maximum daily mean	125 µg m^{-3}
Average	46 µg m^{-3}
Data capture	99.0 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	3	3

Produced by AEA on behalf of Newtownabbey BC

Produced by AEA on behalf of Newtownabbey Borough Council

NEWTOWNABBEY BALLYCLARE MAIN ST
01 January to 31 December 2010

These data have been fully ratified by AEA

POLLUTANT	NO_X	NO	NO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	8402
Maximum 15-minute mean	1702 µg m^{-3}	880 µg m^{-3}	407 µg m^{-3}
Maximum hourly mean	1215 µg m^{-3}	618 µg m^{-3}	271 µg m^{-3}
Maximum running 8-hour mean	668 µg m^{-3}	343 µg m^{-3}	156 µg m^{-3}
Maximum running 24-hour mean	465 µg m^{-3}	250 µg m^{-3}	106 µg m^{-3}
Maximum daily mean	424 µg m^{-3}	223 µg m^{-3}	101 µg m^{-3}
Average	104 µg m^{-3}	42 µg m^{-3}	40 µg m^{-3}
Data capture	95.9 %	95.9 %	95.9 %

All mass units are at 20'C and 1013mb
NO_X mass units are NO_X as NO_2 µg m-3

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	2	2

Appendix B: Locations of AQMAs

Figure 1-1 AQMA 2, Main Street Ballyclare

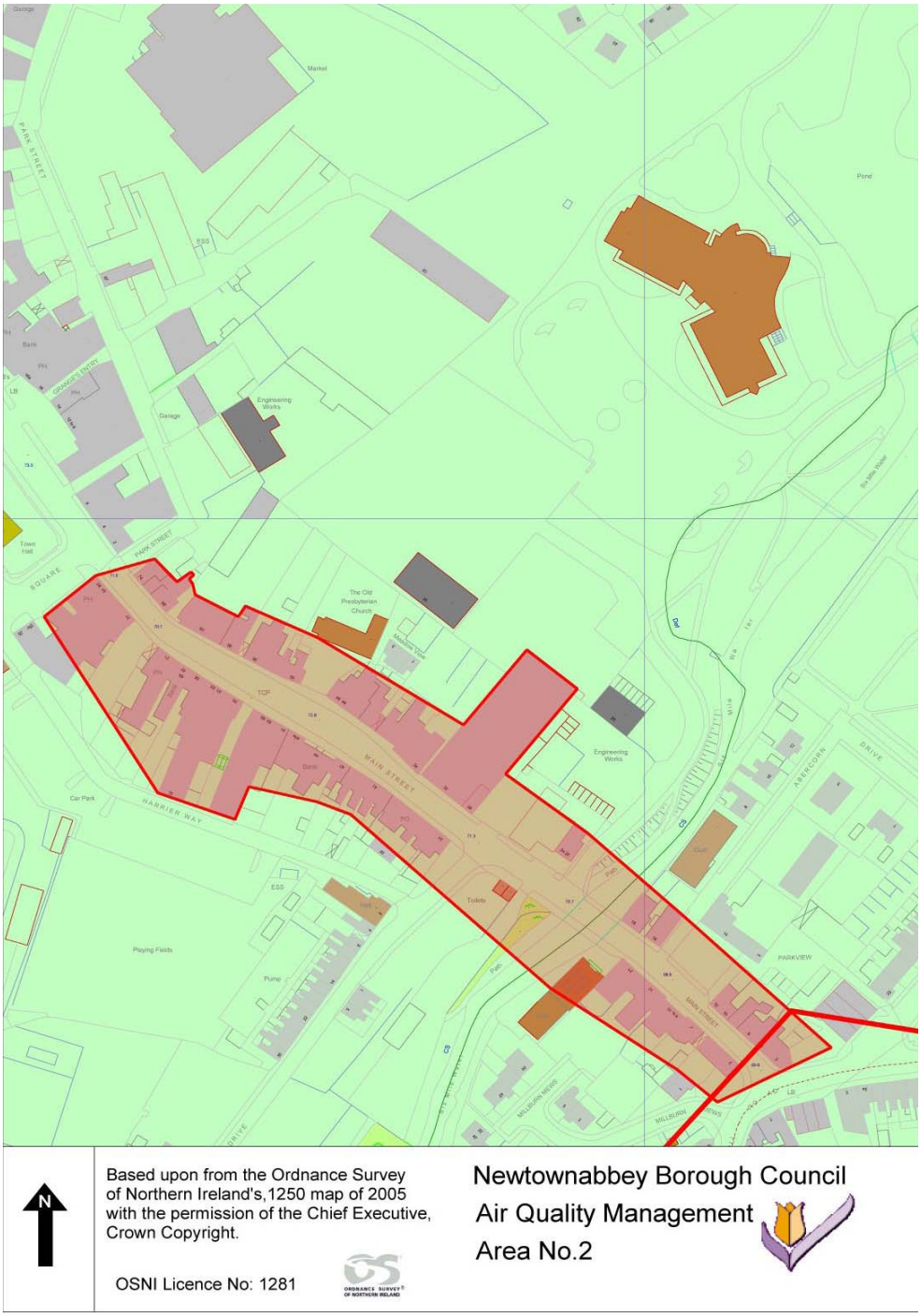


Figure 1-2 AQMA 3 Antrim Road, Elmfield

Figure 1-3 AQMA 4 Sandyknowes

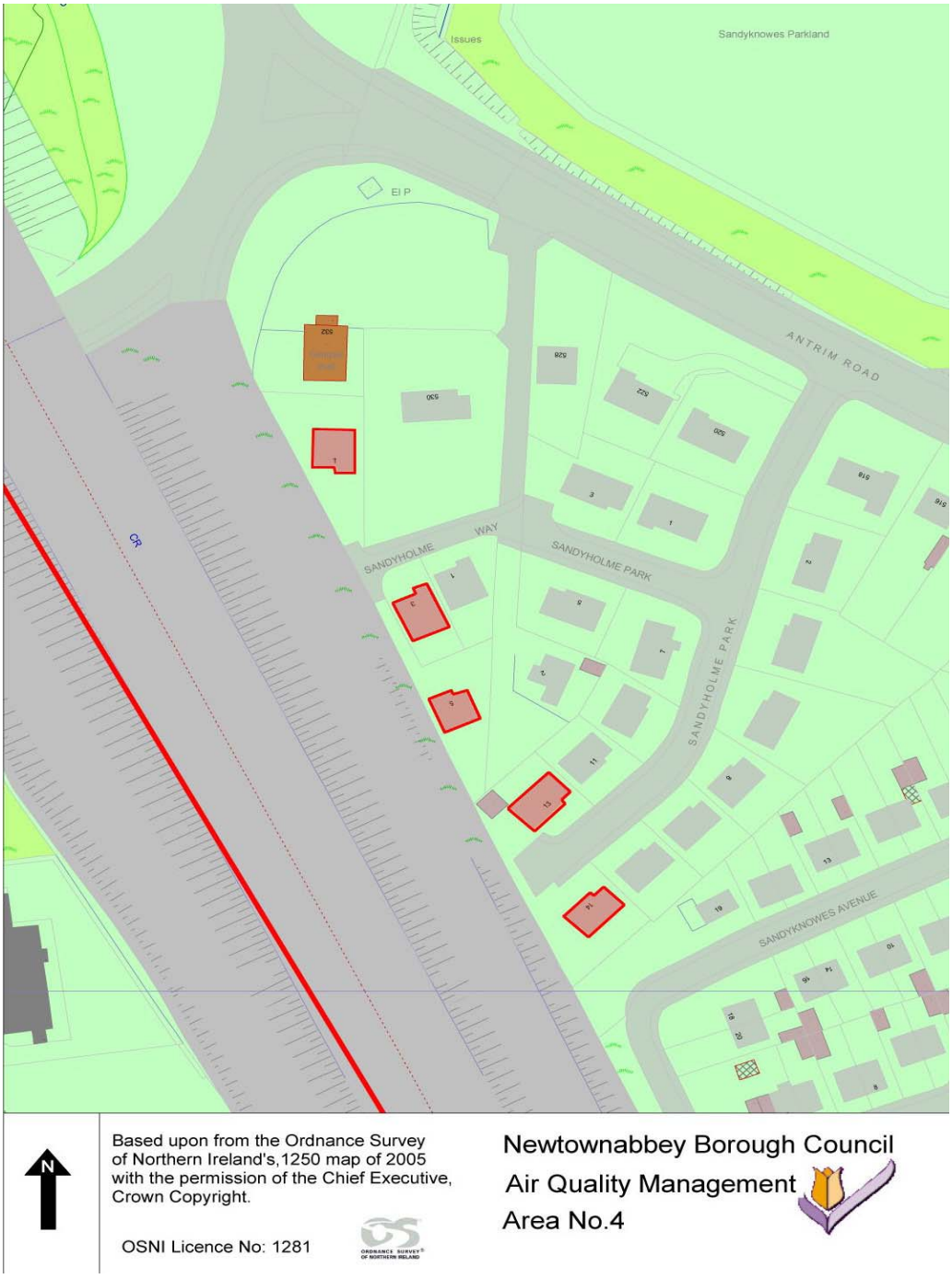
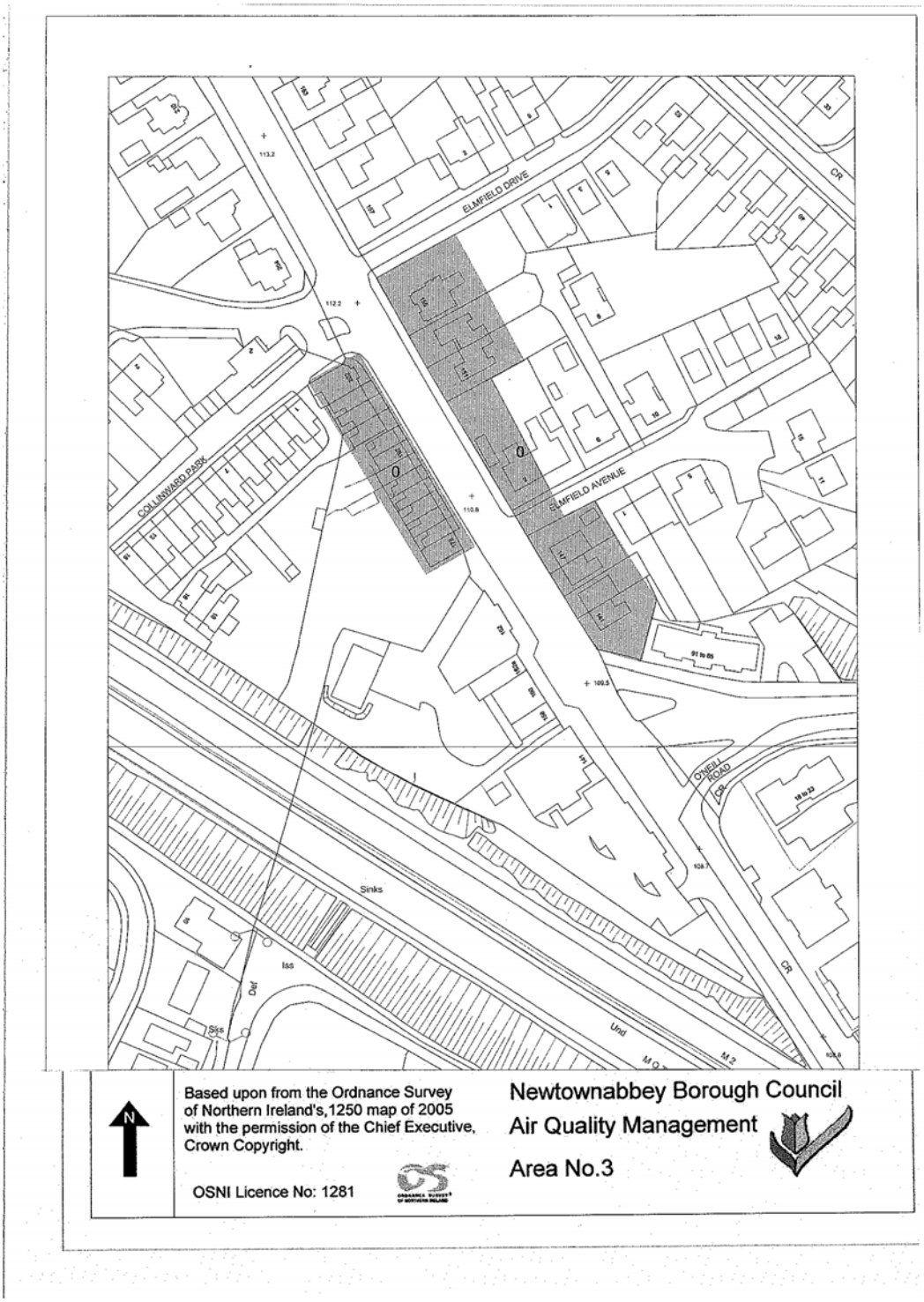
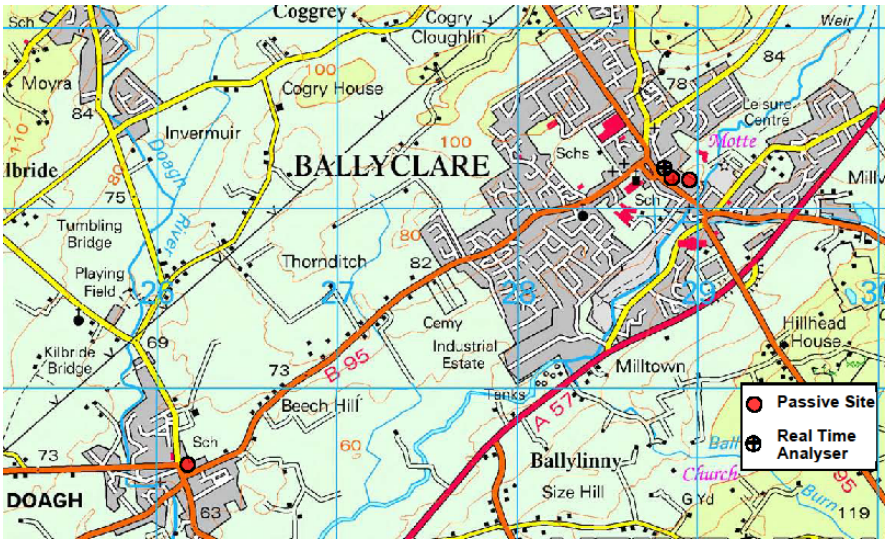


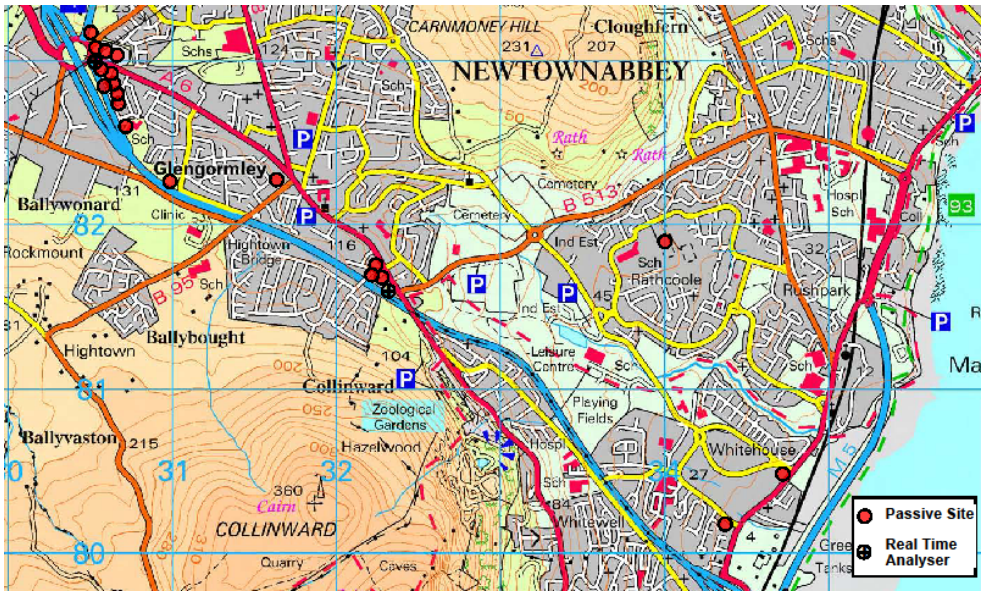
Figure 1-4 AQMA 3 (amended) Antrim Road, Elmfield



Appendix C: Location of Monitoring Sites



Main Street, Ballyclare



Antrim Road, Elmfield

Sandyholme Way, Sandyknowes