2010 Air Quality Progress Report

Newtownabbey Borough Council

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

September 2010

Newtownabbey
BOROUGH COUNCIL

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Executive Summary

AQMA 2 Main Street, Ballyclare

There have been no exceedances of the nitrogen dioxide annual mean objective at the Ballyclare Automatic Analyser site or at any of the diffusion tubes located in AQMA 2, Ballyclare over the last 3 years. Newtownabbey Borough Council consider it appropriate to revoke this AQMA.

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 diffusion tubes located at relevant locations in the Antrim Road, Elmfield AQMA. Newtownabbey Borough Council will be submitting a draft Air Quality Action Plan by 31 December 2010.

AQMA 4 Sandyknowes

There have been no exceedances of the nitrogen dioxide annual mean objective at the Sandyknowes Automatic Analyser site or at any of the diffusion tubes located in AQMA 4, Sandyknowes over the last 3 years. Newtownabbey Borough Council consider it appropriate to revoke this AQMA.

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 2010.

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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 three-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 micrograms 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)
- Air Quality Progress Report (August 2008)
- Air Quality Detailed Assessment Nitrogen Dioxide (April 2009)
- Amendment of AQMA, Antrim Road, Elmfield (June 2009)
- Air Quality USA (August 2009)

The findings of the Progress Report carried out in August 2007 concluded that there were three areas namely, Sandyholme Way/Sandyknowes Avenue, Antrim Road Elmfield and Main Street, Ballyclare where the nitrogen dioxide objective would not be met and required AQMAs to be declared and a Detailed Assessment to be carried out in each area.

The Council declared these three areas as AQMAs in January 2008. (Appendix B Figure 1-1, Figure 1-2, Figure 1-3)

The Council commissioned AEA to carry out a Detailed Assessment to ascertain the concentrations at relevant exposure locations and the geographical extent of the exceedance area and the conclusions of the report submitted in February 2009 were to retain the AQMAs in Main Street, Ballyclare and Sandyknowes and to extend the AQMA in Antrim Road, Elmfield and to amend it to include the nitrogen dioxide hourly mean objective. AQMA 3 Antrim Road, Elmfield was amended on 29 June 2009 (Appendix B Fig 1-4)

The Updating and Screening Report completed in 2009 concluded that there were exceedances of the nitrogen dioxide annual mean and 1 hour objective at the Antrim Road, Elmfield Automatic Analyser site and diffusion tubes located at relevant locations on the Antrim Road requiring an Action Plan to be provided for this AQMA.

It also concluded that there had been no exceedances of the nitrogen dioxide annual mean objective at the Ballyclare or Sandyknowes Automatic Analyser sites or at any of the diffusion tubes located in AQMA 2, Ballyclare or AQMA 4, Sandyknowes and it was proposed to continue to monitor at these locations in 2009 with view of revoking these AQMAs in 2010 if a second year of monitoring results indicated that the Nitrogen Dioxide objective were being met.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Newtownabbey Borough Council has three automatic monitoring stations located at:

- Sandyknowes since 2003
- Main Street Ballyclare since January 2008
- Antrim Road, Elmfield since January 2008.

The Automatic Monitoring Sites at Main Street, Ballyclare and Antrim Road, Elmfield are located in AQMA 2 and AQMA 3 respectively. The analyser at Main Street, Ballyclare is located within 5m of the relevant location and the analyser at Antrim Road, Elmfield is located within 2m of the relevant location. The analyser at Sandyknowes is outside the AQMA.

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

These continuous monitoring stations are 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. 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 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.

2.1.2 Non-Automatic Monitoring

Newtownabbey Borough Council operates a network of 22 nitrogen dioxide diffusion tubes across the Borough. The diffusion tubes are exposed for a four/five week period and further site specific details on these tube locations are provided in Table 2.2 and Appendix C, while the tube data is presented in Table 2.4a. Exceedances of the 40 µg/m^3 annual mean NO_2 are highlighted in bold.

In 2009 the diffusion tubes were analysed by Gradko Services using 20% triethylamine in water.
QA/QC details which include the bias adjustment factor for 2009 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 5 Ulster Bank, Hightown Road	Roadside	331697 382250	NO_2	N	Y (20m)	2m	N
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 43 Analyser, Antrim Road,Elmfield	Roadside	332305 381697	NO_2	Y	Y (2m)	1m	N
Site 58 Lamp-post, 198 Antrim Road ,Elmfield	Roadside	332305 381697	NO_2	Y	Y (2m)	1m	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 52 10 Mill Road	Roadside	334354 380226	NO_2	N	Y (located on property)	5m	Y
Site 56 5 Sandyholme Park	Roadside	330589 382908	NO_2	N	Y (7m)	68m	N

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
Sandyknowes, Mallusk	N	94.9	34.0	35.0	33.0
Ballyclare, Main St	Y	97.7	N/A	37.0	34.0
Antrim Rd, Elmfield	**Y**	**99.7**	**N/A**	**56.0**	**68.0**

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

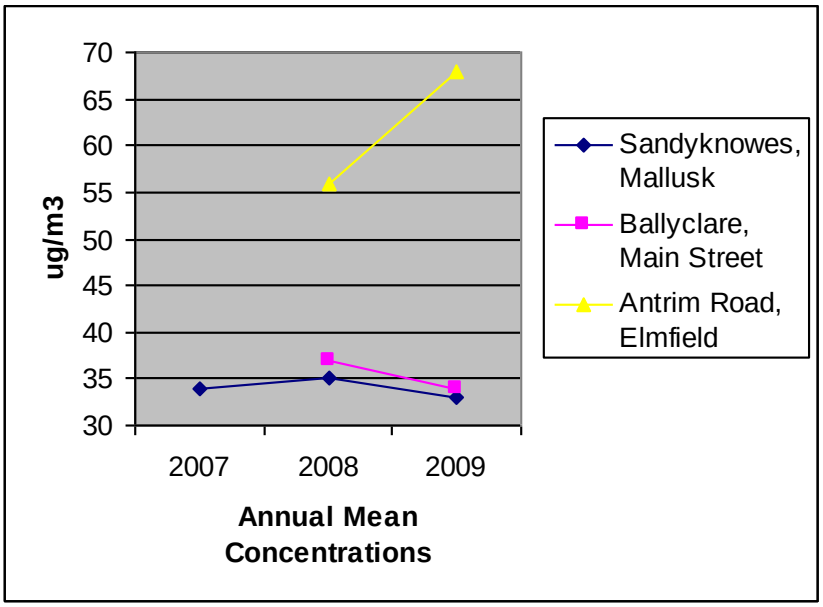


Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID & Location	Within AQMA?	Data Capture for full calendar year 2009 %	Number of Exceedences of hourly mean (200 μg/m^3)		
			2007	2008	2009
Sandyknowes, Mallusk	N	94.9	6	15	7
Ballyclare, Main St	Y	97.7	N/A	0	1
Antrim Rd, Elmfield	Y	99.7	N/A	55	11

Results of Automatic Monitoring for Nitrogen Dioxide for 2009 showed an exceedance of the annual mean at the Antrim Road, Elmfield site however it was within the permitted number of exceedances of the 1 hour mean objective.

There were no exceedances of the annual mean objective or hourly mean objective for nitrogen dioxide at either of the other two sites.

Diffusion Tube Monitoring Data

All diffusion tube monitoring data for 2009 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 2.4a shows results for 2009

There were only two sites, namely Site 43 and Site 58 which showed an exceedance of the NO_2 annual mean objective in 2009. These are located within AQMA 3 Antrim Road, Elmfield.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations (μg/m^3) Adjusted for bias		
			2007 National Gradko (0.89)	**2008** National Gradko (0.89)	**2009** Local (0.9)
Site 1	Main Street, Ballyclare	Y	32	30	29
Site 59	Main Street, Ballyclare	Y	29	28	29
Site 57	7 Sandyholme Way	Y	39	37	37
Site 12	7 Sandyholme Way	Y	37	36	38
Site 5	Ulster Bank, Hightown Road	N	26	25	29
Site 8	Braden Heights, Rathcoole	N	21	16	17
Site 11	44 Sandyknowes Avenue	N	37	32	35
Site 16	Doagh Village	N	26	27	28
Site 20	A8/Motorway at Sandyknowes	N	31	25	25
Site 36	NOx Analyser Antrim Road, Sandyknowes	N	37	34	28
Site 37	NOx Analyser Antrim Road, Sandyknowes	N	39	34	33
Site 38	NOx Analyser Antrim Road, Sandyknowes	N	36	34	32
Site 43	**Antrim Road, Elmfield, Analyser**	**Y**	**45**	**45**	**46**
Site 58	**Lamp-post at 198 Antrim Road, Elmfield**	**Y**	**45**	**45**	**47**

Site 46	12 Collinbridge Road	N	35	34	37
Site 47	13 Sandyholme Park	Y	45	37	39
Site 48	24 Sandyknowes Avenue	N	31	28	29
Site 49	6 Sandyknowes Gardens	N	27	24	26
Site 50	45 Burney's Lane	N	31	29	32
Site 51	196 Shore Road	N	32	30	31
Site 52	10 Mill Road	N	29	26	27
Site 56	5 Sandyholme Park	N	32	27	27

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

Newtownabbey Borough Council has examined the results from monitoring throughout the Borough. Measured concentrations of Nitrogen Dioxide above the annual mean objective at relevant locations have been identified. However, all these locations were identified in last years Update and Screening Assessment and are being dealt with through the Action Plan.

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 Updating and Screening Assessment, 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 Updating and Screening Assessment, 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 Updating and Screening Assessment, 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 Updating and Screening Assessment, 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 Updating and Screening Assessment, 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 three 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, five Key Transport Corridors (KTCs), four 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 has produced and submitted for appraisal a draft Action Plan for the AQMA in Antrim Road, Elmfield. The appraiser's comments have been received and the final draft is due to be submitted by 31 December 2010.

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 2008 showed an annual mean concentration of 37 µg/m^3 which has decreased in 2009 to 34µg/m^3

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 29 µg/m^3 which is consistent with the previous two years results.

In our Detailed Assessment Report, April 2009 there were two tubes in the AEA study for Ballyclare that exceeded the objective, namely tube 31 and 38. However it must be noted that neither of these two tubes had a relevant location close by, they were placed there to determine the extent of the AQMA.

As all of these monitoring data results have shown levels of nitrogen dioxide well below the annual mean objective of 40 µg/m^3 over the last 3 years Newtownabbey Borough Council consider it appropriate to revoke the AQMA

AQMA 3, Antrim Road, Elmfield

The Nitrogen Dioxide Analyser is located 2m from the relevant location in AQMA 3 Antrim Road, Elmfield.

Results of Automatic Monitoring for nitrogen dioxide in 2009 showed an annual mean concentration of 68 µg/m^3. There were also 11 exceedances of the 1 hour objective.

Diffusion tubes 43 and 58 are located within 2m from the relevant location and they both showed exceedances of the annual mean concentration showing results of 46 and 47 µg/m^3 respectively.

In January 2010 two new diffusion tubes have been located on the façade of the relevant locations and the sampling inlet of the continuous monitor has been relocated to within 1m of the façade of the dwelling.

Newtownabbey Borough Council will be progressing the Action Plan measures once they are approved following submission of the final draft Action Plan on 31 December 2010.

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 33 µg/m^3 in 2009 which is consistent with previous annual average results.

The following diffusion tubes are situated in this AQMA.

Diffusion tubes 57 and 12

These are located on the façade of one of the relevant locations. Results from these diffusion tubes have been consistently below the Air Quality Objective over the last 3 years with results of 38.5 µg/m^3 and 36.5 µg/m^3 in 2007, 37 µg/m^3 and 36 µg/m^3 in 2008, and 37 µg/m^3 and 36 µg/m^3 in 2009.

Diffusion tube 11

This tube is located within 7m of the relevant location and and the results have been below the Air Quality objective for the last 3 years with results of 37 µg/m^3 in 2007, 32 µg/m^3 in 2008, and 35 µg/m^3 in 2009.

Diffusion tube 47

This tube is located within 7m of a relevant location and again the results have been below the Air Quality Objective for the last 2 years with results of 37 µg/m^3 in 2008 and 39 µg/m^3 in 2009.

Diffusion tube 48

This tube is located on the façade of a relevant location and the 2009 annual average was 29 µg/m^3

As all of these monitoring data results have shown levels of nitrogen dioxide well below the annual mean objective of 40 µg/m^3 over the last 3 years Newtownabbey Borough Council consider it appropriate to revoke the AQMA.

6.2 Conclusions Relating to New Local Developments

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

6.3 Other Conclusions

Newtownabbey Borough Council will be submitting a final draft Air Quality Action Plan by 31st December 2010.

6.4 Proposed Actions

Newtownabbey Borough Council is proposing to revoke 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 2011.

Appendices

Appendix A: QA/QC Data

Appendix B: Locations of AQMAs

Appendix C: Locations of Monitoring Sites

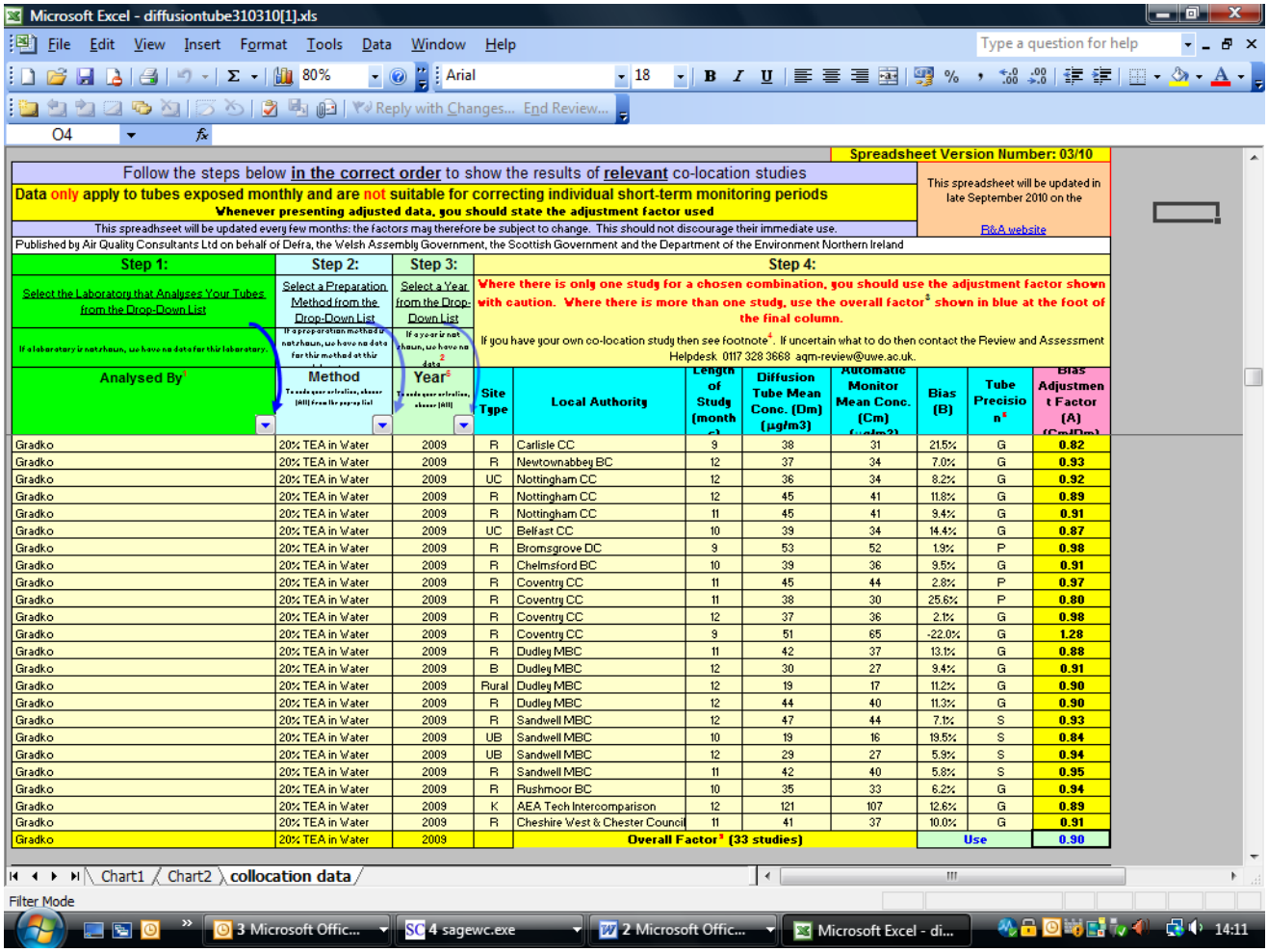
Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors
Diffusion Tube Monitoring

In 2009 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 0.90 was calculated from 33 studies from Gradko Services for 2009 using the diffusion tube spreadsheet tool, for the diffusion tubes study.



Microsoft Excel - diffusiontube310310[1].xls

Spreadsheet Version Number: 03/10

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

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 in late September 2010 on the R&A website

Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Environment Northern Ireland

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

Step 2: Select a Preparation Method from the Drop-Down List

Step 3: Select a Year from the Drop-Down List

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[5] 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 Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.

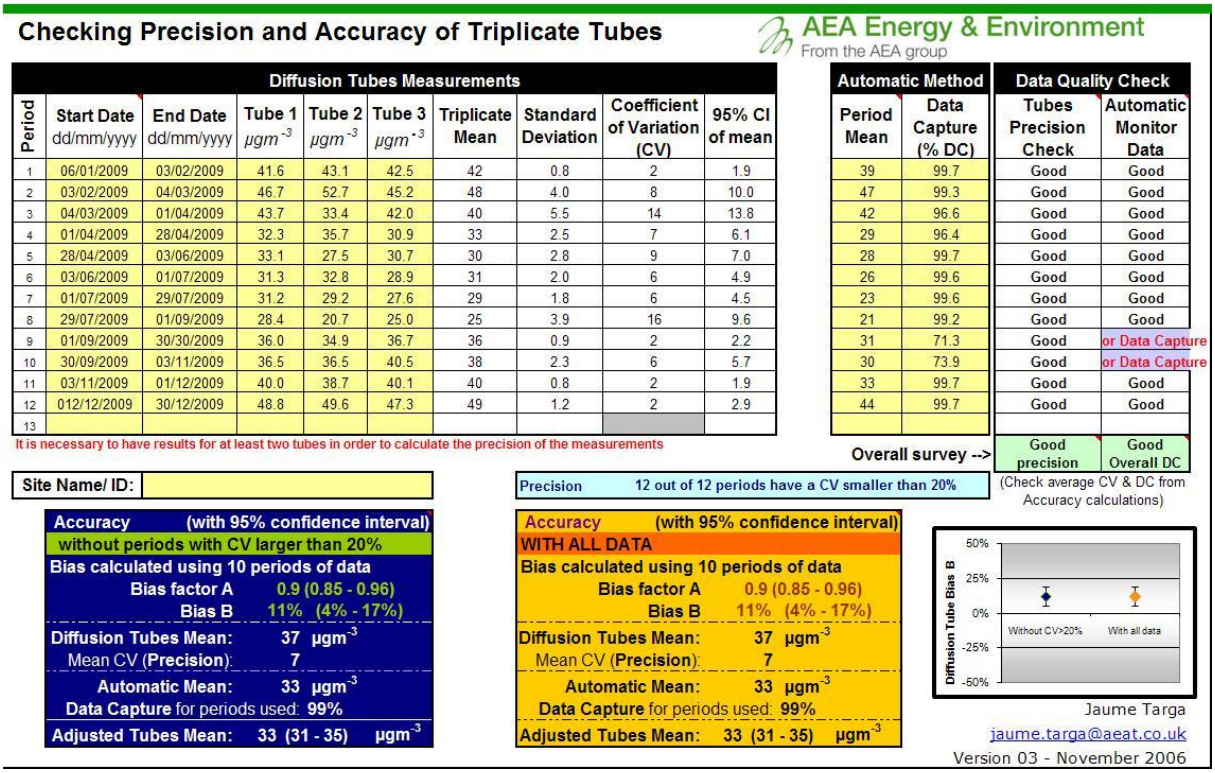
Analysed By[1]	Method	Year[2]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in Water	2009	R	Carlisle CC	9	38	31	21.5%	G	0.82
Gradko	20% TEA in Water	2009	R	Newtownabbey BC	12	37	34	7.0%	G	0.93
Gradko	20% TEA in Water	2009	UC	Nottingham CC	12	36	34	8.2%	G	0.92
Gradko	20% TEA in Water	2009	R	Nottingham CC	12	45	41	11.8%	G	0.89
Gradko	20% TEA in Water	2009	R	Nottingham CC	11	45	41	9.4%	G	0.91
Gradko	20% TEA in Water	2009	UC	Belfast CC	10	39	34	14.4%	G	0.87
Gradko	20% TEA in Water	2009	R	Bromsgrove DC	9	53	52	1.9%	P	0.98
Gradko	20% TEA in Water	2009	R	Chelmsford BC	10	39	36	9.5%	G	0.91
Gradko	20% TEA in Water	2009	R	Coventry CC	11	45	44	2.8%	P	0.97
Gradko	20% TEA in Water	2009	R	Coventry CC	11	38	30	25.6%	P	0.80
Gradko	20% TEA in Water	2009	R	Coventry CC	12	37	36	2.1%	G	0.98
Gradko	20% TEA in Water	2009	R	Coventry CC	9	51	65	-22.0%	G	1.28
Gradko	20% TEA in Water	2009	R	Dudley MBC	11	42	37	13.1%	G	0.88
Gradko	20% TEA in Water	2009	B	Dudley MBC	12	30	27	9.4%	G	0.91
Gradko	20% TEA in Water	2009	Rural	Dudley MBC	12	19	17	11.2%	G	0.90
Gradko	20% TEA in Water	2009	R	Dudley MBC	12	44	40	11.3%	G	0.90
Gradko	20% TEA in Water	2009	R	Sandwell MBC	12	47	44	7.1%	S	0.93
Gradko	20% TEA in Water	2009	UB	Sandwell MBC	10	19	16	19.5%	S	0.84
Gradko	20% TEA in Water	2009	UB	Sandwell MBC	12	29	27	5.9%	S	0.94
Gradko	20% TEA in Water	2009	R	Sandwell MBC	11	42	40	5.8%	S	0.95
Gradko	20% TEA in Water	2009	R	Rushmoor BC	10	35	33	6.2%	G	0.94
Gradko	20% TEA in Water	2009	K	AEA Tech Intercomparison	12	121	107	12.6%	G	0.89
Gradko	20% TEA in Water	2009	R	Cheshire West & Chester Council	11	41	37	10.0%	G	0.91
Gradko	20% TEA in Water	2009		Overall Factor[3] (33 studies)				Use		0.90

Chart1 Chart2 collocation data

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 0.90 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''.



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	06/01/2009	03/02/2009	41.6	43.1	42.5	42	0.8	2	1.9	39	99.7	Good	Good
2	03/02/2009	04/03/2009	46.7	52.7	45.2	48	4.0	8	10.0	47	99.3	Good	Good
3	04/03/2009	01/04/2009	43.7	33.4	42.0	40	5.5	14	13.8	42	96.6	Good	Good
4	01/04/2009	28/04/2009	32.3	35.7	30.9	33	2.5	7	6.1	29	96.4	Good	Good
5	28/04/2009	03/06/2009	33.1	27.5	30.7	30	2.8	9	7.0	28	99.7	Good	Good
6	03/06/2009	01/07/2009	31.3	32.8	28.9	31	2.0	6	4.9	26	99.6	Good	Good
7	01/07/2009	29/07/2009	31.2	29.2	27.6	29	1.8	6	4.5	23	99.6	Good	Good
8	29/07/2009	01/09/2009	28.4	20.7	25.0	25	3.9	16	9.6	21	99.2	Good	Good
9	01/09/2009	30/30/2009	36.0	34.9	36.7	36	0.9	2	2.2	31	71.3	Good	or Data Capture
10	30/09/2009	03/11/2009	36.5	36.5	40.5	38	2.3	6	5.7	30	73.9	Good	or Data Capture
11	03/11/2009	01/12/2009	40.0	38.7	40.1	40	0.8	2	1.9	33	99.7	Good	Good
12	012/12/2009	30/12/2009	48.8	49.6	47.3	49	1.2	2	2.9	44	99.7	Good	Good
13													
										Overall survey -->		Good precision	Good Overall DC

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 10 periods of data	
Bias factor A	0.9 (0.85 - 0.96)
Bias B	11% (4% - 17%)
Diffusion Tubes Mean:	37 μgm^{-3}
Mean CV (Precision):	7
Automatic Mean:	33 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	33 (31 - 35) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 10 periods of data	
Bias factor A	0.9 (0.85 - 0.96)
Bias B	11% (4% - 17%)
Diffusion Tubes Mean:	37 μgm^{-3}
Mean CV (Precision):	7
Automatic Mean:	33 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	33 (31 - 35) μgm^{-3}

Jaume Targa
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Version 03 - November 2006

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 7 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

Sandyknowes, Main Street, Ballyclare and Antrim Road, Elmfield continuous monitoring stations are 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 2009 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 2009 were satisfactory.

Jan 09 Round 104	Ref Value : 2.02ugNO2; Measured Value : 1.85ugNO2 Z Score -0.7 **Satisfactory.**
	Ref Value : 1.22ug NO2; Measured Value : 1.21ugNO2 Z Score - 0.1 **Satisfactory.**
Apr 09 Round 105	Ref Value : 1.68ugNO2; Measured Value : 1.63ugNO2 Z Score -0.4 **Satisfactory.**
	Ref Value : 0.96ug NO2; Measured Value : 0.92ugNO2 Z Score - 0.5 **Satisfactory.**
July 09 Round 106	Ref Value : 1.84ugNO2; Measured Value : 1.88ugNO2 Z Score 0.3 **Satisfactory.**
	Ref Value : 1.42ug NO2; Measured Value : 1.34ugNO2 Z Score - 0.8 **Satisfactory.**
October 09 Round 107	Ref Value : 2.03ugNO2; Measured Value : 1.87ugNO2 Z Score –1.1 **Satisfactory.**
	Ref Value : 2.20ug NO2; Measured Value : 1.96ugNO2 Z Score -1.4 **Satisfactory.**
January 2010 Round 108	Ref Value : 1.92ugNO2; Measured Value : 1.87ugNO2 Z Score - 0.3 Satisfactory**.**
	Ref Value : 1.47ug NO2; Measured Value : 1.45ugNO2 Z Score -0.2 Satisfactory**.**

Produced by AEA on behalf of Newtownabbey

NEWTOWNABBEY ANTRIM ROAD
01 to 31 January 2009

These data have been fully ratified by AEA

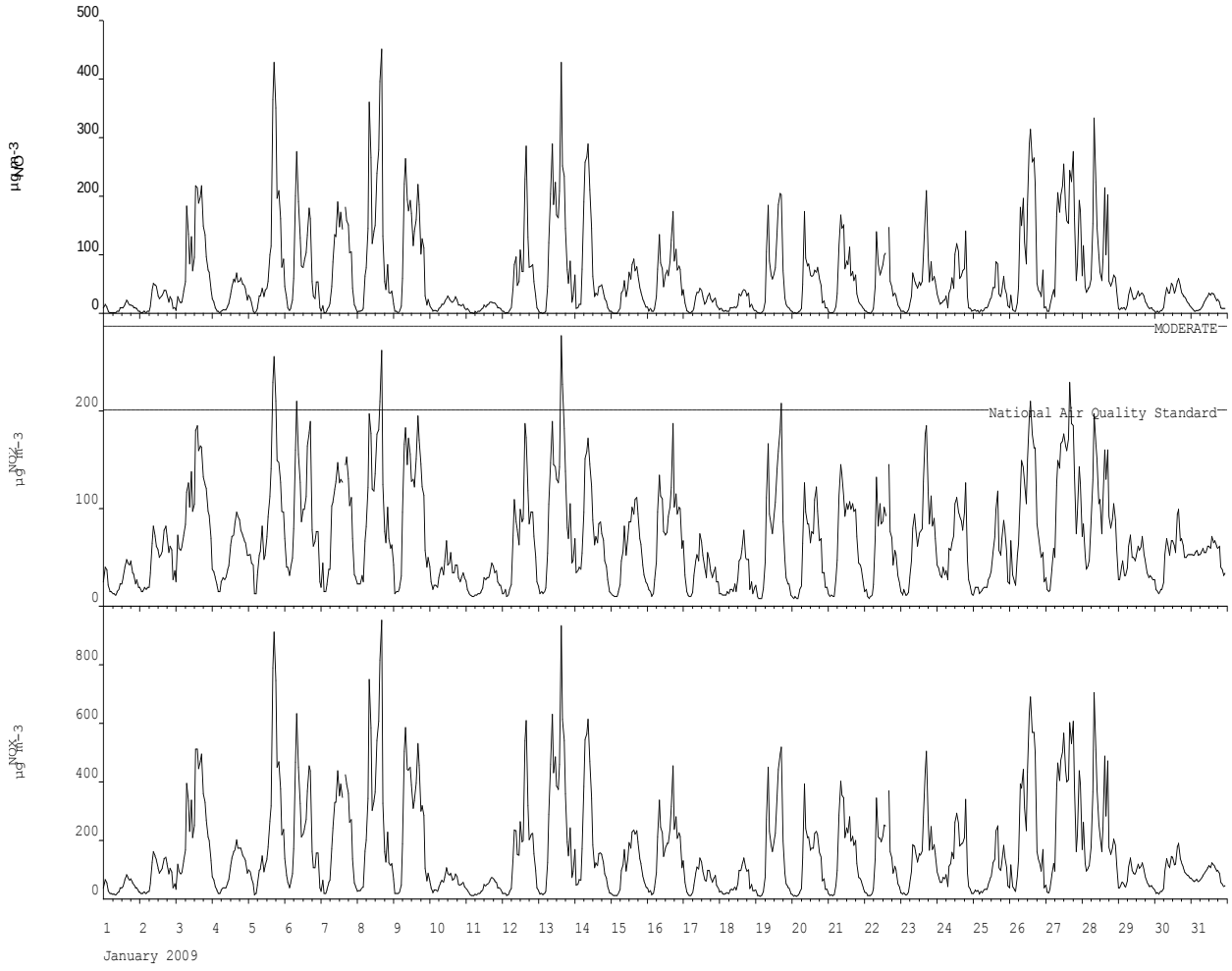
POLLUTANT	NO	NO_2	NO_X
Number Very High	-	0	-
Number High	-	0	-
Number Moderate	-	0	-
Number Low	-	742	-
Maximum 15-minute mean	558 µg m^{-3}	353 µg m^{-3}	1194 µg m^{-3}
Maximum hourly mean	451 µg m^{-3}	277 µg m^{-3}	951 µg m^{-3}
Maximum running 8-hour mean	255 µg m^{-3}	180 µg m^{-3}	563 µg m^{-3}
Maximum running 24-hour mean	154 µg m^{-3}	129 µg m^{-3}	364 µg m^{-3}
Maximum daily mean	136 µg m^{-3}	117 µg m^{-3}	325 µg m^{-3}
Average	60 µg m^{-3}	68 µg m^{-3}	159 µg m^{-3}
Data capture	99.7 %	99.7 %	99.7 %

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}	-	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	11	7

Produced by AEA on behalf of Newtownabbey

Newtownabbey Antrim Road Air Monitoring
Hourly Mean Data for 01 to 31 January 2009



For further information on air pollution monitoring please don't hesitate to contact:

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Produced by AEA on behalf of Newtownabbey BC

NEWTOWNABBEY SANDYKNOWES
01 January to 31 December 2009

These data have been fully ratified by AEA

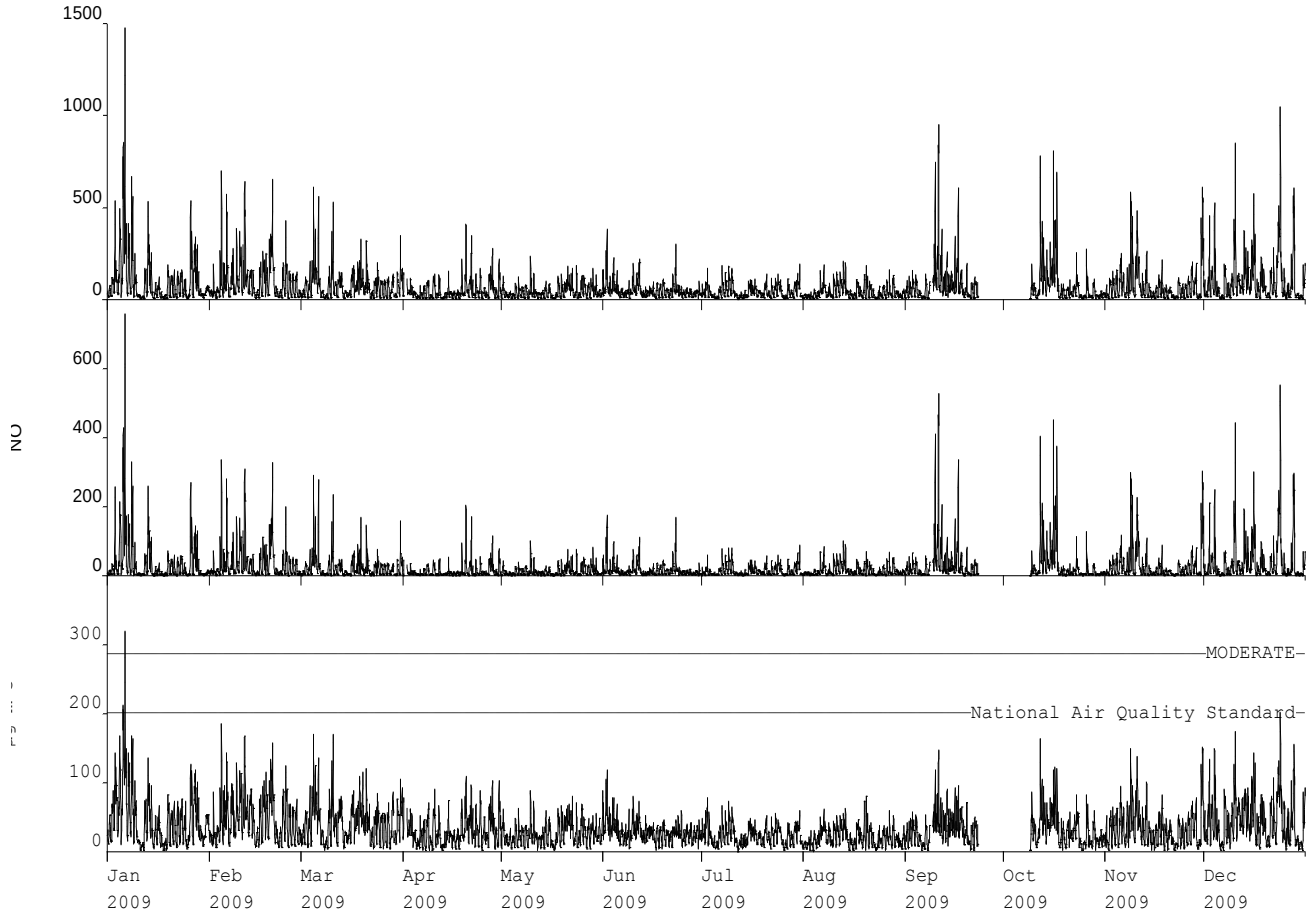
POLLUTANT	NO_X	NO	NO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	1
Number Low	-	-	8308
Maximum 15-minute mean	1820 µg m^{-3}	945 µg m^{-3}	376 µg m^{-3}
Maximum hourly mean	1476 µg m^{-3}	758 µg m^{-3}	319 µg m^{-3}
Maximum running 8-hour mean	804 µg m^{-3}	399 µg m^{-3}	196 µg m^{-3}
Maximum running 24-hour mean	577 µg m^{-3}	272 µg m^{-3}	162 µg m^{-3}
Maximum daily mean	422 µg m^{-3}	191 µg m^{-3}	131 µg m^{-3}
Average	69 µg m^{-3}	24 µg m^{-3}	33 µg m^{-3}
Data capture	94.9 %	94.9 %	94.9 %

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}	7	3

Produced by AEA on behalf of Newtownabbey BC

Newtownabbey Sandyknowes Air Monitoring
Hourly Mean Data for 01 January to 31 December 2009



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Produced by AEA on behalf of Newtownabbey BC

NEWTOWNABBEY BALLYCLARE MAIN ST
01 January to 31 December 2009

These data have been fully ratified by AEA

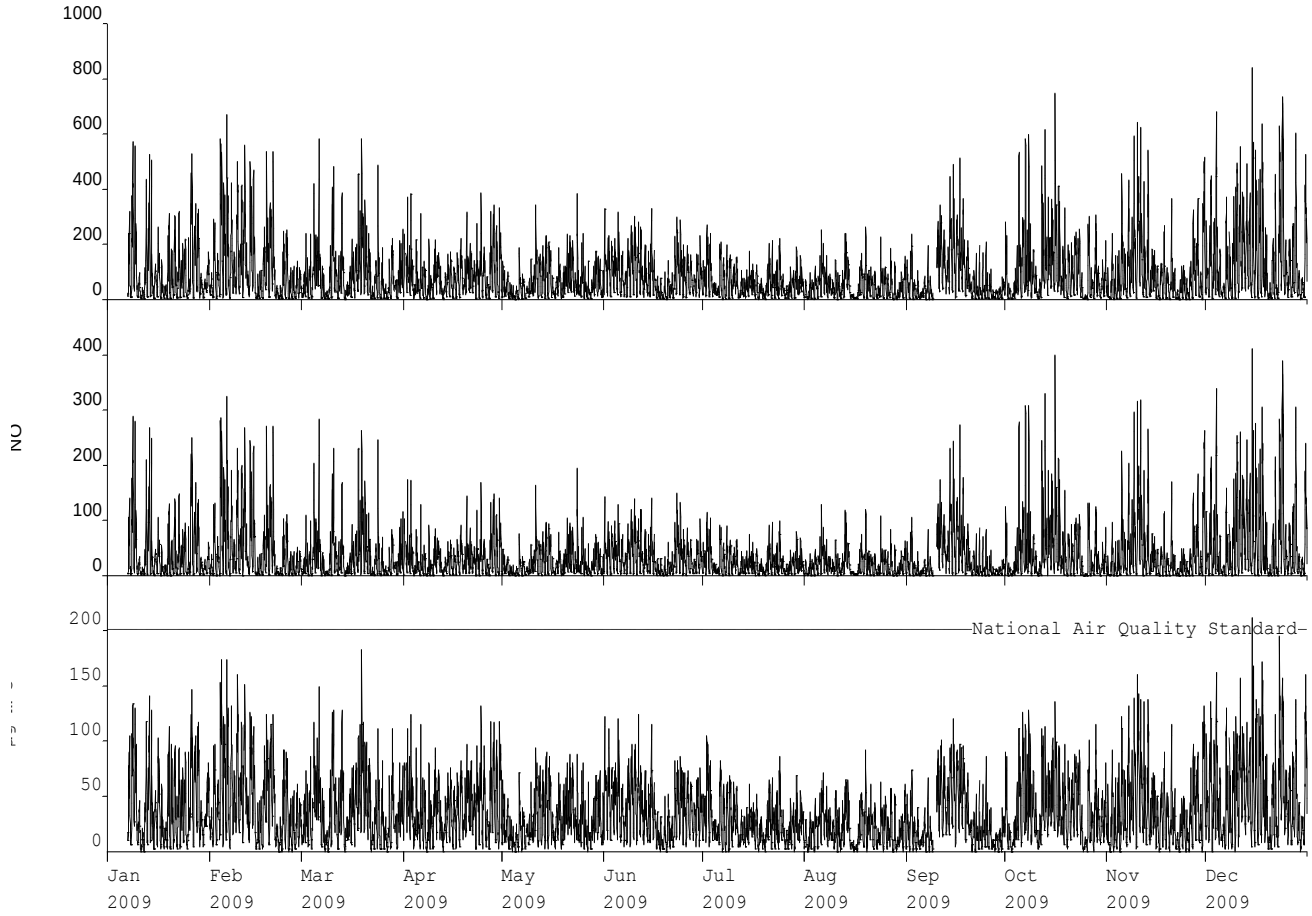
POLLUTANT	NO_X	NO	NO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	8559
Maximum 15-minute mean	1220 µg m^{-3}	541 µg m^{-3}	407 µg m^{-3}
Maximum hourly mean	840 µg m^{-3}	411 µg m^{-3}	212 µg m^{-3}
Maximum running 8-hour mean	631 µg m^{-3}	323 µg m^{-3}	137 µg m^{-3}
Maximum running 24-hour mean	360 µg m^{-3}	176 µg m^{-3}	94 µg m^{-3}
Maximum daily mean	343 µg m^{-3}	166 µg m^{-3}	90 µg m^{-3}
Average	86 µg m^{-3}	34 µg m^{-3}	34 µg m^{-3}
Data capture	97.7 %	97.7 %	97.7 %

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}	1	1

Produced by AEA on behalf of Newtownabbey BC

Newtownabbey Ballyclare Main St Air Monitoring
Hourly Mean Data for 01 January to 31 December 2009



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Appendix B: Locations of AQMAs

Figure 1-1 AQMA 2, Main Street Ballyclare

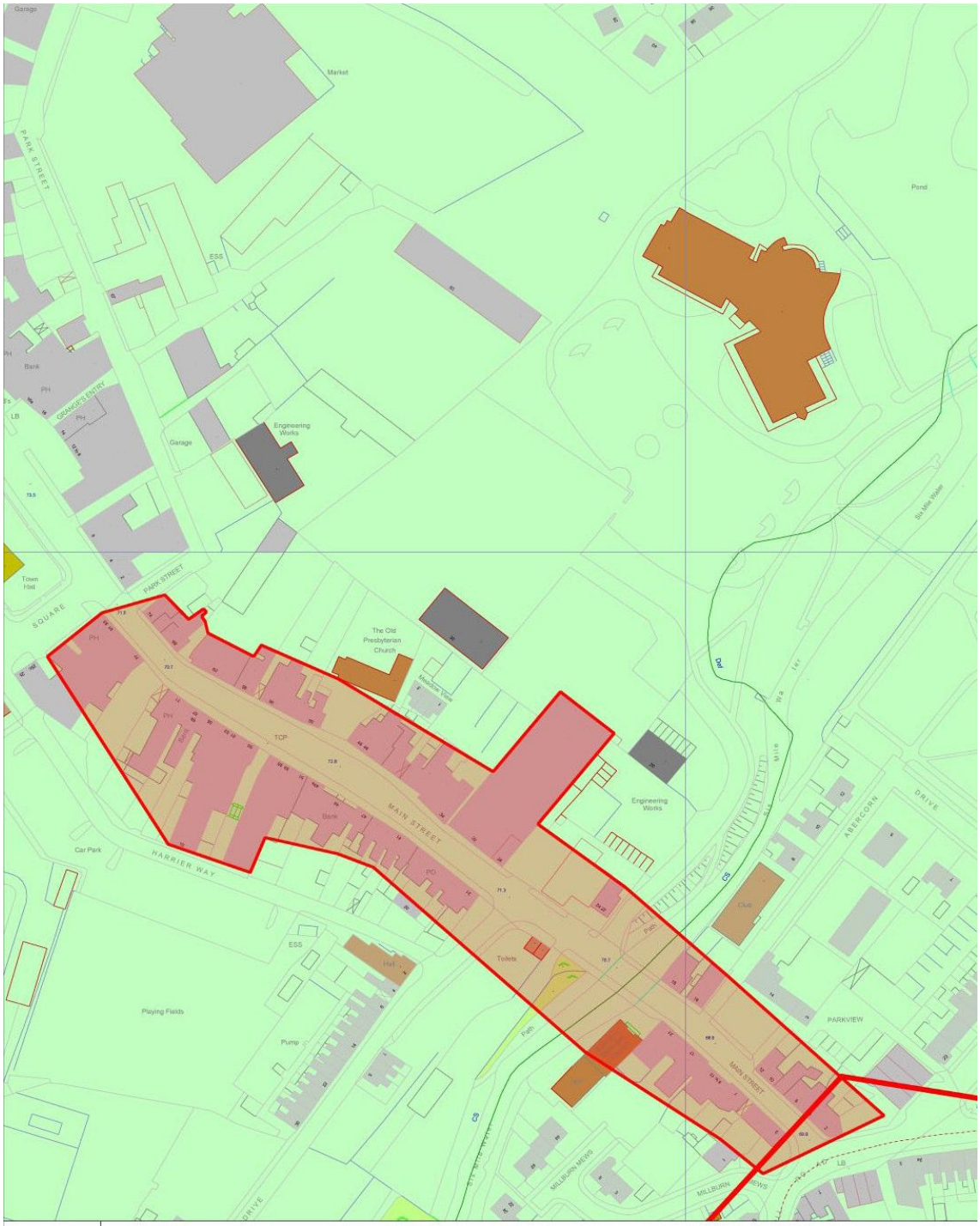


Figure 1-2 AQMA 3 Antrim Road, Elmfield

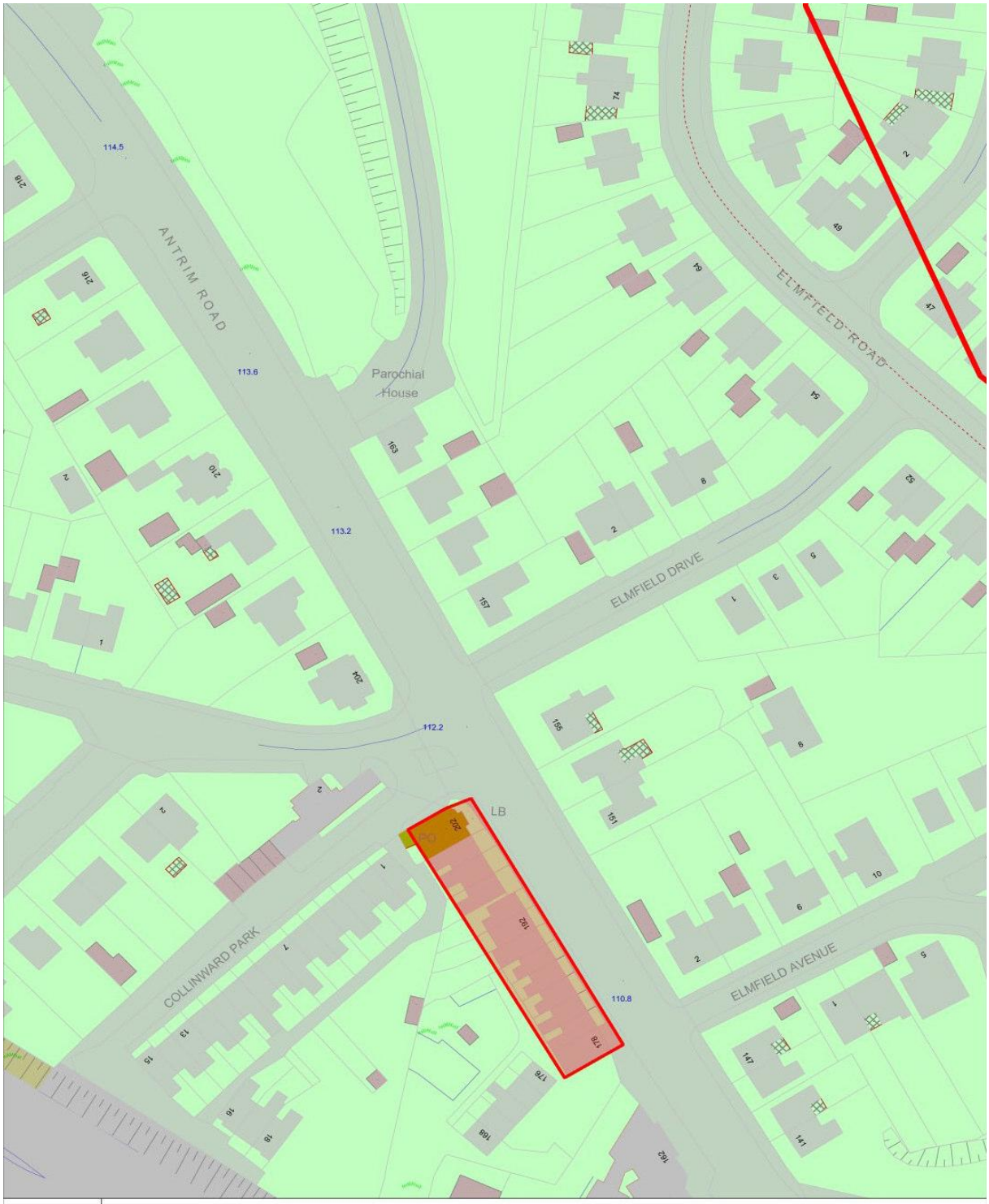


Figure 1-3 AQMA 4 Sandyknowes

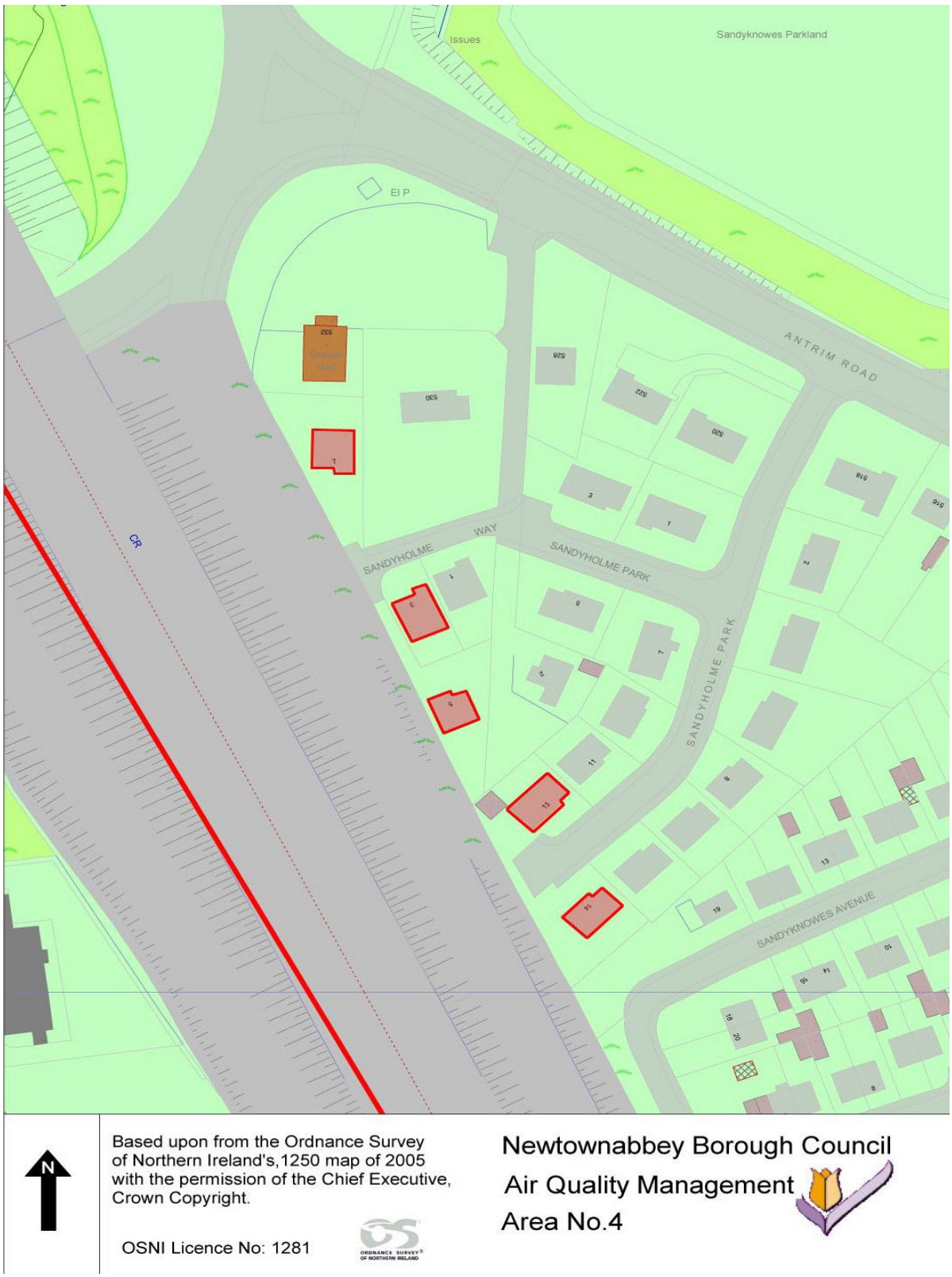
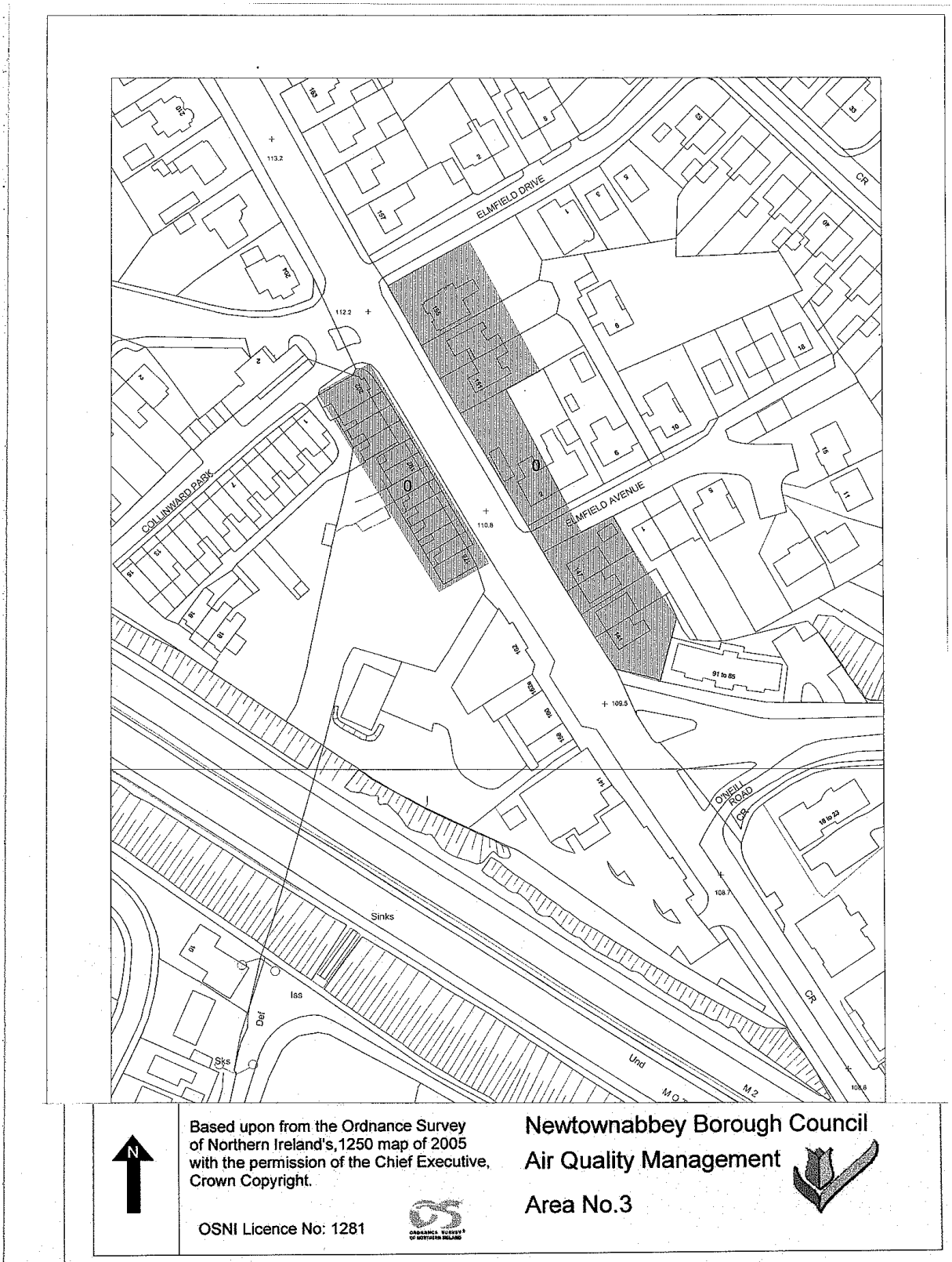
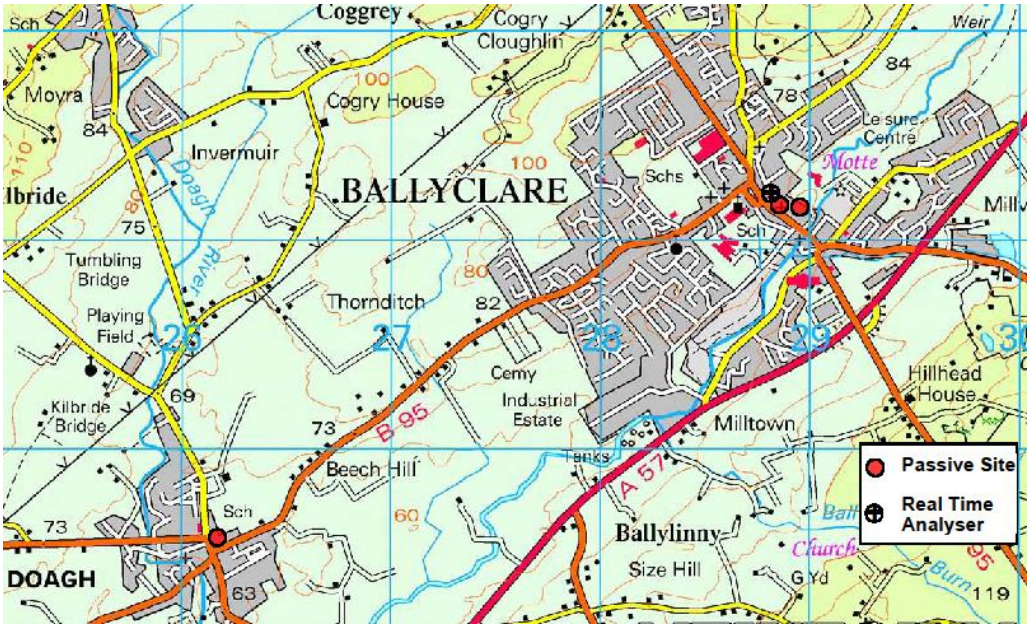


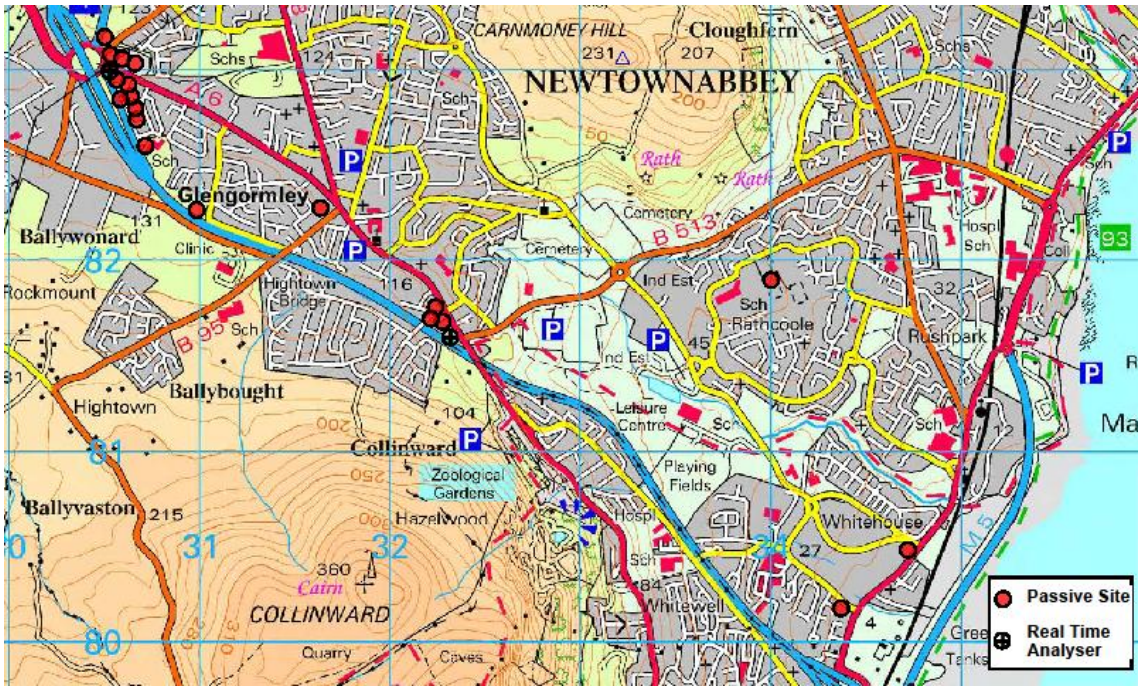
Figure 1-4 AQMA 3 (amended) Antrim Road, Elmfield



Appendix C: Location of Monitoring Sites



Main Street, Ballyclare



Antrim Road, Elmfield

Sandyholme Way, Sandyknowes