NEWTOWNABBEY BOROUGH COUNCIL
Environmental Services Department

LOCAL AIR QUALITY PROGRESS REPORT

AUGUST 2007

Newtownabbey
BOROUGH COUNCIL

Copies of this report are available from:

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C O N T E N T S

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Air Quality Review and Assessment Helpdesk

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1 INTRODUCTION

1.1 Local authorities in Northern Ireland have air quality management duties which are specified in Part III of The Environment (Northern Ireland) Order 2002. The aim of these duties is to deliver the national objectives as set out in the Air Quality Strategy for England, Wales and Northern Ireland.

1.2 In August 2006 Newtownabbey Borough Council published its Updating and Screening Assessment of Local Air Quality.

1.3 Local authorities in Northern Ireland are now required to prepare a Progress Report as specified in Environment (Northern Ireland) Order 2002 Local Air Quality Management Progress Report Guidance LAQM.PRGNI (04). Some of the aims of the Progress Report are to provide a means of communicating air quality information to elected members and the public and providing information to assist in other policy areas such as transport and land planning. The overall aim of the report is to:

- Report progress on implementing local air quality management; and
- Report progress in achieving or maintaining concentrations below the air quality objectives.

1.4 In order to achieve this Newtownabbey Borough Council's progress report will focus on:

- **New monitoring results** (since those reported in Updating and Screening Assessment, August 2006)
- **New local developments** likely to affect air quality

2 NEW MONITORING RESULTS

2.1 Nitrogen Dioxide

2.1.1 Automatic Monitoring Results

From April 2003 the automatic monitoring of NO_2 has been undertaken at two roadside locations in the Borough using chemiluminescent analysers. The analysers are sited at:

Location	Grid Reference
Sandyknowes, Mallusk	305 830
Shore Road	347 805

The mean nitrogen dioxide concentrations obtained from ratified data for 2006 are shown below:

Location	Annual Hourly Mean μgm^{-3}	Max Daily Mean μgm^{-3}	Maximum Hourly Mean μgm^{-3}
Sandyknowes	32	84	199
Shore Road	29	81	172

The mean nitrogen dioxide concentrations for the period 1 January, 2006 to 31 December, 2006 at both the Sandyknowes and the Shore Road site are below the Annual Mean Air Quality Objective of 40 μgm^{-3}.

QA/QC

The automatic monitoring stations are covered by a QA/QC contract with Netcen. The Data Quality Report by Netcen for 2006 is shown in Appendix 1.

2.1.2 Passive Monitoring

Passive diffusion tubes are used to measure nitrogen dioxide at a number of roadside locations throughout the Borough. The tubes remain at the location for a four week exposure period and are then sent to Lambeth Scientific Services Limited, London for analysis and to calculate the average NO_2 concentration at each location.

Since June 2003 tubes were placed in triplicate at the two automatic monitoring sites.

Results

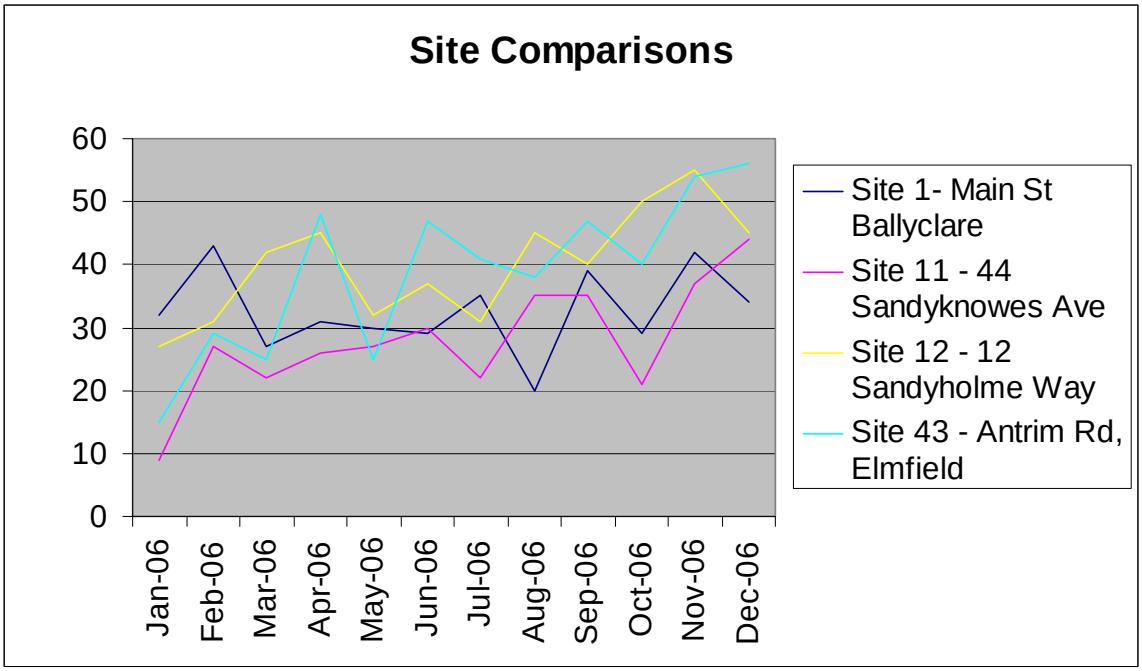
Diffusion tube results for 2006 are listed below (where tube missing/zero result recorded, average taken for number of tubes present).

Site Ref.	Location	No. of Tubes Averaged	Average
1	Main Street, Ballyclare	12	33
5	McMillan House, Antrim Road	12	20
8	Braden Heights	12	13
11	44 Sandyknowes Avenue	12	28
12	12 Sandyholme Way	12	40
16	Doagh Village	12	19
18	Main Street, Ballynure	12	15
20	A8 Motorway at Sandyknowes	12	29
21	Ballyclare Road/Manse Road	11	14
27	1A Jordanstown Road	12	22
31	Bernice Road/Mallusk Road	12	16
36	NOx Analyser, Sandyknowes	12	29
37	NOx Analyser, Sandyknowes	12	29
38	NOx Analyser, Sandyknowes	12	22
39	NOx Analyser, Shore Road	12	19
40	NOx Analyser, Shore Road	12	18
41	NOx Analyser, Shore Road	12	23
42	Langley Hall, Shore Road	12	22
43	Antrim Road, Elmfield	12	39
44	Abbots Cross	12	15
45	B & Q	12	23
46	Collinbridge Road	12	27

The live sites with the highest average nitrogen dioxide concentrations are:

Site Ref.	Location	Result
1	Main Street, Ballyclare	33
11	44 Sandyknowes Avenue	28
12	7 Sandyholme Way	40
43	Antrim Road, Elmfield	39

The graph below shows the monthly results for each of these 4 sites.



Bias Adjustment Factor

Triplicate diffusion tubes have been collocated at both the Newtownabbey chemiluminescent NO_X monitors since June 2003. Bias adjustment factors for both sites for 2006 were calculated (shown in Appendix 2). A bias adjustment factor of 1:34 based on 8 collocation studies (Belfast City Council, Spelthorne Borough Council, Reigate and Banstead Borough Council x 3, City of York Council x 2, East Hertfordshire District Council) was also obtained from Air Quality Consultants Limited.

The various bias adjustment factors have been applied to the annual mean nitrogen dioxide concentrations at sites 1, 11, 12 and 43.

Site Ref.	Location	Annual Average	Bias Adjustment Factor (Sandyknowes) 1.2	Bias Adjustment Factor (Shore Road) 1.45	Bias Adjustment Factor (Air Quality Consultants Ltd) 1.34
1	Main St, Ballyclare	33	40	48	44
11	44 Sandyknowes Avenue	28	34	41	38
12	7 Sandyholme Way	40	48	58	54
43	Antrim Rd, Elmfield	39	47	57	52

The diffusion tube results for these sites for 2004-2006 are shown below (not bias adjusted). The number of tubes averaged at each location is shown in brackets.

Site Ref.	Location	2004	2005	2006
1	Main Street, Ballyclare	27 (11)	26 (12)	33 (12)
11	44 Sandyknowes Avenue	24 (10)	31 (8)	28 (12)
12	7 Sandyholme Way	31 (8)	33 (12)	40 (12)
43	Antrim Road, Elmfield	30 (6)	31 (12)	39 (12)

The diffusion tube results for 2007 to date are shown below:

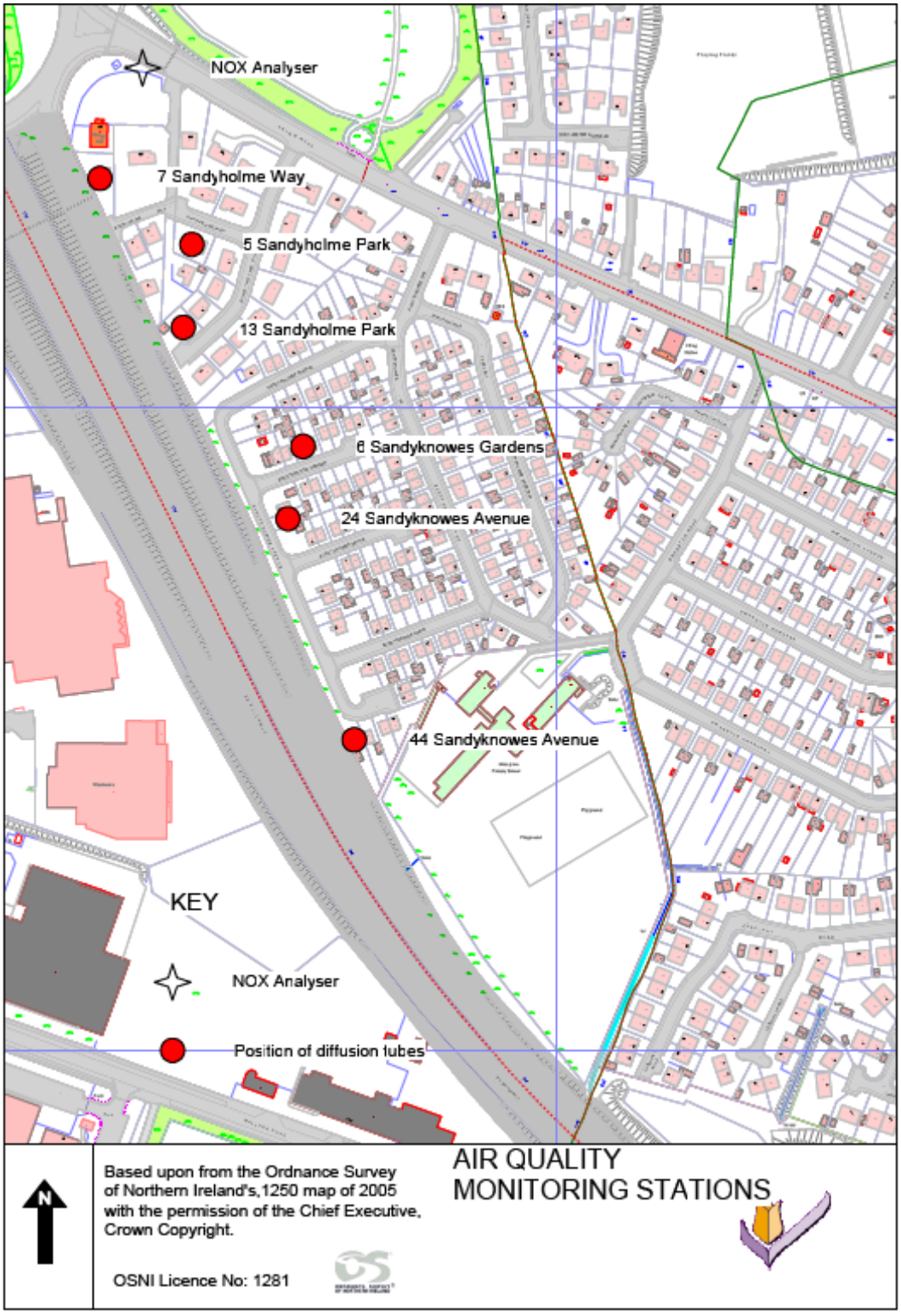
Site Ref.	Location	January	February	March	Average
1	Main Street, Ballyclare	34	33	30	32
11	44 Sandyknowes Avenue	23	42	37	34
12	7 Sandyholme Way	36	31	29	32
43	Antrim Road, Elmfield	49	45	28	41

The diffusion tubes at each of the above sites are either on or adjacent to the facades of domestic properties, ie relevant locations.

a) *7 Sandyholme Way and 44 Sandyknowes Avenue*

The properties at 7 Sandyholme Way and 44 Sandyknowes Avenue are adjacent to the southbound on-slip of the M2 motorway (map and photo below). This area is subject to severe rush-hour congestion and works have commenced on widening the southbound portion of the M2 between Sandyknowes and Greencastle from 2 to 3 lanes. For the last 2-3 years attempts have been made to relocate the existing Sandyknowes analyser adjacent to either the on-slip or in the garden of 7 Sandyholme Way, however to date this has been unsuccessful. The diffusion tubes at both locations are on the façade of the properties.

<u>7 Sandyholme Way</u>

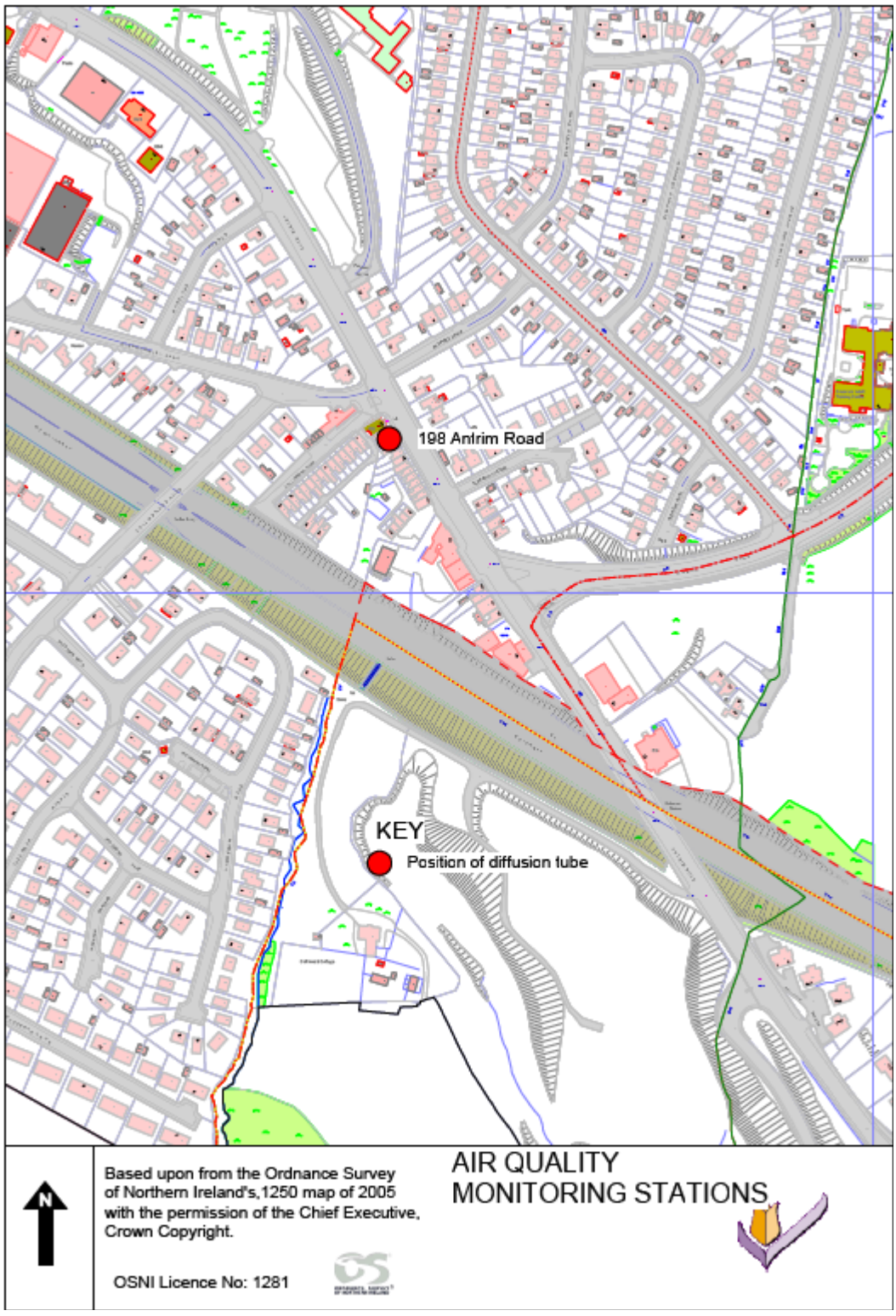

NOX Analyser
7 Sandyholme Way
5 Sandyholme Park
13 Sandyholme Park
6 Sandyknowes Gardens
24 Sandyknowes Avenue
44 Sandyknowes Avenue
KEY
NOX Analyser
Position of diffusion tubes
N
Based upon from the Ordnance Survey of Northern Ireland's,1250 map of 2005 with the permission of the Chief Executive, Crown Copyright.
OSNI Licence No: 1281
AIR QUALITY MONITORING STATIONS

Since January 2007 a diffusion tube has also been located at 13 Sandyholme Park and 6 Sandyknowes Gardens (shown on map above). Since March 2007 a further diffusion tube has been located at 5 Sandyholme Park (shown on map above). The monthly results for these sites for 2007 are shown below:

Site Ref.	Location	Results 2007		
		January	February	March
47	13 Sandyholme Park	40	44	42
49	6 Sandyknowes Gardens	27	20	25
56	5 Sandyholme Park	-	-	23

b) *Antrim Road, Elmfield*

The property at Antrim Road, Elmfield is adjacent to a busy junction of the main road leading from Glengormley to Belfast City Centre (map and photo below). The diffusion tube is attached to the lamppost outside the front of the property. The diffusion tube is 3.1 m from the façade of the property.


198 Antrim Road
KEY
Position of diffusion tube
N
Based upon from the Ordnance Survey of Northern Ireland's,1250 map of 2005 with the permission of the Chief Executive, Crown Copyright.
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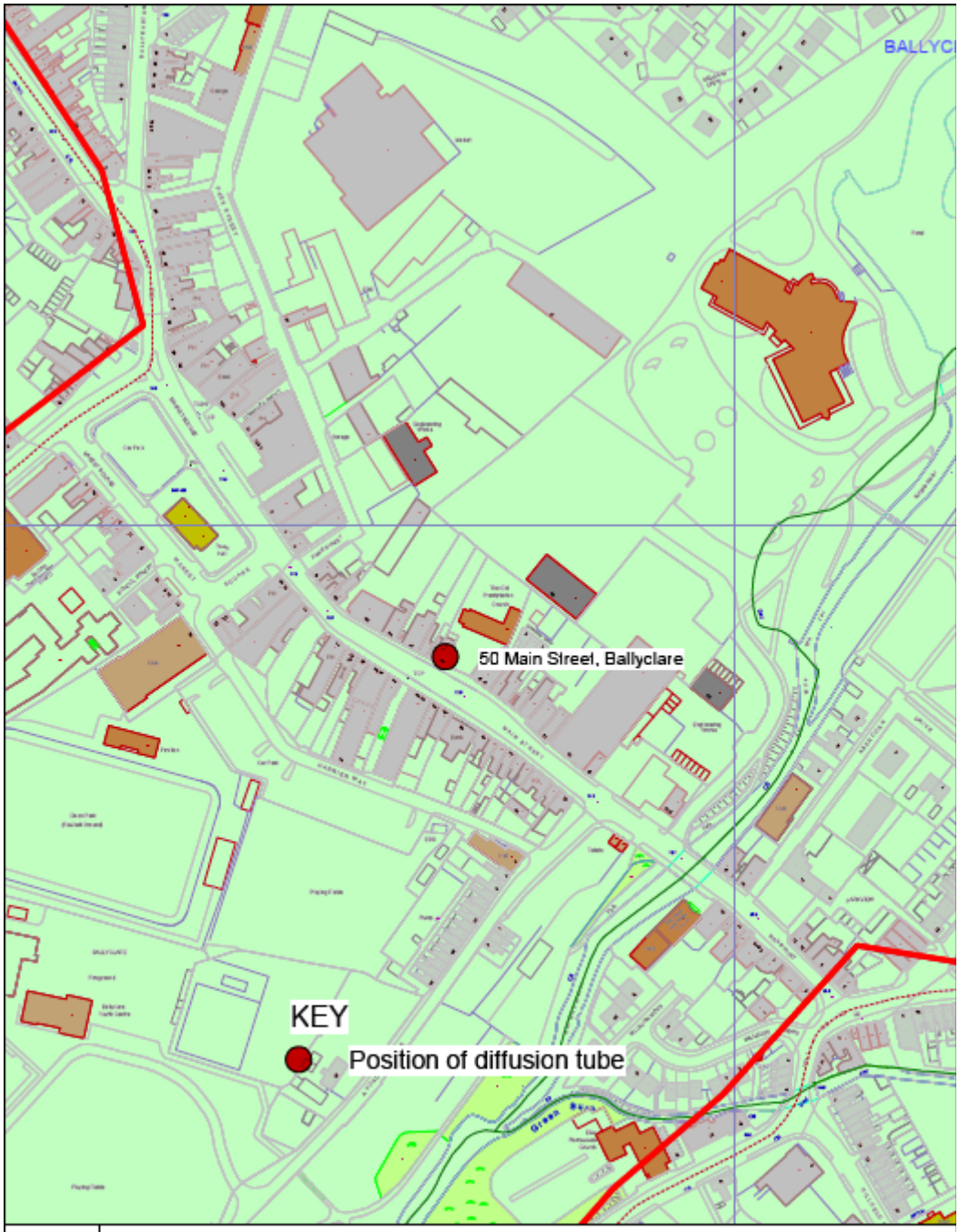
AIR QUALITY MONITORING STATIONS

c) *Main Street, Ballyclare*

The property at Main Street, Ballyclare is adjacent to the main road leading in and out of Ballyclare. This street is sided on both sides by commercial and domestic properties giving a canyon effect. It is a typical rural town which has seen rapid growth in recent years resulting in traffic congestion (map and photo below).



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AIR QUALITY MONITORING STATION

2.2 Sulphur Dioxide and PM10 (Particulate Matter)

From February 2005 the automatic monitoring of SO_2 and PM_{10} has been undertaken in the Ballyclare area using a chemiluminescent analyzer and a TEOM. The station is sited at:

Location	Grid Reference
Ollardale, Ballyclare	283 909

2.2.1 PM10

The mean PM_{10} (particulate matter) concentrations obtained from ratified data for 2006 are shown below.

Location	Max Daily Mean μgm^{-3}	Maximum Hourly Mean μgm^{-3}	Annual Mean μgm^{-3}
Ballyclare	58 (GRAV EQ)	233 (GRAV EQ)	20 (GRAV EQ)

The Annual Mean for the Ballyclare site in 2006 is 20 μgm^{-3} (gravimetric concentration). This is below the annual objective of 40 μgm^{-3} (gravimetric concentration). The 24 hour mean of 50 μgm^{-3} was exceeded 2 times during 2006. The maximum running 24 hour mean was 61 μgm^{-3} (gravimetric concentration).

In the first round of Review and Assessment 42 kerbside locations including junctions were assessed using DMRB assessment (1999 version). The model predicted annual average concentrations of PM_{10} less than 28 μgm^{-3} at all the locations modeled. The occupiers of 7 Sandyholme Way are concerned however about particulate matter from road traffic at their property.

2.2.2 SO_2

The mean sulphur dioxide concentrations obtained from ratified data for 2006 are shown below:

Location	Annual Hourly Mean μgm^{-3}	Max Daily Mean μgm^{-3}	Maximum Hourly Mean μgm^{-3}
Ballyclare	4	30	93

These are all below the objectives for sulphur dioxide. There were no exceedances in 2006 of the 15 minute, 1 hour or 24 hour means.

QA/QC

The automatic monitoring station is covered by a QA/QC contract with Netcen. The Data Quality Report by Netcen for 2006 is shown in Appendix 1.

Air Quality Management Area (AQMA)

In 2004 Newtownabbey Borough Council declared an AQMA in Ballyclare for a likely breach of the Particulate Matter (PM_{10}) objectives. The Council's Updating and Screening Assessment (August 2006) concluded that the objective for PM_{10} was unlikely to be exceeded at any location in Newtownabbey and as a result, the AQMA for Ballyclare was revoked by the Council in November 2006.

3 NEW LOCAL DEVELOPMENTS

The following are new local developments since completion of the last Progress Report (April 2005) and the Updating and Screening Assessment (August 2006).

3.1 Part A, B and C Processes

A list of Part A, B and C processes within Newtownabbey Borough Council are listed in Appendix 3.

3.2 New Retail Developments

- Lidl, Old Courthouse site, Church Road, Newtownabbey
- Marks & Spencer, Glenmount Road, Newtownabbey
- Abbey Trading Centre, Longwood Road, Newtownabbey
- Lidl, Ballynure Road, Ballyclare
- Woodsides (Ballyclare) Ltd, 15 Granges Street, Ballyclare
- Monkstown Units, Jordanstown Road

3.3 New Road Schemes

Works have commenced on the M2 widening scheme from Sandyknowes to Greencastle.

3.4 New Landfill Developments

Baird's Brae Landfill Site Phase 2 commenced in November 2006. Complaints concerning malodour from the site have been received by the Council. These have been referred to Environment and Heritage Service, Department of Environment, the licensing authority for the site.

3.5 Residential Developments

In addition, there have been a number of large residential developments within the Borough with the potential to increase traffic flow, including:

- Gateside Development, Victoria Road, Ballyclare
- Craigyhill Development, Ballyeaston Road, Ballyclare
- Ellisfield, Straid, Ballyclare
- Ballynure Road, Ballyclare

Recently there has also been a substantial increase throughout the Borough in the sale of large detached properties as redevelopment sites for townhouses and apartments. This has the potential to substantially increase traffic flows in the Borough.

4 CONCLUSIONS

4.1 Nitrogen Dioxide

The 2006 annual average concentrations for the passive nitrogen dioxide monitoring sites at Sandyholme Way (Site 12) and Antrim Road, Elmfield (Site 43) are equal to or just below the Annual Mean Air Quality Objective of 40 μgm^{-3} without the application of either a local or national bias adjustment factor.

At Main Street, Ballyclare (Site 1) the 2006 annual average concentration is above the annual mean objective when both the local and the national bias adjustment factors are applied.

At 44 Sandyknowes Avenue (Site 11) the 2006 annual average concentration is just below the annual mean objective of 40 μgm^{-3} when the national bias adjustment factor is applied.

a) *Sandyholme Way and Sandyknowes Avenue (sites 12 and 11)*

The diffusion tubes are located on the exterior façade of the sensitive locations and both properties are adjacent to the on-slip of the M2 motorway (southbound) at Sandyknowes roundabout. For the last 2-3 years attempts have been made to relocate the Sandyknowes analyser adjacent to Site 12. Discussions are ongoing with the property owner in an attempt to locate an analyser in the garden of his property. Since January 2007 further diffusion tubes have been located in this area at 13 Sandyholme Park and 6 Sandyknowes Gardens and since March 2007 at 5 Sandyholme Park.

Advice has been sought from the Review and Assessment Helpdesk and based on the 2006 results the Council is now proposing to declare an Air Quality Management Area in the Sandyknowes area for nitrogen dioxide from road traffic and carrying out a detailed assessment in this area.

b) Antrim Road, Elmfield (site 43)

The diffusion tube is located 3.1 m from the façade of the sensitive location and the property is adjacent to a busy four-lane road which leads from Glengormley to Belfast. The Council is now considering relocating the Shore Road automatic analyser within a roadbox at the location.

Advice has been sought from the Review and Assessment Helpdesk and based on the 2006 results the Council is now proposing to declare an Air Quality Management Area in the Antrim Road, Elmfield area for nitrogen dioxide from road traffic and carry out a detailed assessment in this area.

c) Main Street, Ballyclare (site 1)

The diffusion tube is located on the exterior façade of the sensitive location and the property is adjacent to a busy main street of a rural town.

Advice has been sought from the Review and Assessment Helpdesk and based on the 2006 results the Council is now proposing to declare an Air Quality Management Area in Main Street, Ballyclare for nitrogen dioxide from road traffic and carrying out a detailed assessment in this area.

4.2 Sulphur Dioxide and Particulate Matter (PM_{10})

The mean 2006 concentrations for both SO_2 and PM_{10} are below the annual air quality objectives for both these pollutants. Monitoring results have been consistently low since monitoring commenced.

The Council is now proposing to review this monitoring location and give consideration to re-siting the equipment in an appropriate location.

Due to the concerns raised by the occupiers of 7 Sandyholme Way regarding particulate matter from road traffic at their property consideration will be given to siting a particulate monitor at their property.

APPENDIX 1

DATA QUALITY REPORTS

APPENDIX 2

BIAS ADJUSTMENT FACTORS

Bias Adjustment Factor (2006) for Shore Road Analyser

Month	Analyser Results	Tube Results			Tube Average	Adjusted Analyser
		Site No.	Site No.	Site No.		
January	35	18	18	19	18	35
February	37	18	24	25	22	37
March	29	11	19	23	18	29
April	26	19	14	22	18	26
May	25	14	24	14	17	25
June	26	19	21	16	19	26
July	22	14	14	17	15	22
August	22	17	14	31	21	22
September	27	20	18	17	18	27
October	28	23	20	25	23	28
November	36	31	5	27	21	36
December	31	26	28	37	30	31
Average					**20**	**29**

Bias adjustment factor = $\frac{29}{20}$ = 1.45

Shore Road bias adjustment factor = 1.45

Bias Adjustment Factor (2006) for Sandyknowes Analyser

Month	Analyser Results	Tube Results			Tube Average	Adjusted Analyser
		Site No. 36	Site No. 37	Site No. 38		
January	38	20	33	13	22	38
February	38	34	34	23	30	38
March	33	18	25	18	20	33
April	33	26	28	19	24	33
May	30	22	22	25	23	30
June	31	32	27	35	31	30
July	24	23	22	25	23	24
August	27	32	32	38	34	28
September	31	34	31	21	29	30
October	30	22	23	16	20	30
November	35	38	43	13	31	35
December	31	42	31	21	31	32
Average					**26.5**	**31.75**

Bias adjustment factor = $\frac{31.75}{26.75}$ = 1.25

Sandyknowes bias adjustment factor = 1.2

APPENDIX 3

IPPC PROCESSES

PART A, B AND C IPPC PROCESSES WITHIN NEWTOWNABBEY BOROUGH COUNCIL

Part A Processes

Site Operator Name	Site Address
Brett Martin Limited	24 Roughfort Road, Mallusk
NK Coatings Limited	4 Michelin Road, Mallusk
Diageo Baileys Global Supply	Hightown Industrial Estate, Mallusk Road, Newtownabbey

Part B Processes

Site Operator Name	Site Address
RMC Quarries (Ulster) Ltd	1 Sealstown Road, Mallusk
Ready Use Concrete	Boyd's Quarry, 140 Mallusk Road, Newtownabbey
James Boyd & Sons Ltd	140 Mallusk Road, Newtownabbey
F P McCann Ltd	Boyd's Quarry, 140 Mallusk Road, Newtownabbey
NK Coatings Limited	4 Michelin Road, Mallusk
Brett Martin Limited	24 Roughfort Road, Mallusk

Part C Processes

Vapour Recovery

Site Operator Name	Site Address
Spar	119 Manse Road, Newtownabbey
Spar	91 Templepatrick Road, Ballyclare
Spar	45 Mallusk Road, Newtownabbey
Spar	290 Antrim Road, Newtownabbey
Glenabbey Filling Station	492 Antrim Road, Newtownabbey
Whitehouse Filling Station	Shore Road, Newtownabbey
Twinburn Filling Station	Monkstown Road, Newtownabbey
Ballyrobert Cash Stores	47 Mossley Road, Ballyrobert
Forecourt Centre	Station Road, Doagh
J Gordon and Sons	175 Doagh Road, Newtownabbey
Hazelbank Service Station	448 Shore Road, Newtownabbey
Glen Service Station	88 Ballyclare Road, Newtownabbey
Moyola Park Service Station	387 Antrim Road, Newtownabbey
O'Neill Road Filling Station	O'Neill Road, Newtownabbey
Rathcoole Filling Station	45 Doagh Road, Newtownabbey
Tesco Filling Station	Abbey Retail Park, Newtownabbey
Trackside Service Station	Shore Road, Newtownabbey
N Watt & Sons	4 Ballynure Road, Ballyclare

Site Operator Name	Site Address
Ballynure Filling Station	3 Larne Road, Ballynure

Cement Processes

Site Operator Name	Site Address
Mega-Mix (94) Ltd	60 Ballycraigy Road, Newtownabbey
Abbey-Crete	372 Ballyclare Road, Newtownabbey
Frank McIlroy Ltd	Cloughfern Avenue, Newtownabbey
Roadmix	60 Ballycraigy Road, Newtownabbey
RMC Ulster Ltd	Ballypalady Road, Doagh
RMC Ulster Ltd	Sealstown Road, Mallusk
St Gobain	Dennison Industrial Estate, Ballyclare

Coal Processes

Site Operator Name	Site Address
Home Fuels Ltd	Central Park, Mallusk

Coating Processes

Site Operator Name	Site Address
F G Wilson (Eng) Ltd	Doagh Road, Newtownabbey
Montracon Ltd	50 Mallusk Road, Newtownabbey
J E Coulter Ltd	Commercial Way, Mallusk

Timber Processes

Site Operator Name	Site Address
McLaughlin & Harvey	Trench Road, Mallusk

Mobile Crusher

Site Operator Name	Site Address
McCormack Demolition	Trench Road, Mallusk

Dry Cleaners

Site Operator Name	Site Address
Apollo Dry Cleaners	34 The Diamond
Beverley Dry Cleaners	12A Beverley Road
Speedy Cleaners	379 Antrim Road
Abbey Dry Cleaners	612 Shore Road