BOROUGH COUNCIL

LIMAVADY

Comhairle Bhuirg
Léim an Mhadaidh

ENVIRONMENTAL HEALTH DEPARTMENT

AIR QUALITY REVIEW AND ASSESSMENT

PROGRESS REPORT

September 2007

Air Quality Review and Assessment

Background

The air quality strategy for England, Scotland, Wales and Northern Ireland provides a framework for air quality control through air quality management and air quality standards. The strategy and other standards and their objectives have been enacted through the Air Quality Regulations (Northern Ireland) 2003 within Northern Ireland. The Environment (Northern Ireland) Order 2002 requires district Councils within Northern Ireland to undertake air quality reviews and assessments. The review and assessment of air quality is the first step in the Local Air Quality Management process. Local authorities are required to identify those areas where the prescribed air quality objectives are not likely to be met by or at any point beyond the relevant deadline. These areas are declared as air quality management areas (AQMA). Such areas are only declared where exceedences occur at locations where members of the public might reasonably be exposed i.e. relevant locations.

Review and Assessment

The first stage review and assessment within Limavady Borough Council identified possible exceedences of the nitrogen dioxide, sulphur dioxide and particulate matter objectives. Further modelling and monitoring however revealed that the sulphur dioxide and particulate matter objectives were not being exceeded. However, one area within the Borough was shown to exceed the annual mean objective level for nitrogen dioxide. This area at the western end of Dungiven Main Street was declared an AQMA in March 2006.

The principal source of nitrogen oxides is traffic emissions. Nitrogen dioxide is a respiratory irritant associated with both acute and chronic effects on human health. Nitrogen dioxide (NO_2) and nitric oxide (NO) are collectively referred to as nitrogen oxides (NO_X). All combustion processes produce NOx emissions largely in the form of nitric oxide which is then converted to nitrogen dioxide, mainly as a result of its reaction with ozone in the atmosphere. It is nitrogen dioxide which is associated with the adverse effects on human health.

Limavady Borough Council declared this area as an AQMA in March 2006 as concentrations were found, through monitoring, to be in excess of the annual mean objective level of 40µg/m^3

In light of this declaration Council has continued to monitor air quality within the AQMA in accordance with relevant technical guidance. In April 2006 funding was sought to complete monitoring for the period January 2007 to March 2007 and for a subsequent phase of monitoring for the period April 2007-March 2008. Financial assistance of £3593.04 was secured. Since April 2007 the monitoring area has been extended to enable Council to determine whether the boundary of the AQMA is accurate or needs to be extended. The results of the monitoring which has been carried out within the AQMA in Dungiven are shown in Appendix 1. Table 1, Appendix 1 shows the results obtained on a monthly basis for the period January 2006 to December 2006. Table 2 Appendix 1 shows the annual mean at each sample point within the AQMA. It can be seen from Table 2 Appendix 1 that annual mean concentrations within the AQMA range from 41.7µg/m^3 to 56.8µg/m^3. Levels are still in excess of the annual mean objective level of 40µg/m^3. A draft action plan has been submitted to Department of the Environment for evaluation.

Monitoring is ongoing within the AQMA The scope of this monitoring has been extended beyond the boundary of the AQMA and now includes five additional sites along the middle section of Main Street, Dungiven. Duplicate tubes have been placed at these sites and a collocation study is being conducted at Dale's Corner and Brooke Park in Londonderry where Derry City Council

have continuous NO_2 monitors. This current phase of monitoring will continue until March 2008.With additional data an annual mean will then be calculated.

Action Plan, AQMA Main Street, Dungiven

The action plan was drawn up following consultation with the local community and DRD Roads Service, the relevant authority in Northern Ireland responsible for addressing traffic management. Given the fact that traffic is the major source of NO_2 within the AQMA Council proposes conducting a source apportionment assessment to determine the reduction in traffic volume which is required to reduce emission levels so that the annual mean objective level would be achieved. This information will assist both DRD Roads Service and Council in determining the best way forward. A specification has been drawn up and Council are currently in discussions with consultants to establish if this can be undertaken. Whilst exact costings are as yet unknown Council has submitted a bid of £5000 to carry out this work. This assessment will hopefully be completed by end February 2008.

Expenditure

In summary total expenditure for the period April 2007 to March 2008 is expected to be in the region of £9000. This will cover staffing costs and the cost of carrying out a source apportionment assessment. (Funding which was received in the period April 2006-March 2007 covers the current phase of NO_2 monitoring.)

Appendix 1

Table 1

NO_2 Passive diffusion tube monitoring, Dungiven AQMA 2006

Tube	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
A1	58.35	59.54	51.13	50.67	46.62	39.43	57.70	*	46.93	62.92	52.91	41.74
A2	56.20	52.23	53.52	45.05	43.85	42.66	52.49	*	40.50	54.34	36.71	44.45
B1	68.43	58.43	52.40	45.76	48.76	53.63	20.97	51.11	65.89	56.51	58.62	43.47
B2	65.95	67.14	58.57	38.27	45.94	55.40	21.08	45.96	65.57	64.20	60.98	43.85
C1	64.71	65.69	63.40	43.28	53.27	51.13	56.87	65.75	56.71	64.40	51.18	46.18
C2	59.18	58.32	55.55	37.97	60.67	54.61	49.51	56.06	50.23	64.79	44.56	41.13
D1	59.34	46.92	40.28	41.86	45.60	48.11	46.96	42.25	48.18	54.04	53.34	*
D2	53.56	46.19	42.83	40.80	45.66	50.84	46.75	43.49	48.12	50.19	48.41	48.29
E1	57.11	52.45	47.11	48.45	42.27	43.92	-	45.65	45.58	52.46	50.82	50.09
E2	53.97	40.44	51.52	47.59	45.15	50.56	-	47.30	53.04	46.55	52.39	52.43
F1	-	56.19	48.40	35.03	38.77	37.27	47.48	35.19	39.05	43.83	40.30	37.22
F2	-	57.87	48.05	41.00	43.62	39.55	45.03	49.57	45.80	49.16	39.68	36.27
G1	50.99	47.87	47.81	40.75	35.16	43.29	51.03	36.58	52.98	-	48.58	44.67
G2	63.06	54.41	43.45	40.03	37.98	45.19	46.28	41.01	54.11	-	41.35	49.19
H1	62.65	52.00	51.75	47.59	41.48	53.37	59.06	42.10	56.07	53.65	58.06	55.22
H2	53.72	51.22	51.22	46.52	43.85	57.24	58.43	46.06	58.66	59.07	50.55	54.69
I1	59.76	55.63	56.69	-	-	-	-	-	-	-	45.19	-
I2	*	*	*	*	*	*	*	*	*	*	*	*
J1	32.73	24.19	23.00	21.36	18.68	18.54	23.01	23.50	-	18.24	26.79	24.75
J2	30.08	24.13	22.08	14.28	19.41	19.24	22.23	22.31	-	25.69	25.67	25.01
DC1	44.04	47.40	37.72	27.98	31.04	32.77	36.47	24.68	32.36	40.74	*	40.44
DC2	42.31	41.55	40.15	23.57	28.84	30.24	36.79	25.71	34.03	37.73	42.14	40.89
DC3	44.79	46.79	39.93	28.59	30.70	35.37	34.60	22.52	34.62	37.14	44.16	39.84
DAUN1	31.18	24.90	19.41	12.12	10.46	12.08	12.56	10.46	14.28	18.69	25.41	18.94
DAUN2	26.15	22.72	18.49	10.34	11.77	13.08	14.07	9.53	18.97	19.97	20.18	10.14
DAUN3	23.18	22.17	19.85	13.84	13.19	14.26	12.71	8.19	13.42	17.80	20.57	12.22

All figures in $\mu g/m^3$
- missing tube
* control - not exposed

J1 & J2: background monitoring site, New Street, Dungiven.
DC1-DC3: Dales Corner, Derry City Council continuous NOx monitor – Collocation study
DAUN1-DAUN3: Derry City Council AURN site continuous background NOx monitor – collocation study

** bias as stated in University of West England website www.uwe.ac.uk/aqm/review/links.html (overall factor 0.98 (2006 data) Gradko 20%TEA in water).

Table 2

NO_2 Annual Mean, Dungiven 2006

Sampling point	Location in Dungiven	Annual mean NO_2 concentration ($\mu g/m^3$)
A1	Main Street	51.63
A2	Main Street	47.45
B1	Main Street	51.99
B2	Main Street	52.74
C1	Main Street	56.88
C2	Main Street	52.71
D1	Main Street	47.89
D2	Main Street	47.09
E1	Main Street	48.72
E2	Main Street	49.17
F1	Main Street	41.70
F2	Main Street	45.05
G1	Main Street	45.43
G2	Main Street	46.90
H1	Main Street	52.75
H2	Main Street	54.41
I1	Main Street/ Ballyquin Rd junction	54.31
I2	Not exposed	- (control)
J1	New Street	23.16 (background)
J2	New Street	23.71 (background)