



ORKNEY
ISLANDS COUNCIL

**Local Air Quality Management
Progress Report 2008**

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LAQM Progress Report 2008

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For and on Behalf of
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1 INTRODUCTION

All local authorities have a statutory obligation to review and assess air quality within their area. The aim of the Local Air Quality Management (LAQM) Progress Report is to provide an update on local air quality. This includes information on recent air quality monitoring, changes in local policy towards air quality and changes in local sources of emissions.

The report uses current monitoring data and information on industrial, transport, commercial and domestic atmospheric emissions to identify if there is potential for exceedence of the air quality objectives for pollutants contained within the National Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000 (NAQS).

This report follows guidance set out in LAQM.TG(03) technical guidance, LAQM.PRG(03) progress report guidance, LAQM.PG(03) policy guidance and subsequent guidance amendments.

2 THE ASSESSMENT PROCESS AND NATIONAL AIR QUALITY STANDARDS AND OBJECTIVES

The Environment Act 1995 and subsequent regulations require local authorities to assess the compliance of air quality in their area with the standards and objectives set out in the NAQS. For local authorities within Scotland further regulations are set out in the Air Quality (Scotland) Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002.

The LAQM framework requires that local authorities carry out regular reviews of air quality. This 'Review and Assessment' process comprises two phases. The first phase of the Review and Assessment is an Update and Screening Assessment (U&SA) which is undertaken every three years. The U&SA considers any changes that have occurred in pollutant emissions and sources since the last round of Review and Assessment that may affect air quality.

Depending on the outcome of the U&SA, the second phase of the review and assessment process will comprise of either a Detailed Assessment or a Progress Report.

If a risk of exceeding an air quality objective at a location of relevant public exposure is identified by the U&SA a Detailed Assessment is required. The Detailed Assessment considers the risk of exceeding an objective to greater depth in order to

determine whether it is necessary to declare an Air Quality Management Area (AQMA).

If a risk of exceeding air quality objectives is not identified by the U&SA, a Progress Report is prepared annually up until the next U&SA. As mentioned above, the aim of the Progress Report is to provide an update on pollutant monitoring data, policy towards air quality and new developments which will have an impact on local air quality.

An AQMA is declared following a Detailed Assessment where it has been shown that an air quality objective has been or is predicted to be exceeded by the objective deadline.

Table 1 below displays the air quality objectives set out by the NAQS:

Pollutant	Air Quality Objective		
	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	running annual mean	31-Dec-03
	3.25 $\mu\text{g}/\text{m}^3$	running annual mean	31-Dec-10
1,3-butadiene	2.25 $\mu\text{g}/\text{m}^3$	running annual mean	31-Dec-03
Carbon monoxide (CO)	10 $\mu\text{g}/\text{m}^3$	running 8-hour mean	31-Dec-03
Lead	0.5 $\mu\text{g}/\text{m}^3$	annual mean	31-Dec-04
	0.25 $\mu\text{g}/\text{m}^3$	annual mean	31-Dec-08
Nitrogen dioxide (NO ₂)	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31-Dec-05
	40	annual mean	31-Dec-05
Particulate (PM ₁₀)	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year	24-hour mean	31-Dec-04
	40	annual mean	31-Dec-04
	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 7 times a year	24-hour mean	31-Dec-10
	18	annual mean	31-Dec-10
Sulphur dioxide (SO ₂)	125 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 3 times a year	24-hour mean	31-Dec-04
	350 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 24 times a year	15-minute mean	31-Dec-04
	266 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year	1-hour mean	31-Dec-05

Table 1: NAQS Air Pollutant Objectives

3 LOCAL PERSPECTIVE

The Orkney Islands are situated between 5 and 50 miles north of mainland Scotland (59°N, 3°W). There are approximately 70 islands and 20 skerries in the island group. 17 of the islands are inhabited with an approximate population of 19,770. The largest town is Kirkwall with a population of around 7000.

The main traffic routes in Orkney are a series of A roads that link the west mainland to the east, through Kirkwall and southwards across the barriers to South Ronaldsay. The highest volume of traffic can be found within Kirkwall, with very light levels of traffic found across the mainland and the Outer Isles. The main airport is situated at Grimsetter, 2 miles outside Kirkwall. There are smaller airports across the Outer Isles providing links to Orkney mainland. Large ferry services link Orkney to the Scottish mainland and Shetland with other numerous smaller inter-island links throughout Orkney. Other shipping activity is present within Orkney water's and tends to be concentrated around Scapa Flow.

The county is overwhelmingly rural in character and there are few significant industrial processes in Orkney. The main industrial process comes from the oil activities at Flotta. There are other smaller industrial processes i.e. fish processing and quarrying.

The last update and screening assessment in 2006 concluded that there were no locations in Orkney where the air quality objectives were likely to be exceeded.

4 MONITORING DATA

New data for 2007-2008 has been gathered by Orkney Islands Council. A network of 5 diffusion tubes for Nitrogen Dioxide (NO₂) concentrations and 3 diffusion tubes for Benzene have been used. The tubes are exposed on a monthly basis throughout the year. The locations of the tubes are presented in Figure 1.



Figure 1: Map of Orkney showing Geographic Locations of the Monitoring Points

4.1 Nitrogen dioxide (NO₂)

As diffusion tubes cannot detect short term fluctuations in pollutant concentrations, it is not possible to compare the monitoring results against all NAQS objectives for NO₂ as measured concentrations are monthly averages. The monthly results for NO₂ are shown in Table 2.

	2007						2008	
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1 Kirkwall (control)	-	<1	<1	<1	<1	<1	<1	<1
2 Kirkwall	-	11	11	15	14	8	18	15
3 Stromness	-	6	8	11	-	11	10	11
4 Herston	-	1	1	2	4	3	1	2
5 Waulkmill	-	2	2	3	1	7	2	2
6 St.Mary's	-	2	2	5	3	4	3	3

Table 2: NO₂ Diffusion Tube Monitoring Results for Orkney in µg/m³

As can be seen from the tabulated results for the year 2007-2008, NO₂ has been monitored over a 6 month period having restarted after a lapse in the monitoring within the County.

Over these past 6 months there has been no significant change in levels of NO₂. Kirkwall experiences the highest levels of NO₂ which is understandable considering it is Orkney's largest town and has the highest traffic flows as indicated previously.

Figure 2 below displays the trends of NO₂ concentrations within Kirkwall over the last 6 years.

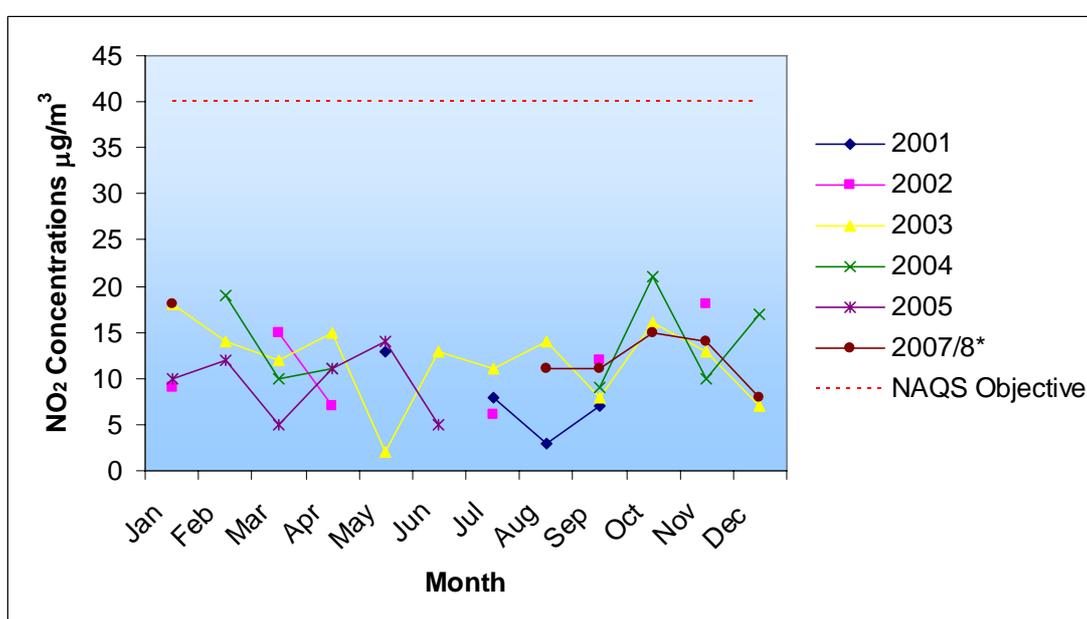


Figure 2: Graph showing trends for NO₂ concentrations in the years 2001-2008

* Due to monitoring having started in second half of the year 2008 results are shown with 2007 Results

As can be seen from Figure 2, concentrations of NO₂ in Kirkwall are less than 30% of the annual mean objective. Levels for NO₂ in Orkney as a whole are less than 15% of the annual mean objective. Therefore it is unlikely that there would be an exceedance of the NO₂ annual mean objective.

4.2 Sulphur Dioxide (SO₂)

There is no new monitoring data for SO₂ in Orkney. In the past SO₂ monitoring has taken place in Orkney through the use of diffusion tubes. Archived results show SO₂ concentrations to be very low with 88% of results below the limit of detection (LOD) of 0.2 ug/m³. However this is not a preferred method of monitoring SO₂, as the short term objectives set out in the NAQS cannot be compared directly.

An assessment of SO₂ was conducted in 2005 to measure ambient levels of SO₂ in Kirkwall, with the assistance of SEPA. Data was obtained from two locations. The first within Kirkwall and the second to monitor the contribution of SO₂ from the Animal incinerator at Chinglebraes.

The resulting report from SEPA concluded that the 'ambient air levels of SO₂ in Kirkwall and the vicinity of Chinglebraes never exceeded the limits set out by the air quality objectives'. '...effects are unlikely to be noticed even by individuals who are sensitive to air pollutants'.

Since these findings were published by SEPA and reported on in Orkney Islands Council 2005 Progress Report, The incinerator at Chinglebraes is no longer operational and there are no significant changes within Kirkwall that would influence ambient SO₂ concentrations in the town.

It can therefore be concluded that SO₂ levels within Orkney are not likely to exceed the air quality objectives set out by NAQS.

Further monitoring may be conducted within the county in the future to confirm compliance with the NAQS objectives. The need for any such monitoring will be properly assessed in the 2009 Update and Screening assessment.

4.3 Benzene

After a gap in the monitoring of benzene within Orkney, monitoring has resumed with a network of diffusion tubes. Over the past 6 months there have been no significant changes in the levels of benzene recorded at the three monitoring locations Herston, Waulkmill and St Mary's. All recorded values for this period were below the Limit of Detection (LOD) of 0.2ppb. Therefore benzene levels within Orkney are less than 20% of the NAQS objectives.

It can therefore be concluded that benzene levels within Orkney are not likely to exceed the air quality objectives set out by NAQS.

5 NEW LOCAL DEVELOPMENTS

There have been no new developments in Orkney since the councils last Update and Screening Assessment which could affect the air quality in the local area.

Through the Orkney Islands Council planning process two new industrial processes are under consideration, but at a very early stage. The first is for the construction of

a container hub at Lyness, Hoy. A full scoping report will be underway, inclusive of an assessment to assess the impact of the hub on a range of environmental issues including impacts on air quality. The container hub itself should have very little impact on air quality, but this may cause a notable rise in the number of shipping vessels within Scapa Flow, possibly having some affect on air quality in the region. This notable rise in shipping traffic within Scapa flow may be offset with the reduction of shipping traffic from other sources, most notably the loss of contracts relating to the oil terminal located at Flotta.

The second process currently under consideration is the refurbishment and re-use of former fuel storage tanks at Lyness, Hoy left over from WWII. The re-use of this site for the storage of petroleum fuels is a classified as a part B process and is identified as a process that releases benzene into the air. Considering that levels of benzene are negligible in Orkney, this shouldn't have an adverse affect on air quality within the County.

Both the planning applications for these processes are at an early stage and will therefore be assessed in more detail in the Update and Screening Assessment for 2009.

6 LOCAL AIR QUALITY STRATEGIES

Orkney Islands Council intends to continue with its current air quality strategy and continue monitoring air quality within Orkney through the use of a network of diffusion tubes on a monthly basis. This will continue to ensure the current high standard of air quality within the county. Should this back ground monitoring display any untoward results appropriate measures will be put in place to investigate these and will be assessed in more detail in the 2009 Update and Screening Assessment.

7 CONCLUSIONS

The report included recent monitoring data which clearly shows that Orkney is currently meeting the air quality objectives set out in the NAQS.

The report states that there have been no new developments within Orkney since the last report which could affect the air quality within the county. The report has noted that there are new developments involving industrial processes currently at the planning stage. Although it is considered unlikely that these processes will have any adverse impact on the local air quality within Orkney, these developments will be addressed in more detail in the 2009 Update and Screening Assessment.

Orkney intends to continue with its air quality monitoring to ensure its high standard of air quality.

From the report it can be said that Orkney is not at risk of exceeding the air quality objectives.