

2011 Air Quality Progress Report for Shetland Islands Council

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

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Executive Summary

This report considers local air quality management in Shetland, taking into account relevant policy and technical guidance documents.

No significant changes to air pollution sources have been identified, although some proposed future changes are noted. Further information on these will be included in annual progress reports and updating and screening assessments as and when the developments take place.

An automatic air quality monitoring site for NO_x and SO₂ came on line in December 2008. There is data for the majority of 2010 and no exceedences of air quality objectives have been recorded.

This progress report concludes that detailed assessments are not required for any pollutant.

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1 Introduction

1.1 Description of Local Authority Area

1.1.1 Geography

Shetland is an archipelago, about 400 miles from the Arctic Circle. The 60°N latitude line passes through mainland Shetland. The southern tip of mainland Shetland is about 100 miles from the nearest point on mainland Scotland & almost 400 miles north of Edinburgh.

Including Fair Isle, Shetland stretches about 100 miles north to south. There are over 100 islands in the group, 15 of which are inhabited. The highest point is Ronas Hill, rising to 1,475 feet. Nowhere in Shetland is more than 3 miles from the sea.

1.1.2 Population

After decades of decline, the population of Shetland, which had fallen to nearly 17,000 in the mid-1960s, rose significantly between 1971 and 1981 as a direct result of oil related activity. Based on recent population estimates since the 2001 Census, the population has been relatively stable at around 22,000.

1.1.3 Air Pollution Sources

a) Road Traffic

Traffic density, is very low in comparison to motorway and city traffic. There are very few roads and junctions where traffic is in excess of 5,000 and 10,000 vehicles per day.

b) Other Transport

There are no trains in Shetland, however there are air and sea ports. The main airports are Sumburgh & Scatsta and the main seaports are Lerwick and Sullom Voe.

c) Industrial

The key industry sectors in Shetland are Fisheries, Oil Production Operations and Agriculture. A (small) major fuel storage depot is located in Lerwick.

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 Scotland are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre, $\mu\text{g}/\text{m}^3$ (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 Scotland.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	18 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Previous rounds of Review and Assessment have not determined the need for detailed assessment and no air quality management areas have been declared in Shetland Islands Council's area.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There has been no change to the automatic monitoring site.

Figure 2.1 Location Map of Automatic Monitoring Site

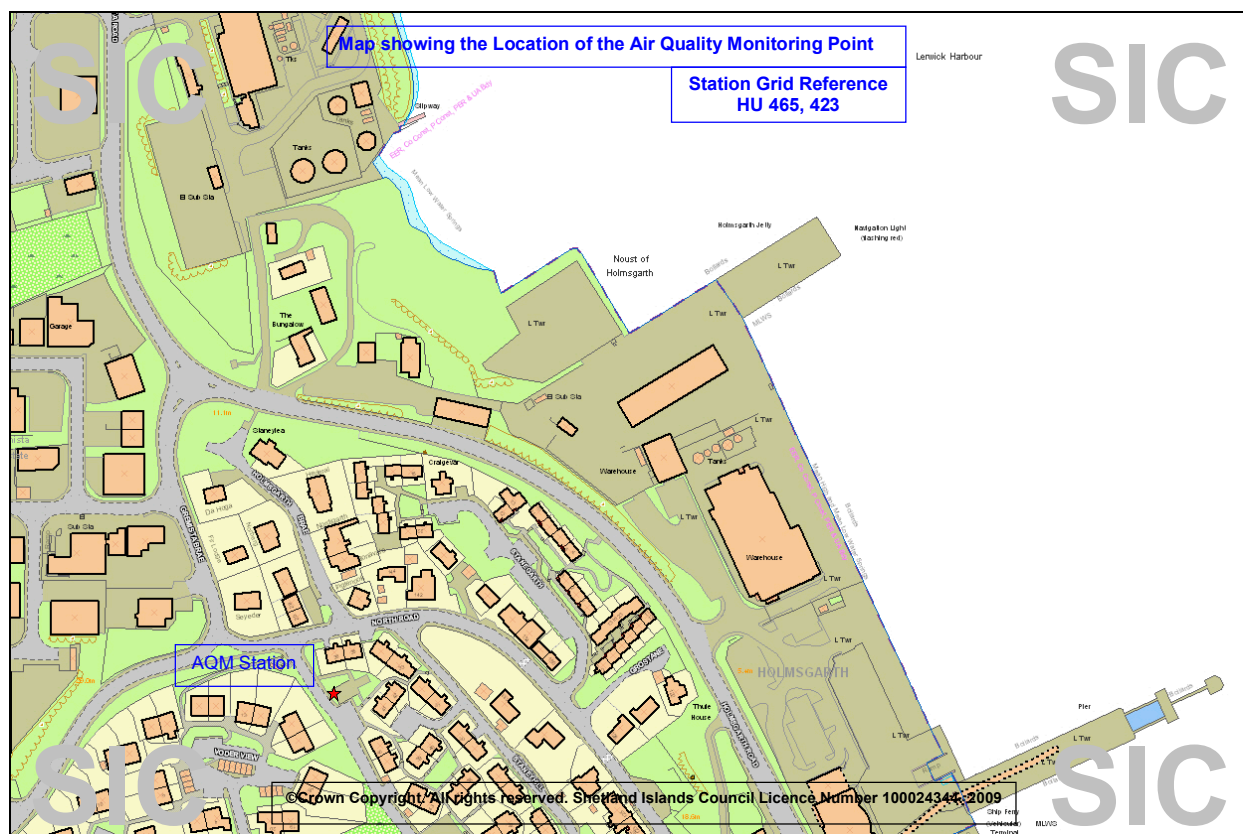


Table 2.1 Details of Automatic Monitoring Site

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to kerb of nearest road	Worst-case exposure?
LER 3	Urban Background	HU 465 423	NO _x SO ₂	N	1.5m	Y

Figure 2.2 Details of Ratified Data Produced by AEA on behalf of the Scottish Government

LERWICK STANEY HILL			
1st January to 31st December 2010			
These data have been fully ratified by AEA			
POLLUTANT	NO₂	NO_x	SO₂
Number Very High	0	-	0
Number High	0	-	0
Number Moderate	0	-	0
Number Low	5524	-	30787
Maximum 15-minute mean	199 µg m ⁻³	886 µg m ⁻³	255 µg m ⁻³
Maximum hourly mean	183 µg m ⁻³	670 µg m ⁻³	194 µg m ⁻³
Maximum running 8-hour mean	105 µg m ⁻³	495 µg m ⁻³	149 µg m ⁻³
Maximum running 24-hour mean	67 µg m ⁻³	407 µg m ⁻³	108 µg m ⁻³
Maximum daily mean	62 µg m ⁻³	297 µg m ⁻³	79 µg m ⁻³
Average	12 µg m ⁻³	23 µg m ⁻³	4 µg m ⁻³
Data capture	63.1 %	63.1 %	87.0 %

All mass units are at 20°C and 1013 mb
NO_x mass units are NO_x as NO₂ µg m⁻³

Pollutant	Air Quality Regulations (2000) and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m ⁻³	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m ⁻³	0	0
Sulphur Dioxide	15-minute mean > 266 µg m ⁻³	0	0
Sulphur Dioxide	Hourly mean > 350 µg m ⁻³	0	0
Sulphur Dioxide	Daily mean > 125 µg m ⁻³	0	0

2.2.1 Nitrogen Dioxide

The annual mean concentration has not exceeded the 40 µg/m³ objective. The 99.8th percentile of 1-hour mean concentrations does not exceed 200 µg/m³.

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

Location	Within AQMA?	Data Capture for full calendar year	Annual mean concentrations
Staney Hill	N	63.1 %	12 µg m ⁻³

Air Quality Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
Annual mean > 40 µg m ⁻³	0	0

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

Location	Within AQMA?	Data Capture for full calendar year	Maximum Hourly Mean Concentration
Staney Hill	N	63.1 %	183 $\mu\text{g m}^{-3}$

Air Quality Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002	Exceedences	Days
Hourly mean > 200 $\mu\text{g m}^{-3}$	0	0

Trends in Nitrogen Dioxide

The overall levels of Nitrogen Dioxide are generally low and with just two years of monitoring any data trend analysis would not be statistically valid.

2.2.2 PM₁₀

No monitoring for PM₁₀ has been carried out for the purposes of this report.

2.2.3 Sulphur Dioxide

There are:

- no 15-minute means greater than 266 $\mu\text{g/m}^3$,
- no 1-hour means greater than 350 $\mu\text{g/m}^3$, or
- no 24-hour means greater than 125 $\mu\text{g/m}^3$

Table 2.6 Results of SO₂ Automatic Monitoring: Comparison with Objectives

Location	Within AQMA?	Data Capture 2010	Number of Exceedences of:		
			15-minute Objective (266 $\mu\text{g/m}^3$)	1-hour Objective (350 $\mu\text{g/m}^3$)	24-hour Objective (125 $\mu\text{g/m}^3$)
Staney Hill	N	87%	0	0	0

Trends in Sulphur Dioxide

The overall levels of Sulphur Dioxide are generally low and with just two years of monitoring any data trend analysis would not be statistically valid.

2.2.4 Benzene

No monitoring for Benzene has been carried out for the purposes of this report.

2.2.5 Other pollutants monitored

No other monitoring has been carried out for the purposes of this report.

2.2.6 Summary of Compliance with AQS Objectives

Shetland Islands Council has examined the results from monitoring in the Shetland Islands Council's area. Concentrations are all below the objectives; therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

There are new housing developments planned for Lerwick, Tingwall and Brae. A new large residential unit and associated Park and Ride facility is planned at Sellaness.

None of these developments are likely to generate enough traffic to impact adversely on air quality, but they will be considered in the 2012 Updating and Screening Assessment.

3.2 Other Transport Sources

There are no new or newly identified non-road traffic transport sources.

3.3 Industrial Sources

There are no new or newly identified industrial sources identified since those identified in the 2010 progress report.

3.4 Commercial and Domestic Sources

There are no new or newly identified commercial and domestic sources.

3.5 New Developments with Fugitive or Uncontrolled Sources

There is one proposed new quarry in Sellaness. Localised dust suppression should mean that this development is unlikely to impact adversely on air quality, but it will be considered in the 2012 Updating and Screening Assessment.

Shetland Islands Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

- Housing scheme developments at Lerwick, Tingwall and Brae,
- Residential unit and associated Park and Ride facility at Sellaness,
- Quarry, Sellaness

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

4 Local / Regional Air Quality Strategy

Shetland Islands Council has not designated an AQMA and does not expect to designate one in the future. There are no areas close to exceedance levels and therefore we do not propose to draw up a local air quality strategy.

5 Planning Applications

The Development Management section of the Planning Service forward a weekly list of Planning Applications to the Environmental Health Service and all the applications are available [on line](#).

6 Air Quality Planning Policies

The preparation of the new [Shetland Local Development Plan](#) will assist with the delivery of sustainable economic growth and the preservation of the natural and built environment of Shetland including its rich cultural and landscape heritage and ways of life, whilst making sure we can continue to provide 21st century communications and infrastructure to communities that are growing and changing.

As part of its commitment to achieving sustainable development Shetland Islands Council Planning Service have issued Interim Planning Guidance - [Reducing Carbon Emissions in New Development](#). The Council requires to assess the environmental impacts of building and construction projects and to ensure that the Scottish Government's target for zero and low carbon developments are met, through the use of energy efficient, micro-generating and decentralised renewable energy systems. Energy requirement is determined at the design stage and there is significant potential to minimise energy demand through adopting good practice in the design and construction phases.

7 Local Transport Plans and Strategies

[ZetTrans](#) is one of the Regional Transport Partnerships within Scotland, formally established on 1 December 2005. No significant effects on local air quality are predicted in the [Shetland Transport Strategy Document](#)

In the absence of local air quality problems and congestion, the main reasons that ZetTrans would set road traffic reduction targets would be to reduce carbon dioxide emissions and accidents/injuries.

A range of policies are being adopted within the Shetland Transport Strategy to contribute to reducing carbon dioxide emissions. Principally, they include fuel efficiency and alternative fuel initiatives. The promotion of walking and cycling and policies to reduce the need to travel are also included. These will help reduce traffic growth, and also carbon dioxide, but also have wider impacts, including benefits to health, and local community vitality and viability.

8 Climate Change Strategies

In 1995 the Shetland Energy Unit was established within the Council to identify, develop and implement practical and cost effective energy conservation measures. The Unit published the Shetland Energy Plan in 1998, which set out to encourage a more strategic and co-ordinated approach to energy management in Shetland. The objectives in the plan were broadly to reduce reliance on oil, maximise the use of local resources - including renewable technologies - and promote energy efficiency and sustainability. The mechanisms for achieving the Plan's objectives are summarised in an action plan which draws together existing strategies such as the Home Energy Conservation Act Report and promotes initiatives including the Lerwick District Heating Scheme.

In January 2006, the Convenor, Councillor Sandy Cluness, signed the [Scottish Climate Change Declaration](#) on behalf of the Shetland Islands Council. By signing this declaration, the Council acknowledges that climate change is happening and beginning to impact on people's lives, and that everyone has a part to play in lessening future changes and adapting to changes already underway.

[Towards a Greener Shetland](#) presents Shetland Community Planning Board's strategy to protect and enhance Shetland's environment, to promote sustainable social and economic benefits from the environment for the local community, and thus improve quality of life in Shetland.