



**ORKNEY**  
ISLANDS COUNCIL

2017 Air Quality Annual Progress Report (APR) for  
**Orkney Islands Council**

In fulfilment of Part IV of the  
Environment Act 1995

Local Air Quality Management

**August 2017**

<b>Local Authority Officer</b>	Nick Blowfield
<b>Department</b>	Environmental Health
<b>Address</b>	Council Offices, School Place, Kirkwall, KW15 1NY
<b>Telephone</b>	01856 873535
<b>E-mail</b>	Env.health@orkney.gov.uk
<b>Report Reference number</b>	OIC/008
<b>Date</b>	August 2017

## **Executive Summary: Air Quality in Our Area**

### **Air Quality in Orkney**

The Orkney Islands is an archipelago of over 70 islands and skerries located some seven miles north of the Scottish mainland and covering an area of just under 100,000 hectares. The county has a population in the region of 21,500 with over 80% of the population inhabiting the main island (called The Mainland). Orkney's two main towns of Kirkwall (population approximately 9,000+) and Stromness (population approximately 2,200) are situated on The Mainland.

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 islands are linked to mainland Scotland via its airport situated 2 miles outside Kirkwall, and via ferry services across three routes. Other smaller air and ferry links serve the outer isles and link to 'The Mainland'.

Because of the islands predominantly rural nature and the lack of large scale industrial processes the main potential source of pollution that may impact on human health is that produced by motor vehicles with Nitrogen Dioxide the main pollutant of concern. However, traffic flows are low and reflect Orkney's small population. A network of diffusion tubes is maintained to monitor those areas deemed to be subject to higher concentrations. Recently acquired monitoring data clearly shows that Orkney is currently meeting the air quality objectives and that pollutant levels remain at consistently low levels with no significant risk of Orkney exceeding these objectives.

### **Actions to Improve Air Quality**

As indicated above air quality in Orkney is considered very good. The Council has not identified any areas where there is a risk of exceeding the air quality objectives and where consequent action is required to improve air quality.

### **Local Priorities and Challenges**

Although no specific priorities or challenges have been identified, Orkney Islands Council will continue to monitor nitrogen dioxide at existing locations unless there becomes reason to do otherwise. These monitoring results will be discussed in 2018's Progress Report. Despite having no significant issues with air quality in the county, Orkney Islands Council will look to prioritise the creation of an Air quality Strategy in order feed in to other council policy areas and ensure a more holistic approach in addressing such issues in Orkney.

### **How to Get Involved**

Copies of reports relating to air quality including monitoring results may be found at:

<http://www.orkney.gov.uk/Service-Directory/A/Air-Pollution.htm>

# Table of Contents

<b>Executive Summary: Air Quality in Our Area</b> .....	<b>i</b>
Air Quality in Orkney .....	i
Actions to Improve Air Quality .....	i
Local Priorities and Challenges.....	ii
How to Get Involved.....	ii
<b>1. Local Air Quality Management</b> .....	<b>5</b>
<b>2. Actions to Improve Air Quality</b> .....	<b>6</b>
2.1 Air Quality Management Areas.....	6
2.2 Cleaner Air for Scotland .....	6
2.2.1 Transport – Avoiding travel – T1 .....	6
2.2.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2.....	7
<b>3. Air Quality Monitoring Data and Comparison with Air Quality Objectives</b> .....	<b>7</b>
3.1.1 Summary of Monitoring Undertaken .....	7
3.1.2 Automatic Monitoring Sites .....	7
3.1.3 Non-Automatic Monitoring Sites.....	7
3.2 Individual pollutants.....	7
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> ).....	8
3.2.2 Particulate Matter (PM <sub>10</sub> ).....	9
3.2.3 Particulate Matter (PM <sub>2.5</sub> ) .....	9
3.2.4 Sulphur Dioxide (SO <sub>2</sub> ) .....	9
3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene .....	9
<b>4. New Local Developments</b> .....	<b>10</b>
4.1 Road Traffic Sources.....	10
4.2 Other Transport Sources .....	10
4.3 Industrial Sources.....	10
4.4 Commercial and Domestic Sources .....	11
4.5 New Developments with Fugitive or Uncontrolled Sources.....	11
<b>5. Conclusions and Proposed Actions</b> .....	<b>12</b>
5.1 Conclusions from New Monitoring Data.....	12
5.2 Conclusions relating to New Local Developments .....	12
5.3 Proposed Actions .....	12
<b>Appendix A: Monitoring Results</b> .....	<b>13</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2016</b> .....	<b>16</b>

**Appendix C: Supporting Technical Information / Air Quality Monitoring**  
**Data QA/QC ..... 19**  
**Appendix D: Map of diffusion tube sites. .... 20**  
**Glossary of Terms ..... 21**  
**References ..... 22**

**List of Tables**

Table 1.1 – Summary of Air Quality Objectives in Scotland .....5

**List of Figures**

- Figure 1 - Chart showing the trend of annual NO<sub>2</sub> levels in the County’s main population centres of Kirkwall and Stromness
- Figure 2 – Chart Showing Average Annual NO<sub>2</sub> Concentrations for individual Monitoring Stations
- Figure 3 – Map showing location of diffusion tubes

## 1. Local Air Quality Management

This report provides an overview of air quality in the Orkney Islands Council area during 2015 and 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by Orkney Islands Council to improve air quality and any progress that has been made.

**Table 1.1 – Summary of Air Quality Objectives in Scotland**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10 µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m <sup>3</sup>	Annual Mean	31.12.2008

## **2. Actions to Improve Air Quality**

### **2.1 Air Quality Management Areas**

Orkney Islands Council currently does not have any AQMAs, and from this and previous annual reporting it is unlikely that there will be reason to declare any AQMAs in the future. Furthermore Orkney Islands Council at present does not have an Air Quality Strategy or similar document to address air quality issues.

### **2.2 Cleaner Air for Scotland**

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland’s legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available at <http://www.gov.scot/Publications/2015/11/5671/17>. Progress by Orkney Islands Council against relevant actions within this strategy is demonstrated below.

#### **2.2.1 Transport – Avoiding travel – T1**

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan (AQAP). Orkney Islands Council does not have an AQAP although it does have a Carbon Management Plan<sup>1</sup> which has put focus on the reduction of carbon emissions from its building stock with little focus on emissions from transportation. Furthermore, the Council has developed a Green Travel Plan<sup>2</sup> with its primary focus on the reducing the reliance on cars for commuting and to adopt greener modes of transport that would improve health and wellbeing. This document does not specifically address air quality, but the measures that the plan encourages should lead to an improvement in air quality within the county.

Orkney’s Local Transport Strategy<sup>3</sup> was published in 2007, and is due to be reviewed and updated. Orkney Islands Council’s Transportation section will undertake this work following the update of the HITRANS Regional Transport Strategy, a draft of which was published in May 2017.

### **2.2.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2**

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered. Orkney Islands Council has recently published a draft Sustainable Energy Strategy 2017-2025<sup>4</sup>, which when adopted will inform a Sustainable Energy Action Plan. However, although the strategy at present clearly defines visions for reducing carbon emissions to mitigate the threat of climate change, air quality has not been addressed directly. It is anticipated that in response to the consultation process this will be addressed in the finalised version and that the future sustainable energy action plan, to be created following publication, will further address air quality issues.

## **3. Air Quality Monitoring Data and Comparison with Air Quality Objectives**

### **3.1.1 Summary of Monitoring Undertaken**

#### **3.1.2 Automatic Monitoring Sites**

Orkney Islands Council does not undertake automatic (continuous) monitoring for the national air quality objectives.

#### **3.1.3 Non-Automatic Monitoring Sites**

Orkney Islands Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 5 sites during 2015 and following review at 7 sites during 2016. Table A.1 in Appendix A shows the details of the sites.

A map showing the location of the monitoring sites are provided in Appendix D.

Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

### **3.2 Individual pollutants**

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2015 and 2016 datasets of monthly mean values is provided in Appendix B.

As stated previously, there is no automatic monitoring data with regards to Nitrogen dioxide. The installation of an automatic monitoring station has been deemed unnecessary due to the islands rural landscape and low population levels. Therefore all monitoring data is obtained through the placement of diffusion tubes.

The County has been monitored for a number of years through the placement of diffusion tubes at 5 locations. However, Orkney Islands Council is continuously assessing its diffusion tube network with regards to the appropriateness of the localities and revised if necessary, this has led to two further locations being added to the network for 2016. The new location in the village of St Maragrets Hope, is primarily in response to increased ferry traffic through the village where residential properties line the road. A diffusion tube has also been placed in the village of Finstown which is located on the main Kirkwall to Stromness road (A965) and features a junction linking another primary road (A966) serving the eastern side of the west mainland. As there is only data for 2016 at these two locations a trend in the data can not yet be established and will therefore be reported on in more detail in future reports once more data is available.

As can be seen from the results in Table A.2 in Appendix A, in 2016 there has been no significant change in levels of NO<sub>2</sub>. Furthermore the graphs in Appendix A despite displaying a negligible increase over the past 2 years, show that the general trend in NO<sub>2</sub> concentrations continue to fall or remain steady.

This is clearly seen in the data from the county's two main towns Kirkwall and Stromness. As expected, Kirkwall as Orkney's largest settlement and home to over 40 percent of the population continues to experience the highest levels of NO<sub>2</sub> in the County. However the levels of NO<sub>2</sub> within Kirkwall are currently at 38 percent of the objective.

It is unlikely that levels will ever exceed the NAQS objective of 40 mg/m<sup>3</sup>.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

Orkney Islands Council does not monitor PM<sub>10</sub>. However, previous reports have referred to the background concentration maps<sup>5</sup>. In consideration of this data it has been concluded that there is no expected exceedance of the objective (18µg/m<sup>3</sup>) in Orkney. Orkney Islands Council has no immediate plans to monitor PM<sub>10</sub> in the future.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

Orkney Islands Council does not monitor PM<sub>2.5</sub> and has no plans to do so in the future.

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

Orkney Islands Council does not monitor SO<sub>2</sub> and has no plans to do so in the future.

### **3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene**

Orkney Islands Council does not monitor Carbon Monoxide, Lead and 1,3-Butadiene and has no plans to do so in the future.

## **4. New Local Developments**

### **4.1 Road Traffic Sources**

A new link road was constructed to the south of Kirkwall in 2016, enabling the east mainland to be linked to the west mainland without going through the town and to enable access for the new hospital. The opening of the road has led to the reduction of traffic along main through routes lined with residential properties. Existing traffic data appears to indicate a 30% reduction in traffic along these routes that had sensitive receptors, however this still needs to be verified.

Orkney Islands Council confirms that there are no new/newly identified:

- 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.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

that require further assessment.

### **4.2 Other Transport Sources**

Orkney Islands Council confirms that there are no new/newly identified:

- 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.

that require further assessment.

### **4.3 Industrial Sources**

Orkney Islands Council confirms that there are no new/newly identified:

- 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

that require further assessment.

#### **4.4 Commercial and Domestic Sources**

Due to Orkney's rural nature there are a number of properties in and out with the towns that use domestic solid fuels. However the number of domestic biomass combustion installations is not known.

It is envisaged that the number of domestic biomass combustion installations will be low and likely to be in low density or individual developments, and would not cause significant risk to PM<sub>10</sub> levels in Orkney.

Other domestic solid fuel sources are present on a greater scale; however this is usually supplementary to rather than the primary source of heating. Considering the size of the towns and villages in Orkney they are not considered a significant risk to the NAQS objectives ever being exceeded, and therefore no further assessment is required.

#### **4.5 New Developments with Fugitive or Uncontrolled Sources**

Orkney Islands Council confirms that there are no new potential sources of fugitive or uncontrolled particulate matter that require further assessment.

## **5. Conclusions and Proposed Actions**

### **5.1 Conclusions from New Monitoring Data**

The recently acquired monitoring data included in this report clearly shows that Orkney is currently meeting the air quality objectives. Comparing historic data against the current data clearly shows that pollutant levels have remained at a consistently low level and that there is no significant risk of Orkney exceeding the air quality objectives.

### **5.2 Conclusions relating to New Local Developments**

There have been no new developments which would be likely to significantly affect air quality and where an air quality assessment as part of an Environmental Statement would be required.

### **5.3 Proposed Actions**

The current monitoring regime for Nitrogen Dioxide within Orkney will continue to ensure that the high standard of air quality in the county continues.

Orkney Islands Council's Marine Services department is currently exploring the possibility of installing new automatic monitoring equipment in relation to the increase in the cruise ships visiting Orkney and the associated increase in traffic in the county. Marine services will be in consultation with Environmental Health on where best to locate the monitor in order to feed in to the Council's air quality reporting should this proposal go ahead. This action is aimed at ensuring these increasing activities are not a detriment to the County's air quality.

Despite the continued low levels of pollutants and that there is no significant risk of Orkney exceeding the air quality objectives. Orkney Islands Council plan to produce an Air quality Strategy to ensure that the county continues to enjoy very low levels of air pollution, and to ensure that air quality is considered a priority in future strategies from other departments such as transport.

The results of the continued monitoring and other work addressing air quality will be contained in the next Annual Progress Report due in 2018.

## Appendix A: Monitoring Results

**Table A.1 – Details of Non-Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?
KW	Kirkwall	Roadside	344812	1011017	NO <sub>2</sub>	N	0m	1m	N
SN	Stromness	Roadside	325590	1009553	NO <sub>2</sub>	N	1m	1m	N
SM	St Mary's	Roadside	347140	1001235	NO <sub>2</sub>	N	10m	1m	N
WM	Waulkmill	Rural	339525	1006985	NO <sub>2</sub>	N	N/A	1m	N
HE	Herston	Rural	341995	991999	NO <sub>2</sub>	N	10m	1m	N
MH	St Margarets Hope	Roadside	344598	993509	NO <sub>2</sub>	N	0m	3m	N
FT	Finstown	Roadside	335993	1013893	NO <sub>2</sub>	N	0m	1m	N

(1) 0 if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2012	2013	2014	2015	2016
KW	Roadside	Diffusion Tube	100	100	17.3	15.2	11.6	13.0	15.1
SN	Roadside	Diffusion Tube	100	100	9.9	9.6	7.7	8.2	9.9
SM	Roadside	Diffusion Tube	100	100	4.1	3.7	1.7	3.5	4.3
WM	Rural	Diffusion Tube	100	100	3.3	2.3	2.1	3.1	3.0
HE	Rural	Diffusion Tube	100	100	2.7	2.1	3.0	2.8	2.6
MH	Roadside	Diffusion Tube	92	92	-	-	-	-	4.1
FT	Roadside	Diffusion Tube	92	92	-	-	-	-	8.4

Notes: Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedence of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure 1 - Chart showing the trend of annual NO<sub>2</sub> levels in the County's main population centres of Kirkwall and Stromness

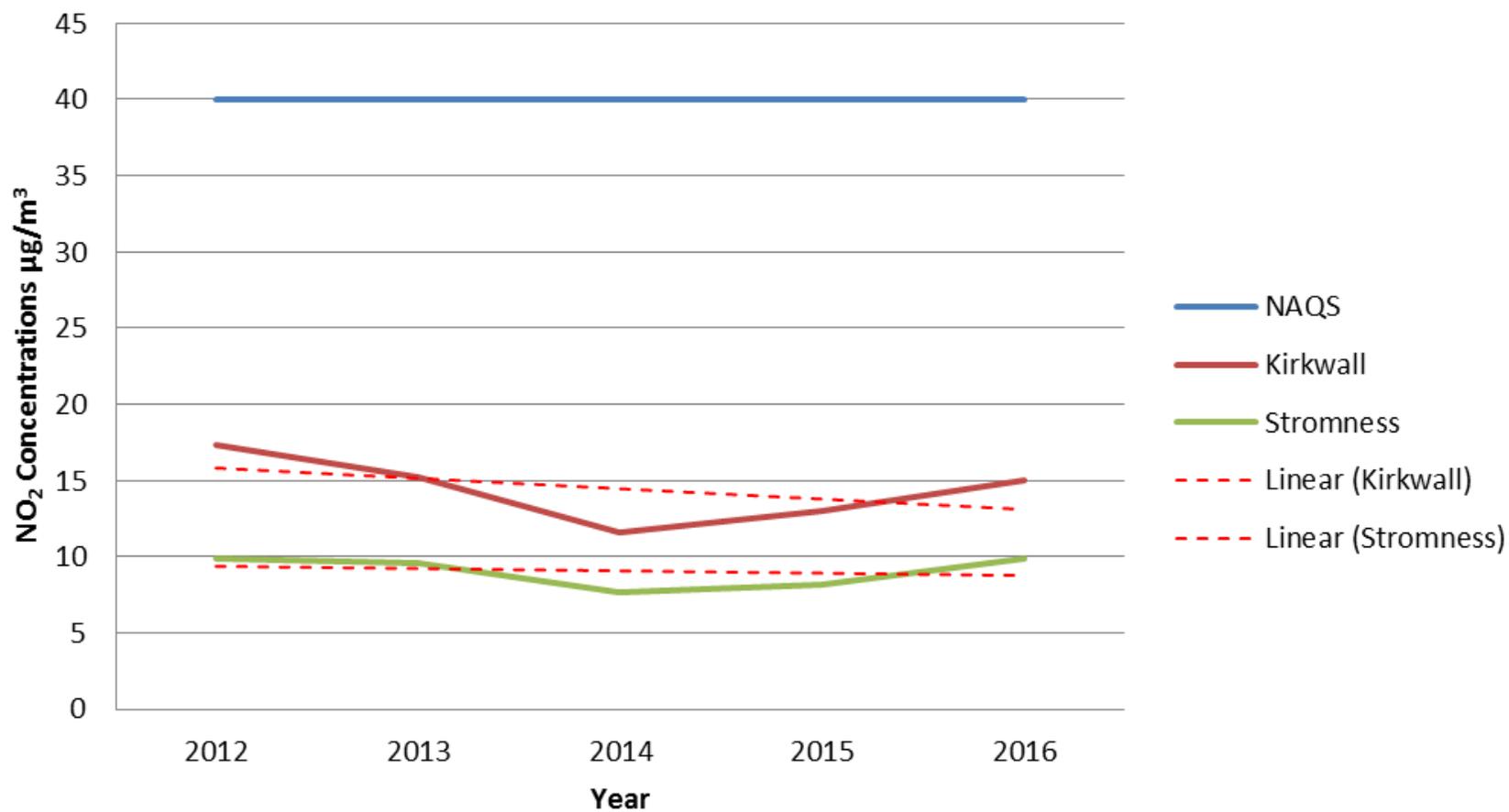
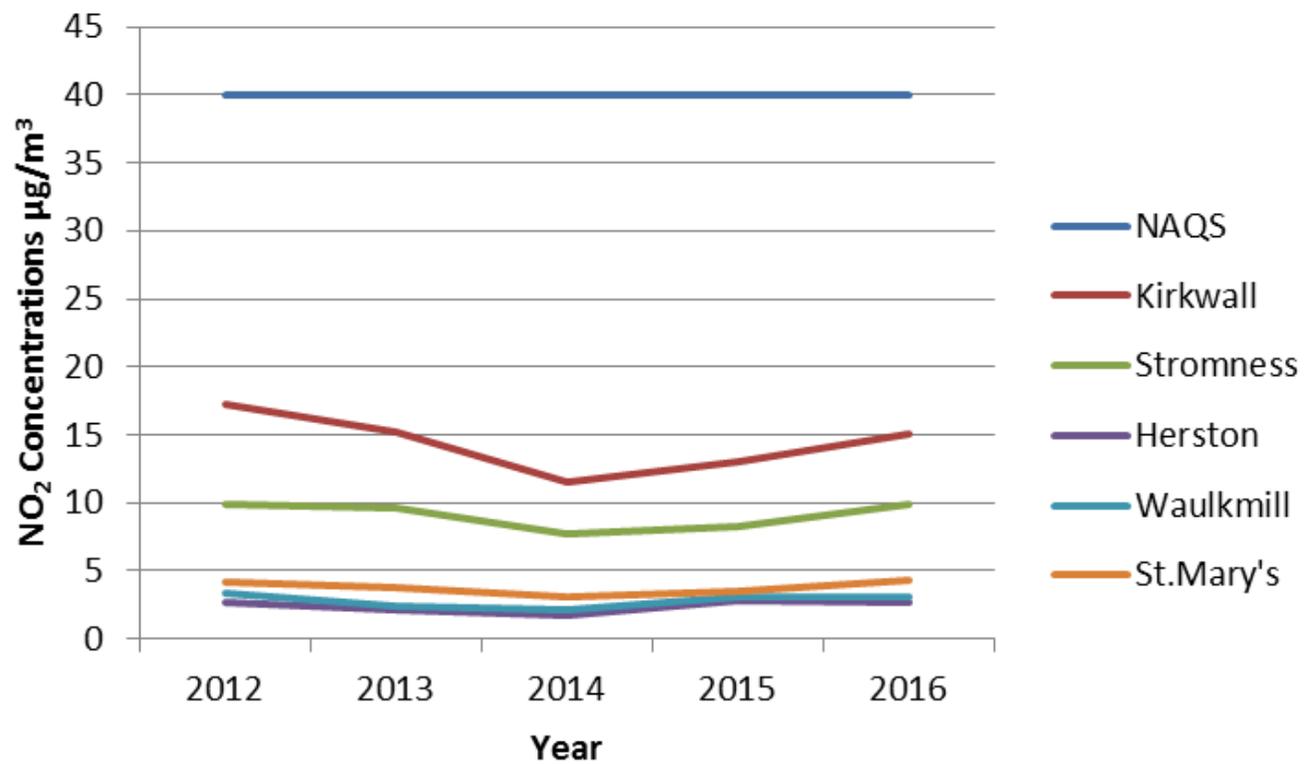


Figure 2 – Chart Showing Average Annual NO<sub>2</sub> Concentrations for individual Monitoring Stations



## Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2016

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>
	KW	9.4	19.3	18.1	26.2	14.3	17.4	14.9	14.9	14.2	20.9	26.4		
SN	12.2	11.0	9.4	18.4	11.7	9.5	9.0	7.9	11.6	9.7	15.1	10.4	11.3	9.9
SM	4.7	3.6	4.3	8.4	4.2	6.6	4.2	5.2	5.3	4.3	5.9	2.1	3.0	2.6
WM	4.6	2.7	2.9	6.1	3.4	3.2	3.3	3.0	2.5	3.2	5.3	1.7	3.5	3.0
HE	2.7	1.2	1.6	6.7	2.4	5.3	2.5	2.2	4.2	2.3	3.6	1.4	4.9	4.3
MH	-	2.8	3.9	6.8	5.0	4.3	8.0	4.9	2.9	4.2	7.2	2.1	4.7	4.1
FT	-	8.1	11.0	12.4	10.5	9.8	9.3	10.3	12.0	14.4	3.2	5.8	9.7	8.4

(1) See Appendix C for details on bias adjustment

Table B.2 – NO<sub>2</sub> Monthly Diffusion Tube Results for 2015

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
	KW	12.1	17.0	13.0	15.7	17.0	14.1	15.9	14.2	19.4	16.4	20.4			16.7
SN	8.7	11.0	14.8	7.3	10.2	7.0	9.3	10.4	7.7	10.1	12.8	12.6	10.1	8.2	
SM	6.5	1.9	4.6	2.5	3.8	3.8	4.2	5.8	3.5	3.7	5.4	5.5	4.3	3.5	
WM	4.9	4.1	4.7	2.4	2.9	2.9	3.1	3.7	2.7	3.9	5.5	5.1	3.8	3.1	
HE	3.0	2.6	5.2	1.4	2.4	2.5	2.7	6.7	3.3	2.9	3.8	5.1	3.5	2.8	

(1) See Appendix C for details on bias adjustment

## **Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC**

### **Diffusion Tube Bias Adjustment Factors**

All diffusion tubes are analysed by Edinburgh Scientific Services.

For 2016 data, a Bias Adjustment of 0.87 was used. This was taken from the National Diffusion Tube Bias Adjustment Spreadsheet (version March 2017 V2)

For 2015 data, a Bias Adjustment of 0.81 was used. This was taken from the National Diffusion Tube Bias Adjustment Spreadsheet (version March 2016)

### **Factor from Local Co-location Studies**

There has been no co-location studies conducted in Orkney.

### **Discussion of Choice of Factor to Use**

The national bias adjustment factor was used as there have been no local bias adjustment factors calculated through a co-location study.

### **PM Monitoring Adjustment**

There has been no recent PM monitoring within Orkney

### **Short-term to Long-term Data adjustment**

No adjustment is required for short term monitoring as all monitoring data is conducted on a monthly basis over the entire year.

### **QA/QC of automatic monitoring**

There are no automatic monitoring sites in Orkney

### **QA/QC of diffusion tube monitoring**

Bias and Precision taken from data supplied on R & A website.

Appendix D: Map of diffusion tube sites.

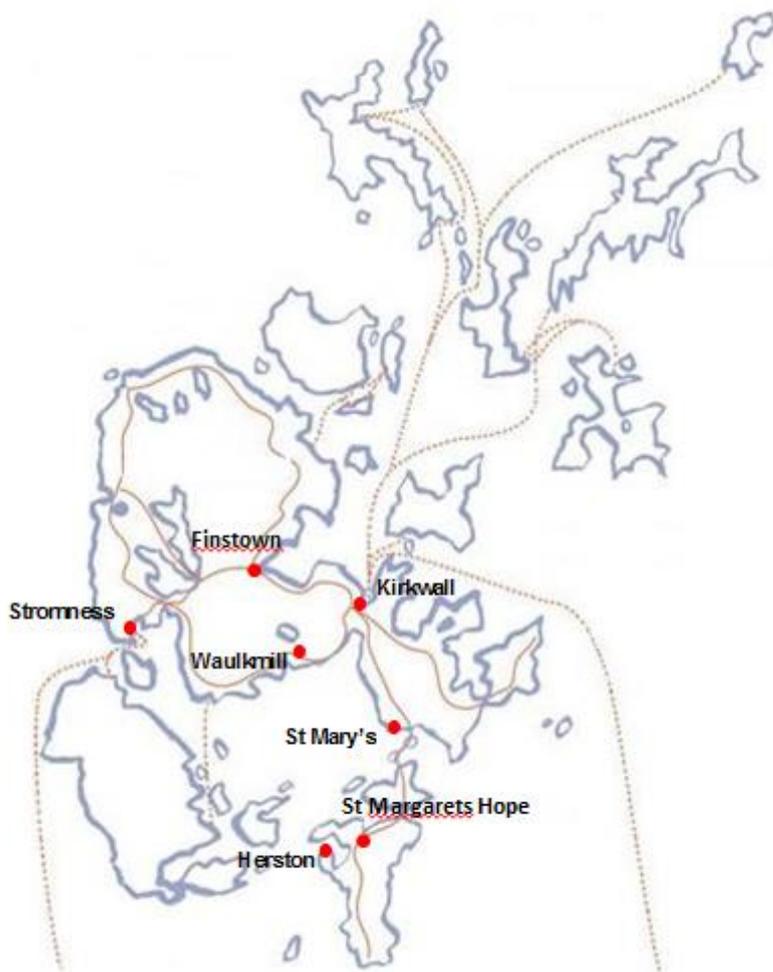


Figure 3 – Map showing location of diffusion tubes

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NAQS	National Air Quality Standard
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

1. Orkney Islands Council Carbon Management Programme 2016-2026 (2015)  
Available at: [http://www.orkney.gov.uk/Files/Committees-and-Agendas/Council-Meetings/2016/28-04-2016/I09\\_App04\\_Carbon\\_Mgt\\_Plan\\_2016-2026.pdf](http://www.orkney.gov.uk/Files/Committees-and-Agendas/Council-Meetings/2016/28-04-2016/I09_App04_Carbon_Mgt_Plan_2016-2026.pdf) [Downloaded: 30 May 2017]
2. Orkney's Green Travel Plan (2016) Available at:  
[http://www.orkney.gov.uk/Files/Committees-and-Agendas/Development%20and%20Infrastructure/2016/15-11-2016/I14\\_App1\\_Orkneys\\_Green\\_Travel\\_Plan.pdf](http://www.orkney.gov.uk/Files/Committees-and-Agendas/Development%20and%20Infrastructure/2016/15-11-2016/I14_App1_Orkneys_Green_Travel_Plan.pdf) [Downloaded: 30 May 2017]
3. Orkney Islands Council Local Transport Strategy (2007) Available at:  
<http://www.orkney.gov.uk/Service-Directory/L/Local-Transport-Strategy.htm>  
[Downloaded: 30 May 2017]
4. Draft Sustainable Orkney Energy Strategy 2017-2025 Available at:  
[http://www.orkney.gov.uk/Files/Consultations/Sustain-Orkney-Energy-Strat-1725/Sustainable\\_Orkney\\_Energy\\_Strategy\\_Accessible.pdf](http://www.orkney.gov.uk/Files/Consultations/Sustain-Orkney-Energy-Strat-1725/Sustainable_Orkney_Energy_Strategy_Accessible.pdf) [Downloaded: 20 April 2017]
5. Air Quality in Scotland (2017) [online] Data for Local Authority Review and Assessment purposes available at:  
<http://www.scottishairquality.co.uk/data/mapping?view=data> [Downloaded 31 May 2017]