2015 Air Quality Updating and Screening Assessment for The Moray Council

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

April, 2015

Local Authority Officer	Mr Russell Anderson
	Environmental Health Officer
Department	Development Services Environmental Services Department
Address	The Moray Council Council Offices High Street Elgin IV30 1BX
Telephone	01343 563357
e-mail	russell.anderson@moray.gov.uk
Report Reference number	AECOM P5130
Date	April 2015

Executive Summary

The 2015 Updating and Screening Assessment Report for The Moray Council was undertaken by AECOM in accordance with Local Air Quality Management Technical Guidance LAQM.TG(09) (Ref.1).

New monitoring data for nitrogen dioxide (NO_2) were analysed to determine if any air quality objectives had been exceeded during 2014. All concentrations were found to be below the objectives.

Examination of the previous 5 years of data show there is a general downward trend in annual mean NO_2 concentrations across the diffusion tube network. The concentration has decreased at all sites between 2010 and 2014. The annual mean remains considerably below the limit of 40µg/m^3 at all locations. The maximum annual mean in 2014 was 24 µg/m^3 in Moss Street, Keith.

A review of planning applications submitted in 2015 showed that there were no new developments likely to result in any exceedences of the AQS objectives for any pollutant.

Consultation with SEPA has confirmed that there are no new or significantly changed industrial sources likely to result in an exceedence of any AQS objectives for any pollutant.

The Moray Council Transportation Section confirmed that there were no new road developments with the potential to result in an exceedence of the AQS objectives. There was a decrease in traffic flow at 2 out of 12 Council run sites within Elgin between 2013 and 2014. The maximum increase was 3.9% at Thornhill Road but the Annual Average Daily Traffic (AADT) count remains well below 10,000 at this location.

Transport Scotland was consulted regarding the AADT figures for the main trunk roads, the A95 and A96 within the Moray Council area. The AADT flows have decreased on 9 out of 16 of the road links between 2013 and 2014. The maximum

increase is 18% on the A96 Elgin-West Road. It is not expected that there will be any exceedences of the AQS objectives at nearby receptors due to changes in traffic flow on the trunk roads.

It is concluded that The Moray Council is not required to proceed to a Detailed Assessment for any pollutant. The next report to be completed will be the Progress Report in April 2016.

Table of contents

List of Tables

List of Figures

.

Appendices

Appendix 1 QA & QC of Monitoring Data

1 Introduction

1.1 Description of Local Authority Area

The Moray Council area is located in the north-east of Scotland between the main cities of Inverness and Aberdeen. It is bordered by The Highland Council area to the west and by Aberdeenshire Council to the south and east. The northern border of the Moray Council area is the coastline of the Moray Firth.

Topographically, the area is dominated by the glens of the Grampian mountain range including large areas of forest and moorland to the south. The northern area is relatively flat with large expanses of agricultural land and coastal grassland.

The population of the Moray Council area is approximately 94,350[1] with the majority of residents living in the towns of Elgin, Forres, Fochabers, Keith, Buckie, Aberlour and Lossiemouth. The main industries are distilling, food processing and traditional farming, forestry and fishing. The RAF base in Kinloss was closed as an air base in 2011 and is now used as barracks accommodation for the Army. RAF Lossiemouth remains operational. The Army commenced use of the Kinloss base in the summer of 2012 and it is now known as Kinloss Barracks. Although no longer an active airfield, The Ministry of Defence retains the right to reactivate the airfield in the future and there is a requirement for the airfield to act as a Relief Landing Ground (emergency only) for RAF Lossiemouth Tornado GR4 and Typhoon aircraft.

There is a mainline passenger rail route passing through the north of the area that runs between Inverness and Aberdeen and the main trunk roads are the A96, which passes through Elgin and the A95 which passes through Keith, Craigellachie and Aberlour. The Fochabers and Mosstodloch by-pass is complete and opened in January 2012.

The Moray Council boundary is shown in Figure 1.1.

[1] National Records of Scotland Population available for 2013.

Figure 1.1 Map of the Moray Council Area

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedences are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment (USA) is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

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 micrograms per cubic metre $\mu g/m^3$ (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 LAQM in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	3.25 µg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/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 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m^3	Annual mean	31.12.2010
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/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

Table 1.2 summarises the Air Quality Review and Assessment reports submitted by The Moray Council since 2003 with the most recent report of 2014 listed first.

Table 1.2 Summary of Previous Air Quality Review and Assessment Reports 2003-2014

Report	Date Completed	Summary and Conclusions
Progress Report (Ref.2)	April, 2014	No predicted exceedences of AQS Objectives
Progress Report (Ref.3)	May, 2013	No predicted exceedences of AQS Objectives
Updating and Screening Assessment (Ref.4)	April, 2012	No predicted exceedences of AQS Objectives
Progress Report (Ref.5)	June 2011	No predicted exceedences of AQS Objectives
Progress Report (Ref.6)	May 2010	No predicted exceedences of AQS Objectives
Updating and Screening Assessment (Ref.7)	May 2009	No predicted exceedences of AQS Objectives
Progress Report (Ref.8)	April 2008	No predicted exceedences of AQS Objectives
Progress Report (Ref.9)	May 2007	No predicted exceedences of AQS Objectives
Updating and Screening Assessment (Ref.10)	June 2006	No predicted exceedences of AQS Objectives
Detailed Assessment of Road Traffic Particulate Emissions (Ref.11)	August 2005	Assessment of short-term monitoring data and modelled road traffic emissions concluded that it was unlikely that there would be an exceedence of the PM_{10} objectives
Progress Report (Ref.12)	May 2005	No predicted exceedences of AQS Objectives
Air Quality Study in the Vicinity of RAF Kinloss and Lossiemouth (Ref.13)	November 2004	No identified exceedences of the AQS Objectives or Odour Threshold Values
Updating & Screening Assessment Supplementary Report (Ref.14)	January 2004	No further assessment of domestic fuel burning or quarries required. Relevant public exposure to PM_{10} identified at 2 road junctions
Updating & Screening Assessment (Ref.15)	May 2003	Additional information on domestic fuel burning and quarry emissions required. DMRB screening tool identified requirement for assessment of PM_{10} at 3 busy junctions

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

Monitoring is carried out for NO_2 within The Moray Council. During 2014, NO_2 was monitored at 19 locations using passive diffusion tubes. There is no other monitoring undertaken for any other pollutant.

2.1.1 Automatic Monitoring Sites

There are no automatic monitoring sites within The Moray Council.

2.1.2 Non-Automatic Monitoring Sites

Non-automatic monitoring of NO_2 was undertaken at 19 locations within The Moray Council in 2014 using passive diffusion tubes. The location and description of each site is shown in Table 2.1. The sites are classified as a mixture of kerbside, roadside and urban background sites. Maps showing the locations of the monitoring sites are shown in Figures 2.1- 2.7.

The tubes are provided and analysed by Aberdeen Scientific Services using 20% TEA in Water and are changed on a monthly basis by Moray Council personnel. The data capture was above 90% for 17 out of 19 sites. The QA/QC procedures for diffusion tube analysis are included in more detail in Appendix A.

Table 2.1 Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Site Height (m)	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
DT1	Lamp Post West Park Court-Elgin	Kerbside	321107	862668	2.8	NO_2	N	N	Y (<5m)	1m	Y
DT2	Junction East & Maisondieu Rd-Elgin	Kerbside	322348	862745	3	NO_2	N	N	Y (<2m)	1m	Y
DT3	99-101 Maisondieu Road-Elgin	Roadside	322302	862727	3	NO_2	N	N	Y (<5m)	2m	Y
DT4	26-28 Priory Place-Elgin	Urban Background	322249	862630	2.8	NO_2	N	N	Y (<5m)	N/A	N
DT5	Main Street New Elgin	Kerbside	322233	861869	3	NO_2	N	N	Y (<5m)	1m	Y
DT6	Queen Street Roundabout-Elgin	Kerbside	322029	862832	3	NO_2	N	N	Y (<5m)	1m	Y
DT7	Hay Street-Elgin	Roadside	321615	862307	2.3	NO_2	N	N	Y (<5m)	2m	Y
DT8	Newmill Road-Elgin	Roadside	322492	863309	3	NO_2	N	N	Y (<5m)	2m	Y
DT9	37 Sandy Road, Elgin	Kerbside	321775	861115	3	NO_2	N	N	Y (5m)	1m	Y
DT10	47 Wittet Drive,Elgin	Kerbside	320641	862291	3	NO_2	N	N	Y (5m)	1m	Y
DT11	50A High Street-Fochabers	Kerbside	334634	858726	3	NO_2	N	N	Y (<2m)	2m	Y

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Site Height (m)	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
DT12	Sunndach George Street-Fochabers	Urban Background	334423	858663	3	NO_2	N	N	Y (<2m)	N/A	N
DT13	Tolbooth, High Street-Forres	Roadside	303726	858931	3	NO_2	N	N	Y (<5m)	2m	Y
DT14	106 Moss Street-Keith	Kerbside	343323	850458	2.8	NO_2	N	N	Y (<5m)	2m	Y
DT15	87 Moss Street-Keith	Kerbside	343329	850415	3.1	NO_2	N	N	Y (<5m)	2m	Y
DT16	1 Merryton Court-Lossiemouth	Urban Background	322463	870293	3	NO_2	N	N	Y (<2m)	N/A	N
DT17	7 James Street-Lossiemouth	Kerbside	323515	870931	3	NO_2	N	N	Y (<2m)	1m	Y
DT18	New Street-Rothes	Roadside	327756	849658	3	NO_2	N	N	Y (<5m)	2m	Y
DT19	New Street-Rothes	Roadside	327740	849239	3	NO_2	N	N	Y (<5m)	2m	Y

Figure 2.1 Map of Non-Automatic Monitoring Sites

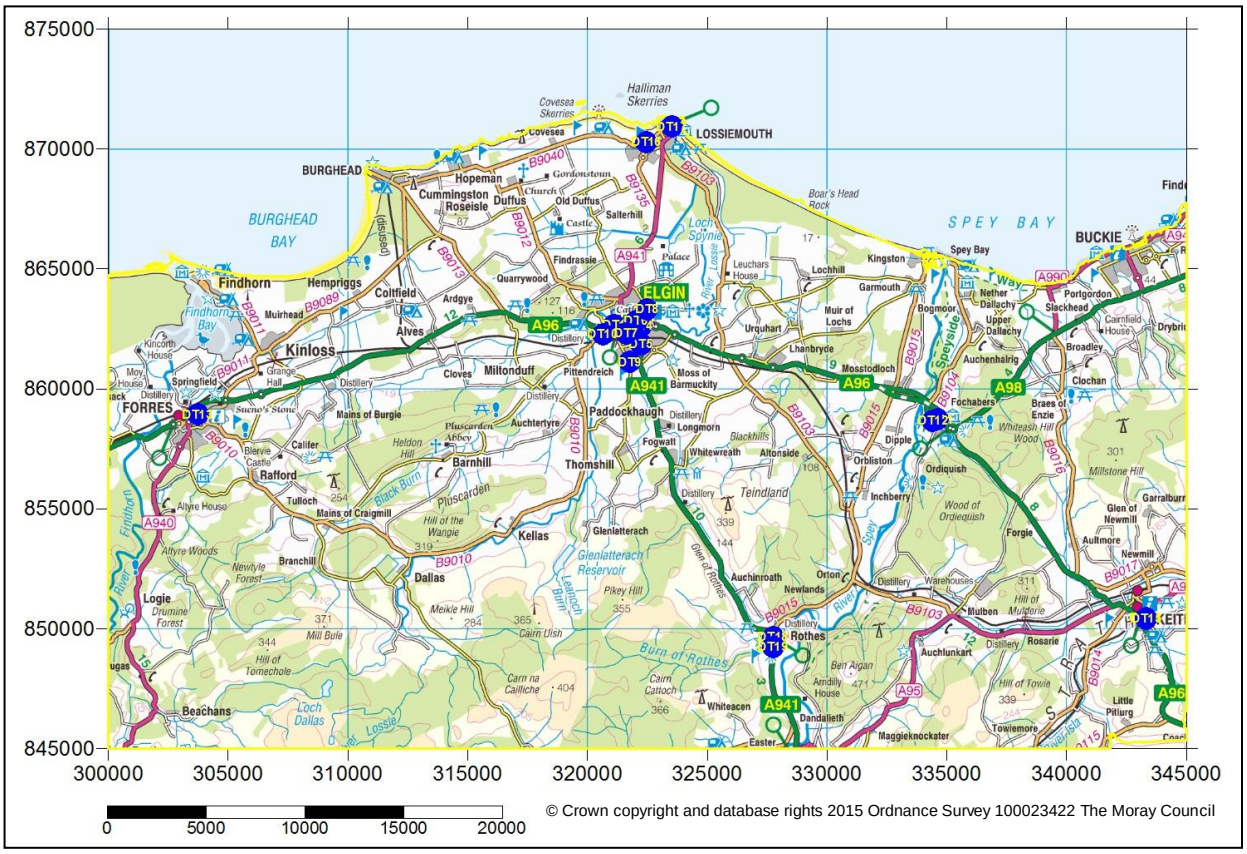


Figure 2.2 Elgin NO_2 Monitoring Sites

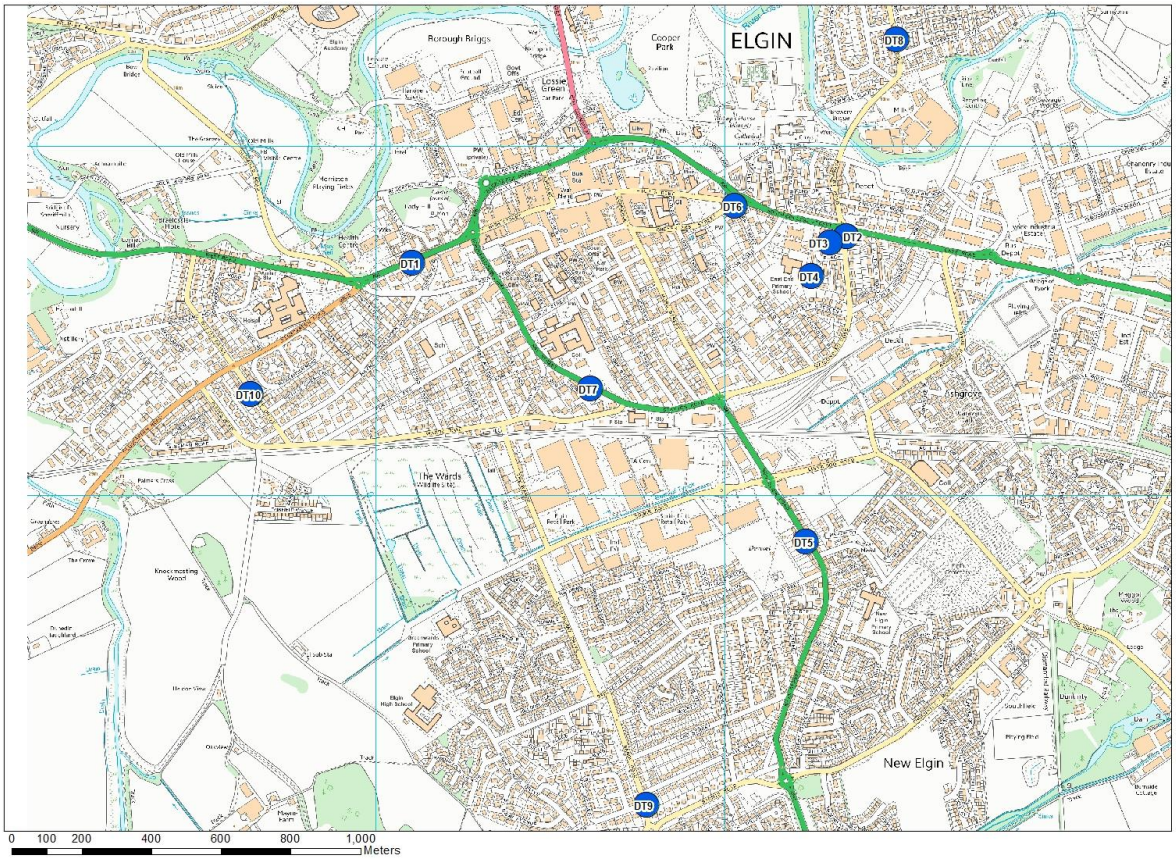


Figure 2.3 Fochabers NO_2 Monitoring Sites

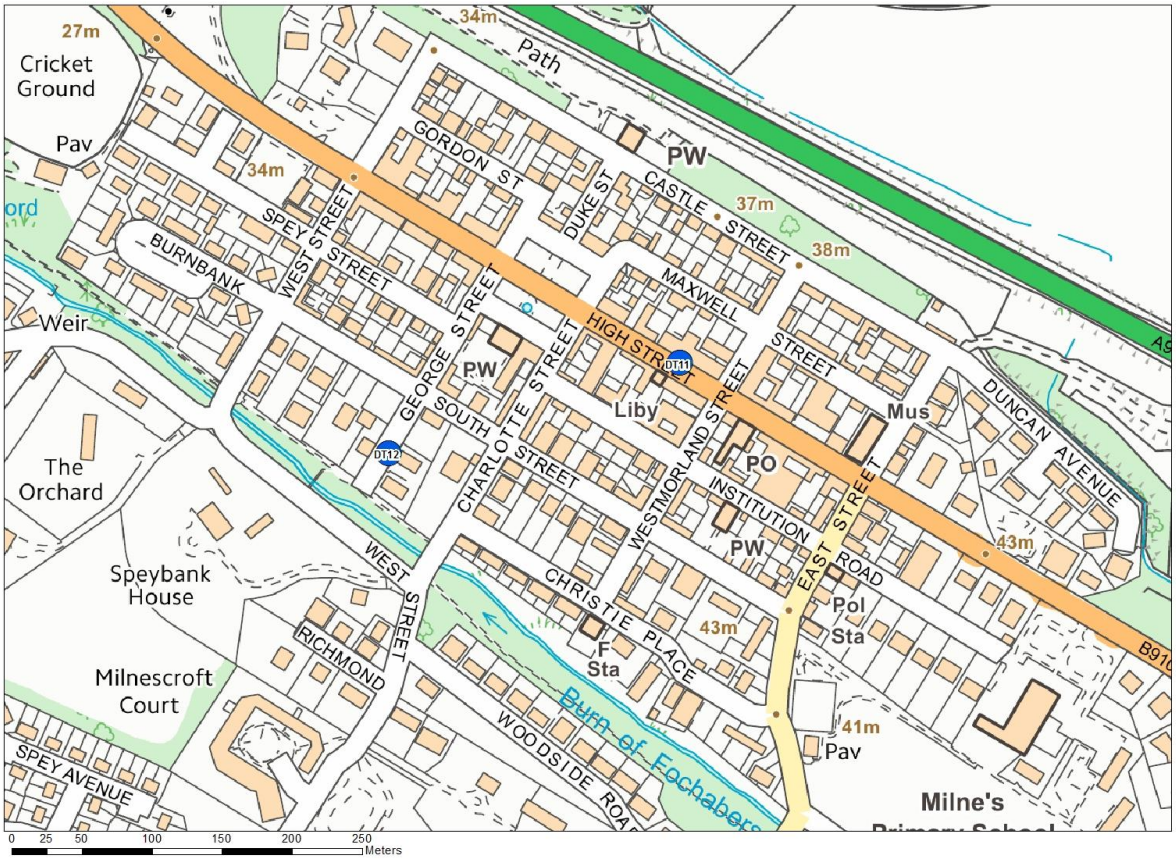


Figure 2.4 Forres NO_2 Monitoring Sites

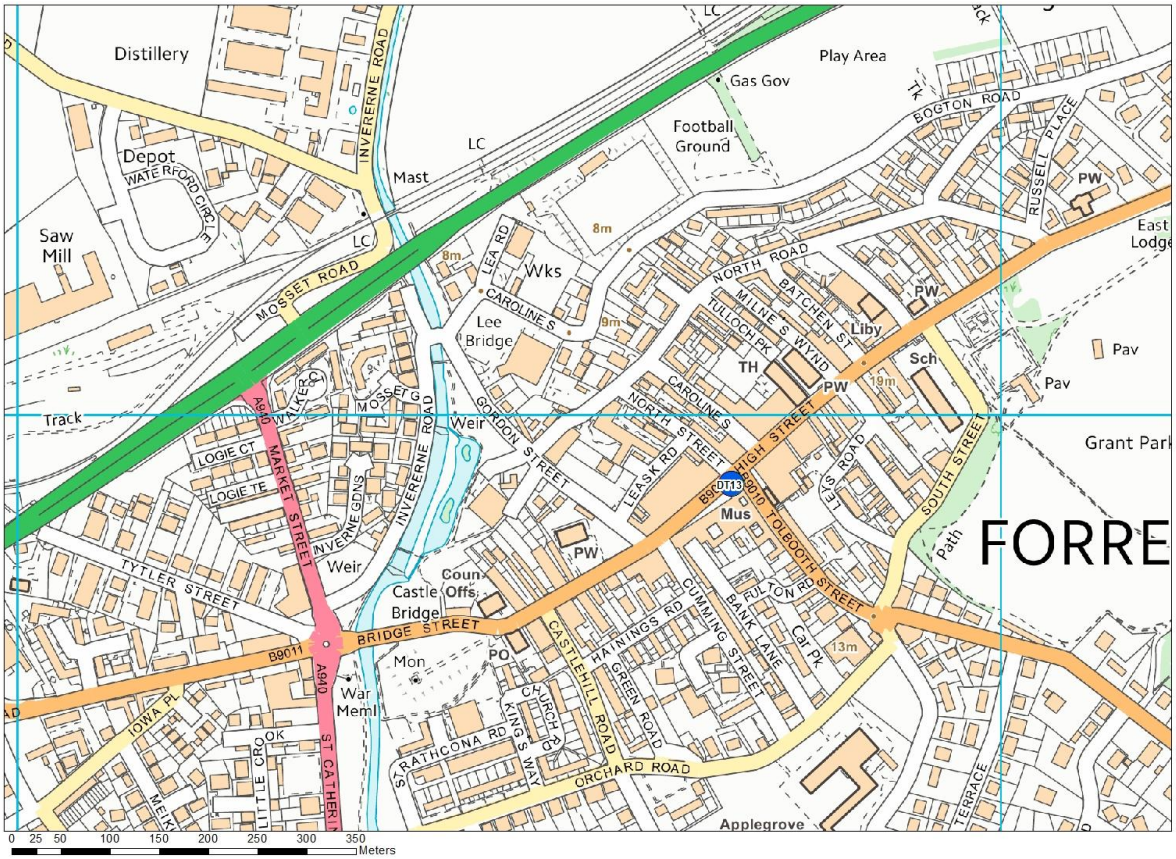


Figure 2.5 Keith NO_2 Monitoring Sites

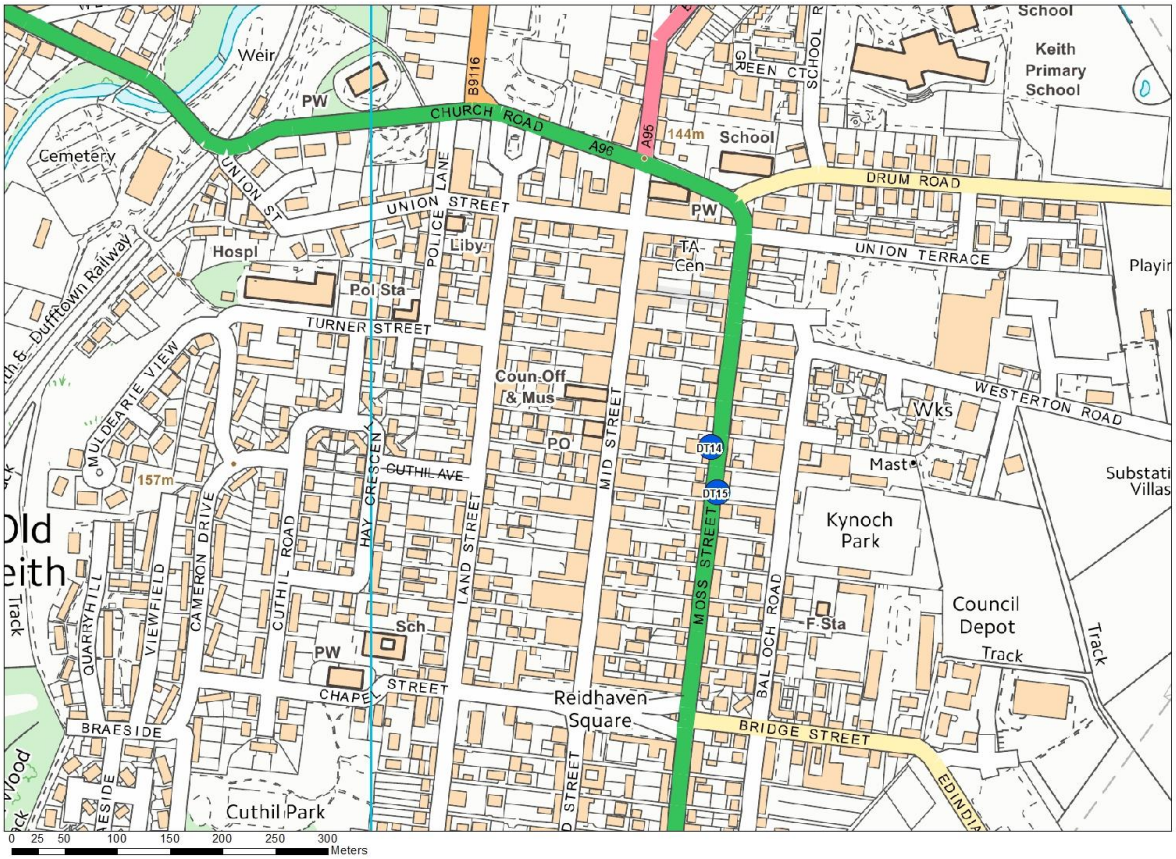


Figure 2.6 Lossiemouth NO_2 Monitoring Sites

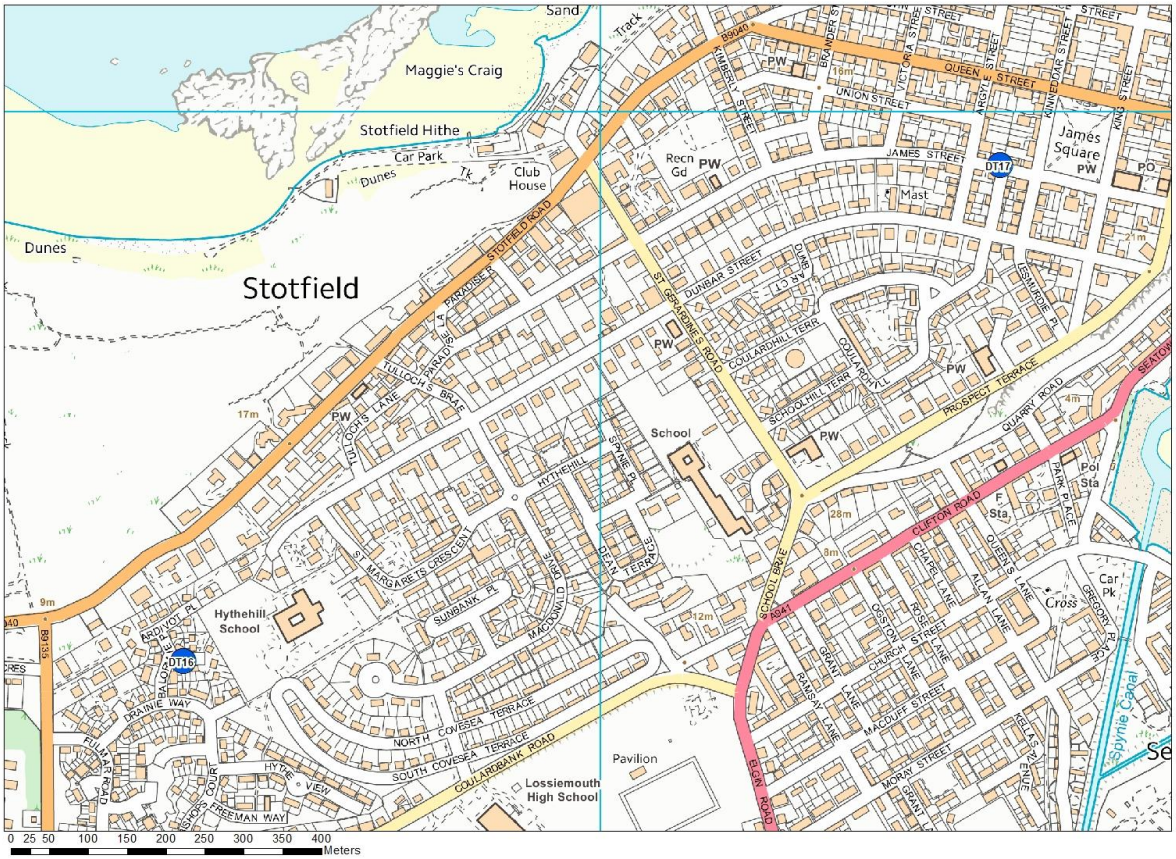
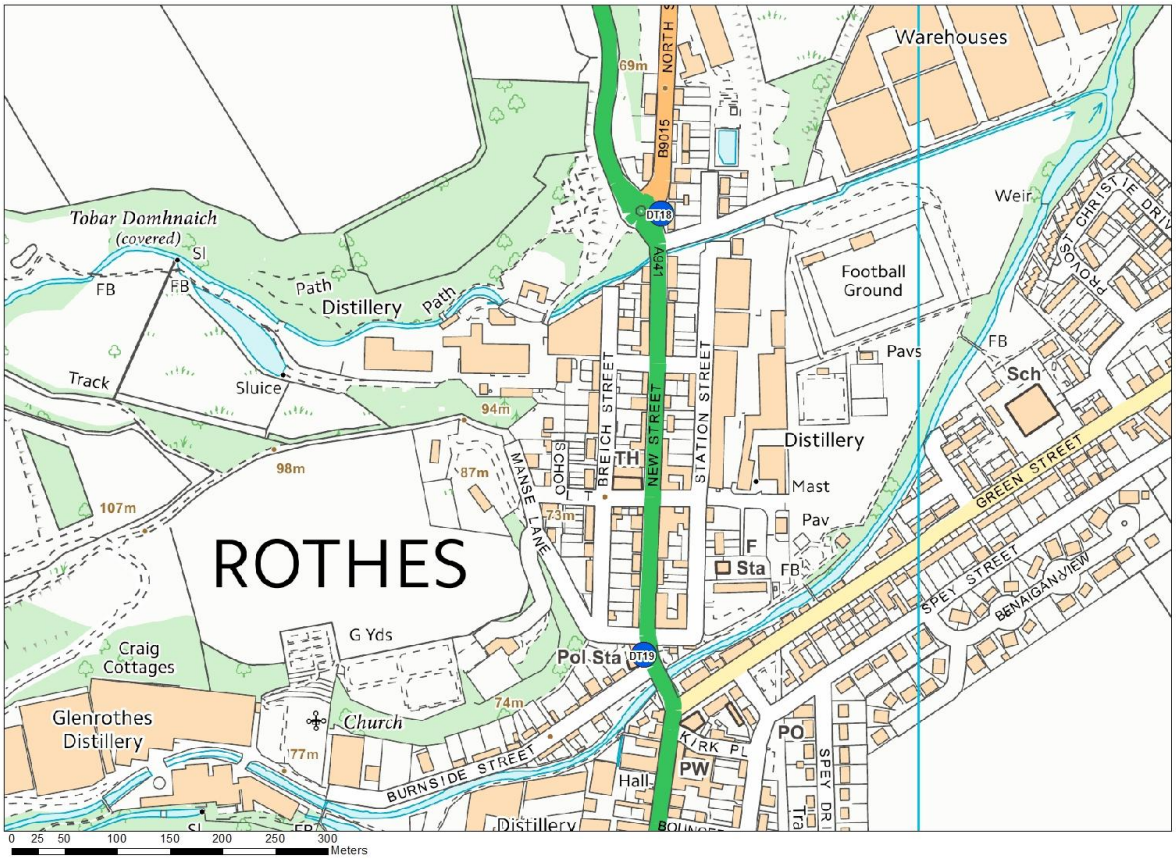


Figure 2.7 Rothes NO_2 Monitoring Sites



2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

A summary of the bias-adjusted annual mean diffusion tube concentrations of NO_2 across the monitoring network for 2014 is shown in Table 2.2. The raw monthly results are included in Appendix A. A summary of data for the last five years is shown in Table 2.3.

A trend graph is shown in Figure 2.8 which illustrates that there is a general downward trend in annual mean NO_2 concentrations across the diffusion tube network. The concentration has decreased at 18 out of 19 sites between 2010 and 2014. There was a small increase in Maisondieu Road (DT3). The maximum annual mean in 2014 was 24 µg/m^3 in Moss Street, Keith. However, the annual mean remains well below the limit of 40µg/m^3 at all locations.

2.2.1 Summary of Compliance with AQS Objectives

The Moray Council has examined the results from monitoring in the Council area. NO_2 concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.75) 2014 (μg/m^3)
DT1	Lamp Post West Park Court-Elgin	Kerbside	N	N	100	N	N	20.9
DT2	Junction East & Maisondieu Rd-Elgin	Kerbside	N	N	100	N	N	19.5
DT3	99-101 Maisondieu Road-Elgin	Roadside	N	N	100	N	N	14.4
DT4	26-28 Priory Place-Elgin	Urban Background	N	N	100	N	N	8.6
DT5	Main Street New Elgin	Kerbside	N	N	83	N	N	15.9
DT6	Queen Street Roundabout-Elgin	Kerbside	N	N	100	N	N	14.9
DT7	Hay Street-Elgin	Roadside	N	N	92	N	N	9.3
DT8	Newmill Road-Elgin	Roadside	N	N	100	N	N	12.8
DT9	37 Sandy Road- Elgin	Kerbside	N	N	100	N	N	6.7
DT10	47 Wittet Drive- Elgin	Kerbside	N	N	100	N	N	12.3

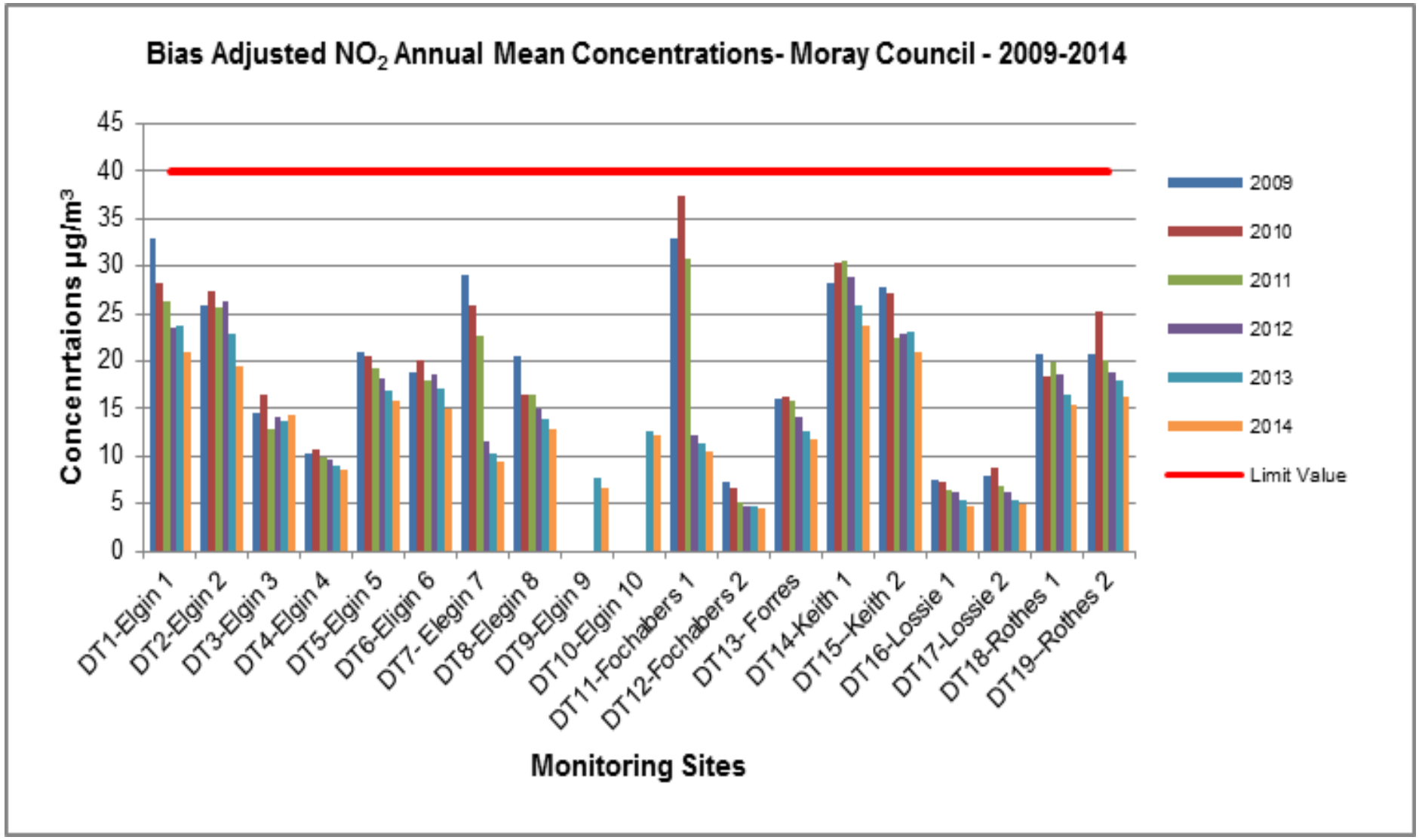
Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.75) 2014 ($\mu g/m^3$)
DT11	50A High Street-Fochabers	Kerbside	N	C	100	N	N	10.4
DT12	Sunndach George Street-Fochabers	Urban Background	N	N	100	N	N	4.4
DT13	Tolbooth, High Street-Forres	Roadside	N	N	100	N	N	11.8
DT14	106 Moss Street-Keith	Kerbside	N	N	100	N	N	23.8
DT15	87 Moss Street-Keith	Kerbside	N	N	100	N	N	20.9
DT16	1 Merryton Court-Lossiemouth	Urban Background	N	N	100	N	N	4.8
DT17	7 James Street-Lossiemouth	Kerbside	N	N	92	N	N	4.8
DT18	New Street-Rothes	Roadside	N	N	100	N	N	15.3
DT19	New Street-Rothes	Roadside	N	N	75	N	N	16.3*

*** Tubes were missing from the New Street-Rothes Site (DT19) from March, June and July. The period mean has been annualised from Urban Background sites with 12 months data capture in accordance with the methodology in Box 3.2 in LAQM.TG(09) (Ref.1). The calculations are shown in Appendix A.**

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2010 (Bias Adjustment Factor = 0.82)	2011 (Bias Adjustment Factor = 0.85)	2012 (Bias Adjustment Factor = 83)	2013 (Bias Adjustment Factor = 0.83)	2014 (Bias Adjustment Factor = 0.75)
DT1	Kerbside	N	28.3	26.2	23.5	23.8	20.9
DT2	Kerbside	N	27.3	25.6	26.2	22.9	19.5
DT3	Roadside	N	16.4	12.8	14.1	13.6	14.4
DT4	Urban Background	N	10.7	9.8	9.7	8.9	8.6
DT5	Kerbside	N	20.6	19.3	18.2	16.8	15.6
DT6	Kerbside	N	20.1	17.9	18.5	17.1	14.9
DT7	Roadside	N	26.0	22.7	11.5	10.3	9.3
DT8	Roadside	N	16.5	16.4	14.9	13.8	12.8
DT9	Kerbside	N	-	-	-	7.8	6.7
DT10	Kerbside	N	-	-	-	12.7	12.3
DT11	Kerbside	N	37.3	30.7	12.2	11.3	10.4
DT12	Urban Background	N	6.6	5.2	4.7	4.7	4.4
DT13	Roadside	N	16.3	15.8	14.1	12.7	11.8
DT14	Kerbside	N	30.4	30.6	28.8	25.8	23.8
DT15	Kerbside	N	27.1	22.4	22.8	23.1	20.9
DT16	Urban Background	N	7.3	6.4	6.2	5.4	4.8
DT17	Kerbside	N	8.7	6.9	6.1	5.3	4.8
DT18	Roadside	N	18.3	19.8	18.5	16.5	15.3
DT19	Roadside	N	25.2	20.0	18.9	18.0	16.3

Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



2.2.1 PM_{10}

There is no monitoring for PM_{10} within The Moray Council. A review of background PM_{10} data available for The Moray Council from the Scottish Air Quality Archive (www.scottishairquality.co.uk/data) resulted in a maximum PM_{10} concentration of 12.8 µg/m^3 for 2014 in a very rural agriculture area. The average PM_{10} concentration across the Council area was 8.5 µg/m^3.

2.2.2 Other Pollutants

There is no monitoring for any other pollutants within The Moray Council area.

2.2.3 Summary of Compliance with AQS Objectives

The Moray Council has examined the results from monitoring and background concentration maps in the Council area. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

A review of traffic flow data was undertaken in order to establish if there were any significant changes in traffic flow since 2013 that could impact on local air quality.

The Moray Council Transportation Section was consulted to obtain automatic traffic count information for Council operated sites in and around Elgin for 2014. A map showing the count locations is shown in Figure 3.1 and the data for 2011-2014 are summarised in Table 3.1 below.

Figure 3.1 Location Map of Automatic Traffic Counts in Elgin

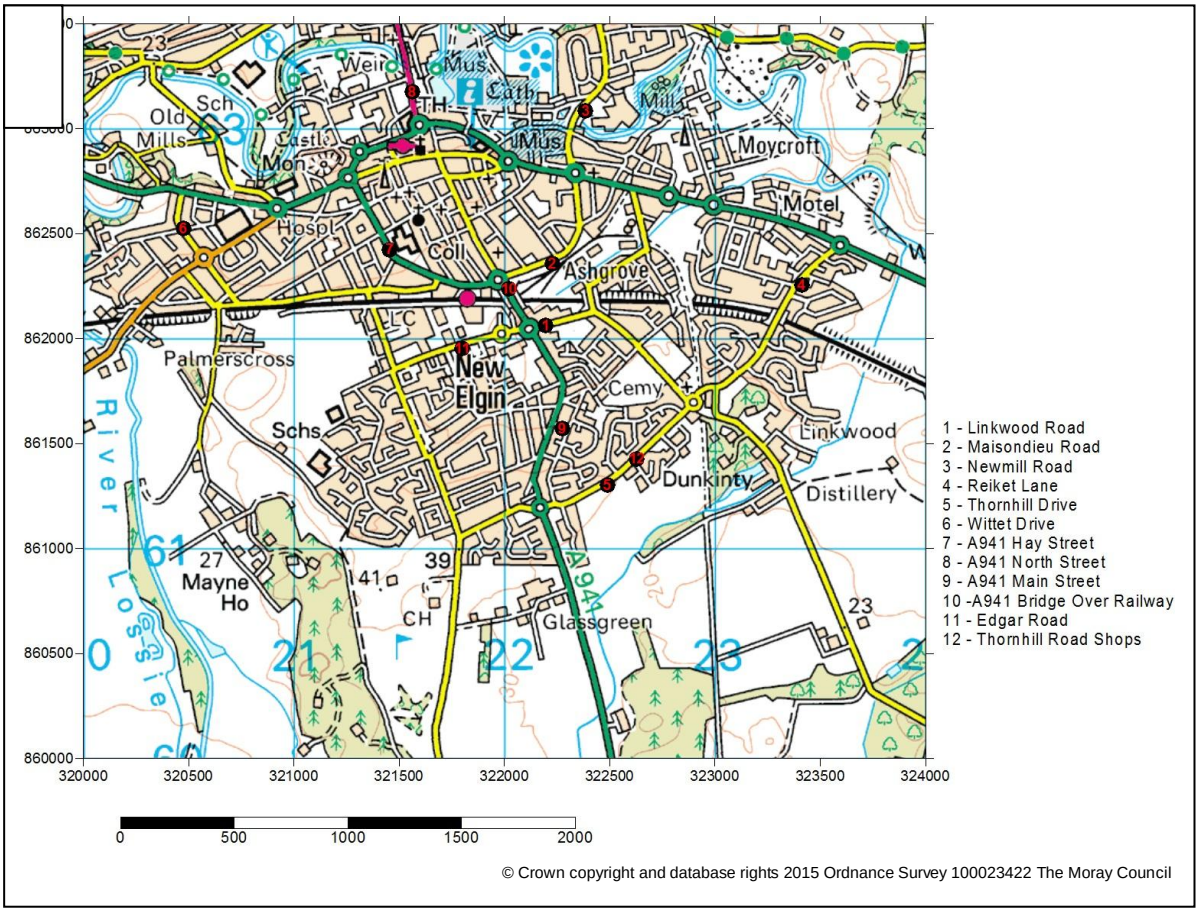


Table 3.1 Summary of Council Operated Traffic Counts Elgin 2011-2014

ID	Description	Annual Average Daily Traffic (AADT)				% Change 2013-2014
		2011	2012	2013	2014	
1	Linkwood Road	8357	8600	8946	8257	-7.7
2	Maisondieu Road	7867	7938	8016	7975	-0.5
3	Newmill Road	10435	No data[2]	No Data[2]	No Data[2]	-
4	Reiket Lane	6865	7377	7885	8011	1.6
5	Thornhill Road	5618	5787	6833	6866	0.5
6	Wittet Drive	3726	3593	3712	3772	1.6
7	A941 Hay St	12582	12998	12741	13100	2.8
8	A941 North St	15663	15307	No Data[3]	No Data[3]	-
9	A941 Main St	10620	10718	10680	10824	1.3
10	A941 Bridge over Railway	20341	20252	19348	19852	2.6
11	Edgar Rd	7955	8220	8901	9140	2.7
12	Thornhill Road Shops	2834	3061	3245	3373	3.9

Moray Council operates 12 traffic count locations in Elgin. Table 3.1 shows that there are increases in 8 of the 12 traffic count locations and reductions in two locations. However, there are no sites with significantly increased traffic flow that would require a screening assessment. Two locations were removed due to bridge replacement and flood alleviation works.

Transport Scotland was consulted in order to obtain automatic traffic count data for 2014 for the trunk roads A95 and A96 that are the main routes through the Moray Council area. A map showing the count locations is shown in Figure 3.2 and the data for 2011-2014 are summarised in Table 3.2.

[2] Counter removed due to bridge replacement works
[3] Counter removed due to flood alleviation works

Figure 3.2 Location Map of Transport Scotland Automatic Traffic Counts in Moray

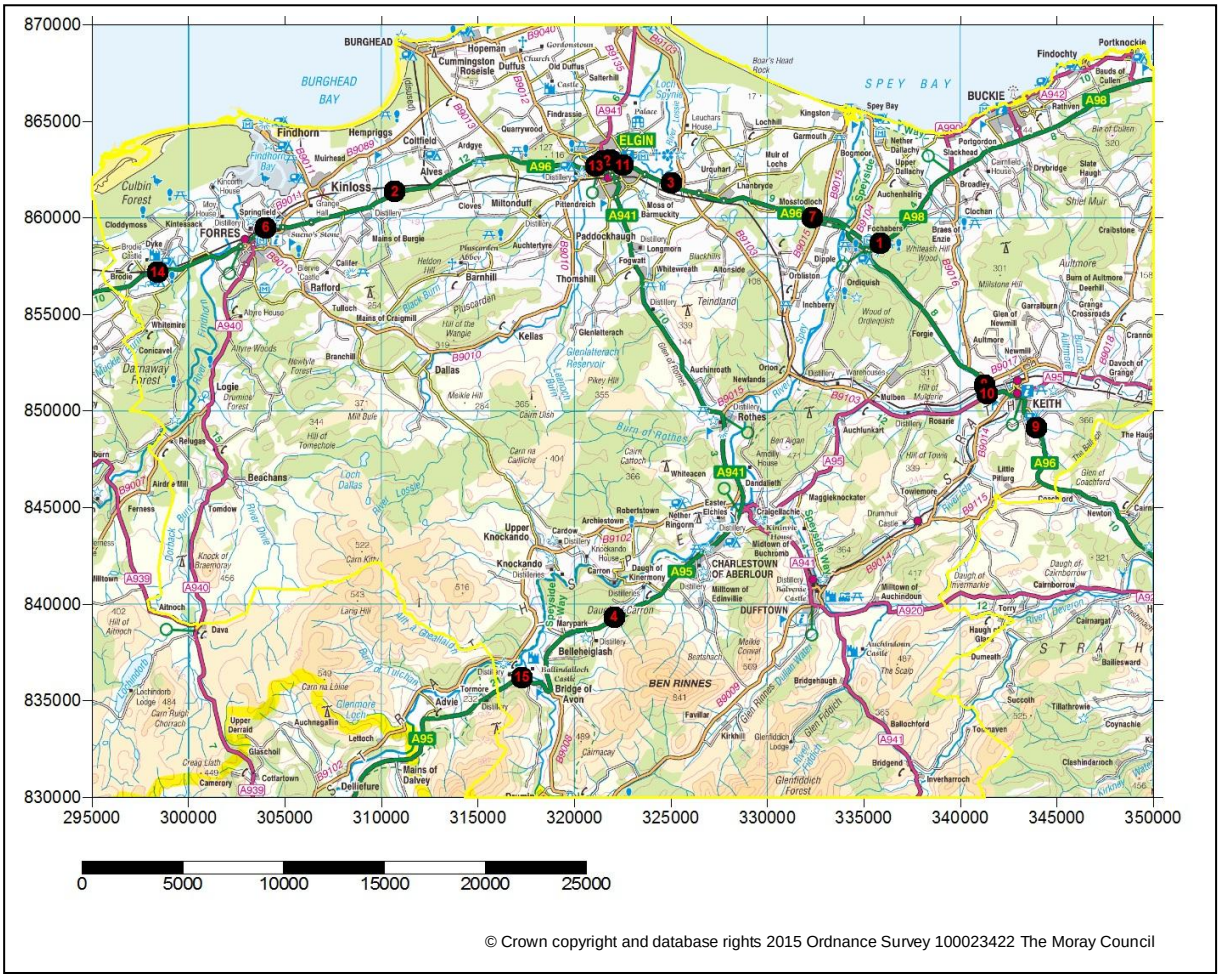


Table 3.2 Summary of Trunk Road Traffic Count Data for A95 & A96 2011-2014

ID	Description	AADT				% Change 2013-2014
		2011	2012	2013	2014	
1	A98 Fochabers	5957	No data	6528	No data	-
2	A96 Forres to Elgin	11075	11054	11309	No data	-
3	A96 Elgin to Lhanbryde	15964	16211	16408	15657	-5
4	A95 Dowans Brae	2761	2773	2757	2732	-1
5	A96 Elgin Town Centre	16524	16525	17271	16414	-5
6	A96 Forres	11039	11376	11641	No data	-
7	A96 Mosstodloch	7403	1436	14016	No data	-
8	A96 North of Keith	5805	6341	6287	6886	10
9	A95 West of Keith	2291	1794	2005	1626	-19
10	A96 Elgin - East Road	21605	21981	22853	22685	-1
11	A96 Elgin – Alexandra Road	21656	21290	22789	20744	-9
12	A96 Elgin - High Street West	13245	12849	13454	12703	-6
13	A96 Elgin - West Road	14667	14791	13494	15871	18
14	A96 Brodie (WiM)	10015	9856	10694	10354	-3
15	A96 Forres (aka Brodie)(Core 744)	10019	9881	10714	10244	-4
16	A95 Ballindalloch (Core 905)	2261	2096	2197	No data	-

The AADT flows have decreased on 9 out of 16 of the road links between 2013 and 2014. The maximum increases were identified on the A96 Elgin-West Road (18%) and A96 North of Keith (10%). It is not expected that there will be any exceedences of the NAQS objectives at nearby receptors due to changes in traffic flow on the trunk roads.

The planning application for the proposed new Western Link Road (WLR) was refused by the Planning and Regulatory Services Committee on November 2014. The decision was based on the grounds that the application was contrary to different local planning policies related to noise mitigation, road and pedestrian safety, integration to the current landscape and demonstration to conserve natural and built environment. None of these policies are considered to be directly relevant to local air quality.

Following this decision and to seek direction from the Council on the scheme, officers submitted a report to the Economic Development and Infrastructure Services

Committee on 25 November 2014. This Committee decided the WLR should remain a strategic project and recommended that this decision should be confirmed by the Moray Council.

On 17th December 2014, the Moray Council agreed with this recommendation and instructed officers to proceed with a revised planning application which addresses the above points and to continue progressing all other work relating to the WLR in accordance with previous instructions. The potential air quality impact of this road will be addressed in future reports as the revised planning application progresses.

No other new or significantly changed roads were identified.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The Moray Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

The Moray Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

The Moray Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

The Moray Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

The Moray Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The Moray Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The Moray Council confirms that there are no relevant bus stations in the Local Authority area that require Detailed Assessment.

4 Other Transport Sources

4.1 Airports

The RAF airbase at Kinloss closed in 2011 and is now used as an Army barracks. The Lossiemouth base remains operational. While the Ministry of Defence retains the right to reopen the Kinloss base in the future a previous study of local air quality in the vicinity of each base while they were both operational (Ref.13) showed that there was no risk of exceedence of air quality objectives.

The nearest commercial airport is Inverness Airport, which is located 18km to the east of the Moray Council area within the Highland Council area. Inverness airport is further than 1km from any relevant public exposure within the Moray Council area and therefore requires no further assessment.

The Moray Council confirms that there are no airports in the local authority area requiring further assessment.

4.2 Railways (Diesel and Steam Trains)

There have been no significant changes to rail movement within the Moray Council area since the last round of Review and Assessment.

The Moray Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

The Moray Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Moray Council has previously reviewed emissions from shipping and has a responsibility for six harbours within the Council area, namely, Buckie, Burghead, Cullen, Findochty, Hopeman and Portknockie. Lossiemouth also has an operational harbour and there is a small harbour, pier and ship building yard at Findhorn. The types of vessels using the harbours are mainly small fishing vessels and recreational boats and it is concluded that no further assessment is required.

The Moray Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

The Scottish Environment Protection Agency (SEPA) and The Planning Department of the Council were contacted to obtain up to date information on industrial processes within the Moray Council area.

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

There was one approved planning application for an industrial installation with the potential to impact local air quality in 2014. The site is regulated by SEPA and an air quality assessment was submitted and considered acceptable by SEPA for the installation. The process is summarised in Table 5.1.

Table 5.1 Summary of Industrial Installations granted Planning Permission during 2014

Application Reference	Description	Applicant	Date Permitted
PPC/B/1116072	Craigellachie Combined Heat & Power Plant	Speyside Renewable Energy Partnership Ltd.	31/01/2014

The Moray Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

SEPA confirmed that there are no existing installations where emissions have increased substantially or new relevant exposure has been introduced.

The Moray Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

After consultation with SEPA, it was confirmed that there was one new industrial installation with no previous air quality assessments within the Moray Council area. An air quality assessment was not required due to the low frequency and short term duration of operation of the plant and consideration of the operating procedures designed to mitigate against emissions to atmosphere. Operation of the plant is considered low risk to air quality within the Moray Council region.

Table 5.2 Summary of Industrial Installations New or Significantly Changed Installation with no Previous Air Quality Assessment during 2014

Application Reference	Description	Applicant	Date Permitted
PPC/B/11120101	Mobile Plant (Crushing and screening)	Charles A Innes & Sons Ltd.	18/11/2014

The Moray Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

There are no new petrol stations with annual throughput of over 2000m^3 of petrol.

The Moray Council confirms that there are no new petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

There have been no significant changes at the two SEPA regulated poultry farms within the Moray Council Area since the last round of Review and Assessment. It is therefore concluded that no further assessment is necessary.

The Moray Council confirms that there are no poultry farms meeting the specified criteria for Detailed Assessment.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

There has been a rise in the number of planning applications for biomass installations within the Moray Council area since the last round of Review and Assessment. Three planning applications for wood burning biomass installations or associated storage buildings were permitted by the Council in 2014. They range from small private domestic and community installations to larger installations up to 6.5 MW at an industrial site. The installations permitted in 2014 are listed as items 27-29 in Table 6.1.

The Environmental Services Department within the Moray Council has an established team of personnel who undertake the air quality impact screening assessments of all proposed wood burning biomass installations in accordance with the Environmental Protection UK guidance (Ref.16) and ensure installations are compliant with the Clean Air Act 1993 and the LAQM air quality objectives before granting permission.

Where the screening assessment approach does not indicate compliance, or the proposed biomass scheme is a complex one, the Moray Council require an Air Quality Assessment to be submitted by the applicant as part of the planning process. Such an assessment was submitted and accepted by the Moray Council for the Glen Moray Biomass Boiler (14/01006/APP) which was granted permission in 2014 (Ref.17).

The planning consent which had been issued for the biomass boiler at Tomintoul Youth Hostel (14/00362/APP) required details to be submitted of the biomass and flue for approval. The Moray Council are still waiting on receipt of these data.

No detailed assessment was carried out of the Heather Glen Guest House biomass (Ref. 14/00072/APP) as it is a small domestic size appliance.

The Moray Council has assessed the applications for biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

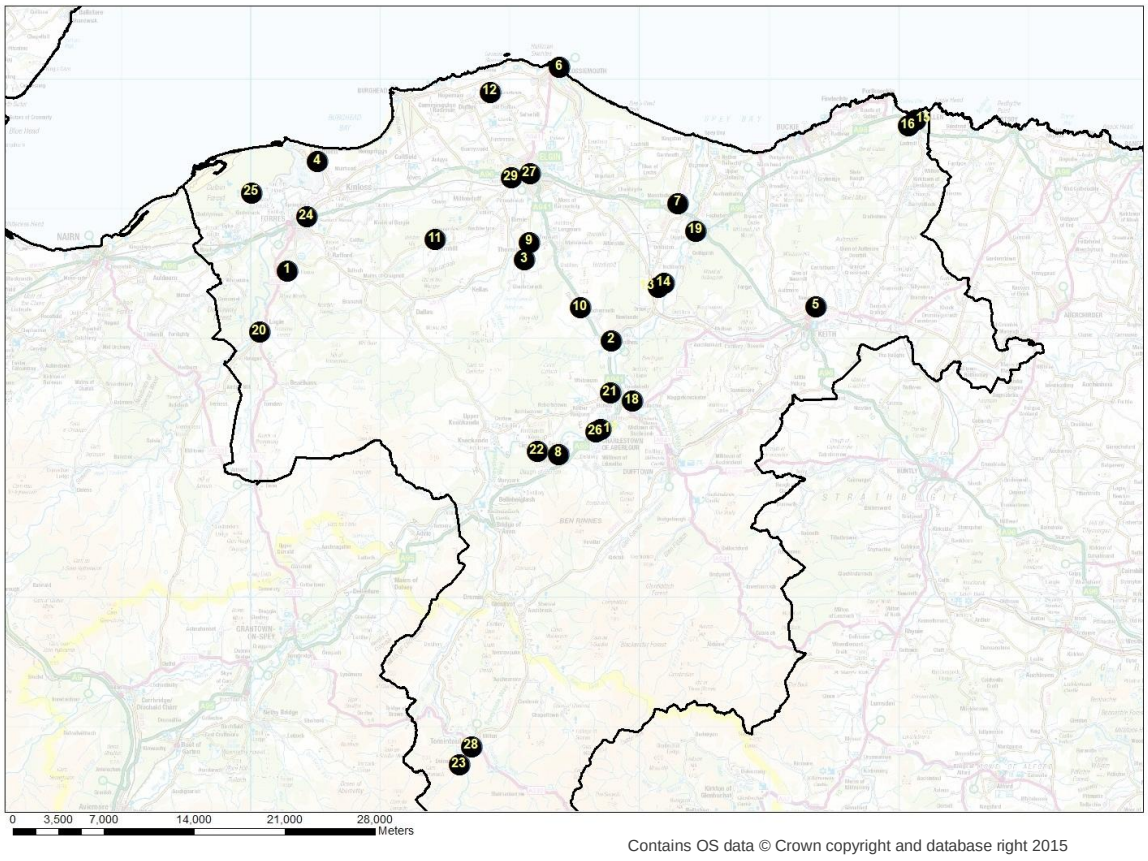
To date there are a total of 29 permitted wood burning biomass installations within the Moray Council area. While these have all been assessed for potential air quality impact as individual installations, the potential combined impact of clusters of installations needs to be assessed for PM_{10} in accordance with TG(09) (Ref.1). The biomass installations with their geographical location are summarised in Table 6.1 and shown in the map in Figure 6.1.

Table 6.1 Biomass Installations in Moray Council

ID Figure 6.1	Application Number	Description	OS Grid Reference		Status
			Easting	Northing	
1	07/02684/FUL	Erect a combined heat and power biomass boiler building at Blairs Farm Steading Forres Moray IV36 2SH	302803	855196	Permitted
2	08/00577/FUL	Construct a 7.2MWe combined heat and power plant at Combination Of Rothes Distillers North Street Rothes Aberlour Moray AB38 7BW	327778	849808	Permitted
3	08/02135/FUL	Convert existing steadings to form 5 dwellings incorporating games room biomass boiler and boidisc treatment plant Easterton Farm Birnie Elgin Moray IV30 8SP	321110	856059	Permitted
4	09/02255/APP	Installation of a biomass (woodchip) boiler at The Park Findhorn Forres Moray	305084	863636	Permitted
5	10/00958/APP	Erect biomass boiler shed at Newmill Public Hall South Street Newmill Moray	343580	852448	Permitted
6	10/01903/APP	Proposed biomass heating system and external hopper and flue at Town Hall High Street Lossiemouth Moray IV31 6AA	323764	870894	Permitted
7	11/00173/APP	Erect boiler house and associated timber and biomass wood fuel storage facility and install 2.9mw wood fuel boiler for providing hot water for sawmill process at Mosstodloch Sawmill Garmouth Road Mosstodloch Fochabers Moray IV32 7LH	332975	860409	Permitted
8	11/01004/APP	Demolition of a redundant process building and tanks with construction of a new bioplant facility in their location at Dailuaine Distillery Carron Aberlour Moray AB38 7RE	323712	841027	Permitted
9	11/01383/APP	Construction of a new biomass plant within the existing site at Glenlossie And Mannochmore Distillery And Dark Grains Site Glenlossie Road Birnie Elgin Moray IV30 8SS	321458	857413	Permitted
10	11/01433/APP	Replace oil fired boiler with biomass heating system and solar panels with associated accumulator tank at Brylach Rothes Aberlour Moray AB38 7AQ	325431	852363	Permitted
11	11/01508/APP	Erect a 195kW biomass boiler installation including boiler house and wood chip store at Pluscarden Abbey Pluscarden Elgin Moray IV30 8UA	314200	857630	Permitted
12	11/01981/APP	Replacement of existing boiler with new biomass boiler and hopper feed system at Gordonstoun School Duffus Elgin Moray IV30 5RF	318440	868990	Permitted
13	11/02010/APP	Erection of biomass heating cabin serving Orton House and adjoining buildings at Orton House Orton Fochabers Moray IV32 7QE	331421	853941	Permitted
14	11/02011/APP	Erection of biomass heating cabin serving Mains Of Orton Orton Fochabers Moray IV32 7QE	331860	854237	Permitted
15	12/00193/APP	Erection of biomass heating cabin at	351296	866871	Permitted

ID Figure 6.1	Application Number	Description	OS Grid Reference		Status
			Easting	Northing	
		Seafield Estate Office York Place Cullen Buckie Moray AB56 4UW			
16	12/00266/APP	Installation of biomass heating plant and ancillary wood chip store to serve Old Cullen House And The Stable Block Cullen Buckie Moray AB56 4XW	350736	866411	Permitted
17	12/00457/APP	Erection of biomass boiler room storage container and access road at Speyside High School Mary Avenue Aberlour Moray AB38 9QU	326973	842941	Permitted
18	12/01142/APP	External biomass boiler enclosure at Viewfield Heights Craigellachie Moray	329450	845152	Permitted
19	12/01282/APP	Create a biomass boiler and fuel silo house at Milnes High School West Street Fochabers Moray IV32 7DJ	334355	858291	Permitted
20	12/01395/APP	Siting a biomass boiler heat cabin at Logie Steading Logie Forres Moray IV36 2QN	300664	850475	Permitted
21	12/01490/APP	Biomass combined heat and power plant (located approximately 820 metres north of The Macallan Distillery) providing electricity to the grid and heat to The Macallan Distillery at site at Craigellachie Wood Craigellachie Moray	327717	845763	Permitted
22	12/02060/APP	Construction of new distillery with associate plant (including evaporator and bio plant buildings) and landscaping on site of former distillery at Imperial Distillery Carron Aberlour Moray AB38 7QP	322118	841262	Permitted
23	12/02082/APP	Erect outbuilding to house biomass boiler and woodchip storage at Delnabo House Tomintoul Ballindalloch Moray AB37 9HT	316059	817043	Permitted
24	13/00691/APP	Site a 160kw biomass boiler at Ramnee Hotel Victoria Road Forres Moray IV36 3BN	304319	859384	Permitted
25	13/01388/APP	Install two boiler biomass heating units at Wellhill Farm House Kintessack Forres Moray IV36 2TG	300023	861223	Permitted
26	13/01479/APP	Erection of biomass boiler container at Aberlour Primary School Mary Avenue Aberlour Moray AB38 9PN	326587	842773	Permitted
27	14/01006/APP	Demolish storage building and construct building to accommodate biomass boiler at Glenmoray Distillery Bruceland Road Elgin Moray IV30 1YE	321509	862682	Permitted
28	14/00362/APP	Erect biomass boiler house including the installation of biomass boiler and wood pellet storage internal refurbishments to the toilets and the erection of boundary fence and change of use of adjacent land to occasional overnight camping in association with the hostel at Tomintoul Youth Hostel Main Street Tomintoul Ballindalloch Moray AB37 9EX	317039	818474	Permitted
29	14/00072/APP	Installation of new Biomass system Heather Glen Guest House 1 North Guildry Street Elgin Moray IV30 1JR	320098	862383	Permitted

Figure 6.1 Location Map of Biomass Installations in Moray



It can be seen that the installations are widely spread across the Council area, mostly in rural locations and there are no clusters in a 500 x 500m^2 area.

The Moray Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

Previous reports concluded that there were no areas of domestic solid-fuel burning with a density of greater than 100 houses in a 500 x 500m area. There have been no new areas of development with significant solid-fuel burning and it is therefore not necessary to undertake any further assessment.

The Moray Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

SEPA confirmed that there were no new industrial sources of fugitive emissions within the Moray Council area.

The Moray Council confirms that there are no potential sources of fugitive emissions that have not been previously assessed within the local authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The results of the NO_2 monitoring across the Moray Council during 2014 confirm that there are no exceedences of the AQS objectives for this pollutant. Historical data analysis of NO_2 concentrations between 2009 and 2014 shows that the concentrations are showing a general downward trend. The review of new monitoring data available for 2014 confirms that The Moray Council does not need to proceed to a Detailed Assessment for any pollutant.

8.2 Conclusions from Assessment of Sources

The assessment has been conducted in accordance with the TG09 Technical Guidance. Updated information of road, rail, industrial, domestic and fugitive emissions sources, including biomass installations, has been obtained and compared against the criteria and conditions described in the Guidance. It was determined that there is no need to proceed to a Detailed Assessment for any of the emissions sources.

8.3 Proposed Actions

The current NO_2 monitoring and traffic flow monitoring is planned to continue during 2015. The results of these activities will be included in the next Progress Report in April 2016.

9 References

Ref.1 Local Air Quality Management Technical Guidance LAQM.TG(09), Department for Environment, Food and Rural Affairs, 2009

Ref. 2 2014 Air Quality Progress Report for The Moray Council, TSI Scotland Ltd, Report Ref: TSI/MOR.004-04-03, May 2014

Ref. 3 2013 Air Quality Progress Report for The Moray Council, TSI Scotland Ltd, Report Ref: TSI/MOR.004-04-03, May 2013

Ref.4 Moray Council LAQM Updating and Screening Assessment 2012, TSI Scotland Ltd Report Ref: TSI/MOR003-04-02, April 2012

Ref.5 2011 Air Quality Progress Report for The Moray Council, TSI Scotland Ltd, Report Ref: TSI/MOR.001-04-03, June 2011

Ref.6 Moray Council LAQM Progress Report 2010, BMT Cordah Ltd Report Ref: G_MOR_015, May 2010

Ref.7 Moray Council LAQM Updating and Screening Assessment 2009, BMT Cordah Ltd Report Ref: G_MOR_014, May 2009

Ref.8 Moray Council LAQM Progress Report 2008, BMT Cordah Ltd Report Ref: G_MOR_013, May 2008

Ref.9 Moray Council LAQM Progress Report 2007, BMT Cordah Ltd Report Ref: E_MOR_012, April 2007

Ref.10 Moray Council LAQM Updating and Screening Assessment 2006, BMT Cordah Ltd Report Ref: E_MOR_011, April 2006

Ref.11 Detailed Assessment of Road Traffic Particulate Emissions, BMT Cordah Ltd Report Ref: MOR_009, August 2005

Ref.12 Moray Council LAQM Progress Report 2005, BMT Cordah Ltd Report Ref: E_MOR_010, May 2005

Ref.13 Air Quality Study in the Vicinity of RAF Lossiemouth and RAF Kinloss, BMT Cordah Ltd, Report Ref: MOR_007, November 2004

Ref.14 Supplementary Report to the Updating and Screening Assessment, BMT Cordah Ltd, Report Ref: MOR_008, January 2004

Ref.15 Updating and Screening Assessment, BMT Cordah Ltd, Report Ref: MOR_005, May 2003

Ref.16 Environmental Protection UK, Biomass and Air Quality Guidance for Scottish Local Authorities, June 2010, Available at: www.environmental-protection.org.uk/biomass

Ref.17 Envirocentre, Glen Moray Biomass Boiler Stack Emission Assessment, May 2014, Envirocentre Document Reference: 6053

Ref.18 DEFRA, Local Air Quality Management Tools, National Bias Adjustment Factor, April 2015, Available at: http://laqm.defra.gov.uk/bias-adjustment-factors

Ref.19 LGC AIR PT Scheme, AR0341 – Aberdeen City Council Individual Report Round 1: 23 May 2014 http://www.lgcpt.com

Ref.20 LGC AIR PT Scheme, AR0341 – Aberdeen City Council Individual Report Round 3: 18 August 2014 http://www.lgcpt.com

Ref.21 LGC AIR PT Scheme, AR0341 – Aberdeen City Council Individual Report Round 4: 14 November 2014 http://www.lgcpt.com

Ref.22 LGC AIR PT Scheme, AR0341 – Aberdeen City Council Individual Report Round 6: 20 February 2015 http://www.lgcpt.com

Appendices

Appendix A: QA/QC Data

Appendix A: QA/QC of Monitoring Data

The 2014 raw monthly average NO_2 diffusion tube results are summarised in Table A1.

Table A1: Raw Unadjusted Monthly Diffusion Tube NO_2 Concentrations µg/m^3 - 2014

ID	SITE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN	Data Capture %
DT1	Lamp Post West Park Court-Elgin	36	27	27	27	5	54	26	6	37	29	38	23	28	100
DT2	Junction East & Maisondieu Rd-Elgin	29	19	21	24	32	34	29	29	35	29	21	10	26	100
DT3	99-101 Maisondieu Road-Elgin	36	14	10	14	21	19	14	11	18	15	35	23	19	100
DT4	26-28 Priory Place-Elgin	17	9	10	9	9	8	7	25	12	11	12	9	12	100
DT5	Main Street New Elgin	27	22	16			17	15	16	24	26	32	17	21	83
DT6	Queen Street Roundabout-Elgin	26	15	17	18	22	17	15	17	21	22	31	18	20	100
DT7	Hay Street-Elgin	17		9	13	15	12	10	9	14	12	18	8	12	92
DT8	Newmill Road-Elgin	24	18	17	18	10	9	8	13	19	22	27	19	17	100
DT9	37 Sandy Road- Elgin	13	10	8	8	9	7	6	6	10	9	15	6	9	100
DT10	47 Wittet Drive- Elgin	22	16	15	14	15	13	10	13	18	19	28	13	16	100
DT11	50A High Street-Fochabers	16	14	11	13	18	14	9	14	19	12	19	8	14	100
DT12	Sunndach George Street-Fochabers	9	5	5	5	5	5	5	5	6	6	10	5	6	100
DT13	Tolbooth, High Street-Forres	25	11	15	14	15	13	11	12	17	16	24	15	16	100
DT14	106 Moss Street-Keith	36	30	33	27	28	25	21	34	41	40	34	32	32	100
DT15	87 Moss Street-Keith	32	18	25	27	34	27	21	28	35	29	42	17	28	100
DT16	1 Merryton Court-Lossiemouth	11	6	5	6	5	5	5	5	6	6	11	5	6	100
DT17	7 James Street-Lossiemouth		6	6	6	5	5	5	5	7	7	12	7	6	92
DT18	New Street-Rothes	27	16	20	20	17	16	12	19	23	24	30	21	20	100
DT19	New Street-Rothes	25	16		19	21			28	27	24	29	21	23	75

Table A.2 Short-Term to Long-Term NO_2 Monitoring Data Adjustment- 2014

Site ID	Town	Location	Site Type	Annual Mean (Am) µg/m^3	Period Mean (Pm) µg/m^3	Ratio Am/Pm µg/m^3
DT04	Elgin 4	26-28 Priory Place	Urban Background	11.5	12.6	0.9159
DT12	Fochabers 2	Sunndach George Street	Urban Background	5.9	6.2	0.9509
DT16	Lossie 1	1 Merryton Court	Urban Background	6.3	6.8	0.9344
					AVERAGE	**0.9337**
					Period Mean (Pm)	**Annualised Mean**
DT19*	Rothes 2	New Street	Roads		23.3	21.8
						Bias Adjusted Annualised Mean (x0.75)
						16.3 µg/m^3

*** Tubes were missing from the New Street-Rothes Site (DT19) from March, June and July. The period mean has been annualised from Urban Background DT sites with 12 months data capture in accordance with the methodology in Box 3.2 in LAQM.TG(09) (Ref.1).**

Factor from Local Co-location Studies (if available)

There is no co-location study within the Moray Council.

Diffusion Tube Bias Adjustment Factors

The national bias adjustment factor spreadsheet v03_15 (http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html) (Ref.18) was used to calculate the national bias adjustment factor for diffusion tubes analysed by Aberdeen Scientific Services Laboratory (ASSL) during 2014. The factor was found to be 0.75.

QA/QC of diffusion tube monitoring

The NO_2 diffusion tubes used by The Moray Council were prepared and analysed by the Aberdeen Scientific Services Laboratory (ASSL) The Laboratory is UKAS accredited and has good performance in both the LGC Standards Proficiency Testing Scheme (formerly WASP) and NPL QA schemes.

The laboratory demonstrated satisfactory performance in the past four rounds for which reports are available with Z scores between -1.61 and 0.19

RESULTS	Tube 1	Tube 2	Tube 3	Tube 4
May 2014	0.19	0.1	-0.27	-0.81
Aug 2014	-0.72	-1.25	0.08	-1.61
Nov 2014	0	-0.13	0	-0.12
Feb 2015	-0.28	0.07	-0.6	-0.64

The general classification of a Z-Score is:

Z < ± 2	Satisfactory
Z > ± 2 and < ± 3	Warning
Z > ± 3	Unsatisfactory

The results of the NPL Intercomparison Study for 2014 are not available at the time of writing. The 2013 results are therefore shown below. The overall survey had good precision and data capture with a bias correction factor of 0.83.

Results of NPL Inter Comparison Study for ASSL

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	02/01/2013	30/01/2013	103.7	106.6	108.5	106	2.4	2	6.0
2	30/01/2013	27/02/2013	87.4	80.9	79.9	83	4.1	5	10.1
3	27/02/2013	27/03/2013	87.1	89.0	82.4	86	3.4	4	8.5
4	27/03/2013	01/05/2013	88.7	90.2	92.9	91	2.1	2	5.3
5	01/05/2013	30/05/2013	92.0	86.3	91.9	90	3.3	4	8.1
6	30/05/2013	26/06/2013	89.5	95.9	91.0	92	3.3	4	8.2
7	26/06/2013	31/07/2013	91.5	98.1	103.3	98	5.9	6	14.6
8	31/07/2013	04/09/2013	103.4	110.6	96.3	103	7.2	7	17.8
9	04/09/2013	02/10/2013	95.6	118.2	105.9	107	11.3	11	28.1
10	02/10/2013	30/10/2013	100.1	104.4	95.0	100	4.7	5	11.7
11	30/10/2013	04/12/2013	80.3	110.4	102.7	98	15.6	16	38.8
12	04/12/2013	08/01/2014	113.4	106.0	124.9	115	9.5	8	23.7
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
84	96.7	Good	Good
74	94.1	Good	Good
74	97.7	Good	Good
77	97.6	Good	Good
83	97.6	Good	Good
73	97.6	Good	Good
89	94.3	Good	Good
84	92.0	Good	Good
84	97.7	Good	Good
89	97.5	Good	Good
77	97.3	Good	Good
80	97.6	Good	Good
Overall survey -->		Good precision	Good Overall DC

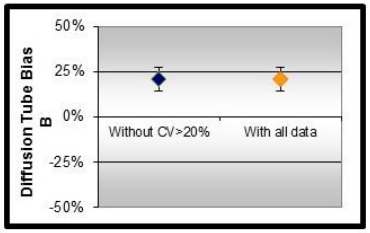
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Marylebone Road

Precision	12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.83 (0.79 - 0.88)
Bias B	21% (14% - 27%)
Diffusion Tubes Mean:	97 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	81 μgm^{-3}
Data Capture for periods used:	96%
Adjusted Tubes Mean:	81 (77 - 86) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.83 (0.79 - 0.88)
Bias B	21% (14% - 27%)
Diffusion Tubes Mean:	97 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	81 μgm^{-3}
Data Capture for periods used:	96%
Adjusted Tubes Mean:	81 (77 - 86) μgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com