

Aberdeenshire
COUNCIL



2015 Updating and Screening
Assessment for
Aberdeenshire Council

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

July 2015

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Executive Summary

A review of monitoring data and emission sources within the Aberdeenshire Council area was undertaken and the information compared with national air quality objectives.

Aberdeenshire Council undertook monitoring of NO₂ concentrations at 16 sites within 5 settlements, including new monitoring sites in the town of Peterhead. Monitoring results show that concentrations of NO₂ in these locations are unlikely to exceed the national air quality objectives.

An examination of transport, industrial, commercial, domestic, fugitive and uncontrolled sources was undertaken. Further information is required for one industrial source and several biomass installations.

There is no requirement for a detailed assessment to be undertaken in respect of any of the local air quality management pollutants at present.

A review of diffusion monitoring sites is proposed as a result of conclusions drawn from the evaluation of monitoring data and sources.

Aberdeenshire Council will submit a Progress Report in 2016.

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1 Introduction

1.1 Description of Local Authority Area

Aberdeenshire Council is located on the north-east coast of Scotland and surrounds Aberdeen City Council area. The Council area is bordered to the south by Angus and Perth and Kinross Councils and to the west by Moray and The Highland Councils. The northern and eastern borders of Aberdeenshire Council area are the Moray Firth and the North Sea coast.

The Council area is split into two distinct geographical types: the western part of the Council area is dominated by the Grampian mountain range and includes large areas of forest and moorland. The northern and eastern parts of the Council area are relatively flat with large expanses of agricultural land, coastal grassland and a greater density of urban centres.

The population of the Aberdeenshire Council area is approximately 240,000 with largest urban populations residing in Peterhead, Fraserburgh, Inverurie, Stonehaven, Westhill and Ellon. A large proportion of the Aberdeenshire population is involved in the off-shore oil and gas industry. A significant proportion of the population are also involved in the traditional industries of farming, forestry and fishing with approximately one third of Scotland's agricultural produce originating in the region. The industrial and commercial areas are primarily located in the east of the Council area around Aberdeen, Stonehaven, Peterhead and Fraserburgh. A large section of the central region of Aberdeenshire is a commuter region for Aberdeen City with a significant proportion of the local population commuting in to Aberdeen City on a regular basis.

The rail network within Aberdeenshire comprises two mainline passenger and freight rail routes: one passing north-south through the Council area along the North Sea coastline from Dundee to Aberdeen; and the second linking Aberdeen to Inverness passing through Inverurie and Huntly.

The major roads passing through the Council area comprise:

- the A90 trunk road linking the coastal towns of Fraserburgh, Peterhead, Portlethen and Stonehaven to Aberdeen and providing the arterial route south to Dundee and Central and Southern Scotland; and
- the A96 trunk road which links Aberdeen to Elgin and Inverness.

There are also several harbours and ports located along the Aberdeenshire coast which are used by fishing boats, oil and gas industry support vessels and leisure craft. The two largest ports are Peterhead and Fraserburgh where there is a significant number of fishing, commercial and oil and gas shipping operations.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management 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 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 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 LAQM in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
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 7 times a year	24-hour mean	31.12.2010
	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

Aberdeenshire Council has undertaken regular reviews of air quality since the introduction of the LAQM process. A summary of reports submitted, from 2003, is provided in Table 1.2.

Table 1.2 Details of Local Air Quality Reports submitted by Aberdeenshire Council

Date Submitted	Review & Assessment Task	Conclusions
August 2003	Updating & Screening Assessment (2003) ¹	Monitoring of NO ₂ was undertaken at 13 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
April 2004	Progress Report (2004) ²	Monitoring of NO ₂ ceased at 4 sites. Monitoring at the remaining 9 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
May 2005	Progress Report (2005) ³	NO ₂ monitoring at 9 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
June 2006	Updating & Screening Assessment (2006) ⁴	Monitoring of NO ₂ undertaken at 14 sites (5 new sites added). No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
June 2007	Progress Report (2007) ⁵	Monitoring of NO ₂ undertaken at 14 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
August 2008	Progress Report (2008) ⁶	Monitoring of NO ₂ undertaken at 14 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
July 2009	Updating & Screening Assessment (2009) ⁷	Monitoring of NO ₂ undertaken at 14 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
July 2010	Progress Report (2010) ⁸	Monitoring of NO ₂ undertaken at 14 sites. All recorded concentrations remained below the annual mean NAQS objective. Six sites will be removed from the monitoring programme over this year. No requirement for a detailed assessment.
June 2011	Progress Report (2011) ⁹	Monitoring of NO ₂ undertaken at 8 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
September 2012	Updating & Screening Assessment (2012) ¹⁰	Monitoring of NO ₂ undertaken at 8 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
June 2013	Progress Report (2013) ¹¹	Monitoring of NO ₂ undertaken at 8 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.
September 2014	Progress Report (2014) ¹²	Monitoring of NO ₂ undertaken at 11 sites. No observed or predicted exceedances of annual mean air quality objectives. No requirement for a detailed assessment.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Aberdeenshire Council does not operate, nor does it have located within its boundaries, any automatic analysers or monitors.

2.1.2 Non-Automatic Monitoring Sites

Aberdeenshire Council has been undertaking diffusion tube monitoring, for NO₂, at 8 monitoring sites for a number of years. Three new sites in Ellon were added to the NO₂ diffusion tube network in 2013.

Five new diffusion tube monitoring sites in Peterhead were set up following changes to operations at Peterhead harbour and in response to local resident's enquiries about the impact of these changes on local air quality. The operational changes mean that an increased number of larger ships are using the harbour and new berths have been created closer to the residential area than previously.

Details of the current monitoring sites and the 5 new sites in Peterhead are presented in Table 2.1. Maps detailing the locations of the non-automatic monitoring sites are presented in Appendix A, Maps A.1-A.7 (p42-49).

Table 2.1 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	Relevant Exposure?	Distance to kerb of nearest road	Worst-case exposure?
Inverurie 1	Kerbside	E 377403 N 821584	NO ₂	Y (2m)	< 5m	Y
Inverurie 2	Roadside	E 376646 N821469	NO ₂	Y (5m)	< 2m	Y
Stonehaven 1	Kerbside	E 387445 N 785823	NO ₂	Y (2m)	< 5m	Y
Westhill 2	Kerbside	E 382118 N 806577	NO ₂	Y (2m)	< 5m	Y
Ellon 1	Roadside	E 395604 N 830472	NO ₂	Y (2m)	< 5m	Y
Ellon 3	Roadside	E 395711 N 830170	NO ₂	Y (3m)	< 5m	Y
Ellon 4	Roadside	E 395893 N 830509	NO ₂	Y (2m)	< 5m	Y
Peterhead 1	Kerbside	E 413594 N 846066	NO ₂	Y (2m)	< 5m	Y
Peterhead 2	Kerbside	E 413209 N 846356	NO ₂	Y (2m)	< 5m	Y
Peterhead 3	Kerbside	E 412716 N 846734	NO ₂	Y (2m)	< 5m	Y
Peterhead 4	Kerbside	E 412758 N 846144	NO ₂	Y (2m)	< 5m	Y
Merchants Quay, Peterhead	Other	E 413422 N 845775	NO ₂	No	N/A	N
Fishmarket, Peterhead	Other	E 413496 N 845841	NO ₂	No	N/A	N
Bath House, Peterhead	Roadside	E 413379 N 845906	NO ₂	Y (10m)	< 5m	Y
Merchant Street 1, Peterhead	Kerbside	E 413420 N 845918	NO ₂	Y (1m)	< 5m	Y
Merchant Street 2, Peterhead	Kerbside	E 413418 N 845977	NO ₂	Y (1m)	< 5m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

The NO₂ diffusion tube monitoring data for all long term monitoring sites in 2014 is presented in Table 2.2. The NO₂ diffusion tube monitoring data for 2014 at new monitoring sites in Peterhead is presented in Table 2.3. Raw data is presented in Appendix B (p50). Long term NO₂ diffusion tube monitoring data for the previous 5 years is presented in Table 2.4, with a longer term trend chart for the data obtained from 2005 onwards period presented in Figure 2.1 (Aberdeenshire Towns excluding Peterhead) and Figure 2.2 (Peterhead).

QA:QC data in relation to NO₂ diffusion tube monitoring data is presented in Appendix C (p51-52).

Data capture is satisfactory at all sites (above 80%) except those new sites in Peterhead where monitoring began in period 5 of the national monitoring calendar. Recommendations in the generic Progress Report Template, provided on the DEFRA website¹³ state that “*Where data capture is less than 75% of a full calendar year (less than 9 months), the mean should be “annualised”*”. Consequently, the measured mean of a 6 month monitoring period (with 100% data capture) for each of the new Peterhead sites was annualised in accordance with instructions given in Box 3.2 of TG(09)¹⁴. The annualisation ratio used in these calculations is described in Appendix E (p56-57) and is based on automatic urban background sites in Aberdeen City and Dundee City. These sites were used in the absence of any automatic urban background monitoring data within the Aberdeenshire Council area. Both sites are part of the national network and have a data capture above 90%, as recommended in the guidance.

The annualised mean data for the new sites in Peterhead was subject to bias adjustment in the normal way and is presented in Table 2.3.

Of the new Peterhead sites, those at Merchant's Quay and Fishmarket, Peterhead have no nearby relevant exposure. Neither site has been distance adjusted for relevant exposure as the sites at Bath House/Merchant Street 1 represent the nearest relevant exposure to both these harbour side locations. With regard to Fishmarket, Lodge Walk and the residential flatted properties on Lodge Walk are significantly elevated from the fishmarket lorry bay and are also set back some distance from the kerb on Lodge Walk (See Appendix D, Figures D.2 and D.3 on p54-55). A distance corrected calculation was undertaken for Fishmarket (Appendix D, Figure D.1 (p53)), however it was decided that the measured value was more useful in informing future monitoring decisions. Similarly, Bath House represents nearest exposure to Merchant's Quay. The Merchant's Quay site is on the quay side approximately 5 metres from the harbours edge.

The highest recorded annual mean concentration (where there is relevant exposure) continues to be observed at site Inverurie 1. This is a kerbside location on the busy B9170 close to the junction with the B9001 where there is a traffic light system in place. The road is the main shopping street in Inverurie and the junction is important for through traffic. In addition, there is a small retail park nearby which is accessed from the B9001 junction.

The results shown in Table 2.2 and Table 2.3 show that there were no exceedances of the NO₂ annual mean objective recorded in Aberdeenshire Council area during 2014.

Analysis of the presented data does not reveal any significant trend at any individual site or across Aberdeenshire as a whole.

Table 2.2 Results of Long Term Nitrogen Dioxide Diffusion Tube Sites in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.86
Inverurie 1	West High St	Kerbside	N	N	11	34.9
Inverurie 2	Gordon House	Roadside	N	N	10	11.3
Westhill 2	Elrick Cottages	Kerbside	N	N	11	25.1
Stonehaven 1	Allardice St	Kerbside	N	N	10	23.1
Ellon 1	Bridge St	Roadside	N	N	12	23.4
Ellon 3	South Road	Roadside	N	N	10	26.9
Ellon 4	The Square	Roadside	N	N	12	22.1
Peterhead 1	Broad St	Kerbside	N	N	12	24.8
Peterhead 2	Queen St	Kerbside	N	N	12	30.0
Peterhead 3	Hay Crescent	Kerbside	N	N	12	22.4
Peterhead 4	Kirk St	Kerbside	N	N	11	25.3

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes at New Peterhead Sites in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2014 (Number of Months)	2014 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.86
N/A	Merchant's Quay	Other	N	N	8 ^a	36.8 ^a
N/A	Fishmarket	Other	N	N	8 ^a	38.0 ^a
N/A	Bath House	Roadside	N	N	8 ^a	32.2 ^a
N/A	Merchant Street 1	Kerbside	N	N	8 ^a	28.1 ^a
N/A	Merchant Street 2	Kerbside	N	N	7 ^a	28.1 ^a

^aMonitoring started in period 5. Means have been "annualised" as in Box 3.2 of TG(09)¹⁴ where full calendar year data capture is less than 75%

Table 2.4 Trend of Results from Long Term Nitrogen Dioxide Diffusion Tube Sites (2010 to 2014)

Site ID	Location	Site Type	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2010 (Bias Adjustment factor = 0.82)	2011 (Bias Adjustment factor = 0.85)	2012 (Bias Adjustment factor = 0.83)	2013 (Bias Adjustment factor = 0.83)	2014 (Bias Adjustment factor = 0.86)
Inverurie 1	West High St	Kerbside	33.6	34.8	34.9 ^a	33.1	34.9
Inverurie 2	Gordon House	Roadside	10.4	9.1	8.9	8.5	11.3
Westhill 2	Elrick Cottages	Kerbside	20.3	20.9	22.3	22.6	25.1
Stonehaven 1	Allardice St	Kerbside	26.1 ^a	22.4	23.8	21.7	23.1
Ellon 1	Bridge St	Roadside	N/A	N/A	N/A	22.6	23.4
Ellon 3	South Rd	Roadside	N/A	N/A	N/A	26.3	26.9
Ellon 4	The Square	Roadside	N/A	N/A	N/A	21.0	22.1
Peterhead 1	Broad St	Kerbside	21.7	23.3	22.1	21.5	24.8
Peterhead 2	Queen St	Kerbside	26.5	28.7	29.3	27.5	30.0
Peterhead 3	Hay Crescent	Kerbside	22.6	24.3	25.5	21.2	22.4
Peterhead 4	Kirk St	Kerbside	27.0 ^a	25.9	22.4 ^a	28.5 ^a	25.3

^a Means have been "annualised" as in Box 3.2 of TG(09)¹⁴ where full calendar year data capture is less than 75%

Figure 2.1: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites in Aberdeenshire Towns (excluding Peterhead) 2005-2014

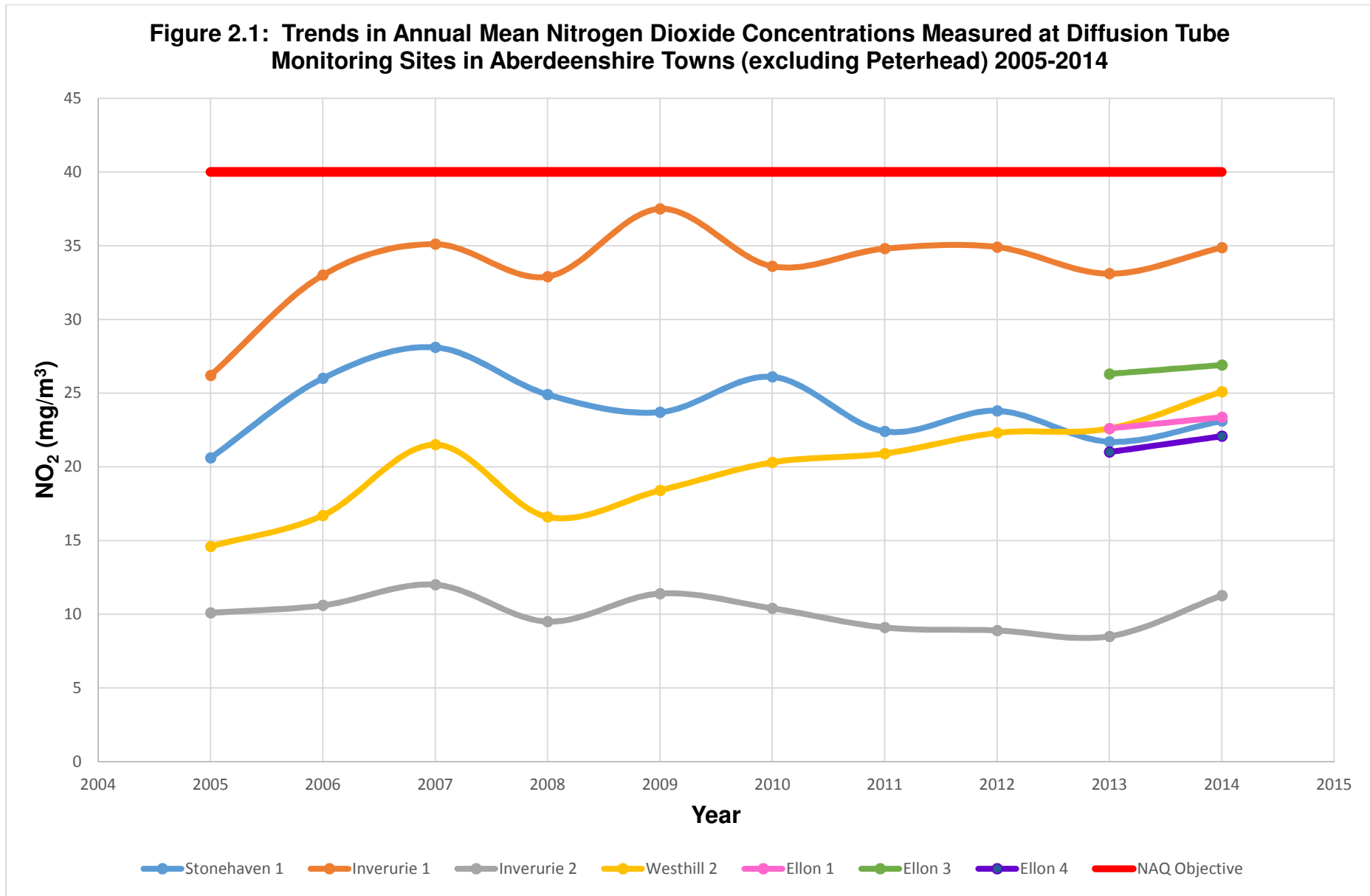
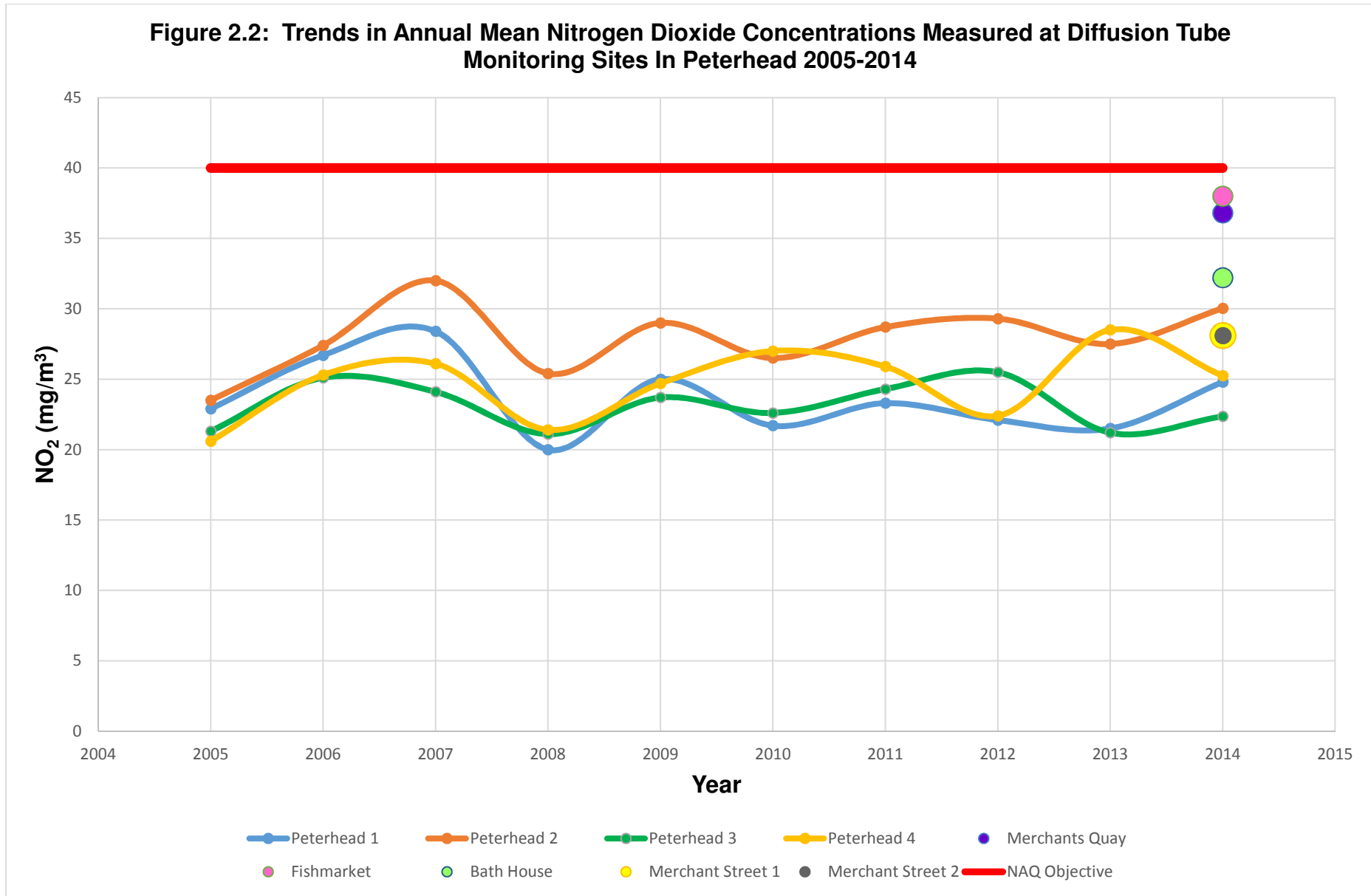


Figure 2.2: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites In Peterhead 2005-2014



2.2.2 PM₁₀

Aberdeenshire Council does not carry out any monitoring in respect of PM₁₀.

2.2.3 Sulphur Dioxide

Aberdeenshire Council does not carry out any monitoring in respect of Sulphur Dioxide.

2.2.4 Benzene

Aberdeenshire Council does not carry out any monitoring in respect of Benzene.

2.2.5 Other pollutants monitored

Aberdeenshire Council has not undertaken specific monitoring in respect of any other pollutant.

There were a total of 212 complaints logged by Aberdeenshire Council during 2013 in regard to matters relevant to air quality. The 212 complaints comprised of the following;

- 29 domestic bonfire complaints
- 7 complaints relating to activities on construction sites
- 7 complaints relating to smoke/odour from small domestic biomass plant
- 6 complaints relating to smoke/odour from domestic chimneys (fuel unknown)
- 64 complaints relating to agricultural activity
- 99 miscellaneous or unsubstantiated complaints

The majority of complaints logged in relation to agricultural activity refer to allegations of odour from one farm. A significant number of miscellaneous complaints refer to allegations of odour from local food businesses (restaurants, cafes, takeaways and manufacturers). Apart from some of these ongoing odour issues (which remain under investigation), all the above noted complaints relate to transient events, some unsubstantiated.

Aberdeenshire Council do not consider that the sources mentioned here are likely to have any significant long term effect on local air quality.

2.2.6 Summary of Compliance with AQS Objectives

Aberdeenshire Council has examined the results from monitoring in the local authority area. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

Traffic flow data for roads in Aberdeenshire in 2014 was obtained from Department for Transport (DfT)¹⁵ and from Aberdeenshire Council Transport & Infrastructure Service for years 2012-2014 (Appendix F, p58-64). Data was reviewed and assessed against the screening criteria to identify any section(s) of road that may contribute to a potential exceedance of air quality objectives.

DfT traffic flow data for 2014 was used as the most recent complete set of data available.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

An examination of traffic flow data, combined with local knowledge regarding the location of nearby residences, in accordance with Box 5.3 (A.1) of TG(09)¹⁴, suggests the following newly identified locations have a high flow of traffic travelling through narrow residential streets:

- High Street/Seafield Street/Boyndie Road, Banff
- King Street/Montrose Road, Inverbervie
- South Road/Commercial Road, Oldmeldrum

There is no traffic flow data available for High Street, Inverurie; however local knowledge suggests a relatively high flow of traffic also travels through this narrow residential street.

There is limited knowledge regarding traffic speeds or patterns in these locations. Although it is unlikely these locations would meet the definition of congested, there is no evidence to support this. Therefore, in the absence of adequate information, it is proposed to undertake a rolling programme of nitrogen dioxide diffusion tube monitoring at appropriately identified sites for a minimum period of 12 months at these newly identified locations.

Further information is required to demonstrate that road traffic sources are unlikely to contribute significantly to nitrogen dioxide emissions in narrow street locations in the centre of Banff, Inverbervie, Inverurie and Oldmeldrum where there are residential properties close to the kerb.

Aberdeenshire 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

Traffic flow data was measured against the criteria in Box 5.3, A2 of the Technical Guidance LAQM.TG(09)¹⁴. No locations were identified that meet the criteria.

Aberdeenshire 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.

Traffic flow data from the DfT¹⁵ details vehicle types using each stretch of road. This data was used to identify any roads where over 20% of the traffic consists of HDV's. No such roads were identified.

Aberdeenshire Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Sections of the trunk road network were considered previously in Updating and Screening Assessments from 2003¹, 2006⁴, 2009⁷ and 2012¹⁰. Neither volume nor mix of traffic on these sections of trunk road has increased significantly since these previous assessments. Traffic flow data was assessed against the criteria in Section A.4 of Box 5.3 of TG(09)¹⁴.

Aberdeenshire Council Transport & Infrastructure Service traffic flow data for years 2012-2014 (Table F.1-F.2, p58-64) was also examined with a view to identifying local road sections with potential to meet the criteria in Section A.4 of Box 5.3 of TG(09)¹⁴.

Aberdeenshire 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

Construction work started in spring 2015 on the Aberdeen Western Peripheral Route and the dualling of the A90 between Balmedie and Tipperty. Air quality impacts of the development of this new road development, including construction phase impacts, were described in the Environmental Statements prepared for both projects in 2007.

Detailed dispersion modelling was undertaken for each project in respect of PM₁₀ and NO₂ emissions and it was determined that concentrations at all properties would remain well within the national air quality objectives (PM₁₀ concentrations were assessed against the 2010 air quality objective of 18µg/m³).

Aberdeenshire Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Two sections of the B9119, at Westhill and West of Echt, were identified as having increases in traffic flow of 28.5% and 25.2% respectively, between the years 2012-2014. However the AADT count for both these sections is below 10 000 vehicles per day and as such does not meet the criteria for detailed assessment laid out in Section A.6 of Box 5.3 of TG(09)¹⁴.

Aberdeenshire Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

Bus and coach stations in the Aberdeenshire Council area were assessed in previous rounds of review and assessment. No new bus or coach stations have been identified.

Aberdeenshire Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

No new airports have been identified in the Aberdeenshire Council area since the last round of review and assessment. Annual throughput of passengers (fixed wing and rotary wing) and freight has not significantly increased since the previous Updating and Screening Assessment in 2012.

Table 4.1 Annual Throughput of Passengers and Cargo at Aberdeen Airport in 2014¹⁶

		Total Equivalent Passenger Number per Annum (mppa)
Passengers (Number of)	3 723 662	3.72
Cargo (Tonnes)	6278	0.06

Using correction factors provided in Box 5.4 of TG(09)¹⁴ the total equivalent passenger number per annum for Aberdeen Airport in 2014 was 3.78 mppa.

Additionally, background map data for NO_x at the nearest relevant receptor within Aberdeenshire Council area is 14.8µg/m³, well below 25µg/m³. It is not considered necessary to proceed to a Detailed Assessment for this source.

Aberdeenshire Council confirms that there are no new airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

Aberdeenshire Council has assessed the emissions from railways in the national rail network in previous rounds of review and assessment. Emissions from the 2 private railways operating in Aberdeenshire (Alford Valley Railway, Alford and The Royal Deeside Railway, Milton of Crathes, Banchory) have also been assessed during previous rounds of review and assessment.

There has been no increase in activity or significant changes to the private or national rail network.

Aberdeenshire 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.

Aberdeenshire 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)

Information relating to shipping movements was sought from Peterhead Port Authority and Fraserburgh Harbour Commissioners. The majority of shipping movements at both harbours relate to fishing vessels, which are not within the scope of the assessment detailed in Box 5.4 B3 of LAQM.TG(09)¹⁴. There is also an increasing number of movements relating to oil supply and support vessels, particularly at Peterhead harbour. These types of vessels generally burn diesel fuel rather than high sulphur bunker oils.

Although these vessel sizes and type do not fall within the scope of the assessment detailed in Box 5.4 B3 of LAQM.TG(09)¹⁴, Aberdeenshire Council has undertaken a number of new diffusion tube studies in regard to potential NO_x emissions from the diesel engines of these ship types, in response to enquiries raised by representatives of residents who live in the vicinity of Peterhead harbour regarding air quality around the harbour area. The results of these studies are presented in Chapter 2, New Monitoring Data, Table 2.3 (p16).

Aberdeenshire 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

All significant industrial processes in Scotland are regulated by the Scottish Environment Protection Agency (SEPA). Information was sought from SEPA regarding any new or significantly changed industrial processes with potential for significant emissions to air.

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

Air Quality Impact Assessments have been received during the planning process for development at the following sites, which are subject to control under the PPC

Regime:

- Bridgend, Longside (continuation of quarrying operations)
- Bodychell Quarry, Memsie, Fraserburgh (continuation of quarrying operations)
- Downiehills Farm, Blackhills, Peterhead (new aerobic digestion plant)
- Kirkmyres Sandpit, Tyrie, Fraserburgh (continuation of quarrying operations)
- Smiddyburn Quarry, Rothienorman (continuation of quarrying operations)
- Toms Forest Quarry (additional asphalt plant)

Exceedances of the air quality objectives are not predicted to arise as a result of the activities identified above.

In Progress Report 2014¹² SEPA advised that the following new PPC activities may have an impact on local air quality objectives:

- New leachate treatment activity at an existing waste water treatment plant in Peterhead (PPC/A/1103919)
- New intensive pig farming activity at Whitecairns Farm, New Deer (PPC/A/1116152)

Consequently, further information was requested from SEPA in regard to these new activities. In respect of the new leachate treatment activity at the waste water treatment plant, SEPA advised that there may be emissions of hydrogen sulphide

and ammonia from sludge handling and poorly aerated inlet sewage. Additionally, in respect of the new intensive pig farming activity, ammonia is identified as a potential pollutant. Control of these pollutants is not within the remit of the Local Air Quality Management process and therefore not included in the scope of this Updating and Screening Assessment.

Particulate emissions from the new intensive pig farming activity are described by SEPA as minimal. It is therefore concluded that these new activities do not require any further assessment with regard to the national air quality objectives at this stage.

Aberdeenshire 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

Aberdeenshire 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

A heat and power plant proposed by Puffin Energy, Boyndie Aerodrome, Boyndie, Banff was considered in the Updating and Screening Assessment 2012¹⁰. This earlier proposal utilised a feed stock of waste wood. An application has now been submitted to amend the design of the consented heat and power plant and utilise a feed stock mix of waste wood and refuse derived fuels. The application is subject to PPC regulation and SEPA have requested information in regard to emissions to air. Aberdeenshire Council will also seek the information required to undertake an assessment with regard to local air quality management as laid down in "Approach 3", Box 5.5 of TG(09)¹⁴.

Aberdeenshire Council also received a planning application for new soil, aggregate and concrete handling activities at Bankhead Refuse Transfer Station, Portlethen. Although no air quality impact assessment was submitted at the planning stage, the environmental statement considered dust impacts and provided a brief outline of any mitigation deemed necessary. The environmental statement does not consider dust to be a significant source of emissions. Dust impacts will be considered fully by SEPA in respect of any forthcoming PPC permit/licence application.

Further information is required regarding the amended heat and power plant at Boyndie Aerodrome, Banff.

Aberdeenshire Council has assessed information received to date regarding 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

One new petrol station has been identified as having an annual throughput which exceeds the threshold of 2000m³:

- Petrol Station, Asda, Huntly

The traffic flow data on nearby roads is approximately 10 000 AADT, well below the 30 000 AADT threshold identified in TG(09)¹⁴.

Aberdeenshire Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

In Progress Report 2014¹² the following new poultry units were identified that meet the criteria in Section C.4 of Box 5.5 TG(09)¹⁴:

- Lower Inchdrewer (PPC/A/1114617)
- Mains of Auchbadie (PPC/A/114003)

SEPA has now confirmed that both these poultry units house approximately 57 000 birds each and are therefore below the threshold required for detailed assessment.

Aberdeenshire Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

A number of new biomass combustion installations have been identified in chapter 3.4 of both Progress Report 2013¹¹ and Progress Report 2014¹². In addition, the installations listed in Table 6.1 have been identified since the submission of Progress Report 2014:

Table 6.1 Biomass plant identified in Aberdeenshire in 2014

Location	Biomass Type	Capacity (kW)
Palace Hotel, Peterhead	Wood pellet boiler	199
Shargerwells, Turriff	Wood chip boiler	380 (2 x 190)
ANM Group, Thainstone Centre, Inverurie	Wood chip boiler	199
Craigston Castle, Turriff	unknown	unknown
Parkside Piggery, Oldmeldrum	Wood chip boiler	720
Cordach, Kincardine O'Neil	unknown	unknown
Coynachie, Gartly, Huntly	unknown	unknown
Castle of Cromney, Aberchirder	unknown	unknown
Brooks House, Glen Tanar, Aboyne	Wood chip boiler	190
Haughhead, Laurencekirk	unknown	80
Balmekewan House, Marykirk	Wood chip boiler	199
Breda House, Alford	Wood pellet boiler	190
Kinknockie Farm, Udny, Ellon	unknown	unknown
The Stables, Thornton, Laurencekirk	Wood chip/pellet boiler	199
Grant Arms, Monymusk	Wood chip boiler	199
Proctors, Kirkton of Skene	Wood pellet boiler	100
Lythe View, Cullen	Wood chip boiler	198
Coldwells Farmhouse, Tullynessle	Wood chip boiler	70
Crathie Opportunity Holidays, Ballater	Wood pellet boiler	50
New Primary School, Uryside, Inverurie	Wood chip/pellet boiler	199
St James Place Care Home, Inverurie	Wood pellet boiler	160
Markethill Primary School, Turriff	Wood chip/pellet boiler	199
Littlewood Park, Alford	Wood chip boiler	130

Screening assessments have been undertaken for the previously identified installations and those listed in the table above. Results of the screening assessments are provided in Appendix G, p66.

The following previously identified installations have now been identified as being below the 50kW threshold for a screening assessment:

- Kincausie House, Maryculter
- Woodend, Lumphanan
- New Kendal, Keith Hall, Inverurie
- East Bandodle, Midmar
- Gallabog Croft, Largue
- House of Glack, Daviot
- Scalloway Park, Fraserburgh

An oil boiler (previously thought to be biomass plant) has been installed at Mid Deeside Church, Torphins.

It has not been possible to obtain detailed information regarding the 100kW wood pellet boiler at Deeside Activity Park. However, this biomass plant is installed at a leisure facility in rural Aberdeenshire. There are no relevant receptors nearby and consequently the national objectives do not apply.

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

6.2 Biomass Combustion – Combined Impacts

The vast majority of homes and commercial enterprises in the Aberdeenshire area use fuels other than biomass. Where there is access to mains gas, this, alongside electricity, is the predominant fuel choice. In more rural areas where mains gas is unavailable, electricity, oil and LPG are the fuel sources used. In chapter 3.4 of Progress report 2014 a breakdown of primary heating types used in Aberdeenshire

was presented. No updated information has been obtained, however the data is not expected to have changed significantly.

Biomass plant identified in this and previous reports are not located in areas of high housing density where there is likely to be significant use of solid fuel nearby. The majority of biomass installations identified are located in predominately rural areas with low density housing.

Consequently, no areas have been identified which meet the criteria listed in Section D.1b of Chapter 5, TG(09)¹⁴.

Aberdeenshire 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

As described in Chapter 6.2, predominant fuel choices for domestic properties in Aberdeenshire are mains gas, electricity, LPG and oil.

The proportion of domestic properties using solid fuel as the main heating source has been assessed in previous rounds of review and assessment, and is not expected to have changed significantly.

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

7 Fugitive or Uncontrolled Sources

There are various quarrying, extraction, landfill and waste management sites located throughout Aberdeenshire which have the potential to give rise to fugitive dust emissions. Where it has been appropriate and possible to do so, conditions have been placed on planning consents relating to such sites in order to minimise the dust emissions from these sites. Additionally, some such sites are regulated by SEPA under the PPC regime.

Analysis of complaints received by Aberdeenshire Council Environmental Health Service reveals no significant problem in regard to dust nuisance at these types of site. Additionally, there is no indication of any significant issue in regard to dust emissions from any site regulated by SEPA.

Aberdeenshire Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area that meet the specified criteria.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The diffusion tube monitoring data presented in Chapter 2 demonstrates that concentrations of NO₂ in Aberdeenshire continue to remain below the national air quality objectives.

The type and number of complaints made to Aberdeenshire Council in respect of air quality issues has been examined and the sources considered. It is unlikely that any of the sources linked to these complaints is significant in terms of the national air quality objectives.

No AQMAs have been declared in the Aberdeenshire Council area and no requirement for detailed assessment has been identified.

8.2 Conclusions from Assessment of Sources

Transport Sources

Assessment of traffic flow data (including local knowledge of traffic flow) was undertaken in respect of road transport sources. A relatively high flow of traffic through narrow residential streets was identified in the following town centres:

- Banff
- Inverbervie
- Inverurie
- Oldmeldrum

Airports, railways and ports have also been considered. None of these sources meet the criteria for detailed assessment and as such are not considered to have significant impact on national air quality objectives.

Industrial Sources

Industrial sources were considered following receipt of information from SEPA and consideration of planning applications received by Aberdeenshire Council. Further

information is required for a combined heat and power plant at Boyndie Aerodrome, Banff.

No industrial sources have been identified that are likely to have significant impact on national air quality objectives.

Commercial and Domestic Sources

Screening assessments have been undertaken for a number of identified biomass installations. There is no requirement to proceed to detailed assessment for any of the identified biomass installations. Concentrations of NO₂ and PM₁₀ arising from biomass combustion are not expected to have significant impact on national air quality objectives.

Additional information is required to complete screening assessments for several new biomass installations.

Fugitive or Uncontrolled Sources

No fugitive or uncontrolled sources of emissions likely to be significant in respect of the national air quality objectives have been identified.

8.3 Proposed Actions

There is no requirement to proceed to a detailed assessment for any pollutant at present.

Diffusion Tube Monitoring Data

An examination of the long term trend of the diffusion tube data shows that concentrations of NO₂ at some sites has remained well below the national objective for some years. At Stonehaven 1 site there has been a steady decline in observed NO₂ concentrations since 2007. It is therefore proposed to cease monitoring at this site after completion of this calendar year.

A review of diffusion tube monitoring locations in Peterhead will be undertaken. It is likely that diffusion monitoring will continue at the new Bath House location and at the new Merchant Street 1 location. It is proposed to cease monitoring at the other new

Peterhead locations (Merchant Quay, Fishmarket, and Merchant Street 2). Although Merchant Quay and Fishmarket sites are near the national air quality objective for NO₂, there is no relevant exposure at these locations and the nearest relevant exposure is better represented by the Bath House/Merchant Street 1 locations. Long term trend data for Peterhead 1 and Peterhead 3 sites also shows little potential for significant increase of NO₂ concentrations and as such, continuation of diffusion tube monitoring at these sites is likely to cease after the completion of this calendar year.

Transport Sources

There is limited knowledge regarding traffic speeds, patterns or fleet composition in the town centre locations identified at Banff, Inverbervie, Inverurie and Oldmeldrum. Although, it is unlikely these locations would meet the definition of congested, there is no evidence to support this. Consequently, it is proposed that diffusion tube monitoring will be set up at appropriate sites within in these locations by completion of Round 6 of the coming review and assessment period.

Industrial Sources

Information regarding the combined heat and power plant at Boyndie Aerodrome, Banff will be sought and a screening assessment of the potential impacts on national air quality objectives undertaken.

Commercial and Domestic Sources

Information is continuing to be sought in respect of those biomass installations where sufficient information has not yet been provided. Screening assessments will be completed, and reported, in due course following receipt of the required information.

Aberdeenshire Council intends to submit a Progress Report in 2016.

9 References

- 1 Aberdeenshire Council, *Air Quality Updating and Screening Assessment for Aberdeenshire Council 2003 for Aberdeenshire Council*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, July 2003
- 2 Aberdeenshire Council, *Local Air Quality Management Progress Report 2004*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, April 2004
- 3 Aberdeenshire Council, *Local Air Quality Management Progress Report 2005*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, April 2005
- 4 Aberdeenshire Council, *Air Quality Updating and Screening Assessment 2006 for Aberdeenshire Council*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, August 2006
- 5 Aberdeenshire Council, *Local Air Quality Management Progress Report 2007*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, April 2007
- 6 Aberdeenshire Council, *Local Air Quality Management Progress Report 2008*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, April 2008
- 7 Aberdeenshire Council, *Air Quality Updating and Screening Assessment 2009 for Aberdeenshire Council*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, July 2009
- 8 Aberdeenshire Council, *Local Air Quality Management Progress Report 2010*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, July 2010
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- 13 Department for Environment, Food and Rural Affairs: London, *Local Air Quality Management Support, Report Templates*, available at <http://laqm.defra.gov.uk/review-and-assessment/report-templates.html>, April 2015

- 14 Department for Environment, Food and Rural Affairs: London, *Local Air Quality Management Technical Guidance LAQM.TG(09)* (PB13215 February 2009)
- 15 Department for Transport, Transport Statistics, *Traffic Counts Aberdeenshire*, available at <http://www.dft.gov.uk/trafficcounts/area.php?region=Scotland&la=Aberdeenshire>, as viewed April 2015
- 16 CAA, UK Airport Statistics, available at <http://www.caa.co.uk/default.aspx?catid=80&pagetype=88&pageid=3&sglid=3>, as viewed June 2015

Appendices

- Appendix A: Maps of Non-Automatic Monitoring Sites**
- Appendix B: Diffusion Tube Raw Data**
- Appendix C: Quality Assurance / Quality Control (QA/QC) Data**
- Appendix D: Fishmarket (Peterhead) Site Information**
- Appendix E: Short to Long Term Data Adjustment**
- Appendix F: Traffic Flow Data**
- Appendix G: Biomass Screening Assessments**

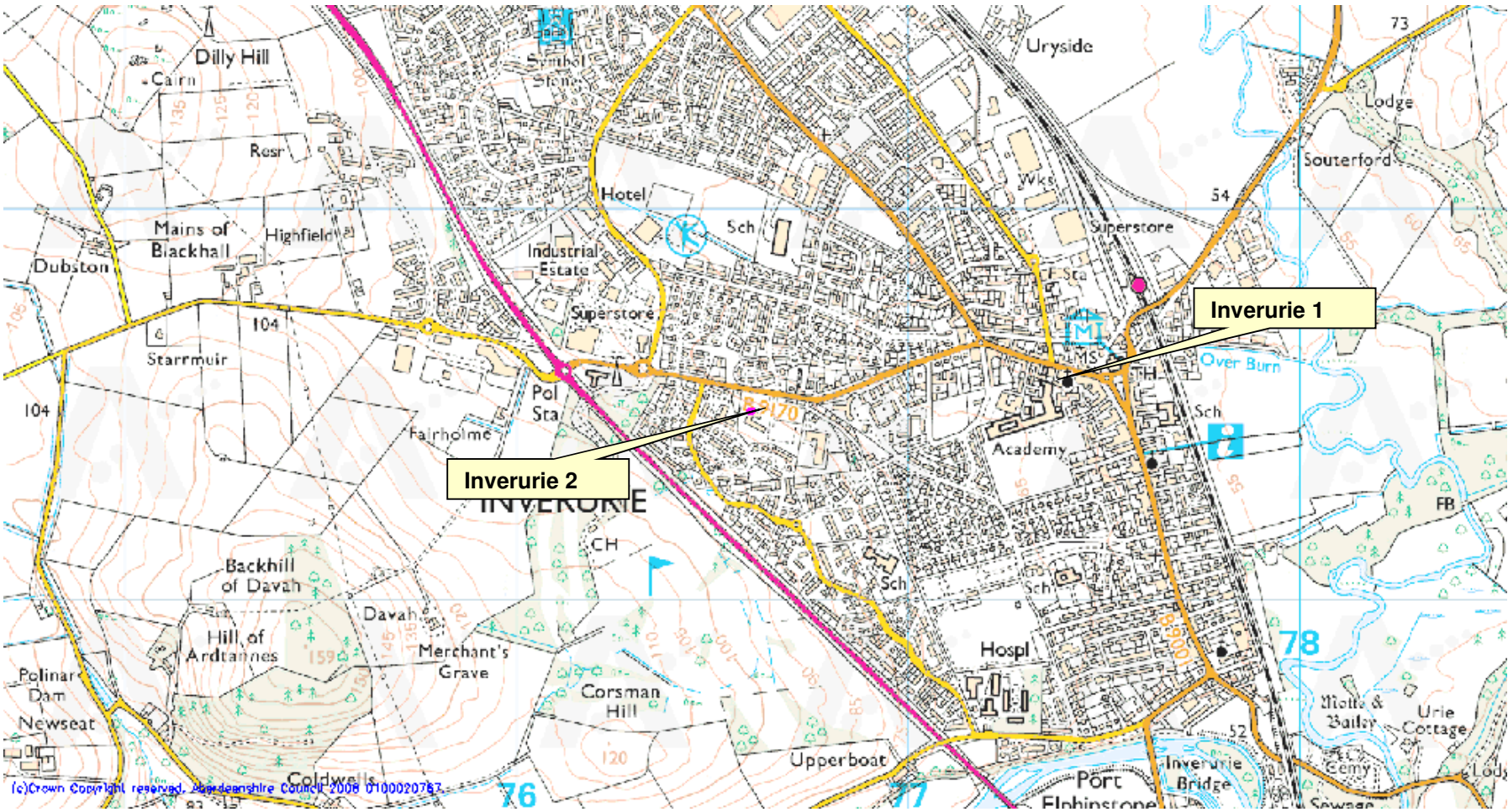
Appendix A: Maps of Non-Automatic Monitoring Sites

- Map A.1** **Settlements in Aberdeenshire where NO₂ Diffusion Tube Monitoring was undertaken during 2014**
- Map A.2** **Location of NO₂ Diffusion Tube Sites (Inverurie)**
- Map A.3** **Location of NO₂ Diffusion Tube Sites (Peterhead)**
- Map A.4** **Location of new NO₂ Diffusion Tubes Sites (Peterhead)**
- Map A.5** **Location of NO₂ Diffusion Tube Sites (Stonehaven)**
- Map A.6** **Location of NO₂ Diffusion Tube Sites (Westhill)**
- Map A.7** **Location of NO₂ Diffusion Tube Sites (Ellon)**

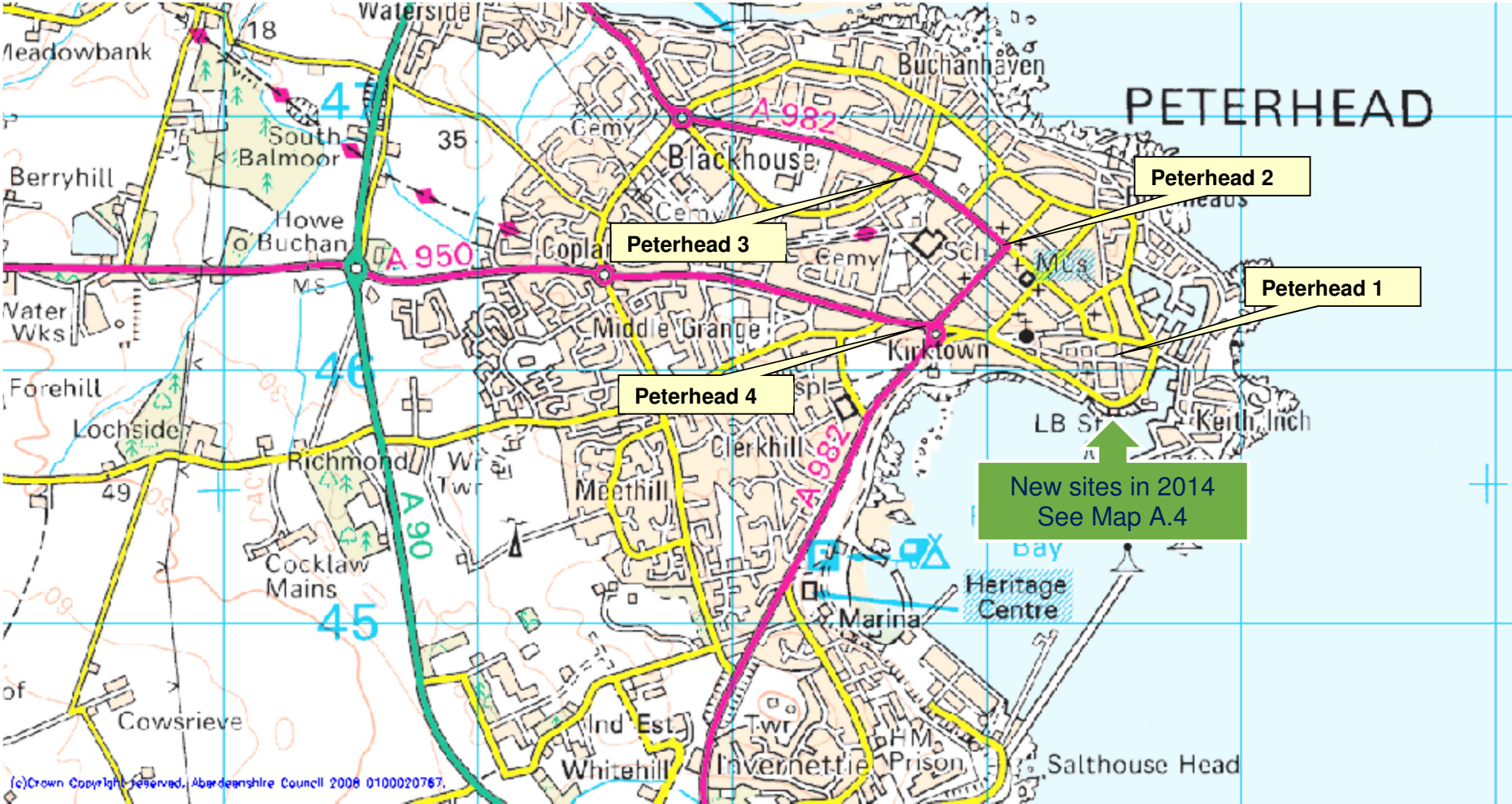
Map A.1 Settlements in Aberdeenshire where NO₂ Diffusion Tube Monitoring was undertaken during 2014



Map A.2 Location of NO₂ Diffusion Tube Sites (Inverurie)

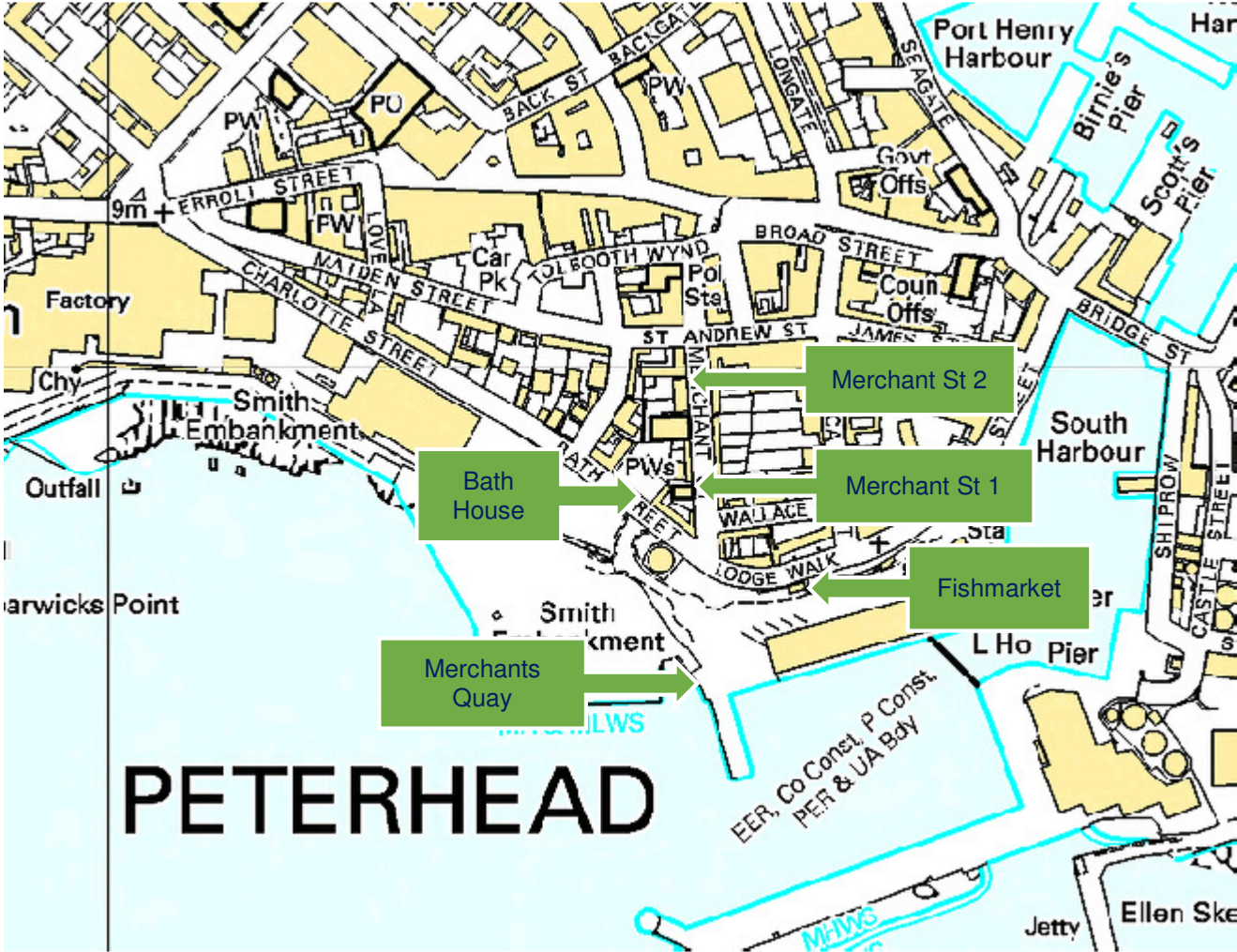


Map A.3 Location of NO₂ Diffusion Tube Sites (Peterhead) (excluding new sites in 2014)

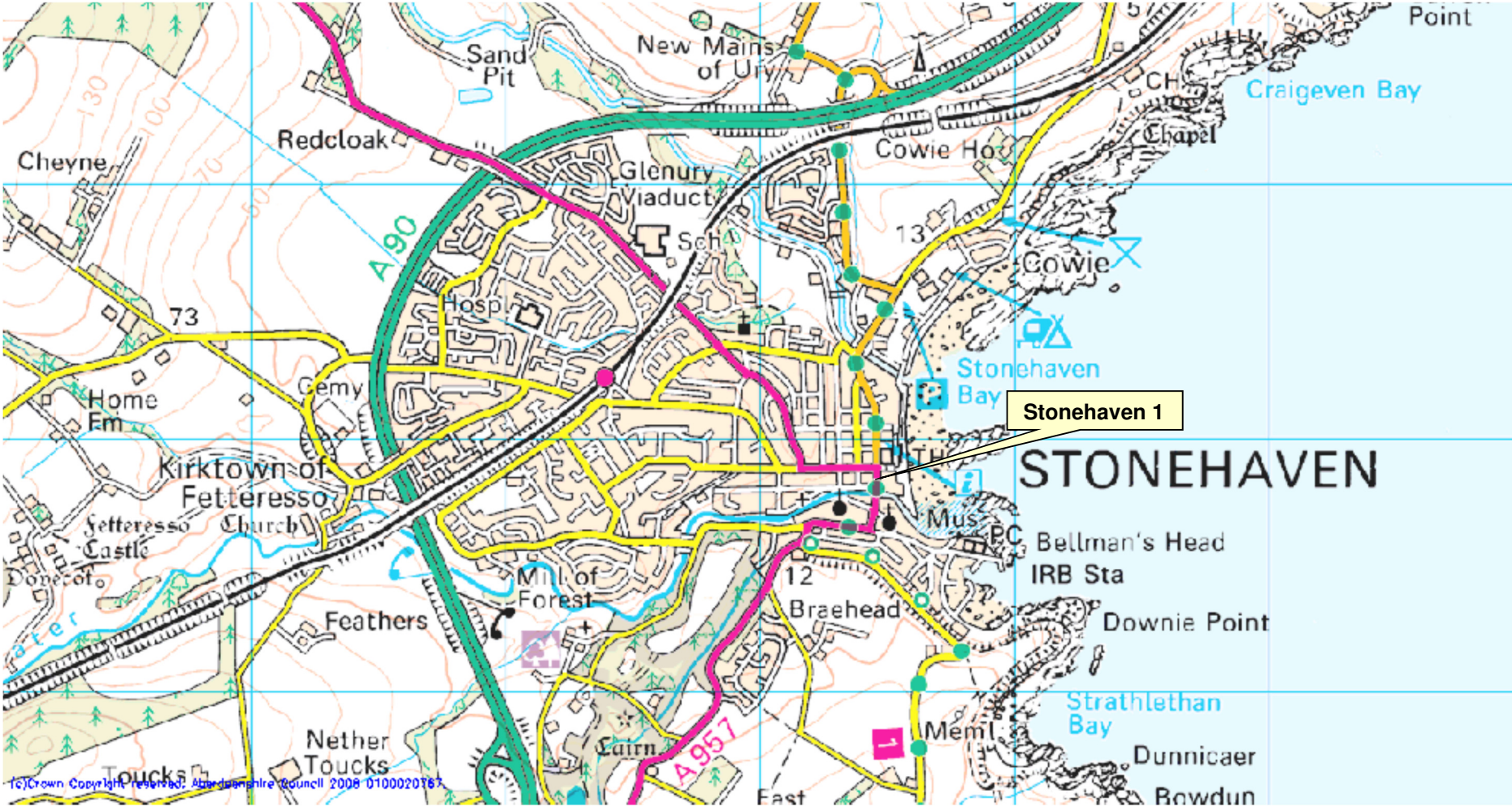


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Map A.4 Location of new NO₂ Diffusion Tubes Sites (Peterhead)

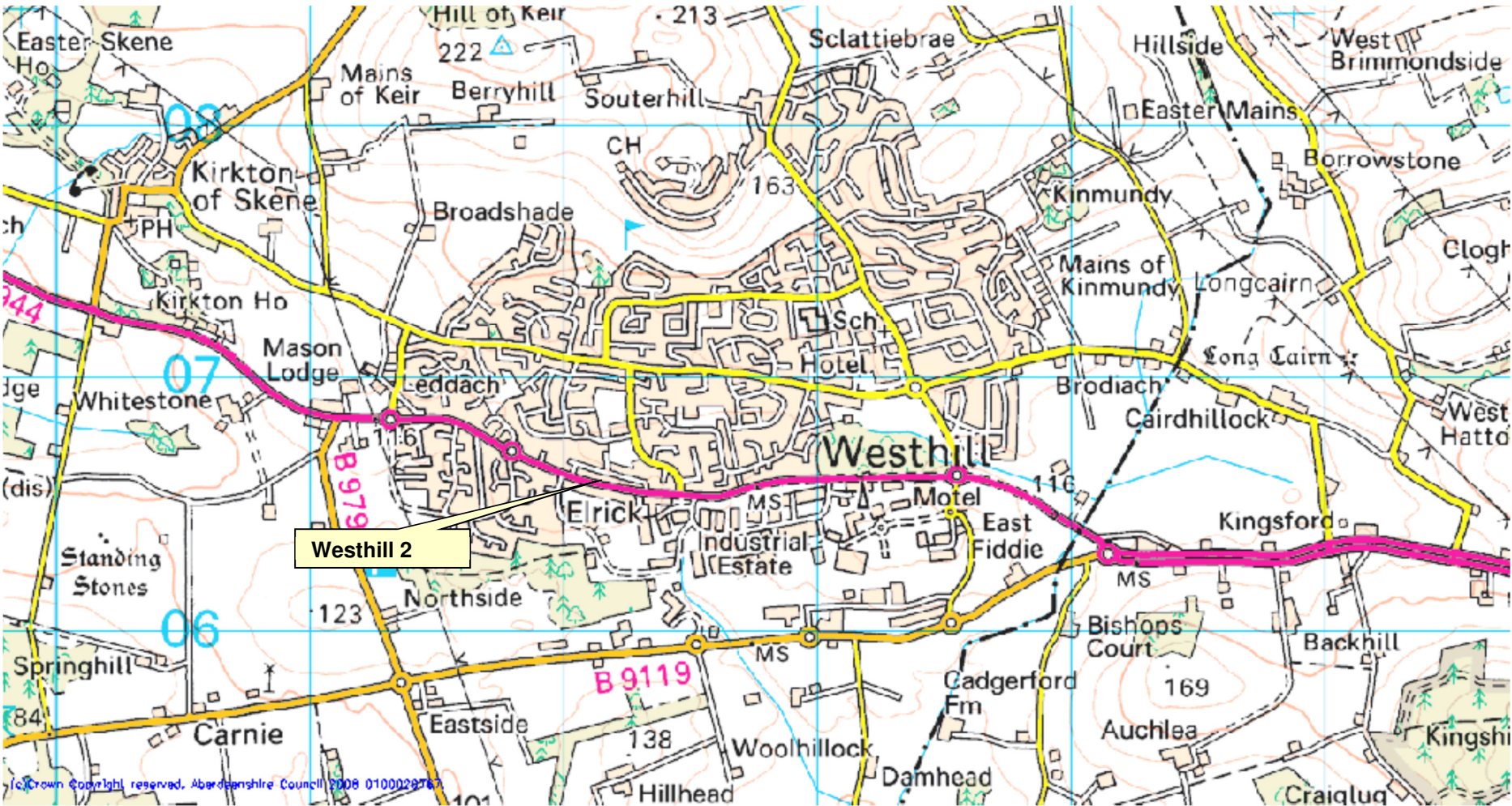


Map A.5 Location of NO₂ Diffusion Tube Sites (Stonehaven)

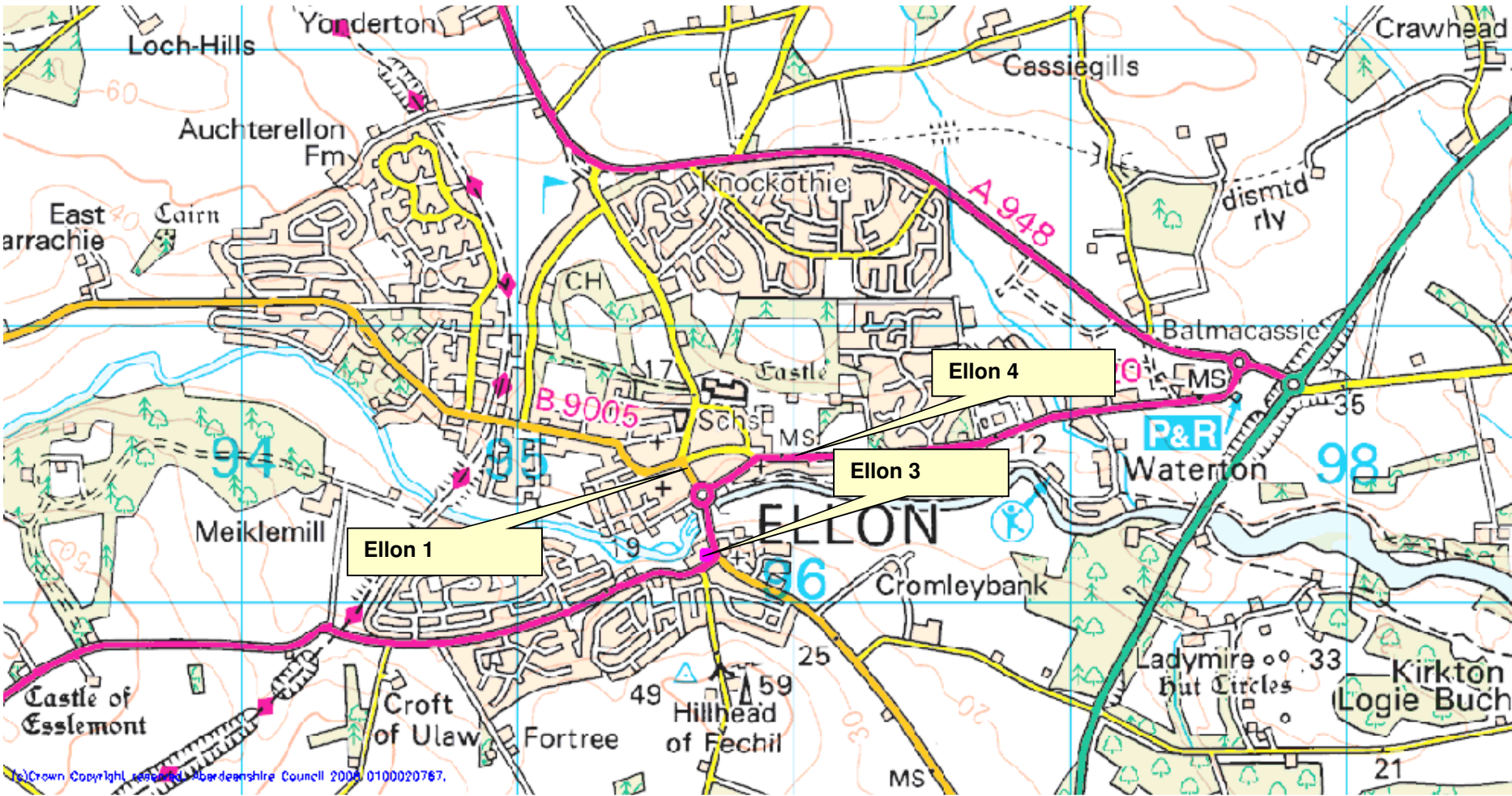


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Map A.6 Location of NO₂ Diffusion Tube Sites (Westhill)



Map A.7 Location of NO₂ Diffusion Tube Sites (Ellon)



Appendix B: Diffusion Tube Raw Data

Table B.1: Raw Nitrogen Dioxide Diffusion Tube Data from Periods 1-12 in Year 2014

Site ID	Period (2014)											
	1	2	3	4	5	6	7	8	9	10	11	12
Inverurie 1	49	N/A	44	37	36	29	31	32	41	40	51	56
Inverurie 2	16	13	13	10	N/A	N/A	8	9	12	11	21	18
Westhill 2	35	29	27	32	N/A	26	25	22	32	25	41	27
Stonehaven 1	25	23	N/A	N/A	33	33	30	18	31	21	29	26
Ellon 1	32	31	27	24	26	21	22	23	31	26	30	33
Ellon 3	36	37	31	27	N/A	28	24	27	33	28	42	N/A
Ellon 4	27	33	27	24	25	20	18	20	29	24	31	30
Peterhead 1	30	30	28	32	23	23	34	22	36	28	30	30
Peterhead 2	33	35	39	34	32	30	41	31	38	34	41	31
Peterhead 3	25	29	26	28	24	20	25	23	31	24	29	28
Peterhead 4	N/A	30	27	31	25	22	29	25	35	28	37	34
Merchant's Quay	N/A	N/A	N/A	N/A	35	39	48	36	44	48	47	29
Fishmarket	N/A	N/A	N/A	N/A	35	35	41	32	58	48	43	38
Bath House	N/A	N/A	N/A	N/A	35	32	43	29	48	35	38	27
Merchant St 1	N/A	N/A	N/A	N/A	27	28	39	27	44	29	29	24
Merchant St 2	N/A	N/A	N/A	N/A	24	N/A	36	26	42	30	32	26

Appendix C: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Laboratory analysis of passive diffusion tubes used by Aberdeenshire Council is undertaken by Aberdeen Scientific Services (Aberdeen City Council). Aberdeen Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis. The laboratory prepares the diffusion tubes using the 20% triethanolamine (TEA) in water method.

The 2014 bias adjustment factor for Aberdeen Scientific Services was obtained from the National Diffusion Tube Bias Adjustment Spreadsheet, version 06/15 (available at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>) and is presented in Table C.1.

QA/QC of Diffusion Tube Monitoring

The National Diffusion Tube Bias Adjustment Spreadsheet, version 06/15 (Table C.1) presents Tube Precision for Aberdeen Scientific Services as **GOOD**.

Aberdeen Scientific Services (Aberdeen City Council) participates in the WASP and AIR NO₂ PT schemes, and with the exception of WASP R124 (which achieved a rating of 75% SATISFACTORY) have **100% SATISFACTORY** score during 2014 (AIR PT AR001-AR004 inclusive). The 75% rating for WASP R124 is not thought to be significant to the conclusions of this Updating and Screening Report.

Table C.1 Details of 2014 Bias Adjustment Factors for Aberdeen Scientific Services (Aberdeen City Council)

National Diffusion Tube Bias Adjustment Factor Spreadsheet								Spreadsheet Version Number: 06/15		
Analysed By ¹	Method To undo your selection, choose (All) from the pop-up list	Year ⁵ To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$)	Bias (B)	Tube Precision ⁶	Bias Adjustment Factor (A) (Cm/Dm)
Aberdeen Scientific Services	20% TEA in water	2014	KS	Marylebone Road Intercomparison	12	107	80	32.9%	G	0.75
Aberdeen Scientific Services	20% TEA in water	2014	UB	Aberdeen City Council	12	28	21	30.3%	G	0.77
Aberdeen Scientific Services	20% TEA in water	2014	R	Aberdeen City Council	13	51	40	29.0%	G	0.78
Aberdeen Scientific Services	20% TEA in water	2014	R	Aberdeen City Council	10	53	47	12.2%	G	0.89
Aberdeen Scientific Services	20% TEA in water	2014	R	Aberdeen City Council	11	18	25	-27.5%	G	1.38
Aberdeen Scientific Services	20% TEA in water	2014	R	Aberdeen City Council	13	33	27	22.4%	G	0.82
Aberdeen Scientific Services	20% TEA in water	2014	R	Aberdeen City Council	12	55	45	20.1%	G	0.83
Aberdeen Scientific Services	20% TEA in water	2014		Overall Factor³ (7 studies)				Use		0.86


Factor from Local Co-location Studies (if available)

Aberdeenshire Council does not undertake any co-location studies.

Appendix D: Fishmarket (Peterhead) Site Information

Figure D.1 Distance Corrected NO₂ Concentrations at Lodge Walk

This calculator allows you to predict the annual mean NO₂ concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.



Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	19	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	(Note 2)	8.38	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	(Note 2)	38	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	(Note 3)	20.4	µg/m ³

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at <http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm> for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Mamer; Approved by Prof Duncan Laxen. Contact: benmamer@aqconsultants.co.uk

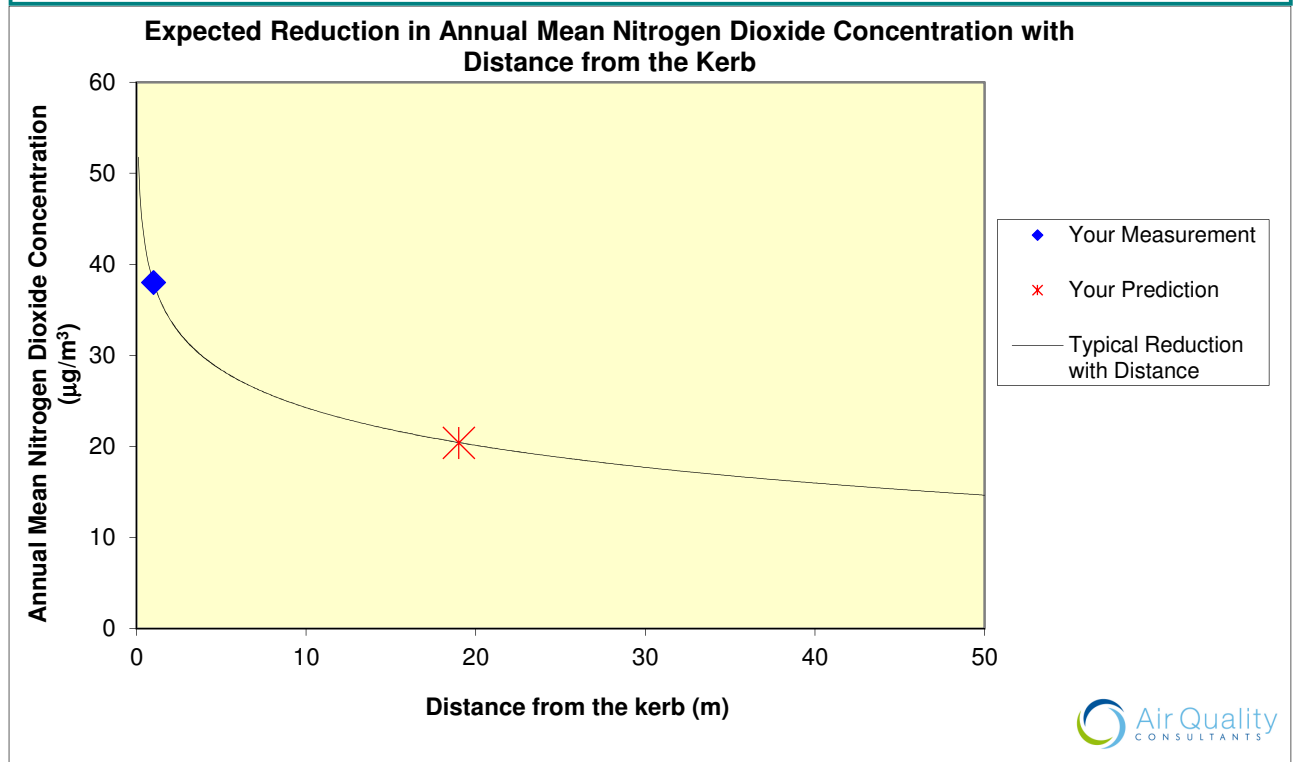


Figure D.2 Fishmarket: View toward Lodge Walk



Figure D.3 Fishmarket: View toward lorry bay at fishmarket



Appendix E: Short to Long Term Data Adjustments

Monitoring commenced at 5 new sites in Peterhead during period 5 of the national diffusion tube calendar. Consequently a full calendar year of data was not obtained at these sites and as such, the available data was subject to annualisation as per the instructions given in Box 3.2 of TG(09)¹⁴.

Sites chosen to obtain the annualisation ratio are detailed in Table E.1, below. The data period chosen to obtain the ratio was a 6 month period from July-December to most closely match the data collected. The data capture at both Aberdeen Errol Place and Dundee Mains Loan for 2014 was above 90% (94% and 93% respectively)

Table E.1 Annualisation Ratio Data For New Peterhead Sites: (July-Dec 2014)

Site	Site Type	Annual Mean $\mu\text{g}/\text{m}^3$	Period Mean $\mu\text{g}/\text{m}^3$	Ratio (AM/PM)
Aberdeen Errol Place	Urban Background	22	23	0.957
Dundee Mains Loan	Urban Background	13	12	1.083
			Average	1.020

Table E.2 Calculation of Annualised Bias Adjusted Mean from Measured Period (July-Dec) for New Peterhead Sites

Site	Measured Period Total	No of Months in Period	Measured Period Mean (Measured Period Total / Number of Months)	Estimated Annual Mean (Measured Period Mean x Average Annualisation Ratio)	Bias Adjusted Mean (Estimated Annual Mean x Bias Adjustment Factor (0.86))
Merchants Quay	252	6	42.0	42.8	36.8
Fishmarket	260	6	43.3	44.2	38.0
Bath House	220	6	36.7	37.4	32.2
Merchant Street 1	192	6	32.0	32.6	28.1
Merchant Street 2	192	6	32.0	32.6	28.1

Appendix F: Traffic Flow Data

Table F.1 Local Authority Traffic Flow Data (Permanent Surveys)

I.D	Route	Location	OSGR	2012 AADF, 7 Day 24Hr	2013 AADF, 7 Day 24Hr	2014 AADF, 7 Day 24Hr	Percentage Change (2012- 2014)	Percentage Change (2013- 2014)
1	B9077	SOUTH DEESIDE RD	390460E 802375N	5152	6394	5661	9.88%	-11.46%
2	A98	E.OF BYTH	383335E 856725N	2912	3005	3158	8.45%	5.09%
3	A948	N.OF ELLON	394080E 834290N	2701	2863	3016	11.66%	5.34%
4	A947	N.OF FYVIE	375085E 842020N	5057	5021	5138	1.60%	2.33%
5	B9170	N.OF INVERURIE	377830E 822975N	10015	9923	10411	3.95%	4.92%
6	A981	S.OF MEMSIE	396720E 861720N	1666	1753	1863	11.82%	6.27%
7	B979	NETHERLEY RD	385005E 795225N	3656	3933	4151	13.54%	5.54%
8	A947	S.OF NEWMACHAR	389050E 818520N	10436	10487	10200	-2.26%	-2.74%
9	A920	E.OF OLDMELDRUM	384760E 826995N	3652	3586	4059	11.14%	13.19%
10	A93	W.OF PETERCULTER	380845E 800250N	4958	5376	5423	9.38%	0.87%

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11	A950	W.OF PETERHEAD	409785E 846365N	6562	6635	6785	3.40%	2.26%
12	B9001	N.OF INVERURIE, ROT	373645E 829055N	6026	6321	6671	10.70%	5.54%
13	A92	S.OF STONEHAVEN	386575E 784145N	5721	5921	5624	-1.70%	-5.02%
14	A98	TYRIE	392470E 862575N	2317	2430	2528	9.11%	4.03%
15	A93	E.OF BANCHORY	372650E 79635N	7641	7825	7966	4.25%	1.80%
16	A93	W.OF BANCHORY	367500E 796400N	4078	4093	4136	1.42%	1.05%
17	A93	ABOYNE	353655E 799250N	4844	5497	4986	2.93%	-9.30%
18	A97	N.E.OF HUNTLY	356550E 841450N	2161	2048	2080	-3.75%	1.56%
19	A948	AUCHREDDIE RD.N.DEER	389000E 846750N	1182	1158	1187	0.42%	2.50%
20	B994	N.OF KINTORE	378900E 816850N	3983	4019	3995	0.30%	-0.60%
21	A97	Aberchirder	362783E 852431N	1482	1426	1515	2.23%	6.24%
22	A944	Westhill	384007E 806430N	20560	20716	N/A		
23	A947	Straloch N. of Newmachar	386956E 821860N	7722	8010	N/A		
24	A947	King Edward	371619E 860398N	3616	3622	3718	2.82%	2.65%

25	A947	Tulloch N. of Oldmeldrum	379516E 860398N	5664	5736	5932	4.73%	3.42%
26	A947	N. of Turriff	373480E 854840N	3419	3641	3725	8.95%	2.31%
27	B9119	Westhill	383633E 806162N	5482	8406	7046	28.53%	-16.18%
28	B9119	W. of Echt	369720E 806080N	1429	1487	1789	25.19%	20.31%
29	B977	Redmoss	396680E 819480N	4251	4208	4109	-3.34%	-2.35%
30	A957	Slug Road	377440E 791600N		1504	1560		3.72%
31		Stonehaven Bervie Braes	387584E 785330N		312	295		-5.45%
32	B979	Carnie Crossroads	383401E 806040N		7459	6767		-9.28%
33	Prospect Road	Westhill	383601E 806316N	4768	4934	4983	4.51%	0.99%
34	South Road	Peterhead	412367E 845402N	11274	10945	11666	3.48%	6.59%

 Subject to Lengthy Roadworks

Table F.2 Local Authority Traffic Flow Data (Temporary Surveys)

Area	Route	Location	OSGR	Survey Start Date	12 hour 2 way flow	AADT
Marr	A93	Aboyne Academy		20/01/2015	2498	3311
Garioch	B979	Hatton of Fintry Primary		05/02/2015	1678	1963
Formartine	B9001	Rothienorman		05/02/2015	2174	2533
Garioch	Mill Road	Inverurie		06/02/2015	221	259
Garioch	C67C	Kinmuck		13/02/2015	877	1026
Kincardine and Mearns	A92	Inverbervie King Street		06/03/2015	4428	5753
Kincardine and Mearns	A92	Inverbervie Montrose Road		06/03/2015	4768	6196
Garioch	B979	Kirkton of Skene (Carpenters Close)		27/02/2015	1218	1535
Kincardine and Mearns	B9077	Old Mill Inn		20/02/2015	5953	7254
Garioch	B9119	East of Garlogie		27/02/2015	6381	8042
Kincardine and Mearns		South of Banchory Devenick School		12/03/2015	680	883
Garioch	U135C	Skene		07/03/2015	459	579
Garioch		Westhill Drive @ Hillside Crescent		10/03/2015	4022	5069
Kincardine and Mearns	A92	south of Inverberive		28/03/2014	3991	5185
Kincardine and Mearns	A937	north of St Cyrus Junction		13/05/2014	2771	3070
Kincardine and Mearns	A937	south of St Cyrus Junction		13/05/2014	2606	2887

Kincardine and Mearns	A937	North of Marykirk		13/05/2014	2630	2914
Garioch	A944	West of Lyne of Skene Crossroads		31/07/2014	4708	5132
Garioch	A944	West of Kirkton of Skene Crossroads		31/07/2014	6611	7207
Garioch	A944	East of Kirkton of Skene Crossroads		31/07/2014	5948	6484
Garioch	A944	Mason Lodge		17/09/2014	6987	7511
Formartine	A948	Ellon Bypass		21/02/2014	2940	3426
Marr	A957	Crathes		25/09/2014	3481	3686
Garioch	B977	Manse, Echt		24/07/2014	1632	1779
Garioch	B977	Parkhill Garden Centre		17/10/2014	4102	4645
Garioch	B977	Corsehill Lodge		17/10/2014	6301	7135
Marr	B977	East of Raemoir Lodge		11/09/2014	5274	5585
Garioch	B977	South of Echt		09/09/2014	1989	2138
Garioch	B993	west of Keithhall		02/12/2014	1869	2460
Garioch	B993	Keithhall		02/12/2014	1762	2319
Marr	B993	Tillyfourie		07/11/2014	1992	2273
Formartine	B999	Pitmedden		03/03/2014	2882	3600
Formartine	B999	Brain's Park, Tarves			1064	1145
Garioch	B9001	Drum of Wartle		21/02/2014	4557	5332
Marr	B9077	west of Ballater		25/09/2014	311	329
Garioch	B9119	Echt Primary School, Echt		24/07/2014	1632	1779
Garioch	B9119	Garlogie Inn, Garlogie		09/09/2014	6974	7497
Garioch	B9170	Inverurie Gateway		24/06/2014	6979	7697
Garioch		Bourtie Road		24/06/2014	461	508
Formartine	B9170	Methlick		21/02/2014	1709	1991
Garioch		Westhill Drive @ Blacklaws Brae		09/09/2014	4133	4443
		Brodiach Road, Aberdeen City		09/04/2014	1235	1408

Garioch		Brodiach Road, Westhill		09/04/2014	1242	1415
Kincardine and Mearns		Burnside Road, Fettercairn		26/02/2014	754	918
Formartine		Commercial Road, Old Meldrum		03/10/2014	5346	6045
Garioch		Corseduick Road, Newmachar		22/11/2014	387	477
Kincardine and Mearns		Edzell Woods		06/08/2014	642	666
Kincardine and Mearns		Edzell Woods		06/08/2014	803	833
Marr		Main Castle Entrance, Huntly		01/04/2014	851	1097
Marr		Seton Terrace, Huntly		13/03/2014	105	136
Garioch		Jackson Street, Inverurie		16/09/2014	441	474
Garioch		Midmar Primary School, Midmar		28/10/2014	193	218
Garioch	B997	Parkhill Garden Centre Crossroads		02/12/2014	6605	8694
Garioch	C22	Parkhill Garden Centre Crossroads		02/12/2014	1896	2496
Kincardine and Mearns		Town Head, Inverbervie		28/03/2014	562	731
Marr		West Park Road, Huntly		13/03/2014	1139	1470
Marr		Main Castle Road, Huntly		01/04/2014	1780	2297
Kincardine and Mearns		West Cairnbeg Entrance		11/07/2014	115	122
Kincardine and Mearns		West Cairnbeg		11/07/2014	49	52
Formartine	A947	South Road, Old Meldrum		13/12/2013	7881	10352
Formartine	A975	Kiplaw Croft		26/09/2013	1262	1427
Garioch	B979	Kinellar Primary, Blackburn		05/10/2013	4262	4827
Garioch	B993	Kemnay Golf Course, Kemnay		22/10/2013	3459	3917
Formartine	B999	Braikley Park, Tarves		11/09/2013	1064	1145
Formartine	B999	North Lodge, Pitmedden		31/10/2013	2706	3059

Garioch		Beechwood Gardens, Westhill		10/09/2013	135	145
Garioch		Boar's Head, Kinmuck		07/09/2013	1327	1426
Garioch		Burnherve		26/07/2013	431	469
Garioch		Canmore, Kingseat		26/07/2013	433	472
Formartine	A920	Commercial Road, Old Meldrum		13/12/2013	5793	7625
Kincardine & Mearns		Egglescraig, St Cyrus		14/08/2013	250	259
Garioch		Endeavour Drive, Westhill		23/09/2013	10754	11560
Garioch		Forest Road (Town Centre), Kintore		23/09/2013	2123	2282
Garioch		Forest Road (A90 overbridge), Kintore		23/09/2013	827	889
Garioch		Glasgow Forest Road @ Old School		07/10/2013	296	335
Garioch		Glasgow Forest Road @ GC		07/10/2013	628	712
Garioch		Hays Way, Westhill		25/10/2013	1871	2119
Garioch		(west gateway) Meikle Wartle		13/08/2013	80	87
Garioch		(east gateway) Meikle Wartle		13/08/2013	220	240
Garioch		Old Skene Road, Westhill		27/07/2013	1690	1842
Garioch		Strathburn Road, Inverurie		07/10/2013	804	910
Garioch		Westhill Drive @ Blacklaw Braes		31/10/2013	4084	5038
Garioch		Westhill Drive @ Denman Park		25/10/2013	11765	13323
Garioch		Whiteford @ bridge		12/11/2013	211	261

Table F.3 DfT Traffic Flow Data

Road	Easting	Northing	AllMotorVehicles
A90	393000	799790	43861
A90	390000	792800	29803
A90	380000	780650	25280
A90	385940	785000	23572
A96	377600	820000	18270
A96	380400	813200	17919
A90	370300	770000	17517
A90	372000	770900	17056
A90	397160	822800	16637
A947	388980	814250	16299
A90	366500	767280	16163
A90	396340	818200	15513
A90	368000	768450	14608
A90	400000	833910	11428
A98	369200	863730	10739
A982	412140	845000	10515
A90	397280	830000	9888
A98	368500	864200	9861
A96	354000	839200	9848
A96	378100	818190	9622
A948	397709	830839	8968
A98	368870	864000	8877
A947	381800	827100	8859
A90	411400	840000	8581
A950	411000	846360	8344
A96	370000	825650	8338
A96	353000	839260	8110
A98	370000	864300	8092
A96	351800	840000	8054
A98	399000	867150	8016
A93	373400	796180	7982
A96	363300	834360	7944
A90	400000	862160	7706
A90	404600	836200	7698
A957	387440	785700	7597
A920	396000	830525	7542
A950	410000	846370	7486
A950	412250	846280	7453
A96	369200	825900	7329
A96	348500	844500	7159
A982	412000	846950	7028
A90	399750	866000	7007
A98	367800	864370	6982
A90	399700	866700	6866
A982	411270	847750	6395
A947	385300	823700	6099
A980	369500	798000	6081
A90	411000	844350	5987
A98	359000	865950	5857
A947	374800	845800	5692
A90	409800	852140	5409
A97	352540	839500	5279
A952	401470	837300	5254

Appendix G Biomass Screening Assessments

Site	Stack height (m)	Stack diameter (m)	Combustion appliance	Thermal Capacity (kW)	Nearest building height (m)	Effective stack height (m)	Estimated emissions (g/s)		Background concentration (ug/m3)		Threshold emission rate (g/s)			Background adjusted emissions (g/s)		
							PM ₁₀	NO ₂	PM ₁₀	NO ₂	PM ₁₀	NO _{2 am}	NO _{2 1-hr}	PM ₁₀	NO _{2 am}	NO _{2 1-hr}
Care Home, Stonehaven	12	0.20	Wood pellet boiler	300	7.0	8.0	0.0091	0.0376	9.4	6.9	0.0749	0.2638	0.3128	0.0004	0.0012	0.0083
Whitehill, New Deer	N/A	N/A	Wood chip boiler	950	N/A											
Tarves Football Club, Tarves	7.2	0.25	Wood pellet boiler	199	3.5	5.9	0.0017	0.0148	13.4	3.8	0.0020	0.0060	0.0250	0.0001	0.0004	0.0031
Inverenan House	5.7	0.30	Wood chip boiler	164	3.6	3.5	0.0049	0.0168	7.2	2.0	0.0484	0.1695	0.2044	0.0002	0.0005	0.0035
Altdourie Home Farm	6.0	0.15	Wood pellet boiler	70	5.0	1.7	0.0008	0.0075	7.0	1.9	0.00218	0.0752	0.0892	0.0000	0.0002	0.0015
Douneside House, Tarland	8.5	0.25	Wood chip boilers	390 (2 x 195)	7.0	2.5	0.0034	0.0278	9.6	2.3	0.0272	0.1221	0.1475	0.0002	0.0007	0.0057
Castleton Farm, Fordoun	6.0	0.20	Wood pellet boiler	70	3.5	4.1	0.0008	0.0056	13.6	5.3	0.0196	0.1544	0.1798	0.0000	0.0002	0.0012
Pitmurchie House, Aboyne	7.7	0.15	Wood pellet boilers	180 (3 x 60)	6.2	2.4	0.0024	0.0180	10.0	2.7	0.0219	0.1020	0.1087	0.0001	0.0005	0.0037
Thistleycrook, Torphins	7.5	0.25	Wood chip boiler	80	6.5	1.66	0.0015	0.0094	9.8	3.5	0.0180	0.0800	0.1063	0.0001	0.0003	0.0019
Lodge on the Loch, Aboyne			Wood chip boiler	50												
Mains of Schivas, Ythanbank	5.8	0.25	Wood chip boiler	195	3.5	3.8	0.0019	0.0129	13.78	2.68	0.0188	0.1667	0.1942	0.0001	0.0003	0.0027
Peterhead Academy, Peterhead																
Linnorie House, Huntly	6	0.20	Wood log boiler	60	4.5	2.5	0.0008	0.0063	10.58	8.0	0.0224	0.0965	0.1254	0.0000	0.0002	0.0014
Aberdeen Arms, Tarland																
Kemnay Academy, Kemnay																
HMP YOI Grampian, Peterhead	19	0.50	Wood pellet boiler	975	8	18.3	0.0210	0.986	11.04	15.0	0.3026	1.0868	1.4103	0.0010	0.0039	0.0232

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Scottish Sculpture Workshop, Lumsden	6	0.18	Wood pellet boiler	100	5	1.66	0.0004	0.0076	8.9	2.4	0.0009	0.0025	0.0080	0.0000	0.0002	0.0016
Westfield School, Fraserburgh																
Sandhaven and Pittulie Hall, Fraserburgh																
Fordoun Sawmill, Fordoun																
Midmill Primary, Kintore	13.0	0.25	Wood pellet/briquette boiler	199	10.5	4.15	0.0023	0.0149	11.54	8.84	0.0308	0.1487	0.1933	0.0001	0.0005	0.0033
Mar Lodge, Braemar	10.1	0.35	Wood chip boiler	700 (2 X 350)	6.9	5.3	0.0053	0.0457	6.93	2.70	0.0749	0.2523	0.3140	0.0002	0.0012	0.0093
Maryculter House Hotel, Maryculter	6	0.20	Wood pellet boiler	200 (2 x 100)	2.9	5.2	0.0036	0.0420	11.40	8.5	0.0015	0.0050	0.0200	0.0002	0.0013	0.0092
Aberdeenshire Grain, Whiterashes	19.7	0.60	Wood chip gasification	6000 (3 x 2000)	DISPERSION MODELLING UNDERTAKEN											
Queen Elizabeth Court, Fettercairn	6	0.25	Wood pellet boiler	199	DISPERSION MODELLING UNDERTAKEN											
Berryhill House, Peterhead	7.8	0.25	Wood chip boiler	150	7.2	1.0	0.0040	0.0145	13.83	6.59	0.0056	0.0445	0.821	0.0002	0.0004	0.0031
Mearns Academy, Laurencekirk	13	0.45	Wood pellet boiler	300	DISPERSION MODELLING UNDERTAKEN											
New Academy, Ellon	17.0	0.40	Wood pellet/briquette boiler	600	12	8.3	0.0367	0.0547	13.86	6.43	0.0475	0.3849	0.5098	0.0020	0.0016	0.0117
Palace Hotel, Peterhead	11	0.30	Wood pellet boiler	199	10	1.66	0.0054	0.0183	10.5	16.7	0.0164	0.0510	0.0917	0.0003	0.0008	0.0044
Shargerwells, Turriff	7.5	0.25	Wood chip boiler	380 (2 x 190)	5.5	3.3	0.0111	0.0360	11.71	3.58	0.0252	0.1461	0.1746	0.0005	0.0010	0.0075
ANM Group, Thainstone Centre, Inverurie	8.3	0.30	Wood chip boiler	199	7.7	1.0	0.0024	0.0144	11.7	7.8	0.0084	0.0429	0.0810	0.0001	0.0004	0.0031
Craigston Castle, Turriff			Wood chip/pellet boiler	199												
Parkside Piggery, Oldmeldrum	12	0.38	Wood chip boiler	720	8	6.6	0.0245	0.1237	11.67	4.65	0.0553	0.3088	0.4009	0.0012	0.0035	0.0259
Cordach, Kincardine O'Neil																
Coynachie, Gartly, Huntly				60												

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Castle of Cromney, Aberchirder																
Brooks House, Glen Tanar, Aboyne	6.7	0.20	Wood chip boiler	190	5.7	1.66	0.0055	0.0180	7.73	3.22	0.0225	0.0806	0.1066	0.0002	0.0005	0.0037
Haughead, Laurencekirk				80												
Balmekewan House, Marykirk	7	0.25	Wood chip boiler	199	6	1.66	0.0043	0.0157	13.4	6.63	0.0101	0.0731	0.1028	0.0002	0.0005	0.0034
Breda House, Alford	5	0.20	Wood pellet boiler	190	2.9	3.5	0.0018	0.0151	10.97	3.44	0.0273	0.1419	0.1622	0.0001	0.0004	0.0031
Kinknockie Farm, Udney, Ellon																
The Stables, Thornton, Laurencekirk	6	0.25	Wood chip/pellet boiler	199	2.6	5.6	0.0043	0.0157	12.75	4.2	0.0327	0.2227	0.2595	0.0002	0.0004	0.0033
Grant Arms, Monymusk	5.6	0.30	Wood chip boiler	199	2.6	5.0	0.0024	0.0146	11.47	3.92	0.0389	0.2150	0.2626	0.0001	0.0004	0.0030
Proctors, Kirkton of Skene	5.5	3.6	Wood pellet boiler	100	3.6	3.2	0.0013	0.0077	11.10	8.14	0.0248	0.1146	0.1445	0.0001	0.0002	0.0017
Lythe View, Cullen	5	0.30	Wood chip boiler	198	4	1.66	0.0057	0.0121	10.7	3.40	0.0160	0.0802	0.1064	0.0003	0.0003	0.0025
Coldwells Farmhouse, Tullynessle	8.5	0.20	Wood chip boiler	70	7.7	1.33	0.0007	0.0053	8.89	3.19	0.0163	0.0661	0.0961	0.0000	0.0001	0.0011
Crathie Opportunity Holidays, Ballater	4.75	0.15	Wood pellet boiler	50	4	1.25	0.0005	0.0036	7.23	3.38	0.0163	0.0554	0.0777	0.0000	0.0001	0.0007
New Primary School, Uryside, Inverurie	13.6	0.25	Wood chip/pellet boiler	199	10.6	4.98	0.0043	0.0157	10.77	5.70	0.0402	0.1907	0.2303	0.0002	0.0005	0.0033
St James Place Care Home, Inverurie	9.6	0.25	Wood pellet boiler	160	8.6	1.66	0.0040	0.0134	10.84	11.04	0.0157	0.0634	0.0979	0.0002	0.0005	0.0030
Markethill Primary School, Turriff	14	0.25	Wood chip/pellet boiler	199	11	4.98	0.0043	0.0157	12.18	11.90	0.0323	0.1562	0.2152	0.0002	0.0006	0.0036
Littlewood Park, Alford	5.3	0.25	Wood chip boiler	130	3.5	3.0	0.0023	0.0098	8.45	2.50	0.0354	0.1390	0.1648	0.0001	0.0003	0.0020