



2012 Air Quality Updating and Screening Assessment for Aberdeenshire Council

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

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Executive Summary

A review of monitoring data and emission sources within Aberdeenshire Council area was undertaken and resultant information compared with NAQS objectives.

Aberdeenshire Council undertook monitoring of NO₂ concentrations at 8 sites within 4 settlements. Monitoring data demonstrates that concentrations of NO₂ in these locations are not likely to exceed the objectives.

Transport, industrial, biomass and fugitive emissions sources were considered and information reviewed.

In terms of transport sources, 10 settlements were identified where there may be potential for objectives to be exceeded due to volume of traffic passing through narrow, residential streets and/or busy roads and junctions. Congestion is unlikely in these locations however, although additional NO₂ diffusion tube monitoring is proposed for the settlement of Ellon to gain additional knowledge. In addition, a DMRB screening assessment was undertaken for Newmacher, Ellon and Oldmeldrum town centres: no exceedences of NAQS objectives were predicted.

In terms of biomass installations, information was sought on existing and proposed plant, with screening assessments undertaken where necessary. No exceedences of NAQS were predicted. Information is required to enable completion of the screening assessments for biomass plant at 3 locations.

At present, Aberdeenshire Council do not need to proceed to a Detailed Assessment for any pollutant; although further work will be carried out in regard to transport emissions and in regard to the completion of screening assessments for biomass installations.

A Progress Report will be submitted in 2013.

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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/yr	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/yr	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/yr	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times/yr	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times/yr	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 exceedences 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. The remaining 9 sites were reported. No observed or predicted exceedences 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 exceedences 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 exceedences 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 exceedences 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 exceedences of annual mean air quality objectives. No requirement for a detailed assessment. Aberdeenshire Council published a local transport strategy in April 2007. The transport interchange in Peterhead opened in February 2008.
July 2009	Updating & Screening Assessment (2009) ⁷	Monitoring of NO ₂ undertaken at 14 sites. No observed or predicted exceedences of annual mean air quality objectives. No requirement for a detailed assessment. Several biomass sources were identified where further information is required to complete screening assessments.
July 2010	Progress Report (2010) ⁸	Monitoring of NO ₂ undertaken at 14 sites. All recorded concentrations remained below the annual mean NAQS objective, and thus 6 sites will be removed from the monitoring programme over this year. No requirement for a detailed assessment to be undertaken.
June 2011	Progress Report (2011) ⁹	Monitoring of NO ₂ undertaken at 8 sites. No observed or predicted exceedences 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

Details of the current monitoring sites 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.5 (p39-44).

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
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
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

2.2 Comparison of Monitoring Results with AQ Objectives

Comparison of measured NO₂ concentrations with relevant air quality standards are discussed in Section 2.2.1.

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

The NO₂ diffusion tube monitoring data for 2011 is presented in Table 2.2. Raw data is presented in Appendix B (p45). NO₂ diffusion tube monitoring data for the previous 5 years is presented in Table 2.3, with a trend chart for this period presented in Figure 2.1.

QA:QC data in relation to NO₂ diffusion tube monitoring data is presented in Appendix C (p46).

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes in 2011

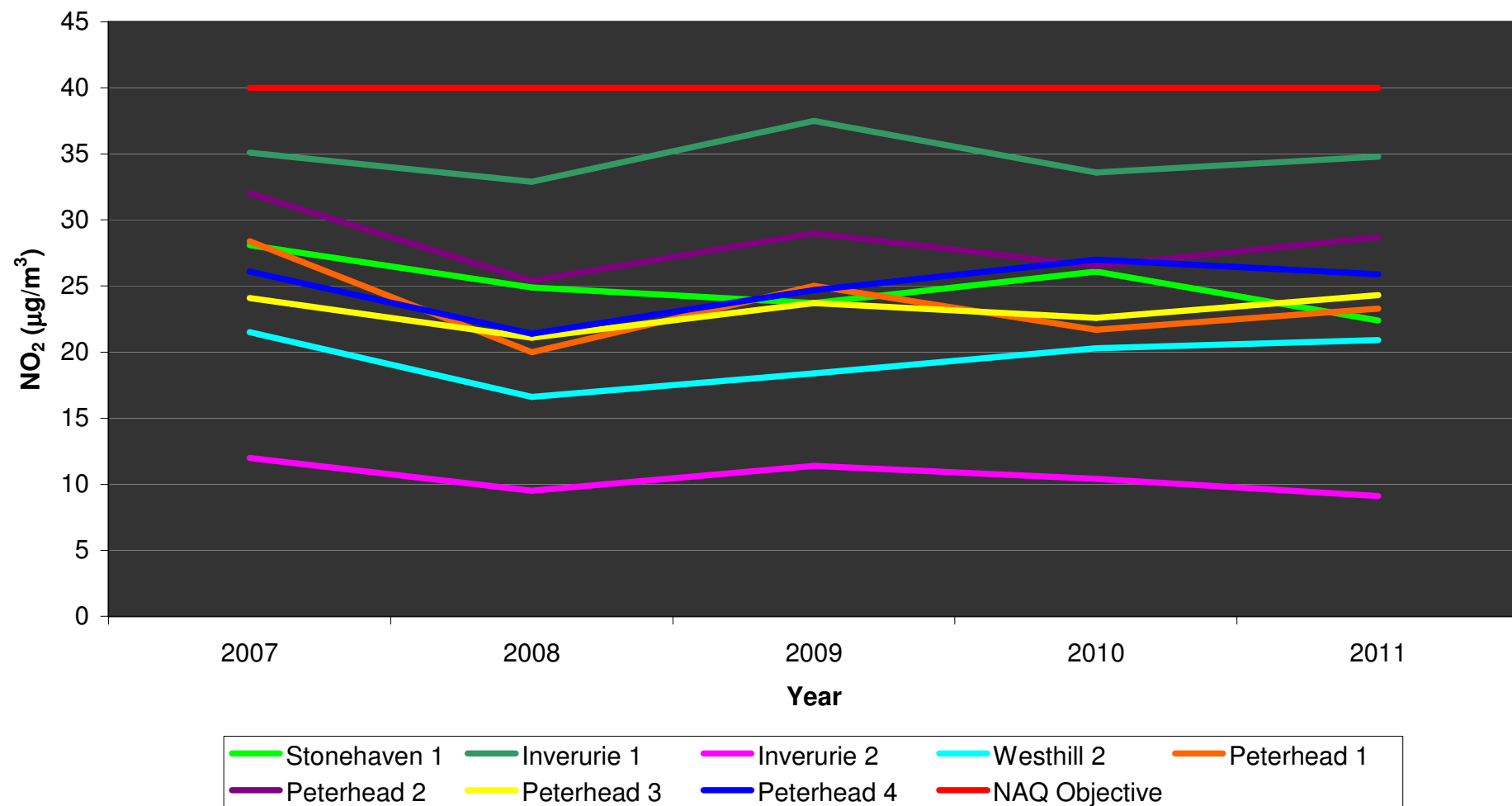
Site ID	Location	Site Type	Data Capture 2011	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.85)
						2011 ($\mu\text{g}/\text{m}^3$)
Inverurie 1	West High St	Kerbside	9 months (75%)	N/A	N	34.8
Inverurie 2	Gordon House	Roadside	10 months (83%)	N/A	N	9.1
Peterhead 1	Broad St	Kerbside	11 months (91%)	N/A	N	23.3
Peterhead 2	Queen St	Kerbside	11 months (91%)	N/A	N	28.7
Peterhead 3	Hay Crescent	Kerbside	11 months (91%)	N/A	N	24.3
Peterhead 4	Kirk St	Kerbside	10 months (83%)	N/A	N	25.9
Stonehaven 1	Allardice St	Kerbside	10 months (83%)	N/A	N	22.4
Westhill 2	Elrick Cottages	Kerbside	10 months (83%)	N/A	N	20.9

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Location	Site Type	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2007	2008	2009	2010	2011
Inverurie 1	West High St	Kerbside	35.1	32.9	37.5	33.6	34.8
Inverurie 2	Gordon House	Roadside	12.0	9.5	11.4	10.4	9.1
Peterhead 1	Broad St	Kerbside	28.4	20.0	25.0	21.7	23.3
Peterhead 2	Queen St	Kerbside	32	25.4	29.0	26.5	28.7
Peterhead 3	Hay Crescent	Kerbside	24.1	21.1	23.7	22.6	24.3
Peterhead 4	Kirk St	Kerbside	26.1	21.4	24.7	27.0 ^(A)	25.9
Stonehaven 1	Allardice St	Kerbside	28.1	24.9	23.7	26.1 ^(A)	22.4
Westhill 2	Elrick Cottages	Kerbside	21.5	16.6	18.4	20.3	20.9

Key: (A) Annualised results

Figure 2.1 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



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 monitoring in respect of any other pollutant.

2.2.6 Summary of Compliance with AQS Objectives

Aberdeenshire Council has examined the results from monitoring within 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 2010 was obtained from Department for Transport (DfT)¹⁰ and Aberdeenshire Council Transport & Infrastructure Service (Appendix D.1-D.2, p48-49). Data was reviewed and assessed against the screening criteria to identify any section(s) of road that may contribute to a potential exceedence of air quality objectives.

Traffic flow data for 2010 was used as the most recent complete set of data available.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The traffic flow data was assessed against those areas where local knowledge suggested there are narrow streets with residential receptors close to the kerb.

There is no traffic flow data for roads in the centre of Inverurie. Local knowledge suggests that West High Street is likely to have the highest density of traffic. There is a kerbside diffusion tube monitoring site at this location. Results from analysis of this diffusion tube (presented in Chapter 2) demonstrate that NO₂ emissions remain below the national objectives and monitoring will continue at this site.

The assessment, in accordance with Box 5.3 (A.1) of TG(09)¹¹, suggests there is potential for exceedences of national objectives in the following settlements:

- Ellon
- Banff
- Peterhead
- Fraserburgh
- Stonehaven
- Huntly
- Oldmeldrum
- Westhill

3.1.1 Ellon

Ellon is located approximately 16 miles north of Aberdeen, on the river Ythan. The A920 meets the A948 from the south before crossing the Ythan and entering the town centre. At Market Street, the A920 and the A948 progress through narrow streets, with residential receptors situated both above shops and at ground level, close to the kerb. Traffic flow is well above 5000 vehicles per day at this location.

3.1.2 Banff

Banff is located in north Aberdeenshire on the coast of the Moray Firth and, whilst no longer a commercial port, the harbour serves leisure craft and small fishing boats. The A98 travels through the town centre at High Street, where the road narrows and there are a number of residential receptors close to the kerb. Traffic flow data is well above 5000 AADT at this location.

3.1.3 Peterhead

Peterhead is a major fishing port in the north east of Aberdeenshire. There are 3 main routes through Peterhead into the town centre and harbour. Traffic flow on all 3 of these main routes is well above 5000 vehicles per day. Diffusion tube monitoring for NO₂ is carried out on these main routes, within Peterhead town centre at 3 kerbside sites and at another kerbside site close to the harbour. Results from diffusion tube analysis demonstrate that NO₂ emissions in Peterhead remain below national objectives (see Chapter 2 for details of diffusion tube monitoring). Diffusion tube monitoring will continue at these sites.

3.1.4 Fraserburgh

Located westward along the coast from Peterhead, Fraserburgh is also a major fishing port. There are 2 main routes which travel through the town towards the centre and harbour, which meet at the junction of High Street and Cross Street in the town centre. AADT data shows traffic flow is above 5000 vehicles per day along both routes. Residential receptors are located close to the kerb above business units and at ground level.

3.1.5 Westhill

Westhill lies on the eastern boundary of Aberdeenshire, close to the outskirts of Aberdeen City. Because of this proximity to the City, Westhill hosts a large business park to the south, on the B9119 and has seen large expansion in residential areas in recent years. The A944 road between Aberdeen and Alford passes through the residential and business areas of Westhill. The data for this stretch of road indicate traffic flows above 5000 vehicles per day. There is a diffusion tube monitoring site adjacent to the A944, at Elrick Cottages. Results demonstrate that NO₂ emissions in Westhill remain below national objectives (see Chapter 2 for details of diffusion tube monitoring). Diffusion tube monitoring will continue at this site.

3.1.6 Stonehaven

Stonehaven is approximately 15 miles south of Aberdeen, and is formed around a historic fishing village. The A957 is the main route through Stonehaven, which progresses across the town centre along Allardice Street, where traffic flow is above 5000 vehicles per day. Diffusion tube monitoring is carried out on Allardice Street and results demonstrate that NO₂ emissions in Stonehaven remain below national objectives (see Chapter 2 for details of diffusion tube monitoring). Diffusion tube monitoring will continue at this site.

3.1.7 Huntly

Huntly is a small town located in western Aberdeenshire adjacent to the main A96 route between Aberdeen and Inverness. The A920 passes through the centre of Huntly, as does the A97, both meeting at The Square in the town centre. Data observed on the A97 entering Huntly from the south shows traffic flow is above 5000 vehicles per day. Residential receptors are located close to the kerb above business units and at ground level.

3.1.8 Oldmeldrum

Located in central Aberdeenshire between Inverurie and Ellon, within commuting distance of Aberdeen is the small town of Oldmeldrum. The A920 passes through the town centre at Market Square and the A947 Banff to Aberdeen road skirts the edges of the town. Traffic flow data for the A920/A947 South Road is around 5000 vehicles per day. Market Square is the centre of town and contains car parking for the retail, business and residential units that surround the square and adjoining streets. In addition, all roads in and out of the square are narrow, with residential receptors above units and at ground level. Traffic speed is limited by speed reduction measures, junctions and narrow roads.

NO₂ diffusion tube monitoring is undertaken at sites in Inverurie, Peterhead, Stonehaven and Westhill. There are no exceedences identified at these sites. Monitoring will continue.

There is no traffic speed data for any of the sites listed above, although it is considered unlikely that any site is congested in terms of the definition provided in Box 5.3 (A.1) of TG(09)¹¹.

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)¹¹. No street locations were identified that met 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 HDVs.

Traffic flow data from the DfT¹⁰ 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 Busy Roads and Junctions

Sections of the trunk road network were considered previously in Updating and Screening Assessments from 2003¹, 2006⁴ and 2009⁷. 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)¹¹.

Maps providing background concentrations of NO_x, NO₂ and PM₁₀ are available on the Scottish Government, Air Quality in Scotland website¹². This information was used to determine locations where the annual mean background concentration of PM₁₀ is expected to be above 15 µg/m³. Traffic data was then analysed to identify any locations where the AADT is above 5000 vehicles per day. One location, A947 through Newmacher, was identified where both these criteria were met, and where there is relevant public exposure.

Further, a similar assessment was carried out for locations where the annual mean background concentration of PM₁₀ is below 15 µg/m³, and the AADT is above 10000 vehicles per day. Two locations were identified, both in Ellon:

- A948/A920 (South Road/Market Street)
- A920/A948 (Riverside Road/South Road)

A further location was identified at Market Square in Oldmeldrum where the annual mean background concentration of PM₁₀ is below 15 µg/m³, and the combined AADT of the 4 roads comprising the junction has the potential to be above 10000 vehicles per day. Traffic data is available for each of these 4 roads at locations outwith Oldmeldrum town centre; however there is no accurate data specifically for the junction. Therefore, the data available has been used to present a “worst case” scenario.

A Design Manual for Roads and Bridges (DMRB)¹³ screening assessment was carried out for the locations in Newmachar, Ellon and Oldmeldrum. In the absence of average speed information in these locations, the national speed limit applicable in Newmachar and Ellon has been used. When carrying out the assessment for Oldmeldrum the local speed limit of 32 kph and a “worst case” 5 kph have been used. The assessments predict that concentrations of NO₂ and PM₁₀ remain below air quality objectives.

Details of the DMRB assessment results are presented in Appendix E (p50).

Aberdeenshire Council has assessed new/newly identified busy roads and junctions meeting the criteria in Section A.4 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

No new roads have been constructed or proposed since the last round of review and assessment.

Aberdeenshire Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Traffic count data was examined. No evidence was found to suggest that traffic flows on any route has significantly changed from previous years.

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

3.7 Bus and Coach Stations

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.

A runway extension at the nearest commercial airport, Aberdeen Airport, was completed in October 2011. This is approximately 1km from any relevant public exposure with the Aberdeenshire Council area. The annual throughput of passengers and freight in 2011 is detailed in Table 4.1.

Table 4.1 Annual Throughput of Passengers and Cargo at Aberdeen Airport in 2011¹⁴

		Total Equivalent Passenger Number per Annum (mppa)
Passengers (Number of)	3 103 811	3.10
Cargo (Tonnes)	6190	0.06

Using correction factors provided in Box 5.4 of TG(09)¹¹ the total equivalent passenger number per annum for Aberdeen Airport in 2011 was 3.16 mppa.

Background map data for NO₂¹² at the nearest relevant receptor within Aberdeenshire Council area is well below 25µg/m³. Therefore, 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 work in previous Updating and Screening Assessments.

There are 2 private railways operating in Aberdeenshire:

- Alford Valley Railway, Alford
Both diesel and steam outline diesel locomotives on approximately 1 mile of narrow gauge track. Operates at weekends during April-Oct, 7 days a week during July and August, and at weekends during the Christmas period between 1230 – 1630 hours.
- The Royal Deeside Railway, Milton of Crathes, Banchory
Both diesel and steam locomotives on approximately 2 miles of standard gauge track. Operates mainly on weekends during April to October and December, generally with 8 return journeys per day, between 1100 – 1645 hours.

4.2.1 Stationary Trains

The impact of emissions from Alford Valley Railway was examined during the last round of assessment. There has been no increase in activity since this assessment.

The Royal Deeside Railway opened in 2010. A return journey takes 30 minutes with a turnaround time of 15 minutes, maximum, between journeys. There are no properties within 15m of the Milton of Crathes station and it is unlikely that visitors would be exposed to locomotive emissions for periods greater than 15 minutes.

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.

4.2.2 Moving Trains

Railway lines with a heavy traffic of diesel passenger trains are identified in Table 5.1 of Technical Guidance LAQM.TG(09)¹¹. None of the lines identified pass through or close to the Aberdeenshire Council area.

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)¹¹. Commercial (and other) shipping movements at both harbours, mainly consist of oil supply and support vessels, which, again, are not within the scope of this assessment.

Data requested from Peterhead shows there were 4466 ship arrivals in 2011 (excluding fishing vessels). This number doubled equates to 8932 movements. Of this, approximately 80% of these movements relate to oil rig supply vessels.

Data requested from Fraserburgh shows there were 58 ship arrivals in 2011 (excluding fishing vessels). This number doubled equates to 116 movements.

Emissions from shipping are controlled at international level. The North Sea has been designated as an International Maritime Organisation (IMO) Emission Control Area (ECA) for sulphur dioxide¹⁵. Fuel used within the ECA is limited to a sulphur content of 1% from January 2012, moving to 0.1% from January 2015.

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 regard to emissions to air.

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

Details of air quality impacts have been received for development at the following sites, which are subject to control under the PPC Regime:

- Crimond (crematorium)
- Mintlaw (crematorium)
- Boyndie, (Puffin Energy, Heat and Power plant)
- Hatton Estate, Turriff (sand and gravel extraction)
- New Pitsligo (waste & soil recovery facility)
- Netherley (gas turbine testing facility)
- Mill of Carden, Pitcaple (pig production)
- Davidson of Rora, Peterhead (restart smelter operations)
- Whitecairns, Ellon (pig production)
- St Fergus Gas Terminal, Peterhead (new furnaces)
- Memsie, Fraserburgh (extension to quarry)
- Easter Hatton, Balmedie (extension to landfill)

None of these sites are predicted to result in exceedences of the air quality objectives. Information from SEPA suggests that the variation to the process at St Fergus Gas Terminal is likely to result in a reduction of emissions to air, and therefore a positive air quality impact.

In addition, changes to the following existing sites have been identified:

- Score Group, Peterhead (new nitric acid activity)

- Kintore (re-opening of rendering plant)
- Baker Hughes, Peterhead (recovery of oil from oilfield waste)

It is understood that the rendering plant in Kintore has not received consent to date, and as such, is not operational. There is no information from SEPA to suggest that activities at the Score Group or Baker Hughes sites in Peterhead will result in exceedences of air quality objectives. No complaints have been received by Aberdeenshire Council in respect of air quality at these sites.

An examination of planning submissions shows that are additional small scale developments, outwith the PPC regime, where air quality and odour have been examined with proportionate controls put in place through the planning process.

- Udney, Ellon (anaerobic digester)
- Stonehaven (microbrewery)
- Ellon (brewery)
- Netherton of Mounie, Oldmeldrum (pig finishing)
- Kininmonth (temporary (small) quarry)

Three paint spraying operations have been identified that are not regulated under the PPC regime. In terms of air quality, all three of these sites are subject to control through the planning system:

- Dales Industrial Estate, Peterhead
- Balmacassie Industrial Estate, Ellon
- Daviot, Inverurie

It is unlikely that these small scale developments would give rise to exceedences of air quality objectives. No complaints have been received by Aberdeenshire Council in respect of air quality at these sites.

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

A number of sites were identified and detailed in Progress Reports 2010⁸ and 2011⁹ where existing industrial processes have substantially changed. However, information provided by SEPA suggests that all of those sites identified have introduced changes that should result in a reduction in emissions and consequent positive impact on air quality. No sites have been identified where there has been or will be a substantial increase in emissions to air, nor where there is new relevant exposure in the vicinity.

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

Aberdeenshire 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

The closest major fuel (petrol) storage depot is located at Aberdeen harbour within Aberdeen City authority. This has been considered in previous rounds of Review and Assessment.

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

5.3 Petrol Stations

There is one new petrol station which has been identified on Longside Road, Peterhead. The traffic flow data on nearby roads is below 30 000 AADT. Additionally, there are no existing petrol stations located nearby roads with traffic flows above 30 000 AADT.

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

5.4 Poultry Farms

The following poultry farms have been identified that house numbers of birds above the criteria defined in Section C.4 of Box 5.5¹¹.

- Newton of Fortrie, Turriff
- Mains of Benholm, Benholm

However, there is no relevant exposure within 100m of either of these sites, and consequently it will not be necessary to proceed to 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

Previous progress reports^{8,9} identified a number of new biomass combustion plant, planned for installation at various locations throughout Aberdeenshire. Not all have progressed to development.

Proposed plant at the Former Mart site in Aboyne was never installed as the heating system was changed to an oil fired alternative. Additionally, the proposals for a communal heating system at Kirktonhill Road, Marykirk have also been reviewed and no decision has yet been made on the type of installation to be used.

The project to replace existing boilers with a biomass fuelled heating system at St Fergus School is currently on hold.

Site west of Banchory Business Centre has not been developed yet and as such there is no information available in relation to the planned biomass heating system.

The demonstration plant at Puffin Fuels Ltd alongside plant at Deeside Cuisine and Leys Estate are all below the 50kW threshold for a screening assessment.

Sites at Haugh of Sluie (Potarch, Banchory) and Inverurie Pre-Cast Concrete Works (Inverurie) contain custom built plant and as such, no emissions data is available.

The plant at Haugh of Sluie is within a construction business located on a rural roadside site, and is used to heat the workshop area during excessively cold weather. It is operational very infrequently. The nearest receptor to the Haugh of Sluie site is located over 180m from the exhaust stack. It is unlikely this plant would lead to exceedences of NAQS objectives.

The plant at Inverurie Pre-Cast Concrete Works was the subject of a complaint to Aberdeenshire Council in May 2011. Following advice from SEPA, operating

procedures have been changed and the issue of complaint resolved. No further complaints have been received in relation to this plant. The nearest receptor is over 50m from the exhaust stack. It is unlikely this plant would lead to exceedences of NAQS objectives.

Screening assessments have been carried out for the remaining sites and those newly identified, listed in Table 6.1.

Table 6.1 Biomass plant identified in Aberdeenshire 2009-11

Location	Biomass Type	Capacity (kW)
Drumblade Primary School, Drumblade	Wood pellet boiler	50
Meldrum House Estate, Oldmeldrum	Wood pellet boilers	2 x 150
Banchory Business Park, Hill of Banchory	Wood, district heating	2 x 700
Kemnay Golf Club, Kemnay	Wood pellet boiler	60
Cottonhillock, Methlick	Wood pellet and/or wood chip boiler	300
Care Home, Stonehaven	Wood pellet boiler	300
Whitehill, New Deer	Wood chip boiler	950
Deeside Activity Park, Aboyne	Wood pellet boiler	100
Praesmohr House, Aboyne	Wood pellet boiler	2 x 35
Glendye, Banchory	Wood chip boiler	88

Screening assessments are provided in Appendix F (p51).

Additional information is required for sites at Deeside Activity Park (Aboyne), Care Home (Stonehaven) and Whitehill (New Deer), and thus screening assessments are unable to be completed at this time. Information continues to be sought and will be reported on in the next round of LAQM screening and assessment.

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.

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)¹¹.

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 solid 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.

One complaint was received in regard to dust from a construction site; however the developer agreed to put in place additional dampening measures to resolve the issue. This episode was minor and of short duration.

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 new monitoring data demonstrates that concentrations of NO₂ in Aberdeenshire continue to remain below NAQS 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

Assessment of road transport sources identified potential for exceedences of NAQS objectives on busy routes through the following settlements, although it is unlikely that these sites meet the definition of congested:

- Ellon
- Banff
- Peterhead
- Fraserburgh
- Stonehaven
- Huntly
- Oldmeldrum
- Westhill

Assessment of road traffic sources in Inverurie was based on local knowledge in the absence of available data.

Sites at Peterhead, Stonehaven, Westhill and Inverurie are currently subject to assessment through the monitoring of NO₂ emissions. No exceedences of NAQS objectives have been identified at these sites to date.

Due to the volume of traffic travelling through Ellon town centre, it is proposed to obtain further information regarding NO₂ emissions in this location by implementing diffusion tube monitoring for a period of one year initially.

Screening assessments have been undertaken for several biomass sites and predict that biomass emissions will not impact significantly on local air quality in Aberdeenshire. Predictions suggest it is unlikely that concentrations of NO₂ and PM₁₀ and PM_{2.5} arising from biomass combustion will lead to breaches of NAQS objectives.

Additional information is required to complete screening assessments at Deeside Activity Park (Aboyne), Care Home site (Stonehaven) and Whitehill (New Deer). The required information has been requested and screening assessments will be completed as soon as this becomes available.

8.3 Proposed Actions

The Updating and Screening Assessment considered new monitoring data and a review of emissions sources in the area. It is concluded there is no requirement to proceed to a Detailed Assessment for any pollutant at this time.

Further information will be obtained in relation to NO₂ concentrations in the settlement of Ellon by the introduction and establishment of diffusion tube monitoring, although this site is unlikely to meet the definition of congested as stated in the Technical Guidance TG(09)¹¹.

Screening assessments that remain outstanding for biomass installations will be completed on receipt of the information requested from the operator/developer.

Aberdeenshire Council intend to present information on the progress of these further assessments regarding transport sources and biomass installations in the Progress Report due for submission in 2013.

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
- 9 Aberdeenshire Council, *Local Air Quality Management Progress Report 2011*, available at <http://www.aberdeenshire.gov.uk/environmental/atmosphere.asp>, June 2011
- 10 Department for Transport, Transport Statistics, *Traffic Counts Aberdeenshire*, available at <http://www.dft.gov.uk/traffic-counts/area.php?region=Scotland&la=Aberdeenshire>, as viewed April 2012
- 11 Department for Environment, Food and Rural Affairs: London, *Local Air Quality Management Technical Guidance LAQM.TG(09)* (PB13215 February 2009)
- 12 Scottish Government, Air Quality in Scotland, Background Map Data, available at http://www.scottishairquality.co.uk/maps.php?n_action=data, June 2012
- 13 Department for Transport, Highways Agency, Air Quality, Revised Guidance for Air Quality Assessments DMRB 11.3.1, available at <http://www.dft.gov.uk/ha/standards/guidance/air-quality.htm>, May 2012
- 14 BAA, Traffic Statistics, available at <http://www.baa.com/about-baa/our-performance/traffic-statistics>, January 2012
- 15 International Maritime Organisation, Special Areas Under MARPOL, available at <http://www.imo.org/ourwork/environment/pollutionprevention/specialareasundermarpol/Pages/Default.aspx>, June 2012

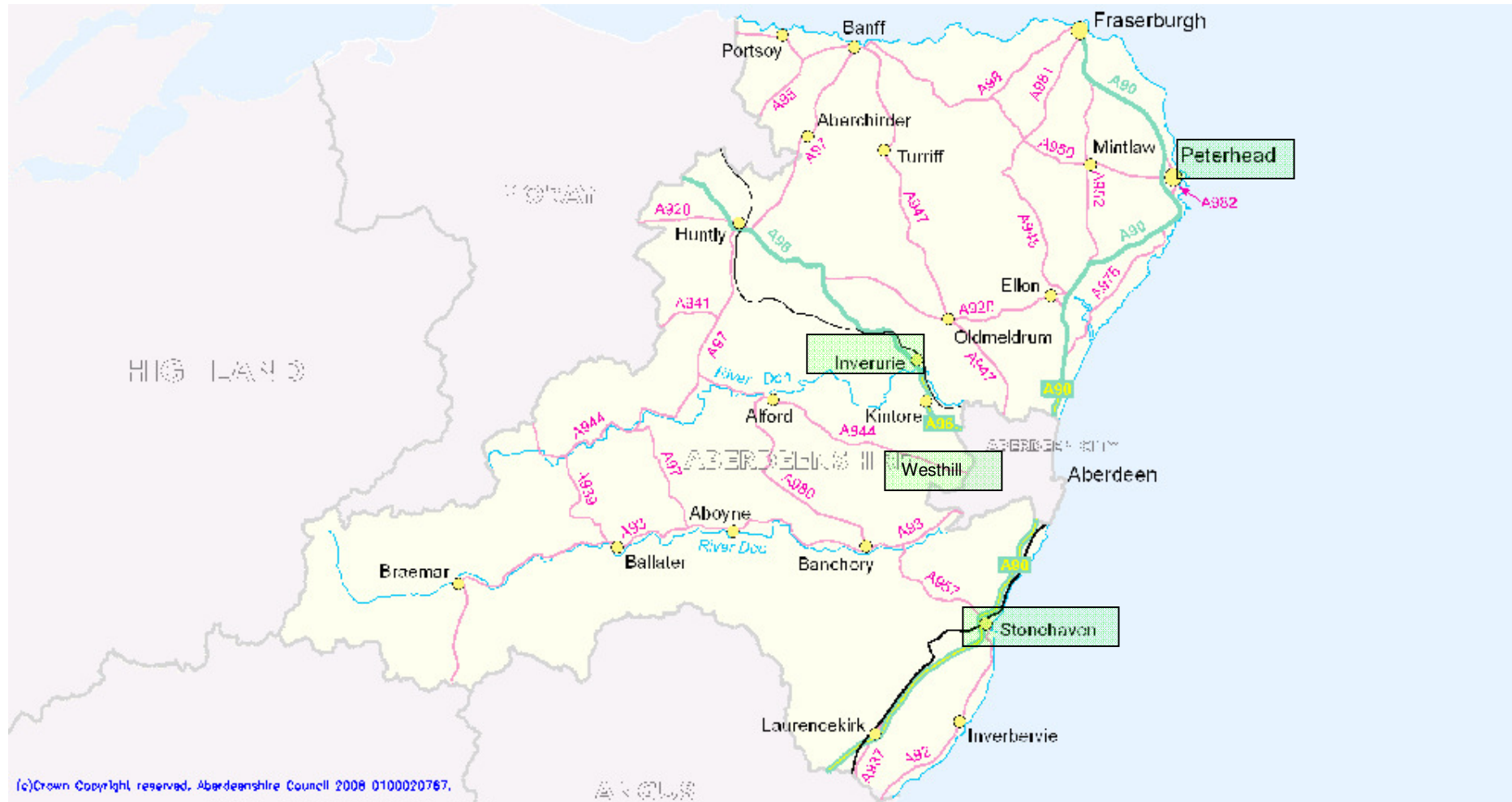
Appendices

Appendix A:	Maps of Non-Automatic Monitoring Sites
Appendix B:	Diffusion Tube Raw Data
Appendix C:	QA:QC Data
Appendix D.1:	Aberdeenshire Council Transport & Infrastructure Services Road Traffic Data
Appendix D.2:	DfT Road Traffic Data 2010
Appendix E:	DMRB Assessment Results
Appendix F:	Biomass Screening Assessments

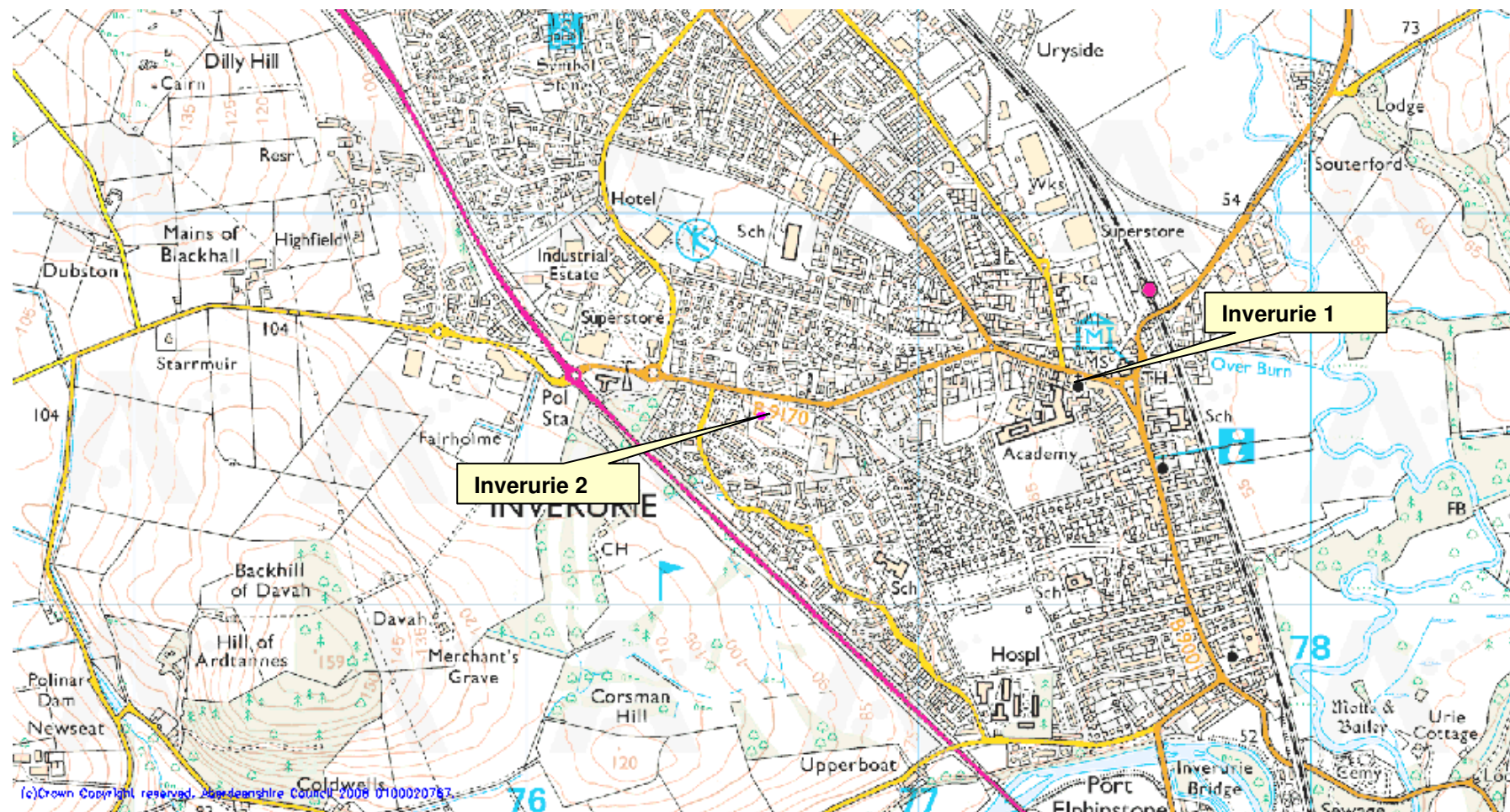
Appendix A: Maps of Non-Automatic Monitoring Sites

- Map A.1** **Settlements in Aberdeenshire where NO₂ Diffusion Tube Monitoring was undertaken during 2011**
- 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 NO₂ Diffusion Tube Sites (Stonehaven)**
- Map A.5** **Location of NO₂ Diffusion Tube Sites (Westhill)**

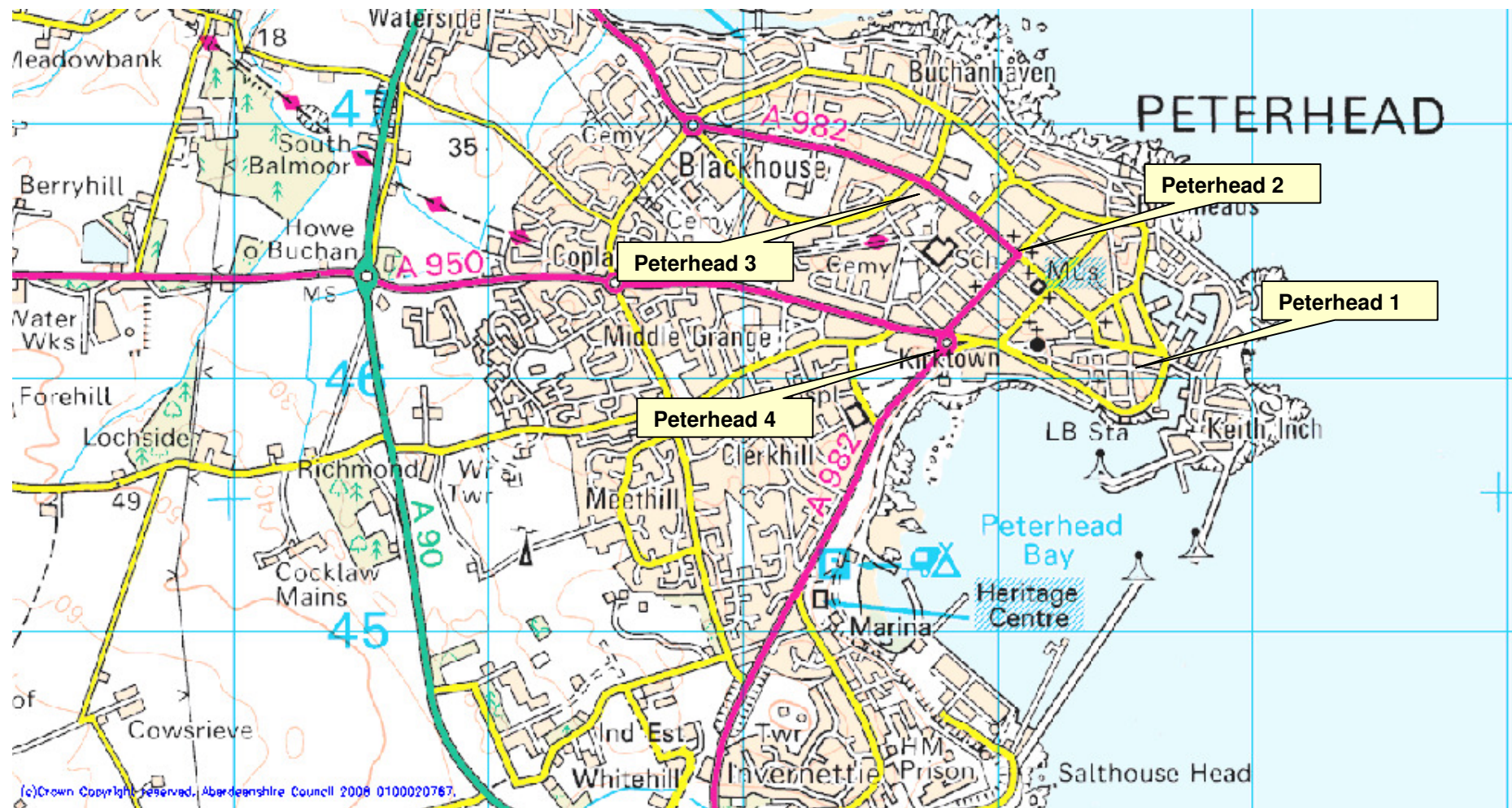
Map A.1 Settlements in Aberdeenshire where NO₂ Diffusion Tube Monitoring was undertaken during 2011



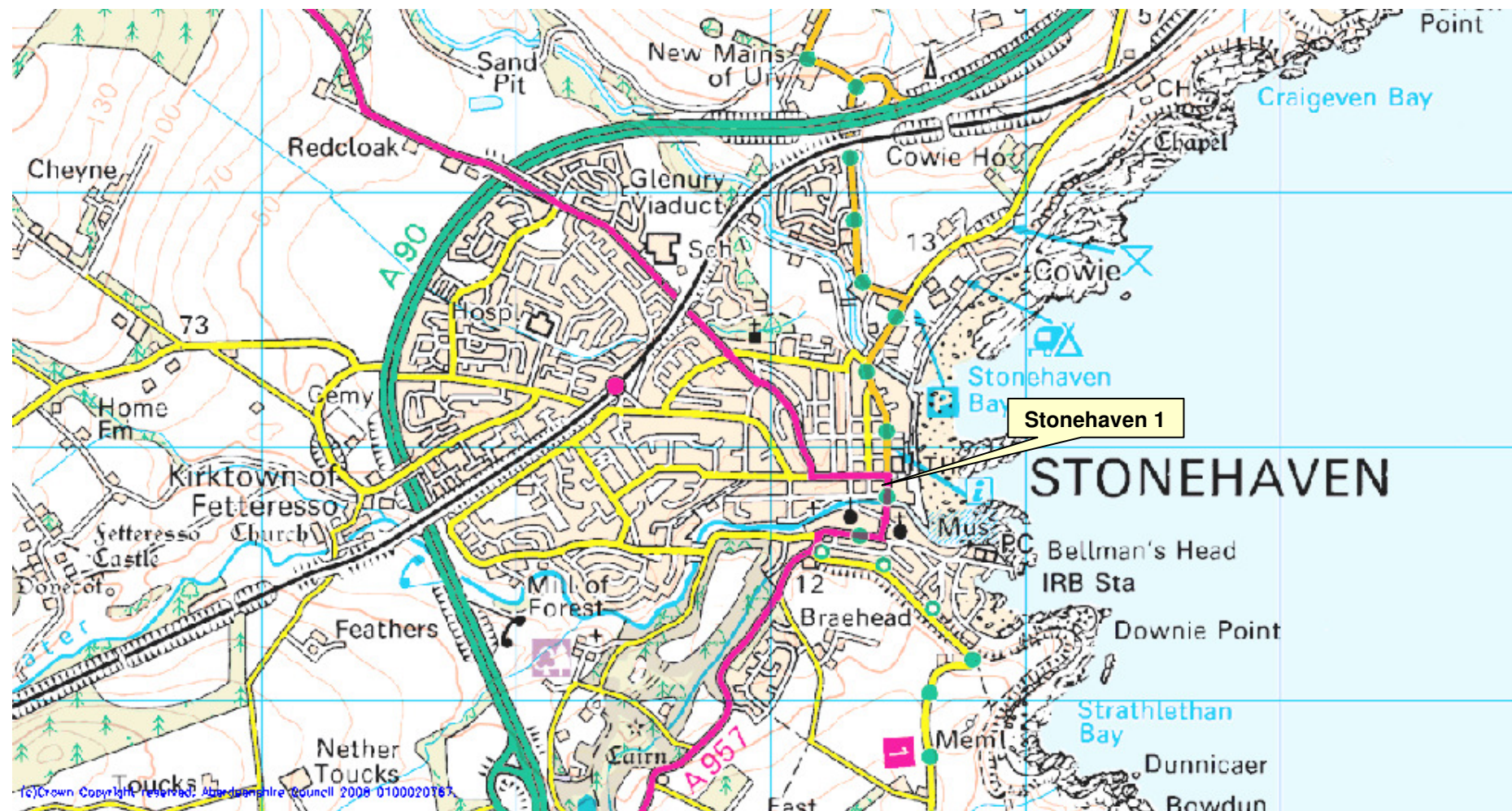
Map A.2 Location of NO₂ Diffusion Tube Sites (Inverurie)



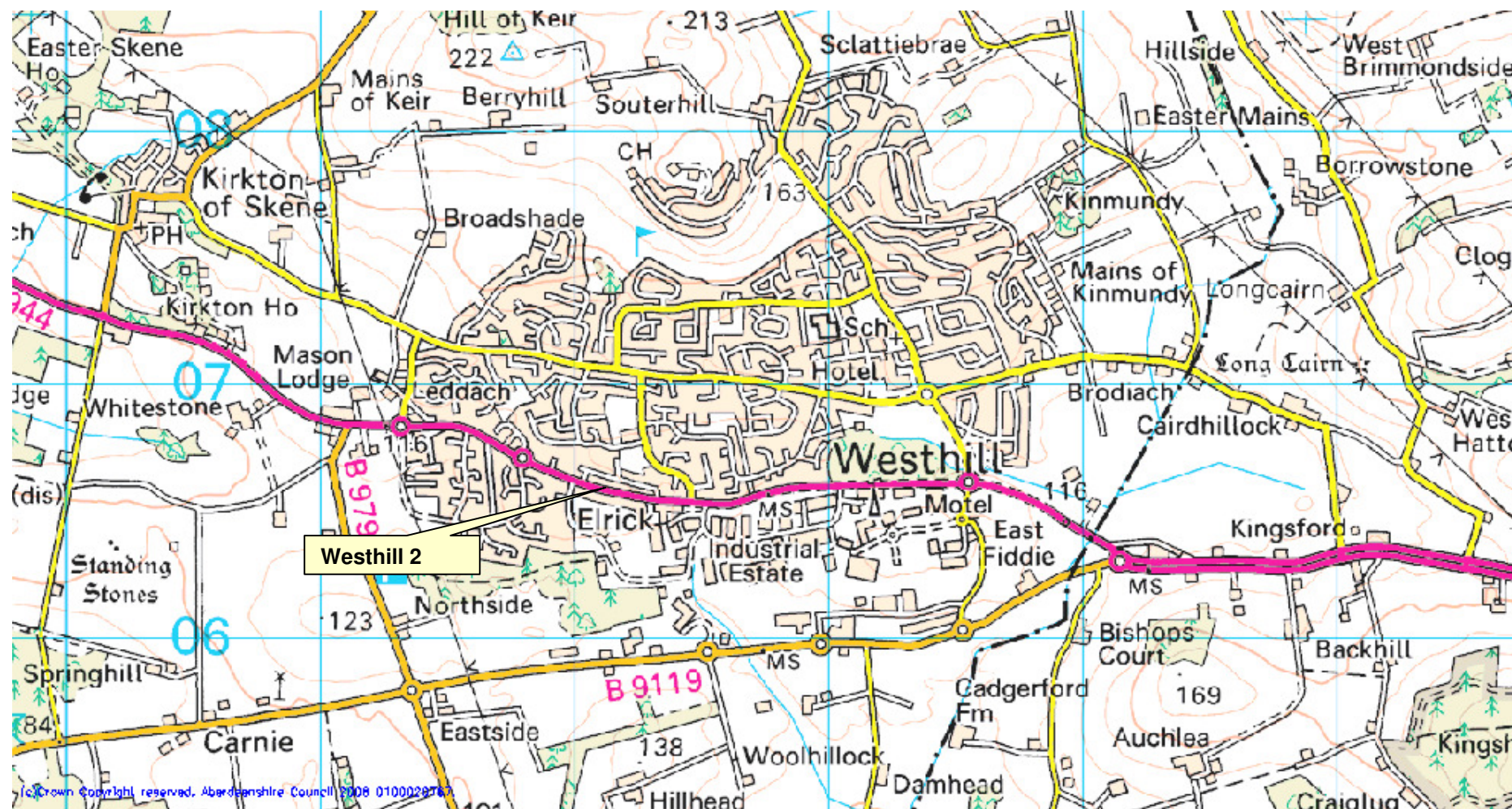
Map A.3 Location of NO₂ Diffusion Tube Sites (Peterhead)



Map A.4 Location of NO₂ Diffusion Tube Sites (Stonehaven)



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



Appendix B: Diffusion Tube Raw Data

Table B.1: Raw Nitrogen Dioxide Diffusion Tube Data from Periods 1-12 in Year 2011

	Period (2011)											
Site ID	1	2	3	4	5	6	7	8	9	10	11	12
Inverurie 1	N/A	55	53	44	N/A	28	22	30	40	44	52	N/A
Inverurie 2	N/A	19	12	10	8	7	7	8	10	8	18	N/A
Peterhead 1	N/A	30	24	29	22	21	21	24	34	30	39	27
Peterhead 2	N/A	38	29	42	29	35	30	30	32	33	45	29
Peterhead 3	N/A	38	26	31	35	26	22	24	27	29	37	30
Peterhead 4	N/A	36	27	28	34	N/A	23	25	30	33	40	29
Stonehaven 1	N/A	30	31	28	N/A	29	28	28	22	17	26	24
Westhill 2	N/A	30	27	24	22	23	21	21	23	24	31	N/A

Key:

	Tube lost , contaminated, or unobtainable due to scaffolding etc
	Exposure period too long or too short (by a factor greater than +/- 2 days)
	Valid data

Appendix C: QA:QC Data

Factor from Local Co-location Studies (if available)

Aberdeenshire Council does not undertake any co-location studies.

Diffusion Tube Bias Adjustment Factors

The laboratory analysis of the passive diffusion tubes used by the 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 2011 bias adjustment factor for Aberdeen Scientific Services was obtained from the National Diffusion Tube Bias Adjustment Spreadsheet, version 03/12 (available at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>) and is presented in Table C.1.

Table C.1 Details of 2011 Bias Adjustment Factors for Aberdeen Scientific Services (Aberdeen City Council)

Laboratory	Method	Year	New (03/12) Update			
			No. Studies Added	Total No. of Studies	Factor	Change in Factor
Aberdeen CC	20% TEA in water	2011	1	1	0.85	

QA/QC of diffusion tube monitoring

The National Diffusion Tube Bias Adjustment Spreadsheets, detailed in Table C.2, present Tube Precision as **GOOD**.

Table C.2 Precision Information from National Diffusion Tube Bias Adjustment Spreadsheets

Analysed By	Method	Year	Bias	Tube Precision	Bias Adjustment Factor
Aberdeen Scientific Services	20% TEA in water	2011	17.1%	G	0.85

Aberdeenshire Council

Aberdeen Scientific Services (Aberdeen City Council) participates in the WASP scheme, and have **100% SATISFACTORY** score from the last 8 rounds (R108-115) of the scheme.

APPENDIX D.1: Aberdeenshire Council Transport & Infrastructure Services

Road Traffic Data

Location	Grid Ref	2009 AADT/7 D- 24HR	2010 AADT/7 D- 24HR	2011 AADT/7 D- 24HR
B9077 Sth Deeside Rd	E 390460 N 802375	6850	4854	4669
A98 E of Byth	E 383335 N 856725	3305	2920	1940
B9119 W of Echt	E 373365 N 805665	1958	1445	N/A
A9498 N of Ellon	E 394080 N 834290	3091	2577	2579
A947 N of Fyvie	E 375085 N 842020	5276	3922	4812
B9170 N of Inverurie	E 377830 N 822975	9395	9268	9099
A981 S of Memsie	E 396720 N 861720	1715	1649	1581
B979 Netherly	E 385005 N 795225	3971	3259	3538
A947 Newmacher	E 389050 N 818520	11065	8802	8535
A920 E of Oldmeldrum	E 384760 N 826995	3773	3618	2176
A93 W of Peterculter	E 380845 N 800250	5242	4290	2913
A950 W of Peterhead	E 409785 N 846365	7633	6063	N/A
B9001 N of Inverurie	E 373645 N 829055	6397	5725	5462
A92 S of Stonehaven	E 386575 N 784145	5687	5494	5645
B9077 Slug Road	E 375245 N 795635	1560	1417	N/A
B999 Tarves		N/A	N/A	N/A
A98 Tyrie	E 392470 N 862575	2632	2309	2121
A93 E of Banchory	E 372650 N 796395	7628	6211	5470
A93 W of Banchory	E 367500 N 796400	4259	3581	3438
A93 Aboyne	E 353655 N 799250	5673	5201	4226
A947 N of Turriff		N/A	N/A	2197
A97 NE of Huntly	E 356550 N 841450	2322	1483	N/A
A948 New Deer	E 389000 N 846750	1275	1165	1199
B994 Kintore	E 378900 N 816850	4395	3952	3227
A97 Aberchirder	E 362783 N 852431	1625	1427	1414
A944 Westhill	E 384007 N 806430	21594	N/A	N/A
B9119 Arnhall Ind Estate	E 383625 N 806084	9260	7459	6695

APPENDIX D.2: DfT Road Traffic Data 2010

Road	Easting	Northing	AllMotorVehicles	Comments
A90	393000	799790	40154	A90 just before City Boundary at Charleston Flyover
A90	390000	792800	27663	A90 between Muchalls and Newtonhill
A90	385940	785000	22889	A90 South of Stonehaven
A96	377600	820000	18357	A96 Port Elphinstone to Inverurie
A947	388980	814250	18221	Road leaving Dyce to Newmacher (count prior to Newmacher)
A96	380400	813200	18009	A96 Blackburn
A90	380000	780650	17316	A90 Fiddes
A90	370300	770000	17294	A90 Oatyhill (Laurencekirk)
A90	372000	770900	17083	A90 Laurencekirk
A90	397160	822800	16660	A90 South of Foveran
A90	366500	767280	16169	A90 North of Strathcathro
A90	396340	818200	15510	A90 Balmedie
A90	368000	768450	14721	A90 South of Laurencekirk
A90	400000	833910	11394	A90 North of Ellon
A948	395700	830240	11165	A920 IN Ellon
A98	370000	864300	10683	A98 Banff-MacDuff (shore road)
A98	369200	863730	10009	A98 at Deveronvale Gd
A90	397280	830000	9862	A90 South of Ellon
A98	368500	864200	9827	Boyndie St/Seafield St, Banff
A96	354000	839200	9771	A96 Huntly
A982	412140	845000	9683	South suburb of Peterhead (Dales Ind Est)
A96	378100	818190	9636	A96 Thainstone-Kintore
A947	381800	827100	8889	A 947 East of Oldmeldrum
A98	368870	864000	8749	High St, Banff
A90	411400	840000	8598	A90 Longhaven
A98	399000	867150	8576	College Bounds, Fraserburgh
A950	411000	846360	8377	A950 Peterhead
A96	370000	825650	8288	A96 Oyne Fork (near side)
A982	412000	846950	8284	Balmoor
A950	412250	846280	8276	Grange Gardens, Peterhead
A96	351800	840000	8011	A96 Huntly (Tesco)
A96	353000	839260	7807	A96 Huntly (Deveron)
A93	373400	796180	7621	A93 Banchory (Milton)
A96	363300	834360	7552	A96 Glens of Foundland
A982	411270	847750	7537	A982 Peterhead
A920	396000	830525	7339	A920 Ellon (Deer Park)
A90	400000	862160	7319	A90 South of Fraserburgh
A90	404600	836200	7298	A90 South of Hatton
A948	396000	830000	7257	B9005 SE Ellon
A957	387440	785700	7243	Stonehaven (bridge)
A950	410000	846370	7170	A950 West of Peterhead (rural)
A96	369200	825900	6922	A96 Oyne Fork (further side)
A90	399750	866000	6617	Fraserburgh - Kessock Industrial Estate
A98	367800	864370	6610	A98 (Boyndie Road) at very western boundary of Banff (Banff Springs Hotel)
A96	348500	844500	6523	A96 Cairnie turn off
A90	399700	866700	6494	Fraserburgh - just past Bellslea on right
A947	385300	823700	6419	A947 at Whiterashes turn off (south of Oldmeldrum)
A97	352540	839500	6376	A97 Huntly, at playing field just past Asda
A980	369500	798000	5818	A980 Banchory to Raemoir (rural)
A90	411000	844350	5725	A90 ringroad round Peterhead (Industrial)
A98	359000	865950	5557	Seafield St, Portsoy (town centre)
A947	374800	845800	5404	A947 South of Turriff
A90	409800	852140	5163	A90 St Fergus
A920	381000	827080	5027	A947 South Rd into Oldmeldrum
A952	401470	837300	5009	A952 road to Fraserburgh (rural)

APPENDIX E: DMRB Assessment Results

All receptors			Pollutant concentrations at receptors						
Receptor Number	Name	Year	CO	Benzene	1,3-butadiene	NO _x	NO ₂	PM ₁₀	
			Annual mean mg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Annual mean µg/m ³	Days >50µg/m ³
1	Newmachar	2010	0.04	0.05	0.04	19.02	9.64	16.19	0.38
2	Ellon	2010	0.14	0.15	0.16	48.00	16.51	15.91	0.29
3	Oldmeldrum	2010	0.07	0.07	0.09	29.29	12.27	14.19	0.00
4	Oldmeldrum (Worst Case)	2010	0.31	0.27	0.35	53.44	17.68	17.54	1.07

APPENDIX F: 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/m ³)			Threshold emission rate (g/s)				Background adjusted emissions (g/s)			
							PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂ - am	NO ₂ 1-hr	PM ₁₀	PM _{2.5}	NO ₂ am	NO ₂ 1-hr
Drumblade Primary School, Drumblade	5	0.16	Wood pellet boiler	50	3	3.20	0.0005	0.0005	0.003	11.3	4.6	3.4	0.001	0.003	0.003	0.009	0.00002	0.00002	0.00008	0.00060
Meldrum House Estate, Oldmeldrum	10	0.30	Wood pellet boiler	2 x 150	8	3.20	0.0060	0.0060	0.019	9.5	4.4	4.1	0.001	0.004	0.004	0.015	0.00027	0.00029	0.00053	0.00400
Hill of Banchory, Banchory	22	0.35	Wood district heating	2 x 700	14	12.8	0.1465	0.1465	0.228	7.3	4.1	4.8	0.008	0.025	0.025	0.130	0.00593	0.00701	0.00648	0.04790
Kemnay Golf Club, Kemnay	9.2	0.20	Wood pellet boiler	60	8.6	0.96	0.0007	0.0007	0.005	9.6	4.5	4.4	0.001	0.002	0.002	0.007	0.00003	0.00004	0.00010	0.00100
Cottonhillock, Methlick	6.9	0.35	Wood or pellet chip boiler*	300	5.1	2.88	0.0054	0.0054	0.031	10.3	4.6	3.9	0.001	0.004	0.004	0.015	0.00044	0.00047	0.00009	0.00065
Care Home, Stonehaven	12	0.20	Wood pellet boiler	300	7	8.00				9.4	4.9	6.9	0.003	0.002	0.002	0.039				
Whitehill, New Deer			Wood chip boiler	950																
Deeside Activity Park, Aboyne			Wood pellet boiler	100																
Praesmohr House, Aboyne	5.2	0.18	Wood pellet boiler	2 x 35	3.6	2.56	0.0005	0.0005	0.007	7.5	3.9	3.3	0.001	0.003	0.003	0.010	0.00002	0.00002	0.00019	0.00140
Glendye, Banchory	8	0.20	Wood chip boiler	88	6	3.20	0.0011	0.0011	0.006	7.0	3.8	3.8	0.001	0.003	0.003	0.011	0.00004	0.00005	0.00018	0.00135

*Worst case emissions presented

Key: awaiting information

