Annual Progress Report (APR)

Aberdeenshire COUNCIL

2017 Air Quality Annual Progress Report (APR) for
Aberdeenshire Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2017

Local Authority Officer	Joe May
Department	Environmental Health (Pollution Control)
Address	Viewmount, Arduthie Road, Stonehaven, AB39 2DQ
Telephone	03456 08 12 07
E-mail	environmental@aberdeenshire.gov.uk
Report Reference number	APR17-01
Date	29 June 2017

Executive Summary: Air Quality in Our Area

Air Quality in Aberdeenshire

Aberdeenshire Council is located on the north-east coast of Scotland and surrounds the Aberdeen City Council area. 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, eastern and southern parts of the Council area are somewhat less mountainous with large expanses of agricultural land, coastal grassland and a greater density of small towns.

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 Aberdeenshire Council area enjoys good air quality with no exceedances of the national air quality objectives. Consequently there is no requirement for Aberdeenshire Council to declare any air quality management areas (AQMAs).

Actions to Improve Air Quality

Aberdeenshire Council is involved with North East Scotland Sustainable Energy Action Plan (NESSEAP) in partnership with Aberdeen City, Moray and Angus Council.

Additionally Aberdeenshire Council is working with Aberdeen City in an ECO Star scheme this focuses on businesses with a fleet of vehicles , however small the fleet.

The Council's Local Transport Strategy, discussed in previous rounds of Review and Assessment, aims to encourage individuals to consider how to reduce the number of journeys made in the first instance. Where travel is unavoidable, the emphasis is on supporting active travel for journeys less than 5km.

Local Priorities and Challenges

Aberdeenshire Council will continue to review and assess local air quality in accordance with the statutory monitoring and reporting requirements.

How to Get Involved

For further information on Air Quality in Aberdeenshire, including information on how to obtain previous annual LAQM reports and a link to the Scottish air pollution forecast please visit the air quality section of our website:

https://www.aberdeenshire.gov.uk/environment/environmental-protection/atmospheric-pollution/

Additional information regarding the Integrated Travel Town project can be found at:

https://www.aberdeenshire.gov.uk/roads-and-travel/transportation/integrated-travel-towns/

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1. Local Air Quality Management

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

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

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2020
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m^3	Annual Mean	31.12.2008

2. Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12 months, setting out measures it intends to put in place in pursuit of the objectives.

Aberdeenshire Council currently does not have any AQMAs.

2.2 Cleaner Air for Scotland

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

2.2.1 Transport – Avoiding travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan.

Aberdeenshire Council has an Integrated Travel Town project details of which can be found at.

https://www.aberdeenshire.gov.uk/roads-and-travel/transportation/integrated-travel-towns/

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

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan to ensure that air quality considerations are covered.

Aberdeenshire Council is involved with North East Scotland Sustainable Energy Action Plan (NESSEAP) in partnership with Aberdeen City, Moray and Angus Council.

Air quality is considered in the plan, for example one statement reads:

By acting to reduce energy consumption, especially within the transport sector, there can be huge benefit in terms of improved local air quality especially in urban areas and near major roads (which can also reduce environmental inequality). Transitioning to low emission vehicles and modal shift from private vehicles to public or active transport and the related health benefits of cleaner air can be profound and have related economic benefits in terms of reduced health costs.

Many of the projects identified within the NESSEAP have improved air quality as a co-benefit. For example, the development of sustainable travel plans for all public bodies, 10 new park and ride sites, electric and hybrid public sector fleet.

Eco Stars, a **free** environmental fleet management recognition scheme, is operating in Aberdeen City and Aberdeenshire. The scheme encourages and supports operators of HGVs, vans, buses and coaches run their fleets more efficiently. ECO Stars fleet experts assess each fleet, award a star rating based on current performance and produce a 'roadmap' of recommendations which will help operators to reduce emissions while also reducing costs. Membership is free to all fleet operators, irrespective of the size of the operation.

The City and Shire scheme was set up in 2016 as a partnership between the City and Shire Councils and NESTRANS, the Regional Transport Partnership and is the first in Scotland to operate across more than one area. It aims to help improve air quality within the City's three Air Quality Management areas, reduce CO_2 emissions across the north east and support fleet operators reduce costs.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

Aberdeenshire Council does not operate any automatic analysers or monitors in respect of the identified LAQM pollutants.

3.1.2 Non-Automatic Monitoring Sites

Aberdeenshire Council undertook non- automatic (passive) monitoring of NO_2 at 15 sites during 2016.

Maps showing the location of the monitoring sites are provided in Appendix A. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes is included in Appendix C.

3.2 Individual pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table B.2 in Appendix B compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

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

3.2.2 Particulate Matter (PM_{10})

Aberdeenshire Council does not carry out any monitoring in respect of PM_{10}.

3.2.3 Particulate Matter ($PM_{2.5}$)

Aberdeenshire Council does not carry out any monitoring in respect of $PM_{2.5}$ and there are no current plans to do so in future years.

3.2.4 Sulphur Dioxide (SO_2)

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

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Aberdeenshire Council does not carry out any monitoring in respect of Carbon Monoxide, Lead and 1,3-Butadiene.

4. New Local Developments

4.1 Road Traffic Sources

Within Aberdeenshire in 2016 there were no new

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed
- Roads with significantly changed traffic flows.
- Bus or coach stations.

Aberdeenshire Council has in place 34 traffic monitoring sites (Appendix D1 and D2) on rare occasions the traffic count exceeded 500 vehicles per day during 2016, but this is an unusual event rather than a regular occurrence .

4.2 Other Transport Sources

Within Aberdeenshire in 2016 there were no new

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping

4.3 Industrial Sources

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. The SEPA response stated that a Part A permit application has been received for Buchan Biogas plant, and is under consideration.

New civic amenity sites in Ellon and Macduff were identified by SEPA as potential sources of fugitive particulate matter emissions.

No other significant industrial sources have been identified.

4.4 Commercial and Domestic Sources

All new or proposed biomass or CHP installations identified in 2016 are listed in Table 4.1.

Table 4.1 Biomass or CHP plant identified in Aberdeenshire in 2016

Location	Biomass Type	Capacity (kW)
Aberdeen Grain, Whiterashes	Wood chip boiler	2000
Derry Lodge, Braemar	Wood chip boiler	50
Upper Pitforthie, Fordoun	Wood chip boiler	unknown
Scottish Water, Invercannie, Banchory	Wood pellet boiler	250

An air quality impact assessment including dispersion modelling was carried out by the applicant, at planning application stage, for the Aberdeen Grain biomass plant (Planning application APP/2016/1672.) No significant impact on air quality is expected. A screening assessment has been undertaken for the installation at Derry Lodge. No significant impact nor exceedances of national air quality objectives are predicted. Screening assessments for the plant at Upper Pitforthie and Invercannie will be carried out in due course as soon as all relevant information is received.

Information is still required for a number of sites listed in the Updating and Screening Report 2015 and the Annual Progress Report 2016 to enable screening assessments

to be undertaken. Screening assessments for these previously identified sites will be carried out in due course if and when the relevant information is received.

4.5 New Developments with 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 (in addition to those listed in Chapter 5). 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.

Furthermore, the construction phase of the new Aberdeen Western Peripheral Route and the dualling of the A90 between Balmedie and Tipperty has potential for release of particulate matter arising from various construction activities such as use of exposed soil routes, blasting, crushing and screening of rock and aggregates, etc. Dust suppression measures are used where appropriate and certain activities are subject to SEPA regulation under the PPC regime.

There were a total of 146 complaints logged by Aberdeenshire Council during 2016 in regard to matters relevant to air quality .

The 146 complaints comprised of the following:

- 20 domestic bonfire complaints
- 37 complaints relating to burning or dust generating activities on construction sites, forestry , agriculture, industrial or commercial sites.
- 4 complaints relating to smoke/ odour from biomass boilers
- 43 complaints relating to odour from domestic properties, agricultural, industrial or commercial sites
- 42 miscellaneous or unsubstantiated complaints

Of the 43 complaints relating to odour only one premise had two complaints and

none of the complaints received are ongoing.

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

5. Planning Applications

There were 9 planning applications for residential, retail or mixed use development submitted to Aberdeenshire Council in 2016, which remain active (Note that 2 of the 9 applications refer to the Blackdog development):

- Mixed use development including Blackdog (550 houses)
- Residential development, Boothby Rd, Fraserburgh (120 houses)
- Residential development, Greenacres, Peterhead (220 houses)
- Residential development, Lethan Fields, Portlethan (170 houses)
- Residential development, Fordoun Rd, Laurencekirk (247 houses)
- Residential development, Northwoods, Mintlaw (100 houses)
- Residential development, Hillbrae Way, Newmachar (300 houses)
- Residential development, Meadowbank Rd, Turriff (231 houses)

An air quality impact assessment was received in respect of the Blackdog development and no exceedances of the national air quality objectives were predicted (APP/2016/ 0767- R16.9002/2/AF) The findings of the air quality impact assessment were accepted.
Although the above developments, in isolation, are not considered to have significant detrimental impact on local air quality they are recorded here should any potential cumulative impacts require consideration in future.

There were 11 planning applications for new quarrying operations or extensions to existing quarry operations in 2016:

- Cairnballoch Quarry, Alford
- Haddo Quarry, Tarves
- Howe of Byth Quarry, New Pitsligo
- Burnthill Quarry, Fraserburgh
- Teuchan Clay Quarry, Cruden Bay
- Mill of Auchlin Quarry, New Aberdour
- Stirlinghill Quarry, Boddam

- Bogantassie Quarry, Lumphanan
- Newton of Savoch Quarry, Blackhills
- Fordafourie Quarry, Memsie
- North Mains Quarry, Portlethen

Planning consents for new or extended quarrying developments generally contain a requirement, through planning conditions, for dust suppression measures to be in place.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

The diffusion tube monitoring data presented in Chapter 3 and Appendix B demonstrates that concentrations of NO_2 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.

6.2 Conclusions relating to New Local Developments

Transport Sources

Roads, airports, railways and ports have been considered. There are no significant changes since the previous Annual Report in 2016.

Industrial Sources

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

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

Commercial and Domestic Sources

Only a small number of new biomass installations have been identified, in comparison with recent years. Concentrations of NO_2 and PM_{10} 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

Potential fugitive or uncontrolled sources of emissions are unlikely to be significant in respect of the national air quality objectives.

6.3 Proposed Actions

Diffusion Tube Monitoring Data

An examination of the long term trend of the diffusion tube data shows that concentrations of NO_2 at some sites remain below the national objective. New diffusion tube sites were set up in 2016 in Peterhead, Inverurie and Inverbervie. These new sites will continue throughout 2017.

A review of the longer term diffusion tube monitoring locations will be carried out in 2017 and discussed in detail in the Annual Progress Report 2018.

Transport Sources

There is limited knowledge regarding traffic speeds, patterns or fleet composition in the town centre locations at Banff, Inverbervie, Inverurie and Oldmeldrum identified in the Updating and Screening Assessment 2015. Although, it is unlikely these locations would meet the definition of congested, there is no evidence to support this. Diffusion tube monitoring has been set up at new sites in Inverurie and Inverbervie during 2016 and will be set up at new sites in Banff and Oldmeldrum during 2017.

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 in due course following receipt of the required information.

Aberdeenshire Council intends to submit an Annual Progress Report in 2018.

Appendix A: Maps of Non-Automatic Monitoring Sites

Map A.1 Settlements in Aberdeenshire where NO_2 Diffusion Tube Monitoring was undertaken during 2016

Map A.2 Location of NO_2 Diffusion Tube Sites (Inverurie)

Map A.3 Location of NO_2 Diffusion Tube Sites (Peterhead)

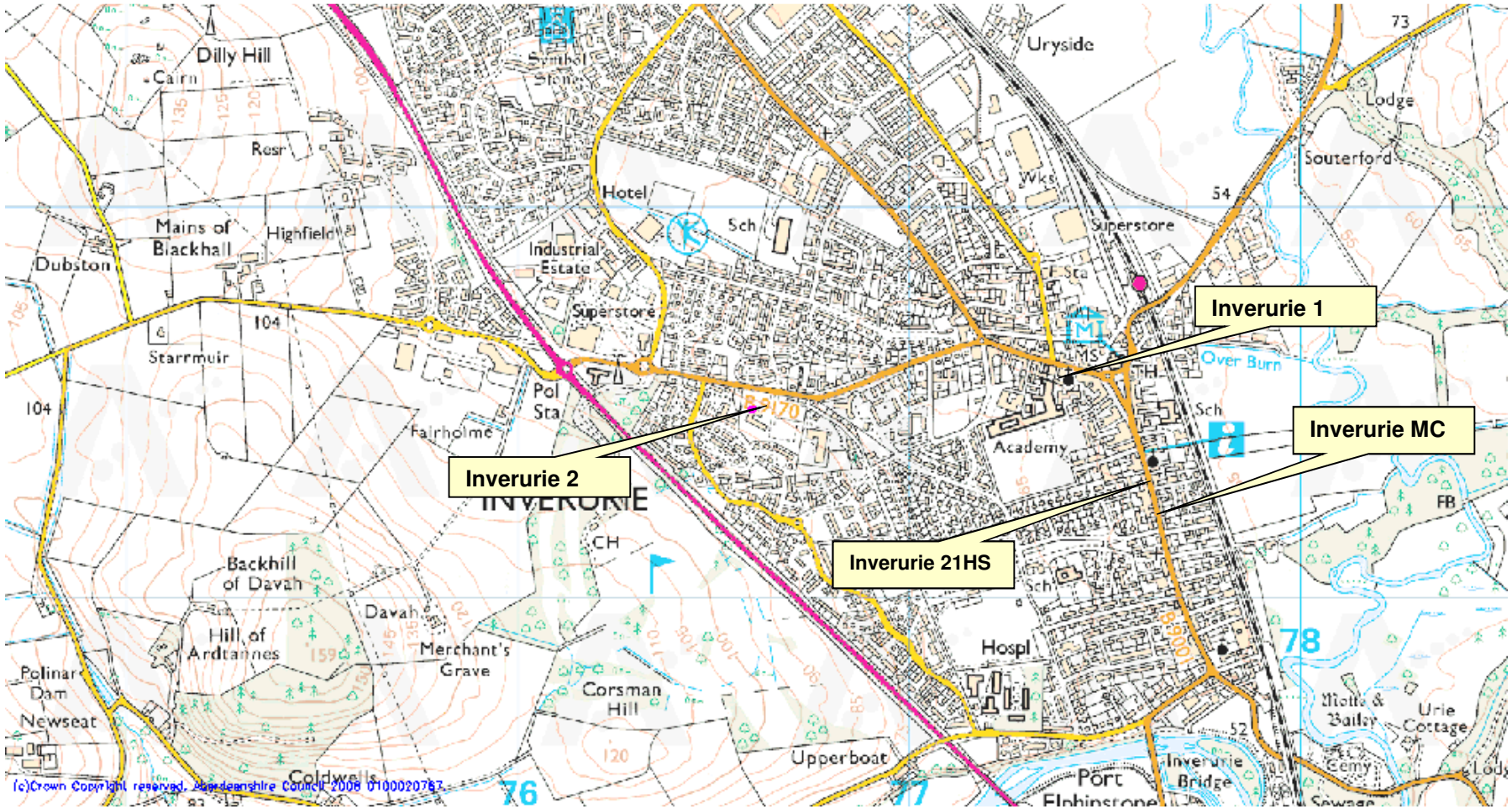
Map A.4 Location of NO_2 Diffusion Tube Sites (Westhill)

Map A.5 Location of NO_2 Diffusion Tube Sites (Ellon)

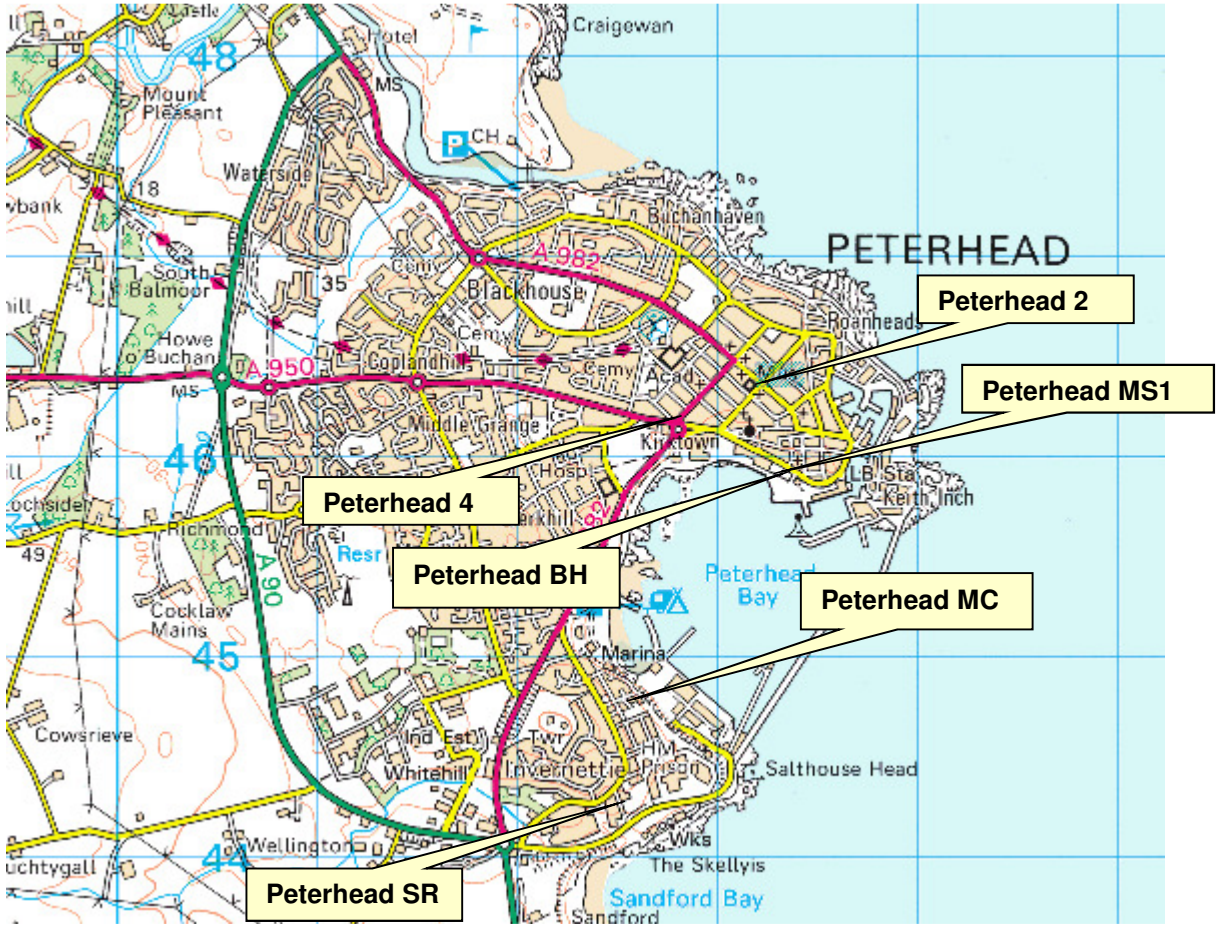
Map A.6 Location of NO_2 Diffusion Tube Site (Inverbervie)

Map A.1 Settlements in Aberdeenshire where NO_2 Diffusion Tube Monitoring was undertaken during 2016

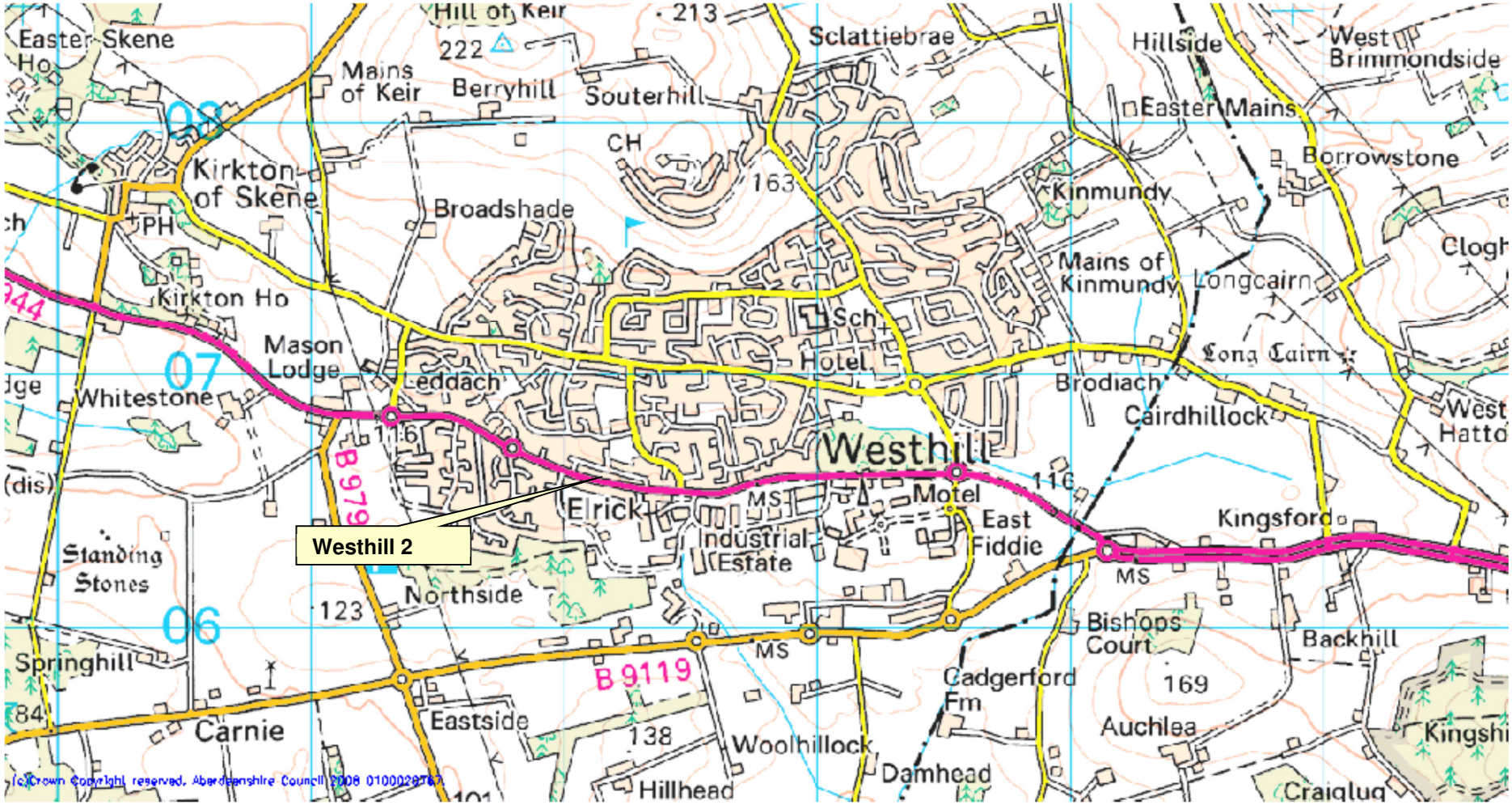
Map A.2 Location of NO_2 Diffusion Tube Sites (Inverurie)



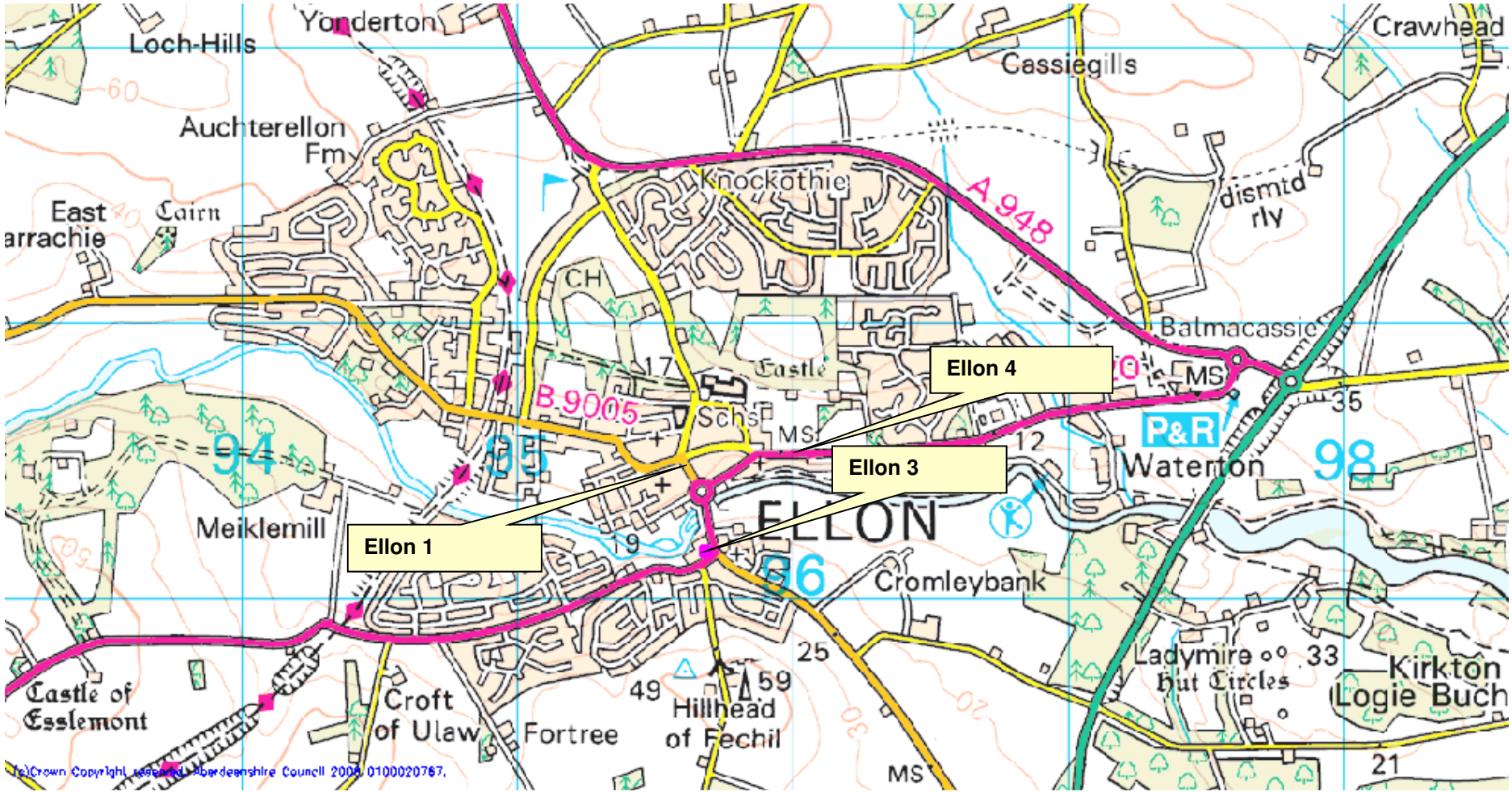
Map A.3 Location of NO_2 Diffusion Tube Sites (Peterhead)



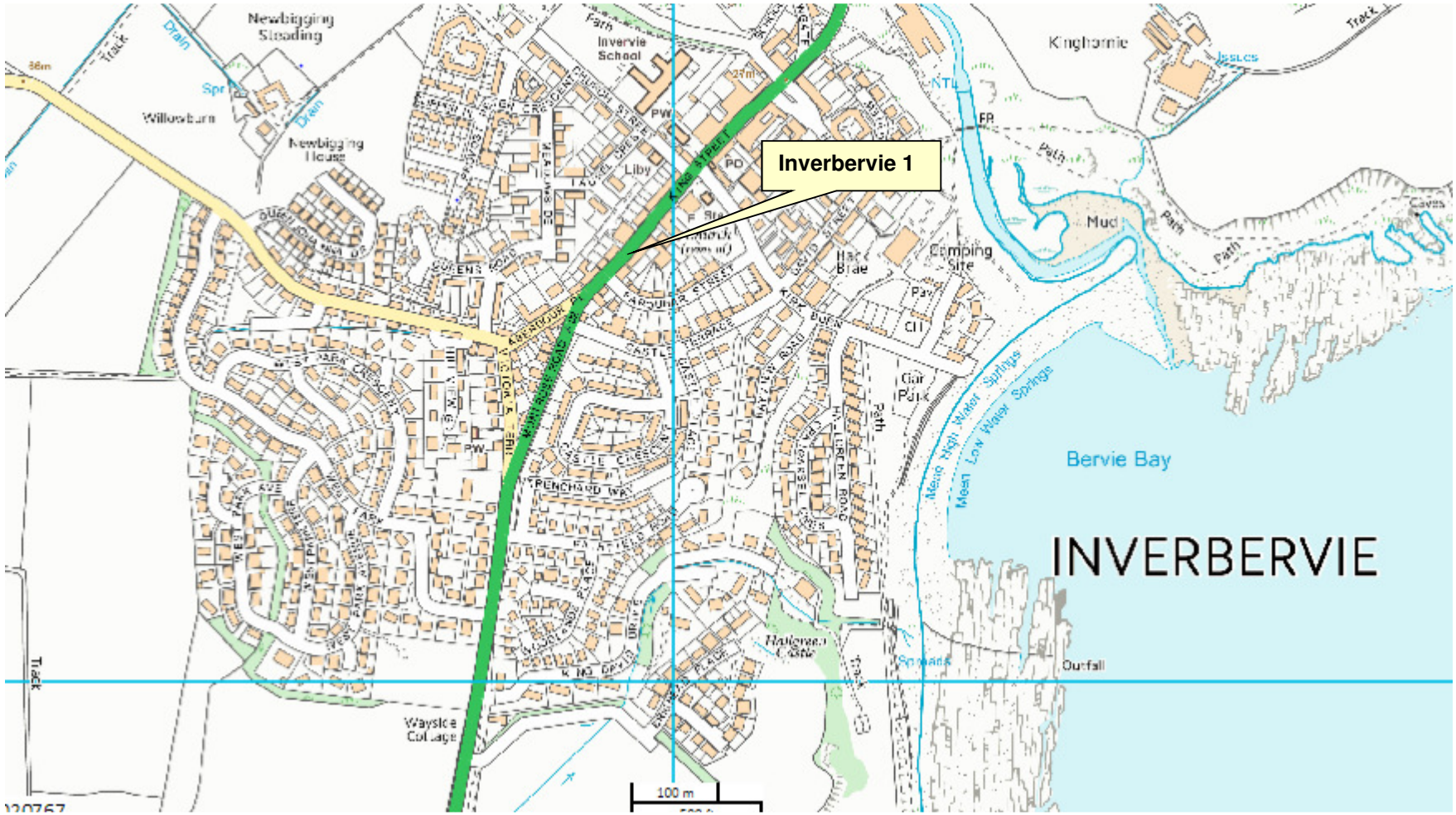
Map A.4 Location of NO_2 Diffusion Tube Sites (Westhill)



Map A.5 Location of NO_2 Diffusion Tube Sites (Ellon)



Map A.6 Location of NO_2 Diffusion Tube Site (Inverbervie)



Appendix B: Monitoring Results

Table B.1 – Details of Non-Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref (Easting, Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?
Inverurie 1	Kerbside	E 377403 N 821584	NO_2	No	2	< 5m	No
Inverurie 2	Roadside	E 376646 N 821469	NO_2	No	5	< 2m	No
Inverurie MC	Roadside	E 377623 N 821295	NO_2	No	1	< 2m	No
Inverurie 21HS	Roadside	E 377603 N 821324	NO_2	No	1	< 2m	No
Westhill 2	Kerbside	E 382118 N 806577	NO_2	No	2	< 5m	No
Ellon 1	Roadside	E 395604 N 830472	NO_2	No	2	< 5m	No
Ellon 3	Roadside	E 395711 N 830170	NO_2	No	3	< 5m	No
Ellon 4	Roadside	E 395893 N 830509	NO_2	No	2	< 5m	No
Peterhead 2	Kerbside	E 413209 N 846356	NO_2	No	2	< 5m	No
Peterhead 4	Kerbside	E 415758 N 846144	NO_2	No	2	< 5m	No
Peterhead BH	Roadside	E 413379 N 845906	NO_2	No	10	< 5m	No
Peterhead MS1	Kerbside	E 413420 N 845918	NO_2	No	1	< 5m	No
Peterhead MC	Kerbside	E 412553 N 844839	NO_2	No	1	< 3m	No
Peterhead SR	Kerbside	E 412495 N 844286	NO_2	No	7	< 3m	No
Inverbervie 1	Roadside	E 382957 N 772522	NO_2	No	1	< 2m	No

Table B.2 – Annual Mean NO_2 Monitoring Results

Site Name	Monitoring Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2016 (%)	NO_2 Annual Mean Concentration (µg/m^3) (1)				
				2012	2013	2014	2015	2016
Inverurie 1	Diffusion Tube	100	100	34.9[a]	33.1	34.9	31.9	31.5
Inverurie 2	Diffusion Tube	100	100	8.9	8.5	11.3	9.4	10.5
Inverurie MC	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	31.0
Inverurie 21HS	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	28.2
Westhill 2	Diffusion Tube	100	100	22.3	22.6	25.1	21.2	22.4
Ellon 1	Diffusion Tube	92	92	N/A	22.6	23.4	20.8[a]	26.2
Ellon 3	Diffusion Tube	42	42	N/A	26.3	26.9	23.9[a]	24.3[a]
Ellon 4	Diffusion Tube	92	92	N/A	21.0	22.1	19.8[a]	23.1
Peterhead 2	Diffusion Tube	75	75	29.3	27.5	30.0	28.3	23.0
Peterhead 4	Diffusion Tube	75	75	22.4[a]	28.5[a]	25.3	22.5	21.4
Peterhead BH	Diffusion Tube	75	75	N/A	N/A	32.2[a]	31.4	26.6
Peterhead MS1	Diffusion Tube	75	75	N/A	N/A	28.1[a]	28.1	25.4
Peterhead MC	Diffusion Tube	75	75	N/A	N/A	N/A	N/A	9.8
Peterhead SR	Diffusion Tube	75	75	N/A	N/A	N/A	N/A	9.7
Inverbervie 1	Diffusion Tube	62.5	42	N/A	N/A	N/A	N/A	20.3[a]

Notes: (1) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(16) if valid data capture for the full calendar year is less than 75% (marked [a]). See Appendix C for details.

Figure B.1: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Long Term Diffusion Tube Monitoring Sites in Aberdeenshire Towns (excluding Peterhead) 2005-2016

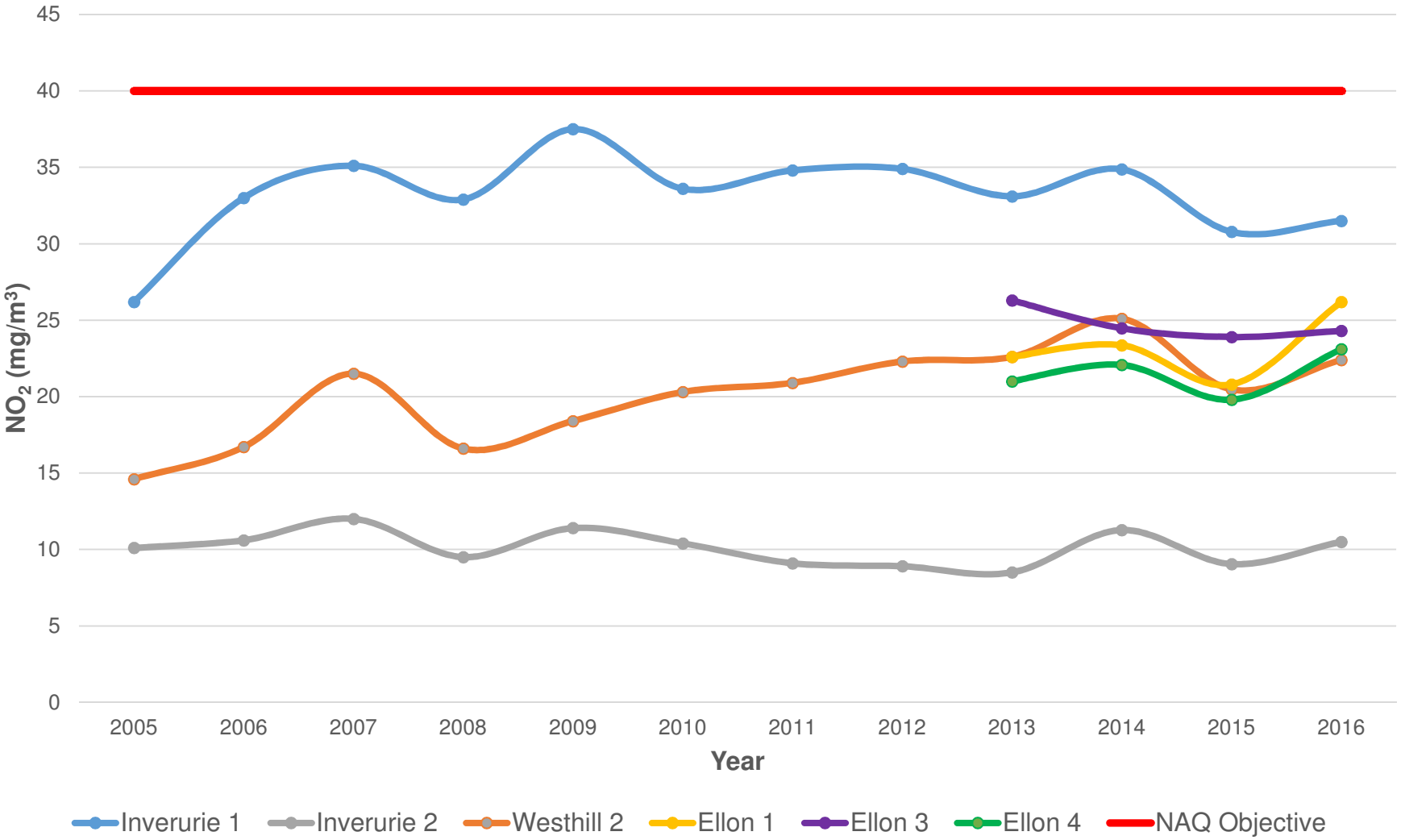


Figure B.2: Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites In Peterhead 2005-2016

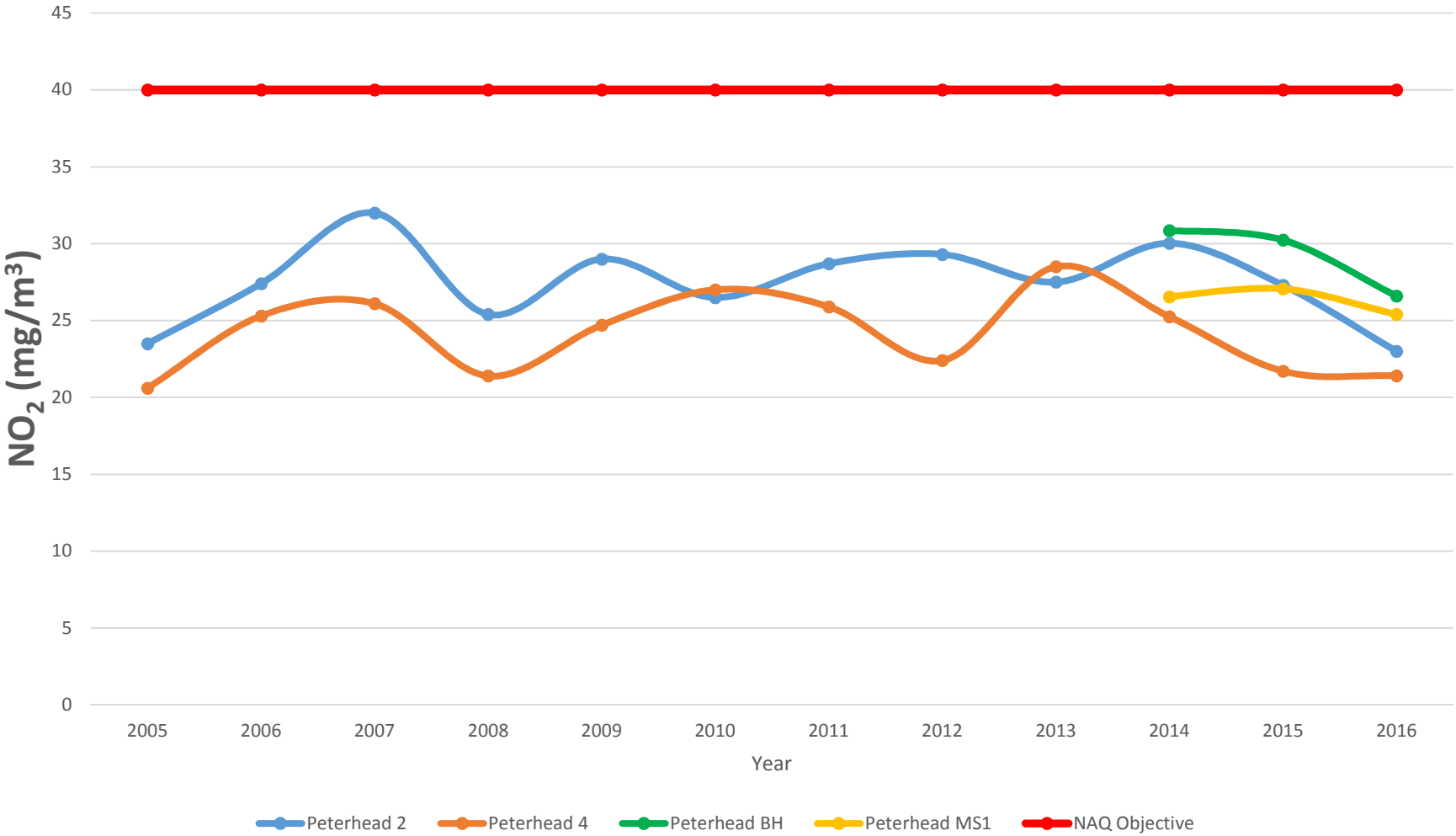


Table B.3 – NO_2 Monthly Diffusion Tube Results for 2016

Site Name	NO_2 Mean Concentrations (µg/m^3)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted (1)
Inverurie 1	49	48	38	29	31	23	34	28	30	34	46	49	36.6	31.5
Inverurie 2	21	15	13	9	6	7	8	7	9	13	21	17	12.2	10.5
Inverurie MC	40	38	41	35	30	32	29	24	28	37	60	38	36.0	31.0
Inverurie 21HS	36	38	37	39	30	27	21	23	30	32	44	37	32.8	28.2
Westhill 2	36	25	27	26	26	23	21	19	19	29	32	29	26.0	22.4
Ellon 1	-	32	31	25	22	22	20	21	22	24	34	35	26.2	22.5
Ellon 3	34	34	37	23	-	-	-	-	27	-	-	-	31.0	24.3(2)
Ellon 4	27	29	22	-	19	17	19	17	19	23	30	32	23.1	19.9
Peterhead 2	-	28	24	26	25	25	29	27	26	31	-	-	26.8	23.0
Peterhead 4	-	35	23	20	23	20	27	25	28	23	-	-	24.9	21.4
Peterhead BH	-	29	38	20	28	24	41	35	34	29	-	-	30.9	26.6
Peterhead MS1	-	29	26	18	27	23	37	36	37	33	-	-	29.6	25.4
Peterhead MC	-	13	11	11	12	13	9	8	10	16	-	-	11.4	9.8
Peterhead SR	-	16	16	8	14	12	8	6	11	10	-	-	11.2	9.7
Inverbervie	-	-	-	-	20	17	17	16	-	-	-	26	19.2	20.3(2)

(1) See Appendix C.1 for details on bias adjustment

(2) Data has been annualised. See Appendix C.2 for details of annualisation

Appendix C: Supporting Technical Information

Appendix C.1 Air Quality Monitoring Data QA/QC

Appendix C.2 Short to Long Term Data Adjustments

Appendix C.1: Air Quality Monitoring Data QA/QC

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 2016 bias adjustment factor for Aberdeen Scientific Services was obtained from the National Diffusion Tube Bias Adjustment Spreadsheet, version 03/17 v2 (available at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html).

QA/QC of Diffusion Tube Monitoring

The National Diffusion Tube Bias Adjustment Spreadsheet, version 03/17 v2, presents Tube Precision for Aberdeen Scientific Services as **GOOD**.

Aberdeen Scientific Services (Aberdeen City Council) participates in the AIR NO2 PT scheme, and has a **100% SATISFACTORY** score during 2016 (AR012, AR013, AR015 and AR016 inclusive) (performance statistics available at https://laqm.defra.gov.uk/assets/airptrounds7to18apr2015feb2017.pdf).

Factor from Local Co-location Studies (if available)

Aberdeenshire Council does not undertake any co-location studies.

Appendix C.2: Short to Long Term Data Adjustments

Diffusion Tube Exposure Periods

Aberdeenshire Council follows the Defra recommended exposure calendar for NO_2 diffusion tube monitoring (available at the following link http://laqm.defra.gov.uk/diffusion-tubes/diffusion-tubes.html). Where NO_2 diffusion tubes exposure periods are outwith the recommended +/- 2 days of the due date, results are excluded from the calculation of the annual mean.

Short to Long Term Data Adjustments

Due to missing diffusion tubes, data capture at one site in Ellon (Ellon 3) was below 75%. The diffusion tube site at Inverbervie 1 was set up at the beginning of period 5. However, there were also some problems with missing diffusion tubes at this site and so data capture for the monitoring period was below 75 %. It is therefore necessary to annualise the data captured at Ellon 3 and Inverbervie 1 as per the advice provided in Box 7.10 of TG16[4].

Aberdeenshire Council does not operate, or have within the local authority boundary, any continuous monitoring sites for NO_2. Data from a continuous background site within the neighbouring local authority (Aberdeen City) has therefore been used in the calculations to annualise the data for the Ellon and Inverbervie sites. Data capture at the continuous monitoring Aberdeen City Errol Place site is above 95% for all months, except May during 2016 (data available at http://www.scottishairquality.co.uk/latest/site-info?site_id=ABD&view=statistics). The data capture of 76% in May for this site is not thought to be significant to this annualisation task.

Month	Aberdeen Errol Place (monthly mean µg/m^3)	Ellon 3 (monthly measured µg/m^3)	Inverbervie 1 (monthly measured µg/m^3)

January	29	34	
February	28	34	
March	23	37	
April	15	23	
May	10		20
June	10		17
July	15		17
August	14		16
September	18	27	
October	22		
November	32		
December	33		26
Average	21	31	19

The 2015 annual mean (A_m) of the Aberdeen City Errol Place site is equivalent to the calculated average of 21µg/m^3.

The period mean ($P1_m$) of the Aberdeen City Errol Place site when Ellon site 3 has data capture is ((29+28+23+15+18) divided by 5) equal to 23µg/m^3.

The period mean ($P2_m$) of the Aberdeen City Errol Place site when Inverbervie site 1 has data capture is ((10+10+15+14+33) divided by 5) equal to 17µg/m^3.

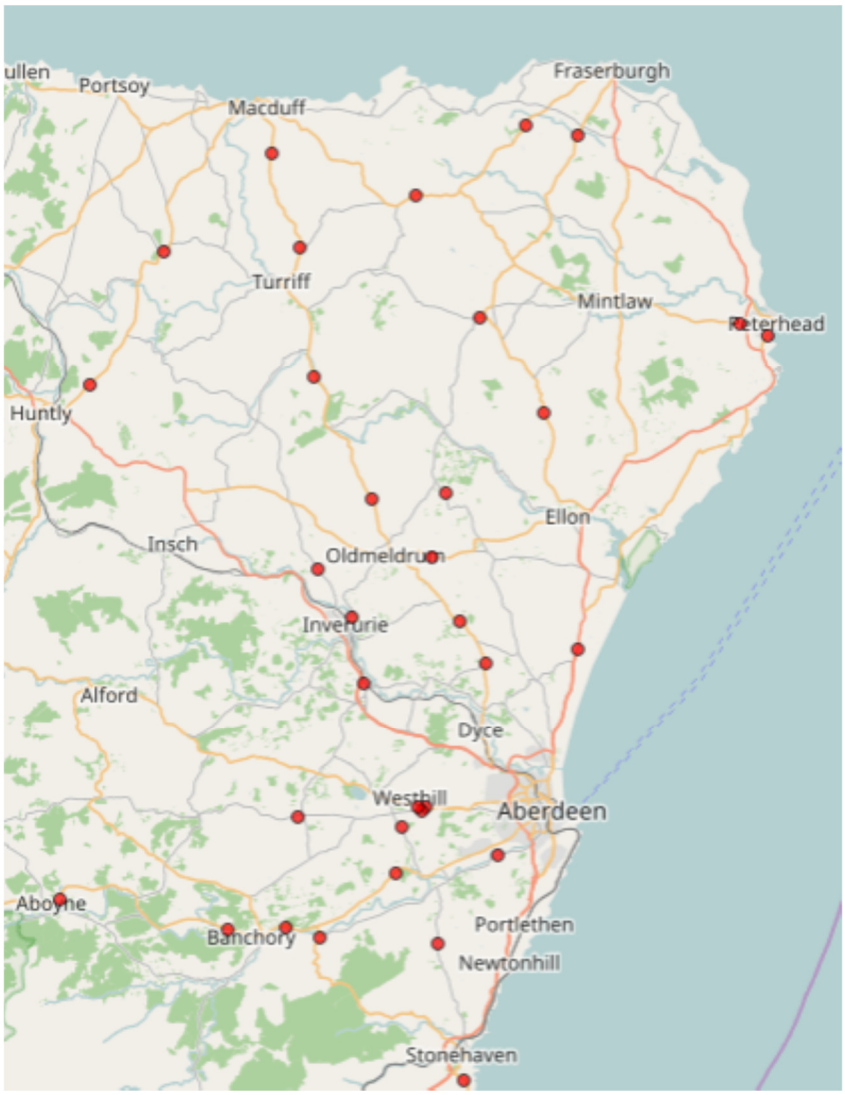
	For Ellon Site 3 ($P1_m$)	For Inverbervie Site 1 ($P2_m$)

Annualisation Factor Ratio of Annual Mean to Period Mean (A_m/P_m)	**0.91**	**1.24**

The annualised mean for the two sites is calculated as follows:

	Ellon 3	Inverbervie 1
Measured period mean concentration ($\mu g/m^3$)	31	19
Annualisation Factor	0.91	1.24
Annualised mean concentration ($\mu g/m^3$)	28.2	23.6
Bias Adjustment Factor	0.86	0.86
Bias Adjusted Annualised Mean Concentration ($\mu g/m^3$)	**24.3**	**20.3**

Appendix D Map of Aberdeenshire Council Traffic monitoring sites



Appendix D1 further details of traffic monitoring sites

Site No.	Site Details	Site Reference
10000001	(AC-001) B9077 South Deeside Road	AC-001
10000002	(AC-002) A98 E Of Byth	AC-002
10000004	(AC-004) B9119 W Of Echt	AC-004
10000005	(AC-005) A948 N Of Ellon	AC-005
10000006	(AC-006) A947 N Of Fyvie	AC-006
10000007	(AC-007) B9170 N Of Inverurie	AC-007
10000008	(AC-008) A981 S Of Memsie	AC-008
10000009	(AC-009) B979 Netherly Road	AC-009
10000010	(AC-010) A947 S Of Newmachar	AC-010
10000011	(AC-011) A920 E Of Oldmeldru	AC-011
10000012	(AC-012) A93 W Of Peterculter	AC-012
10000013	(AC-013) A950 W Of Peterhead	AC-013
10000014	(AC-014) B9001 S of Lochter	AC-014
10000015	(AC-015) A92 S Of Stonehaven	AC-015
10000016	(AC-016) A957 Slug Road @ B9077	AC-016
10000017	(AC-017) B999 N Of Tarves	AC-017
10000018	(AC-018) A98 Tyrie	AC-018
10000019	(AC-019) B979 Carnie Crossroads	AC-019
10000020	(AC-020) B977 Redmoss	AC-020
10000021	(AC-021) A93 E Of Banchory	AC-021
10000022	(AC-022) A93 W Of Banchory	AC-022
10000023	(AC-023) A93 Aboyne	AC-023

10000024	(AC-024) A947 N Of Turriff	AC-024
10000025	(AC-025) A97 N.E Of Huntly	AC-025
10000026	(AC-026) A948 Auchreddie Road, New Deer	AC-026
10000028	(AC-028) B987 N Of Kintore	AC-028
10000029	(AC-029) A97 Aberchirder	AC-029
10000035	(AC-035) A944 East of Westhill	AC-035
10000038	(AC-038) B9119 west of Westhill roundabout	AC-038
10000046	(AC-046) Westhill - Prospect Road Tesco	AC-046
10000051	(AC-051) A982 Peterhead - South Road	AC-051
10000057	(AC-057) A947 Straloch n of Newmachar	AC-057
10000058	(AC-058) A947 Tulloch n of Oldmeldrum	AC-058
10000059	(AC-059) A947 King Edward	AC-059

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

1 Aberdeenshire Council, Local Transport Strategy 2012, available at https://www.aberdeenshire.gov.uk/media/2374/2012finallts.pdf, January 2012

2 SEPA, Volcanic Ash Emissions Network (BETA), available at http://apps.sepa.org.uk/volcanicemissionsnetwork/Dashboard.aspx?id=LochOfStrathbeg

3 Aberdeenshire Council, *Air Quality Updating and Screening Assessment 2016 for Aberdeenshire Council*, available at https://www.aberdeenshire.gov.uk/environment/environmental-protection/atmospheric-pollution/,

4 Department for Environment, Food and Rural Affairs: London, *Local Air Quality Management Technical Guidance (TG16)*, April 2016