



2012 Air Quality Updating and Screening Assessment for Angus Council

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

June 2012

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Executive Summary

This report presents the findings of Angus Council's Updating and Screening Assessment (USA) of air quality. The USA evaluates new and changed sources to identify those that may give rise to a risk of an exceedance of an air quality objective. Results from monitoring within the Angus Council area are also presented and evaluated in relation to the objectives; the likelihood of an exceedance at relevant locations is discussed, as is the requirement to proceed to a Detailed Assessment.

Previous Review and Assessments have concluded that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide, PM₁₀ and nitrogen dioxide are compliant with the relevant objectives, and no Air Quality Management Areas (AQMAs) have been declared.

Monitoring data for 2011 confirms that the annual mean nitrogen dioxide objective is unlikely to be exceeded at any location, with measured concentrations well below the objective. Measured PM₁₀ concentrations also meet the annual mean objective. It is concluded that a Detailed Assessment is not required.

The USA has not identified any significant changes in emissions sources within the Angus Council area.

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1 Introduction

1.1 Description of Local Authority Area

The Angus Council area is located on the east coast of Scotland between Aberdeenshire Council to the north, Perth and Kinross Council to the west and Dundee City Council to the south.

The area is largely rural and mountainous, with a low population density in the north and west. The main population centres are Arbroath, Forfar and Montrose with the remaining population concentrated in Brechin City and the towns of Monifieth, Carnoustie and Kirriemuir. The population is approximately 110,000. The Angus Council boundary is shown in Figure A1 in Appendix A.

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.

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

The 2003 Angus Updating and Screening Assessment (USA) was completed in April 2003 and concluded that it was unlikely that any of the air quality objectives would be exceeded within the Angus Council area. During 2004 Angus Council conducted a review of emissions from domestic sources to address issues raised by the Scottish Environment Protection Agency (SEPA) and the Scottish Government following the USA. The review identified twenty-four communities for which further investigation of fuel types and quantities used at domestic properties was required. SEPA recommended that two or three communities with the greatest density of coal burning be investigated to conserve Council resources. The domestic fuel survey was undertaken in 2005 in Glamis, Newbigging and Auchmithie.

A review of particulates was conducted in 2004 to assess in detail the emissions and sources of particulate matter (PM₁₀) within the Angus Council area. The review assessed monitoring data, emissions of PM₁₀ from regulated processes and road traffic. The report concluded that the monitoring data and screening assessment criteria provided in the LAQM.TG(03) technical guidance did not correlate well. The monitoring data indicated exceedences of the 2010 objectives for PM₁₀ were likely, but the screening criteria indicated that there was unlikely to be an exceedence of the AQS objectives. It was concluded that further investigation was required to identify the sources of PM₁₀ within the Angus Council area.

The Angus Council LAQM Progress Report 2005 reviewed the changes in industrial and domestic sources of pollutants and assessed new monitoring data for nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and PM₁₀ against the relevant objectives. The report concluded that exceedences of the air quality objectives for carbon monoxide (CO), benzene, 1, 3-butadiene, lead, NO₂ and SO₂ were unlikely. However, based on the Tapered Element Oscillating Monitor (TEOM) results, annual mean projected concentrations of PM₁₀ were predicted to exceed the 2010 objective at the Forfar monitoring station. In October 2005, a gravimetric Partisol sampler was installed adjacent to the Forfar TEOM in order to verify the results. It was also concluded that further assessment of PM₁₀ emissions from the Ethibethan Quarry was required, along with domestic fuel surveys in Auchmithie, Glamis and Newbigging.

The 2006 USA concluded that it was unlikely that any of the objectives would be exceeded, including those for PM₁₀. The density of coal burning properties was found to be less than 50 properties per 500m² and was therefore unlikely to result in exceedences of the PM₁₀ or SO₂ objectives. However, SEPA and the Scottish Government requested that a Detailed Assessment of PM₁₀ be carried out in Forfar in relation to potential exceedences of the 2010 objective; this was prepared in 2007.

The Detailed Assessment concluded that measured concentrations for a 12 month period 1st June 2006 – 31st May 2007 exceeded 18µg/m³; projected concentrations for 2010 were below, although approaching, the objective. The report concluded that monitoring should continue, however an AQMA would not be required at that time.

The 2008 Progress Report concluded that it was not necessary for Angus Council to proceed to a Detailed Assessment, but that the current monitoring programme should be maintained in order to identify any changes in NO₂ or PM₁₀ concentrations. The 2009 USA also concluded that Angus Council were not required to proceed to a Detailed Assessment for NO₂. The possibility that PM₁₀ concentrations may exceed the 2010 objective was however identified, and a continuation of the existing monitoring programme was recommended.

Both the 2010 Progress Report and the 2011 Progress Report concluded that there was no need to carry out a Detailed Assessment, but that monitoring should be maintained.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Monitoring of PM₁₀ concentrations was carried out in 2011 at two locations. A gravimetric Partisol sampler is located at both sites, with an FDMS TEOM analyser co-located at the Forfar site. The locations of the analysers are shown in Figure 2.1.

Figure 2.1 Automatic Monitoring Sites

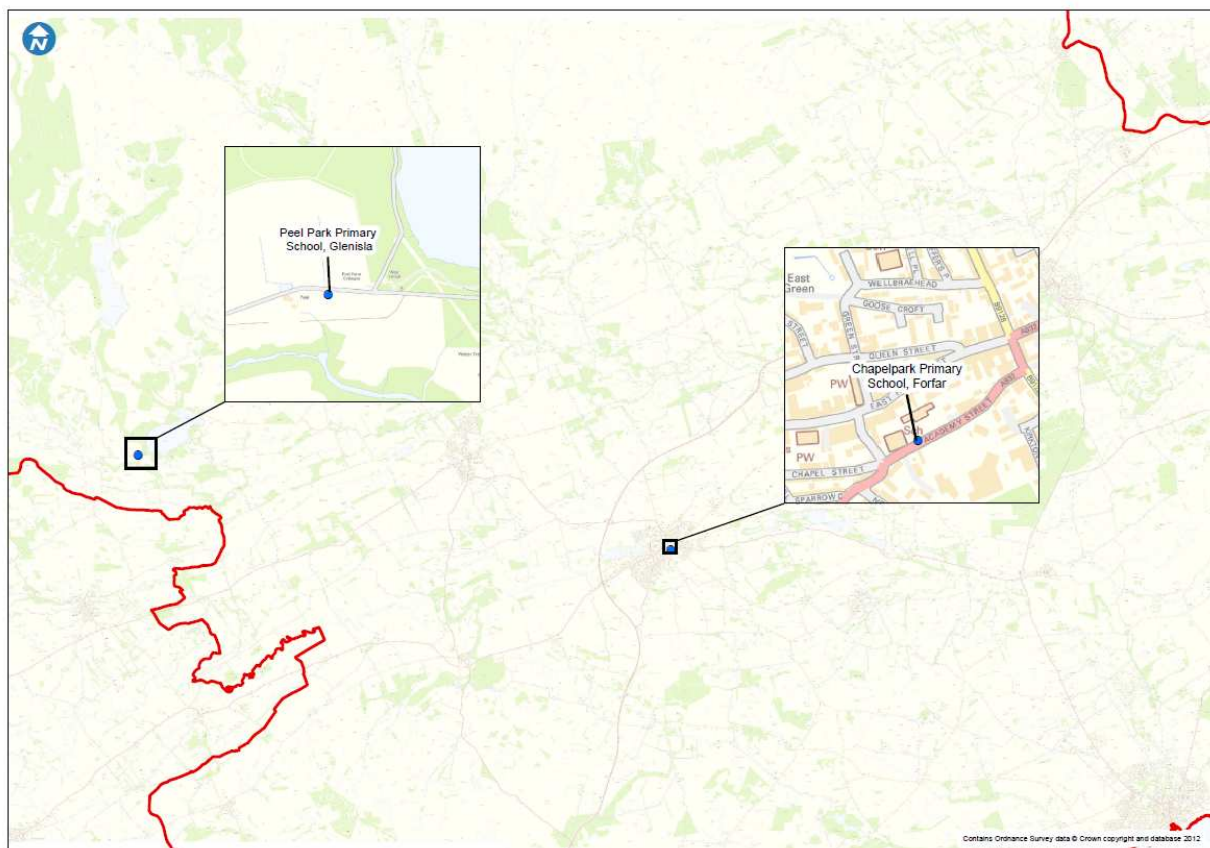


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure?	Distance to kerb of nearest road	Representative of worst-case exposure?
Chapelark Primary School, Forfar	Roadside	345914	750612	PM ₁₀	N	Gravimetric	Y (0m)	5m	N
Chapelark Primary School, Forfar	Roadside	345914	750613	PM ₁₀	N	FDMS	Y (0m)	6m	N
Peel Park Primary School, Glenisla	Rural Background	326515	754046	PM ₁₀	N	Gravimetric	Y (0m)	20m	N

2.1.2 Non-Automatic Monitoring Sites

Nitrogen dioxide was measured at 11 locations during 2011 within the Angus Council area. These sites are described further in Table 2.2, and are shown in Figure 2.2. The monitoring sites provide information for a range of roadside, kerbside, industrial and background locations.

The diffusion tubes are prepared and analysed by Tayside Scientific Services (TSS) using the 20% TEA in water method. Tubes are changed on a monthly basis. See Appendix B for further details of QA/QC of the diffusion tubes.

Figure 2.2 Diffusion Tube Monitoring Sites



Table 2.2 Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	In AQMA?	Is monitoring co-located with a Continuous Analyser?	Relevant Exposure?	Distance to kerb of nearest road	Does this location represent worst-case exposure?
A1	Ethie Terrace, Arbroath	Urban Background	364585	742349	NO ₂	N	N	Y (0m)	1m	N
A2	Inchcape Road, Arbroath	Urban Background	362987	740642	NO ₂	N	N	Y (0m)	2m	N
A3	Abbey Path, Arbroath	Roadside	364299	741225	NO ₂	N	N	Y (1.5m)	<1m	N
A4	22 Lordburn, Arbroath	Roadside	364158	741122	NO ₂	N	N	Y (3m)	<1m	N
CAR	High St, Carnoustie	Kerbside	356243	734526	NO ₂	N	N	Y (3m)	2m	N
M1	High St, Monifieth	Kerbside	349759	732549	NO ₂	N	N	Y (0m)	2m	N
M2	High St, Montrose	Kerbside	371418	757767	NO ₂	N	N	Y (2m)	1m	Y
B1	High St, Brechin	Kerbside	359727	760170	NO ₂	N	N	Y (2m)	1m	N
B2	Sacone 1, Brechin	Industrial	361216	759644	NO ₂	N	N	N	8m	N
FOR	High St, Forfar	Kerbside	345825	750674	NO ₂	N	N	Y (3m)	<1m	N
KIR	Manse Close, Kirriemuir	Kerbside	338621	754032	NO ₂	N	N	Y (5m)	6m	N

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

Measured concentrations at the 11 diffusion tube monitoring sites in 2011 are presented in Table 2.3. Concentrations since 2005 are presented in Table 2.4.

There is no automatic nitrogen dioxide monitoring carried out within the Angus Council area, and therefore there is no co-location study carried out with which to calculate a local bias adjustment factor; the national bias adjustment factor has therefore been applied to the data. See Appendix B for further details.

Concentrations at all 11 sites were well below the annual mean objective in 2011, the highest concentration was $23.8\mu\text{g}/\text{m}^3$ measured at monitoring site M2 located on the High Street, Montrose. Concentrations have remained similar at all sites since 2005 (Figure 2.3).

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes in 2011 (Bias Adjusted)

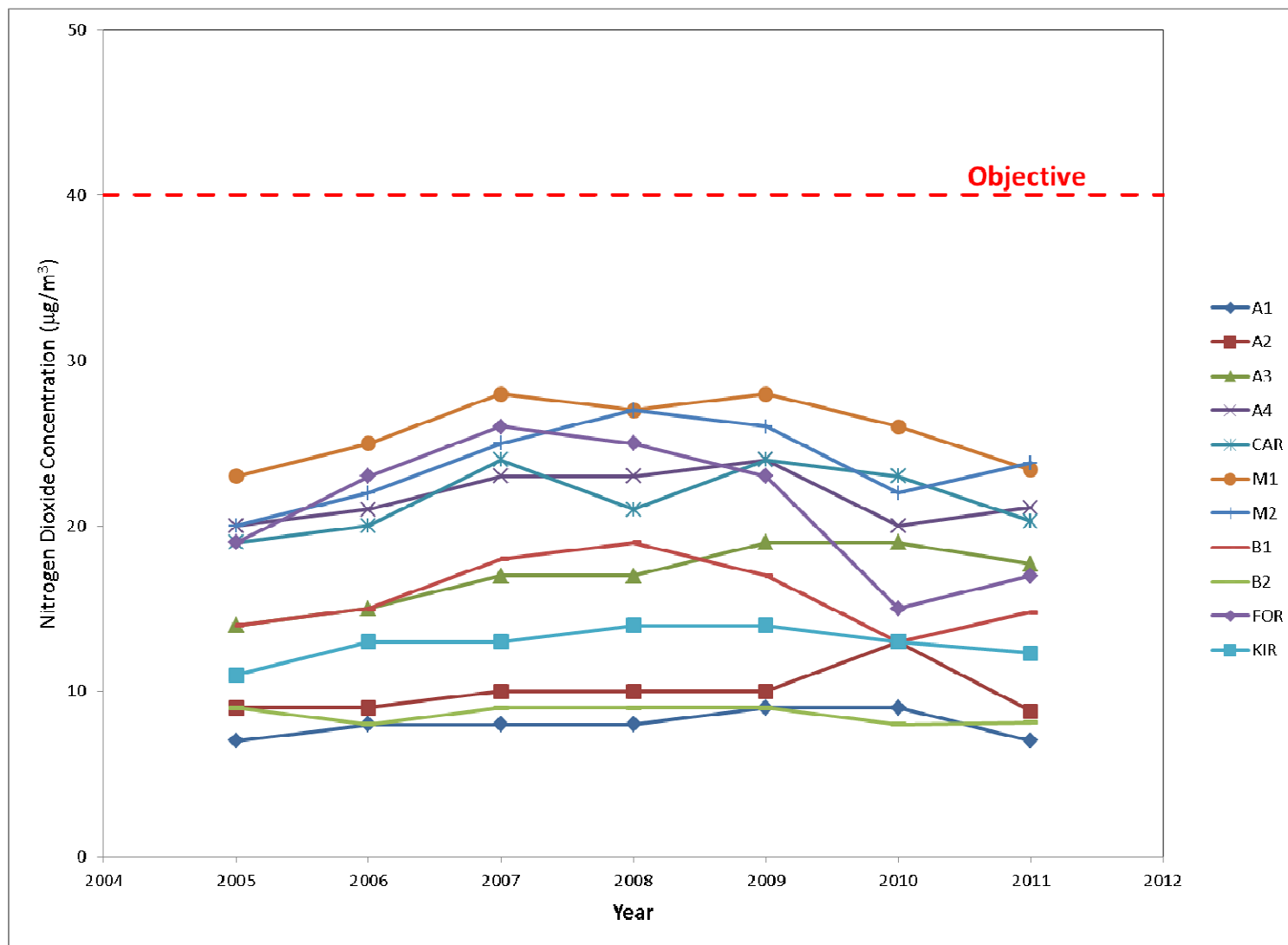
Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Data Capture (Months)	2011 Annual mean concentration ($\mu\text{g}/\text{m}^3$) (BAF=0.78)
A1	Ethie Terrace, Arbroath	Urban Background	N	N	12	7.0
A2	Inchcape Road, Arbroath	Urban Background	N	N	12	8.8
A3	Abbey Path, Arbroath	Roadside	N	N	11	17.7
A4	22 Lordburn, Arbroath	Roadside	N	N	12	21.1
CAR	High St, Carnoustie	Kerbside	N	N	11	20.3
M1	High St, Monifieth	Kerbside	N	N	12	23.4
M2	High St, Montrose	Kerbside	N	N	12	23.8
B1	High St, Brechin	Kerbside	N	N	11	14.8
B2	Sacone 1, Brechin	Industrial	N	N	12	8.1
FOR	High St, Forfar	Kerbside	N	N	12	17.0
KIR	Manse Close, Kirriemuir	Kerbside	N	N	12	12.3
Objective						40

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes (2005 to 2011), Bias Adjusted

Site ID	Annual mean concentration ($\mu\text{g}/\text{m}^3$)						
	2005 (0.73)	2006 (0.78)	2007 (0.91)	2008 (0.86)	2009 (0.77)	2010 (0.78)	2011 (0.78)
A1	7	8	8	8	9	9	7.0
A2	9	9	10	10	10	13	8.8
A3	14	15	17	17	19	19	17.7
A4	20	21	23	23	24	20	21.1
CAR	19	20	24	21	24	23	20.3
M1	23	25	28	27	28	26	23.4
M2	20	22	25	27	26	22	23.8
B1	14	15	18	19	17	13	14.8
B2	9	8	9	9	9	8	8.1
FOR	19	23	26	25	23	15	17.0
KIR	11	13	13	14	14	13	12.3
Objective	40	40	40	40	40	40	40

Bias adjustment factors presented in parentheses

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tubes



2.2.2 PM₁₀

PM₁₀ concentrations are measured at two locations within the Angus Council area: Chapelpark Primary School in Forfar, where a Partisol sampler and a TEOM FDMS analyser are co-located, and Peel Farm Primary School, Glenisla, where a Partisol sampler has been located since midway through 2010.

Measured PM₁₀ concentrations are presented in Tables 2.5 and 2.6. Concentrations measured at Peel Farm Primary School are well below the annual mean and daily mean objectives. The measured number of daily mean exceedences of 50µg/m³ are also well below the objective at both analysers at Chapelpark Primary School. The 2010 annual mean objective of 18µg/m³ is more stringent than the daily mean objective; annual mean concentrations at Chapelpark Primary School are below or equal to the annual mean objective.

Annual mean concentrations over the 2007 to 2011 period are presented in Figure 2.4, and are compared with the 2010 objective. Overall, concentrations have remained fairly constant, with no clear trend evident. Trend data are not presented for the Peel Park monitor, as only one full year of data is available.

Table 2.5 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site	Site Type	Within AQMA?	Valid Data Capture 2011 (%)	Gravimetric Equivalent? (Y or NA)	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)				
					2007	2008	2009	2010	2011
Chapelpark Primary School, Forfar	Roadside	N	93.6	FDMS (ref equiv)	-	16	17	18	18
Chapelpark Primary School, Forfar	Roadside	N	93.7	Gravimetric	19	17	16	16	17.2
Peel Park Primary School, Glenisla	Rural Background	N	95.3	Gravimetric	-	-	-	5.7*	8.9
Objective					40	40	40	18	18

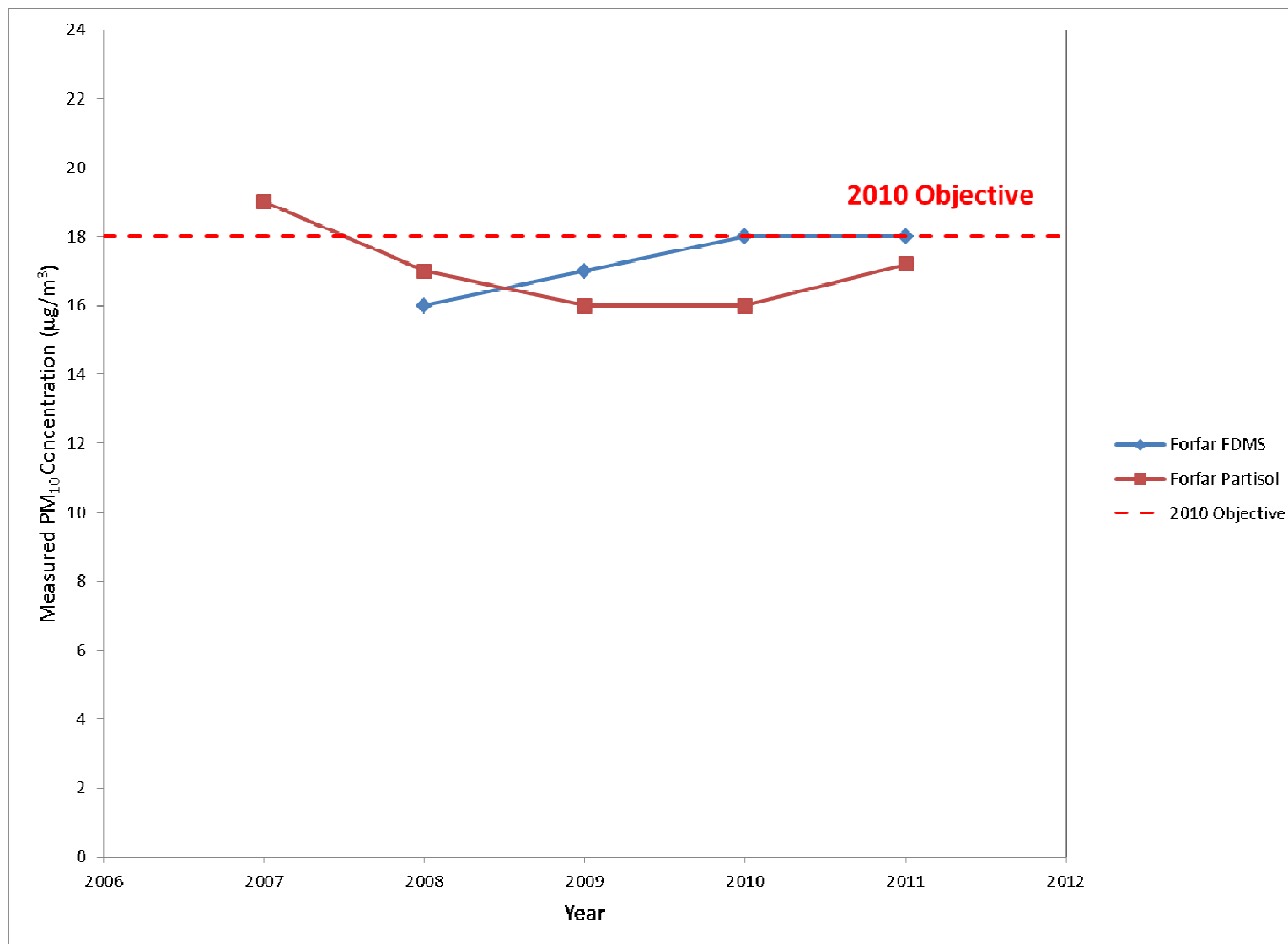
*Annualised

Table 2.6 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site	Site Type	Within AQMA?	Valid Data Capture 2011 %	Gravimetric Equivalent?	Number of days $>50\mu\text{g}/\text{m}^3$				
					2007	2008	2009	2010	2011
Chapelpark Primary School, Forfar	Roadside	N	93.6	FDMS (ref equiv)	-	0	2	4	0
Chapelpark Primary School, Forfar	Roadside	N	93.7	Gravimetric	n/a	3	1	5	2
Peel Park Primary School, Glenisla	Rural Background	N	95.3	Gravimetric	-	-	-	0 (18.8)	1
Objective					35	35	35	7 (50)	7

90th percentile presented in parentheses where data capture <90%

Figure 2.4 Trends in Annual Mean PM₁₀ Concentrations



2.2.3 Sulphur Dioxide

Sulphur dioxide is not monitored within the Angus Council area.

2.2.4 Benzene

Benzene is not monitored within the Angus Council area.

2.2.5 Other pollutants monitored

No other pollutants are monitored within the Angus Council area.

2.2.6 Summary of Compliance with AQS Objectives

Angus Council has examined the results from monitoring within the local authority area. Nitrogen dioxide concentrations are all well below the annual mean objectives. Concentrations of PM₁₀ are well below the daily mean objective, and the annual mean objective is not exceeded at any location. There is therefore no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The criteria for assessing narrow congested streets are set out in Section A.1 of Box 5.3, LAQM.TG(09), and are unchanged from the last round of Review and Assessment.

The 2009 Updating and Screening Assessment did not identify any narrow congested streets which met the revised assessment criteria, and which had not been previously assessed. No additional narrow congested streets have been identified or created since the 2009 Updating and Screening Assessment.

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

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

The criteria for assessing busy streets relevant for the hourly nitrogen dioxide objective are set out in Section A.2 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Busy streets where people may spend 1-hour or more close to traffic were considered in previous Updating and Screening Assessments, and no new locations have subsequently been identified.

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

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

The criteria for assessing roads with high flows of buses and/ or HGVs are set out in Section A.3 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Roads with high flows of buses and/ or HGVs were considered in previous Updating and Screening Assessments, and no new locations have subsequently been identified.

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

3.4 Junctions and Busy Roads

The criteria for assessing junctions are set out in Section A.4 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Busy junctions were considered in previous Updating and Screening Assessments, and no new locations have subsequently been identified.

Angus 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

No new roads have been constructed since the 2009 Updating and Screening Assessment, and none are currently proposed.

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

3.6 Roads with Significantly Changed Traffic Flows

The criteria for assessing new roads are set out in Section A.6 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Angus Council have confirmed that a mixed-use development was given permission close to the junction of St James Road and New Road in Forfar. Whilst the development has the potential to generate a significant amount of traffic, concentrations of nitrogen dioxide in Forfar are well below the air quality objectives. Any increase in PM₁₀ concentrations will be identified at the monitor located approximately 300m east of the St James Road / New Road junction, and should an increase occur resulting in a breach of the air quality objective, a Detailed Assessment will be carried out at that time.

Angus Council has identified one location where traffic has the potential to increase significantly. Should increases in measured PM₁₀ concentrations arise, resulting in a breach of the annual mean objective, a Detailed Assessment will be carried out at that time.

3.7 Bus and Coach Stations

The criteria for assessing bus and coach stations are set out in Section A.7 of Box 5.3, LAQM.TG(09). Previous Updating and Screening Assessments have concluded that there are no bus stations within the Angus Council area with more than 2,500 daily movements or with relevant exposure within 10m. Angus Council have confirmed that this continues to be the case.

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

4 Other Transport Sources

4.1 Airports

The criteria for assessing airports are set out in Section B.1 of Box 5.4, LAQM.TG(09). There are no airports within the Angus Council area.

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

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

The 2009 Updating and Screening Assessment did not identify any locations where diesel locomotives were stationary for more than 15 minutes on a regular basis. There has been no change to this position.

Angus 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

Table 5.1 of LAQM.TG(09) identified railway lines carrying large numbers of movements of diesel locomotives. None of these lines travel through the Angus Council area.

Angus 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)

The 2009 Updating and Screening Assessment did not identify any ports which met the criteria requiring detailed assessment. The Montrose Port has undergone significant redevelopment work in the last 2 years; a consultation was therefore

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carried out with the Montrose Port Authority to determine whether there had been a significant increase in movements such that the criteria were now breached. Montrose Port Authority confirmed that there are around 300 movements each year, which is well below the 5,000 requiring a Detailed Assessment.

Angus 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

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

The criteria for assessing industrial installations are set out in Section C.1 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. There have been no new industrial installations within the Angus Council area since the 2009 USA was completed, and there are currently no proposals for any significant installations.

Angus Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

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

Angus Council is not aware of any industrial installations which have significantly increased their emissions, and no new exposure has been introduced nearby to any existing installations. Data provided by SEPA have confirmed that there were no significant changes to emissions from Part A installations regulated by themselves in or around the Angus area, where data were available. Data is currently awaited relating to the Glaxo site; data for this site will be considered once available. Should any significant increase have occurred, Angus Council will proceed to a Detailed Assessment.

Angus Council confirms that, based on the currently available data, 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.

Should data for the Glaxo site confirm that emissions have significantly increased, Angus Council will proceed to a Detailed Assessment.

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

There have been no new industrial installations within the Angus Council area since the 2009 USA was completed, and there are currently no proposals for any significant installations.

Angus Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

The criteria for assessing Major Fuel (Petrol) Storage Depots are set out in Section C.2 of Box 5.5, LAQM.TG(09). The 2009 Updating and Screening Assessment did not identify any major fuel storage depots. There has been no change to this position.

Angus Council confirms that there are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

The criteria for assessing petrol stations are set out in Section C.3 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. One petrol station is proposed within the Angus Council area, however the annual throughput is 110,000 litres, which is well below the criteria (of 2 million litres per year) requiring a Detailed Assessment.

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

5.4 Poultry Farms

The criteria for assessing poultry farms are set out in Section C.4 of Box 5.5, LAQM.TG(09); this was a new consideration for the 2009 Updating and Screening Assessment. The 2009 USA stated that there were no new or newly identified poultry farms were identified within the Council area which met the specified criteria.

A number of poultry farms have been granted permission since the 2009 USA, however, for each poultry unit, the number of bird places is well below that at which a Detailed Assessment is required, or there is no relevant exposure within 100m of the poultry units.

Poultry farms considered:

Bractullo Farm	23,000 places
Templeton Farm	22,000 places
Janeston Farm	20,000 places
Lundie Castle	16,000 places
Sandyford Farm	SEPA regulated; no relevant exposure within 100m

A number of additional poultry units are currently at the pre-planning stage. Many of these exceed the number of places for which an assessment may be required. These will be considered in future Review and Assessment reports as they progress through the planning system. Air quality assessments will be requested for those farms where relevant exposure exists within 100m of the proposed poultry buildings, and which meet the following criteria:

- 400,000 bird places if mechanically ventilated
- 200,000 bird places if naturally ventilated
- 100,000 bird places for turkey units

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

The criteria for assessing biomass combustion (individual installations) are set out in Section D.1a of Box 5.8, LAQM.TG(09). Since the 2011 Progress Report was completed, four new biomass boilers have been proposed or have been granted permission within the Angus Council area.

The biomass calculator¹ was used to calculate the target emission rates for each boiler. The boiler data used are presented in Table 6.1, whilst the calculated Target Emission Rates are presented in Table 6.2. Background concentrations have been taken from the national maps provided on the UK-Air website².

None of the boilers emission rates exceed the Target Emission Rates for nitrogen dioxide or PM₁₀, and therefore it is not necessary to proceed to a Detailed Assessment for any of the boilers.

Table 6.1 Boiler Data used in the Screening Assessment

Boiler Location	Building Height (m)	Stack Diameter (m)	Stack Height (m)	Background Concentration (µg/m ³)		Emission Rates (g/s)	
				PM ₁₀	NO ₂	PM ₁₀	NO ₂
Dungmans Tack	8	0.25	9	11.11	13.15	0.0012	0.0226
South Kinloch Street	8	0.3	8.8	8.6	7.4	0.002	0.00071
Seggieden Farm	2.4	0.2	4.9	12.45	7.5	0.00022	0.00023
Piperdam	10	0.3	11.2	10.99	7.44	0.0164	0.0323

¹ Available at: http://laqm.defra.gov.uk/documents/biomass_calculator_tool6.xls

² <http://uk-air.defra.gov.uk/>

Table 6.2 Target Emission Rates from Biomass Calculator

Boiler Location	PM ₁₀ Annual Mean		Nitrogen Dioxide Annual Mean		Nitrogen Dioxide Hourly Mean	
	Target Emission Rate (g/s)	Detailed Assessment Required?	Target Emission Rate (g/s)	Detailed Assessment Required?	Target Emission Rate (g/s)	Detailed Assessment Required?
Dungmans Tack	0.0151	No	0.0588	No	0.0956	No
South Kinloch Street	0.0169	No	0.0585	No	0.092	No
Seggieden Farm	0.0247	No	0.1446	No	0.1756	No
Piperdam	0.0206	No	0.0958	No	0.1357	No

Angus 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 criteria for assessing biomass combustion (combined impacts) are set out in Section D.1b of Box 5.8, LAQM.TG(09). The estimated average PM₁₀ background concentration in the Angus Council area in 2012 is 8.7µg/m³ (range 5.9 - 14.0µg/m³).

Using the nomograms (Figure 5.23), and data in Table 5.3, provided in TG(09), and assuming a worst-case background of 14µg/m³ for a large town, emissions of at least 1800 kg PM₁₀ per year would be required in a square 500m by 500m in order for this type of emission source to be likely to lead to exceedence of the annual mean objective for PM₁₀ in Scotland. This is equivalent to over 65 households within a 500m by 500m grid square all burning wood in fireplaces as their primary fuel. Alternatively, there would need to be a minimum of 7,905m² of commercial floorspace (approximately equivalent to 3 large supermarkets) heated by biomass boilers within a 500m by 500m grid square all using wood as their primary fuel. On this basis, and using the results of previous domestic fuel surveys, it is considered highly unlikely that there are any areas of biomass combustion exceeding these criteria.

Angus Council confirms that there are unlikely to be combined impacts from biomass combustion in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The criteria for assessing domestic solid-fuel burning are set out in Section D.2 of Box 5.8, LAQM.TG(09) and are unchanged from previous Review and Assessments. The 2009 USA concluded, based on the results of a domestic fuel survey, that there were no areas of significant domestic coal or smokeless fuel burning, and that the likelihood of areas of domestic solid-fuel burning exceeding the criteria was highly unlikely. The Council has confirmed that this continues to be the case.

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

7 Fugitive or Uncontrolled Sources

The criteria for assessing fugitive or uncontrolled sources are set out in Box 5.10, LAQM.TG(09). Since the 2009 USA was prepared, two new quarries or mineral extraction facilities have submitted planning applications. These are:

10/01189/MINM Ethiebeaton and Ardownie Quarry – Extension and Merging

Planning permission has been granted for the extension and merging of the existing Ethiebeaton and Ardownie Quarries. The planning permission includes Condition 11, which states:

“That prior to the commencement of any works associated with this planning permission a dust monitoring scheme shall be submitted to and approved in writing by the Planning Authority. The dust monitoring scheme shall include details of the following:-

- *monitoring locations, frequency of monitoring and the equipment to be used. The monitoring scheme shall take into account the guidance in both LAQM.TG(09) and the Environment Agency Guidance Document M17;*
- *trigger values and a complaint investigation procedure;*
- *reporting of results to the Planning Authority ;*
- *timescales for the implementation and the regular review of the scheme.”*

Background PM₁₀ concentrations are below 16µg/m³ in the area and there are residential properties within 200m of the existing facility, and the application boundary. Angus Council has not received any complaints from the properties within 200m of the existing quarries, and SEPA has received only one complaint in 5 years. The implementation of the conditioned dust monitoring scheme will ensure that dust impacts are monitored and therefore controlled. Any dust complaints will be reported in future Review and Assessment Reports.

11/01169/FULM Struan Sand and Gravel Quarry

An application has been made for a sand and gravel quarry to the southeast of Edzell Wood, Edzell. The decision on the application is pending. There are a small number of properties within 200m of the proposed excavation boundary. An air quality assessment has been prepared as part of the Environmental Statement. As the extraction process is a ‘wet’ process, the impact of dust on the surrounding area was considered to be insignificant, however a Dust Management Strategy is proposed for the site. Dust mitigation measures will be imposed through planning conditions should the site be granted permission. Further consideration will be given to the

impacts of this quarry should permission be granted, and should dust complaints arise.

In addition, residential development is proposed adjacent to an existing quarry:

Kingennie Farm

Planning permission has been granted for a residential development in proximity to the Ethiebeaton and Ardownie Quarry. The development will comprise 160 properties. A planning condition has been imposed requiring an air quality assessment to be prepared to determine an appropriate buffer distance between the proposed housing and the quarry. Consequently, there are unlikely to be any impacts on the proposed properties.

Angus Council confirms that there are unlikely to be any significant impacts from fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Concentrations of nitrogen dioxide measured at 11 monitoring sites across the Angus Council area were well below the annual mean objective in 2011. Concentrations have remained similar at all sites over a seven year period (2005 - 2011).

PM₁₀ concentrations measured at the Peel Farm Primary School analyser are well below the annual mean and daily mean objectives. The measured number of daily mean exceedences of 50µg/m³ are also well below the objective at both analysers at Chapelpark Primary School. Annual mean concentrations at Chapelpark Primary School are below or equal to the annual mean objective.

Annual mean PM₁₀ concentrations over the 2007 to 2011 period have remained fairly constant, with no clear trend evident.

8.2 Conclusions from Assessment of Sources

The Updating and Screening Assessment has not identified any significant changes to emissions sources within the Angus Council area that will lead to a deterioration in air quality. There have been no new or significantly altered industrial processes, road, transport, commercial, domestic or fugitive sources of emissions for which more Detailed Assessment is required.

8.3 Proposed Actions

Angus Council will continue monitoring nitrogen dioxide and PM₁₀ concentrations. A third site has been identified within Arbroath for a Partisol unit which, assuming a suitable electrical supply can be provided, should become operational in 2012.

The 2013 Progress Report will be submitted in April 2013 setting out 2012 monitoring data and newly identified sources.

9 References

Angus Council, 2011. 2011 Air Quality Progress Report for Angus Council. Available at: www.angus.gov.uk/atoz/pdfs/airquality2011/AQReport2011.pdf

Angus Council, 2010. 2010 Air Quality Progress Report for Angus Council. Available at: www.angus.gov.uk/atoz/pdfs/airquality2010/AQReport2010.pdf

Angus Council, 2009. 2009 Updating and Screening Assessment for Angus Council. Available at: www.angus.gov.uk/atoz/pdfs/airquality2009/AQReport2009.pdf

Defra, 2009. Review & Assessment: Technical Guidance LAQM.TG(09), available at: <http://archive.defra.gov.uk/environment/quality/air/airquality/local/guidance/documents/tech-guidance-laqm-tg-09.pdf>

Defra, 2012. Data Archive, available at: <http://uk-air.defra.gov.uk/data/>

Appendices

Appendix A – Angus Council Area

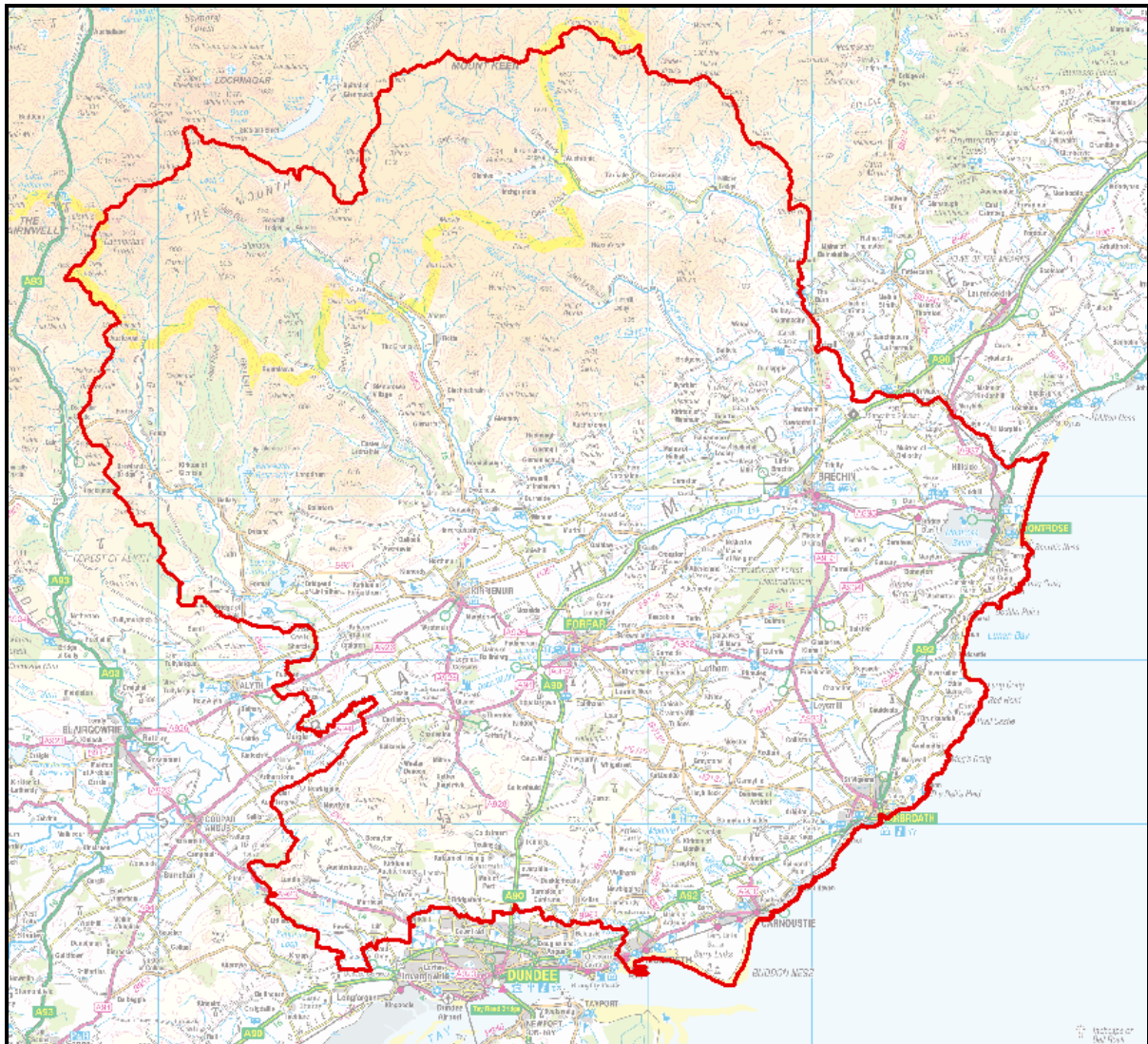


Figure A.1 Angus Council Boundary. Contains Ordnance Survey data © Crown copyright and database 2012.

Appendix B: QA/QC

Diffusion Tube QA/QC

Angus Council deploy diffusion tubes prepared and analysed by Tayside Scientific Services (TSS; 20% TEA in water method). Tubes are changed on a monthly basis.

Bias Adjustment Factors from Local Co-location Studies

Angus Council do not operate a chemiluminescent analyser, and therefore no co-location study is carried out. It is therefore not possible to calculate a local bias adjustment factor.

National Bias Adjustment Factor

The national bias adjustment factor for TSS in 2011 is 0.78 (taken from spreadsheet v03/12, based on 8 studies, including 7 from Dundee City Council and Fife Council; available at: http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors-v03_12.xls). This factor has been applied to all 2011 diffusion tube data.

WASP

Tayside Scientific Services take part in the Workplace Analysis Scheme for Proficiency (WASP), operated by the Health and Safety Laboratory (HSL). During 2011, on average, 100% of samples were determined to have been satisfactory (1st quarter: 100%; 2nd quarter: 100%; 3rd quarter: 100%, 4th quarter: 100%).

Automatic Monitoring QA/QC

Angus Council change the Partisol filter cassettes on a two-weekly basis. The samplers are serviced bi-annually by SupportingU Ltd.

Data from the FDMS analyser are collected via automatic telemetry by Air Monitors Ltd and are checked daily by AEA. The analyser is also serviced on an annual basis and audited every six months. All data are ratified 6-monthly using procedures comparable to those used for national network monitoring data. Data are available on the Scottish air quality website www.scottishairquality.co.uk.

Personnel from Angus Council visit each site on a regular basis in order to change filters and check diagnostics.