



# 2015 Updating and Screening Assessment for Perth and Kinross Council

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

June 2015



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<b>Report Reference number</b>	USA2015
<b>Date</b>	October 2015

## Executive Summary

The report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environmental 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 exceedances are 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.

Perth & Kinross Council declared the whole of Perth city an AQMA in May 2006 after the Detailed Assessment in 2004 found that there would be areas of exceedances for NO<sub>2</sub> and PM<sub>10</sub> where relevant exposure occurred. The 2007 Further Assessment confirmed the conclusions of the Detailed Assessment and recommended that Perth & Kinross Council retain their city wide AQMA for NO<sub>2</sub> and PM<sub>10</sub> and those exceedances of these pollutants were due mainly to queuing and congested traffic specifically HDV traffic. The Progress Reports to date show that all sites in Perth which are above or close to the objectives lie within the city centre or close to it on the main through routes and are within the existing AQMA.

This Updating and Screening Assessment considered monitoring data from 61 sites within Perth & Kinross and when assessing the bias corrected annual mean nitrogen dioxide concentrations against the national standard, there are exceedances at 11 sites in Perth once more, and 1 out with Perth (Crieff). There were no exceedances of the 1 hour NO<sub>2</sub> standard at any of the 3 monitors in the area which shows a big decrease from 13 in 2013 at Atholl St, this ties in with a fairly convincing 5 year downward trend at both the real time monitor and along this corridor and more widely in the district.

The annual mean PM<sub>10</sub> standard was exceeded at Atholl St and Crieff real time monitors, however there was a decrease in levels from 22µgm<sup>-3</sup> to 20µgm<sup>-3</sup> at Atholl St with Crieff remaining at 20µgm<sup>-3</sup>. These levels are the same as the newly

## **Perth and Kinross Council**

proposed annual mean standard. There was once more a good decrease from 7 to 1 exceedance of the 24 hour mean standard at Atholl St, tying in well with the reduction of the annual mean levels here.

The Crieff High St Corridor was declared an AQMA in April and work on an AQAP should begin in 2015.

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# 1 Introduction

## 1.1 Description of Local Authority Area

The Perth & Kinross local authority area is made up of Perthshire and Kinrossshire. Collectively the Perth & Kinross area was formerly known as Perthshire. Perth & Kinross is one of the 32 unitary council areas formed by the reorganisation of Scottish local authority boundaries in 1996. Perth & Kinross is the 5<sup>th</sup> largest council area in Scotland, but it is only the 14<sup>th</sup> largest in terms of population, reflecting its extensive rural and upland areas. Important settlements in Perth & Kinross include Perth, Kinross, Auchterarder, Aberfeldy, Blairgowrie, Blair Atholl, Pitlochry, Coupar Angus and Crieff.

The 'Fair City' of Perth lies to the east, on the banks of the Tay, the largest river in Britain. Blairgowrie and East Perthshire have quiet glens, peaceful lochs and the mountains of Glenshee.

Known as the 'big county', Perth & Kinross, is the gateway to the Highlands and home to around 140,000 people. The "big" county refers to not only its physical area, but to the diversity of towns and countryside. Perth & Kinross features everything you associate with Scotland including lochs, mountains, forests and castles. Perth & Kinross is bordered on its north by Highland and Aberdeenshire; on its east by Angus and the City of Dundee; and on its south by Fife, Clackmannanshire and Stirling.

It covers 5,406 sq. km (includes fresh and tidal waters) with a land area of 5,311 sq km.

Perth is a hub for employment, commerce, leisure and tourism for the wider area of Perth & Kinross and this contributes to the traffic issues that arise within our designated AQMA's.

The main and strategic roads within Perth & Kinross include the A90, A9, M90, A85, A827 and the two roads A93 and A94 which are the major road links associated with

the proposed Cross-Tay Link Road (CTLR). Four main line rail routes converge in the city of Perth.

## 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 exceedances 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,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

**Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in Scotland**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
	3.25 µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m <sup>3</sup>	Running 8-hour mean	31.12.2003
Lead	0.5 µg/m <sup>3</sup>	Annual mean	31.12.2004
	0.25 µg/m <sup>3</sup>	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m <sup>3</sup>	Annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric)	50 µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m <sup>3</sup>	Annual mean	31.12.2010
Sulphur dioxide	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

Perth and Kinross Council has completed the following Review and Assessments of air quality to date:

- Stage 1 March 1999, Stage 1 (Revised)
- Stage 2 (September 2002)
- Upgrading and Screening Assessment (2003)
- Detailed Assessment (2004) NO<sub>2</sub> & PM<sub>10</sub>
- Progress Report (2005)
- Air Quality Management Area Declared (May 2006) for NO<sub>2</sub> & PM<sub>10</sub>
- Updating and Screening Assessment (2006)
- Progress Report (2007)
- Further Assessment (2007) NO<sub>2</sub> & PM<sub>10</sub>
- Progress Report (2008)
- Updating and Screening Assessment (2009)
- Air Quality Action Plan adopted by council and approved by Scottish Government (2009)
- Progress Report (2010)
- Progress Report (2011)
- Updating and Screening Assessment (2012)
- Detailed Assessment of Air Quality A85 at Crieff (2012)
- Air Quality Management Area Declared April 2014 for NO<sub>2</sub> & PM<sub>10</sub> in Crieff
- Progress Report (2014)

The previous assessments of the air quality in Perth & Kinross concluded that there were likely exceedances of the annual mean objectives for NO<sub>2</sub> and PM<sub>10</sub> as a result of traffic sources in Perth city.

Perth & Kinross Council declared the whole of Perth City an AQMA for both pollutants in May 2006. Figure 1 (1.1) shows the extent of the area designated. The decision to designate the whole of Perth city in the AQMA was made to ensure that areas that are close to, but do not at presently exceed the objectives

are included. This approach also allows the Action Plan to take in a wider area, thus avoiding moving problems to other parts of the city, while dealing with the areas which are exceeding the objectives.

Perth & Kinross Council has taken account of the effect of the proposed AQAP for Perth on greenhouse gas emissions in accordance with Scottish Government guidance. To inform this process, AEA Energy & Environment was commissioned to undertake a study in terms of the effect of the AQAP on greenhouse gas emissions (GHG) for the whole of the Perth & Kinross Council area, rather than just the AQMA, this assessment was completed in May 2007.

The 2007 Progress Report, using 2006 data, concluded that nitrogen dioxide concentrations at 17 sites were breaching the 2005 annual mean objective of  $40\mu\text{g}/\text{m}^3$ , and at 8 sites were between  $35 - 39 \mu\text{g}/\text{m}^3$ , all close to Perth city centre, and levels of  $\text{PM}_{10}$  at both High Street and Atholl Street monitoring sites appeared to be increasing by a small margin year on year.

The 2008 further assessment confirmed the conclusions of the 2007 detailed assessment and tested the city centre traffic management (CCTMR) scenarios to assess the likely impact they may have on pollutant concentrations. The report included an assessment of source apportionment and identified emissions from heavy duty vehicle and congested traffic as the main local contributors to elevated levels of nitrogen dioxide and  $\text{PM}_{10}$  in Perth.

The 2008 Progress Report, using 2007 data, concluded that nitrogen dioxide concentrations at 19 sites in Perth were above the annual mean objective of  $40\mu\text{g}/\text{m}^3$  and 4 were between  $35-40\mu\text{g}/\text{m}^3$ . Also in Crieff, 1 site was above  $40\mu\text{g}/\text{m}^3$  and 2 sites were between  $35 - 40 \mu\text{g}/\text{m}^3$ . As the sites which are exceeding the standard are kerbside and not representative of exposure for the annual standard and the façade level tubes were below  $40\mu\text{g}/\text{m}^3$ , it was decided not to proceed to a Detailed Assessment in 2008, but instead to undertake automatic monitoring in Crieff.

A Draft Air Quality Action Plan, Strategic Environmental Assessment Report (2008), Climate Change Implication of the Draft Air Quality Action Plan (2008) and the Further Assessment (2008) all went out for consultation in June 2008.

The 2009 Updating and Screening Assessment, using 2008 data, concluded that nitrogen dioxide concentrations at 23 sites within Perth's AQMA were above the annual mean objective of  $40\mu\text{g}/\text{m}^3$  as were two sites in Crieff (out with Perth's AQMA). As a result two additional monitoring sites at the façade of buildings were introduced at Crieff.

Perth & Kinross Council's Air Quality Action Plan for Perth was approved by The Scottish Government and Adopted as Council Policy in August 2009.

The 2010 progress report showed exceedances at 16 sites within the AQMA and a reduction at both High St and Atholl St real time monitors of 27 to  $25\mu\text{g}/\text{m}^3$  and 60 to  $56\mu\text{g}/\text{m}^3$ . There was one site out with the Perth AQMA (7 West High St Crieff) above the objective. This is a road side site with the corresponding façade level tubes being slightly below the objective.

The 2011 progress report recorded exceedances at 20 diffusion tube sites within the Perth AQMA and 3 outside (all in Crieff). The Atholl St real time monitor remained at an annual average of  $56\mu\text{g}/\text{m}^3$ , whilst the High St monitor saw an increase to  $30\mu\text{g}/\text{m}^3$ .

The 2012 Updating and Screening Assessment saw no significant change in  $\text{NO}_2$  and  $\text{PM}_{10}$ . The diffusion tubes in Crieff continue to show  $\text{NO}_2$  levels above the objective; therefore Perth and Kinross Council commissioned AEA to conduct a Detailed Assessment which confirmed exceedances of both  $\text{PM}_{10}$  and  $\text{NO}_2$  annual mean objectives.

The 2013 Progress report continued to show exceedances of  $\text{PM}_{10}$  and  $\text{NO}_2$  in both Perth and Crieff, and as a consequence Crieff was declared an AQMA in April 2014.

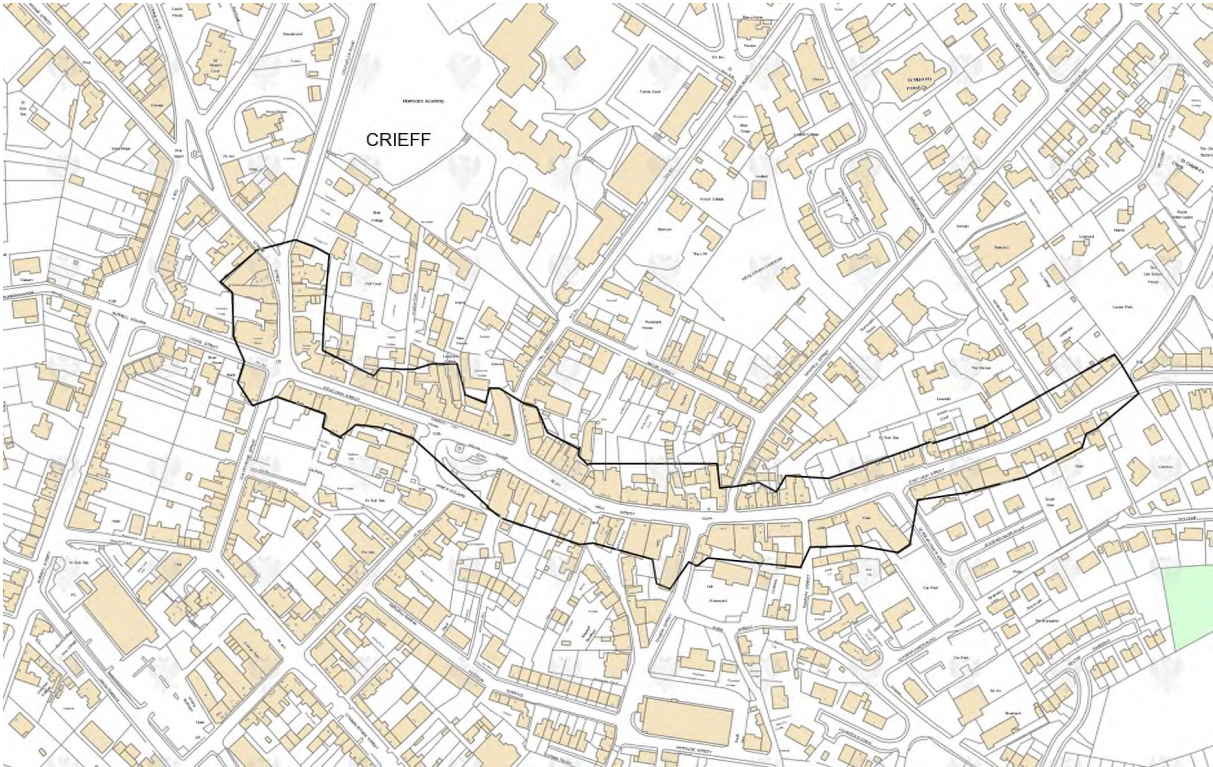
The 2014 Progress report showed a significant improvement in NO<sub>2</sub> at both Perth Real Time Monitors however the concentrations increased in Crieff. PM10 showed a slight increase at all monitors.

**Figure 1.1 Map of AQMA Boundary Perth**





Figure 1.2 Map of AQMA Boundary Crieff



## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

Figure 2.1 Map of Automatic Monitoring Sites Central Perth

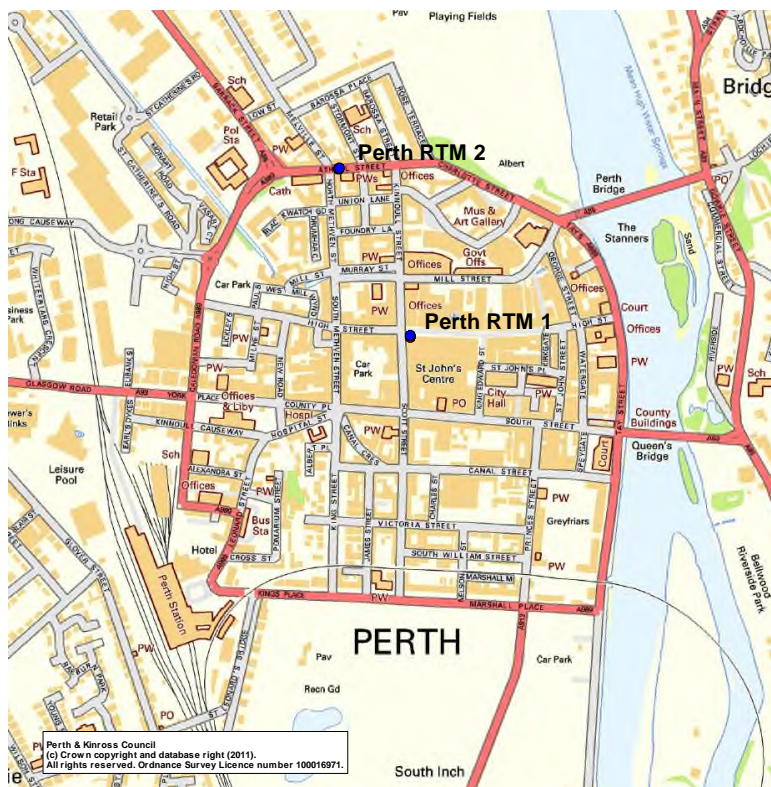
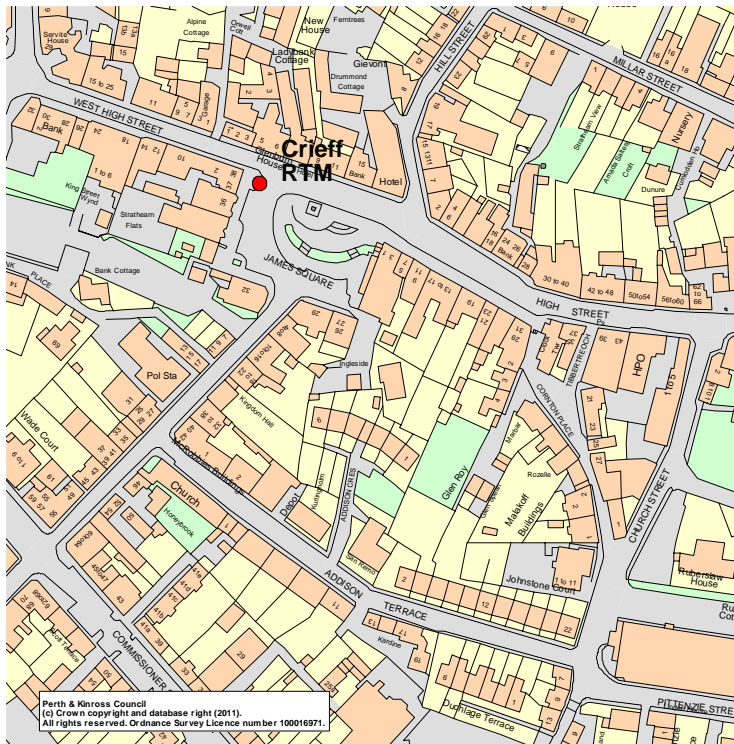


Figure 2.2 Map of Automatic Monitoring Site Muirton Perth



Figure 2.3 Map of Automatic Monitoring Site Crieff



**Table 2.1 Details of Automatic Monitoring Sites**

## Perth and Kinross Council

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Perth 1- High Street (RTM1)	Roadside	311680	72362 4	NO <sub>2</sub> & PM <sub>10</sub>	AP1 M200A chemiluminescent analyser for Oxides of Nitrogen & R&P TEOM analyser for PM <sub>10</sub>	Y	Y (20.4m)	4.8m	Y
Perth 2- Atholl Street (RTM2)	Roadside	311575	72391 7	NO <sub>2</sub> & PM <sub>10</sub>	AP1 M200A chemiluminescent analyser for Oxides of Nitrogen & R&P TEOM analyser for PM <sub>10</sub>	Y	Y (22.3m)	2.3m	Y
Perth 3- North Muirton (RTM3)	Urban Background	310658	72565 8	PM <sub>10</sub>	FDMS TEOM Analyser	Y	N(30m)	N/A	N
Crieff-St James Sq  LAQM USA 2015	Roadside	286363	72161 4	NO <sub>2</sub> & PM <sub>10</sub>	AP1 M200A chemiluminescent analyser for Oxides of Nitrogen & FDMS TEOM analyser for PM <sub>10</sub>	Y	Y (9.5m)  21	5.3m	N

2.1.2 Non-Automatic Monitoring Sites

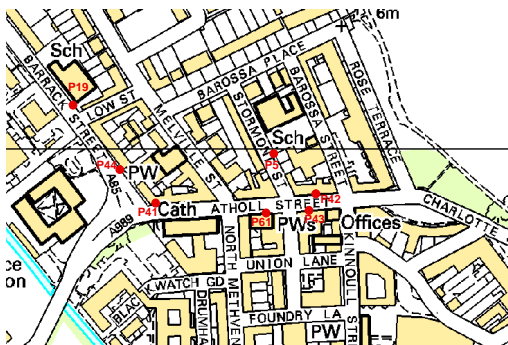
Figure 2.4 Maps of Non-Automatic Monitoring Sites



South Street/Scott Street Area



NW Perth Area



Atholl Street



Edinburgh Road

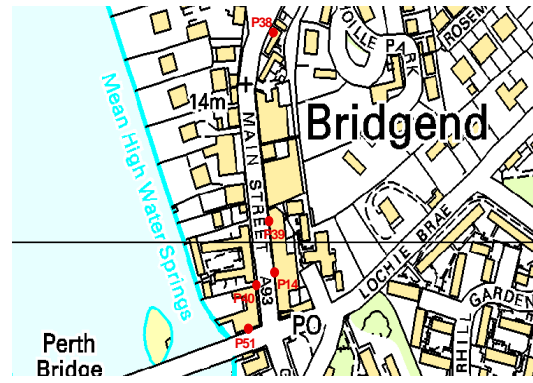
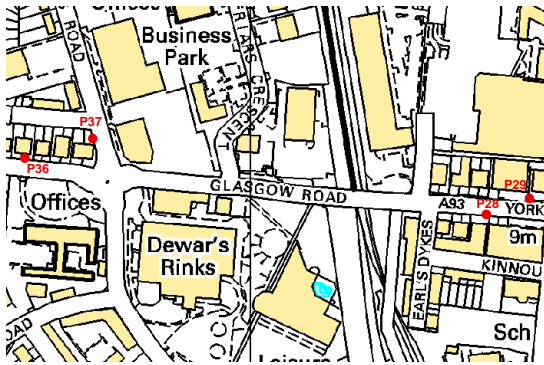


Glasgow Rd West



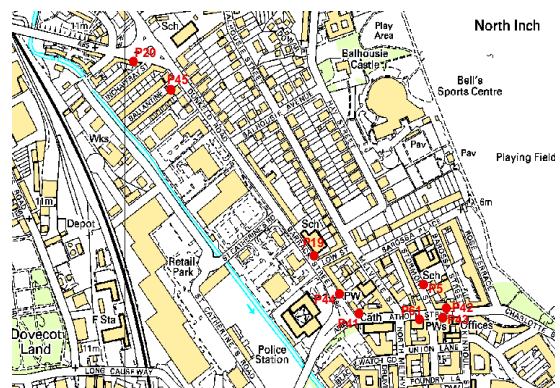
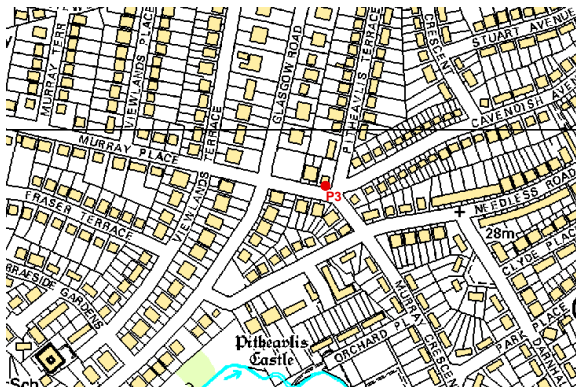
Lower Muirton Area

**Perth and Kinross Council**



**Glasgow Rd Area**

**Bridgend**



**Murray Crescent**

**North Centre Perth**



**Auchterarder**

**Dunkeld**



**Kinross**

**Crieff Background**



**Crieff**



**Glenfarg**





**Ballinluig**

**Blairgowrie**

Perth and Kinross Council

Table 2.2a Details of Non-Automatic Monitoring Sites Perth

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
42 Scott Street, Perth, PH1 5PH	R	NO117235	NO2	Y	Y(3)	2.5	Y
17 Speygate, Perth, PH2 8PJ	UC	NO120234	NO2	Y	Y(2.9)	2.05	Y
15 Murray Crescent, Perth, PH2 0HU	UB	NO105228	NO2	Y	Y(2.9)	2.05	N
8 Stormont Street, Perth, PH1 5NW	UC	NO116239	NO2	Y	Y(10)	1.7	Y
41 Mull Place, Perth, PH1 3DP	UB	NO105257	NO2	Y	Y(6)	1.7	N
257 Rannoch Road Roundabout, Perth,	UC	NO089244	NO2	Y	Y(8.3)	2.1	Y
86/88 South Street, Perth, PH2 8PD	R	NO118234	NO2	Y	Y(1)	2.6	Y
9 Main Street, Bridgend, Perth,	R	NO122239	NO2	Y	Y(1)	2.3	Y
St Ninian's School, Dunkeld Road,	R	NO113241	NO2	Y	Y(3.4)	3.2	Y
2 Crieff Road, Perth, PH1 5RT	R	NO110243	NO2	Y	Y(1)	1.9	Y
28 York Place, Perth, PH2 8EH	R	NO111234	NO2	Y	Y(12)	2.4	Y
37 York Place, Perth, PH2 8EH	R	NO112235	NO2	Y	Y(8)	4.1	Y
104 South Street, Perth, PH2 8PA	R	NO117234	NO2	Y	Y(1)	2.4	Y
45-47 South Street, Perth, PH2 8PD	R	NO119234	NO2	Y	Y(5)	3.5	Y
135 South Street, Perth, PH2 8PA	R	NO117234	NO2	Y	Y(23)	4.6	Y
216 South Street, Perth, PH2 8NY	R	NO116234	NO2	Y	Y(5)	2.5	Y

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10 County Place, Perth, PH2 8EE	R	NO115234	NO2	Y	Y(2)	3	Y
17 Princes Street, Perth, PH2 8NG	R	NO119234	NO2	Y	Y(1.5)	1.8	Y
51 Glasgow Road, Perth, PH2 0PE	R	NO107235	NO2	Y	Y(7.2)	2.6	Y
Riggs Road, Perth, PH1 1PR	R	NO108236	NO2	Y	Y(10)	1.9	Y
93-109 Main Street, Bridgend, Perth,	R	NO122241	NO2	Y	Y(1)	7	Y
39 Main Street, Bridgend, Perth,	R	NO122240	NO2	Y	Y(7)	2.1	Y
18 Main Street, Bridgend, Perth,	R	NO122239	NO2	Y	Y(18)	2.4	Y
76 Atholl Street, Perth, PH1 5NL	R	NO114239	NO2	Y	Y(1)	2.5	Y
26-28 Atholl Street, Perth, PH1 6NP	K	NO116239	NO2	Y	Y(2)	0.3	Y
17 Atholl Street, Perth, PH1 5NH	R	NO116239	NO2	Y	Y(2)	3	Y
22 Barrack Street, Perth, PH1 5RD	K	NO114239	NO2	Y	Y(2.7)	0.3	Y
Ballantine Place, Perth, PH1 5RD	UC	N0110243	NO2	Y	Y(4)	1.7	Y
204A Crieff Road, Perth, PH1 2PE	R	N0093248	NO2	Y	Y(11.5)	2	Y
East Huntingtower, Perth, PH1 3JJ	R	NO083248	NO2	Y	Y(5.5)	1.8	Y
30 Edinburgh Road, Perth, PH2 8BX	R	NO083248	NO2	Y	N(37)	2.5	Y
2 West Bridge Street, Perth, PH2	R	NO122239	NO2	Y	Y12.5)	3.7	Y
Real Time Monitor adjacent to 176 High	R	NO115239	NO2	Y	Y(20.4)	4.8	Y
Real Time Monitor, Atholl Street, Perth,	R	NO117235	NO2	Y	Y(22.3)	2.3	Y
84 Dundee Road, Perth, PH2 7BA	R	NO125229	NO2	Y	Y(1)	1.7	Y
30 Dundee Road, Perth, PH2 7AQ	R	NO124232	NO2	Y	Y(1.5)	1.4	Y

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The Lodge, Isla Road, Bridgend,	R	NO122241	NO2	Y	Y(1)	1.4	Y
5-7 Charlotte Street, Perth, PH1 5LW	R	NO119238	NO2	Y	Y(3.3)	2	Y
1 Atholl Street, Perth, PH1 5NH	R	NO116239	NO2	Y	Y(1)	2.3	Y
2 Atholl Street, Perth, PH1 5NP	R	NO116239	NO2	Y	Y(2.5)	0.8	Y
United Free Church of Scotland, Kinnoull Street, Perth,	R	NO116239	NO2	Y	Y(3)	2.6	Y
Leith Buildings, 28 Dunkeld Road,	R	NO110244	NO2	Y	Y(5.1)	2.1	Y
134-140 Dunkeld Road, Perth,	R	NO106249	NO2	Y	Y(7.8)	1.5	Y
82 Crieff Road, Perth PH1 2RP	R	NO103240	NO2	Y	Y(1)	2.4	Y
2 Friarton Road, Perth, PH2 8DE	R	NO117812	NO2	Y	Y(4.5)	2.0	Y
202 Glasgow Road Perth, PH2 0NA	R	NO101602	NO2	Y	Y(5.5)	1.5	Y
59 South Methven Street, Perth,	R	NO115492	NO2	Y	Y(0)	3.2	Y
22 North Methven Street, Perth,	R	NO115412	NO2	Y	Y(0)	3	Y

Perth and Kinross Council

**Table 2.2b Details of Non- Automatic Monitoring Sites Dunkeld**

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
1 Atholl Street, Dunkeld, PH8 0AH	R	NO026654	NO2	N	Y(0)	2.25	Y
14 Atholl Street, Dunkeld, PH8 0AR	R	NO026744	NO2	N	Y(0)	2	Y

**Table 2.2c Details of Non- Automatic Monitoring Sites Kinross**

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
124 High Street, Kinross, KY13 8DE	R	NO119200	NO2	N	Y(0.5)	1.3	Y
76 High Street, Kinross, KY13 8JA	R	NO119360	NO2	N	Y(0)	2	Y

**Table 2.2d Details of Non- Automatic Monitoring Sites Auchterarder**

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
66 High Street, Auchterarder, PH3 1BN	R	NN945691	NO2	N	Y(1.7)	0.5	Y
176 High Street, Auchterarder, PH3 1AS	R	NN942671	NO2	N	Y(3.0)	0.5	Y

Table 2.2e Details of Non- Automatic Monitoring Sites Crieff

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
7 West High Street, Crieff, PH7 3AF	UC	NN866215	NO2	Y	Y(10)	0.4	N
39, High Street, Crieff, PH7 3HT	UC	NN865215	NO2	Y	Y(18)	1.2	N
62, High Street, Crieff, PH7 3BS	UC	NN865215	NO2	Y	Y(1)	1	Y
9 East High Street, Crieff, PH7 3AF	UC	NN866215	NO2	Y	Y(5)	0.3	Y
19 West High Street, Crieff, PH7 4AU	UC	NN862992	NO2	Y	Y(0)	2.5	Y
43 High Street, Crieff, PH7 3HT	UC	NN866672	NO2	Y	Y(0)	1.4	Y
10/12 West Street, Crieff, PH7 4DL	UC	NN863192	NO2	Y	Y(0)	2	Y
9 Comrie Street, Crieff, PH7 4AX	UC	NN862692	NO2	Y	Y(0)	2.7	Y
1 Lodge Street, Crieff, PH7 4AX	UC	NN862202	NO2	Y	Y(0)	2.2	Y
RTM Crieff, St James Square, Crieff,	UC	NN863602	NO2	Y	Y(9.5)	5.3	N
Hollybush Road, Crieff, PH7 3QD	UB	NN870302	NO2	Y	Y(25)	25.0	N

Table 2.2f Details of Non- Automatic Monitoring Site Glenfarg

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Main St, Glenfarg, PH2 9NT	R	NO135821	NO2	N	(25)	1	Y

Table 2.2g Details of Non- Automatic Monitoring Site Ballinluig

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Main Road, Ballinluig PH9 0LG	R	NN977515	NO2	N	(10)	1	N

Table 2.2h Details of Non- Automatic Monitoring Site Blairgowrie

Site Address	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
26 Allan St, Blairgowrie, PH10 6AD	UC	NO178984	NO2	N	(2)	1	Y

## **2.2 Comparison of Monitoring Results with Air Quality Objectives**

### **2.2.1 Nitrogen Dioxide**



Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 % <sup>b</sup>	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
				2010 <sup>*c</sup>	2011 <sup>*c</sup>	2012 <sup>*c</sup>	2013 <sup>*c</sup>	2014 <sup>c</sup>
Perth 1	Roadside	Yes	100	30	27	26	22	22
Perth 2	Roadside	Yes	96	<b>56</b>	<b>57</b>	<b>54</b>	<b>48</b>	<b>45</b>
Crieff	Roadside	Yes	94	30	34	23	26	23

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

<sup>c</sup> Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

\*Annual mean concentrations for previous years are optional.

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

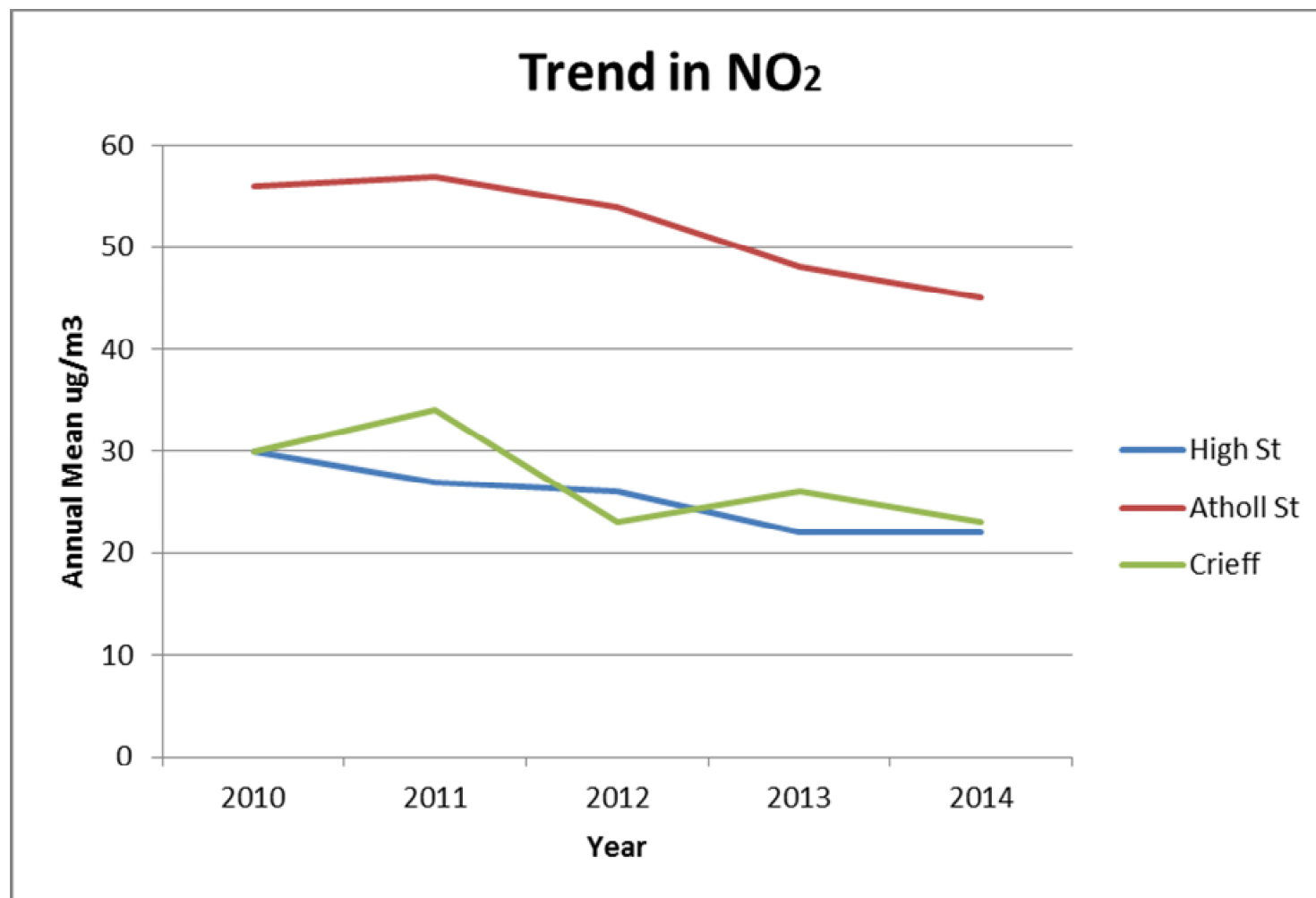


Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 % <sup>b</sup>	Number of Exceedances of Hourly Mean (200 µg/m <sup>3</sup> )				
				2010	2011	2012	2013	2014
Perth1	Roadside	Yes	100	0	2	0	0	0
Perth 2	Roadside	Yes	96	10	17	<b>25</b>	13	0
Crieff	Roadside	Yes	94	N/A	0	0	0	0

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

<sup>c</sup> If the period of valid data is less than 90%, include the 99.8<sup>th</sup> percentile of hourly means in brackets

\*Number of exceedances for previous years are optional.

**Diffusion Tube Monitoring Data**

Table 2.5a Results of Nitrogen Dioxide Diffusion Tubes Perth (2014)

Site ID	Location	Site Type	Within AQMA?	TriPLICATE or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P1	42 Scott Street	R	Y	Triplicate	58	Y	N	<b>40 ( 38 - 42 )</b>
P2	17 Speygate	UC	Y	N/A	100	N/A	N	21 ( 19 - 23 )
P3	15 Murray Crescent	UB	Y	N/A	100	N/A	N	17 ( 16 - 18 )
P5	8 Stormont Street	UC	Y	N/A	50	N/A	N	20 ( 19 - 22 )
P6	41 Mull Place	UB	Y	N/A	100	N/A	N	11 ( 10 - 12 )
P7	257 Rannoch Road	UC	Y	N/A	100	N/A	N	18 ( 16 - 19 )
P13	86 South Street	R	Y	N/A	100	N/A	N	30 ( 28 - 32 )
P19	Dunkeld Road	R	Y	N/A	92	N/A	N	31 ( 28 - 33 )
P20	2 Crieff Road	R	Y	N/A	100	N/A	N	27 ( 25 - 29 )
P28	28 York Place	R	Y	N/A	100	N/A	N	38 ( 36 - 41 )
P29	37 York Place	R	Y	N/A	100	N/A	N	<b>40 ( 37 - 43 )</b>
P30	104 South Street	R	Y	Triplicate	100	N/A	N	34 ( 32 - 37 )

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Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P31	45-47 South Street	R	Y	N/A	100	N/A	N	29 ( 27 - 31 )
P32	135 South Street	R	Y	N/A	100	N/A	N	32 ( 30 - 35 )
P33	216 South Street	R	Y	N/A	100	N/A	N	35 ( 33 - 38 )
P34	10 County Place	R	Y	N/A	100	N/A	N	<b>45 ( 42 - 49 )</b>
P35	17 Princes Street	R	Y	N/A	100	N/A	N	26 ( 24 - 28 )
P36	51 Glasgow Road	R	Y	N/A	92	N/A	N	30 ( 28 - 33 )
P37	Riggs Road	R	Y	N/A	92	N/A	N	27 ( 25 - 29 )
P38	93 Main Street, Bridgend	R	Y	N/A	83	N/A	N	30 ( 28 - 32 )
P39	39 Main Street, Bridgend	R	Y	N/A	92	N/A	N	<b>44 ( 41 - 47 )</b>
P40	18 Main Street, Bridgend	R	Y	N/A	100	N/A	N	<b>42 ( 39 - 46 )</b>
P41	76 Atholl Street	R	Y	N/A	100	N/A	N	<b>42 ( 39 - 45 )</b>
P42	26-28 Atholl Street	K	Y	N/A	100	N/A	N	<b>43 ( 40 - 46 )</b>
P43	17 Atholl Street	R	Y	Triplicate	86	N/A	N	<b>49 ( 46 - 53 )</b>

Perth and Kinross Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P44	22 Barrack Street	K	Y	N/A	92	N/A	N	34 ( 31 - 36 )
P45	Ballantine Place	UC	Y	N/A	100	N/A	N	21 ( 19 - 22 )
P46	204 Crieff Road	R	Y	N/A	92	N/A	N	30 ( 27 - 32 )
P47	5 East Huntingtower	R	N	N/A	100	N/A	N	25 ( 23 - 27 )
P48	30 Edinburgh Road	R	Y	N/A	100	N/A	N	24 ( 22 - 26 )
P51	2 West Bridge Street	R	Y	N/A	100	N/A	N	27 ( 25 - 29 )
P62	84 Dundee Road	R	Y	N/A	100	N/A	N	31 ( 29 - 34 )
P63	30 Dundee Road	R	Y	N/A	92	N/A	N	37 ( 34 - 39 )
P64	Isla Road	R	Y	N/A	100	N/A	N	<b>43 ( 40 - 47 )</b>
P65	5 Charlotte Street	R	Y	N/A	100	N/A	N	34 ( 31 - 36 )
P67	1 Atholl Street	R	Y	N/A	100	N/A	N	35 ( 32 - 38 )
P68	2 Atholl Street	R	Y	N/A	100	N/A	N	30 ( 28 - 32 )
P69	Church, Kinnoull Street	R	Y	N/A	100	N/A	N	31 ( 29 - 34 )

Perth and Kinross Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P70	28 Dunkeld Road	R	Y	N/A	83	N/A	N	28 ( 26 - 30 )
P71	134 Dunkeld Road	R	Y	N/A	100	N/A	N	16 ( 15 - 17 )
P72	82 Crieff Road	R	Y	N/A	92	N/A	N	35 ( 32 - 37 )
P79	17 Main Street, Bridgend	R	Y	Triplicate	97	N/A	N	<b>40 ( 37 - 43 )</b>
P86	2 Friarton Road	R	Y	N/A	100	Y	N	28 ( 26 - 30 )
P88	202 Glasgow Road	R	Y	N/A	100	Y	N	37 ( 34 - 40 )
P89	59 South Methven Street	R	Y	N/A	100	Y	N	37 ( 34 - 40 )
P90	22 North Methven Street	R	Y	N/A	100	Y	N	34 ( 31 - 36 )



Table 2.5b Results of Nitrogen Dioxide Diffusion Tubes Dunkeld (2014)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P84	1 Atholl Street	R	N	N/A	92	N	N	18 ( 16 - 19 )
P85	14 Atholl Street	R	N	N/A	83	N	N	21 ( 20 - 23 )

Table 2.5c Results of Nitrogen Dioxide Diffusion Tubes Auchterarder (2014)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P82	66 High Street	R	N	N/A	100	N	N	27 ( 25 - 29 )
P83	176 High Street	R	N	N/A	92	N	N	22 ( 20 - 24 )

Table 2.5d Results of Nitrogen Dioxide Diffusion Tubes Kinross (2014)

Site ID	Location	Site Type	Within AQMA ?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2013 ( $\mu\text{g}/\text{m}^3$ )
P80	124 High Street, Kinross	R	N	N/A	100	N	N	20 ( 19 - 22 )
P81	76 High Street	R	N	N/A	100	N	N	25 ( 23 - 27 )

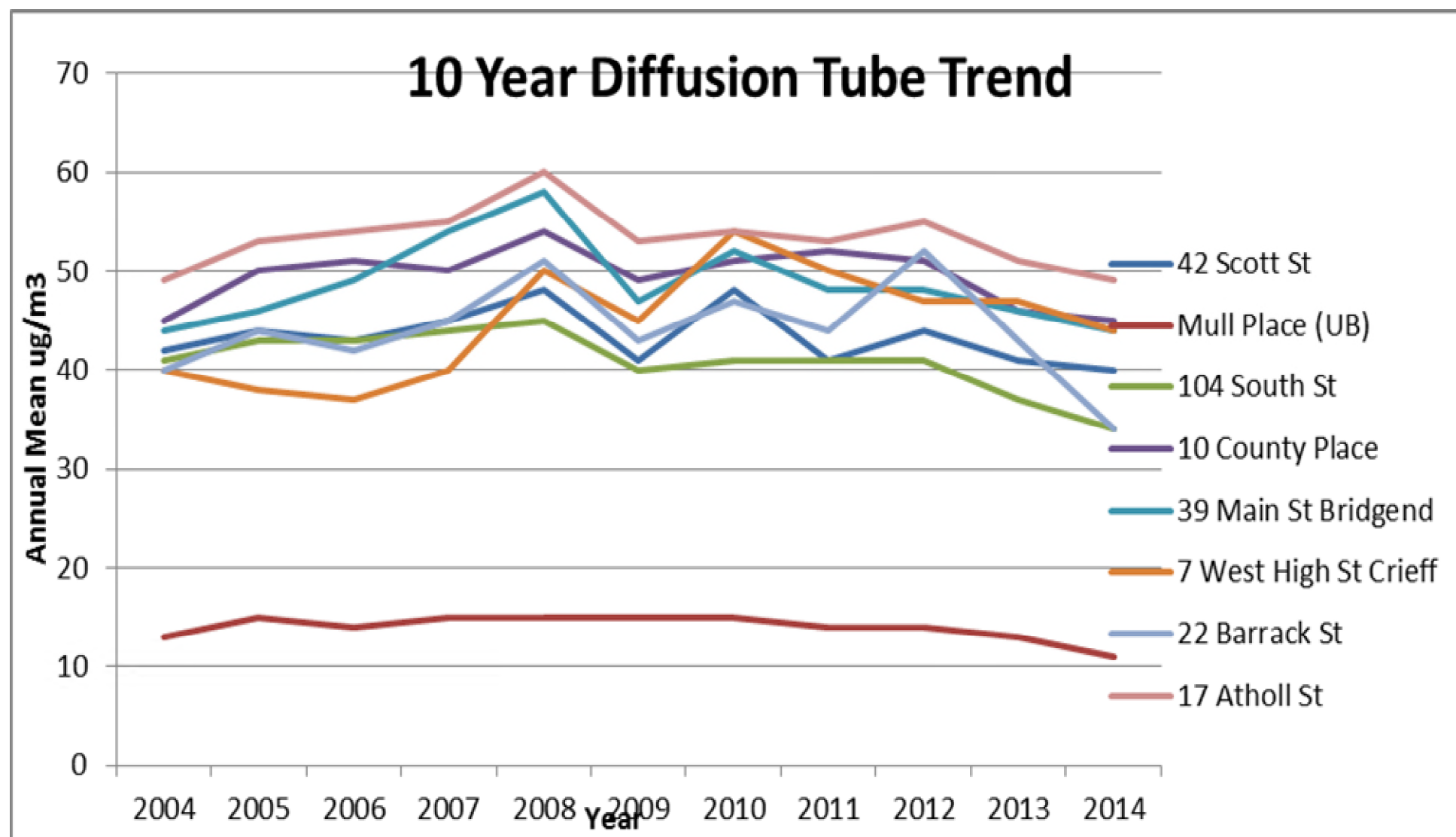
Table 2.5e Results of Nitrogen Dioxide Diffusion Tubes Glenfarg (2014)

Site ID	Location	Site Type	Within AQMA ?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2013 ( $\mu\text{g}/\text{m}^3$ )
P91	Main Street Glenfarg	R	N	N/A	75	Y	N	14 (13 – 15)

Table 2.5f Results of Nitrogen Dioxide Diffusion Tubes Crieff (2014)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2013 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ( $\mu\text{g}/\text{m}^3$ )
P55	7 West High Street	R	N	N/A	75	N/A	N	<b>44 ( 40 - 47 )</b>
P56	39, High Street	R	N	N/A	83	N/A	N	29 ( 27 - 31 )
P57	62, High Street	R	N	N/A	100	N/A	N	28 ( 26 - 30 )
P58	9 East High Street	R	N	N/A	75	N/A	N	39 ( 36 - 42 )
P73	19 West High Street	R	N	N/A	92	N/A	N	39 ( 36 - 42 )
P74	43 High Street	R	N	N/A	92	N/A	N	31 ( 29 - 34 )
P87	Background Hollybush	R	N	N/A	83	N/A	N	7 ( 7 - 8 )
P76	10/12 West High Street	R	N	N/A	92	N/A	N	36 ( 33 - 38 )
P77	9 Comrie Street	R	N	N/A	100	N/A	N	21 ( 19 - 23 )
P78	1 Lodge Street	R	N	N/A	100	N/A	N	25 ( 23 - 27 )

Figure 2.6 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites





2.2.2 PM<sub>10</sub>

**Table 2.6 Results of Automatic Monitoring of PM<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture 2014 % <sup>b</sup>	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m <sup>3</sup>				
					2010	2011	2012	2013	2014
Perth1	Roadside	Y	100	Y	19	19	15	16	14
Perth2	Roadside	Y	98	Y	24	25	21	22	20
Perth3	UB	Y	87	Y	N/A	N/A	8	10	10
Crieff	Roadside	Y	87	Y	17	19	16	20	20

<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

<sup>c</sup> Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

\* Optional

Table 2.7 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2014 % <sup>b</sup>	Confirm Gravimetric Equivalent	Number of Exceedances of 24-Hour Mean (50 µg/m <sup>3</sup> )				
						2010	2011	2012	2013	2014
Perth1	Roadside	Y		96	Y	3	3	2	0	0
Perth2	Roadside	Y		98	Y	12	17	11	7	1
Perth3	UB	Y		87	Y	N/A	N/A	0	0	0
Crieff	Roadside	Y		87	Y	0	0	1	0	1

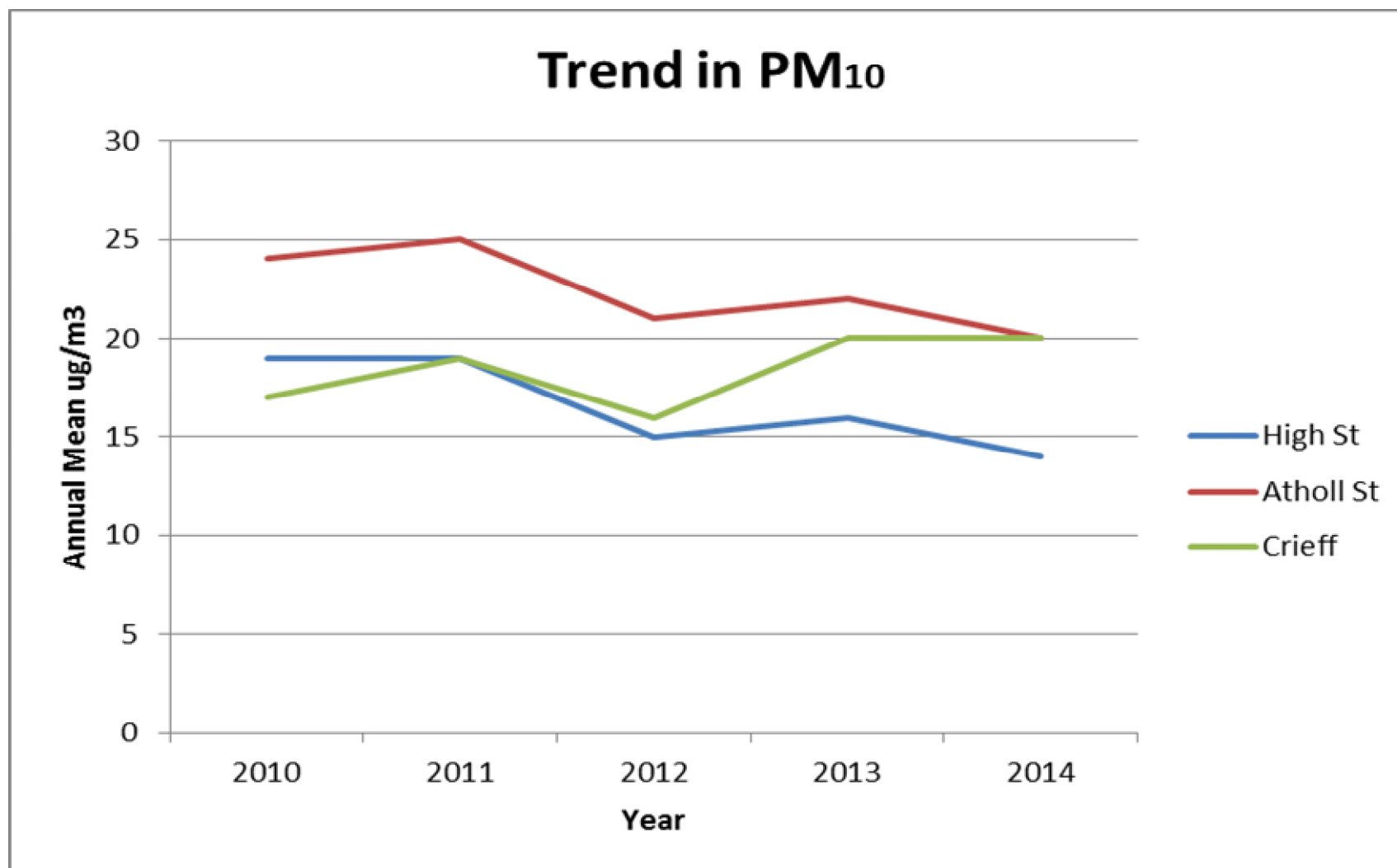
<sup>a</sup> i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

<sup>b</sup> i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

<sup>c</sup> if data capture is less than 90%, include the 90<sup>th</sup> percentile of 24-hour means in brackets

\* Optional



Figure 2.7 Trends in Annual Mean PM<sub>10</sub> Concentrations

**2.2.3 Sulphur Dioxide**

Not monitored

**2.2.4 Benzene**

Not monitored

**2.2.5 Other pollutants monitored**

No other pollutants monitored

**2.2.6 Summary of Compliance with AQS Objectives**

Perth and Kinross Council has examined the results from monitoring in the district concentrations outside of the AQMAs are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

### **3 Road Traffic Sources**

#### **3.1 Narrow Congested Streets with Residential Properties Close to the Kerb**

Perth and Kinross Council have installed diffusion tubes in other towns in the area out with the Perth and Crieff AQMAs due to some of the simple screening counts showing a potential for over 5000 vehicles. At the end of 2014 new tubes were installed in Blairgowrie which is the second largest town in Perthshire and a tube was installed at Ballinluig which is a village close to the A9. The tubes so far are both reading very low but there is only a few months data, therefore monitoring will continue this year.

Perth and Kinross 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**

Kinross and Auchterarder have been considered for the last 2 years when 2 tubes each were installed. These were all very low so one each was removed and put in Blairgowrie and Ballinluig as discussed above.

Perth and Kinross Council has assessed new/newly identified busy streets where people may spend 1 hour or more close to traffic, that were not assessed in previous rounds of Review and Assessment, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

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

### **3.4 Junctions**

Perth and Kinross 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**

A planning application (15/00036/FLL) was submitted for a new interchange for the A9 and A85 at the western side of Perth which included new stretches of road in Perth and to the west to allow development land to be opened up. This also forms the first part of the Cross Tay Link Road which is the major measure within the Air Quality Action Plan for reducing NO<sub>2</sub> and PM<sub>10</sub> in the centre of Perth. As part of this application air quality was assessed both in the vicinity of the road and further afield into the centre of Perth.

Increases in NO<sub>2</sub> and PM<sub>10</sub> in the vicinity of the road itself were relatively small with each assigned a negligible significance of impact under the Environment Protection UK guidance document. Predicted increases in the centre of Perth were much higher due to the fact cumulative impacts with the development land to the west were also considered however it was considered that the model over estimated these impacts considerably. Due to the fact the application was purely for the road and the cumulative impact from the other developments had not been applied for, this application was supported by the Environmental Health Team.

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

### **3.6 Roads with Significantly Changed Traffic Flows**

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

### **3.7 Bus and Coach Stations**

Perth and Kinross Council confirms that there are no relevant bus stations meeting the criteria in the Local Authority area.

## **4 Other Transport Sources**

### **4.1 Airports**

Perth and Kinross Council confirms that there are no airports meeting the criteria in the Local Authority area.

### **4.2 Railways (Diesel and Steam Trains)**

#### **4.2.1 Stationary Trains**

Perth and Kinross 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**

Perth and Kinross 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)

Perth and Kinross 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**

Perth and Kinross 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**

Sepa have confirmed there are none in the area, email correspondence attached in Appendix C

Perth and Kinross 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**

Perth and Kinross 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**

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

## **5.3 Petrol Stations**

Perth and Kinross Council confirms that there are no petrol stations meeting the specified criteria.

## 5.4 Poultry Farms

Perth and Kinross Council confirms that there are no poultry farms meeting the specified criteria.

## 6 Commercial and Domestic Sources

### 6.1 Biomass Combustion – Individual Installations

Perth and Kinross Council received a number of applications which included provision for wood burning in 2014. Environmental Health are consulted on each of them and the table below summarises those of which fall between 50kW and 20MW in capacity. The AEA/Epuk screening spreadsheet is used to gauge acceptability.

Application Reference	Location	Capacity (kW)	Acceptable
13/02294/FLL	Kettins	199	Y
13/02350/FLL	Kinfauns	199	Y
14/00219/FLL	Glencarse	100	Y
14/00233/FLL	Pitlochry	199	Y
14/00488/FLL	Meiklour	177	Y
14/00539/FLL	Kinross	120	Y
14/00657/FLL	Abernyte	199	Y
14/00781/FLL	Lawhill House	990	Y
14/00963/FLL	Enochdhu	130	Y
14/01154/FLL	Balgedie	100	Y
14/01560/FLL	Butterstone	149	Y
14/01766/FLL	Murthly	100	Y
14/01835/FLL	Gask	198	Y
14/01877/FLL	Inchmagrannachan	150	Y

Perth and Kinross Council has assessed these biomass combustion plants, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 6.2 Biomass Combustion – Combined Impacts

15/01112/IPM is an application for up to 3000 houses on the west edge of Perth and one of the heating options being explored is the use of biomass. This has the potential to lead to high levels of PM<sub>10</sub> in the vicinity of the properties, therefore the applicant has been advised if wide spread biomass is to be adopted here, an assessment will be required.

Perth and Kinross Council has assessed other biomass combustion plants, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## 6.3 Domestic Solid-Fuel Burning

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

## 7 Fugitive or Uncontrolled Sources

Perth and Kinross Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## 8 Conclusions and Proposed Actions

### 8.1 Conclusions from New Monitoring Data

#### Perth

##### Nitrogen Dioxide

Diffusion tube data captured within Perth AQMA show exceedances at 10 locations which is a decrease from the 11 exceedances measured last year. This ties in well with the decreases at Atholl St, Perth which reduced from  $48\mu\text{g}\text{m}^{-3}$  to  $45\mu\text{g}\text{m}^{-3}$  with High St remaining at  $22\mu\text{g}\text{m}^{-3}$ . The hourly exceedance also mirror this reduction with a no breaches of the standard at all for the first time in a number of years.

##### Particulates

$\text{PM}_{10}$  annual mean shows a slight decrease of  $2\mu\text{g}\text{m}^{-3}$  at both High St and Atholl St to  $14\mu\text{g}\text{m}^{-3}$  and  $20\mu\text{g}\text{m}^{-3}$  respectively. The 24 hour mean level was only exceeded at Atholl St once. The Urban background level remains at  $10\mu\text{g}\text{m}^{-3}$

#### Crieff

##### Nitrogen Dioxide

The only diffusion tube showing an exceedance here was in West High St down from 3 last year The real time monitor had a decrease from  $26\mu\text{g}\text{m}^{-3}$  to  $23\mu\text{g}\text{m}^{-3}$  with no exceedance of the short term standard

##### Particulates

$\text{PM}_{10}$  levels remained the same at  $20\mu\text{g}\text{m}^{-3}$  with one exceedance of the daily mean.



## **Other Towns**

Perth and Kinross Council also monitored NO<sub>2</sub> in Dunkeld, Auchterarder and Kinross, in each case the annual mean was well below the objective.

## **8.2 Conclusions from Assessment of Sources**

There are a number of large scale developments for the expansion of Perth to the west, which over the next few years have the potential to increase traffic in and around Perth. These applications were submitted this year and air quality is a consideration in their determination. These developments should all tie in with the Cross Tay Link Road, which is the main measure for improving air quality in Perth and construction of this road in theory should also ensure no degradation of air quality in Perth arising from these developments.

## **8.3 Proposed Actions**

Monitoring is well established in Perth and Crieff for NO<sub>2</sub> and PM<sub>10</sub>. Perth & Kinross Council have also begun monitoring in other towns within the area too. Monitoring was undertaken at Kinross, Ballinluig, Blairgowrie and Auchterarder and given that the annual mean measured at these towns was below 30 µg/ m<sup>3</sup> it is proposed to remove monitoring from some areas to enable monitoring in other towns and villages. A tube has been installed in Coupar Angus and other towns will be considered later this year.

The Crieff AQMA has now been in place for a little over a year and the preparation of the Air Quality Action Plan has been delayed due to staffing constraints and the requirement to put out to tender air quality services. Now this has been completed, work on the AQAP can begin and a draft copy should be produced next year.

The next report will be the 2016 Progress report.

## 9 References

Part IV of the Environment Act 1995. Local Air Quality Management Technical Guidance LAQM.TG (03) January 2003.

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

Spreadsheet of Bias Adjustment Factors accessed at [http://laqm.defra.gov.uk/documents/Diffusion\\_Tube\\_Bias\\_Factors\\_v04\\_11\\_v6.xls](http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls)

UK National Air Quality Information Archive, accessed at <http://uk-air.defra.gov.uk/>

Air Quality Detailed Assessment. 2004, AEA Technology plc, Report AEAT/ENV/R1708 Issue 1

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Further Assessment of Air Quality 2007 AEA Technology plc Report AEA/ED49360001 issue 1

Perth & Kinross Council Progress Report 2007, 2008, 2010 2011 & 2013

Perth & Kinross Council Updating and Screening Assessment 2012

Updating and Screening Assessment 2015

Regional Transport Strategy <http://www.tactran.gov.uk/documents/TACTRANRTS-FinalNov2008.pdf>

National Transport Strategy

<http://www.scotland.gov.uk/Publications/2006/12/04104414/0>

Scotland's Climate Change Declaration (SCCD) Perth and Kinross Council's first annual progress report [http://www.sustainable-](http://www.sustainable-scotland.net/documents/6703_annual%20progress%20report.pdf)

[scotland.net/documents/6703\\_annual%20progress%20report.pdf](http://www.sustainable-scotland.net/documents/6703_annual%20progress%20report.pdf)

Perth and Kinross Local Climate Impacts Profile (LCLIP)

[http://www.pkc.gov.uk/NR/rdonlyres/E590425C-2665-4D13-B8DD-](http://www.pkc.gov.uk/NR/rdonlyres/E590425C-2665-4D13-B8DD-B70C659B3080/0/PerthandKinrossLocalClimateImpactProfile2008_w.pdf)

[B70C659B3080/0/PerthandKinrossLocalClimateImpactProfile2008\\_w.pdf](http://www.pkc.gov.uk/NR/rdonlyres/E590425C-2665-4D13-B8DD-B70C659B3080/0/PerthandKinrossLocalClimateImpactProfile2008_w.pdf)

HSL (on behalf of Defra and the Devolved Administrators), WASP – Annual Performance Criteria for NO<sub>2</sub> Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 117-124 (<http://laqm.defra.gov.uk/diffusion-tubes/ga-gc-framework.html> ) April 2015

# Appendices

Appendix A: QA/QC Data

Appendix B: Raw Diffusion Tube Data

Appendix C: Correspondance with SEPA

# Appendix A: QA/QC Data

## Factor from Local Co-location Studies

### Checking Precision and Accuracy of Triplicate Tubes



Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm <sup>-3</sup>	Tube 2 µgm <sup>-3</sup>	Tube 3 µgm <sup>-3</sup>	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2015	31/01/2015	55.4	55.3	56.1	56	0.4	1	1.1
2	01/02/2015	28/02/2015	54.1	51.4	54.3	53	1.6	3	4.0
3	01/03/2015	31/03/2015	41.5	47.5	45.9	45	3.1	7	7.7
4	01/04/2015	30/04/2015	51.1	50.4	47.2	50	2.1	4	5.2
5	01/05/2015	31/05/2015	49.4	45.3	50	48	2.6	5	6.4
6	01/06/2015	30/06/2015	44.8	44.8	44.5	45	0.2	0	0.4
7	01/07/2015	31/07/2015	47.5	50.2	46.3	48	2.0	4	5.0
8	01/08/2015	31/08/2015	43.1	43.1	44.8	44	1.0	2	2.4
9	01/09/2015	30/09/2015	52.5	52.4	53.3	53	0.5	1	1.2
10	01/10/2015	31/10/2015	47.5	50.8	57.7	52	5.2	10	12.9
11	01/11/2015	30/11/2015	43.5	52.2	51.5	49	4.8	10	12.0
12	01/12/2015	31/12/2015	58.9	57.3	57.9	58	0.8	1	2.0
13									

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
52	99	Good	Good
50	100	Good	Good
45	99	Good	Good
44	100	Good	Good
42	100	Good	Good
37	100	Good	Good
38	100	Good	Good
34	100	Good	Good
42	100	Good	Good
42	61	Good	or Data Captu
49	100	Good	Good
64	100	Good	Good

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

Overall survey --> **Good precision** **Good Overall DC**

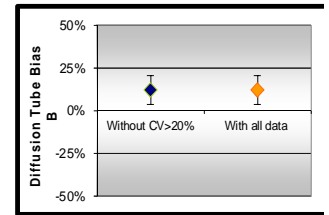
Site Name/ ID: **Atholl St**

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

(Check average CV & DC from Accuracy calculations)

<b>Accuracy (with 95% confidence interval)</b>	
<b>without periods with CV larger than 20%</b>	
Bias calculated using 11 periods of data	
Bias factor A	<b>0.91 (0.84 - 0.98)</b>
Bias B	<b>10% (2% - 19%)</b>
Diffusion Tubes Mean:	<b>50 µgm<sup>-3</sup></b>
Mean CV (Precision):	<b>4</b>
Automatic Mean:	<b>45 µgm<sup>-3</sup></b>
Data Capture for periods used:	<b>100%</b>
Adjusted Tubes Mean:	<b>45 (42 - 49) µgm<sup>-3</sup></b>

<b>Accuracy (with 95% confidence interval)</b>	
<b>WITH ALL DATA</b>	
Bias calculated using 11 periods of data	
Bias factor A	<b>0.91 (0.84 - 0.98)</b>
Bias B	<b>10% (2% - 19%)</b>
Diffusion Tubes Mean:	<b>50 µgm<sup>-3</sup></b>
Mean CV (Precision):	<b>4</b>
Automatic Mean:	<b>45 µgm<sup>-3</sup></b>
Data Capture for periods used:	<b>100%</b>
Adjusted Tubes Mean:	<b>45 (42 - 49) µgm<sup>-3</sup></b>



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Checking Precision and Accuracy of Triplicate Tubes



Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{gm}^{-3}$	Tube 2 $\mu\text{gm}^{-3}$	Tube 3 $\mu\text{gm}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2015	31/01/2015	29.2	28.2	30.3	29	1.1	4	2.6
2	01/02/2015	28/02/2015	25.4	28	26.1	27	1.3	5	3.3
3	01/03/2015	31/03/2015	20.8	20.5	20.1	20	0.4	2	0.9
4	01/04/2015	30/04/2015	22	21	21.4	21	0.5	2	1.3
5	01/05/2015	31/05/2015	17.2	19.2	18.9	18	1.1	6	2.7
6	01/06/2015	30/06/2015	18.1	19.7	18.8	19	0.8	4	2.0
7	01/07/2015	31/07/2015	18.8	18.9	19.3	19	0.3	1	0.7
8	01/08/2015	31/08/2015	20.5	20.8	21.5	21	0.5	2	1.3
9	01/09/2015	30/09/2015	26.1	24	25.7	25	1.1	4	2.8
10	01/10/2015	31/10/2015	25.5	26.3	25.4	26	0.5	2	1.2
11	01/11/2015	30/11/2015	31.8	31.7	32.8	32	0.6	2	1.5
12	01/12/2015	31/12/2015	33	33.7	32.8	33	0.5	1	1.2
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
27	100	Good	Good
22	100	Good	Good
19	100	Good	Good
19	100	Good	Good
16	100	Good	Good
15	100	Good	Good
15	100	Good	Good
18	100	Good	Good
22	100	Good	Good
23	99	Good	Good
31	100	Good	Good
35	100	Good	Good

Overall survey --> **Good precision** **Good Overall DC**

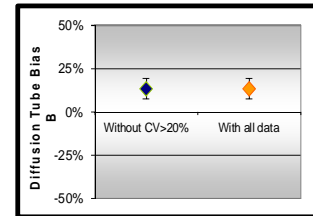
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: **High St**

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

<b>Accuracy</b> (with 95% confidence interval)
<b>without periods with CV larger than 20%</b>
Bias calculated using 12 periods of data
Bias factor A <b>0.9 (0.86 - 0.95)</b>
Bias B <b>11% (5% - 17%)</b>
Diffusion Tubes Mean: <b>24 <math>\mu\text{gm}^{-3}</math></b>
Mean CV (Precision): <b>3</b>
Automatic Mean: <b>22 <math>\mu\text{gm}^{-3}</math></b>
Data Capture for periods used: <b>100%</b>
Adjusted Tubes Mean: <b>22 (21 - 23) <math>\mu\text{gm}^{-3}</math></b>

<b>Accuracy</b> (with 95% confidence interval)
<b>WITH ALL DATA</b>
Bias calculated using 12 periods of data
Bias factor A <b>0.9 (0.86 - 0.95)</b>
Bias B <b>11% (5% - 17%)</b>
Diffusion Tubes Mean: <b>24 <math>\mu\text{gm}^{-3}</math></b>
Mean CV (Precision): <b>3</b>
Automatic Mean: <b>22 <math>\mu\text{gm}^{-3}</math></b>
Data Capture for periods used: <b>100%</b>
Adjusted Tubes Mean: <b>22 (21 - 23) <math>\mu\text{gm}^{-3}</math></b>



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Checking Precision and Accuracy of Triplicate Tubes



Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{gm}^{-3}$	Tube 2 $\mu\text{gm}^{-3}$	Tube 3 $\mu\text{gm}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	01/01/2015	31/01/2015	30.9	32.6	31.6	32	0.9	3	2.1
2	01/02/2015	28/02/2015	26.9	25.8	29.9	28	2.1	8	5.3
3	01/03/2015	31/03/2015	25.5	25.4	25.8	26	0.2	1	0.5
4	01/04/2015	30/04/2015	19.7	21.2	20	20	0.8	4	2.0
5	01/05/2015	31/05/2015	22.6	21.1	19.6	21	1.5	7	3.7
6	01/06/2015	30/06/2015	19.2	18	17.6	18	0.8	5	2.1
7	01/07/2015	31/07/2015	19.4	19.2	19.4	19	0.1	1	0.3
8	01/08/2015	31/08/2015	23.6	23.7	24.8	24	0.7	3	1.7
9	01/09/2015	30/09/2015	22.7	22.9	24.1	23	0.8	3	1.9
10	01/10/2015	31/10/2015	23.2	24.5	25.4	24	1.1	5	2.7
11	01/11/2015	30/11/2015	30	30.1	27.8	29	1.3	4	3.2
12	01/12/2015	31/12/2015	34.6	34.2	29.5	33	2.8	9	7.0
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
30	98	Good	Good
28	98	Good	Good
23	90	Good	Good
20	99	Good	Good
19	98	Good	Good
16	68	Good	or Data Captu
17	99	Good	Good
20	96	Good	Good
20	99	Good	Good
22	99	Good	Good
27	99	Good	Good
38	80	Good	Good

Overall survey --> **Good precision** **Good Overall DC**

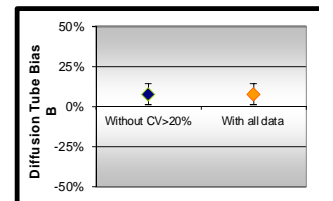
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: **Crieff**

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

<b>Accuracy</b> (with 95% confidence interval)
<b>without periods with CV larger than 20%</b>
Bias calculated using 11 periods of data
Bias factor A <b>0.95 (0.89 - 1.01)</b>
Bias B <b>6% (-1% - 12%)</b>
Diffusion Tubes Mean: <b>25 <math>\mu\text{gm}^{-3}</math></b>
Mean CV (Precision): <b>4</b>
Automatic Mean: <b>24 <math>\mu\text{gm}^{-3}</math></b>
Data Capture for periods used: <b>96%</b>
Adjusted Tubes Mean: <b>24 (23 - 26) <math>\mu\text{gm}^{-3}</math></b>

<b>Accuracy</b> (with 95% confidence interval)
<b>WITH ALL DATA</b>
Bias calculated using 11 periods of data
Bias factor A <b>0.95 (0.89 - 1.01)</b>
Bias B <b>6% (-1% - 12%)</b>
Diffusion Tubes Mean: <b>25 <math>\mu\text{gm}^{-3}</math></b>
Mean CV (Precision): <b>4</b>
Automatic Mean: <b>24 <math>\mu\text{gm}^{-3}</math></b>
Data Capture for periods used: <b>96%</b>
Adjusted Tubes Mean: <b>24 (23 - 26) <math>\mu\text{gm}^{-3}</math></b>



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### Diffusion Tube Bias Adjustment Factors

The national bias adjustment figure found at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html> for the 20% TEA in water preparation method was given as 0.77. Based on advice in TG.09, it was decided a local figure would be more robust.

### PM Monitoring Adjustment

TEOM data used by Perth and Kinross Council for the 2 Perth monitors was corrected using the Volatile Correction Model by AEA using daily average purge measurements from the 26 FDMS sites in Central Scotland.

The Crieff monitor is a BAM and is corrected using a gravimetric factor of 0.83333 for Indicative Gravimetric Equivalent.

### Short-term to Long-term Data Adjustment

Adjustment was done for Scott St and Glenfarg, the Scott St tubes were removed due to work on the pavement there for a few months, Glenfarg was installed later in the year.

Site	Site Type	Annual Mean	Period Mean	Ratio
Atholl St	Road	45	45.9	0.981
High St	Road	22	24.4	0.901
Crieff	Road	23	24.9	0.924
			Average	0.935

Scott St

Site	Site Type	Annual Mean	Period Mean	Ratio
Atholl St	Road	45	43.8	1.027
High St	Road	22	22.3	0.989
Crieff	Road	23	22.5	1.022
			Average	1.013

Glenfarg



### **QA/QC of Automatic Monitoring**

AEA carries out the QA/QC for the automatic monitors and they are calibrated annually and meet the criteria for national network.

### **QA/QC of Diffusion Tube Monitoring**

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL). WASP formed a key part of the former UK NO<sub>2</sub> Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). The laboratory participants analyse four spiked tubes, and report the results to HSL. HSL assign a performance score to each laboratory's result, based on their deviation from the known mass of nitrite in the analyte.

The outcomes of these QA/QC schemes are evaluated on a regular basis against a set of pre-defined performance criteria. The Performance criteria are due to be changed, at present the criteria are based on the z-score method, however from April 2009; the criteria will be based upon the Rolling Performance Index (RPI) statistic.

Tayside Scientific Services takes part in this scheme and in each of the rounds were scored as 100% satisfactory.

# Appendix B: Raw Diffusion Tube Data

## Perth and Kinross Council

		Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
P1 L	42 Scott St, Perth, PH1 5PH	49.1	X	X	X	X	X	37.4	18.3	43.1	40.2	52.2	44.6
P1 C	42 Scott St, Perth, PH1 5PH	51.7	X	X	X	X	X	38.3	37.1	44.7	41.4	52.9	41.8
P 1 R	42 Scott St, Perth, PH1 5PH	49.2	X	X	X	x	X	38.2	34.6	43.3	38.4	51.9	39.3
P2	17 Speygate, Perth, PH2 8PJ	29.6	26.5	X	22.1	19.3	15.7	17.4	18.8	23.6	24.1	30.7	26.7
P3	15 Murray Cres, Perth, PH2 0HU	29.1	22.2	15.6	17	12.6	11.9	12.1	12.6	17.5	17.7	31.6	23.1
P5	8 Stormont St, Perth, PH1 5NW	X	X	X	X	X	X	17.1	14.4	20.6	24.1	27.9	30.5
P 6	41 Mull Place, Perth, PH1 3DP	19.1	16.5	9.6	9.2	7.5	7.5	8.1	8.7	10.6	13.8	19.4	17.5
P 7	257 Rannoch Rd, Perth, PH1 2DW	29.9	21.5	17.9	17.5	17.2	15	14.3	13.5	17.2	18.6	30.5	20.6
P 13	86/88 South Street Perth PH2 8PD	43.6	38	36.5	36.3	6.8	29.8	30	28.5	22.7	35.3	41.9	44.7
P 19	St Ninian's School , Perth, PH1 5RF	48	42.4	25	26.8	25	27.6	26 X		32.7	35.9	41.4	39.9
P 20	2 Crieff Road Perth PH1 5RT	38.2	32.3	22.3	27.9	23.7	26.1	24.7	23	31.4	32.5	34.8	33.8
P28	28 York Place Perth PH2 8EH	60.5	52	40.6	47.3	41.7	35.1	28.2	35.1	39.6	41.1	50.7	35.3
P29	37 York Place Perth PH2 8EH	48.8	41.2	36.5	40.2	37.2	40.6	42	37.7	44	48.7	57.9	49.8
P30 L	104 South St, Perth, PH2 8PA	43.2	44.6	32.5	37.6	34	31	34	29.7	39.6	30.8	41.3	48.8
P30 C	104 South St, Perth, PH2 8PA	47.2	43.8	37.7	39.7	31	29.9	29.1	30.5	38.5	38.3	39.3	53.4
P30 R	104 South St, Perth, PH2 8PA	43	41.4	34.3	36.3	34	29.1	31.1	31.1	37.6	39.9	43	43.8
P31	45-47 South St, Perth, PH2 8PD	37.8	39.6	30.2	32.3	28.6	26.7	21.2	25.9	28.9	30.5	46.7	34.2
P32	135 South St, Perth, PH2 8PA	37.6	37.2	35	38.9	28.9	31.3	29.7	35	36.8	34.1	43	40.9
P33	216 South Street Perth PH2 8NY	45.8	41.5	31.9	39.2	35	34.3	35.6	32.7	39.5	35.8	46	48.2
P34	10 County Place, Perth, PH2 8EE	58.1	53	42.2	50.3	48	46.8	43.6	42.4	51.1	47.2	56.7	57.8
P35	17 Princes St, Perth, PH2 8NG	34.3	31.2	25.5	26.1	23.6	23.5	23.4	24.7	26.7	30.2	37.6	39.3
P36	51 Glasgow Rd, Perth, PH2 0PE	39.8	38.1	30.5	31	28.6	27	27.4	27.4	X	29.6	45.1	41
P37	Riggs Rd, Perth, PH1 1PR	44.5	35.1	24.8	26.5	X	24.1	24.2	23.6	30	30.4	35	31.2
P38	93-109 Main St Bridgend, PH2 7HE	39.5	32.3	31.3	32.3	37.6 X		X	26.5	31.1	31.5	38	31.5
P39	39 Main St, Bridgend, PH2 7HD	52.6	48.3	49.5	50.2	51.8	48.8	X	40.8	50.4	45.9	53.3	40.6
P40	18 Main St, Bridgend, PH2 7HB	47.6	47.3	44.4	44.3	46.2	43.3	46.1	42.6	51.9	44.3	50.5	51.7
P41	76 Atholl St, Perth, PH1 5NL	54	42.1	42.6	51.7	47.7	50.6	41.9	39.9	46	42.9	53.1	41.5
P42	26-28 Atholl St, Perth, PH1 6NP	52.1	46.6	43.9	45.2	45.2	46	42.4	43.1	50.6	42.5	58.7	48.9
P43 L	17 Atholl St, Perth, PH1 5NH	65.8	55.9	49.9	51.6	55	35.6	X	46.3	52.5	50.1	51.7	61
P43 C	17 Atholl St, Perth, PH1 5NH	62.4	58.5	48.2	53.3	55.4	X	X	47.2	52.9	52.1	61.1	54.5
P43 R	17 Atholl St, Perth, PH1 5NH	64	54.4	45.4	52	55.8	X	X	48.5	54.6	50.7	56.4	60.9
P44	22 Barrack St, Perth, PH1 5RD	51	40.3	39.8	37.4	35.3	X	28.4	30.6	16.6	38.2	52.7	38.3
P45	Ballantine Place, Perth PH1 5RR	34.4	21	19.3	20.8	18.6	18.7	16.5	16.7	21.4	23.2	33.1	27.7
P46	204 A Crieff Rd, Perth, PH1 2PE	44.9	33.1	30.5	33.2	35.3	31.7	27.1	26.7	32.3	34	X	31.1
P47	5 East Huntingtower, Perth, PH1 3JJ	37.8	29.9	21.9	25.3	24.3	26.7	20.6	19.7	27.8	25.7	41.5	24.7
P48	30 Edinburgh Rd, Perth, PH2 8BX	40.7	27	22.1	24	23.7	25.3	21.7	17.3	25	28.2	38.7	25
P51	2 West Bridge St, Bridgend, Perth, PH2 7HA	33.2	29.5	27.7	30.7	27.9	28.2	26	29.6	29.9	26.1	37.4	32.5
P54L	176 High St, Perth PH1 5EW	29.2	25.4	20.8	22	17.2	18.1	18.8	20.5	26.1	25.5	31.8	33
P54C	176 High St, Perth PH1 5EW	28.2	28	20.5	21	19.2	19.7	18.9	20.8	24	26.3	31.7	33.7
P54R	176 High St, Perth PH1 5EW	30.3	26.1	20.1	21.4	18.9	18.8	19.3	21.5	25.7	25.4	32.8	32.8
P55	7 West High St, Crieff	57.3	40.2	40.4	46	X	X	X	44.4	56.3	47	56.1	43.3
P56	39, High St, Crieff	45.3	36.8	30.4	36.2	X	X	25.6	25.5	28.6	24.1	36.1	32.2
P57	62, High St, Crieff	40.3	29	28.3	30.4	28.7	25.8	26.7	29.1	29.4	31	41.3	32.3
P58	9 East High St, Crieff	47.4	38.9	34.4	38	X	X	38.1	41.1	44.6	47.8	51.8	X
P61L	Atholl St, Perth real time monitor	55.4	54.1	41.5	51.1	49.4	44.8	47.5	43.1	52.5	47.5	43.5	58.9
P61C	Atholl St, Perth real time monitor	55.3	51.4	47.5	50.4	45.3	44.8	50.2	43.1	52.4	50.8	52.2	57.3
P61R	Atholl St, Perth real time monitor	56.1	54.3	45.9	47.2	50	44.5	46.3	44.8	53.3	57.7	51.5	57.9
P62	84 Dundee Rd, Perth PH2 7BA	45.9	33.4	30.2	32.5	34.5	33.8	31.1	29.1	37.9	31.4	43.9	29
P63	30 Dundee Rd, Perth PH2 7AQ	48	40.5	36.1	41.4	42.8	42.7	36.6	36.4	42.3	38.9	X	35.7
P64	The Lodge, Isla Rd, Bridgend, Perth PH2 7HC	48.5	46.1	46.3	44.6	42.9	46.8	46.8	46.1	46.7	44.8	55.8	55.3
P65	5-7 Charlotte Street, Perth PH1 5LW	45.2	35.9	34.5	39.1	35	35	32.2	30.5	36.6	32.1	43.7	44.5
P67	1 Atholl Street, Perth PH1 5NH	45.9	46.6	35	36.6	33.8	29.6	35.5	31.9	39.8	38.7	37	51.9
P68	2 Atholl Street, Perth PH1 5NP	38.9	35.7	26.9	28.2	26.9	24.3	26.6	29.5	34	37.4	40.5	45.8
P69	Church Kinroull Street, Perth PH1 5EZ	36.4	36.6	30.4	29.7	29.2	32.3	28.7	31.9	36.8	34.7	42.5	44.2
P70	Leith Buildings, 28 Dunkeld Rd, Perth PH1 5A	40.6	34.4	24.7	30.3	25.8	26.6	27.8	X	X	29.6	32.3	36.6
P71	134-140 Dunkeld Road, Perth PH1 5AS	28.7	19.1	15.2	15.6	13.3	13.5	12.1	11.7	16.6	17.9	27.8	21
P72	82 Crieff Road, Perth PH1 2RP	48.7	39.3	35.3	36.3	33.8	32.6	36.5	35.1	39.7	39.2	43.3	X
P73	19 West High Street Crieff, PH7 4AU	55	41.2	34.7	42.8	43.9	45.6	37.1	40.9	44	40.7	X	45.3
P74	43 High Street Crieff, PH7 3HT	37.3	28.2	29.9	32.5	34.8	28.5	X	56.2	35.2	28.2	34.8	32.9
P75L	Crieff RTM	30.9	26.9	25.5	19.7	22.6	19.2	19.4	23.6	22.7	23.2	30	34.6
P75C	Crieff RTM	32.6	25.8	25.4	21.2	21.1	18	19.2	23.7	22.9	24.5	30.1	34.2
P75R	Crieff RTM	31.6	29.9	25.8	20	19.6	17.6	19.4	24.8	24.1	25.4	27.8	29.5
P76	10/12 West High Street, Crieff	39.2	41.5	34.3	38.1	X	32.3	38.4	38.5	45.3	38	45.4	38.3
P77	9 Comrie Street, Crieff	35.1	24.1	20.6	23.8	24.4	22	19.5	15.8	22	21.9	29.8	18.7
P78	1 Lodge Street, Crieff	37.5	25.4	23.7	28.2	27.3	25.3	23.1	22.1	29.1	25.7	37.2	21.1
P79 L	17/19 Main Street Bridgend Perth PH2 7HD	49.9	40.2	40.3	49.2	45.6	46.8	43	33.9	45.9	33	48.3	35.9
P79 C	17/19 Main Street Bridgend Perth PH2 7HD	55.1	42.3	42.2	48.6	44.9	46.2	39.8	36.3	45.5	42.1	54.9	38.4
P79 R	17/19 Main Street Bridgend Perth PH2 7HD	52.3	41.4	42.6	50.2	45.6	43.6	39.6	34.3	45.4	37.1	51.7	38.6
P80	124 High St Kinross Central Café	28.4	25	21	18.6	16.2	17	19.5	19.4	23.2	23.6	26.9	26
P81	76 High St Kinross Opticians	33.5	28.7	22.6	23.8	23.1	25	23.3	26.8	31.5	31.8	35.7	29.8
P82	66 High St Auchterarder Ironmongers	41.1	37.1	30.4	27.3	30.1	27.2	23.2	23.2	36.8	19.2	35.6	27.6
P83	176 High St Auchterarder Lamppost	35.4	20.5	26.4	25.3	16.2	20.4	X	16.2	28	23.4	31.3	21.1
P84	1 Atholl St Dunkeld Ellas	29.9	21.9	18.5	16.8	18.2	16.2	17.8	19.7	22.2	24.2	25.6	
P85	14 Atholl St Pet Shop/Fish Bar	28.9	23.8	20.2	20.9	17.1	17.3	18.2	16.8 x		46.9	49.2	
P86	2 Friarton Road Perth Lamp post	40.8	29.3	24	28	27.1	27	26.2	21.6	34.2	33.5	42.3	32.4
P87	Crieff Background Hollybush Road Crieff	17.2	9.2	6.3	6.2	4.6	3.9	X	X	5.5	7.2	13.4	8.9
P88	202 Glasgow Road Perth Lamp post	55.1	35.9	39.5	40.5	38.3	37.6	34.9	33	42.8	39.5	44.2	45.4
P89	59 South Methven Street	47.2	45.9	36	36.7	29.7	33.5	35.4	32.4	41.4	42.3	47.9	57.3
P90	22 North Methven Street	39.4	45.6	31.6	30.3	27.4	28.7	26.5	28.3	31.5	37.5	77.4	40.8
P91	Glenfarg				20.9	X	21.6	19.1	15.6	22.6	20.4	31.3	22.3
P92	Ballinluig												26.2
P93	26 Allan Street. Blairgowrie												20.5

## Appendix C Sepa Correspondance

Martin

I have received a response from the area team, please see below:

The following questions relate to changes that have occurred after May 2014.

1. Are you aware of any changes that have been made to any Part A or B processes that will result in a positive or negative effect on the local air quality? (this includes: change of fuel, increased or decreased emissions rates, changes to stack heights, the introduction of a new process etc.). **NO**
2. Are you aware of any SEPA regulated process that has increased its emissions to air by more than 30%? **NO**
3. Are you aware of any new industrial or new commercial developments that are likely to have a significant impact on the local air quality? **NO**
4. Are you aware of any Part A or B processes that have ceased to operate? **Carsie Broiler Farm(PPC/A/1016753) is currently mothballed and it is about to be surrendered.**
5. Are you aware of any new petrol stations with an annual throughput of over 2000 cubic metres of petrol? **NO**
6. Are you aware of any new mineral extraction processes that are likely to have a significant impact on the local air quality? **NO**
7. Are you aware of any new poultry units that house >400 000 birds (with mechanical ventilation), >200 000 birds (with natural ventilation) or >100 000 turkeys? **NO**
8. Are there any sources that you would like to see included in the Council's assessment? **NO**

If you would like to discuss any of the above, please do not hesitate to contact me.

Regards

John lamb  
SEPA