



# 2013 Air Quality Progress Report for **Newport City Council**

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

**April 2013**

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## Executive Summary

The Environment Act 1995 requires all local authorities in England and Wales to review and assess air quality in their authority area from time to time. This review and assessment process forms the backbone of Local Air Quality Management which helps authorities work towards achieving the criteria found within the Air Quality Objectives. Newport City Council has undertaken a review of its air quality monitoring programme and assessed the data it has collected during 2012.

Diffusion tube monitoring data for nitrogen dioxide has shown a slight decrease in levels compared to the previous year. This is thought to have been caused by a loss of data due to laboratory error which may have skewed averages downwards. However the majority of Air Quality Management Areas still record exceedances of the  $40\mu\text{g}/\text{m}^3$  objective level for Nitrogen Dioxide, or are recorded as being marginally below the objective level.

All exceedances of the objective levels outside existing AQMAs have been discussed in previous rounds of review and assessment and considered not to require a detailed assessment.

Data gathered for other pollutants (PM10, PM2.5, PAH's and Benzene) did not record any exceedance of the relevant objective or target level. The only notable change being a significant increase in Polycyclic aromatic hydrocarbons (PAHs) being recorded.

There are a number of significant new developments underway or still being considered within the planning process which may cause potential impacts to air quality. However all developments have been accompanied by a detailed air quality assessment which predict that impact will be negligible and not create new AQMAs.

The existing Air Quality Action Plan has undergone extensive revision and is currently in draft form. All measures within the old plan have been revised and the new measures are considered more deliverable than those contained within the old plan. The cornerstone of the new plan will involve commissioning a specialist consultancy to undertake a traffic assessment to propose physical changes to the highway within AQMAs (or to highways that feed into AQMAs) that will deliver air quality improvements. These recommendations will be incorporated into the final version of the Air Quality Action Plan.

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# 1 Introduction

## 1.1 Description of Local Authority Area

Newport City Council is located in South Wales and is the third largest city in the principality. It has a long industrial heritage due to its coastal location and large docks. A significant proportion of the area is urban consisting of several residential districts, a large docks area, several industrial estates and is also transversed by the M4 Motorway.

The most significant contributor to poor air quality within the authority is the M4 Motorway due its close proximity to several residential districts. In addition there are several major routes prone to high traffic volume and congestion which are also considered to have an impact on air quality.

There has been continued decline in the heavy manufacturing industries once common in Newport particularly in areas around the River Usk and the Docks. However over the last 5 years or so there has been an increase in the number of planning applications for ambitious projects which involve combustion processes which have emissions to air. For example energy from waste plants and three biomass power plants. In addition there is still some heavy industry remaining such as the Alpha Steel, and the Orb Steelworks. These industrial sources are not considered to impact sensitive receptor areas due to their relatively isolated locations.

## 1.2 Purpose of Progress 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

### **1.3 Air Quality Objectives**

The air quality objectives applicable to LAQM **in Wales** are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), 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 exceedences in each year that are permitted (where applicable).

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

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
	5.00 µg/m <sup>3</sup>	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m <sup>3</sup>	Running 8-hour mean	31.12.2003
Lead	0.50 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
Particulate Matter (PM <sub>10</sub> ) (gravimetric)	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m <sup>3</sup>	Annual mean	31.12.2004
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

The first round of local air quality review and assessment has included:

Stage	Outcome
Stage 1 Review & Assessment of Air Quality (December 1998)	
Stage 2 Review & Assessment of Air Quality (October 1999)	
Stage 3 Review & Assessment of Air Quality (June 2001)	Declaration of seven Air Quality Management Areas (December 2002)
Stage 4 Review & Assessment of Air Quality Management Areas (July 2004)	Declaration of Air Quality Management Areas (December 2004)

The current second round of local air quality review and assessment has included:

Report Title	Date	Outcome Summary
Air Quality Updating and Screening Assessment	May 2003	Seven areas adjacent to the M4 identified and declared as AQMAs, through modelling and monitoring
Detailed Assessment	2004	Four AQMAs were revoked and the remaining 3 amended.
Air Quality Progress Report	Sept 2005	Exceedances for NO <sub>2</sub> . All other pollutants met objective levels. Four new AQMA proposed.
Air Quality Updating and Screening Assessment	2006	No new significant sources identified. Large industrial operations considered in the past are no longer considered as having a significant impact on air quality at receptor locations.
Air Quality Progress Report	2007	Nitrogen dioxide exceedances in areas outside existing AQMAs. Two new AQMAs proposed.
Air Quality Action Plan	2008	For seven existing AQMAs
Air Quality Updating and Screening Assessment	2009	Identified exceedances outside AQMAs and one AQMA falling below objective level. Detailed Assessment required.
Air Quality Action Plan Progress Report	2009	Update on the progress of action plan measure implementation.
Air Quality Detailed Assessment	2009	Created two new AQMAs and retained existing one

Air Quality Progress Report	2010	No detailed assessment required
Air Quality Progress Report	2011	No detailed assessment required
Air Quality Action Plan Revision	2012	First draft produced (not submitted)
Air Quality Updating and Screening Assessment	2012	Recommends AQAP is revised to include new AQMAs. Some exceedances recorded outside existing AQMAs. Additional monitoring proposed
Revised Air Quality Action Plan submitted	2013	Revision includes two new AQAMs (from detailed assessment 2009) and to strengthen action plan measures.

The above documents are available for viewing on the Council's website or by appointment at the Civic Centre.

### **Newport City Council Updated Screening Assessment 2012**

Air Quality Monitoring undertaken by Newport City Council has shown there has been a small increase in Nitrogen Dioxide levels across the majority of monitoring locations during 2011. The data follows a relatively steady trend which does not appear to show significant variation over the past three years of monitoring data.

Monitoring data has also recorded a number of locations failing to meet the objective level requirement for Nitrogen Dioxide. The majority of these locations are within existing AQMAs. Unfortunately this demonstrates that the existing Air Quality Action Plan is not delivering significant improvements in air quality and is therefore currently being revised.

Monitoring locations outside existing AQMAs that exceed objective levels include the Castle Street Caerleon and Glasllwch Crescent and Corporation Road.

Castle Street, Caerleon – Future consideration of this exceedance depended on the outcome of an air quality study conducted by the Environment Agency's Mobile Air Quality Monitoring Unit. This is discussed in section 2.1.1 below.

69 Glasllwch Crescent – Additional monitoring was recommended in the 2012 USA given that it was the first exceedance at this location and there was only one monitoring tube in this area.

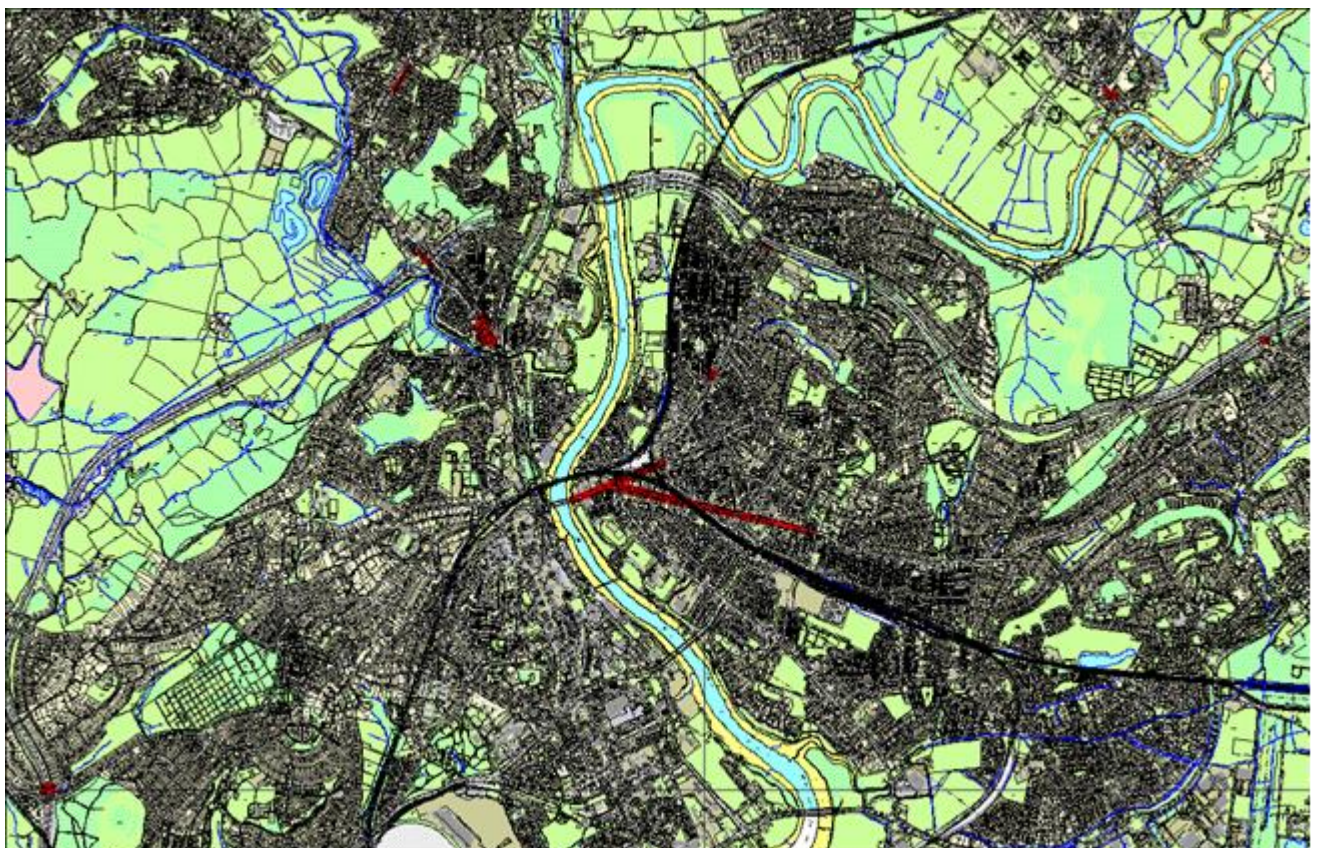
Corporation Road – The exceedance recorded during 2011 at this location was based on only 7 months of data capture and after annualisation the figures were lower than expected. Therefore it was decided that the tube position should be changed and additional tubes located along Corporation Road.

All three locations have been discussed in further detail in section ..... following a further 12 months data capture for these monitoring locations.

Those monitoring locations adjacent to the M4 have shown an increase in nitrogen dioxide levels. It is assumed this is because of the lifting of the 50mph limit and average speed cameras during 2011 and introduction of a variable speed limit which operated periodically. A significant trend was therefore been recorded over the period of 3-4 years where nitrogen dioxide levels decreased with the introduction of a speed restriction and enforcement cameras (resulting in a drop in measured average speed). This trend then reversed when these measures were revoked and a variable limit introduced.

Monitoring within one AQMA recorded data below the threshold level. This was the Glasllwch AQMA, which has previously been subject to a detailed assessment which recommended that its AQMA status was maintained. Therefore this location will not be progressed to a detailed assessment.

**Figure 1.1 Map(s) of AQMA Boundaries (if applicable)**



## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

Based on information from the 2012 Updated Screening and Assessment, the air quality program now only measures the following pollutants using automatic monitoring;

- Nitrogen Dioxide (NO<sub>2</sub>)
- Nitrogen Oxide
- Ozone
- Particulates (PM10 PM2.5)
- PAHs
- Benzene

During 2012 two new locations were created one temporary and the other more permanent. The temporary monitoring station was provided the Natural Resources Wales (formerly known as the Environment Agency) ambient air quality monitoring team. It consisted of a mobile monitoring facility which was created on the edge of the worst performing Air Quality Management Area within the authority area (Caerleon High Street). The station was deployed between February 2012 and October 2012. During this period the station monitored nitrogen oxides, PM10 and PM2.5.

The second new monitoring station commissioned during 2012 was deployed adjacent to the M4 motorway at junction 25. This station was purchased by the Highways Agency at the request of the Welsh Government due to that stretch of the M4 being modelled to exceed the air quality objective level. A 3 year monitoring programme therefore began in March 2012 which will include Ozone and oxides of nitrogen.

The St Julians AURN monitoring station continues to operate within the grounds of St Julians School and now includes Benzene monitoring which was introduced to the site during 2012.

The site also contains a PAH monitor which is not contained within the ground hog cabin which contains the other analysers but as a 'stand alone' unit adjacent to the cabin.

The equipment is maintained by SupportingU and Air Monitors and is serviced twice a year. The majority of the machines are calibrated either monthly or quarterly by NCC staff. Annual QA/QC audits are also conducted as required by the AURN administrators.

Figure 2.1 Map of Automatic Monitoring Sites

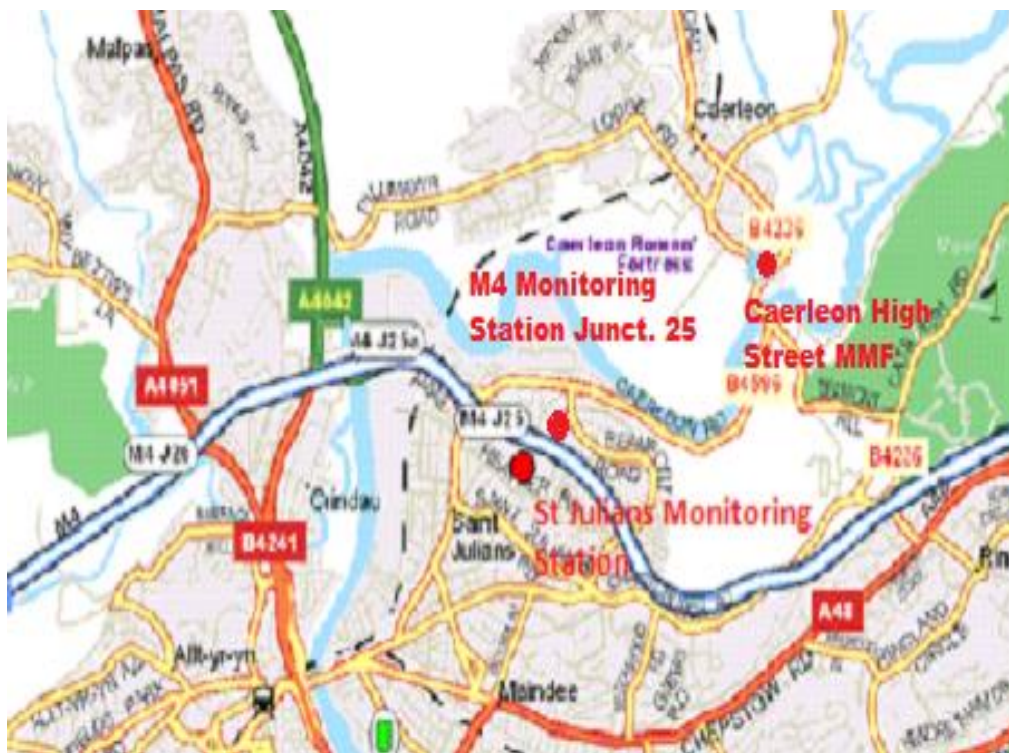


Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
<b>St Julians School</b>	St Julians School	Urban Background	332418	189603	2	NO, NO2, PM2.5, 10, Benzene, PAH's.	N	TEOM / FDMS, Automatic analyser	Y	NA	Y
<b>Junction 25A M4</b>	Junction 25A M4	Roadside	332685	189613	2	Ozone, NO, NO2	N	Automatic analyser	Y	<5	Y
<b>*Caerleon High Street AQMA</b>	Caerleon High Street MMF	Kerbside	334171	190420	2	NO, NO2, PM10, PM2.5	N	TEOM / FDMS, Automatic analyser	Y	<1M	Y

\*Temporary station – February – October 2012

### 2.1.2 Non-Automatic Monitoring Sites

Environmental Health currently have a diffusion tube monitoring network consisting of 55 tubes. These are predominately roadside or kerbside monitoring locations with a small number used at co-location positions with two continuous analysers (St Julians and Junction 25A M4). The location of each tube is selected following the assessment of areas likely to suffer from poor air quality due to traffic volume, congestion or street layout and the presence of potential receptors. In addition Environmental Health also consider deploying tubes to monitoring locations where concerns relating to air quality have been raised by members of the public.

Diffusion tubes are located at monitoring position for at least twelve months and if no exceedances or significant elevation of NO<sub>2</sub> is identified the tube is relocated to another potential pollution hotspot.

Wherever possible tubes are located on the façade of residential buildings or as close to areas where people are likely to spend long periods of time as described within the technical guidance, to provide an accurate measurement of potential exposure.

The monitoring data allows the City Council to obtain a better understanding of the spatial distribution of NO<sub>2</sub> concentrations in addition to providing data for modelling verification. The diffusion tube network is continuously reviewed so that tubes which do not record NO<sub>2</sub> levels above or near to the threshold level are relocated to other areas of potential exceedances.

All diffusion tubes are currently monitoring road vehicle emission sources with the exception of the co-location tubes at the St Julians and Junction 25A continuous monitoring stations, (for bias adjustment purposes).

The annual average diffusion tube measurement for each tube location was adjusted for bias as a result of a collocated study conducted at both continuous monitor sites following the approach described in Box 6.4 of LAQM.TG (09). Details of the bias calculation are detailed in Appendix A .

Diffusion tubes are supplied by ESG laboratories who use the 20% TEA/Water analysis method.

Figure 2.2 Map of Non-Automatic 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	Site Height (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
NCC1	<b>Chepstow Road</b>	Kerbside	332002	188416	2.2	NO2	Y	N	Y(<1M)	(1M)	Y
NCC2	<b>69 Glasllwch Crescent</b>	Roadside	328333	191742	1.7	NO2	N	N	Y(<1M)	3	Y
NCC3	13 Mill Street	Kerbside	334092	190822	2.2	NO2	N	N	Y(<1M)	2	Y
NCC4	71 Glasllwch Crescent	Roadside	328334	187884	1.7	NO2	N	N	Y(<1M)	5	Y
NCC5	Corporation Road	Kerbside	329205	191003	2.2	NO2	N	N	Y(<1M)	(1M)	Y
NCC6	153 Malpas Rd	Roadside	330564	189617	2.2	NO2	Y	N	Y(<1M)	4	Y
NCC7	Glasllwch Lane	Roadside	328363	188394	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC8	High Street Caerleon	Kerbside	334164	190430	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC9	Emlyn Street 1	Kerbside	331433	187809	2.2	NO2	N	N	Y(<1M)	1	Y
NCC10	97 Chepstow Rd	Roadside	332090	188394	1.7	NO2	Y	N	Y(<1M)	4	Y
NCC11	169 Caerleon Rd (Maceys)	Roadside	332064	189102	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC12	73 George Street	Roadside	332018	186869	2.2	NO2	N	N	Y(<1M)	2	Y
NCC13	Mont Road	Kerbside	330148	191693	2.2	NO2	N	N	Y(<1M)	1	Y

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Reference</b>	<b>Y OS Grid Reference</b>	<b>Site Height (m)</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b>	<b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b>	<b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b>	<b>Does this Location Represent Worst-Case Exposure?</b>
NCC14	48 Malpas Road	Roadside	330832	189312	1.7	NO2	Y	N	Y(<1M)	1	Y
NCC15	Glasllwch Crescent	Roadside	330837	187709	2.2	NO2	N	N	Y(<1M)	2.5	Y
NCC16	40 Denbigh Road	Roadside	332317	188441	1.7	NO2	Y	N	Y(<1M)	3	Y
NCC17	179 Malpas Road	Roadside	330510	190446	2.2	NO2	Y	N	Y(<1M)	13	Y
NCC18	Bassaleg Road 158/3	Roadside	328598	186991	1.7	NO2	Y	N	Y(<1M)	9	Y
NCC19	177 Malpas Road	Roadside	330506	190461	2.2	NO2	Y	N	Y(<1M)	11	Y
NCC20	Emlyn Street 2	Kerbside	331433	187809	2.2	NO2	N	N	Y(<1M)	1	Y
NCC21	Caerleon Ground Hog 1	Kerbside	334170	190422	3.0	NO2	N	N	Y(<1M)	1	Y
NCC22	88 Chepstow Road	Roadside	332002	188394	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC23	Caerleon Ground Hog 2	Kerbside	334170	190422	3.0	NO2	N	N	Y(<1M)	3	Y
NCC24	Caerleon Road swift	Roadside	331529	188535	2.2	NO2	Y	N	Y(<1M)	3	Y
NCC25	Denbigh Rd	Kerbside	332317	189703	1.5	NO2	Y	N	Y(<1M)	1	Y
NCC26	15 High Street, Caerleon	Roadside	334138	190592	2.2	NO2	Y	N	Y(<1M)	1.5	Y
NCC27	18 High Street, Caerleon	Roadside	334157	186225	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC28	155 Caerloen Road	Roadside	332046	189068	2.2	NO2	N	N	Y(<1M)	3	Y
NCC29	Maindee Library	Roadside	332615	188416	2.2	NO2	Y	N	Y(<1M)	3	Y

**Newport City Council**

<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Reference</b>	<b>Y OS Grid Reference</b>	<b>Site Height (m)</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b>	<b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b>	<b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b>	<b>Does this Location Represent Worst-Case Exposure?</b>
NCC30	1 Montgomery Road	Roadside	330150	191742	2.2	NO2	N	N	Y(<1M)	4	Y
NCC31	Buckland Cottage	Roadside	332049	188274	2.2	NO2	Y	N	Y(<1M)	7	Y
NCC32	*372 Malpas Road	Roadside	330416	190529	1.7	NO2	Y	N	Y(<1M)	3	Y
NCC33	162 Bassaleg Road	Roadside	328538	190969	1.7	NO2	Y	N	Y(<1M)	10	Y
NCC34	The Priory Caerleon	Kerbside	333996	190536	2.2	NO2	N	N	Y(<1M)	2	Y
NCC35	6 Castle Street	Kerbside	334211	190446	2.2	NO2	N	N	Y(<1M)	2	Y
NCC36	1 Castle Street	Kerbside	334256	190473	2.2	NO2	N	N	Y(<1M)	2	Y
NCC37	St. Julians School 1	Urban Background	334944	190529	2.2	NO2	N	Y	Y(<1M)	N/A	Y
NCC38	St. Julians School 2	Urban Background	334944	188340	2.2	NO2	N	Y	Y(<1M)	N/A	Y
NCC39	St. Julians School 3	Urban Background	334944	188326	2.2	NO2	N	Y	Y(<1M)	N/A	Y
NCC40	158 Bassaleg Road	Roadside	328587	190554	1.7	NO2	Y	N	Y(<1M)	6	Y
NCC41	162/3 Bassaleg Rd	Roadside	328544	186975	1.7	NO2	N	N	Y(<1M)	5	Y
NCC42	Mendalgeif Road	Kerbside	330913	187047	2.2	NO2	N	N	Y(<1M)	3	Y
NCC43	7 Castle Street	Kerbside	334211	190446	2.2	NO2	N	N	Y(<1M)	2	Y
NCC44	Malpas (Mont) 2	Kerbside	330146	191713	2.2	NO2	N	N	Y(<1M)	2	Y
NCC45	155 Caerloen Road	Roadside	332046	189068	2.2	NO2	N	N	Y(<1M)	3	Y

**Newport City Council**

<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>	<b>X OS Grid Reference</b>	<b>Y OS Grid Reference</b>	<b>Site Height (m)</b>	<b>Pollutants Monitored</b>	<b>In AQMA?</b>	<b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b>	<b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b>	<b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b>	<b>Does this Location Represent Worst-Case Exposure?</b>
NCC46	*148 Chepstow Road	Roadside	332285	188340	1.7	NO2	Y	N	Y(<1M)	2	Y
NCC47	9 Castle Street	Kerbside	334232	190461	2.2	NO2	N	N	Y(<1M)	1	Y
NCC48	Cefn Road	Kerbside	327119	188743	2.4	NO2	N	N	Y(<1M)	3	Y
NCC49	40 Chepstow Road	Roadside	331762	188441	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC50	9 Caerleon Road	Roadside	331529	188535	2.2	NO2	Y	N	Y(<1M)	2	Y
NCC51	19 Goldcroft Road	Kerbside	333752	190786	2.2	NO2	N	N	Y(<1M)	1	Y
NCC52	9 Station Road	Roadside	334232	190461	1.7	NO2	N	N	Y(<1M)	3	Y
NCC53	5 High Street Caerleon	Roadside	333960	190554	1.7	NO2	N	N	Y(<1M)	2	Y
NCC54	96/98 Mill Street	Kerbside	334279	190592	2.2	NO2	N	N	Y(<1M)	1	Y
NCC55	116 Alexandra Road	Kerbside	331539	186225	2.2	NO2	N	N	Y(<1M)	1	Y

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

### **2.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

#### **Automatic Monitoring Data**

Automatic monitoring data was collected from the St Julians air quality monitoring station. Data capture was relatively good which may be in part a result of having a new NO<sub>x</sub> analyser upgrade due to requirements of the site's AURN affiliation. The annual average for NO<sub>2</sub> was the same as the previous year 22mg/ m<sup>3</sup>.

**Table 2.3 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Annual Mean Concentration (µg/m <sup>3</sup> )				
					2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011* <sup>c</sup>	2012 <sup>c</sup>
St Julians	Urban Background	N	96.46%	96.46%	25	24	25	22	22
M4 Monitoring Location	Roadside	N	N.A.	N.A.	/	/	/	/	n.a.
Caerleon High Street	Roadside	N	N.A.	N.A.	/	/	/	/	N.A.

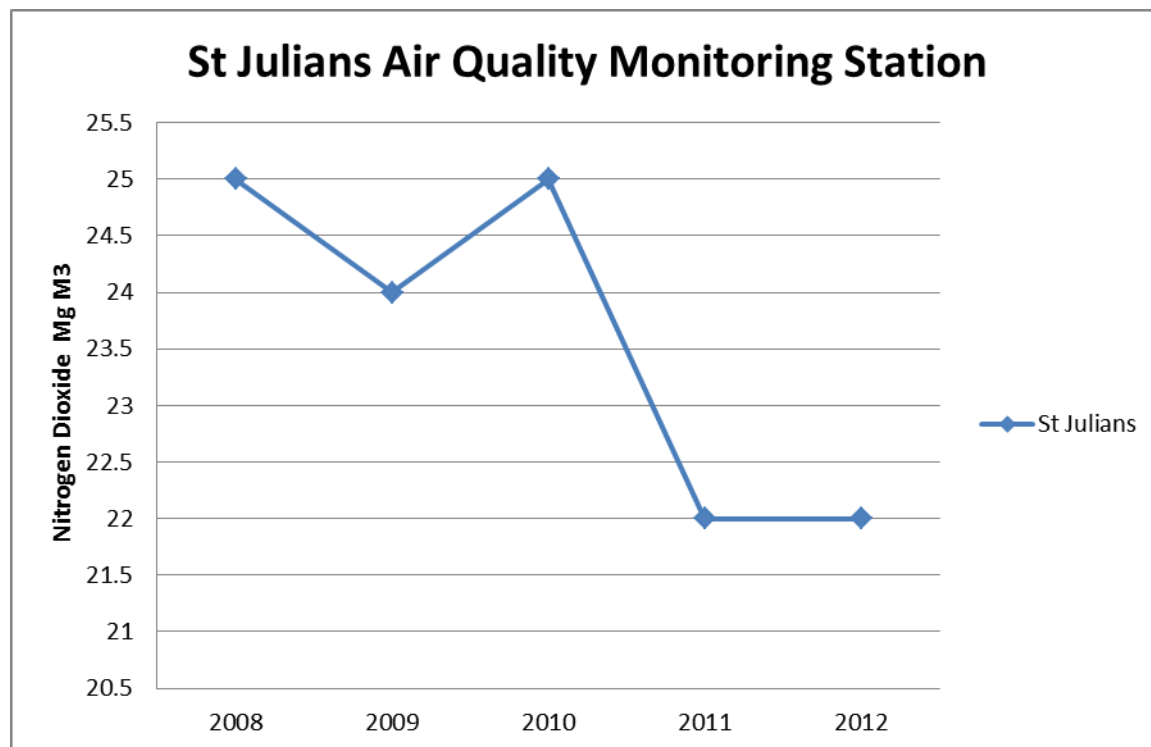
In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40µg/m<sup>3</sup>

<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\(09\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if valid data capture is less than 75%

\* Annual mean concentrations for previous years are optional

**Figure 2.3 Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Sites**

There was no obvious trend between 2008 and 2010. However since 2010 there appears to be a moderate decline in NO<sub>2</sub> levels and of approximately 3 mg/m<sup>3</sup>. Future assessment will help determine if this is a sustained trend or a short term fluctuation in urban background nitrogen dioxide levels.

**Table 2.4 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Number of Hourly Means > 200µg/m <sup>3</sup>				
					2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011* <sup>c</sup>	2012 <sup>c</sup>
St Julians	Urban Background	N	96.46%	96.46%	1	1	5	/	0
M4 Monitoring Location	Roadside	N			/	/	/	/	7

In bold, exceedence of the NO<sub>2</sub> hourly mean AQS objective (200µg/m<sup>3</sup> – not to be exceeded more than 18 times per year)

<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 data capture for full calendar year is less than 90%, include the 99.8<sup>th</sup> percentile of hourly means in brackets

\* Number of exceedences for previous years is optional



## Diffusion Tube Monitoring Data

Newport City Council has fifty five diffusion tubes located within nine declared AQMAs, in addition to other areas where potential exceedances of the NO<sub>2</sub> objective level may occur.

Nine of these tubes showed an exceedance of the objective level and a further 11 fell just below the threshold and were within the range of 36-39.9µg/m<sup>3</sup>. Five existing AQMAs were recorded as exceeding the objective level for nitrogen dioxide, with the majority of the remainder falling within the marginal range. The notable exception of this is the St Julians AQMA which fell outside the marginal range 34.8 µg/m<sup>3</sup>.

The diffusion tube data for 2012 appears to show a broad decrease across the majority of the diffusion tube locations. It is assumed that this may be partly due to only having 11 months' worth of data for 2012. This is a result of a laboratory error meaning that all data for February 2012 was considered to not to meet the quality checks employed by the laboratory, and therefore declared void.

Diffusion tube readings during February usually record high levels of nitrogen dioxide as a result of seasonal variation and having lost data for this month may have therefore skewed the annual average readings downwards slightly. Several more of the diffusion tubes located in AQMAs may have therefore recorded exceedances if this error had not occurred.

Otherwise diffusion tube data collection was good with only the occasional tube theft and no persistent tube loss at any monitoring locations.

Table 2.5 Results of NO<sub>2</sub> Diffusion Tubes 2012

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration (µg/m <sup>3</sup> ) - Bias Adjustment factor = <b>0.787</b>
NCC1	Chepstow Road	Kerbside	Y	N	91.7%	33.7
NCC2	69 Glasslwch Crescent	Road side	N	N	91.7%	<u>36.1</u>
NCC3	13 Mill Street	Kerbside	N	N	91.7%	21.6
NCC4	71 Glasslwch Crescent	Road side	N	N	91.7%	27.1
NCC5	Corporation Street	Kerbside	N	N	91.7%	<u>36.1</u>
NCC6	153 Malpas Road	Road side	Y	N	91.7%	<u>38.6</u>
NCC7	Glasslwch Lane	Road side	N	N	91.7%	33.5
NCC8	High Street, Caerleon	Kerbside	Y	N	83.3%	<b>47.9</b>
NCC9	Emlyn Street 1	Kerbside	N	N	91.7%	28.5
NCC10	97 Chepstow Road	Kerbside	Y	N	91.7%	27.5
NCC11	169 Caerleon Road	Kerbside	Y	N	91.7%	<u>37.1</u>
NCC12	73 George Street	Kerbside	N	N	91.7%	<u>36.8</u>
NCC13	Mont Road	Kerbside	N	N	91.7%	<b>71.0</b>
NCC14	48 Malpas Road	Kerbside	Y	N	91.7%	<b>41.1</b>

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = <b>0.787</b>
NCC15	Glasslwch Crescent	Kerbside	N	N	91.7%	34.0
NCC16	40 Derbigh Rd	Kerbside	Y	N	91.7%	34.8
NCC17	179 Malpas Road	Road side	Y	N	91.7%	33.4
NCC18	Bassaleg Rd 158/3	Road side	Y	N	91.7%	<u>36.5</u>
NCC19	177 Malpas Road	Road side	Y	N	91.7%	35.3
NCC20	Emlyn Street 2	Kerbside	N	N	83.3%	25.0
NCC21	Caerleon Ground Hog 1	Kerbside	N	N	-	34.4
NCC22	88 Chepstow Road	Kerbside	Y	N	91.7%	<u>38.6</u>
NCC23	Caerleon Ground Hog 2	Kerbside	Y	N	-	<u>36.3</u>
NCC24	Caerleon Road	Kerbside	Y	N	91.7%	<b>41.9</b>
NCC25	Denbigh Rd	Kerbside	Y	N	91.7%	27.8
NCC26	15 High Street Caerleon	Kerbside	Y	N	83.3%	<b>57.1</b>
NCC27	18 High Street Caerleon	Kerbside	Y	N	91.7%	<b>47.7</b>
NCC28	155 Caerleon Road	Kerbside	Y	N	83.3%	<u>39.5</u>
NCC29	Mainde library	Road side	Y	N	91.7%	30.5
NCC30	1 Montgomery Road	Road side	N	N	91.7%	25.2
NCC31	Buckland Cottage	Road side	Y	N	91.7%	<b>40.9</b>

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = <b>0.787</b>
NCC32	372 Malpas Road	Road side	N	N	91.7%	35.3
NCC33	162 Bassaleg Road	Road side	Y	N	91.7%	31.5
NCC34	The Priory Caerleon	Kerbside	N	N	91.7%	32.0
NCC35	6 Castle Street	Kerbside	N	N	91.7%	30.7
NCC36	1 Castle Street	Kerbside	N	N	91.7%	29.4
NCC37	St Julian's School	Urban Background	N	TRIPILCATE	91.7%	21.1
NCC38	St Julian's School	Urban Background	N	TRIPLICATE	91.7%	21.2
NCC39	St Julian's School	Urban Background	N	TRIPLICATE	91.7%	19.3
NCC40	158 Bassaleg Road	Road side	Y	Y	91.7%	31.3
NCC41	Bassaleg Road 162/3	Road side	N	Y	91.7%	34.1
NCC42	Mendalgeif Road	Kerbside	N	N	91.7%	26.8
NCC43	7 Castle Street	Kerbside	N	N	75%	34.5
NCC44	Malpas (Mont) 2 Road	Kerbside	N	N	91.7%	<b>51.3</b>
NCC45	515 Malpas Road	Kerbside	Y	N	91.7%	27.6
NCC46	148 Chepstow Road	Kerbside	Y	Y	91.7%	<b>45.6</b>
NCC47	9 Castle Street	Kerbside	N	N	91.7%	<u>38.9</u>
NCC48	Cefn Road	Kerbside	N	N	91.7%	21.6

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %) <sup>a</sup>	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.787
NCC49	40 Chepstow Road	Road side	Y	Y	91.7%	26.6
NCC50	9 Caerleon Road	Kerbside	Y	Y	91.7%	<u>37.1</u>
NCC51	19 Goldcroft Road	Kerbside	N	N	91.7%	20.3
NCC52	9 Station Road	Road side	N	N	91.7%	24.5
NCC53	5 High Street Caerleon	Road side	N	N	91.7%	23.8
NCC54	96/98 Mill Street	Kerbside	N	N	91.7%	18.9
NCC55	Alexandra Road	Kerbside	N	N	83.3%	32.4

*\* Temporary monitoring project - Co-location study with continuous analyser located at Caerleon High Street - March to October 2012*

In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean AQS objective

<sup>a</sup> Means should be “annualised” as in Box 3.2 of TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%

<sup>b</sup> If an exceedence is measured at a monitoring site not representative of public exposure, NO<sub>2</sub> concentration at the nearest relevant exposure should be estimated based on the “NO<sub>2</sub> fall-off with distance” calculator (<http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>), and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=30>).

Table 2.6 Results of NO<sub>2</sub> Diffusion Tubes (2008 to 2012)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m <sup>3</sup> ) - Adjusted for Bias <sup>a</sup>				
			2008 (Bias Adjustment Factor = XX)	2009 (Bias Adjustment Factor = XX)	2010 (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)	2012 (Bias Adjustment Factor = XX)
NCC1	Kerbside	Y		37.83	40.0	39.0	33.7
NCC2	Road side	N		34.31	32.9	<b>40.0</b>	<u>36.1</u>
NCC3	Kerbside	N		-	-	-	21.6
NCC4	Road side	N		-	-	-	27.1
NCC5	Kerbside	N		34.87	35.8	<b>41.5</b>	<u>36.1</u>
NCC6	Road side	Y		36.54	37.0	<b>40.0</b>	<u>38.6</u>
NCC7	Road side	N		35.04	32.4	35.0	33.5
NCC8	Kerbside	Y		46.54	43.5	<b>44.6</b>	<b>47.9</b>
NCC9	Kerbside	N		-	-	-	28.5
NCC10	Kerbside	Y		-	31.1	27.4	27.5
NCC11	Kerbside	Y		41.8	34.7	37.9	<u>37.1</u>
NCC12	Kerbside	N		34.60	27.5	38.5	<u>36.8</u>
NCC13	Kerbside	N		64.29	61.5	<b>66.1</b>	<b>71.0</b>
NCC14	Kerbside	Y		45.83	35.2	<b>41.7</b>	<b>41.1</b>
NCC15	Kerbside	N		33.81	33.4	32.3	34.0
NCC16	Kerbside	Y		36.02	32.2	35.8	34.8
NCC17	Road side	Y		34.96	31.1	33.8	33.4
NCC18	Road side	Y		36.27	24.5	35.8	<u>36.5</u>
NCC19	Road side	Y		31.68	28.3	35.3	35.3
NCC20	Kerbside	N	-	-	-	-	25.0
NCC21	Kerbside	N	-	-	-	-	34.4
NCC22	Kerbside	Y		<b>40.39</b>	40.0	<b>43.9</b>	<u>38.6</u>
NCC23	Kerbside	N		-	-	24.1	<u>36.3</u>
NCC24	Kerbside	Y		<b>40.16</b>	38.8	<b>44.4</b>	<b>41.9</b>

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
			2008 (Bias Adjustment Factor = XX)	2009 (Bias Adjustment Factor = XX)	2010 (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)	2012 (Bias Adjustment Factor = XX)
NCC25	Kerbside	Y		27.02	26.3	28.7	27.8
NCC26	Kerbside	Y		57.34	60.0	<b>63.0</b>	<b>57.1</b>
NCC27	Kerbside	Y		49.89	53.5	<b>53.5</b>	<b>47.7</b>
NCC28	Kerbside	Y		-	35.8	<b>40.5</b>	<u>39.5</u>
NCC29	Road side	Y		30.46	32.0	31.0	30.5
NCC30	Road side	N		26.43	26.2	27.7	25.2
NCC31	Road side	Y		35.40	34.2	<b>40.0</b>	<b>40.9</b>
NCC32	Road side	N		39.20	34.2	<b>40.0</b>	35.3
NCC33	Road side	Y		29.9	32.5	32.4	31.5
NCC34	Kerbside	N		-	20.5	24.0	32.0
NCC35	Kerbside	N		-	20.7	22.5	30.7
NCC36	Kerbside	N		-	21.1	21.4	29.4
NCC37	Urban Background	N		21.54	23.7	19.4	21.1
NCC38	Urban Background	N		22.43	24.9	22.1	21.2
NCC39	Urban Background	N		23.30	25.1	23.2	19.3
NCC40	Road side	Y		36.27	33.3	34.4	31.3
NCC41	Road side	N		29.4	30.3	32.5	34.1
NCC42	Kerbside	N		26.04	30.4	28.7	26.8
NCC43	Kerbside	N	-	-	31.7	38.7	34.5
NCC44	Kerbside	N	-	<b>45.81</b>	<b>46.8</b>	<b>51.7</b>	<b>51.3</b>
NCC45	Kerbside	Y	-	<b>41.99</b>	30.4	31.0	27.6
NCC46	Kerbside	Y	-	<b>46.7</b>	<b>45.8</b>	<b>56.2</b>	<b>45.6</b>
NCC47	Kerbside	N	-	-	39.9	<b>44.5</b>	<u>38.9</u>
NCC48	Kerbside	N	-	-	-	31.2	21.6

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
			2008 (Bias Adjustment Factor = XX)	2009 (Bias Adjustment Factor = XX)	2010 (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)	2012 (Bias Adjustment Factor = XX)
NCC49	Road side	Y	-	-	25.5	26.0	26.6
NCC50	Kerbside	Y	-	36.98	39.1	<b>45.5</b>	<u>37.1</u>
NCC51	Kerbside	N	-	-	21.7	21.5	20.3
NCC52	Road side	N	-	-	25.2	25.6	24.5
NCC53	Road side	N	-	-	30.4	30.2	23.8
NCC54	Kerbside	N	-	-	22.0	24.4	18.9
NCC55	Kerbside	N	-	-	32.1	34.7	32.4

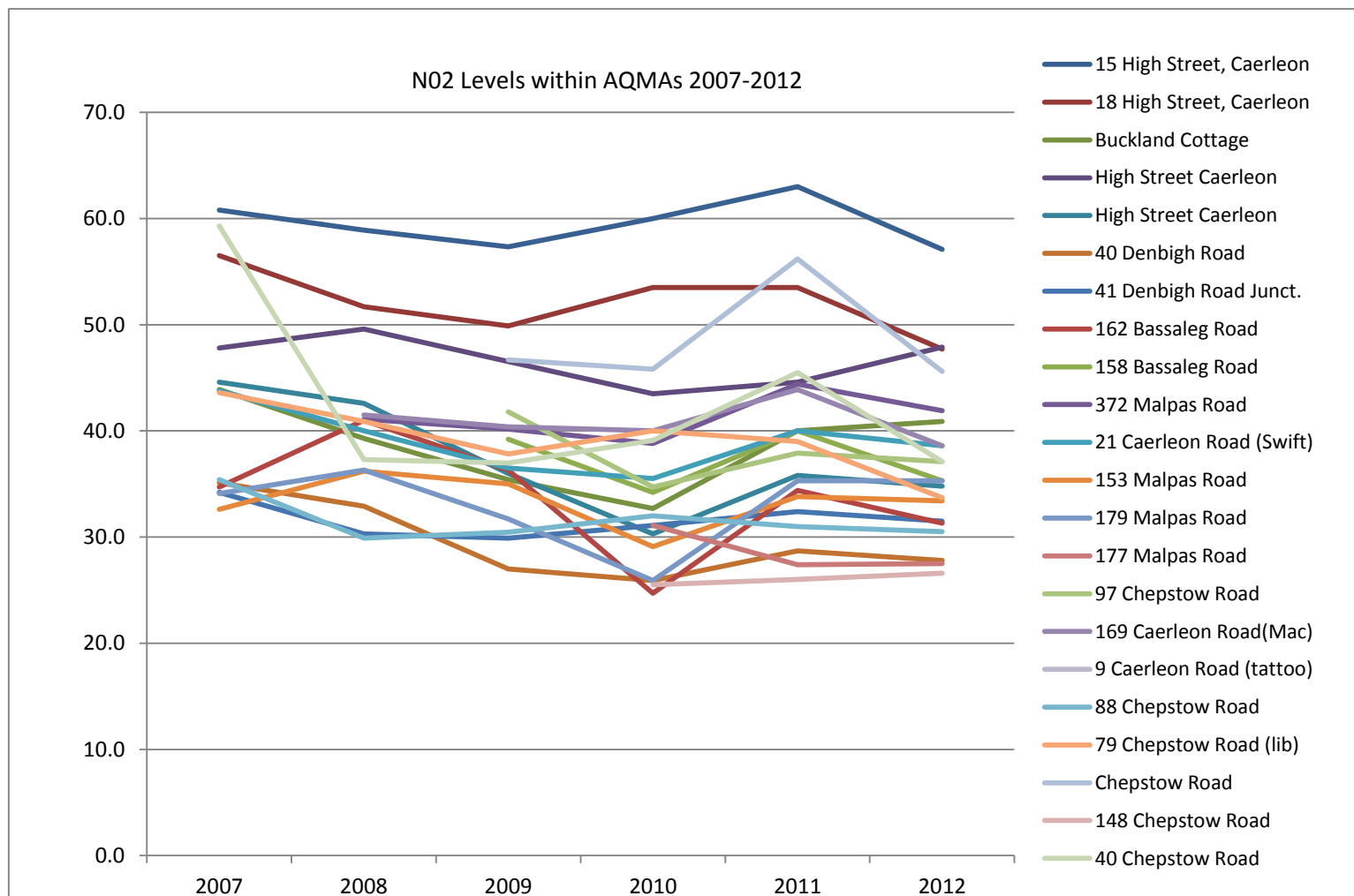
In bold, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedence of the NO<sub>2</sub> hourly mean AQS objective

<sup>a</sup> Means should be “annualised” [as in Box 3.2 of TG\(09\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if full calendar year data capture is less than 75%



Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



### 2.2.2 Particulate Matter (PM<sub>10</sub>)

PM10 data capture was relatively good during 2012 with almost 90% data capture. Previous years have seen significant data capture loss due to faulty drier units which required replacement, in addition to historic problems with the air conditioning system not being able to keep the cabin cool. During 2012 there were fewer problems

The site is located within the yard area of St Julians School and is classified as an 'urban background' monitoring location. During 2012 PM10 levels did not exceed the annual mean objective level or exceed the 24 hour mean any time during the monitoring period.

As data capture has been so poor over that last five years it is difficult to identify trend with any confidence. However based on comparison of the monitoring data from the 12 months prior to the 2012 data available there seems to be a small improvement in PM10 levels over recent years at the monitoring location.

**Table 2.7 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m <sup>3</sup> )				
						2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011* <sup>c</sup>	2012 <sup>c</sup>
St Julians	Urban Background	N	89.9	89.9	n/a	n/a/	17	n/a	13	11

bold, exceedence of the PM<sub>10</sub> annual mean AQS objective of 40µg/m<sup>3</sup>

<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\(09\)](http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if valid data capture is less than 75%

\* Annual mean concentrations for previous years are optional

### Figure 2.5 Trends in Annual Mean PM<sub>10</sub> Concentrations

A trend chart providing PM<sub>10</sub> annual mean results over the past 5 years (or more if available) may be inserted here. Please discuss any trends shown.

**Table 2.8 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 2012 % <sup>b</sup>	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m <sup>3</sup>				
						2008* <sup>c</sup>	2009* <sup>c</sup>	2010* <sup>c</sup>	2011* <sup>c</sup>	2012 <sup>c</sup>
St Julians	Urban Background	N	89.9	89.9	N/A					0

In bold, exceedence of the PM<sub>10</sub> daily mean AQS objective (50µg/m<sup>3</sup> – not to be exceeded more than 35 times per year)

<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 for full calendar year is less than 90%, include the 90.4<sup>th</sup> percentile of 24-hour means in brackets

\* Number of exceedences for previous years is optional

### **2.2.3 Sulphur Dioxide (SO<sub>2</sub>)**

Sulphur Dioxide is not monitored by Newport City Council as the last USA has not identified any new significant emission sources.

### 2.2.4 Benzene

Benzene monitoring commenced within the St Julians AURN monitoring station during 2012, which represents an urban background site. There were no exceedances of either objective level during 2012.

### 2.2.5 Other Pollutants Monitored

Newport City Council also monitors the following pollutants at the St Julians air quality monitoring station located to the rear of St Julians School.

### 2.2.6 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons are also monitored at St Julians School site adjacent to the continuous analyser we operate. This analyser has been operating at this location for five years after being moved from a location close to the former Llanwern steelworks following its closure.

PAH	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Ave
B(a)P ng. m <sup>3</sup>	0.33	0.43	0.27	0.12	0.14	0.09	0.15	0.1	0.18	0.16	0.6	0.28	<b>0.237</b>

The average recorded level for 2012 – 0.237 ng. m<sup>3</sup> is below the objective level 0.25 ng. m<sup>3</sup>. However there appears to be a significant increase in PAH levels at the monitoring station when compared to last year's data 0.163 ng. m<sup>3</sup>. The most significant source of PAHs within the local authority area is road traffic, particularly the M4 Motorway which is within 100m of the station.

### 2.2.7 PM2.5

In addition to monitoring PM10 the St Julians site also monitors PM2.5 which started during 2009. Data capture was good with over 90% of data being collected and considered valid. Data capture from the previous year was poor (58%) and therefore the average used may not be a true reflection of the actual figure. However the reading for 2012 was recorded as being well below the recommended level of 25µg/m<sup>3</sup>

Newport City Council

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % <sup>a</sup>	Valid Data Capture 2011 % <sup>b</sup>	Mean PM2.5 $\mu\text{g}/\text{m}^3$	
					2011	2012
St Julians	Urban Background	N	93.9%	93.9%	16.79	10

## Summary of Compliance with AQS Objectives

Newport City Council has examined the results from monitoring in the Authorities area.

Concentrations within the AQMA still exceed the  $40\mu\text{g}/\text{m}^3$  for nitrogen dioxide at the majority of AQMAs and the AQMAs should remain.

Those areas outside AQMAs where exceedances have been recorded are not considered as requiring a detailed assessment due to the reasons explained in earlier sections. Therefore there is no need to proceed to a Detailed Assessment.



## 3 New Local Developments

### 3.1 Road Traffic Sources

There were two proposed developments where air quality assessments were conducted to assess the potential impact on air quality since the last USA.

The largest in terms of potential impact on air quality related to the redevelopment of the city centre. An application to demolish and redevelop a significant proportion of the central business district was submitted prior to 2012 and development started during that year. Changes to the location of the main bus station and large multi-storey car parks combined with the anticipated extra traffic and rejuvenated city centre may impact on air quality and therefore Environmental Health requested that an air quality assessment was undertaken.

The initial assessment recorded a 'slight' impact on adjacent AQMAs. However modelling also predicted that increased vehicle emissions may create a new AQMA within Emlyn Street, a city centre location leading to a multi storey carpark. The modelled prediction was based on an assumption that nitrogen dioxide levels within the area were already high and therefore a small increase in levels caused an exceedance of the objective level for nitrogen dioxide. With the absence of monitoring data within the area Environmental Health decided to undertake some diffusion tube monitoring to assess background nitrogen dioxide levels before the city centre redevelopment commences. Diffusion tube measurement to date record the area as being well below the predicted existing levels and therefore it is unlikely that the new development will conceivably cause an exceedance of the objective level. Therefore it is unlikely to require a detailed assessment.

It is Environmental Health's intention to expand diffusion tube monitoring within several city centre locations when the city centre redevelopment is complete to verify the air quality assessment submitted with this planning application.

The second air quality assessment was conducted to support a planning application for a new 'metro' type supermarket within the town of Caerleon to the north east of Newport. The proposed store was located on a one-way system which loops through the town and also through the Caerleon High Street AQMA, which records the highest levels of nitrogen dioxide within the monitoring network.

Local residents voiced their concerns that the store would bring additional traffic onto the one-way system which would add to the existing poor air quality within the high street. A traffic assessment was conducted which concluded that the store may

generate approximately 450 additional daily vehicle trips within the vicinity of the store. This was predicted to create small increases in nitrogen dioxide levels or approximately 0.3mg/m<sup>3</sup> (per annum) within the existing AQMA and some adjacent areas. The increase was therefore considered small and did not create any new AQMAs within the area.

### **3.2 Other Transport Sources**

There are no new significant emission sources from other forms of transport since the last USA within the authority area.

### **3.3 Industrial Sources**

There are no new industrial sources which may generate significant emissions.

### **3.4 Commercial and Domestic Sources**

A planning application was submitted for the Veolia energy from waste plant proposed for a brownfield site adjacent to the former Llanwern Steel works.

The plant proposed to incinerate domestic waste (a form of biomass?) which would be brought to the site by road and convert this thermal energy into electricity. Information submitted with the planning application included a detailed air quality assessment given the public concerns relating to some of the more sinister chemical compounds associated with waste incineration emissions.

The rural and isolated location combined with proposed emissions abatement technology meant that the air quality assessment only identified slight increases in pollution sources at the nearest sensitive receptor locations. There are no existing AQMA within the immediate vicinity and the impact on those nearest (over 3km away) were deemed negligible. As a result there was no requirement for this site to be considered further as part of a detailed assessment.

### **3.5 New Developments with Fugitive or Uncontrolled Sources**

## Newport City Council

There are no new significant sources of fugitive or uncontrolled sources of particulate emissions that Environmental Health are aware of since the last USA. Occasional dust complaints are received by Environmental Health from building sites, however there are usually provisions in place to mitigate against this as a requirement of planning conditions. Therefore dust issues are not persistent enough from construction sites to warrant on-going monitoring.

There has been the creation of one landfill and quarry (at the same site) since the last USA. Both operations did not have planning consent and are therefore being investigated by the planning enforcement team. Environmental Health were not made aware of either activity until the enforcement team had prevented further works although following a site visit were found to be relatively small in scale of traditional quarries and landfill standards.

The location of the site was rural with no receptor locations within 200m of the site. In addition there were no complaints of dust or odour nuisance during the period of operation. Therefore Environmental Health did not consider it to be on-going or requiring monitoring or further assessment as a potential source of particulates.

Newport City Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Newport City Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

## 4 Planning Applications

A development which has not yet been approved by the planning department but will have a significant impact on local traffic volumes involves the redevelopment of the former ALCAN site in Rogerstone, northwest of the city centre. The site was formerly a large aluminium manufacturing plant and closed during 2008.

It is proposed to build up to 800 new houses a primary school and a small amount of commercial units at the site. An air quality assessment was undertaken as required by Environmental Health and did not identify any significant impact on existing local air quality or the nearest AQMAs. It is thought this may be because the site is well served by a major transport link - the A467 (a dual carriageway) which provides the main access to the site with little additional impact on roads in surrounding residential areas.

## 5 Air Quality Planning Policies

Newport City Council has no specific planning policies which focus only on air quality. However the consideration of air quality issues is required for large scale development which may impact on local air quality. This is usually picked up via consultation with the Environmental Health either during the scoping or planning consultation phase. In addition all AQAMs are flagged up as a constraint on planning land use maps and therefore developments at or adjacent to this areas result in automatic consultation with Environmental Health.

There is a proposed measure within the draft revised AQAP where Environmental Health aim to provide input into the development of planning policies such as the revision of the Local Development Plan to ensure that there is a robust requirement to consider air quality when making future planning decisions.

The development of other relevant corporate policies and strategies often focus on the climate change agenda with air quality issues often wrongly assumed to be included in this subject area. Therefore Environmental Health intend to raise the profile of local air quality issues given they arguably cause more tangible impacts on public health at a local level.

## **6 Local Transport Plans and Strategies**

Air quality did not feature within the last revision of the authority's Transport Strategy Plan and as already discussed in the previous section Environmental Health has committed to addressing this omission within the current draft of the revised AQAP.

This will be achieved by ensuring the Air Quality Action Plan Steering Group is maintained and not disbanded after the final draft of the plan is produced.

## 7 Implementation of Action Plans

Environmental Health have recently submitted a first draft Air Quality Action Plan to the Welsh Government following a complete revision of the Action Plan first published in 2008. Since this time two new Air Quality Management Areas have been declared which required these to be incorporated into the plan. In addition after reviewing the existing plan and considering monitoring data within the 7 AQMAs, Environmental Health were of the opinion that the plan required a complete revision in order to help deliver air quality improvements.

The revised plan was developed 'in house' under the direction of a steering group consisting of internal and external members. The revised action plan is more focussed on measures which are considered to be more deliverable than the those put forward in the original plan. Many of the measures within the original plan fell outside the remit of Environmental Health and were also very difficult to influence in any way.

The development of a closer working relationship with the Council's Highways department as a result of their membership to the Action Plan Steering Group has helped raise the profile of air quality issues, and gone some way towards achieving some low/no cost actions being implemented by the Highways department.

Table 9.1 Action Plan Progress

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1	Policy & Strategy	Provide air quality input during the local and regional development of the transport infrastructure and city centre redevelopment	NCC	2011-2013	2013 - onwards	none	<1%	Some input via highways on some projects	limited	On-going	Likely to be small and difficult to quantify
2	Policy & Strategy	Identify and input air quality considerations into relevant corporate and service area policy and strategy development	NCC	2011-2013	2013 - onwards	Air Quality included on report/ strategies	<1%	Input into various corporate reports including new staff travel plan	Comments submitted for LDP?	On-going	Likely to be small and difficult to quantify
3	Policy & Strategy	Provide air quality input during the next revision of NCC Transport Strategy Publication	NCC	2011-2013	2014-15	Air Quality included on report/ strategies	<1%	None	None. Next draft not scheduled for 2015	On-going	Likely to be small and difficult to quantify
4	Policy & Strategy	Continue to stipulate air quality assessments for planning applications which may impact AQMAs, or potentially create new ones	NCC	2011-2013	On-going	Conditions attached to all relevant planning approvals	<1%	Several major development Commented on.	Several major development Commented on.	On-going	Likely to be small and difficult to quantify
5	Policy & Strategy	Request that vehicle emissions considerations are incorporated into all NCC vehicle procurement, hire or contracts	NCC	2011-2013	On-going	Air quality requirements included in procurement contracts	<1%	Discussions with Contract Manager / fleet manager	None	2014	Likely to be small and difficult to quantify
6	Practical Highways Measures	Reduce the speed limit to 30mph through the Malpas Road / Graig Park Road AQMA	NCC	2011-2013	2013-2015	Implementation	AQMA annual average below Objective level	none	None	2014	Small improvement but may be enough to tip levels under threshold.
7	Practical Highways Measures	Move digital traffic speed sensor and display closer to Malpas Road / Graig Park Road AQMA	NCC	2011-2013	2013-2015	Implementation	AQMA annual average below Objective level	Discussion already undertaken with Highways	Discussion already undertaken with Highways	2014	Small improvement but may be enough to tip levels under threshold.
8	Practical Highways Measures	Consider undertaking a HGV assessment at Caerleon, similar to that undertaken by Monmouthshire CBC to assess HGV impact and destinations.	NCC	2011-2013	2013-2015	Undertaken	<1%	Discussion already undertaken with Highways	Discussion already undertaken with Highways	2014	Likely to be small and difficult to quantify



## Newport City Council

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
9	Practical Highways Measures	Request that Newport Transport use most efficient vehicles on routes through AQMAs	NCC Newport Transp.	2011-2013	2013-2015	Undertaken	<1%	Mentioned to NT representative During steering group meeting	None	2014	Likely to be small and difficult to quantify
10	Practical Highways Measures	Consider employing traffic assessment experts to fully investigate the causes of congestion, traffic volume and air quality impact within AQMAs and suggest solutions to improve air quality	NCC	2011-2013	2013-2015	Undertaken	n.a.	Project Scope / Tender Document prepared	Project Scope / Tender Document prepared	2013	Potentially significant improvements to air quality in AQMAs if changes are identified that can improve AQ
11	Practical Highways Measures	Update Air Quality Action Plan with proposals generated from traffic assessment outcomes.	NCC	2011-2013	2013-2015	Undertaken	AQMA annual average below Objective level	None	None	2014	As above
12	Practical Highways Measures	Consider implementation of air quality improvements identified in Bus Lane Priority Assessment undertaken during 2013	NCC	2011-2013	2013-2015	Undertaken	<1%	Raised with Highways	Raised with Highways	2013	Little merit in undertaking these steps given that it lacked robust improvement recommendations
13	Practical Highways Measures	Utilise Welsh Government Grant Funding opportunities for air quality improvements.	NCC	2011-2013	2013-2015	Undertaken	<1%	On-going	Unsuccessful applications made for Green Spaces fund	On-going	Potentially significant improvements to air quality in AQMAs funding can deliver AQ improvements.
14	Practical Highways Measures	Provide air quality input into the development of the M4 Corridor Enhancement Measures, during implementation	NCC	2011-2013	2013-2015	Undertaken	<1%	Consultation Feedback provided to date	Attendance to workshops	2013	Likely to be small and difficult to quantify
15	Practical Highways Measures	Analysis and assessment of future bespoke air quality monitoring projects and traffic 'hot spot' assessments (such as Caerleon High Street) to help inform decision making.	NCC	2011-2013	2013-2015	Undertaken	n.a.	One project completed. Others being considered	Caerleon High Street Monitoring project Undertaken	On-going	Will gather useful data but not actually deliver AQ improvements on its own
16	Sustainable Travel Alternatives	Environmental Health input into the revision of the NCC Green Travel Plan to ensure air quality objectives are incorporated into its objectives.	NCC	2011-2013	2013-2015	Undertaken	<1%	Input into draft plan completed	Input into draft plan completed	Completed	Likely to be small and difficult to quantify

## Newport City Council

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
17		Assess the feasibility and level of support for a bus park & ride system for the Newport City Centre Commuters	NCC	2011-2013	2013-2015	Undertaken	n.a	none	none	2014	Likely to be small, localised and difficult to quantify
18		Assess the feasibility for a pilot bus park & ride scheme for Caerleon	NCC	2011-2013	2013-2015	Undertaken	n.a	none	none	2014	Likely to be small, localised and difficult to quantify
19		Work with partners and provide air quality input into the development of cycling and walking facilities in Newport.	NCC	2011-2013	2013-2015	Undertaken	<1%	Some consultation on various sustainable travel initiatives	Some consultation on various sustainable travel initiatives	On-going	Likely to be small and difficult to quantify
20		Implement improved communication of air quality issues to enhance public awareness and help influence behavioural change	NCC	2011-2013	2013-2015	Undertaken	<1%	Some improvement of Council AQ web pages	Some improvement of Council AQ web pages	On-going	Likely to be small and difficult to quantify
21		Increase awareness of air quality issues and action plan objectives at Newport Transport	NCC	2011-2013	2013-2015	Undertaken	<1%	Meeting to discuss AQ issues with NT	None	2013	Likely to be small and difficult to quantify
22		Consider better parking enforcement, to reduce illegal parking problems in Newport, particularly in AQMAs.	NCC	2011-2013	2013-2015	Undertaken	<1%	Decriminalised parking raised with Highways	Decriminalised parking being considered by NCC Highways	2014	Likely to be small and difficult to quantify
23		Investigate the potential for introducing a Car Club in Newport	NCC	2011-2013	2013-2015	Undertaken	<1%	None	None	2013	Likely to be small and difficult to quantify
24		Engage with Lifelong Learning & Leisure to encourage adoption of Travel Plans for Newport Schools	NCC	2011-2013	2013-2015	Undertaken	<1%	None	None	2014	Likely to be small and difficult to quantify

However Environmental Health recognise that to improve air quality within the majority of AQMAs physical changes to road layout and / or management of the highways may be needed to produce tangible improvements to air quality. For example such changes may include reducing speed limits, moving pedestrian crossings or changing signalling at junctions. Environmental Health acknowledge that they are not best placed to judge what changes are required to provide air quality improvements. Therefore the intention is for specialist consultants who can both undertake traffic modelling and air quality modelling to measure the impacts on air quality are employed to identify improvements that can be made.

This would ensure that any changes to the highways infrastructure would deliver air quality improvements and not potentially cause negative impacts on the wider highways network. In addition it is essential that any changes to infrastructure or management that create significant costs for the Authority are justified and make a quantifiable improvement to air quality in AQMAs that can be verified.

Environmental Health are keen for any such assessment to produce recommendations that move away from traditional suggestions which are beyond the control and influence of Environmental Health – such as encouraging members of the public to use more sustainable forms of travel. Therefore the draft action plan will be revised to include these recommendations following the completion of the assessment scheduled for October 2013.

## 8 Conclusions and Proposed Actions

### 8.1 Conclusions from New Monitoring Data

Nitrogen dioxide levels stayed broadly similar to previous years although were noticeably lower in some areas probably as a result of data loss during February 2012 and discussed in earlier sections of this report. Other pollutant monitoring showed similar figures to previous years, with the exception of PAHs which have appeared to have risen to just below the target level.

Diffusion tube monitoring data has recorded elevated levels of nitrogen dioxide in all AQMAs although only exceedances in some of them. There were three AQMAs which did not record objective level exceedances during 2012. These included Shaftesbury / Crindau AQMA  $-39.3\mu\text{g}/\text{m}^3$ , Griag Park Road (Malpas Road)  $-35.8\mu\text{g}/\text{m}^3$  and Glasllwch  $37.1\mu\text{g}/\text{m}^3$ . Revoking the Glasllwch AQMA was considered within a detailed assessment during previous rounds of reporting and assessment and the recommendation was to keep its AQMA status. The other two AQMAs are only slightly below the objective level which may be due to the data being skewed downwards as a result of data loss during February.

There were three exceedances outside existing AQAMs and another which was marginally below the threshold. Two tubes (Malpas Mont  $72.2\mu\text{g}/\text{m}^3$  / Mont 1  $52\mu\text{g}/\text{m}^3$ ) are located at the northern end of Malpas Road – a dual carriage way which is close to a speed change from 70mph to 50mph. Speeding vehicles are suspected to be causing the exceedance in this area. However diffusion tube monitoring within an adjacent property boundary records levels as  $25.6\mu\text{g}/\text{m}^3$  which demonstrates the rapid drop off in nitrogen dioxide levels over relatively short distances, probably helped by a tall dense hedge. This area was considered within a detail assessment 2009 which concluded that an AQMA was not required.

Another notable diffusion tube reading was recorded at 9 Castle Street, Caerleon ( $39.5\mu\text{g}/\text{m}^3$ ). This monitoring location exceeded the objective level during 2011 and partly prompted the Caerleon High Street monitoring project using the Environment Agency's Mobile Monitoring Facility. The result of this study identified that the air quality between the AQMA on the High Street and monitoring locations on the adjacent Castle Street was not as impacted by traffic as assumed ( $28\mu\text{g}/\text{m}^3$ ) and therefore the possibility of extending the existing AQMA was discounted. However significantly elevated levels of nitrogen dioxide have been recorded on Castle Street for a second year although not quite exceeding the objective level. Additional tubes have been deployed in this area and further future monitoring data will be reviewed to identify whether a detailed assessment is required if objective levels are exceeded.

## **8.2 Conclusions relating to New Local Developments**

There are a number of planning applications currently under consideration (during 2013). These include residential proposals for Herbert Road and the former Pirelli site, in addition to the proposed Llantarnam Hospital just beyond the authority's boundary, which may impact the Caerleon High Street AQMA. Air Quality assessments have been requested for all development and Environmental Health are currently in the process of discussing air quality issues with developers and their representatives. These developments will be discussed in future rounds of reporting.

The significant developments proposed or submitted to the planning authority during 2012 have been discussed above and include the former ALCAN site, the Energy from Waste Site at Llanwern, the City Centre Development, a Metro store at Caerleon and an extension to the Eastman chemical manufacturing plant. All of these developments have been accompanied by detailed air quality assessments which determined that air quality would not be impacted significantly and no new AQMAs would be created. Therefore it is unlikely that a detailed assessment would obtain any additional information if required within the next USA report.

## **8.3 Other Conclusions**

The existing Air Quality Action Plan has been reassessed and considered to contain measures which Environmental Health recognise are largely undeliverable. Therefore the 2013 draft revision is tailored to contain measures that are hoped will lead to improvements in air quality but are also able to be influenced by Environmental Health. The cornerstone of the revised plan will be the traffic and air quality assessment of each non-M4 related AQMA to provide robust recommendations on how the layout or operation of the highway within the AQMA can be changed to deliver air quality improvements.

## **8.4 Proposed Actions**

Environmental Health proposed to continue to review site specific information and re-locate monitoring equipment where the potential risk of objective exceedances may exist. This will be based on officer observations, public concern relating to emissions or advice from our Highways Colleagues. There is also the intention of undertaking

similar bespoke air quality studies to that undertaken in Caerleon by utilising equipment provided by Natural Resources Wales (EA).

The next report to be produced will be the final version of the revised Action Plan which will include the recommendations from the traffic and air quality assessment scheduled to be undertaken during October this year. The final version of the Plan will need approval from the relevant Council committee which we expect will take place during early 2014, and will then become a formal Council Action Plan document.

## 9 References

Newport City Council Progress Report 2011

Newport City Council Updated Screening Assessment 2012

Newport City Council Draft Revised Action Plan 2013

Newport City Council Air Quality Action Plan 2008

Local Air Quality Management - Technical Guidance LAQM.TG(09)

Newport City Council USA 2008

Welsh Government M4 Corridor Enhancement Website ([www.m4cem.com/](http://www.m4cem.com/))

LAQM / Defra website - <http://laqm.defra.gov.uk/>

Welsh Air Quality Website - <http://www.welshairquality.co.uk/>

# Appendices


Appendix A: Quality Assurance / Quality Control (QA/QC) Data



## Appendix A: QA:QC Data

### Diffusion Tube Bias Adjustment Factors

A triplicate co-location study was conducted at the St Julians AURN air quality monitoring station with the three diffusion tubes located next to the sample inlet of the monitoring unit.

Adjustment of DUPLICATE or TRIPLICATE Tubes												
Diffusion Tubes Measurements											Adjusted measurement (95% confidence level)	
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 Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check	Without periods with CV larger than 20%	
1	30/11/2011	04/01/2012	11.80	10.70	16.50	13.0	3.08	23.70	7.65	Poor Precision	Bias calculated using 9 periods of data	
2	04/01/2012	01/02/2012	36.70	37.70	36.60	37.0	0.61	1.64	1.51	Good	Tube Precision: 7	Automatic DC: 96%
3	01/02/2012	29/02/2012									Bias factor A <b>0.773 +/- 0.079</b>	
4	29/02/2012	28/03/2012	36.90	34.20	31.90	34.3	2.50	7.29	6.22	Good	Bias B <b>32 +/- 11 %</b>	
5	28/03/2012	25/04/2012	30.10	29.10	22.20	27.1	4.30	15.85	10.69	Good	Information about tubes to be adjusted	
6	25/04/2012	30/05/2013	26.50	24.70	26.60	25.9	1.07	4.12	2.66	Good	Diffusion Tube average 27 µgm <sup>-3</sup> Average Precision (CV): 7	
7	30/05/2013	27/06/2013	17.70	17.30	18.80	17.9	0.78	4.33	1.93	Good	Adjusted Tube average 21 +/- 2 µgm <sup>-3</sup>	
8	27/06/2013	01/08/2012	17.80	13.60	19.20	16.9	2.91	17.28	7.24	Good	Adjusted measurement (95% confidence level)	
9	01/08/2012	29/08/2012	18.60	19.60	19.10	19.1	0.50	2.62	1.24	Good	with all data	
10	29/08/2012	26/09/2012	22.60	31.60	20.20	24.8	6.01	24.23	14.93	Poor Precision	Bias calculated using 12 periods of data	
11	26/09/2012	31/10/2012	28.10	29.80	31.50	29.8	1.70	5.70	4.22	Good	Tube Precision: 11	Automatic DC: 97%
12	31/10/2012	28/11/2012	31.8	29.5	31.5	30.9	1.25	4.04	3.11	Good	Bias factor A <b>0.845 +/- 0.177</b>	
13	28/11/2012	02/12/2013	26.7	42.9	36.1	35.23	8.13	23.09	20.21	Poor Precision	Bias B <b>27 +/- 13 %</b>	
It is necessary to have results for at least two tubes in order to calculate the precision of the measurements											Information about tubes to be adjusted	
Site Name/ID: <b>St Julians</b>											Diffusion Tube average 26 µgm <sup>-3</sup> Average Precision (CV): 11	
Jaume Targa netcen jaume.targa@aeat.co.uk											Adjusted Tube average 22 +/- 5 µgm <sup>-3</sup>	
Beta 3 - February 2004												

Based on the output calculation of NETCEN EXCEL calculation sheet (copied above) the following bias adjustment factor was calculated;

$$\text{Bias B} = 27\%$$

$$0.27 + 1 = 1.27$$

$$1/1.27 = 0.787$$

Bias adjustment factor applied to all diffusion tube results is 0.885

### Factor from Local Co-location Studies (if available)

n.a.

**Discussion of Choice of Factor to Use**

A local bias adjustment factor was chosen rather than using national figures. It was felt that this was more representative given that the tubes are from the same laboratory and prepared by the same methods as used for all tubes deployed. Tubes are also positioned at similar exposed conditions and at similar heights to the co-location monitoring position. In addition the co-location monitoring station has high quality results given its AURN standard and recently upgraded NOx analyser.

When comparing the results to previous years it does not appear that the bias adjustment factor (0.787) used is over-conservative

**PM Monitoring Adjustment**

N.A.

**Short-term to Long-term Data adjustment**

n.a.

**Table A.1 Short-Term to Long-Term Monitoring Data Adjustment**

Site	Site Type	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	Period Mean ( $\mu\text{g}/\text{m}^3$ )	Ratio
Average				

## **Appendix B**

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

Newport City Council undertake monthly calibrations of the PM10, PM2.5 and Nitrogen Oxide analysers. In addition calibrations are also conducted bi-annually for the PAH analyser.

All equipment is audited annually by AEA or the NPL to meet AURN requirements.

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

The WASP result for Gradko laboratories was satisfactory for the four quarters between January – December 2012 (100% data satisfactory).

Precision was also good with the exception of the last 4 weeks of the 2012.

