

**THE PUBLIC PROTECTION COMMITTEE: 4 February 2014**

**Report of the Head of Regulatory and Supporting Services**

**PROGRESS REPORT REGARDING AIR QUALITY IN CARDIFF**

**1. Background**

- 1.1 The Council has a statutory obligation under the Environment Act 1995 to review and assess air quality in its area against National Air Quality Standards which have been set for the protection of human health. The Act requires local authorities to monitor, review and report on seven pollutants. Within Cardiff the pollutant of greatest concern is Nitrogen Dioxide (NO<sub>2</sub>).
- 1.2 Nitric Oxide (NO) is mainly derived from road transport emission. NO is not considered to be harmful to health. However, once released to atmosphere, NO is usually very rapidly oxidised (reacts with oxygen) to form Nitrogen Dioxide (NO<sub>2</sub>), which is harmful to health.
- 1.3 Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza. Continued or frequent exposure to concentrations that are typically much higher than those formally found in the ambient air may cause increased incidence of acute respiratory illness in children.
- 1.4 The Council is required to report annually to Welsh Government (WG) with regard to latest monitoring data, changes and developments which may be significant with regard Local Air Quality Management (LAQM) and progress in implementing Air Quality Action Plans (AQAPs) devised to address previously identified areas of locally poor air quality.
- 1.5 There are currently four Air Quality Management Areas (AQMAs) declared in Cardiff as a result of exceedence of the annual mean objective of Nitrogen dioxide ; these areas are:  
  
**Cardiff City Centre AQMA** (declared 1/4/13 to incorporate Westgate Street; formerly St Marys St AQMA);  
**Ely Bridge AQMA** (declared 1/2/07);  
**Stephenson Court AQMA** (declared 1/ 12/10);  
**Llandaff AQMA** (declared 1/4/13)
- 1.6 The Environment Act requires Local Authorities to complete a Further Assessment within 12 months of designating an AQMA. Both Llandaff AQMA and Cardiff City Centre AQMA will be subject to Further Assessments by 1/4/14. Further Assessments are aimed to confirm exceedence of the standard; define what improvements in air quality, and corresponding reductions in emissions that are required to attain the standard; provide information on the source contribution (where vehicles are the source this can then be broken down to type of vehicle). The conclusion of those reports will be presented to this Committee later in 2014.

- 1.7 This report presents the Council's 2013 Progress Report to WG and highlights some of the report's key points.

## **2. Air Quality Monitoring**

- 2.1 The 2013 Progress Report presents monitoring data for the seven key pollutants that the Council is required to consider under the Local Air Quality Management (LAQM) regime. Data for nitrogen dioxide is presented in two parts, i.e. inside and outside of the AQMAs.
- 2.2 The monitoring data confirms the findings of previous reports in that, for the six regulated pollutants other than nitrogen dioxide (particulate matter, sulphur dioxide, carbon monoxide, benzene, 1,3 butadiene and lead) there are no areas where measured concentrations are above the air quality standards.
- 2.3 Monitoring data for nitrogen dioxide inside the AQMAs during 2012 confirms the findings of previous reviews and assessments and concentrations remain elevated in all four AQMAs. However, monitoring data for nitrogen dioxide for Llandaff AQMA appears to fluctuate around the annual mean objective level. This issue will be considered in more detail within the Further Assessment.
- 2.4 Monitoring data presented within the 2013 Progress Report shows one site which is representative of relevant exposure out side of an Air Quality Management Area with an exceedence of the annual mean objective of 40micrograms per cubic metre of air. This monitoring site is at residential accommodation adjacent to the roundabout at the junction with Fair oak Road and Ninian Road. It is proposed to proceed to a Detailed Assessment for this area.

## **3 Action Plan Progress**

- 3.1 An Action Plan for the former St Mary Street AQMA was adopted in February 2010 and the measures therein have been fully implemented. The St Mary Street AQMA boundary was varied on 1/4/13 to include Westgate Street. This AQMA is now called Cardiff City Centre AQMA; an Action Plan will be developed in due course following the Further Assessment.
- 3.2 An Action Plan for Ely Bridge AQMA was adopted in February 2009. The action plans draws heavily on traffic and emission reduction measures contained in the Local Transport Plan (LTP).
- 3.3 There is currently no formal action plan for Stephenson Court AQMA, however, plans are being developed in collaboration with Transport Planners.
- 3.4 Llandaff AQMA was declared on 1<sup>st</sup> April 2013, an Action Plan will be developed following the Further Assessment.

## **4. Achievability**

- 4.1 This report has no equality, property or human resource implications.

## **5. Financial Implications**

- 5.1 This report is for information purposes only and does not result in any additional financial implications.

## **6. Legal Implications**

- 6.1 The Council has statutory obligations under Part IV of the Environment Act 1995 which include reporting Air Quality annually to WG. The 2013 Progress Report fulfils this obligation.

## **7. Recommendations**

It is recommended that Committee: -

- Note the contents of the 2013 Air Quality Progress Report and continue to be advised on air quality in Cardiff and measures taken to improve it.
- Note that the 2013 Progress Report and its conclusions has been accepted and approved by WG.
- Approve a Detailed Assessment for the area surrounding the junction with Fair oak Road and Ninian Road.
- Approve further assessments for both the Llandaff AQMA and City Centre AQMA.

**Dave Holland**  
**Head of Regulatory and Supporting services.**

**20<sup>th</sup> January 2014**

This report has been prepared in accordance with procedures approved by the Corporate Management Team.

Background Papers:

Part IV Environment act 1995 - Local Air Quality Management Progress Report, June 2013



# 2013 Air Quality Progress Report Cardiff Council

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

June 2013

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## Executive Summary

This report is Cardiff Council's 2013 Progress Report. It is the second of three annual reports to be made under "Phase 5" of the Local Air Quality Management regime.

Since the 2012 Updating and Screening Assessment the Council has varied the former "St Mary Street AQMA" such that it now encompasses Westgate Street and it has been renamed "Cardiff City Centre AQMA". A new AQMA has been declared centred on Cardiff Road, Llandaff.

The 2012 nitrogen dioxide monitoring data presented in this report shows one site which is representative of relevant exposure and outside of Air Quality Management Areas with an exceedence the  $40\mu\text{g}\text{m}^{-3}$  objective. This site is at residential accommodation adjacent to the roundabout at the junction with Fair oak Road and Ninian Road. It is proposed to proceed to a Detailed Assessment for this area.

Monitoring for other pollutants did not result in other exceedences of National Air Quality Standards.

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- Appendix 2 LTP APR Implementation Tables

# 1 Introduction

## 1.1 Description of Local Authority Area

Cardiff is located in South East Wales. It is the largest city in Wales having a population of about 346,000. Cardiff is a relatively flat city bounded by hills on the outskirts to the north and west. The Western, Northern and Eastern areas of the City are mainly residential, with the main commercial areas being in the City Centre and to the south. The industrial areas are centered on the docks in coastal areas to the south.

In common with other towns and cities across the UK, emissions into the atmosphere are dominated by road-traffic sources.

## 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

This Report is the second of Phase 5 of the Local Air Quality Management regime. The outcomes of the previous phases are discussed below.

### Phase 1

The Local Air Quality Management regime commenced with the Air Quality Regulations 1997, which came into force in December of that year. These Regulations were revoked and superceded by the current Air Quality (Wales) Regulations 2000 (as amended).

The first phase of the review and assessment process concluded that for six of the seven pollutants included in the regulations there was little or no risk of the objectives being breached and that Air Quality Management Areas (AQMAs) for these pollutants were not necessary. Measures taken at the national level would be sufficient to ensure that there would be no local “hot-spots” of these pollutants and therefore local controls in addition to the national measures would not be required.

However, for the seventh of these pollutants, nitrogen dioxide (NO<sub>2</sub>), it was concluded that national control measures such as vehicle emission and fuel standards, controls on industrial emissions, etc., would not, of themselves, be sufficient to ensure that the air quality objectives for this pollutant would not be met in all areas of Cardiff.

Whilst the vast majority of the area would meet the objectives, there were predicted to be local “hot-spots” close to heavily-trafficked road junctions where there were buildings close to the road and significant amounts of queuing traffic where the objectives would not be met.

As a result, four AQMAs were declared, each having been declared on the basis of measurements and modelling showing predicted breaches of the annual average objective for NO<sub>2</sub>. These AQMAs were known as:

- The Cardiff West AQMA
- The Newport Road AQMA
- The Philog AQMA
- The St Mary Street AQMA

The first three of these came into force on 1<sup>st</sup> December 2000 and the latter on 1<sup>st</sup> September 2002. AQAPs the first three were published in November 2002 and for St Mary Street in February 2010.

## Phase 2

The Council's 2003 USA concluded that for five of the seven pollutants regulated under the LAQM regime there is no evidence to suggest that local "hot-spots" for these pollutants had been missed in the first phase of the review and assessment process and that there was no need to consider these pollutants further at this time. The 2003 USA also concluded that no local hot-spots of nitrogen dioxide had been overlooked during the first phase of review and assessment and that further detailed assessment of this pollutant was not necessary.

However, whilst the USA concluded that there was no evidence to suggest a likely breach of the 2004 objective for particulate matter (PM<sub>10</sub>), there was considerable doubt that the provisional 2010 objectives for PM<sub>10</sub> would be achieved.

As a result of the conclusions of the 2003 USA the Council issued Progress Reports in 2004 and 2005.

## Phase 3

Following the 2006 USA, the Council published and consulted upon an Air Quality Management Area (AQMA) Review during the autumn of 2006. This concluded that two of the four AQMAs could be revoked and that the then Cardiff West AQMA should be reduced in size and renamed as the Ely Bridge AQMA. Orders making the changes came into force on 1<sup>st</sup> February 2007.

The 2007 Progress Report highlighted a potential problem with regard to nitrogen dioxide concentrations on Newport Road in the immediate vicinity of Stephenson Court, where concentrations had been marginally, but consistently, above the Air Quality objective for a few years. It was concluded that the possibility of declaring a new AQMA would be assessed in the 2008 Progress Report.

The monitoring data for the Stevenson Court area presented in the 2008 Progress Report led to the conclusion that a further "watching brief" would be kept with a view to reaching a firm conclusion once ratified monitoring data for the 2008 calendar year became available.

The monitoring data for 2007 presented in the 2008 Progress Report provided reassurance that the Council's decisions in respect of the 2006 AQMA Review were soundly based.

## Phase 4

The 2009 USA concluded that a Detailed Assessment for the Stephenson Court area of Newport Road was required as the annual mean concentration of nitrogen dioxide at three sites representative of relevant exposure in the area were above the air quality Objective.

A Detailed Assessment for this area was consulted upon during the summer of 2010 and the AQMA came into force on 1<sup>st</sup> December 2010.

The Council's 2010 Progress Report was submitted in December 2010 and the 2011 Progress Report in June 2011.

The 2011 Progress Report highlighted abnormally high NO<sub>2</sub> annual mean concentrations across the Council's monitoring network which could not be attributed to a particular source and evidence was presented to show that this was a regional issue probably associated with a prolonged period of unusually cold weather during November and December 2010. After dialogue with Welsh Assembly Government with regard to the conclusions reached about this data it was concluded that the Council would proceed to Detailed Assessments for the Llandaff and Westgate Street areas of the city and review the situation with regard to other exceedences when 2011 data is available and reported in 2012.

A Further Assessment for the Stephenson Court AQMA was submitted to WAG for review in December 2011, i.e. one year after the AQMA was declared, in compliance with Section 84(2)(a) of the Environment Act 1995.

## **Phase 5**

The 2012 USA was the first report in Phase 5 of the review and assessment process.

Monitoring data for 2011 largely confirmed that the annual mean concentrations of nitrogen dioxide previously reported for 2010 were unusually elevated, both locally and regionally, and local concentrations had returned to more typical values in 2011.

Detailed Assessments in respect of nitrogen dioxide Westgate Street and for the Llandaff area were consulted during the summer of 2012 and as a result a new AQMA for Llandaff was declared on 1<sup>st</sup> April 2013 and Westgate Street was incorporated into the St Mary Street AQMA; this latter AQMA is now named Cardiff City Centre AQMA.

There are currently four AQMAs in Cardiff; all have been declared in respect of NO<sub>2</sub> resulting from road-traffic emissions:

- Cardiff City Centre AQMA
- Ely Bridge AQMA
- Stephenson Court AQMA
- Llandaff AQMA

Figure 1.1 Boundary of Cardiff City Centre AQMA

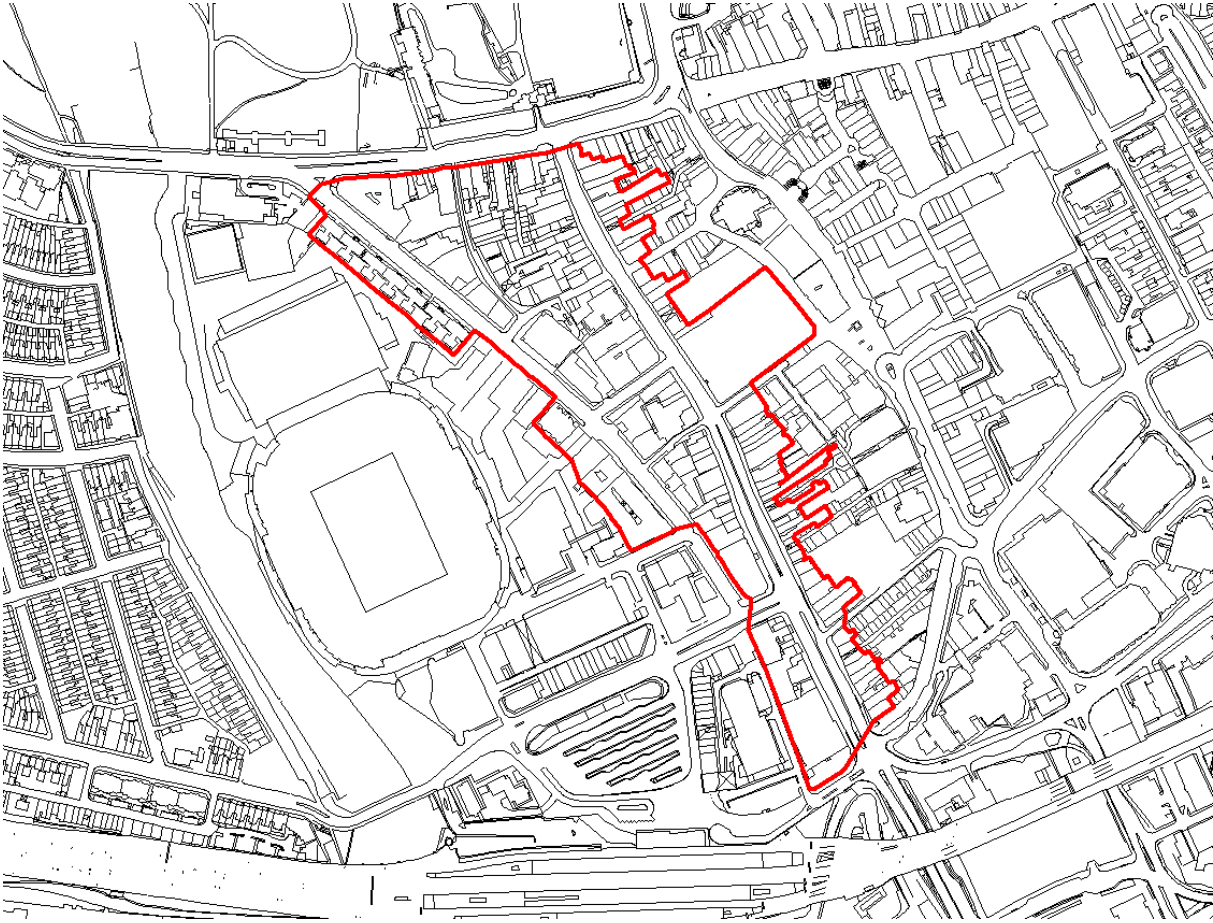


Figure 1.2 Boundary of Ely Bridge AQMA

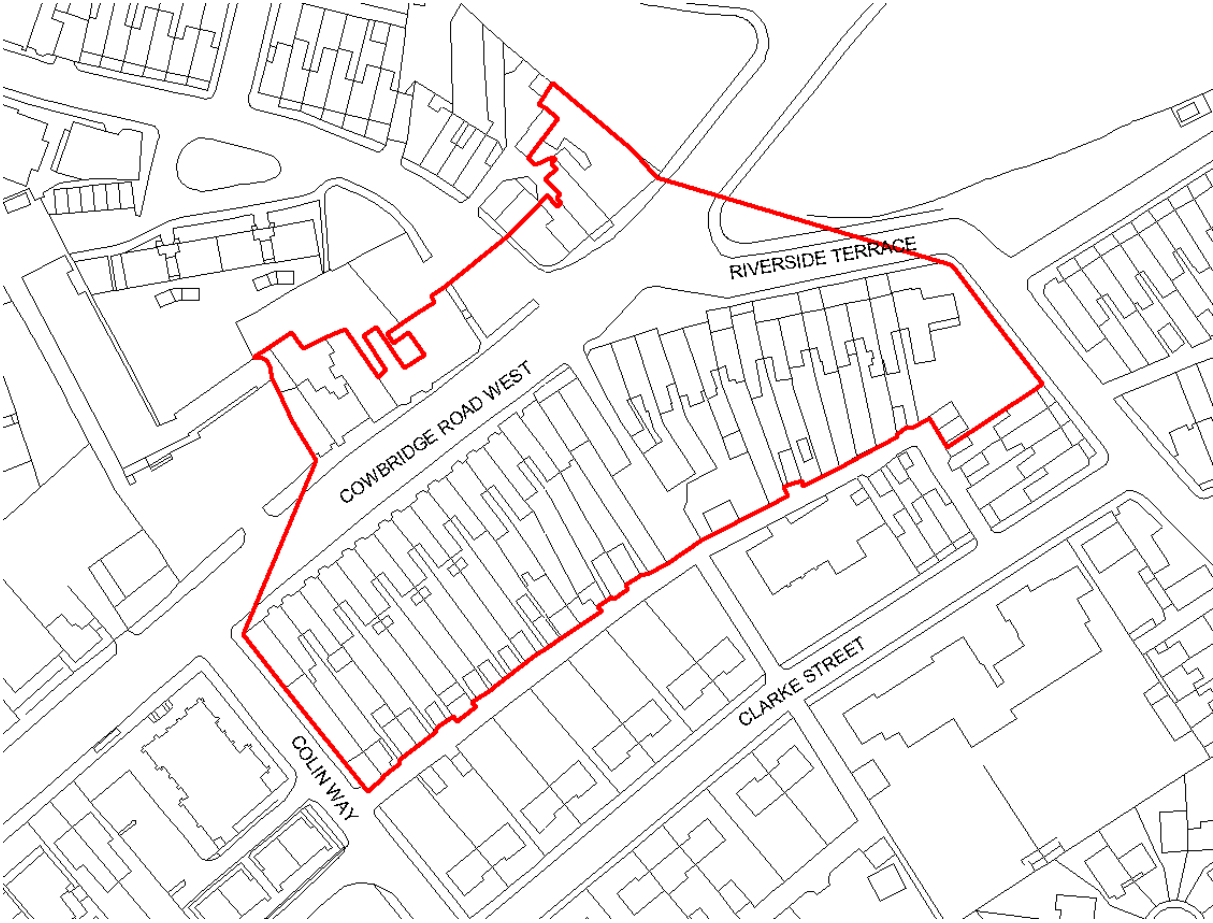




Figure 1.3 Boundary of Stephenson Court AQMA

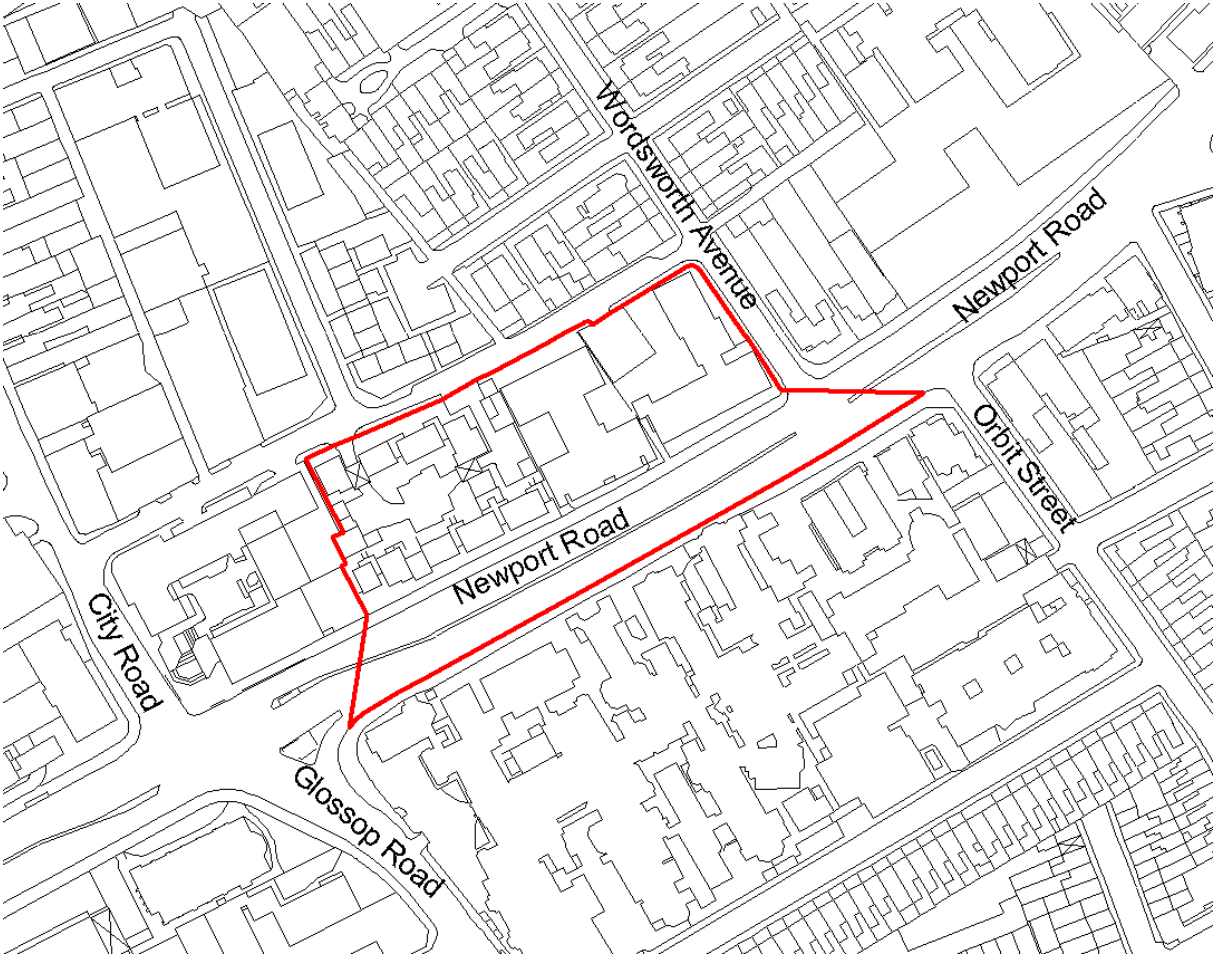


Figure 1.4 Boundary of Llandaff AQMA



## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

During 2012 monitoring is presented for one automatic monitoring site in Cardiff, i.e. DEFRA's Cardiff Centre AURN site in Frederick Street (adjacent to the pedestrianised Queen Street shopping centre).

The Cardiff Centre AURN has been operating since May 1992. The station is part of DEFRA's AURN network and there are similar stations located in other towns and cities across the UK.

This site is subject to six-monthly QA/QC audits by AEA, DEFRA's appointed contractor, and calibration gases are all traceable to National Standards. Calibrations have been carried out fortnightly by the appointed LSO. The repair and replacement of equipment has been contracted to suppliers of national repute throughout the station's working life. In February 2007 the PM<sub>10</sub> analyser was replaced with a PM<sub>10</sub> FDMS analyser and the site was augmented with a PM<sub>2.5</sub> FDMS analyser in August 2008.

Data from the Cardiff Centre AURN site has been validated and ratified by Ricardo-AEA and was downloaded from DEFRA's Data Archive (<http://uk-air.defra.gov.uk/data/>) during May 2013.

Information for the Cardiff Centre AURN site is given in Table 2.1 below.

The Council commissioned a new automatic monitoring site in Westgate Street during the autumn of 2011. The unit is an AQM60 and measures NO<sub>2</sub> and PM<sub>10</sub>, albeit not to reference standards. It is intended that the data be used to supplement that diffusion tube monitoring in Westgate Street (part of the Cardiff City Centre AQMA) and provide improved data resolution, i.e. hourly measurements, to inform the redevelopment of the nearby Central Bus Station and to help with further assessments and action planning in respect of the AQMA.

Technical issues with regard to data collection and a and second significant equipment malfunction since installation mean that data is only available from November 2012 onwards. It has been decided to report data from this site (for 2013) in the 2014 Progress Report.

Figure 2.1 Location of Cardiff Centre AURN Monitoring Site

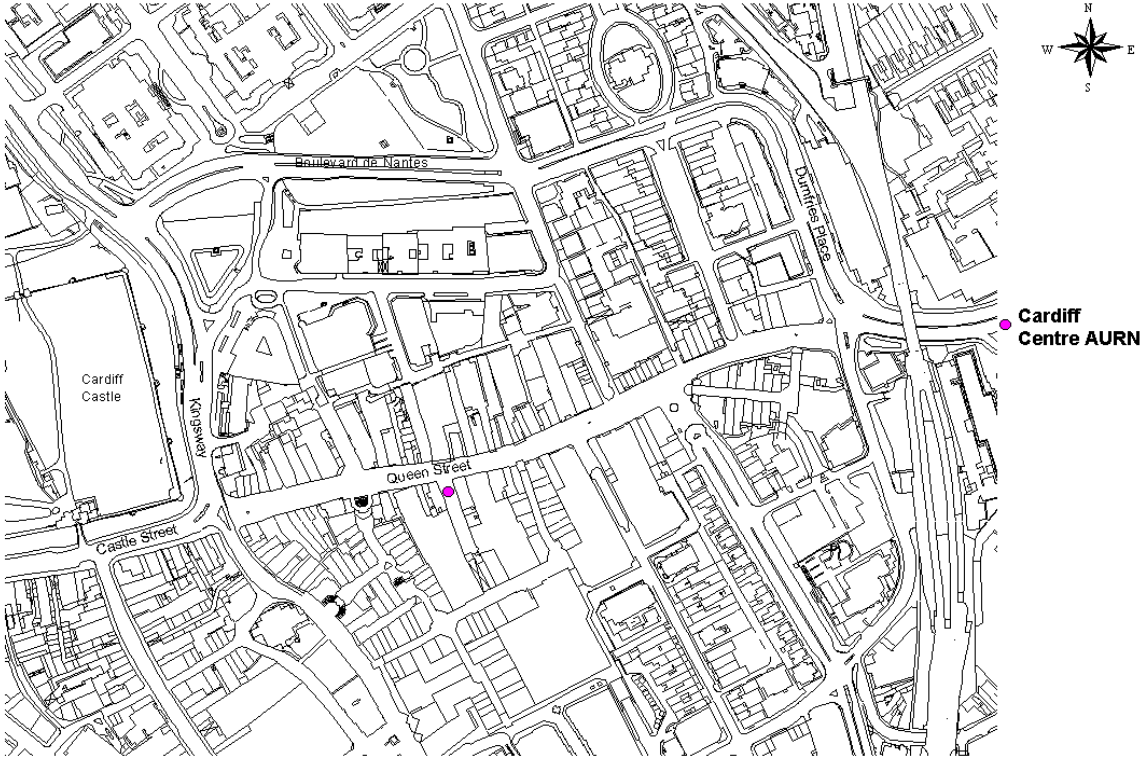


Table 2.1 Details of Automatic Monitoring Sites

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?
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO <sub>2</sub>	N	Chemiluminescence	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	PM <sub>10</sub> , PM <sub>2.5</sub>	N	FDMS	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	SO <sub>2</sub>	N	UV Fluorescence	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	CO	N	Infra-Red GFC	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	O <sub>3</sub>	N	UV Absorbtion	Y	200m	N

### 2.1.2 Non-Automatic Monitoring Sites

During 2012 Cardiff Council operated a network 59 nitrogen oxide diffusion tubes. This monitoring network has evolved over time and, as sites have been closed and replaced by new ones, the tube locations have become increasingly focussed on residential premises close to busy roads.

Of those sites for which monitoring data were presented in the 2012 USA, Sites 150, 154 and 155 were closed at the beginning of February 2012. Each of these sites had been monitoring for two years and in no case was an annual mean concentration of nitrogen dioxide greater than  $30\mu\text{g}\text{m}^{-3}$ . These three sites were replaced by sites 161, 162 and 163 which were commissioned at the start of February 2012 in and around the area now declared as the Llandaff AQMA.

Since 2002, three of the 59 diffusion tubes sites have been located on the inlet duct of the Cardiff Centre AURN monitoring site for bias-adjustment purposes.

A map showing the location and distribution of the diffusion tubes is shown below.

**Figure 2.2 Map Showing Location and Distribution of Diffusion Tubes in 2012**



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?
16	Ninian Park Road	Façade	317040	176060	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
33	Mitre Place	Kerbside	315248	178165	3.0	NO <sub>2</sub>	Y	N	N (20m)	1m	Y
44	City Road	Kerbside	319086	177097	3.0	NO <sub>2</sub>	N	N	Y (2m)	1m	Y
45	Mackintosh Place	Kerbside	318722	177788	3.5	NO <sub>2</sub>	N	N	N (3m)	1m	Y
47	Ely Bridge	Kerbside	314457	176738	2.5	NO <sub>2</sub>	Y	N	N (2m)	0.25m	Y
49	Penarth Road	Façade	317760	175310	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	7m	Y
56	Birchgrove Village	Kerbside	316816	180005	2.5	NO <sub>2</sub>	N	N	N (10m)	1.5m	Y
58	Westgate Street	Kerbside	317937	176400	2.5	NO <sub>2</sub>	Y	N	N (5m)	0.5m	Y
73	Green Street	Kerbside	317607	176434	2.5	NO <sub>2</sub>	N	N	N (2m)	0.5m	Y
74	Station Terrace	Kerbside	318772	176544	2.5	NO <sub>2</sub>	N	N	N (50m)	1m	Y
81	Stevenson Court	Façade	319387	176980	2.0	NO <sub>2</sub>	Y	N	Y (0.05m)	5m	Y
82	104 Birchgrove Road	Façade	316518	179683	2.0	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y

Cardiff Council

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?
85	497 Cowbridge Road West	Façade	312129	175084	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
86	19 Fairoak Road	Façade	318452	178805	1.5	NO <sub>2</sub>	N	N	Y 0.10m)	10m	Y
96	Manor Way Junction	Façade	316601	179653	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
97	Newport Road (premises)	Façade	319955	177546	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	10m	Y
98	Western Avenue (premises)	Façade	314805	177345	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	10m	Y
99	Cardiff Road Llandaff	Façade	315275	178117	1.5	NO <sub>2</sub>	Y	N	Y (0.05m)	3m	Y
100	188 Cardiff Road	Façade	316226	177305	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	20m	Y
101	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO <sub>2</sub>	N	Y, Triplicate with Tubes 102 & 103	Y (0.10m)	200m	Y
102	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO <sub>2</sub>	N	Y, Triplicate with Tubes 101 & 103	Y (0.10m)	200m	Y
103	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO <sub>2</sub>	N	Y, Triplicate with Tubes 101 & 102	Y (0.10m)	200m	Y
106	30 Caerphilly Road	Façade	316851	179520	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
107	Lynx Hotel	Façade	320356	177618	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	4m	Y



**Cardiff Council**

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?
111	98 Leckwith Road	Façade	316444	175866	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	6m	Y
112	17 Sloper Road	Façade	316613	175910	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
115	21 Llandaff Road	Façade	316604	176641	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	3m	Y
117	25 Cowbridge Road West	Façade	314458	176735	2.0	NO <sub>2</sub>	Y	N	Y (0.05m)	2m	Y
119	Havelock Street	Kerbside	318184	176086	2.0	NO <sub>2</sub>	N	N	N	1m	Y
124	287 Cowbridge Road East	Façade	316586	17535	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	10m	Y
126	Westgate Street Flats	Façade	317946	176387	1.5	NO <sub>2</sub>	Y	N	Y (0.10m)	5m	Y
128	117 Tudor Street	Façade	317540	175979	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	5m	Y
129	Stephenson Court 2	Façade	319349	176963	1.2	NO <sub>2</sub>	Y	N	Y (3m)	4m	Y
130	Burgess Court	Façade	319326	176949	2.0	NO <sub>2</sub>	Y	N	Y (0.05m)	5m	Y
131	Dragon Court	Façade	319292	176932	1.75	NO <sub>2</sub>	Y	N	Y (0.05m)	5m	Y
133	St Mark's Avenue	Kerbside	317019	179078	2.0	NO <sub>2</sub>	N	N	N (21m)	2m	N
134	Sandringham Hotel	Façade	318261	176229	2.0	NO <sub>2</sub>	Y	N	N (3m)	5m	Y

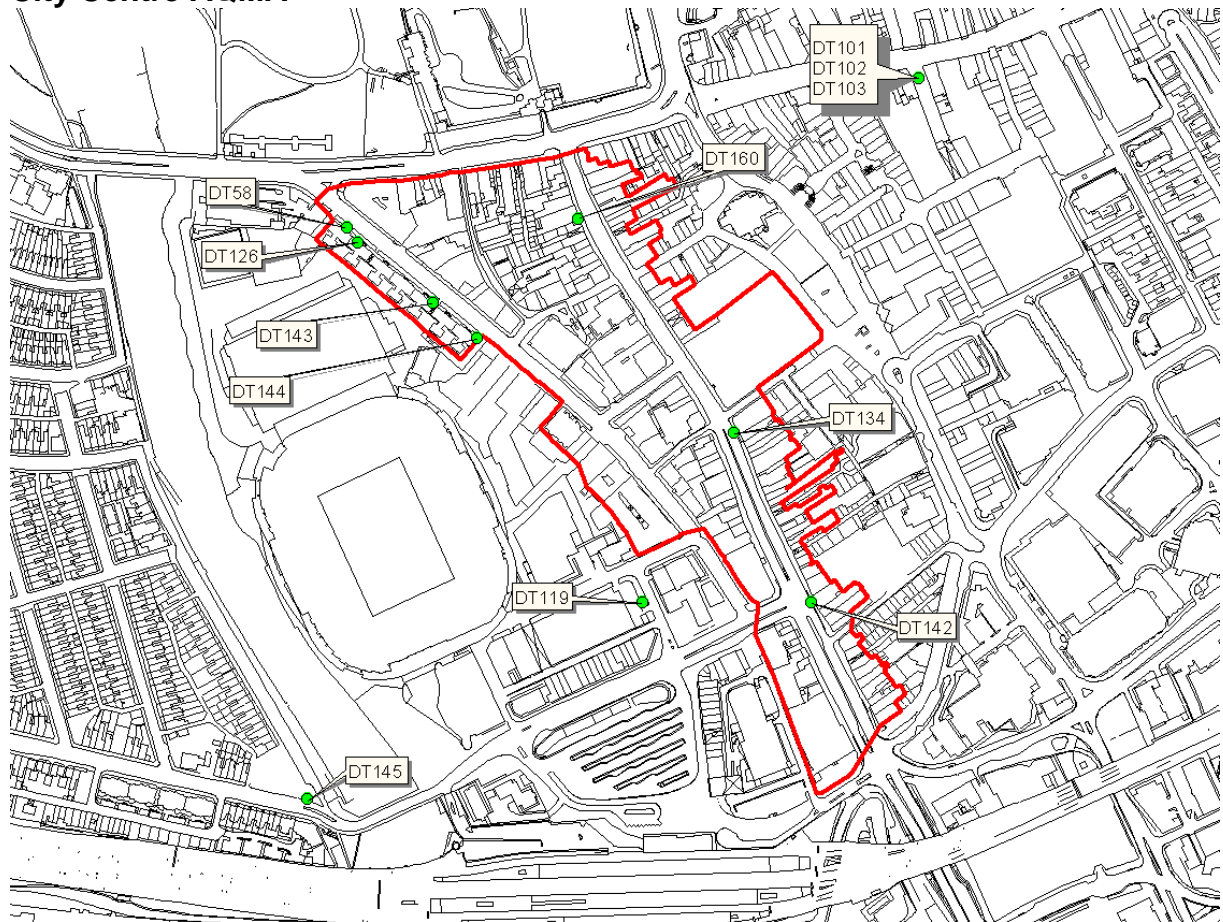
**Cardiff Council**

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?
139	Lower Cathedral Road	Kerbside	317540	176410	2.0	NO <sub>2</sub>	N	N	Y (3m)	1m	Y
140	Clare Street	Kerbside	317600	176047	2.0	NO <sub>2</sub>	N	N	Y (6m)	0.5m	Y
141	Fairoak Road 2	Kerbside	318438	178742	2.0	NO <sub>2</sub>	N	N	N (5m)	1.5m	Y
142	Pure Rugby	Kerbside	318326	176086	2.0	NO <sub>2</sub>	Y	N	N (>25m)	0.25m	Y
143	Windsor House	Façade	318009	176337	1.5	NO <sub>2</sub>	Y	N	Y (0.10m)	6.5m	Y
144	Marlborough House	Façade	318046	176307	1.5	NO <sub>2</sub>	Y	N	Y (0.10m)	6.5m	Y
145	Tudor Street Flats	Façade	317904	175921	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	4.5m	Y
146	Neville Street	Façade	317508	176275	2.0	NO <sub>2</sub>	N	N	Y (0.05m)	3.5m	Y
147	211 Penarth Road	Façade	317636	175161	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	7.0m	Y
148	161 Clare Road	Façade	317695	175389	1.5	NO <sub>2</sub>	N	N	Y (0.05)	5.0m	Y
149	10 Corporation Road	Façade	317764	175174	1.5	NO <sub>2</sub>	N	N	Y (0.05)	4.6m	Y
151	St James Church	Kerbside	319219	176846	1.5	NO <sub>2</sub>	N	N	N (75m)	5.0m	Y
152	James Street	Façade	319003	174596	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	6.0m	Y
153	Magic Roundabout	Façade	319491	176183	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	12.5m	Y
156	2a/4 Colum Road	Façade	317997	177412	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	5.0m	Y

Cardiff Council

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?
157	47 Birchgrove Road	Façade	316605	179703	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	8.0m	Y
158	64/66 Cathays Terrace	Façade	318093	177716	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	3.0m	Y
159	IMO façade replacement	Façade	320709	177918	1.5	NO <sub>2</sub>	N	N	Y (0.10m)	4.0m	Y
160	High Street Zizzi	Façade	318131	176407	2.0	NO <sub>2</sub>	N	N	Y (0.10m)	65m	Y
161	52 Bridge Road	Façade	315230	178205	1.5	NO <sub>2</sub>	Y	N	Y (0.05m)	7.9m	Y
162	58 Cardiff Road	Façade	315533	177809	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	8.8m	Y
163	118 Cardiff Road	Façade	315738	177723	1.5	NO <sub>2</sub>	N	N	Y (0.05m)	14.8m	Y

Figure 2.3 Map Showing Location of Diffusion Tubes in and around the Cardiff City Centre AQMA



**Figure 2.4 Map Showing Location of Diffusion Tubes in and around the Ely Bridge AQMA**

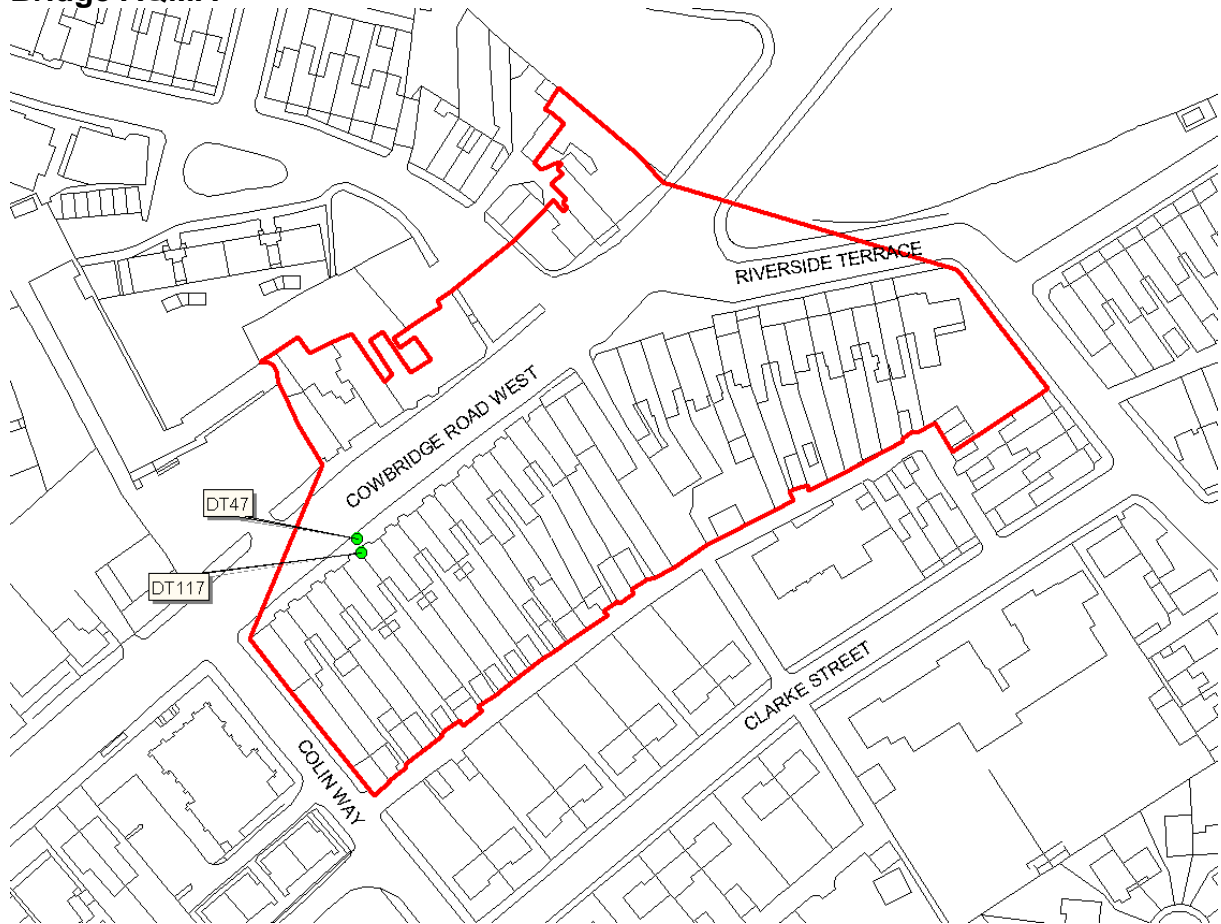


Figure 2.5 Map Showing Location of Diffusion Tubes in and around the Stephenson Court AQMA

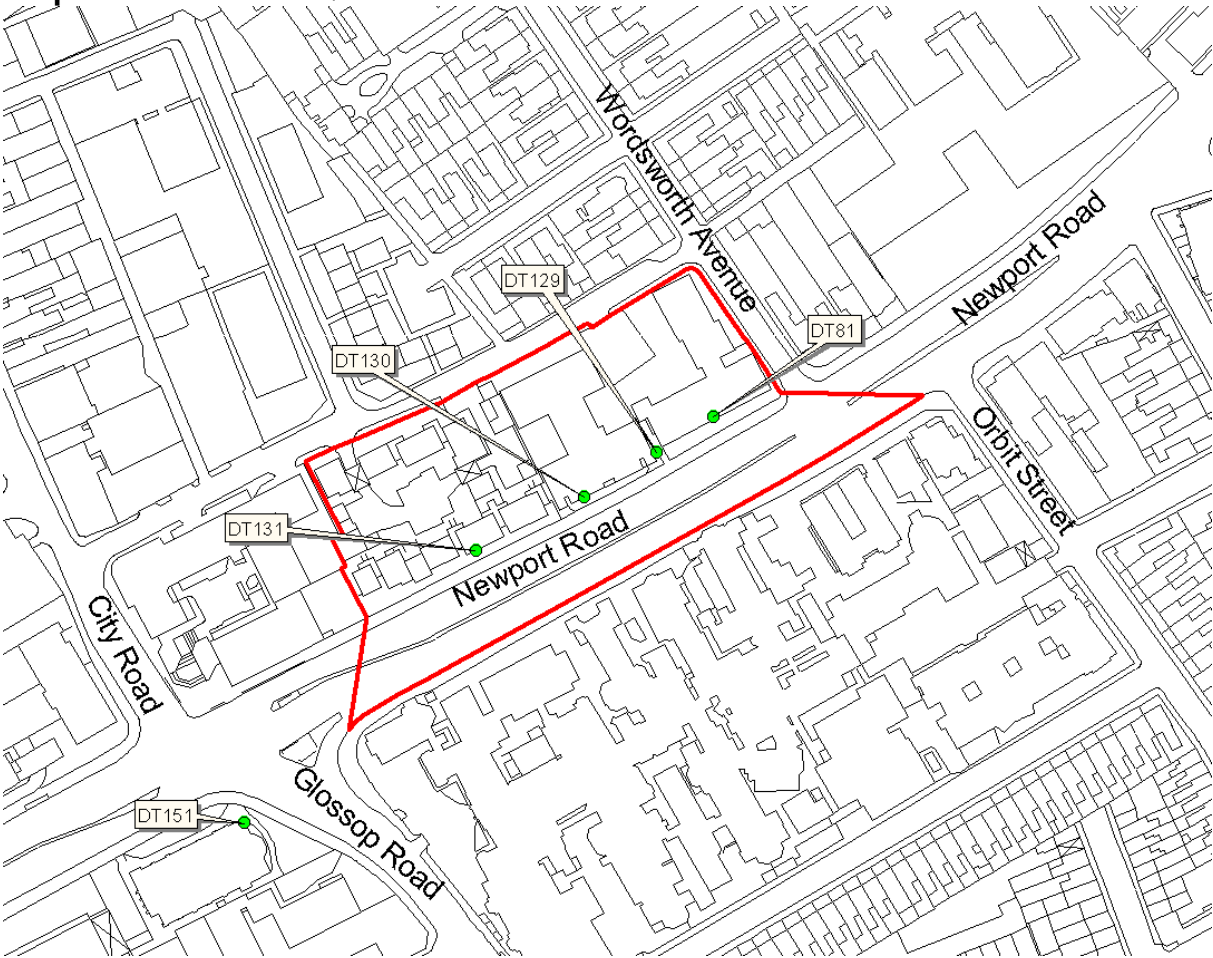


Figure 2.6 Map Showing Location of Diffusion Tubes in and around the Llandaff AQMA

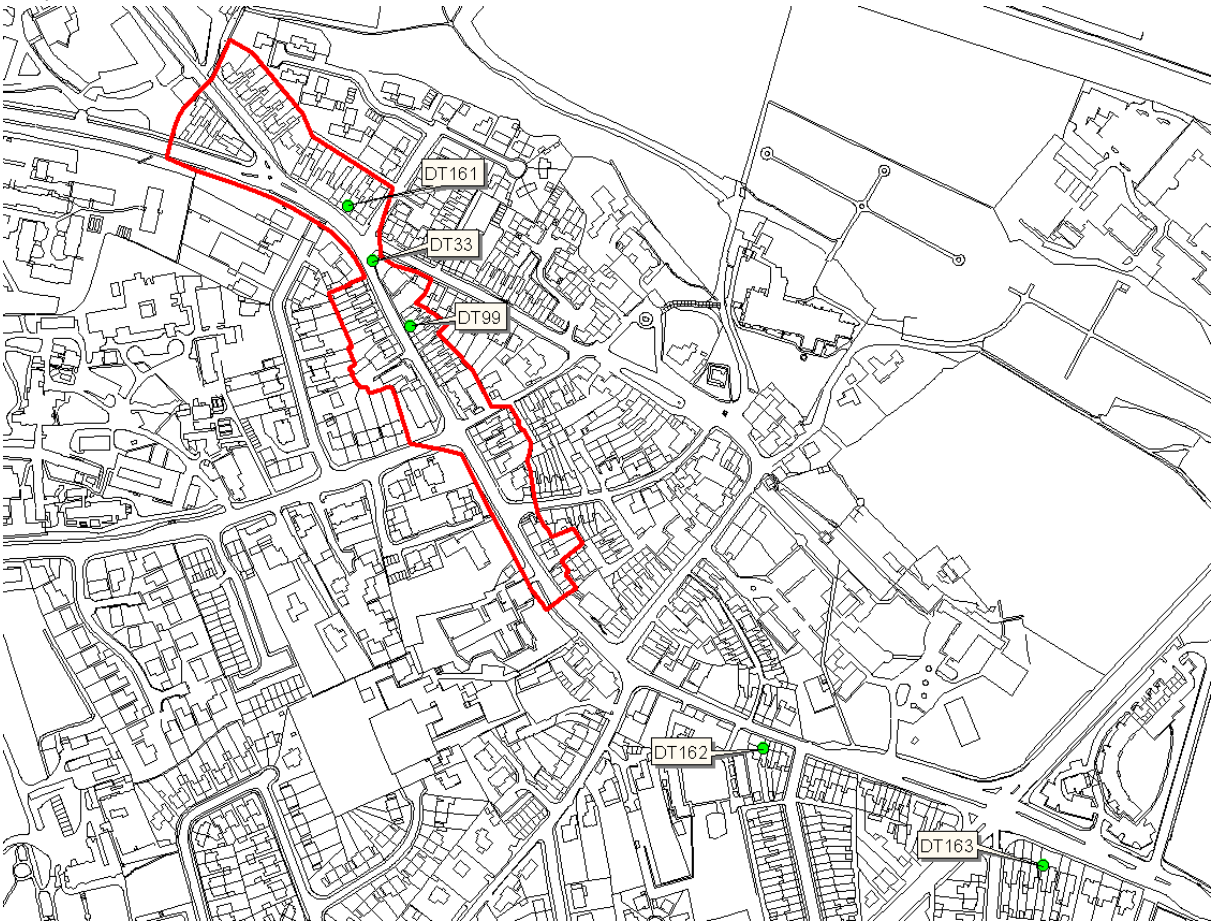


Figure 2.7 Map Showing Location of Diffusion Tube at Cardiff Road





Figure 2.8 Map Showing Location of Diffusion Tubes in Cathays area

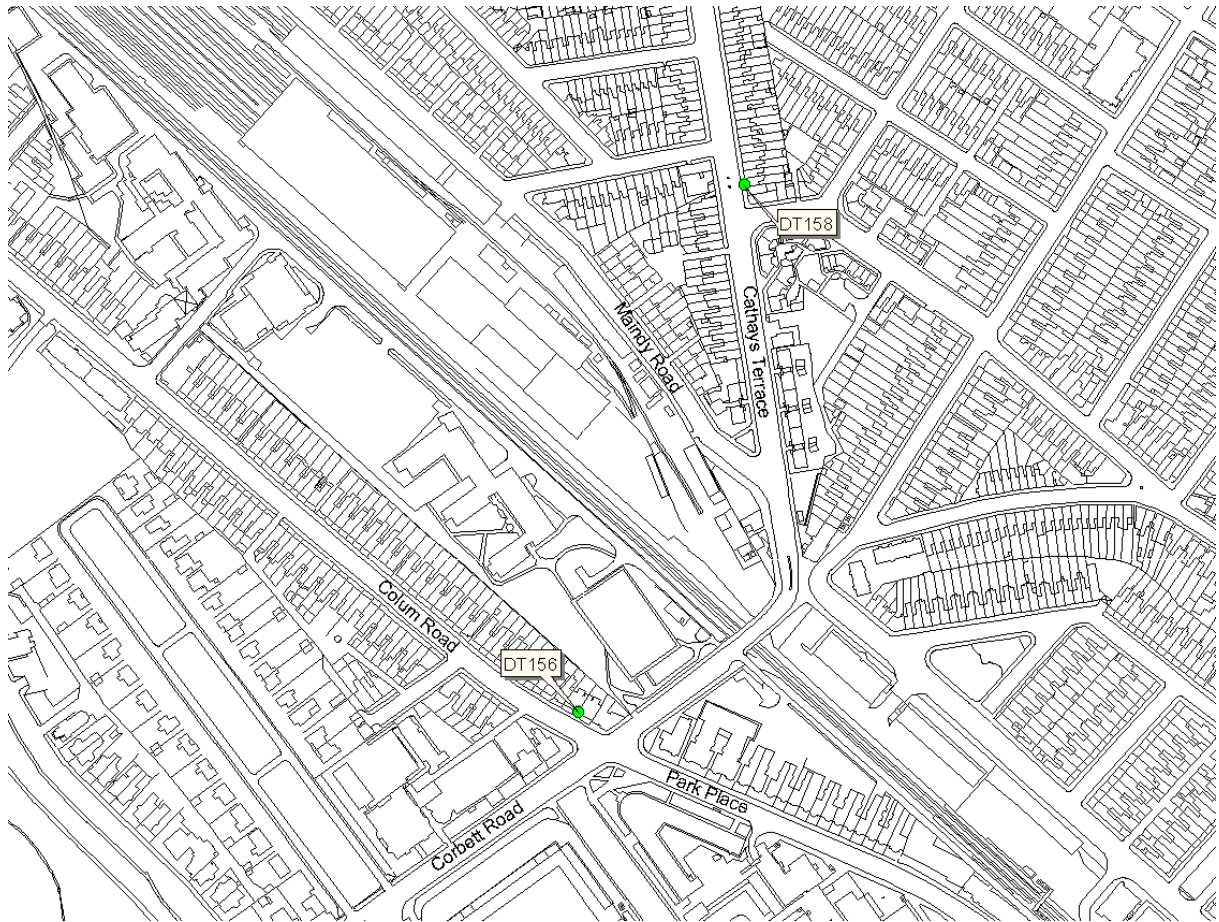


Figure 2.9 Map Showing Location of Diffusion Tube in City Road



Figure 2.10 Map Showing Location of Diffusion Tubes in Riverside area

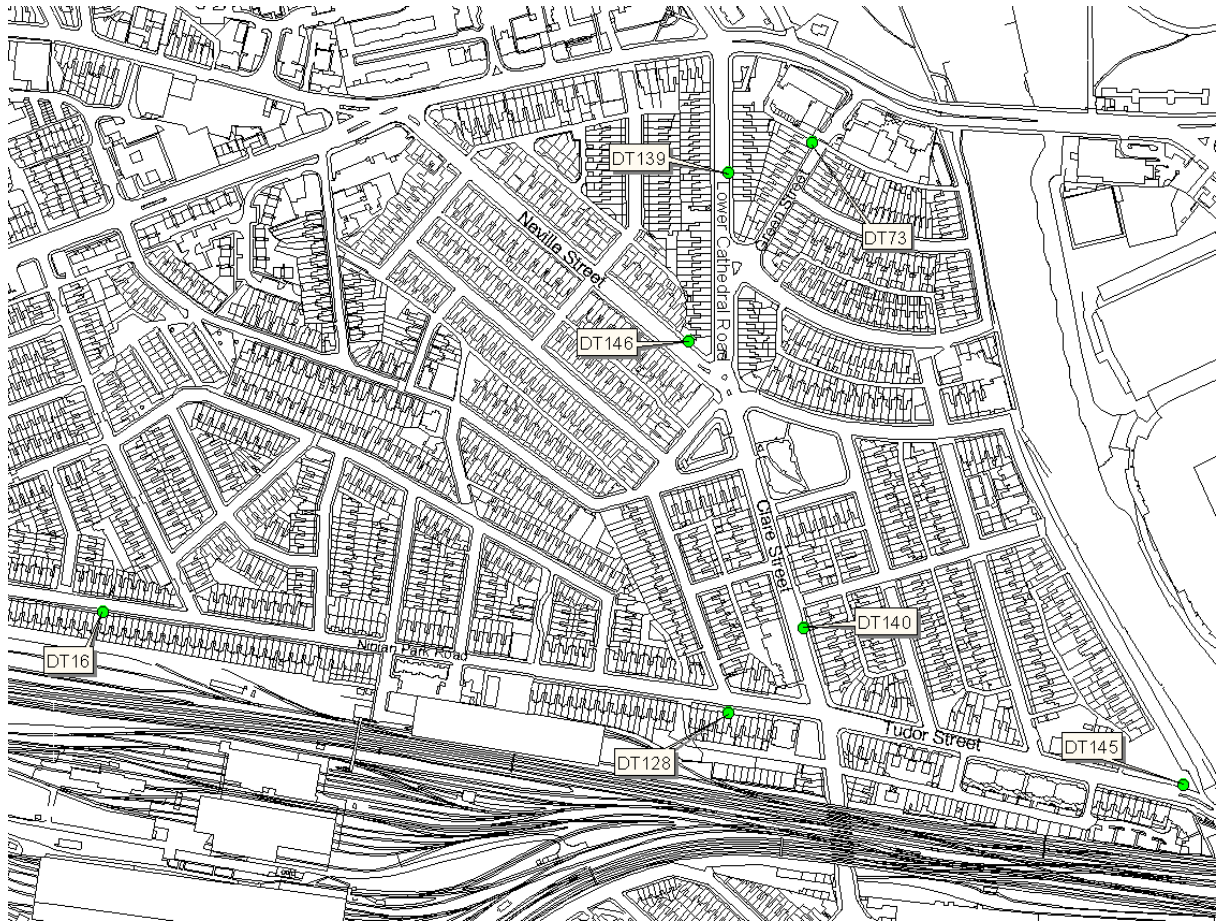


Figure 2.11 Map Showing Location of Diffusion Tube in Cowbridge Road West

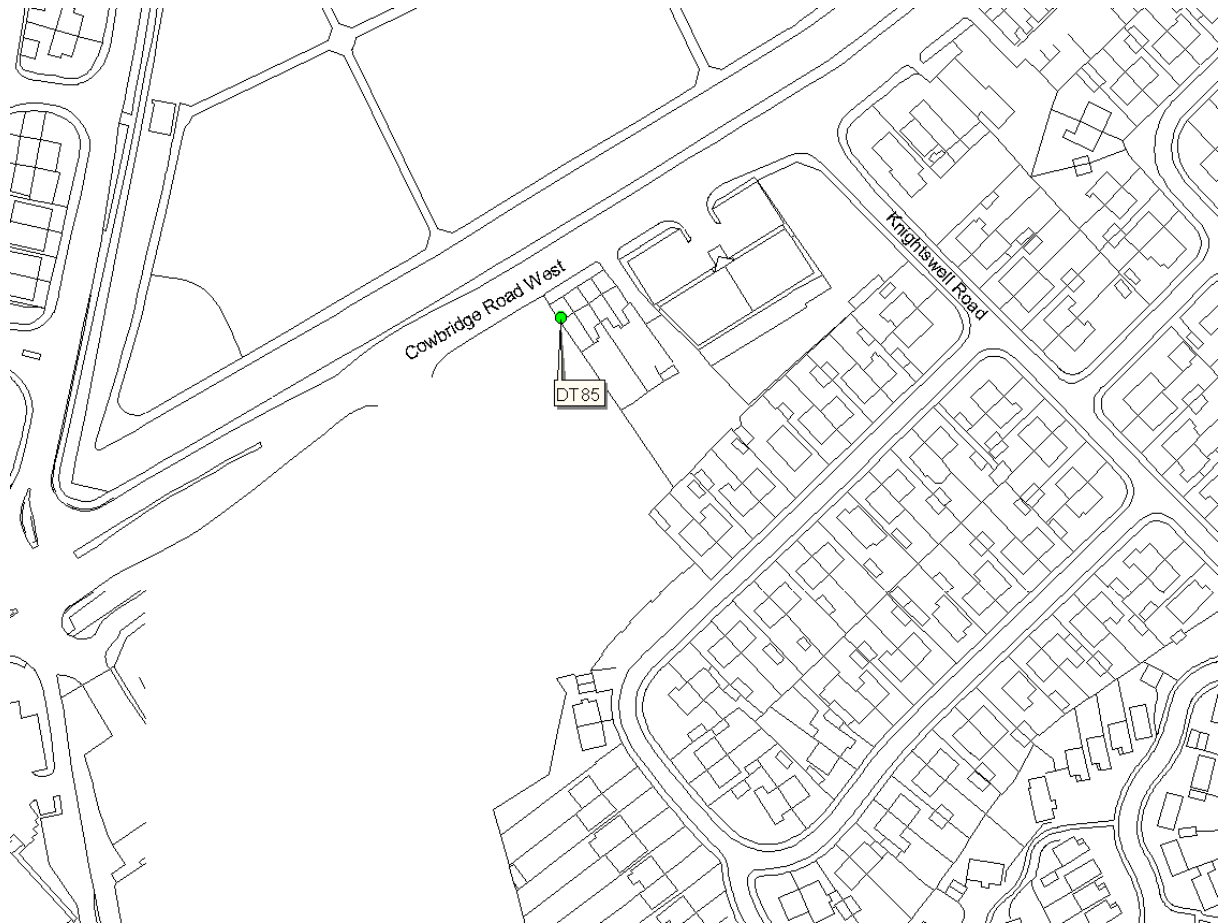


Figure 2.12 Map Showing Location of Diffusion Tube in Mackintosh Place



Figure 2.13 Map Showing Location of Diffusion Tubes in Fairoak Road

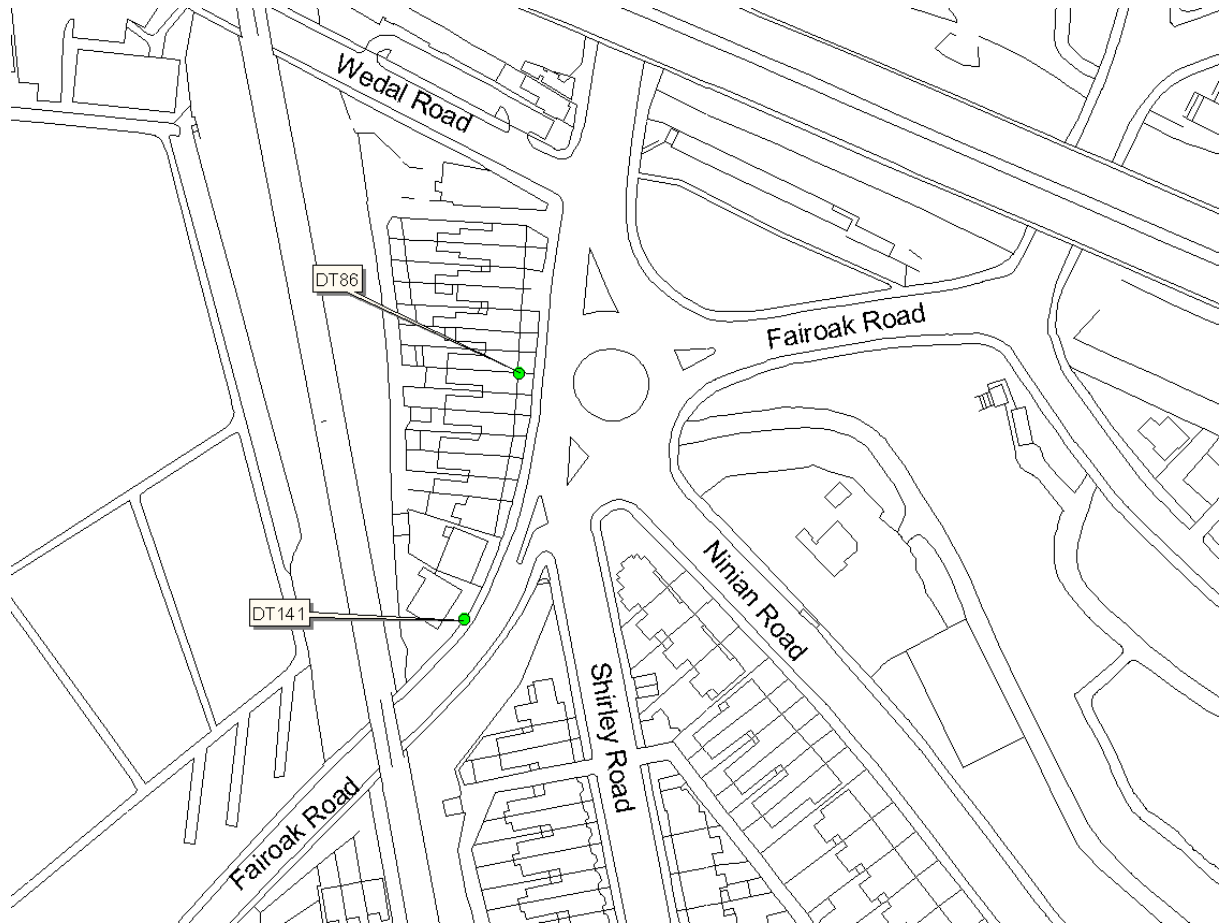


Figure 2.14 Map Showing Location of Diffusion Tubes in Heath area



Figure 2.15 Map Showing Location of Diffusion Tube in James Street

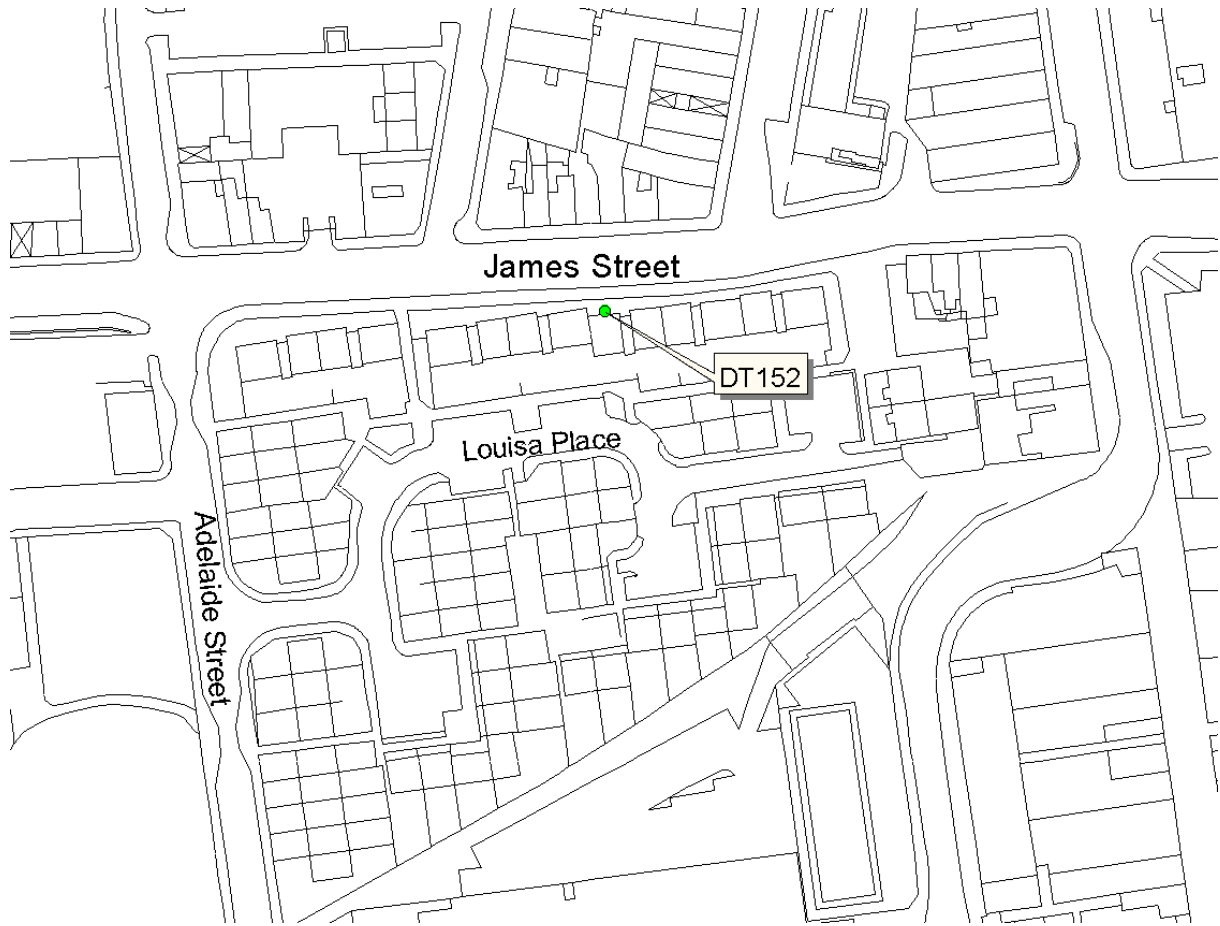




Figure 2.16 Map Showing Location of Diffusion Tubes in Leckwith area

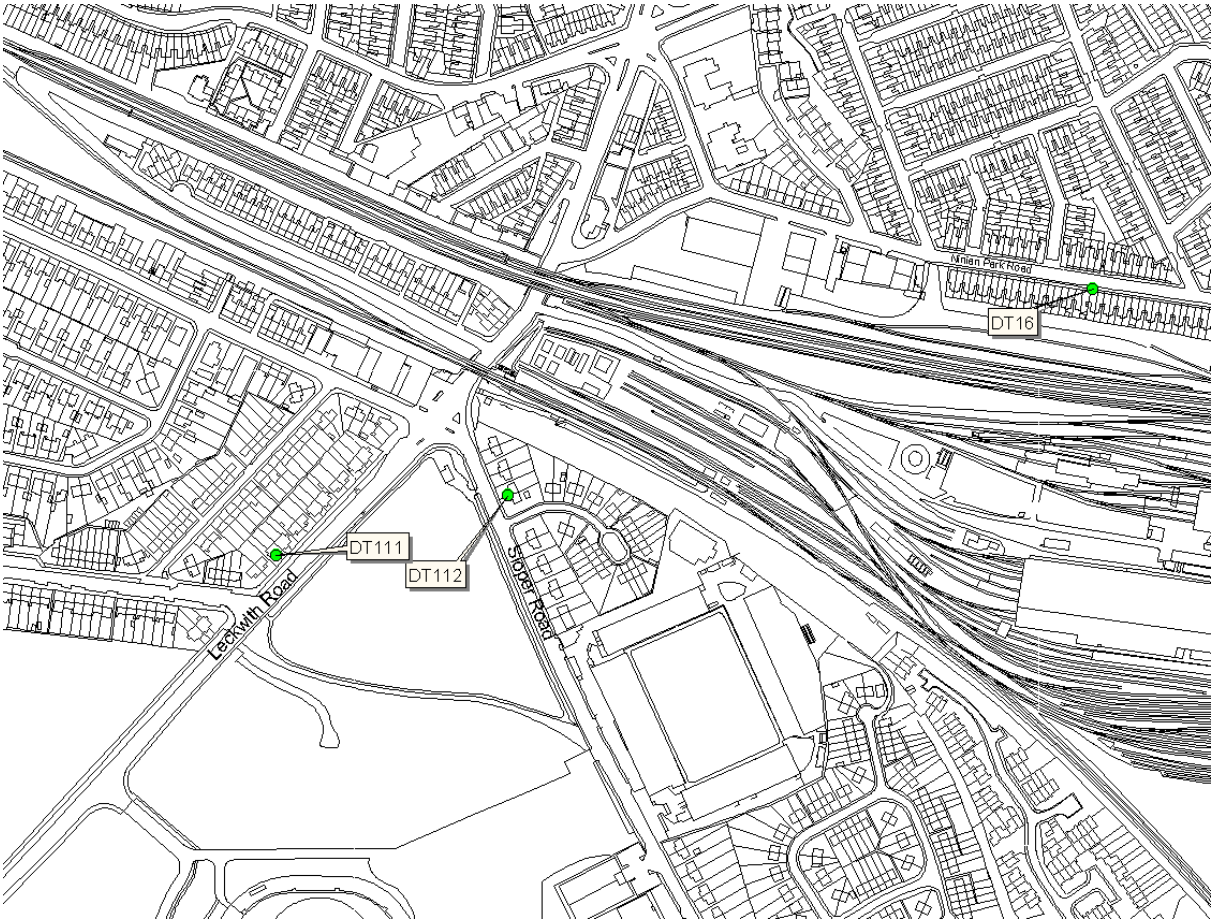


Figure 2.17 Map Showing Location of Diffusion Tube in East Tyndall Street



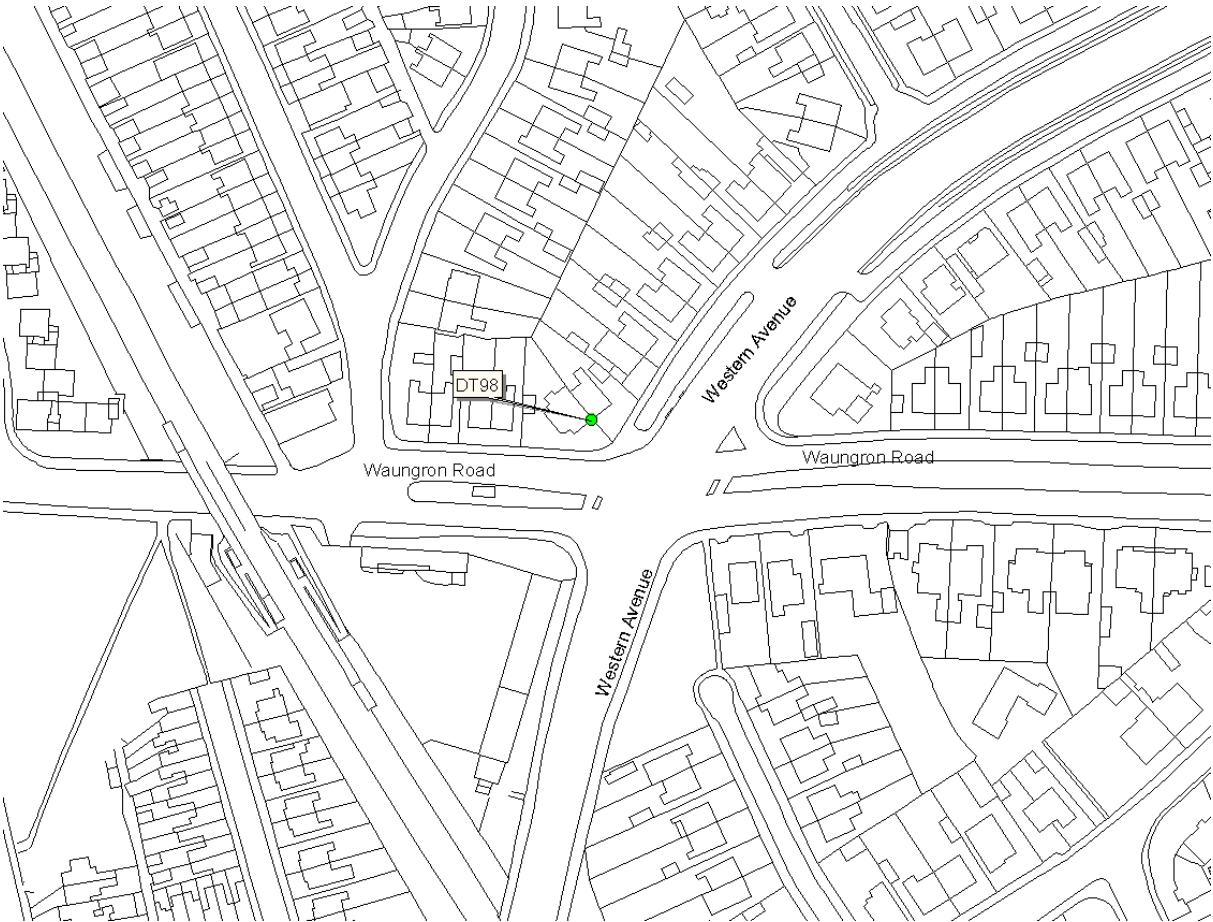
Figure 2.18 Map Showing Location of Diffusion Tubes in Newport Road



Figure 2.19 Map Showing Location of Diffusion Tubes in Penarth Road area



Figure 2.19 Map Showing Location of Diffusion Tube in Western Avenue



**Figure 2.20 Map Showing Location of Diffusion Tubes in Cowbridge Road East and Llandaff Road**



Measurement of nitrogen dioxide by diffusion tube can be unreliable due to a variety of preparation and analytical methodologies in use and due to errors that may occur during preparation, extraction and analysis. It is important therefore that diffusion tube measurements are validated against a properly calibrated chemiluminescent analyser and the diffusion tube measurements corrected for any systematic bias that may occur.

Three of the diffusion tubes are located at the Cardiff Centre AURN site, data from these tubes being used to determine the Bias Adjustment Figure for the network. The remaining 56 are located at various sites throughout the city and generally associated with road traffic sources.

The Council's diffusion tubes are prepared, extracted and analysed by Cardiff Scientific Services. The tubes are prepared and extracted using the 50% TEA in acetone method and the Harmonisation Practical Guidance is followed for this.

Since February 2002, the Council has co-located three diffusion tubes with the Cardiff Centre AURN site in Frederick Street. The tubes are located on the station's sample inlet duct and are used to determine the "Bias Adjustment Factor" and "Diffusion Tube Bias" for measurements made by diffusion tube compared to the more accurate measurements made by chemiluminescent analyser.

Table 2.1.1 below summarises the nitrogen dioxide measurements made at the Cardiff Centre AURN site during 2012. Columns 101, 102 and 103 refer to diffusion tube site numbers, "Tube" is the monthly average of the three diffusion tubes and "AURN" is the ratified monthly average from the site's chemiluminescent analyser.

**Table 2.1.1 2012 Nitrogen Dioxide Measurements at Cardiff Centre AURN**

Month	2011					
	101	102	103	Tube	AURN	
Jan	40	41	39	40.0	34.1	R
Feb	34	34	35	34.3	31.1	R
Mar	27	31	33	30.3	35.0	R
Apr	26	29	26	27.0	26.4	R
May	25	21	24	23.3	15.0	R
Jun	19	21	18	19.3	14.0	R
Jul	25	22	22	23.0	18.0	R
Aug	24	24	24	24.0	19.0	R
Sep	28	25	27	26.7	24.0	R
Oct	40	43	42	41.7	27.0	R
Nov	36	36	34	35.3	37.1	R
Dec	36	36	36	36.0	62.3	R to end of Dec 2012
<b>Ave</b>	30.0	30.3	30.0	29.5	25.5	

The Bias Adjustment Factor (BAF) may be calculated as:

$$\text{BAF} = \frac{\text{CAA}}{\text{DTA}}$$

The percentage Diffusion Tube Bias (DTB) is calculated as:

$$\text{DTB (\%)} = \frac{\text{DTA} - \text{CAA}}{\text{CAA}} \times 100$$

Where:

CAA = Chemiluminescent Analyser Average  
DTA = Diffusion Tube Average

Cardiff Council used the following spreadsheet to calculate the Bias Adjustment Factor:

[http://laqm.defra.gov.uk/documents/AEA\\_DifTPAB\\_v04.xls](http://laqm.defra.gov.uk/documents/AEA_DifTPAB_v04.xls)

The Bias Adjustment Factor so calculated for 2012 from Cardiff Council diffusion tube data and ratified nitrogen dioxide data from the Cardiff Centre AURN site is 0.86. This is consistent with previous years' figures. Please note that this value excludes the data for December 2012 where poor data capture for NO<sub>2</sub> at the AURN site

(42.88% data capture) made comparison with the (whole month's) diffusion tube data meaningless. The data for December 2012 is presented for completeness only.

The calculated BAF and DTB values from 2002 to 2012 are given in Table 2.1.2 below.

**Table 2.1.2 BAF and DTB Values Calculated from Cardiff Centre AURN Co-location Data**

Year	BAF	DTB (%)	Status*
2002	0.94	+6.25	R
2003	0.875	+14.29	R
2004	0.81	+23.3	R
2005	0.84	+18.9	R
2006	0.85	+17.0	R
2007	0.88	+14%	R
2008	0.84	+17.2%	R
2009	0.89	+11.8%	R
2010	0.92	+8%	R
2011	0.88	+14.2%	R
2012	0.86	+15.75	R

\*R = calculated from ratified (rather than provisional) data

The data indicate that the Council's diffusion tubes, prepared, extracted and analysed by Cardiff Scientific Services, tend to over-read when compared to measurements made by automatic chemiluminescent analyser.

A database of calculated Bias Adjustment Factors (BAF) is kept online. At the time of writing, the factors were available here:

[http://laqm.defra.gov.uk/documents/Database\\_Diffusion\\_Tube\\_Bias\\_Factors-v03\\_13-Final.xls](http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_13-Final.xls)

There were no other bias adjustment studies using tubes prepared and analysed by Cardiff Scientific Services available for comparison with Cardiff Council's locally-derived BAF.

In the absence of other comparable studies and given that the calculated BAF (0.86) is very-much in accord with that calculated in previous years, diffusion tube data reported herein has been corrected using this BAF.



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

During 2012 monitoring was carried out for nitrogen dioxide, particulate matter (PM<sub>10</sub>), sulphur dioxide, carbon monoxide, ozone and lead. There was no monitoring carried out for benzene or 1,3-butadiene.

The monitoring results are given and discussed in the following sections.

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

Nitrogen dioxide was measured during 2012 at one site equipped with an automatic analyser and by a network of 59 diffusion tubes. The results are given and discussed below.

#### **Automatic Monitoring Data**

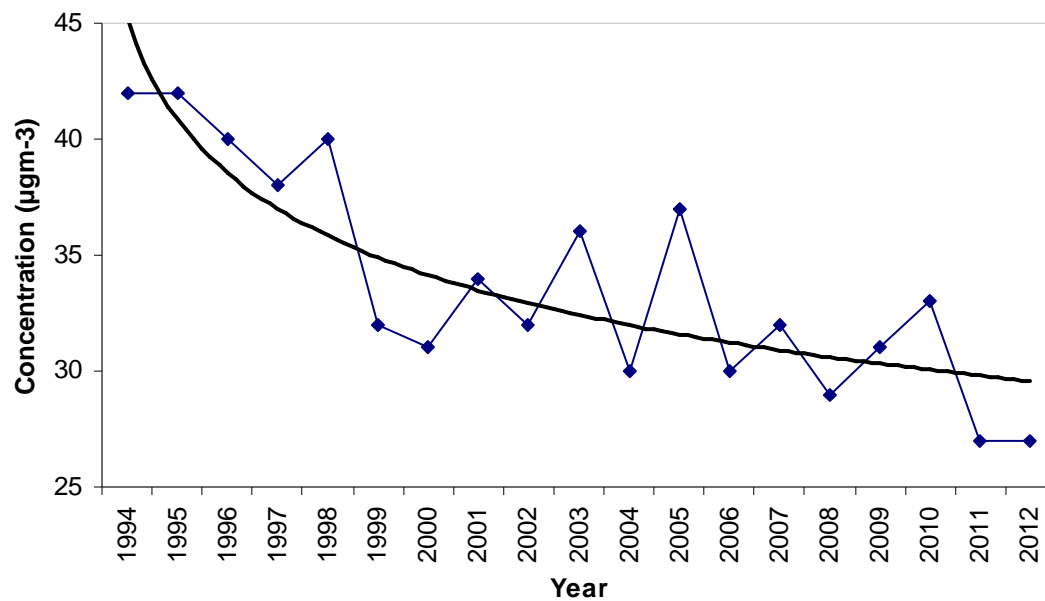
Data from the Cardiff Centre AURN site for 2012 is given in Tables 2.3 and 2.4 below.

There have been no exceedences of either of the nitrogen dioxide national air quality standards at this site in any of the past five years.

**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 %	Valid Data Capture 2012 %	Annual Mean Concentration (µg/m <sup>3</sup> )				
					2008	2009	2010	2011	2012
Cardiff Centre AURN	Urban Centre	N	91	91	29	31	33	27	27

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



**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 %	Valid Data Capture 2012 %	Number of Hourly Means > 200µg/m <sup>3</sup>				
					2008	2009	2010	2011	2012
Cardiff Centre AURN	Urban Centre	N	91	91	0	0	0	0	5

## Diffusion Tube Monitoring Data

During 2012, monitoring for nitrogen dioxide was carried out using a network of 59 nitrogen oxide diffusion tubes. Three of these tubes are placed at the Cardiff Centre AURN site for the purposes of bias adjustment. Results for the 59 diffusion tubes for 2012 are given in Table 2.5 below. The results have been adjusted for bias using the correction factor (0.86) given in Section 2.1.2 above.

Monthly diffusion tube data is reported by Cardiff Scientific Services rounded to a whole number. Annual mean data calculated therefrom and given herein is reported to one decimal place.

The data given in Tables 2.5 and 2.6 are bias adjusted “as measured” with the exception of Sites 47, 134 and 151. Data capture for these three sites was less than 75% (i.e. 8 monthly measurements or less) and the data has therefore been “annualised” (and bias-adjusted) according to “Box 3.2” of LAQM.TG(09) and details provided in a separate table.

Table 2.5 shows that, during 2012, 14 of the 59 monitoring sites recorded a concentration of NO<sub>2</sub> which was above the 40µg/m<sup>3</sup> annual mean Objective in 2012. Of these 14 sites, 10 are inside one of the four AQMAs.

Of the remaining 4 sites not currently in an AQMA where the measured concentration of NO<sub>2</sub> was above the 40µg/m<sup>3</sup> annual mean Objective in 2012, 3 of these sites (numbers 74, 140 and 141) are kerbside sites not representative of relevant exposure. Site 74 has been discussed in previous reports; it is not representative of relevant exposure and remains in place to record long-term trends.

Site 140 (Clare Street) has also been discussed in previous reports. It is at a kerbside location but there is relevant exposure 6m from the kerb. The monitoring site is on street-furniture 0.2m from the kerb. The nearest “urban background” monitoring site is at Green Street (Site 73).

It is possible to estimate the decrease in nitrogen dioxide concentration with increasing distance from a road using the following tool made available by DEFRA:

<http://laqm.defra.gov.uk/documents/NO2withDistancefromRoadsCalculatorIssue4.xls>

The tool can be used to estimate concentrations at relevant locations, i.e. façades of nearby buildings, from concentrations measured at kerbside sites.

Using the above tool together with 2012 monitoring data gives a calculated façade concentration at the nearest relevant location of 33.4µgm<sup>-3</sup> which is below the Objective.

Site 86 (Fairoak Road) is on the façade of residential accommodation adjacent to the roundabout at the junctions of Fairoak Road, Ninian Road, Shirley Road and Wedal Road. The road network is busy at peak times, particularly in the afternoon where there is often vehicle queuing on north-bound side of Fairoak Road away from the City/Civic/University area and towards residential areas.

Table 2.6 shows data from 2008 to 2012 inclusive for sites which were in use during 2012. There are four monitoring sites (74, 86, 140 and 141) which are not in AQMAs for which the monitoring data shows a number of years' of exceedence. Sites 74 and 140 have been discussed above.

Data for sites 86 and 141 have been highlighted in Table 2.6. Both are in the vicinity of the aforementioned Fair oak Road roundabout. Site 86 is representative of relevant exposure whereas 141 is not. Site 86 is on the façade of residential accommodation. Site 141 is a kerbside site; the nearest residential accommodation to this site is set back from the road and is considerably elevated relative to it.

There are 10 façade-based diffusion tube sites with complete data from 2002, i.e. from when the Council started determining an annual bias-adjustment factor. These sites are numbers 16, 49, 81, 82, 85, 86, 96, 97, 99 and 100. Bias-adjusted nitrogen dioxide concentrations from these 10 sites have been averaged for each year and plotted in Figure 2.4 to give a combined, representative trend over 11 years. The plot seems to indicate a very slow, gradual increase in nitrogen dioxide concentrations. However, it is noticeable that there are peaks in the plot in 2003, 2007 and 2010 and it is possible that data from these years is skewing the trend slightly upward. Alternatively, it could be reasonably argued that the overall trend in concentrations is "flat".

There were no annual mean concentrations measured in 2012 which were greater than  $60\mu\text{g m}^{-3}$  and consequently there is little risk of the hourly-mean Objective being exceeded.

Given the discussion above and monitoring data presented above, it is proposed to proceed to a Detailed Assessment for the Fair oak Road area.

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 %)	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.86
16	Ninian Park Road	Façade	N	N	12	30.9
33	Mitre Place	Kerbside	Y	N	12	<b>49.8</b>
44	City Road	Kerbside	N	N	10	34.8
45	Mackintosh Place	Kerbside	N	N	10	36.8
47	Ely Bridge	Kerbside	Y	N	8	<b>51.1<sup>a</sup></b>
49	Penarth Road	Façade	N	N	11	27.9
56	Birchgrove Village	Kerbside	N	N	12	33.9
58	Westgate Street	Kerbside	Y	N	11	<b>49.5</b>
73	Green Street	Kerbside	N	N	12	25.6
74	Station Terrace	Kerbside	N	N	12	<b>50.1</b>
81	Stevenson Court	Façade	Y	N	12	<b>40.6</b>
82	104 Birchgrove Road	Façade	N	N	12	28.5
85	497 Cowbridge Road West	Façade	N	N	12	27.3
86	19 Fair oak Road	Façade	N	N	12	<b>40.3</b>

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %)	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.86
96	Manor Way Junction	Façade	N	N	12	35.4
97	Newport Road (premises)	Façade	N	N	9	37.8
98	Western Avenue (premises)	Façade	N	N	12	26.9
99	Cardiff Road Llandaff	Façade	Y	N	9	34.5
100	188 Cardiff Road	Façade	N	N	12	33.7
101	Cardiff Centre AURN	Urban Centre	N	Y	12	25.8
102	Cardiff Centre AURN	Urban Centre	N	Y	12	26.1
103	Cardiff Centre AURN	Urban Centre	N	Y	12	25.8
106	30 Caerphilly Road	Façade	N	N	12	35.7
107	Lynx Hotel	Façade	N	N	12	37.6
111	98 Leckwith Road	Façade	N	N	12	23.7
112	17 Sloper Road	Façade	N	N	12	30.6
115	21 Llandaff Road	Façade	N	N	12	37.7
117	25 Cowbridge Road West	Façade	Y	N	11	<b>42.6</b>
119	Havelock Street	Kerbside	N	N	11	33.7
124	287 Cowbridge Road East	Façade	N	N	12	25.5

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %)	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.86
126	Westgate Street Flats	Façade	Y	N	10	39.9
128	117 Tudor Street	Façade	N	N	12	35.1
129	Stephenson Court 2	Façade	Y	N	12	34.9
130	Burgess Court	Façade	Y	N	12	<b>41.5</b>
131	Dragon Court	Façade	Y	N	11	<b>47.9</b>
133	St Mark's Avenue	Kerbside	N	N	12	39.3
134	Sandringham Hotel	Façade	Y	N	7	37.2 <sup>a</sup>
139	Lower Cathedral Road	Kerbside	N	N	12	34.3
140	Clare Street	Kerbside	N	N	12	<b>41.7</b>
141	Fairoak Road 2	Kerbside	N	N	11	<b>47.6</b>
142	Pure Rugby	Kerbside	Y	N	11	<b>47.6</b>
143	Windsor House	Façade	Y	N	9	<b>41.5</b>
144	Marlborough House	Façade	Y	N	12	39.5
145	Tudor Street Flats	Façade	N	N	9	33.8
146	Neville Street	Façade	N	N	11	29.5
147	211 Penarth Road	Façade	N	N	12	31.0
148	161 Clare Road	Façade	N	N	12	27.8
149	10 Corporation Road	Façade	N	N	12	33.0



Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2012 (Number of Months or %)	2012 Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Bias Adjustment factor = 0.86
151	St James Church	Kerbside	N	N	8	35.0 <sup>a</sup>
152	James Street	Façade	N	N	12	32.5
153	Magic Roundabout	Façade	N	N	12	36.2
156	2a/4 Colum Road	Façade	N	N	12	32.6
157	47 Birchgrove Road	Façade	N	N	12	31.6
158	64/66 Cathays Terrace	Façade	N	N	11	28.8
159	IMO façade replacement	Façade	N	N	9	39.9
160	High Street Zizzi	Façade	N	N	12	31.4
161	52 Bridge Road	Façade	Y	Y	9	<b>43.0</b>
162	58 Cardiff Road	Façade	N	N	11	28.5
163	118 Cardiff Road	Façade	N	N	11	27.5

<sup>a</sup> = Annual mean has been “annualised” as in Box 3.2 of TG(09) as full calendar year data capture was less than 75%

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

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 = 0.84)	2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)

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 = 0.84)	2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)
16	Façade	N	29.7	31.1	32.8	32.1	30.9
33	Kerbside	Y	<b>49.0</b>	<b>52.3</b>	<b>53.5</b>	<b>55.0</b>	<b>49.8</b>
44	Kerbside	N	36.8	38.1	<b>44.1</b>	39.2	34.8
45	Kerbside	N	36.6	<b>42.7</b>	39.9	36.8	36.8
47	Kerbside	Y	<b>49.7</b>	<b>49.6</b>	<b>58.3</b>	<b>53.0</b>	<b>51.1<sup>a</sup></b>
49	Façade	N	31.4	31.7	35.5	31.9	27.9
56	Kerbside	N	36.0	36.8	37.6	31.5	33.9
58	Kerbside	Y	39.7	<b>49.5</b>	<b>52.4</b>	<b>54.9</b>	<b>49.5</b>
73	Kerbside	N	26.0	27.1	29.3	28.0	25.6
74	Kerbside	N	37.7	<b>44.7</b>	<b>54.1</b>	<b>48.0</b>	<b>50.1</b>
81	Façade	Y	<b>41.2</b>	<b>40.7</b>	<b>45.6</b>	<b>40.6</b>	<b>40.6</b>
82	Façade	N	29.1	29.2	33.2	28.2	28.5
85	Façade	N	25.0	27.9	29.7	28.2	27.3
86	Façade	N	<b>40.3</b>	<b>41.0</b>	<b>42.6</b>	39.9	<b>40.3</b>
96	Façade	N	34.7	35.2	39.4	34.5	35.4
97	Façade	N	36.4	37.5	<b>41.9</b>	35.4	37.8

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 = 0.84)	2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)
98	Façade	N	29.7	31.4	32.8	29.1	26.9
99	Façade	Y	38.6	<b>41.7</b>	<b>48.6</b>	39.8	34.5
100	Façade	N	36.0	36.0	38.3	34.8	33.7
101	Urban Centre	N	29.8	31.6	31.7	26.7	25.8
102	Urban Centre	N	28.8	31.3	32.7	28.0	26.1
103	Urban Centre	N	29.2	30.4	33.1	27.4	25.8
106	Façade	N	35.5	37.5	37.5	34.0	35.7
107	Façade	N	36.4	39.0	<b>43.9</b>	36.4	37.6
111	Façade	N	22.9	24.2	29.0	24.5	23.7
112	Façade	N	29.0	31.6	36.6	30.2	30.6
115	Façade	N	37.1	<b>40.5</b>	<b>42.8</b>	38.7	37.7
117	Façade	Y	<b>40.9</b>	<b>43.3</b>	<b>51.6</b>	<b>46.5</b>	<b>42.6</b>
119	Kerbside	N	31.3	34.3	37.6	<b>40.2</b>	33.7
124	Façade	N	24.3	26.4	31.4	27.0	25.5
126	Façade	Y	35.0	40.0	<b>48.7</b>	<b>45.4</b>	39.9
128	Façade	N	36.3	36.4	38.6	36.7	35.1

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 = 0.84)	2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)
129	Façade	Y	34.5	36.0	39.6	36.2	34.9
130	Façade	Y	<b>42.7</b>	<b>44.9</b>	<b>46.7</b>	<b>44.4</b>	<b>41.5</b>
131	Façade	Y	<b>43.8</b>	<b>46.7</b>	<b>49.5</b>	<b>47.3</b>	<b>47.9</b>
133	Kerbside	N	36.9	41.2	<b>49.7</b>	39.5	39.3
134	Façade	Y	<b>46.1</b>	<b>45.7</b>	<b>48.8</b>	<b>45.1</b>	37.2 <sup>a</sup>
139	Kerbside	N	31.0	35.2	<b>40.6</b>	34.3	34.3
140	Kerbside	N	38.6	<b>43.7</b>	<b>48.9</b>	<b>42.5</b>	<b>41.7</b>
141	Kerbside	N	35.3	<b>40.3</b>	<b>43.0</b>	40.0	<b>47.6</b>
142	Kerbside	Y	-	-	<b>58.8</b>	<b>48.7</b>	<b>47.6</b>
143	Façade	Y	-	-	<b>48.6</b>	<b>43.8</b>	<b>41.5</b>
144	Façade	Y	-	-	<b>46.2</b>	<b>42.9</b>	39.5
145	Façade	N	-	-	39.7	34.6	33.8
146	Façade	N	-	-	33.5	29.4	29.5
147	Façade	N	-	-	34.3	31.1	31.0
148	Façade	N	-	-	34.2	29.0	27.8
149	Façade	N	-	-	36.5	34.1	33.0

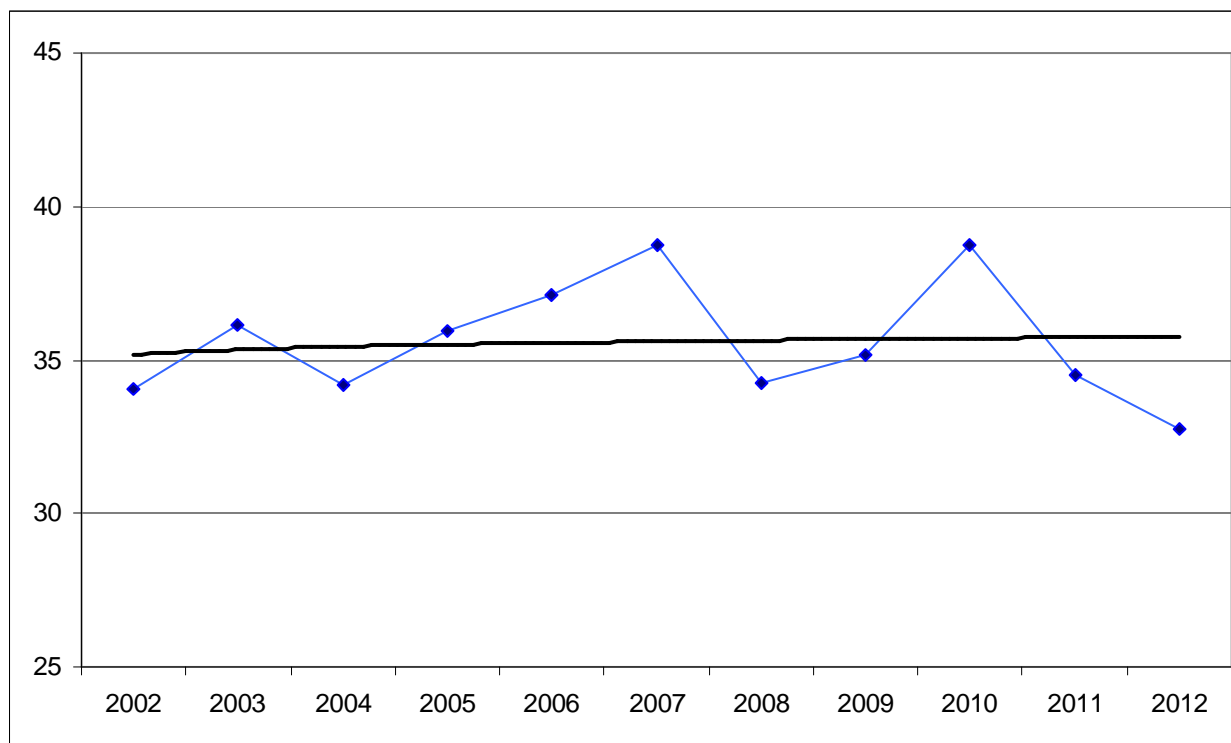
Site ID	Site Type	Within AQMA?	Annual Mean Concentration ( $\mu\text{g}/\text{m}^3$ ) - Adjusted for Bias <sup>a</sup>				
			2008 (Bias Adjustment Factor = 0.84)	2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)
151	Kerbside	N	-	-	32.1	37.3	35.0 <sup>a</sup>
152	Façade	N	-	-	35.1	32.8	32.5
153	Façade	N	-	-	36.1	35.0	36.2
156	Façade	N	-	-	38.2	33.4	32.6
157	Façade	N	-	-	33.9	33.1	31.6
158	Façade	N	-	-	34.8	31.5	28.8
159	Façade	N	-	-	<b>41.9</b>	38.7	39.9
160	Façade	N	-	-	36.0	32.6	31.4
161	Façade	Y	-	-	-	-	<b>43.0</b>
162	Façade	N	-	-	-	-	28.5
163	Façade	N	-	-	-	-	27.5

<sup>a</sup> = Annual mean has been “annualised” as in Box 3.2 of TG(09) as full calendar year data capture was less than 75%

Table showing “annualisation” calculations

Tube Corrected	Tubes Used	Periods used	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)	Average	Measured Mean	Corrected Mean
47	85 117	Jan-Mar, Jun, Aug-Oct, Dec	31.8 49.5	33.4 51	0.952 0.971	0.961	53.2	<b>51.1</b>
134	142 160	Jan, Mar-May, Aug-Sep, Nov	55.4 36.5	54.2 35.3	1.022 1.034	1.028	36.2	37.2
151	81 129 130 131	Jan, Mar, May-Jul, Oct- Dec	47.2 40.6 48.3 55.7	46.1 41.3 46.5 54.4	1.024 0.983 1.039 1.024	1.017	34.4	35.0

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>)

During 2012 PM<sub>10</sub> was measured at the Cardiff Centre AURN monitoring site and the summary data is given in Tables 2.7 and 2.8 below.

Data capture in 2011 was only 55.925% and so the data presented for that year has been “annualised” as described in the Council’s 2012 Updating and Screening Assessment. It was considered unlikely therefore that there would have been more than 35 exceedences of the 50µgm<sup>-3</sup> daily mean standard at the Cardiff Centre site.

As for previous years, there no exceedence of either of the National Air Quality Standards.

Figure 2.5 shows a generally downward trend in annual mean concentrations of PM<sub>10</sub>.

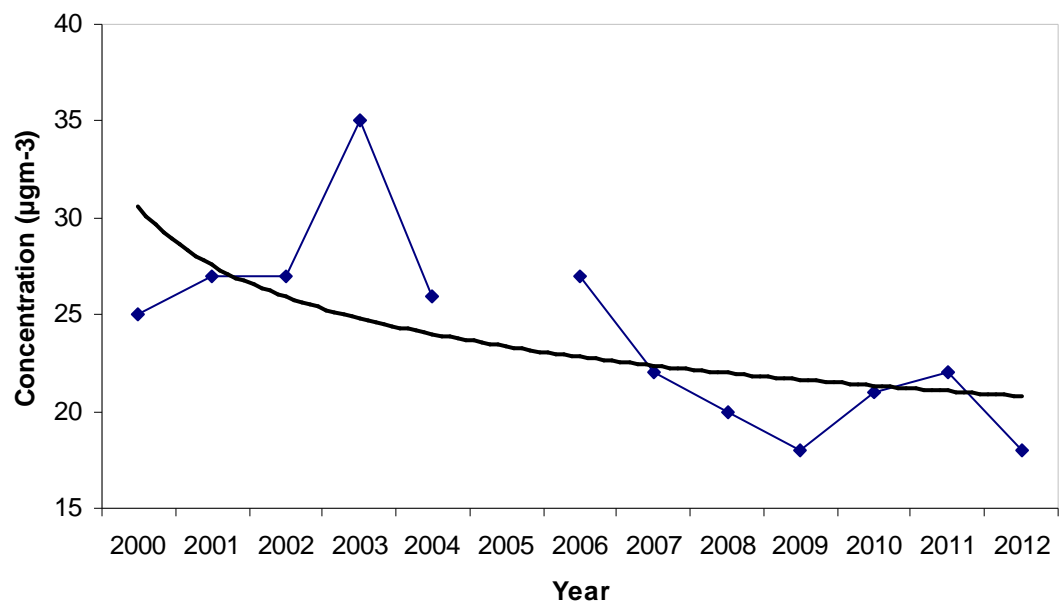


**Table 2.7 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2012 %	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m <sup>3</sup> )				
						2008	2009	2010	2011 <sup>a</sup>	2012
Cardiff Centre AURN	Urban Centre	N	78.75	78.75	Y	20	18	21	22	18

<sup>a</sup> = Annual mean has been “annualised” as in Box 3.2 of TG(09) as full calendar year data capture was less than 75%

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



**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 %	Valid Data Capture 2012 %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m <sup>3</sup>				
						2008	2009	2010	2011 <sup>a</sup>	2012
Cardiff Centre AURN	Urban Centre	N	78.75	78.75	Y	9	6	3	3	5

<sup>a</sup> = Annual mean has been "annualised" as in Box 3.2 of TG(09) as full calendar year data capture was less than 75%

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

Sulphur dioxide was measured at the Cardiff Centre AURN automatic monitoring site during 2012. The site is classified as “Urban Background” and is a relevant location for the 15-minute and 1-hour Objectives. Data for the monitoring is given in Table 2.9 below.

There were no exceedences of Objectives during 2012.

**Table 2.9 Results of Automatic Monitoring for SO<sub>2</sub>: Comparison with Objectives**

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % <sup>a</sup>	Valid Data Capture 2012 % <sup>b</sup>	Number of: <sup>c</sup>		
					15-minute Means > 266µg/m <sup>3</sup>	1-hour Means > 350µg/m <sup>3</sup>	24-hour Means > 125µg/m <sup>3</sup>
Cardiff Centre AURN	Urban Centre	N	91.72	91.72	0	0	0

#### 2.2.4 Benzene and 1,3 Butadiene

There was no monitoring for either benzene or 1,3-butadiene in Cardiff during 2012.

#### 2.2.5 Other Pollutants Monitored

During 2012 monitoring for lead, ozone and carbon monoxide was carried out in Cardiff. Details are in the following sections.

##### 2.2.5.1 Lead

Lead continues to be monitored at the Cardiff Llandaff and Cardiff Rumney sites by NPL. The Cardiff Llandaff site is located at the junction of Waungron Road and Western Avenue. The Cardiff Rumney site became operational during 2008 and is located at Greenway Primary School. At the time of writing, ratified data for 2011 was available for both sites, but data for 2012 was classified as “provisional” and therefore subject to possible revision at a later date.

Site	2011( $\mu\text{g}/\text{m}^3$ )	2012( $\mu\text{g}/\text{m}^3$ )
Cardiff Llandaff	0.011584	0.007414
Cardiff Rumney	0.009054	0.008243

The Objective is  $0.25\mu\text{g}/\text{m}^3$  and, as in previous years, was comfortably achieved, the highest value in the table above being less than  $1/20^{\text{th}}$  of the standard.

There continues to be no risk of the National Air Quality Standard being exceeded.

##### 2.2.5.2 Carbon Monoxide

Carbon monoxide was monitored at Cardiff Centre AURN during 2012.

Data capture at for the whole year at the Cardiff Centre AURN site was 91.81% and there was no exceedences of the Objective.

There continues to be no risk of the National Air Quality Standard being exceeded.

##### 2.2.5.3 Ozone

Ozone was monitored at Cardiff Centre AURN during 2012.

During 2012 the data capture was 92.16%. There were 58 measured exceedences of the Air Quality Standard (8hr running mean  $> 100\mu\text{g}/\text{m}^3$ ) over 7 days. The Objective was met as the measured exceedences occurred on not greater than 10 days.

Ozone is considered to be a transboundary pollutant. Control measures are implemented at national rather than local level and therefore ozone falls outside the LAQM regime.

### 2.2.6 Summary of Compliance with AQS Objectives

Cardiff Council has measured concentrations of nitrogen dioxide above the annual mean objective at relevant locations outside of its four AQMAs and **will need to proceed to a Detailed Assessment** for residential accommodation in the vicinity of the Fair oak Road/Ninian Road roundabout.

## **3 New Local Developments**

### **3.1 Road Traffic Sources**

Cardiff Council has considered these locations in earlier reports and has used its monitoring network to measure concentrations of nitrogen dioxide in many of them. These have been considered either in earlier reports or discussed earlier in this report.

New monitoring sites have been commissioned at the start of 2012 and additional sites are planned for commissioning at the start of July 2012.

There are no newly identified locations which need to be specifically considered.

### **3.2 Other Transport Sources**

There are no new other transport sources which need to be considered.

### **3.3 Industrial Sources**

There are no new or proposed industrial sources since those discussed in the 2012 Updating and Screening Assessment which are of significance in terms of air quality.

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

No large combustion plants burning biomass materials, no known service sector biomass boilers and no community heating schemes using biomass boilers have been identified since the 2012 USA. No residential areas with extensive solid fuel heating have been identified in previous reports.

It is not necessary to consider this further at this time. However, the Council is aware of the potential impact of biomass burning and will be keeping a register of such plant and installations for which planning approval is granted.

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

There are no new locations where fugitive could occur which have not been covered by previous rounds of review and assessment and no locations where new relevant exposure has been introduced to existing locations.

It is not considered necessary to consider this further at this time.

Cardiff 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.

Cardiff 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 Local / Regional Air Quality Strategy

The Council published its local air quality strategy “A Framework for the Future, 2003 – 2010” in October 2003. The Strategy recognised that the Council has the major role in securing improvements in local air quality in Cardiff and, in consequence, improved health and quality of life for those who live and work in the City.

The Strategy recognised the importance of bringing together the Council’s policies, strategies and plans as they may influence or affect air quality and recognises the importance of committing both the Council and other significant organisations to secure low air pollution levels in the city in the long term.

The Strategy detailed a number of commitments for the Council in this regard and these are summarised below:

1. The Council would continue to control local sources of air pollution using available environmental and enforcement powers, local planning controls and traffic management systems.
2. The Council would continue to ensure that its statutory responsibilities in respect of air quality continue to be addressed in all relevant aspects of the Council’s local policy framework.
3. The Council would continue to measure levels of key pollutants in the atmosphere using techniques and methodologies such that the data obtained may be compared to the air quality Objectives. The Council will undertake to ensure that the monitoring data is available within the public domain using the Council’s internet website.
4. The Council would continue to implement the Local Air Quality Management regime and periodically review and assess air quality in its area according to statutory requirements and according to guidance from central government and the devolved administrations. The Council will develop Air Quality Action Plans as necessary and will work towards meeting the air quality Objectives.
5. The Council would continue to operate, maintain and augment its vehicle fleet with low-emission vehicles wherever practicable.
6. The Council would review this Strategy from time-to-time as appropriate to ensure that it is both factually accurate and reflective of national and local developments in air pollution knowledge, control, measurement and good practice.

It is recognised that the Strategy is overdue for review and this will be considered once the Council’s Local Development Plan is in place. However, the commitments outlined above remain in place.

## 5 Planning Applications

No planning applications for developments of potential significance with regard to local air quality have been received or approved since the 2012 Updating and Screening Assessment.

The Council continues to monitor the impact of recent developments already underway or in use and the nitrogen dioxide diffusion tube monitoring network will be expanded to include residential properties in the Tremorfa area from July 2013. This is to measure the impact (if any) from both on-site emissions and road traffic resulting from the proposed Viridor Energy from Waste plan discussed in previous reports.

The air quality impact assessment submitted with the application for planning consent did not raise cause for concern in this regard.

## 6 Air Quality Planning Policies

As advised in earlier reports, Cardiff's LDP was withdrawn during 2010 and the Council is currently working on a new LDP for Cardiff which will set out the Council's objectives and priorities for the development and use of land in Cardiff over the plan period. The plan is being prepared in partnership with the local community and will aim to promote sustainable development.

It is intended that the plan will:

1. Identify where new housing , community facilities and employment should be provided
2. Explain future transport policies
3. Explain how Cardiff's natural and built environment will be protected
4. Identify which areas will be priority for improvement

The former Unitary Development Plan remains as the reference document Policy 2.64 deals with air quality and states that development will not be permitted that would cause unacceptable harm to health and local amenity because of air, noise or light pollution.

The purpose of Policy 2.64 is to ensure that:

1. developments that would generate unacceptable levels of air quality, noise or light pollution are appropriately located and controlled having regard to the impact that they can have on housing areas, other developments that are sensitive to such impacts, the character and quality of the countryside and areas of nature conservation importance; and
2. incompatible land uses and the development are not located close to potential sources of pollution.

## 7 Local Transport Plans and Strategies

The Local Transport Plan (LTP) 2000 - 2016 included a range of measures common to all parts of Cardiff which will have an impact upon traffic movements, growth and emissions (and hence air quality). These included measures to promote the use of alternative modes of transport to the private car such as:

- include the creation of an Express/Core Bus Network
- GPS-based bus shelter information and improved junction priorities
- rail system improvements including the creation of a “City Circle” rail loop by the joining of Coryton and Radyr Stations
- developing the local cycle-route network
- enhanced potential for developing walking-based travel
- strategies for powered two-wheelers and air travel
- a study into an ULTra (Urban Light Transport) system
- traffic management and demand restraint
- intelligent transport systems (transport telematics)
- capacity reallocation
- other measures (e.g. green transport plans, clear zones, etc)
- integrated transport measures (park & ride, etc)

Cardiff's Local Transport Plan (LTP) has been replaced with a Regional Transport Plan for South East Wales. The progress of the RTP will be monitored by the South East Wales Transport Alliance (Sewta). Cardiff Council will continue to produce an APR focusing on transport developments within the city.

The Council has published an Annual Progress Report (APR) for Transport each year since 2002. These are available here:

[http://www.cardiff.gov.uk/content.asp?nav=2870,4048,4188,4242&parent\\_directory\\_id=2865](http://www.cardiff.gov.uk/content.asp?nav=2870,4048,4188,4242&parent_directory_id=2865)

At the time of writing the APRs are available up to and including 2011.

## 8 Climate Change Strategies

The Council published the “Carbon Lite Cardiff Action Plan” in June 2010 and this can be downloaded from here:

*[http://www.cardiff.gov.uk/objview.asp?object\\_id=16964](http://www.cardiff.gov.uk/objview.asp?object_id=16964)*

The Plan was developed in partnership with other major employers and organizations in the city. The Action Plan includes both mitigation measures (reducing our emissions) and adaptation actions (preparing for likely changes). The purpose of this Plan is to ensure that all those who play a part in the city are aware of the challenges afforded by climate change and are galvanized into action by means of a central guiding plan

## 9 Implementation of Action Plans

There were three AQMAs in Cardiff at the end of 2012, namely:

- St Mary Street AQMA
- Ely Bridge AQMA
- Stephenson Court AQMA

On 1<sup>st</sup> April 2013 the Council varied the St Mary Street AQMA to include residential accommodation in Westgate Street; the AQMA was renamed to “Cardiff City Centre AQMA”. This AQMA encompasses the whole of the area of the former St Mary Street AQMA and added Westgate Street to it. The Council also declared the “Llandaff AQMA” on that date. Both of these are as a result of road –traffic derived nitrogen dioxide (annual mean concentration).

Therefore, at the time of writing, there are four AQMAs in Cardiff, all for road-traffic derived nitrogen dioxide (annual mean):

- Ely Bridge AQMA (1<sup>st</sup> Feb 2007)
- Stephenson Court (1<sup>st</sup> December 2010)
- Cardiff City Centre AQMA (1<sup>st</sup> April 2013)
- Llandaff AQMA (1<sup>st</sup> April 2013)

An Action Plan for the former St Mary Street AQMA was adopted in February 2010 and the measures therein have been fully implemented. Essentially, the plan was to create a pedestrian-friendly environment. The works have been completed and monitoring remains in place to fully assess the effect.

The Stephenson Court AQMA came into force on 1<sup>st</sup> December 2010. There is no formal Action Plan as yet for this AQMA. However, plans have been designed to remodel the adjacent junction and the feasibility of moving the bus stops which are adjacent to the residential accommodation is being investigated. An application for funding has been made and the viability of the planned junction alterations and other changes are dependent upon this.

The Cardiff City Centre and Llandaff AQMAs are very recent and, as might be expected, there are no Action Plans in place. Further Assessments are due for both of these areas by 1<sup>st</sup> April 2014.

## 9.1 Ely Bridge Action Plan

The Ely Bridge AQMA is centred upon the north-western end of Cowbridge Road West (known locally as Ely Bridge).

Cowbridge Road West is a dual-carriageway road linking Culverhouse Cross to the south-west with Western Avenue and Cowbridge Road East to the north-east. It is heavily trafficked during the daytime, both during weekdays and at weekends, as it provides one of the principal routes into and out from the city centre from the A4232 Peripheral Distributor Road (PDR) and The Vale of Glamorgan to the west of Culverhouse Cross.

Towards the south-west, the road link is relatively open in aspect and traffic is free-flowing in the main. The whole length of Cowbridge Road West is subject to a 30mph speed limit and this is enforced by permanently located speed cameras at a number of points.

Within the AQMA there are terraced residential properties just a footpath's width from the kerb and there is significant localised traffic congestion adjacent to these properties. The free-flow of traffic is adversely affected by light-controlled junctions at Mill Road and Riverside Terrace and an on-demand light-controlled pedestrian crossing adjacent to these junctions. There is also a junction with Colin Way adjacent to the AQMA on the south-bound side of the carriageway.

The Ely Bridge AQMA came into force on 1<sup>st</sup> February 2007. An Action Plan for this AQMA was adopted in February 2009 following review of an earlier Action Plan for the former Cardiff West AQMA. The review concluded that there were no additional measures available for the Ely Bridge AQMA other than those which were in the former Action Plans and these drew heavily on traffic and emission reduction measures contained in the Local Transport Plan (LTP).

The LTP has a number of key themes:

- Widening Travel Choices
- Managing Travel Demand
- Network Management

The Council Produces Annual Progress Reports (APR) for the implementation of the measures Contained in the LTP. There are available online here:

[http://www.cardiff.gov.uk/content.asp?nav=2870,4048,4188,4242&parent\\_directory\\_id=2865](http://www.cardiff.gov.uk/content.asp?nav=2870,4048,4188,4242&parent_directory_id=2865)

At the time of writing the latest APR available is for 2011. Appendix 2 contains contains tables detailing progress with regard to implementing the LTP

## **10 Conclusions and Proposed Actions**

### **10.1 Conclusions from New Monitoring Data**

Monitoring data for 2012 in conjunction with data from 2008 onwards indicates a need to proceed to a Detailed Assessment for road-traffic derived nitrogen dioxide in the vicinity of the Fair oak Road roundabout

It is anticipated that this will be produced in addition to the 2014 Progress report.

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

There are no new developments identified as having significance for local air quality.

### **10.3 Other Conclusions**

There are no other conclusions to be drawn from the information provided herein.

### **10.4 Proposed Actions**

As a result of the information provided herein it is proposed to

1. Commission additional nitrogen dioxide diffusion tube monitoring sites in and around the Tremorfa area in July 2013
2. Proceed to a Detailed assessment for nitrogen dioxide in and around the Fair oak Road roundabout
3. Produce further Assessments in respect of the Cardiff City Centre and Llandaff AQMAs
4. Submit a Progress Report in 2014.



## 11 References

1. Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138)
2. Air Quality (Amendment)(Wales) Regulations 2002, No. 3182 (Wales 298)
3. The County Council of the City and County of Cardiff (The Philog Air Quality Management (NO<sub>2</sub>)) Order 2000
4. The County Council of the City and County of Cardiff (The Newport Road Air Quality Management (NO<sub>2</sub>)) Order 2000
5. The County Council of the City and County of Cardiff (The Cardiff West Air Quality Management (NO<sub>2</sub>)) Order 2000
6. The County Council of the City and County of Cardiff (The St Mary Street Air Quality Management (NO<sub>2</sub>)) Order 2002
7. The County Council of the City and County of Cardiff (Ely Bridge Air Quality Management (NO<sub>2</sub>)) Order 2007
8. The County Council of the City and County of Cardiff (Stephenson Court Air Quality Management (NO<sub>2</sub>)) Order 2010
9. The County Council of the City and County of Cardiff (Cardiff city Centre Air Quality Management (NO<sub>2</sub>)) Order 2013
10. The County Council of the City and County of Cardiff (Llandaff Air Quality Management (NO<sub>2</sub>)) Order 2013
11. Cardiff Council 2003 Updating and Screening Assessment
12. Cardiff Council 2004 Progress Report
13. Cardiff Council 2005 Progress Report
14. Cardiff Council 2006 Updating and Screening Assessment
15. Cardiff Council 2007 Progress Report
16. Cardiff Council 2008 Progress Report
17. Cardiff Council 2009 Updating and Screening Assessment
18. Cardiff Council 2010 Progress Report
19. Cardiff Council 2011 Progress Report
20. Cardiff Council 2012 Updating and Screening Assessment
22. Cardiff Council Detailed Assessment for Stephenson Court
22. Cardiff Council 2012 Further Assessment for Stephenson Court
23. Cardiff Local Transport Plan 2000-2016
24. Cardiff Annual Progress Report for Transport 2009
25. Regional Transport Plan for South Wales
26. Cardiff Council Ely Bridge Air Quality Action Plan 2009
27. Cardiff Council St Mary Street Air Quality Action Plan 2010
28. Cardiff Council Detailed Assessment for Llandaff
29. Cardiff Council Detailed Assessment for Westgate Street

# Appendices

## Appendix 1 2012 NO<sub>2</sub> Diffusion Tube Monitoring Data

Cardiff Council

DATE	16	33	44	45	47	49	56
2012							
JAN	39	57	66		62	45	48
FEB	38	72		54	55	44	52
MAR	43	60		51	63	35	48
APR	33	57	45	39			35
MAY	25	42	26	29		26	21
JUN	27	41	30	33	41	27	26
JUL	28	51	30	38	<2	31	31
AUG	38	66	31		117	27	37
SEP	33	53	34	39	38	39	34
OCT	39	60	44	49	64	37	48
NOV	48	70	52	54		33	50
DEC	40	66	47	42	55	36	43
AVE	35.9	57.9	40.5	42.8	61.9	34.5	39.4

DATE	58	73	74	81	82	85	86
2012							
JAN	35	40	61	60	43	63	57
FEB	85	32	71	61	37	31	58
MAR	47	40	72	52	45	34	55
APR	52	28	51	51	34	33	44
MAY	43	24	41	32	24	24	32
JUN	56	19	46	37	22	20	35
JUL	67	20	55	42	22	23	43
AUG	65	23	61	39	25	27	40
SEP	56	24	54	46	25	24	46
OCT	69	37	65	50	41	34	46
NOV		38	65	50	43	34	55
DEC	58	33	58	46	36	34	52
AVE	57.5	29.8	58.3	47.2	33.1	31.8	46.9

## Cardiff Council

DATE	96	97	98	99	100	101	102
2012							
JAN	53	52	40	52	44	40	41
FEB	47	48	34		40	34	34
MAR	51	52	38		42	27	31
APR	42	42	32		39	26	29
MAY	30	30	29	43	28	25	21
JUN	25	35	25	28	31	19	21
JUL	30		25	28	32	25	22
AUG	37	36	31	32	42	24	24
SEP	39		26	34	38	28	25
OCT	44		20	49	41	40	43
NOV	50	54	40	52	49	36	36
DEC	46	47	36	43	44	36	36
AVE	41.2	44.0	31.3	40.1	39.2	30.0	30.3

DATE	103	106	107	111	112	115	117
2012							
JAN	39	49	52	34	43	50	56
FEB	35	48	49	24	36	47	49
MAR	33	46	56	40	39	50	62
APR	26	40	45	23	37	42	44
MAY	24	24	35	27	28	32	50
JUN	18	30	33	20	25	34	44
JUL	22	34	36	20	30	35	37
AUG	24	42	33	25	31	44	50
SEP	27	37	41	20	35	40	41
OCT	42	48	48	34	41	45	
NOV	34	56	50	35	42	57	56
DEC	36	44	46	29	40	50	55
AVE	30.0	41.5	43.7	27.6	35.6	43.8	49.5

Cardiff Council

DATE	119	124	126	128	129	130	131
2012							
JAN	46	36		46	51	59	58
FEB		31	51	42	52	64	66
MAR	44	36	46	50	51	56	63
APR	37	29	44	39	38	53	53
MAY	36	26	39	33	27	34	40
JUN	29	23	44	31	31	41	44
JUL	33	21	46	32	32	39	51
AUG	36	28	51	39	32	40	
SEP	32	23	49	35	35	50	59
OCT	50	32	57	44	44	54	56
NOV	45	37	37	54	47	52	63
DEC	43	33		44	47	37	60
AVE	39.2	29.6	46.4	40.8	40.6	48.3	55.7

DATE	133	134	139	140	141	142	143
2012							
JAN	58	53	48	48	59	63	
FEB	55		39	45	57	57	53
MAR	60	40	51	63	51	50	40
APR	42	42	44	49	48	51	45
MAY	35	32	37	43	36	51	40
JUN	30		28	42	24	47	47
JUL	39		26	34		52	50
AUG	36	39	33	53	33	52	49
SEP	45	40	31	40	49		53
OCT	42		42	51	51	66	58
NOV	54	49	53	61	58	58	
DEC	52		47	53	51	62	
AVE	45.7	42.1	39.9	48.5	47.0	55.4	48.3

Cardiff Council

DATE	144	145	146	147	148	149	151
2012							
JAN	45	44	40	37	33	38	44
FEB	55	48	37	34	32	40	
MAR	35	44	38	43	38	45	51
APR	43			40	40	44	
MAY	35	30	34	33	30	29	29
JUN	44	32	25	29	27	31	25
JUL	46	31	24	28	22	36	30
AUG	43	38	32	35	31	36	
SEP	50		28	30	26	39	
OCT	50	43	33	40	35	37	42
NOV	51	44	44	42	37	43	50
DEC	53		42	41	36	43	49
AVE	45.8	39.3	34.3	36.0	32.3	38.4	40.0

DATE	152	153	156	157	158	159	160
2012							
JAN	42	50	46	45	46	51	44
FEB	42	47	37	47	36	49	39
MAR	56	52	50	46		62	35
APR	38	40	42	35	32		36
MAY	33	33	38	24	27	39	27
JUN	26	30	27	27	23	37	29
JUL	29	36	26	31	22	40	37
AUG	32	38	30	32	28	44	34
SEP	32	41	30	33	27	41	35
OCT	40	44	41	34	42		44
NOV	44	47	45	45	45	55	36
DEC	40	47	43	43	40		42
AVE	37.8	42.1	37.9	36.8	33.5	46.4	36.5

DATE	161	162	163
2012			
JAN			
FEB	66	33	38
MAR	89	41	34
APR	57	33	33
MAY		28	24
JUN	29	28	24
JUL	36	28	25
AUG	37	30	28
SEP	42	29	27
OCT	46	36	35
NOV	48	40	42
DEC		38	42
AVE	50.0	33.1	32.0

**Appendix 2**  
**LTP APR Implementation Tables**



## Appendix A: Implementation Progress 2009/10 and 10/11 and Rolled Forward Implementation Programme 2010/11–2015/16

Key:						
Reference		Funding Source:		Reference		Funding Source:
LA Capital		Local Authority capital		TG.		Transport Grant
LA Revenue		Local Authority revenue		WG		Welsh Government
RTC Grant		Regional Transport Consortia Grant		SRiC		Safe Routes in Communities
STC Capital		Sustainable Travel City Capital		P		Private Company
STC Revenue		Sustainable Travel City Revenue		O.		Other
ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>THEME A: WIDENING TRAVEL CHOICES</b>					
	<b>TOPIC: A1 WALKING IMPROVEMENTS</b>					
A1.1	<b>Walking Strategy &amp; Schemes</b>	See individual project entries for update of Walking Schemes.	See individual project entries for update of Walking Schemes.	Walking Strategy will continue to be monitored and reviewed.	Various funding sources for Strategy Schemes.	1,2,3,4,5
A1.2	<b>Pedestrian Improvement Schemes</b>	4 pedestrian crossing schemes implemented in 2009/10	10 pedestrian crossing schemes implemented in 2010/11	Implement two pedestrian improvement schemes 2011/12. Implement the highest ranking of the remaining schemes 2012-17. (24 schemes currently on the waiting list with a value of about £1.5 Million)	LA capital, Regional Transport Consortium Grant.	1,2,3,4,5
A1.3	<b>Centenary Walk (formerly City Centre Prestige Walk)</b>	<b>Scheme complete</b>	<b>Scheme complete</b>	<b>Scheme complete</b>	No funding required for capital works.	2,3,4

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A1.4	<b>Implementation of Public Rights of Way Improvement Plan (ROWIP)</b>	The (ROWIP) has now been in operation for two years. This strategic document is detailed as having a ten year existence. As such, the tasks detailed within the document will continue to be rolled out in accordance with their time-frame and available resources. Particular attention will be applied to the updating of the definitive map, publicity/promotional measures and appropriate maintenance and enforcement procedures. This year's tasks will include the establishment of a promoted circular walk in the Pentyrch area, implementation of a shared path code of conduct in Hailey Park, continued progression of the All Wales Coast Path and the establishment of a volunteers database.	The Rights of Way Improvement Plan (ROWIP) has been in operation since 2008. The document has a ten year life span and tasks detailed within the document remain relevant.	The ROWIP document is valid until 2018 and is subject to a three year cycle business plan. The ROWIP is currently undergoing its first review of the business plan. An assessment will be made of the progress and tasks undertaken within this first cycle and any amendments/modifications documented.	Funding is obtained from the following sources: <ul style="list-style-type: none"> <li>• Local Authority revenue;</li> <li>• Welsh Government grant administered via Countryside Council for Wales;</li> <li>• 'Countryside on your Doorstep' programme, administered by the Council's Strategic Planning (Countryside) Team;</li> <li>• Charitable Organisations.</li> </ul>	4
A1.5	<b>St Mary St/High St Improvement Scheme</b>	Design and statutory procedures for the creation of a pedestrian friendly environment in High Street.	High Street scheme and part of St Mary Street scheme implemented.	Scheme complete.	Part of Capital Programme	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A1.6	<b>Cardiff Walking for Health Scheme</b>	There are currently 13 weekly walks in the city. Throughout 2009/10 a further 58 Walk leaders were trained for Cardiff and an additional 134 walkers joined the scheme. Seasonal joint walks have been held and newsletters have been produced.	There are currently 13 weekly walks in the city. Seasonal joint walks have been held and newsletters have been produced.	To take forward the current programme of walks. To work towards turning some of the walks into independent walking groups. To assist in developing walking across the city with a wide range of partners.	Funding will now continue until March 2013 (£15,000 per year). This funding will sit within the LAPA.	1,3
A1.7	<b>Strategic Recreational Routes (see also A1.8)</b>	Further sections of Ely trail completed. Re-surfacing of Dunleavy Drive to Penarth Road section and new Toucan Crossing installed on Penarth Road. Missing link remains across Paper Mill site which is awaiting redevelopment.	Additional route signing, new crossing at Clarence Road, resurfacing of off road section adjacent to Ty Mawr Road, lighting improvements and other minor works. Improved signing of interim route avoiding Paper Mill site. Alternative route to section of planned Ely trail investigated. Bay Trail completed. Map produced. Taff-Ely Trail link route identified.	Taff Trail improvements planned for 2011/12 include additional signing from local destinations and Taff Embankment/Penarth Road crossing improvement (phase 1). Ely Trail improvements planned for 2011/12 include a bike ramp on railway bridge (as part of temporary alternative route) and feasibility work and investigation of the relocation of the barrage bridge to cross the Ely to Trelai Park. Bay Trail improvements planned for 2011/12 include additional signage from the city centre to the Bay Trail and additional signage on the route itself. Taff Trail-Ely Link schemes are required to be packaged into sections of route	LA Capital	1,4

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A1.8	<b>Coastal Access Route</b>	Funding secured from CCW to undertake a feasibility study and approved assessment of the proposed route of the coastal path.	Following the completion of the feasibility study, ground work has commenced on several sections of the proposed route of the Cardiff Coastal Path.	The development of the Cardiff Coastal Path is being progressed to link in with sections in Newport and the Vale of Glamorgan.	Funding is obtained from the following sources: • Countryside Council for Wales; • Welsh Government.	1,2,4
	<b>TOPIC: A2 CYCLING IMPROVEMENTS</b>					
A2.1	<b>Cycling Strategy</b>	See individual project entries for update of Cycling Schemes.	See individual project entries for update of Cycling Schemes.	Development of 5 year programme to deliver cycling improvements to and across the city centre. Development of a Strategic Cycle Network Plan. Enfys agreed as cycle network name.	LA Capital. STC Funding	1,2,3,4,5
A2.2	<b>City Centre Cycle Route Study</b>	Consultants engaged by the City Centre Team have produced an initial report identifying potential routes to and through the City Centre.	Report reviewed as part of Strategic Cycle Network Development Plan	Key schemes within city centre to be progressed as part of 5 year programme. Further work to be carried out re: cycling in pedestrianised areas such as Queen Street.	LA revenue.	1,2,3,4,5
A2.3	<b>Cycle Audit Procedure</b>	Continued to carry out cycle audits on traffic management/highway schemes.	Ongoing	Ongoing	Incorporated as part of works programme.	2

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A2.4	<b>Strategic Cycle Network</b>	Schemes undertaken in 2009/10 include contraflow facility between Adam Street and Churchill Way via Guildford Crescent, upgrading of path on east side of North Road between College Road and Boulevard de Nantes, Phase 1 of North Cardiff Community Route between A469 and Heol Hir Thornhill, Toucan Crossing at Penarth Road on the Ely Trail and upgrading of the Ely Trail between Penarth Road and Dunleavy Drive.	Strategic Cycle Network Plan developed. Concept design, consultation, detailed design, and prioritised programme of implementation for 2010/11 developed.	Strategic Cycle Network to be presented at Executive Business Meeting in September 2011 for approval. 5 year programme to be based on routes/schemes identified in Strategic Cycle Network Plan.	LA capital, P.	1,2,3,4,5
A2.6	<b>Cycle Stands Implementation Programme</b>	New cycle stands installed in city centre and Cardiff Bay	Cycle stand locations identified across district centres throughout the city. Over 100 new stands installed.	Additional sites to be identified across the city. Necessary surveys to be undertaken and stands to be installed. Ongoing programme. Specific budget to be allocated to cycle parking year on year.	WG TG and LA Capital	1,2,3,4,5
A2.7	<b>River Ely Cycle/Footbridge, Cogan Railway Station (Pont y Werin scheme)</b>	Project near completion. Official opening Summer 2010.	Pont y Werin completed and opened. Initial monitoring demonstrates pedestrian and cycle use is increasing.	Continued monitoring and analysis of cycle use on the Pont y Werin	Lottery & LA capital and WG TG	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A2.8	<b>Cardiff Bike Scheme</b>	Scheme launched in September 2009	Following scheme launch in September 2009 work has been progressing to expand the scheme to cover more sites and provide additional cycles. Scheme now provides 18 locations, 50 rental stations and 100 bikes. Scheme sponsorship continued in second year.	Work with operators to maintain and develop scheme.	WG STC Grant	1,2,3,4,5
A2.9	<b>Bike It</b>	Scheme launched in September 2009	The scheme works with 18 schools in Cardiff, helping pupils overcome barriers to cycling to school. The first year of the Bike It scheme (September 2009 - July 2010) achieved 30% of pupils cycling to school once a week up from 11% before the project started and 13% of pupils cycling every day up from 3%.	The Bike It scheme is intended to work with 6 additional Bike It schools in 2011/12 (24 in total). The continuation of the Bike It scheme in Cardiff is subject to the availability of funding.	WG Revenue	1,2,3,4 and 5
<b>TOPIC: A3 BUS IMPROVEMENTS</b>						
A3.1	<b>City Centre Transport Interchange</b>	This will be taken forward as part of the redesign of the area around Central Station. A planning application will be made in October 2010 and work is expected to commence in April 2011.	This will be taken forward as part of the redesign of the area around Central Station.	The overall design of new bus facilities will be included in the new arrangements for the area around Central Station. However arrangements in the rest of the city centre will have a bearing on the final facility.	Not known	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A3.2	<b>Bus Priority Hub</b>	Implementation of Bus Box Measures.	Implementation of Bus Priority Hub Measures in Station Terrace, Castle Street/Kingsway, North Road and Churchill Way (lower)	Continued implementation of Bus Priority Hub	STC Funding/Other Funding Sources	1,2,3,4,5
A3.3	<b>Core Bus Network: A470 Bus Priority Measures</b>	TG funding obtained to model and design section from Parkfield Place Junction to Gabalfa Interchange and Pantmawr Rd to Tyn-y-Parc Rd sections, together with start of on-site of works	TG funding obtained to model and design section from Pantmawr Rd to Tyn-y-Parc Rd sections, together with start of works on site.	Future bids to be made via Sewta for TG funding.	Business Plan indicates (ECO5/5) TG and General Capital Funding for this. TG as indicated by the Business Plan 2007/10 - Table 5.1a.	1,2,3,4,5
A3.4	<b>Core Bus Network: A469 Bus/Cycling/Walking Priority Measures</b>	Scheme on hold for foreseeable future. No change	Scheme on hold for foreseeable future. No change.	Scheme on hold. No funding.	Business Plan indicates (ECO5/5) TG Funding for this.	1,2,3,4,5
A3.5	<b>Core Bus Network: Cowbridge Road East and West Bus Priority Measures (Western Corridor)</b>	TG funding obtained to model western corridor junctions approaching the city centre	TG funding obtained to model western corridor junctions approaching the city centre.	Future bids to be made via Sewta for TG funding for both design and implementation.		
A3.6	<b>Core Bus Network: Newport Road (out to St Mellons) Bus Priority Measures</b>	Detailed design completed for sections to Southern Way junction, except for Clifton St to Albany Rd section. Bus lanes implemented	Detailed design completed for sections to Southern Way junction, except for Clifton St to Albany Rd section. Bus lanes implemented.	Remainder of scheme on hold.	LA capital.	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A3.7	<b>Core Bus Network: Pontprennau Corridor Bus Priority Measures</b>	No change	No change.	No change.	TG funding sought.	1,2,3,4,5
A3.8	<b>Core Bus Network: Leckwith Corridor Bus Priority Measures</b>	No change	No change.	No change.	TG funding sought.	1,2,3,4,5
A3.9	<b>Cogan Corridor (Penarth Rd) Bus Priority Measures</b>	No change	No change.	No change.	TG funding sought.	1,2,3,4,5
A3.10	<b>Infrastructure Improvements to Bus Services (stops, shelters, boarders)</b>	15 new bus shelters installed. 12 new bus boarders provided.	10 new bus shelters installed. 17 new bus boarders provided.	Aspiration to provide 3 new bus shelters per annum, over the 3 years remaining on the street furniture agreement and 10 new bus boarders per annum.	LA capital, TG, P.	1,2,3,4,5
A3.11	<b>Supported Bus Services Review</b>	Reviewed on ongoing basis. Services with poorest value terminated April 2010	Reviewed on ongoing basis.	Reviewed on ongoing basis.	LA revenue.	1,2,3,4,5
A3.12	<b>Local Bus Strategy</b>	No change	No change	Continue implementation through RTP.	LA revenue, Sewta.	1,2,3,4,5
A3.13	<b>Bus Quality Partnerships</b>	Implementation delayed due to slippage in works.	Implementation delayed due to slippage in works.	First phase to be agreed.	LA revenue and capital.	1,2,3,4,5
A3.14	<b>Cardiff Smartcard Project</b>	New arrangements with WG back office in place. New cards issued.	No change.	No change.	WG to fund concessions for elderly/disabled people. LA revenue to fund student concession scheme.	1,2,4



ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>TOPIC: A4 RAIL IMPROVEMENTS</b>					
A4.1	<b>Queen St Station Capacity Improvements (Sewta)</b>	Now WG scheme, stakeholder meetings to establish scope of works/interface with Cardiff Area Signalling Renewal to take place.	No change (pending new Government's spending review).	To be progressed by WG through Network Rail. Timescale to be confirmed.	Direct funding from WG to Network Rail.	1,2,3,4,5
	<b>TOPIC: A5 PARK AND RIDE</b>					
A5.2	<b>Leckwith Park and Ride</b>	Commenced operation October 2009	Commenced operation October 2009.	Further phases of construction, subject to funding. Revenue opportunities to be explored.	P.	1,2,3,4,5
A5.3	<b>Detailed proposals and designs for Park and Ride at ISV and IKEA</b>	Funding allocated in Regional Transport Plan 5 year programme for development of facilities to support Park and Ride operations at ISV and IKEA	Feasibility study completed in March 2010 recommended that support should be given to park and ride facilities in the Vale of Glamorgan first to intercept traffic	Sites will be developed for delivery in the Vale of Glamorgan and RCT through Sewta. These will be managed and developed via instruction from WG. Sites identified for development within the RTP five year programme.	WG TG	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>TOPIC: A6 POWERED TWO WHEELERS</b>					
A6.1	<b>Powered Two Wheelers Parking Needs Study</b>	On street parking bays in the city centre are being reviewed and relocated as a consequence of the proposed "bus box".	On street parking bays in the city centre are being reviewed and relocated as a consequence of the proposed "bus box".	Once locations have been finalised, bays will be marked out and provided with security locking rails. The web site page for motorcycling will be updated accordingly.	LA revenue, P.	2,4,5
	<b>TOPIC: A7 TAXIS AND PRIVATE HIRE</b>					
A7.1	<b>City Centre Taxi Rank Accessibility Improvements</b>	The strategy for taxi rank facilities is being reviewed in liaison with the Hackney Association and the Access Focus Group. A shelter is being installed at the Capital Tower rank on Greyfriars Road to promote this rank and improve waiting facilities.	The daytime ranks in the city centre have now been agreed at Officer / Executive Member level.	Types of vehicles to be reviewed with the licensing department to ensure that the fleet meet the requirements from a DDA point of view. Night time requirements for ranks will be reviewed. The Central Square scheme with the new bus station will review the taxi facilities there to ensure that the new scheme provides adequate provision for the numbers of taxis currently observed in the area and also required to facilitate the demand.	LA revenue.	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>TOPIC: A8 PASSENGER AND WATER TRANSPORT</b>					
A8.1	<b>Cardiff Bay Infrastructure Development: Moorings, Water Taxi Landing Stages, Slipways.</b>	Water Transport has not been progressed because the tenders that were received were unaffordable.	No further updates.	No further updates.	WG, P (Aquabus, Cardiff Cats).	3,4,5
	<b>TOPIC: A10 RAPID TRANSIT</b>					
A10.3	<b>Options for the Replacement of Herbert St Bridge and Rail Link to Cardiff Bay Station</b>	No progress made.	No progress made.	No further updates.	WG.	4,5
	<b>TOPIC: A11 ACCESSIBLE TRANSPORT</b> (incl. Community Transport and Transport for the Mobility Impaired)					
A11.1	<b>Ring and Ride Service Extension Countywide</b>	No change.	No change.	No further update.	Part LA revenue, part LTSG.	1,2,4

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A11.2	<b>Shopmobility Scheme</b>	The organisation continued to provide a wheelchair hire service for visitors to Cardiff city centre	The organisation continued to provide a wheelchair hire service for visitors to Cardiff city centre.	To continue to provide the service.	Charity-led service supported by Cardiff Council via LA revenue. and other sources of private funding (fundraising, bequests, sponsorship and user charges).	3,4
A11.3	<b>Transport Support and Services for Learners aged 16-19: Preparation of Transport Policy Statement and Implementation of Associated Projects</b>	Transport Policy Statement is to be update. From June 2010 onwards The School Transport Team are taking over responsibility for the 16+ passport to Travel Scheme.	Transport Policy Statement is being updated for 2010/11. From June 2010 onwards the School Transport Team has taken over responsibility for the 16+ Passport to Travel Scheme.	Review and update statement as necessary.	LA revenue.	1,4

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A11.4	<b>Review of school transport</b>	All Home to School Transport Contracts have been reviewed and the majority have been re-allocated using the School Transport Framework system. The remaining contracts will be re-allocated as they expire. The 2 WLGA/WG funded projects are underway, the main project to Travel Train pupils so that they can independently travel to school currently has a number of pupils undertaking the training. The Vehicle Utilisation project is also underway and has started to centralise the administration of DART transport.	The WLGA funded project to Travel Train pupils with Statements for SEN so that they can travel independently is continuing and has been rolled out to more Schools from September 2010 onwards. This project has recently recruited a Travel Trainer to ensure all pupils in Cardiff have the opportunity to access training.	Following the creation of the Central Transport Service, and as part of the WLGA/WG funded project to look at vehicle utilisation, all passenger transport undertaken by the Council is being reviewed and the administration is being centralised around the School Transport Team which will become the Passenger Transport Team. The Adult Services Transport and Children's Services are due to be centralised by April 2011, followed by 14-19 Alternative Curriculum Transport in July 2011. In addition a hire desk will be created/centralised by April 2011 for Council Departments to hire vehicles that require a driver. In November 2011 a new Framework Agreement will be tendered ready for September 2012.	LA revenue. WLGA/WG.	1,3,4

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	<b>TOPIC: A12 DRIVER CHOICES</b>					
A12.1	<b>Council's Journey Sharing Scheme</b>	The scheme had 1333 members on March 31st 2010 with 553 members in 260 car journey groups. The scheme had 416 Council employees registered. This represents a 15.6% decrease on the March 2009 (416) baseline. This is largely due to a review of members and the removal of inactive memberships. The programme of promotion has continued to focus on encouraging membership from employees based at other sites. A quarterly newsletter and poster campaign is undertaken. Travel Information boards at County Hall are updated regularly. The update of the site was completed in April 2008 to create recognisable branding consistent with the Keeping Cardiff Moving website.	The scheme had 1460 members on March 31st 2011 with 341 members in 161 car journey groups. The scheme had 454 Cardiff Council employees registered. This represents a 9.1% increase on the March 2009 (416) baseline.	Increase the uptake of car sharing by all Council employees by 20% (March 2009 baseline) by April 2015.	LA revenue.	1,2,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A12.2	<b>Continue to roll out Council Journey Share Scheme to businesses in Cardiff on a closed group basis</b>	The Journey Share Scheme now has 10 external organisations as members. Work is progressing with other organisations and business parks to encourage take up of the scheme as a means of managing parking and reducing travel.	The Journey Share Scheme now has 18 external organisations as members. Work is progressing with other organisations and business parks to encourage take up of the scheme as a means of managing parking and reducing travel to the sites.	Continue to promote Journey Sharing Scheme to local organisations as part of the Travel Planning programme.	LA revenue and P.	1,2,3,4,5
A12.3	<b>Car Club</b>	N/A, scheme launched November 2010	The scheme provides 10 car club cars in Cardiff, which can be booked by the hour or day. The cars are located within city centre and nearby residential areas. The scheme had 118 private members on 31st March 2011. There were 5 Corporate Member Organisations of the scheme, which have 33 members on 31st March 2011.	Continue to promote the car club scheme to Cardiff residents and local organisations as part of the Travel Planning programme.	WG Revenue	1,3,4 and 5
<b>TOPIC: A13 FREIGHT</b>						
A13.1	<b>Wales Freight Strategy</b>	Response to draft Wales Freight Strategy submitted Jan 2008. No further updates	No further updates.	No further updates.	WG committed to maintaining Freight Facilities Grant which has been withdrawn in England.	3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRIC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>TOPIC: A14 SAFE ROUTES IN COMMUNITIES</b>					
A14.1	<b>Llanrumney High School SRTS</b>	Scheme complete.	Scheme complete.	No further updates.	N/A	1,2,4,5
A14.2	<b>Cardiff West SRTS Initiative (5 schools)</b>	Scheme complete.	Scheme complete.	Changes in modal shift to be monitored by Traffic Management.	Business Plan indicates (EC05/5) Transport Grant Funding for this. WG funded entire project. No further funding required.	1,2,4,5
A14.3	<b>Ely Area Safer Routes to Schools (Ely, Caerau and Michaelston-Super-Ely Safe Routes in Communities)</b>	Transport Grant Bid submitted to WG in Autumn 2009. Project awarded £486,000 to implement third and final stage.	Scheme completed March 2011	Ongoing monitoring	WG funded.	1,2,4,5
A14.4	<b>Christ the King Primary School SRTS</b>	School Safety Zone installed.	School Safety Zone installed.	Consideration being given to construction of a path linking Llanishen train station with the school 2010/11.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.5	<b>Whitchurch High School</b>	Scheme complete.	Scheme complete.	Ongoing monitoring.	Business Plan indicates (EC05/5) Transport Grant Funding for this. WG awarded £430,000 as part of SRTS TG bid.	1,2,4,5



ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A14.6	<b>Willows High School - cluster group</b>	Scheme complete.	Scheme complete.	Ongoing monitoring.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.7	<b>Bryn Deri Primary School</b>	Crossing facility installed on Bryn Derwen. School Safety Zone to be considered.	School Safety Zone to be considered.	School Safety Zone to be considered when funding becomes available.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund when available.	1,2,4,5
A14.8	<b>Ton yr Ywen Primary School</b>	Cycle stands installed. Other measures to be considered to deter school-gate parking and congestion.	School Safety Zone to be considered to deter school-gate parking and congestion.	Awaiting the installation of yellow lines in the vicinity of the school entrance during 2011.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding to be sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5

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A14.9	Cardiff High School	School Safety Zone installed.	School Safety Zone installed. Celyn Ave Pedestrian Crossing complete.	Additional crossing facilities planned over the next three years. Subject to funding, cycle paths will be considered. Pedestrian crossing in Lake Rd North to be considered. Pedestrian crossing on Lake Road North construction programmed 2011/12. Ongoing monitoring.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Uncertain at this stage, but more than likely under the Council's School's Traffic Management Group Programme (Cycle Stand Fund) TG fund.	1,2,4,5
A14.10	Cathays High School	Discussions with school to combat parental parking.	Discussions with school to combat parental parking.	School Travel Plan still awaited	Business Plan indicates (EC05/5) Transport Grant Funding for this. N/A.	1,2,4,5
A14.11	Coryton Primary School	Scheme complete.	Scheme complete.	Further investigations into pedestrian entrance.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.12	Birchgrove Primary School	School Safety Zone installed	School Safety Zone installed.	Decision to install a pedestrian crossing in Rhydheilig Ave on hold.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A14.1 3	Bishop Childs Primary School	School Safety Zone installed	School Safety Zone installed.	Scheme to be monitored.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.1 4	Eglwys Wen Primary School	School Safety Zone installed	School Safety Zone installed. Crossing and traffic calming installed on College Road 2010/11	Crossing to be installed in College Road 2011/12. Ongoing monitoring.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.1 5	Fairwater Primary School	School Safety Zone installed.	School Safety Zone installed.	Scheme to be monitored. Parental parking issues.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.1 6	Oakfield Primary School	School Safety Zone installed.	School Safety Zone installed.	Scheme to be monitored. Parental parking issues.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A14.1 7	Radyr Primary School	School-gate safety measures installed.	School-gate safety measures installed.	Further discussion required with the school to improve walking and cycling routes to the school when funding becomes available.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.1 8	Roath Park Primary School	School Safety Zone installed	School Safety Zone installed.	Scheme to be monitored.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.1 9	Willowbrook Primary School	School Safety Zone installed.	School Safety Zone installed.	Scheme to be monitored. Further work to be carried out on Willowbrook Drive.	Business Plan indicates (EC05/5) Transport Grant Funding for this. Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.2 0	Marlborough Junior & Infant School	School Safety Zones installed	School Safety Zones installed.	Schemes to be monitored.	TG as indicated by the Business Plan 2007/10 - Table 5.1a Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
A14.2 1	Coed Glas School	School Safety Zone to be installed summer 2010	Scheme complete 2010/11	Scheme to be monitored. TRO awaited.	TG as indicated by the Business Plan 2007/10 - Table 5.1a Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.2 2	Llanishen High	School Safety Zone planned and prepared for.	School Safety Zone planned for summer 2011.	Scheme to be monitored.	TG as indicated by the Business Plan 2007/10 - Table 5.1a Funding sourced under the Council's School's Traffic Management Group Programme TG fund.	1,2,4,5
A14.2 3	Safer Routes in the Communities	Crwys Road and Corporation Road areas of the city identified as locations of high pedestrian casualties.	WG grant for £220,000 awarded for Corporation Road area.	Corporation schemes to be installed 2011-12. Ongoing monitoring.	Business Plan indicates (EC05/5) Transport Grant Funding for this. WG funded entire project. No further funding required.	
A14.2 4	St. Mary's School, Wyndham Cres.	N/A new scheme 2010/11	School Safety Zone planned for summer 2011.	Scheme to be installed 2011/12	Funding sourced from RTCG	2,3,4
A14.2 5	Bryn Hafod	N/A new scheme 2010/11	School Safety Zone planned for summer 2011.	Scheme to be installed 2011/12	Funding sourced from RTCG	2,3,4

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	<b>TOPIC: A16 TRAVEL PLANS (School, Workplace and Personalised)</b>					
A16.1	<b>Travel Plan for Council Premises</b>	A Travel Plan for Brindley Road and Bessemer Close was approved by officer decision in May 2009. A Travel Plan for Lamby Way is being undertaken.	A Travel Plan for Lamby Way was approved by officer decision on 31st January 2010.	Complete the Umbrella Travel Plan for the remaining smaller sites. Continue to progress the Cardiff Travel Planning Strategy. Progress work on rolling out the 1:5 Scheme to County Hall.	LA revenue.	1,2,4,5
A16.2	<b>School Travel Plans</b>	52 schools have now completed school travel plans.	63 schools have now completed school travel plans.	Schools with existing Travel Plans requested to review their plans annually. Remaining schools encouraged to produce STPs, with objective of all responding by 2013.	LA revenue.	1,2,4,5
A16.3	<b>Travel Plan Promotion and Support for Local Businesses and Organisations (including car share)</b>	Initial monitoring of Travel Plans due to return figures in 2009 was undertaken. A low response rate was received by the organisations surveyed. A programme of work is ongoing to approach key organisations in Cardiff with respect to developing Travel Plans and promote the Keeping Cardiff Moving grants which are being offered as part of the Sustainable Travel City programme. This is supported by the Sewta Regional Travel Plan Coordinator.	Initial monitoring of Travel Plans due to return figures in 2010 was undertaken. A low response rate was received by the organisations surveyed. A programme of work is ongoing to approach key organisations in Cardiff with respect to developing Travel Plans and promoting the Keeping Cardiff Moving grants which are being offered as part of the Sustainable Travel City programme. This is supported by the Sewta Regional Travel Plan	Monitor the Travel Plan database. Increase the numbers of external organisations with Travel Plans in Cardiff. Review and request annual update of all plans received. Report progress on annual basis. Work with Sustrans on the delivery of their Personalised Travel Planning project which is assisting organisations with the development of Travel Plans in Cardiff.	LA revenue.	1,2,4,5

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			Coordinator.			
A16.4	<b>Develop a Best Practice Travel Plan Advice Pack for Developers</b>	Keeping Cardiff Moving has a comprehensive Travel Planning Advice section. A Travel Plan Toolkit has been prepared and distributed to key target organisations in an ongoing coordinated programme to promote uptake of Travel Planning and Journey Sharing. Documents to support organisations considering developing Journey Share Schemes/Pool Bikes have been completed along with several other travel plan resources e.g. Travel Plan Template, Travel Audit Guide.	The Travel Plan Toolkit resources have been reviewed and updated following feedback from users to ensure it remains relevant and useful.	Continue to update and refresh Travel Planning Advice on Council Website. Review travel plan database contacts and develop a more targeted approach.	LA revenue.	1,2,4,5
	<b>TOPIC: A17 TRAVEL AWARENESS CAMPAIGNS</b>					
A17.1	<b>Keeping Cardiff Moving Travel Awareness Campaign</b>	The website has received a complete review and redesign in line with the Sustainable Travel City project. The site has received 45013 visits to date.	The website has received a complete review and redesign in line with the Sustainable Travel City project. The site has received 54294 visits to date.	The website will be developed to provide information about the Sustrans Personalised Travel Planning Project.	WG revenue	1,4

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	<b>TOPIC: A18 TRAVEL AND TRAFFIC INFORMATION</b>					
A18.1	<b>Central Bus Station Public Transport Information</b>	Improved hard copy information rolled out in 2009/10	Continued to provide up to date hard copy information.	Continue to provide up to date hard copy information.	LA revenue and STC	1,3,4,5
A18.2	<b>Bus Enhancements - Passenger Information (RTI in shelters and buildings)</b>	Stagecoach buses fitted. New radio base station installed to enhance coverage.	Veolia to be fitted if funding available from TG. Cardiff Bus fleet to be upgraded as funding made available.	Continue installation where funds available.	TG, P and LA capital.	1,3,4,5
A18.3	<b>Provision of Real Time bus information on the internet</b>	Discussions continuing.	Discussions ongoing.	Service Level Agreement terms to be agreed.	LA revenue.	1,3,4,5
A18.4	<b>Traffic Management Information for the General Public - website and leaflets</b>	On street parking bays in the city centre are being reviewed and relocated as a consequence of the proposed "bus box".	On street parking bays in the city centre are being reviewed and relocated as a consequence of the "bus box".	Once locations have been finalised, the corresponding web site pages will be updated accordingly, and information leaflets produced and distributed as appropriate.	LA revenue.	1,3,4,5
A18.5	<b>Provision of Car Journey Time Information and CCTV Images on Main Routes into Cardiff on the Internet</b>	Integration of car park management interface into control room 70% complete. VMS server upgrade to facilitate increasing number of signs and capacity for interfaces to car park management system complete.	Integration of car park management interface into control room 90% complete. VMS server upgrade to facilitate increasing number of signs and capacity for interfaces to car park management system complete.	Journey Time management system requires funding.	P, O.	1,3,4,5



ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
	<b>THEME B: MANAGING TRAVEL DEMAND</b>					
	<b>TOPIC: B1 INTEGRATION OF LAND USE PLANNING AND TRANSPORT</b>					
<b>B1.1</b>	<b>Input into Cardiff's emerging Local Development Plan</b>	Monthly liaison with the Strategic Planning team on Regional Transport Plan and Local Development Plan issues has continued.	There has been continuing, regular liaison between the Transport Policy team and the Strategic Planning team developing the LDP. Transport Policy input has been provided on the LDP Vision and Objectives and the associated Strategic Environmental Assessment.	1. Undertake policy-based assessment of LDP candidate site submissions. 2. Develop transport sections and key strategic transport policies as part of the LDP Preferred Strategy, by March 2012. 3. Undertake modelling, trip assignment and impact assessment of candidate sites/strategic land use options. 4. Identify and test feasibility of transport infrastructure proposals to support projected development in LDP as part of development of transport infrastructure plan.	LA revenue.	1,2,3,4,5
<b>B1.2</b>	<b>Transport input into Development Control Process</b>	Ongoing	Ongoing	To continue to provide observations as required.		1,3,4,5

ID	MEASURE	2009/2010 Entry	New 2010/11 Entry	ROLLED FORWARD ACTION PLAN FOR 2011/12 - 16/17 (5 years)	Funding Source: TG, P, LA (incl. Partnership), WG, LA revenue, LA Capital, SRiC, RTC Grant, STC Capital, STC Revenue	Fit with LTP Objectives
B1.3	<b>Supplementary Planning Guidance for Developer Contributions for Transport</b>	Supplementary Planning Guidance for Developer Contributions for Transport Approved by Council in January 2010.	Supplementary Planning Guidance for Developer Contributions for Transport approved by Council in January 2010.	Determine application of SPG to decision making in light of introduction of Community Infrastructure Regulations in April 2010.	LA revenue.	1,3,4,5
	<b>TOPIC: B2 PARKING AND ENFORCEMENT</b>					
B2.3	<b>Introduction of Civil Parking Enforcement (CPE)</b>	The Executive approved the implementation of Civil Parking Enforcement in Cardiff (see report dated 11th June 2009). Implementation arrangements have been progressing for a start date of 5th July 2010.	CPE was successfully introduced on 5th July 2010 and the enforcement team has been busy visiting all areas of the city since then. An annual report is being prepared which will demonstrate their activity over that period.	Proposed recruitment of additional civil enforcement officers during 2011/12 to increase enforcement coverage. Refinement of the deployment model following production of the annual report on a year to year basis.	LA capital and revenue.	1,2,3,4,5
B2.4	<b>Coach Parking Facilities</b>	Coach Parking facilities installed at Sophia Gardens.	No update.	Consideration is being given to removing long stay on-street coach parking in the city centre (not Cardiff Bay), in favour of using the new facilities in Sophia Gardens. Web site page and plans will be updated accordingly.	LA capital and revenue, P.	1,3,4
B2.5	<b>Integrated Parking Strategy</b>	The Strategy was approved in April 2006. No further updates.	The Strategy was approved in April 2006. No further updates.	No further updates.	Funded through the progress of other schemes.	1,3,4,5
	<b>TOPIC: B4 TELEWORKING</b>					
B4.1	<b>Council's Homeworking Initiative</b>	The corporate homeworking policy is still being embedded within and across the organisation. As part of our	The corporate homeworking policy is still embedded within and across the organisation. A successful	Whilst the homeworking policy will be reviewed in the light of operational experience, this is not scheduled until 2011.	No external funding, LA revenue.	1,5

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		move to Internal Shared Services, we are seeking to build in better data capture concerning working arrangements, etc. The free desking area, established by ICT, is well established and regularly utilised. Details of the TBS exercise and other WLB initiatives were presented to the meeting of the Works Council in December 2009.	team based solutions pilot exercise has been completed in Highways where a number of small highways maintenance teams have introduced an element of flexible working that has proved successful.			
	<b>THEME C: NETWORK MANAGEMENT</b>					
	<b>TOPIC: C1 TRAFFIC MANAGEMENT SCHEMES AND ASSESSMENT</b>					
C1.1	<b>Traffic management engineering schemes, including junction improvements, traffic calming, pedestrian facilities and low cost safety schemes (See A1.2 for details on Pedestrian Improvement Schemes)</b>	16 other traffic management schemes implemented in 2009/10 including Safe Routes in Communities	18 other traffic management schemes implemented in 2010/11 including Safe Routes in Communities	Implement programme 2011/12. Implement the highest ranking of the remaining schemes 2012/17. (130 schemes currently on the waiting list with a value of about £4.6 million, not including the pedestrian improvements)	LA capital, Regional Transport Consortium Grant.	1,2,3,4,5
	<b>TOPIC: C2 INTELLIGENT</b>					

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	<b>TRANSPORT SYSTEMS</b>					
C2.1	<b>Intelligent Transport Systems Strategy</b>	No funding has yet been provided.	No funding has yet been provided.	Funding sought.	No funding secured for 2011/12. Submit bid for capital funding Autumn 2011.	1,2,3,4,5
C2.2	<b>Traffic Management System (including SCOOT traffic control, Urban Traffic Control, COMET, new traffic signals/ refurbishment controllers, emergency services vehicles priority, system for the classification and presentation of traffic information)</b>	Servers and SCOOT software to be upgraded to PC platform to ensure continued support and access to latest developments. Planned end June 2010	Servers and SCOOT software to be upgraded to PC platform to ensure continued support and access to latest developments. Planned end June 2010 100% complete	1. Incremental enhancement of graphical systems ongoing as the traffic signal and signing network grows. 2. Funding required for virtual server upgrade. 3. Strategy manager upgrade to COMET to provide state machine operation and improved graphical interface.	O.	1,2,3,4,5
C2.3	<b>Real Time Information and Intelligent Bus Priority System (using Automated Number Plate Recognition, specially adapted CCTV cameras, Selective Vehicle Detection &amp; GPS on buses)</b>	Ongoing	Ongoing	Ongoing	TG.	1,2,3,4,5

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C2.4	<b>Driver Information (including VMS &amp; Website information)</b>	1.) Development of strategic map, showing existing and proposed sign locations continues to be ongoing. 2.)As part of 106 contributions the following VMS have been installed, Cardiff Rd, Thornhill Rd, A4232 S/B North Pentwyn Link and A48 W/B prior to Pentwyn Interchange. 3.) As part of 106 contributions the following VMS is scheduled to be installed, A48 Eastern Av E/B prior to Pentwyn. 4.) As part of Llanedeyrn Interchange capital works the following VMS is scheduled to be installed, A48 Eastern Av E/B prior to Llanedeyrn Interchange. 5.) 8 Car park management information signs providing realtime car park spaces data linked to SD2, Dumfries, Knox and Capitol car parks have been installed. 6.) A further 4 Car Park Management Signs are scheduled to be installed, with further signs installed subject to funding.	1.) Development of strategic map, showing existing and proposed sign locations continues to be ongoing. 2.) As part of 106 contributions the following VMS has been installed on A48 Eastern Av E/B prior to Pentwyn. 3.) As part of 106 contributions the following VMS are scheduled to be procured, A4232 Gantry and Central Link 4.) As part of Llanedeyrn Interchange capital works the following VMS has been installed on A48 Eastern Av E/B prior to Llanedeyrn Interchange. 5.) The Car park management information signing system providing realtime car park spaces data linked to SD2, Dumfries, Knox and Capitol car parks continues to be maintained and managed. Additional signs have been installed on Station Terrace and Churchill Way. 6.) A further 3 Car Park Management Signs have been procured and are awaiting installation subject to subject to funding. 7.) A comprehensive RPS signing system and rising bollard system associated with the	The strategic plan showing existing and proposed sign locations will be continue to be updated. Further schemes will be added to the programme of signs subject to funding. Car Park Management realtime signs will continue to be installed as funding becomes available	P.	2,3

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			S278 Porth Teigr works is currently being installed.			
C2.5	<b>Incident Detection &amp; Management (including VMS, Q Loops, website information &amp; CCTV)</b>	Provision of ANPR system for incident detection and real time journey times through the existing CCTV system being investigated. Provision of real time journey times through the ACIS bus priority system has been provided.	Provision of ANPR system for incident detection and real time journey times through the existing CCTV system being investigated. The eMerge web site has been updated.	Incident detection and management system will continue to expand on an ongoing basis and be refined subject to funding.	LA capital, P.	2,3
	<b>TOPIC: C3 ROAD SAFETY MANAGEMENT AND EDUCATION</b>					
C3.1	<b>Local Road Safety strategy</b>	Draft document prepared and submitted for consultation.	Draft document prepared and submitted for consultation.	Will be replaced by Sewta Strategy from 2011/12.	LA revenue.	2,3
C3.2	<b>Urban Safety Management Area studies and projects</b>	The following schemes are to be implemented this year - Mill Road Footway Lisvane, Newport Road (Cypress Drive to Wern Fawr Lane) St Mellons, and Colwinstone Street and Hawthorne Road East, Llandaff North.	The following schemes were implemented this year - Mill Road Footway Lisvane, Newport Road (Cypress Drive to Wern Fawr Lane) St Mellons, and Colwinstone Street and Hawthorne Road East, Llandaff North.	The following schemes are to be implemented (2010/11) - <u>Pedestrian Facilities</u> - Mill Road Footway Lisvane, Heol Don Whitchurch, Birchgrove/Manor Way. <u>Traffic Calming</u> - Albany Road (Aran Place to Roundabout), Park Road/Pendywallt Road, Llantrisant Road, Speed Activated Signs, Thornhill Road. <u>Low Cost</u> - Bridge Road, Pantbach Road refuge, Bryn Celyn Primary School, Ton Yr Ewen Primary School, Forrest Farm Road. <u>Junction Improvements</u> - Ton-Yr-Ywen	LA revenue, LA capital, TG, WG, other WG, P, O.	1,2,3,4

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				<p>Avenue / Heathwood Road, Caerphilly Road, Llanover Road car park Romilly Road Markings, Ninian Park School Sloper Road.</p> <p><u>School Journey Measures</u> - Melin Gruffydd/Eglwys Wen College Road Zebra, Marlborough Road Primary School - Walking Bus, Cardiff High School - Lake Road North, Christ the King RC Primary School, Peter Lea Primary School. <u>School Gate Measures</u> Willowbrook Primary School - Sandbrook Road, Howells School - Relocation of Puffin Crossing, Coed Glas Primary School - Ty Glas Avenue, Llanishen High School - School Safety Zone, St Marys RC School - Wyndham Crescent, Ysgol y Berllan Deg, Ysgol Mynydd Bychan - New Zealand Road. Years 2011/12, 2012/13, 2013/14, 2014/15, and 2015/16. Pedestrian Facilities, Traffic Calming, Low Cost, Junction Improvements, School Journey Measures, School Gate Measures, and Safety Camera Partnership Support - all yet to be determined.</p>		

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C3.3	<b>Programme of Traffic Education and Road Safety Initiatives</b>	Road Safety Centre relocated to Maindy Stadium summer 2009. Continuation of all relevant schemes and local support given by road safety team to national programmes and campaigns in conjunction with partner organisations.	Continuation of all relevant schemes and local support given by road safety team to national programmes and campaigns in conjunction with partner organisations.	New schemes programmed for 2011/2 including deployment of exhibition vehicle, theatre in education, and adult cycle training courses. Junior Road Safety Officer Scheme, Kerbcraft - Child Pedestrian Training Scheme and Safer Routes in the Communities. Road safety plan produced for next 5 years.		2,3,4
C3.4	<b>Enforcement cameras - extension of operation</b>	2 sites on Newport Road/Rover Way installed awaiting BT connections to the CTO.	Continued to monitor accident data for sites and survey community concern sites as required.	Continue to monitor accident data for sites and survey community concern sites as required.	Self-financing.	1,2
C3.5	<b>Home Zones</b>	Surveys and advice supplied to Housing and Neighbourhood Renewal who are the lead Service Area for this project	Ongoing assistance to Housing and Neighbourhood Renewal Team.	Ongoing assistance to Housing and Neighbourhood Renewal Team.	Dependant on sources identified by Neighbourhood Renewal. Still awaiting Home Zone Regulations from National Assembly for Wales.	2,3,4



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	<b>TOPIC: C4 IMPROVED DIRECTION SIGNING</b>					
C4.1	<b>Visitor Signage Strategy for Cardiff Bay</b>	Pedestrian and Cycle signage in Cardiff Bay is being significantly expanded with the opening of Pont Y Werin from July. The bay edge walkway route will be accessible to the public and new and improved signage will be in place to assist users.	Pont y Werin is now open to the public and new and improved signage is in place to assist users.	Further improvements to signage in the Bay area are being introduced through the BBC media village development.	River Ely Bridge - LA capital (CC and VoG); P and O. Barrage to Inner Harbour - O Prospect Place - P International Sports Village - P and LA capital.	3,4
C4.2	<b>Directions Signing Policy Review</b>	This matter has now been passed to the City Centre Management and Major Projects teams. The '2020 Wayfinding Group' is to review the policy. Currently, the priority is to install variable car park management signage. This process has begun with the signage on approach to the city centre, along with initial integration with pedestrian signage.	Most car park signage has now been implemented.	As schemes are implemented any additional car park signage identified as being required is implemented as part of those schemes.	Currently only: Capital (St Mary Street), WG (relating to transport schemes) & Section 106 (adjacent schemes)	3,4
C4.3	<b>Pedestrian Signage Strategy for City Centre</b>	This matter has now been passed to the City Centre Management and Major Projects teams. New maps and wayfinding have been installed as part of the SD2 development.	No new wayfinders were added to the 31 installed to coincide with the opening of St David's in late 2009; however some of the individual fingers were replaced to incorporate new destinations (Cardiff	Continued installation and extension of pedestrian signage scheme subject to availability of funding.	Currently only: Capital (St Mary Street), WG (relating to transport schemes) & Section 106 (adjacent schemes)	3,4

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			Market, Queens Arcade and Capitol Shopping). Potential locations for new wayfinders, particularly around the approaches to the Millennium Stadium and in the Civic Centre, have been identified should funding become available for them.			
	<b>TOPIC: C5 EVENTS MANAGEMENT</b>					
C5.1	<b>Events Management Strategy for Cardiff</b>	Roll forward existing Events Management Strategy. Major football events have returned to Wembley but major sporting events will continue at the Millennium Stadium and will be catered for. The weekend use of P&R has continued to rise and was 47,500 users approaching the target of 67,500 (Business Plan 2007/10 - T/KPI 22). Some of this use is associated with events and functions to alleviate the transport impact of such occasions.	Roll forward existing Events Management Strategy. Support the 'Arena' (smaller events at Millennium Stadium) by assisting with the provision of scaled down Park and Ride in collaboration with the business community.	Ongoing.	LA revenue & sponsorship.	2,3,4

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	<b>TOPIC: C6 AIR QUALITY MANAGEMENT</b>					
C6.1	<b>Air Quality Management Areas (AQMA)</b>	Following the revocation of two AQMAs and the reduction in size of another, the Air Quality Action Plans were reviewed during 2008/9. An Air Quality Action Plan to address high concentrations of nitrogen dioxide within the St Mary Street AQMA will be developed during 2009 following finalisation of the High Street and St Mary Street traffic scheme.	There are two Air Quality Management Areas in Cardiff (St Mary Street and Ely Bridge). A Detailed Assessment into air quality in the vicinity of Stephenson Court, Newport Road, a third AQMA has been proposed for this area and this will be declared during 2010.	An Air Quality Action Plan for St Mary Street was adopted in February 2010. The principal measure in the Plan is the implementation of a “pedestrian-friendly environment” and the removal of most of the traffic from the AQMA.	Main air quality monitoring and Larian Streetbox/SCOOT system all funded internally from LA revenue.	1
C6.2	<b>Air Quality Strategy</b>	The implementation of the Air Quality Strategy has continued.	The implementation of the Air Quality Strategy has continued.	Implement Air Quality Strategy and redraft as and when necessary in accordance with local and national policies and strategies.	LA revenue.	1
C6.3	<b>Air Quality Improvements in AQMAs</b>	Data measured since the introduction of the St Mary Street experimental traffic order in August 2007 have not shown any significant improvement in annual mean concentrations of nitrogen dioxide.	Gradual removal of road-traffic from the AQMA has seen air pollution levels begin to fall. Air pollution levels should drop further as the implementation of the “pedestrian-friendly environment” proceeds.	Monitoring will continue both during and after the full implementation of the “pedestrian-friendly environment” detailed in the Action Plan.	LA revenue.	1

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C6.4	<b>Council's Green Fleet and Introduction of Alternative Fuel Vehicles</b>	Maintain the use of a minimum of 5% bio diesel in the vehicle fleet fuel mix.	Maintain the use of a minimum of 5% bio diesel in the vehicle fleet fuel mix. 13 Euro 3 standard vehicles have been replaced with Euro 5 to date. A new target date in place for this for April 2011.	Maintain current procurement levels. Replace 250 Euro 3 standard vehicles in the fleet for Euro 5 standard over a 5 year rolling programme.	LA revenue.	1
<b>TOPIC: C7 MAINTENANCE-HIGHWAYS AND BRIDGES</b>						
C7.1	<b>Highway Assessments &amp; Maintenance Programme</b>	SCANNER, DVI, SCRIM and AEI surveys undertaken as planned feeding into the decision making process relating to the prioritisation of carriageway and footway improvement schemes.	SCANNER, DVI, SCRIM and AEI surveys undertaken as planned feeding into the decision making process relating to the prioritisation of carriageway and footway improvement schemes.	It is proposed that the SCANNER, DVI, SCRIM and AEI surveys shall be undertaken on an annual basis. The data resulting from these surveys shall be evaluated holistically to provide an improved scheme prioritisation methodology.	The SCANNER (Surface Condition Assessment for the National Network of Roads) survey for A, B and C class roads will be funded by Cardiff Council revenue budgets, WG will fund the survey of unclassified roads. DVI, SCRIM and AEI surveys funded through Cardiff Council revenue budgets.	2,3
C7.2	<b>Bridge Assessments and Strengthening Programme</b>	Capital funding allocated for the design and construction of 7 schemes. These include expansion joint replacement Leckwith Viaduct, strengthening feasibility study Station Rd Llandaff North, vehicle incursion measures at	Park Road Strengthening scheme completed 2010/11. Doyle Avenue strengthening scheme completed 2010/11. Station Road Feasibility study completed 2010/11. Penarth Road Bridge refurbishment design and	Funding allocation included in medium term financial plan starting 2009/10. Further works are programmed through to 20014/15 including Windsor Rd. replacement, Station Rd. strengthening, Penarth Rd. & Llandennis Rd. Mardy Rd	LA capital and revenue.	2,3

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		Mardy Rd and 4 bridge strengthening schemes at Park Rd, Wentloog Rd, Doyle Ave and Llantrisant Rd.	contract documentation completed 2010/11. Lake Road North & West strengthening design and contract documentation complete 2010/11.	design ongoing 2011/12. Leckwith Viaduct 4th & final joint replacement on site 2011/12. Gabalfa Flyover Expansion Joint replacement on site 2011/12. Lake Road North & West strengthening works on site 2011/12.		
	<b>TOPIC: C8 HIGHWAY IMPROVEMENT SCHEMES</b>					
C8.1	<b>Eastern Bay Link (Major)</b>	Scheme assessment of the Eastern Bay Link progressed as part of Cardiff Transportation Partnership. Ecological surveys of bird populations undertaken in advance of preparing scheme assessment and environmental impact assessment. Ongoing consultation with key stakeholders has been progressed and continues. Forward programming of work has been planned.	The scheme remains a policy aspiration of the Council.	The scheme is dependent upon funding.	Subject to availability of funding	1,2,3,4,5

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C8.5	<b>Llanedeyrn Interchange Study</b>	Commissioning of Stage 1 of the design including site investigations, surveys, traffic modelling, road safety assessment and option development was delayed due to the receipt of non-conforming bids under the Framework Agreement.	Phase 1 traffic signal improvements were completed in May 2010.	Phase 2 traffic signal improvements will be considered in future years dependent upon funding.	Subject to availability of funding	1,2,3,4,5
	<b>THEME D: IMPLEMENTATION</b>					
D1	<b>South East Wales Transport Alliance Regional Transport Plan</b>	Final Regional Transport Plan approved January 2010	Final Regional Transport Plan approved January 2010.	Delivery of Actions and Schemes set out in the Regional Transport Plan.	LA revenue.	1,2,3,4,5
D3	<b>Revise and Update Countywide Multimodal Model</b>	Strategic Omnitrans Model not currently being progressed. Work on-going with development of 2008 Base Cardiff City Centre & Bay Paramics Micro-simulation Model, pending completion of Stage 3 update	Matrices from the Strategic Omnitrans Model have fed in to the modelling of Bus Rapid Transit Line 1 and preliminary analyses in support of the LDP Preferred Strategy	Jul 2011-Mar 2012: rebasing of Strategic Omnitrans and Paramics models and use in testing development scenarios for the LDP Preferred Strategy; Jan 2012-Sep 2012: option testing for the LDP Draft Deposit Plan; 2013-2015: use of models for option testing of local and developer schemes, and the investigation of its use for testing of regional schemes.	Funding Source: P, LA (incl. Partnership), WG, LA revenue.	1,2,3,4,5

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D5	<b>Integrate Control Room with Police and Community Safety Officers (Smart City Hub)</b>	Works on new Control Room complete.	Co-location has been operational for 18 months with Police and community safety officers	Facilitate agreement and implementation of option. Develop processes ANPR, Parking enforcement. Develop processes ANPR, Parking enforcement Ongoing. Setup data sharing agreement.	Joint LA Rev and SW Police	
D6	<b>Neighbourhood Area Transport Study Report</b>	N/A new scheme 2010/11	N/A	Prepare a Transport Project Report that covers all six Neighbourhood Areas identifying all current activities. Future years this report to be extended to cover all Transport issues, investigations and plans.	LA Revenue	1,2,3,4,5,6
D7	<b>Road Safety Auditing</b>	N/A new scheme 2010/11	Preparation of the Cardiff Road Safety Audit Manual and training of audit team.	Undertake Road Safety Audits for 90% Cardiff Council funded schemes and be able to provide a service for externally funded schemes on roads in Cardiff.	LA Revenue	1,4,6,8