

PUBLIC PROTECTION COMMITTEE: 5th August 2014

Report of the Head of Regulatory and Supporting Services

TITLE: An update on Air Quality Management 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.
- 1.2 The Council is required to report annually to Welsh Assembly Government (WAG) with regard to latest monitoring data, changes and developments which may be significant with regard Local Air Quality Management (LAQM).
- 1.3 The City of Cardiff Council's 2014 Air Quality Progress Report is the third of three annual reports to be made under "Phase 5" of the Local Air Quality Management regime. The cycle of reporting is usually made up of one Updating, Screening and Assessment (USA) and two Progress Reports.
- 1.4 There are currently four Air Quality Management Areas (AQMA) in Cardiff, namely:
 - **Cardiff City Centre AQMA** (declared 1/4/13 to incorporate Westgate street; formerly St Mary St AQMA);
 - **Ely Bridge AQMA** (Declared 1/2/07);
 - **Stephenson Court AQMA** (Declared 1/12/10);
 - **Llandaff AQMA** (Declared 1/4/13);

All four AQMA's have been declared for Nitrogen Dioxide resulting from road vehicle emissions.
- 1.5 This report presents the City of Cardiff Council's 2014 Air Quality Progress Report.
- 1.6 The Council's 2013 Progress Report recommended that a Detailed Assessment be undertaken on the air quality in the area of Fairoak Road roundabout. This was reported at Public Protection Committee on 4th February 2014. This report also presents the findings of that Detailed Assessment.

2. Report Findings : Progress Report 2014 & Detailed Assessment, Fair oak road roundabout

- 2.1 The nitrogen dioxide monitoring data for the whole of Cardiff presented within the Progress Report shows no locations representative of relevant exposure and outside of existing Air Quality Management Area with exceedances above the 40 microgram per cubic metre, annual mean objective.
- 2.2 Since 2013, the Council has increased its monitoring of nitrogen dioxide in specific areas in response to planning applications and significant industrial developments, notably in the vicinity of Viridor Energy from Waste plant in Splott and Northgate House opposite Cardiff Castle.
- 2.3 Monitoring for other pollutants in Cardiff did not result in other exceedances of National Air Quality standards.
- 2.4 Assessments of the new Cardiff City Centre AQMA and Llandaff AQMA have been prepared, submitted to and accepted by Welsh Government. It is proposed that the Cardiff City Centre AQMA proceeds to development of an Action Plan. The Llandaff AQMA Further Assessment concludes that it is not necessary to develop an Action Plan at the present time but that monitoring will continue for the foreseeable future.

The 2014 Progress Report includes an update on the implementation of the Air Quality Action Plan for the Ely Bridge AQMA and advises that an Air Quality Action Plan is under development for the Stephenson Court AQMA.

- 2.5 The Detailed Assessment of air quality in the vicinity of Fair oak Road roundabout has been prepared and it concludes that it is not currently necessary to declare an Air Quality Management Area. However, given the annual mean concentrations of nitrogen dioxide being measured in the area and the Council's proposal to relocate a Civic Amenity Site closer to the assessment area, it is proposed to continue monitoring in the area for the foreseeable future. The Council will undertake a further detailed assessment of air quality should future years' monitoring data indicate a need.

3. Consultation

It is proposed that the authority consults statutory consultees, ward Members, local residents, and other interested parties on the findings of the Detailed Assessment of air quality at Fair oak Road roundabout.

4. Achievability

This report contains no equality personnel or property implications.

5. Legal Implications

5.1 The Council has a statutory obligation under Part IV of the Environment Act 1995 which include reporting on Air Quality annually to Welsh Government. The 2014 Progress Report and Detailed Assessment, Fairoak Road Roundabout fulfils this obligation.

6. Financial Implications.

6.1 These reports are for information only and do not result in any additional financial implications.

7. Recommendation

7.1 It is recommended that Committee:

- Note the contents of the 2014 Air Quality Progress Report and continue to be advised on air quality in Cardiff and measures taken to improve it;
- Note the contents of the Detailed Assessment, Fairoak road roundabout, Plasnewydd, Cardiff, May 2014.
- Give authority to consult statutory and other consultees with regard to the conclusions of the Detailed Assessment of Fairoak Road roundabout, Plasnewydd, Cardiff, May 2014.

Dave Holland

14th July 2014

HEAD OF REGULATORY AND SUPPORTING SERVICES

This report has been prepared in accordance with procedures approved by Corporate Managers.

Background Papers:

2014 Air quality Progress Report, The City of Cardiff Council.

Detailed Assessment, Fairoak Road Roundabout, Plasnewydd, Cardiff. May 2014.



2014 Air Quality Progress Report The City of Cardiff Council

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

June 2014

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Executive Summary

This report is Cardiff Council's 2014 Progress Report. It is the third of three annual reports to be made under "Phase 5" of the Local Air Quality Management regime.

Since the 2013 Progress Report the Council has increased its monitoring of nitrogen dioxide in specific areas in response to planning applications and significant industrial developments. Further Assessments on the new Cardiff City Centre and Llandaff AQMAs and a Detailed Assessment in respect of the Fair Oak Road Roundabout have been prepared.

The 2013 nitrogen dioxide monitoring data presented in this report shows no sites representative of relevant exposure and outside of Air Quality Management Areas with exceedences the $40\mu\text{g}\text{m}^{-3}$ annual mean objective.

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

It is not proposed to proceed to a Detailed Assessment.

The report highlights a number of developments with potential significance for local air quality, most notably the granting of planning consent for residential accommodation in the city centre at a location outside of the existing AQMA. The consequences of this in subsequent years could be significant.

Table of Contents

1	Introduction	6
1.1	Description of Local Authority Area	6
1.2	Purpose of Progress Report	6
1.3	Air Quality Objectives	6
1.4	Summary of Previous Review and Assessments	8
2	New Monitoring Data	15
2.1	Summary of Monitoring Undertaken	15
2.2	Comparison of Monitoring Results with Air Quality Objectives	50
3	New Local Developments	73
3.1	Road Traffic Sources	73
3.2	Other Transport Sources	73
3.3	Industrial Sources	73
3.4	Commercial and Domestic Sources	73
3.5	New Developments with Fugitive or Uncontrolled Sources	74
4	Local / Regional Air Quality Strategy	75
5	Planning Applications	76
6	Air Quality Planning Policies	79
7	Local Transport Plans and Strategies	80
8	Climate Change Strategies	81
9	Implementation of Action Plans	82
9.1	Ely Bridge Action Plan	83
10	Conclusions and Proposed Actions	84
10.1	Conclusions from New Monitoring Data	84
10.2	Conclusions relating to New Local Developments	84
10.3	Other Conclusions	84
10.4	Proposed Actions	84
11	References	85

List of Tables

Table 1.1	Air Quality Objectives included in Regulations for the purpose of LAQM in Wales
Table 2.1	Details of Automatic Monitoring Sites
Table 2.2	Details of Non- Automatic Monitoring Sites
Table 2.1.1	2013 Nitrogen Dioxide Measurements at Cardiff Centre AURN
Table 2.1.2	BAF and DTB Values Calculated from Cardiff Centre AURN Co-location Data
Table 2.3	Results of Automatic Monitoring for NO ₂ : Comparison with Annual Mean Objective
Table 2.4	Results of Automatic Monitoring for NO ₂ : Comparison with 1-hour Mean Objective
Table 2.5	Results of NO ₂ Diffusion Tubes 2013
Table 2.6	Results of NO ₂ Diffusion Tubes (2009 to 2013)
Table 2.7	“Annualisation” Calculation for Site 134 in 2013
Table 2.8	Results of Automatic Monitoring for PM ₁₀ : Comparison with Annual Mean Objective
Table 2.9	Results of Automatic Monitoring for PM ₁₀ : Comparison with 24-hour Mean Objective
Table 2.10	Results of Automatic Monitoring for SO ₂ : Comparison with Objectives
Table 2.11	Results of Monitoring for Lead (2011 – 2013)

List of Figures

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
Figure 2.1	Location of Cardiff Centre AURN Monitoring Site
Figure 2.2	Map Showing Location and Distribution of Diffusion Tubes in 2013
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 at 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 Fair Oak 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 2.20	Map Showing Location of Diffusion Tube in Western Avenue

- Figure 2.21 Map Showing Location of Diffusion Tubes in Cowbridge Road East and Llandaff Road
- Figure 2.22 Map Showing Location of Diffusion Tubes in Ocean Way
- Figure 2.23 Map Showing Location of Diffusion Tubes in Tremorfa area
- Figure 2.24 Map Showing Location of Diffusion Tubes in area of former Papermill, Canton
- Figure 2.25 Trends in Annual Mean NO₂ Concentrations Measured at Automatic Monitoring Sites
- Figure 2.26 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites
- Figure 2.27 Trends in Annual Mean PM₁₀ Concentrations

Appendices

- Appendix 1 2013 NO₂ Diffusion Tube Monitoring Data
- 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 (LAQM) 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 LAQM 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, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m ³	Running annual mean	31.12.2003
	5.00 µg/m ³	Annual mean	31.12.2011
1,3-Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m ³	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m ³	Annual mean	31.12.2004
	0.25 µg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m ³	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

This Report is the third 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 subsequently amended in 2002).

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 (NO₂), 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 NO₂. 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 1st December 2000 and the latter on 1st 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 was 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 (PM₁₀), there was considerable doubt that the provisional 2010 objectives for PM₁₀ 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 1st 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 1st 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 NO₂ 2010 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 in Westgate Street and for the Llandaff area were consulted upon during the summer of 2012 and as a result a new AQMA for Llandaff was declared on 1st April 2013 and Westgate Street was incorporated into the St Mary Street AQMA; this latter AQMA is now named Cardiff City Centre AQMA.

The Council's 2013 Progress Report recommended proceeding to a Detailed Assessment for the Fair oak Road Roundabout in the Plasnewydd Ward of the city as monitoring data over previous years indicated the need.

A Further Assessment for the City Centre AQMA was submitted in April 2014 and this has been accepted. A Further Assessment for the Llandaff AQMA and the proposed Detailed Assessment for the Fair oak Road Roundabout have been submitted in advance of this Report.

In summary, there are currently four AQMAs in Cardiff; all have been declared in respect of NO₂ 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

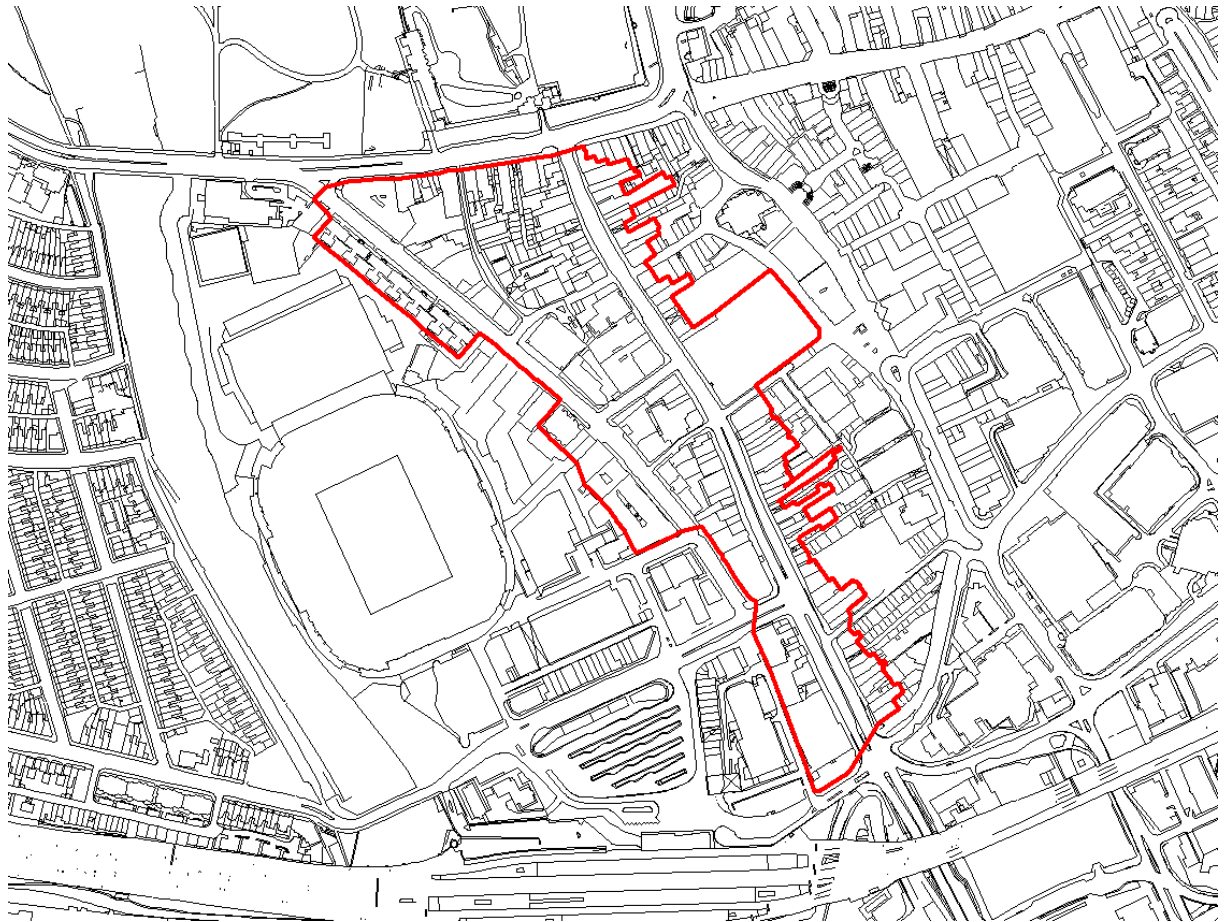


Figure 1.2 Boundary of Ely Bridge AQMA

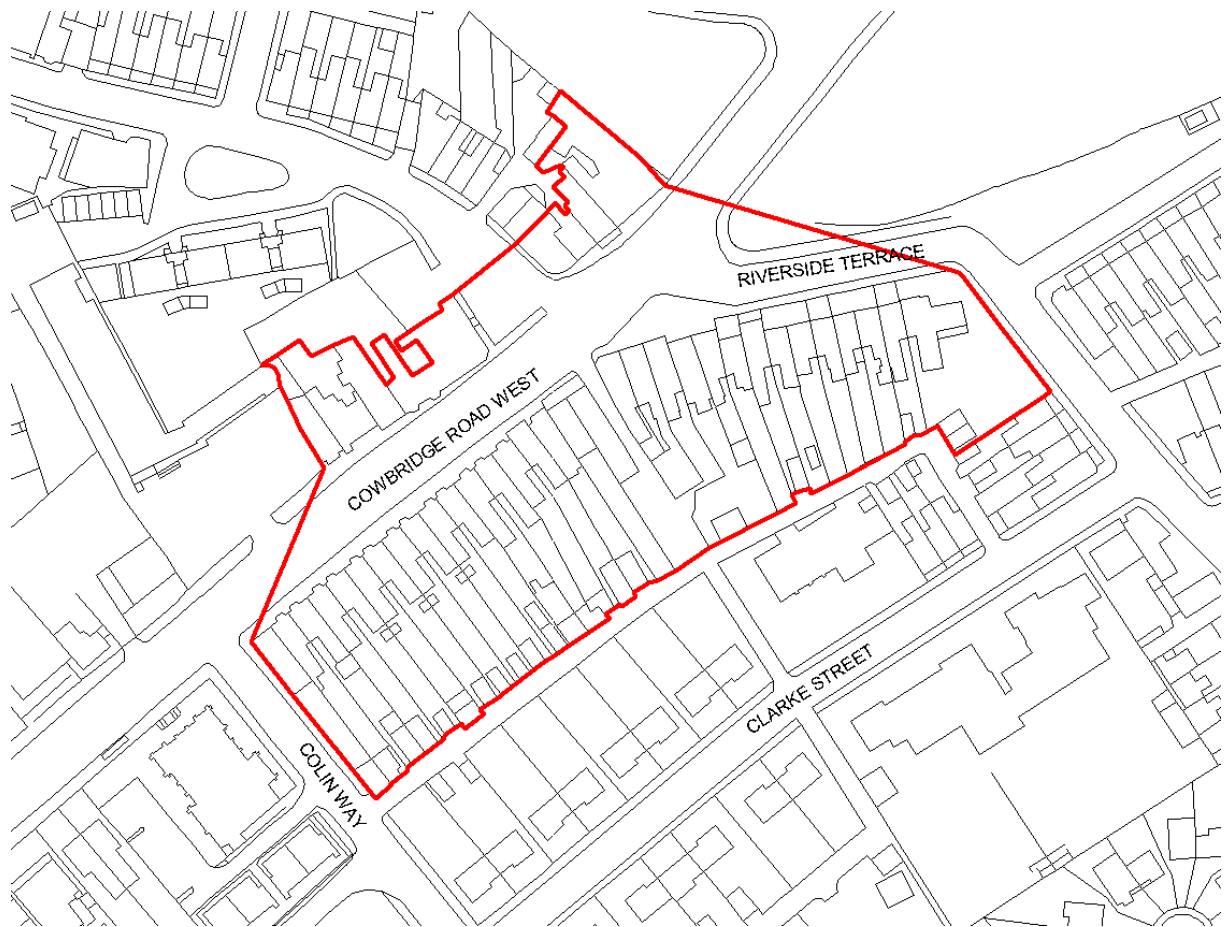


Figure 1.3 Boundary of Stephenson Court AQMA

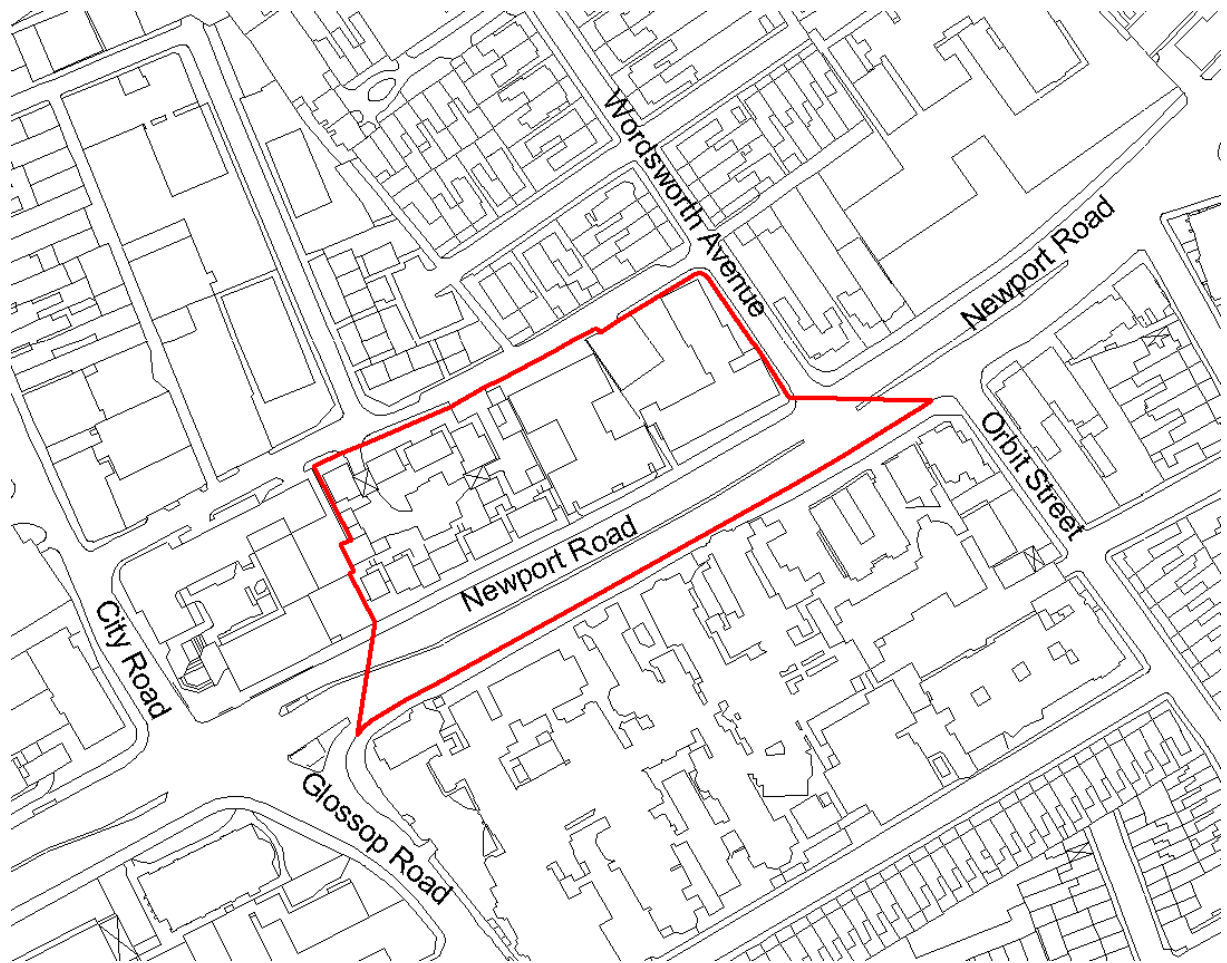


Figure 1.4 Boundary of Llandaff AQMA



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

During 2013 monitoring took place at 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 PM₁₀ analyser was replaced with a PM₁₀ FDMS analyser and the site was augmented with a PM_{2.5} 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 during May and June 2014. The site can be accessed here:

<http://uk-air.defra.gov.uk/data/>

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 NO₂ and PM₁₀, albeit not to reference standards. It was intended that the data be used to supplement 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.

Equipment malfunctions, technical issues with regard to data collection and severe doubts as to the validity of the monitoring data mean that it is not appropriate to publish data from this unit at the present time. Investigation of the data issues and the future of the unit are under review.

Figure 2.1 Location of Cardiff Centre AURN Monitoring Site

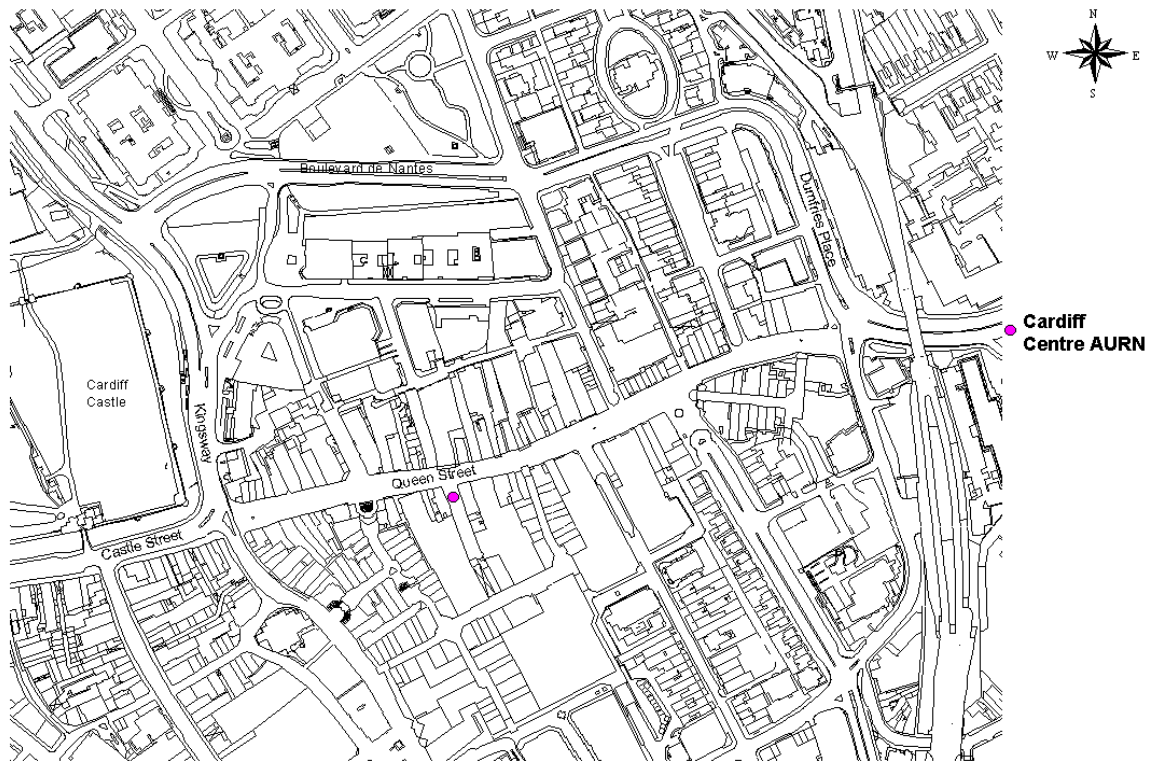


Table 2.1 Details of Automatic Monitoring Sites

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 ₂	N	Chemiluminescence	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	PM ₁₀ , PM _{2.5}	N	FDMS	Y	200m	N
N/A	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	SO ₂	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 ₃	N	UV Absorption	Y	200m	N

2.1.2 Non-Automatic Monitoring Sites

During 2013 Cardiff Council operated a network 63 nitrogen oxide diffusion tubes for the whole of the year, supplemented by an additional 5 sites commissioned at the beginning of July 2013. The Council's 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 and junctions.

Of those sites for which 2012 monitoring data were presented in the 2013 Progress Report, Site 151 (St James Church) was closed at the beginning of January 2013. The site was commissioned as a result of planning consent gained for the church to be converted into residential accommodation. This development has yet to commence and there was no exceedence of the annual mean Objective for NO₂ measured during the three years that the site had been operational despite the site's proximity to the Stephenson court AQMA.

Five new sites (numbers 164 to 168 inclusive) were commissioned at the start of January 2013 with another five (Sites 169 to 173 inclusive) in July 2013. Data for all 68 of the diffusion tubes is reported.

Since 2002, three diffusion tubes 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 and Table 2.2 details the monitoring sites and their locations.

Figure 2.2 Map Showing Location and Distribution of Diffusion Tubes in 2013

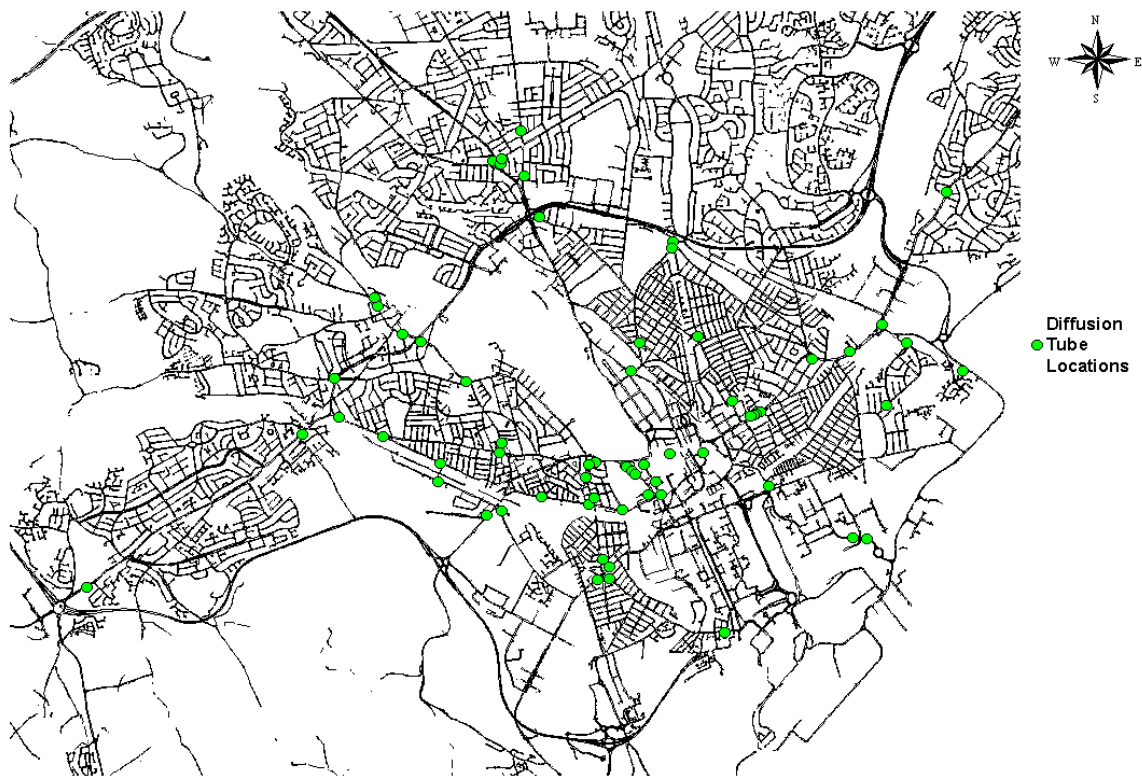


Table 2.2 Details of Non- Automatic Monitoring Sites

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 ₂	N	N	Y (0.05m)	5m	Y
33	Mitre Place	Kerbside	315248	178165	3.0	NO ₂	Y	N	N (20m)	1m	Y
44	City Road	Kerbside	319086	177097	3.0	NO ₂	N	N	Y (2m)	1m	Y
45	Mackintosh Place	Kerbside	318722	177788	3.5	NO ₂	N	N	N (3m)	1m	Y
47	Ely Bridge	Kerbside	314457	176738	2.5	NO ₂	Y	N	N (2m)	0.25m	Y
49	Penarth Road	Façade	317760	175310	1.5	NO ₂	N	N	Y (0.05m)	7m	Y
56	Birchgrove Village	Kerbside	316816	180005	2.5	NO ₂	N	N	N (10m)	1.5m	Y
58	Westgate Street	Kerbside	317937	176400	2.5	NO ₂	Y	N	N (5m)	0.5m	Y
73	Green Street	Kerbside	317607	176434	2.5	NO ₂	N	N	N (2m)	0.5m	Y
74	Station Terrace	Kerbside	318772	176544	2.5	NO ₂	N	N	N (50m)	1m	Y
81	Stevenson Court	Façade	319387	176980	2.0	NO ₂	Y	N	Y (0.05m)	5m	Y
82	104 Birchgrove Road	Façade	316518	179683	2.0	NO ₂	N	N	Y (0.05m)	5m	Y
85	497 Cowbridge Road West	Façade	312129	175084	1.5	NO ₂	N	N	Y (0.05m)	5m	Y

City of 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?
86	19 Fair oak Road	Façade	318452	178805	1.5	NO ₂	N	N	Y 0.10m)	10m	Y
96	Manor Way Junction	Façade	316601	179653	1.5	NO ₂	N	N	Y (0.05m)	5m	Y
97	Newport Road (premises)	Façade	319955	177546	1.5	NO ₂	N	N	Y (0.05m)	10m	Y
98	Western Avenue (premises)	Façade	314805	177345	1.5	NO ₂	N	N	Y (0.05m)	10m	Y
99	Cardiff Road Llandaff	Façade	315275	178117	1.5	NO ₂	Y	N	Y (0.05m)	3m	Y
100	188 Cardiff Road	Façade	316226	177305	1.5	NO ₂	N	N	Y (0.10m)	20m	Y
101	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO ₂	N	Y, Triplicate with Tubes 102 & 103	Y (0.10m)	200m	Y
102	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO ₂	N	Y, Triplicate with Tubes 101 & 103	Y (0.10m)	200m	Y
103	Cardiff Centre AURN	Urban Centre	318416	176525	3.0	NO ₂	N	Y, Triplicate with Tubes 101 & 102	Y (0.10m)	200m	Y
106	30 Caerphilly Road	Façade	316851	179520	1.5	NO ₂	N	N	Y (0.05m)	5m	Y
107	Lynx Hotel	Façade	320356	177618	1.5	NO ₂	N	N	Y (0.05m)	4m	Y
111	98 Leckwith Road	Façade	316444	175866	1.5	NO ₂	N	N	Y (0.05m)	6m	Y

City of 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?
112	17 Sloper Road	Façade	316613	175910	1.5	NO ₂	N	N	Y (0.05m)	5m	Y
115	21 Llandaff Road	Façade	316604	176641	1.5	NO ₂	N	N	Y (0.05m)	3m	Y
117	25 Cowbridge Road West	Façade	314458	176735	2.0	NO ₂	Y	N	Y (0.05m)	2m	Y
119	Havelock Street	Kerbside	318184	176086	2.0	NO ₂	N	N	N	1m	Y
124	287 Cowbridge Road East	Façade	316586	17535	1.5	NO ₂	N	N	Y (0.05m)	10m	Y
126	Westgate Street Flats	Façade	317946	176387	1.5	NO ₂	Y	N	Y (0.10m)	5m	Y
128	117 Tudor Street	Façade	317540	175979	1.5	NO ₂	N	N	Y (0.05m)	5m	Y
129	Stephenson Court 2	Façade	319349	176963	1.2	NO ₂	Y	N	Y (3m)	4m	Y
130	Burgess Court	Façade	319326	176949	2.0	NO ₂	Y	N	Y (0.05m)	5m	Y
131	Dragon Court	Façade	319292	176932	1.75	NO ₂	Y	N	Y (0.05m)	5m	Y
133	St Mark's Avenue	Kerbside	317019	179078	2.0	NO ₂	N	N	N (21m)	2m	N
134	Sandringham Hotel	Façade	318261	176229	2.0	NO ₂	Y	N	N (3m)	5m	Y
139	Lower Cathedral Road	Kerbside	317540	176410	2.0	NO ₂	N	N	Y (3m)	1m	Y
140	Clare Street	Kerbside	317600	176047	2.0	NO ₂	N	N	Y (6m)	0.5m	Y

City of 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?
141	Fairoak Road 2	Kerbside	318438	178742	2.0	NO ₂	N	N	N (5m)	1.5m	Y
142	Pure Rugby	Kerbside	318326	176086	2.0	NO ₂	Y	N	N (>25m)	0.25m	Y
143	Windsor House	Façade	318009	176337	1.5	NO ₂	Y	N	Y (0.10m)	6.5m	Y
144	Marlborough House	Façade	318046	176307	1.5	NO ₂	Y	N	Y (0.10m)	6.5m	Y
145	Tudor Street Flats	Façade	317904	175921	1.5	NO ₂	N	N	Y (0.05m)	4.5m	Y
146	Neville Street	Façade	317508	176275	2.0	NO ₂	N	N	Y (0.05m)	3.5m	Y
147	211 Penarth Road	Façade	317636	175161	1.5	NO ₂	N	N	Y (0.10m)	7.0m	Y
148	161 Clare Road	Façade	317695	175389	1.5	NO ₂	N	N	Y (0.05)	5.0m	Y
149	10 Corporation Road	Façade	317764	175174	1.5	NO ₂	N	N	Y (0.05)	4.6m	Y
152	James Street	Façade	319003	174596	1.5	NO ₂	N	N	Y (0.10m)	6.0m	Y
153	Magic Roundabout	Façade	319491	176183	1.5	NO ₂	N	N	Y (0.10m)	12.5m	Y
156	2a/4 Colum Road	Façade	317997	177412	1.5	NO ₂	N	N	Y (0.10m)	5.0m	Y
157	47 Birchgrove Road	Façade	316605	179703	1.5	NO ₂	N	N	Y (0.10m)	8.0m	Y
158	64/66 Cathays Terrace	Façade	318093	177716	1.5	NO ₂	N	N	Y (0.05m)	3.0m	Y

City of 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?
159	IMO façade replacement	Façade	320709	177918	1.5	NO ₂	N	N	Y (0.10m)	4.0m	Y
160	High Street Zizzi	Façade	318131	176407	2.0	NO ₂	Y	N	Y (0.10m)	65m	Y
161	52 Bridge Road	Façade	315230	178205	1.5	NO ₂	Y	N	Y (0.05m)	7.9m	Y
162	58 Cardiff Road	Façade	315533	177809	1.5	NO ₂	N	N	Y (0.05m)	8.8m	Y
163	118 Cardiff Road	Façade	315738	177723	1.5	NO ₂	N	N	Y (0.05m)	14.8m	Y
164	725 Newport Road	Façade	321405	179345	1.5	NO ₂	N	N	Y (0.05m)	6.5m	Y
165	6 Heol Tyrrell	Façade	315918	176221	1.5	NO ₂	N	N	Y (0.05m)	5.5m	Y
166	163 Lansdowne Road	Façade	315950	176424	1.5	NO ₂	N	N	Y (0.05m)	5.4m	Y
167	359 Lansdowne Road	Façade	315326	176714	1.5	NO ₂	N	N	Y (0.05m)	6.1m	Y
168	570 Cowbridge Road East	Façade	314856	176929	1.5	NO ₂	N	N	Y (0.05m)	4.8m	Y
169	43 Clos Hector	Façade	321586	177414	1.5	NO ₂	N	N	Y (0.05m)	43m	Y
170	11 Pengam Green	Façade	320973	177721	1.5	NO ₂	N	N	Y (0.05m)	9.3m	Y
171	23 Tweedsmuir Road	Façade	320750	177053	1.5	NO ₂	N	N	Y (0.05m)	10.2m	Y

City of 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?
172	Ocean Way 1	Kerbside	320544	175613	2.0	NO ₂	N	N	N (>650m)	1.5	Y
173	Ocean Way 2	Kerbside	320395	175623	2.0	NO ₂	N	N	N (>650m)	1.5	Y

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

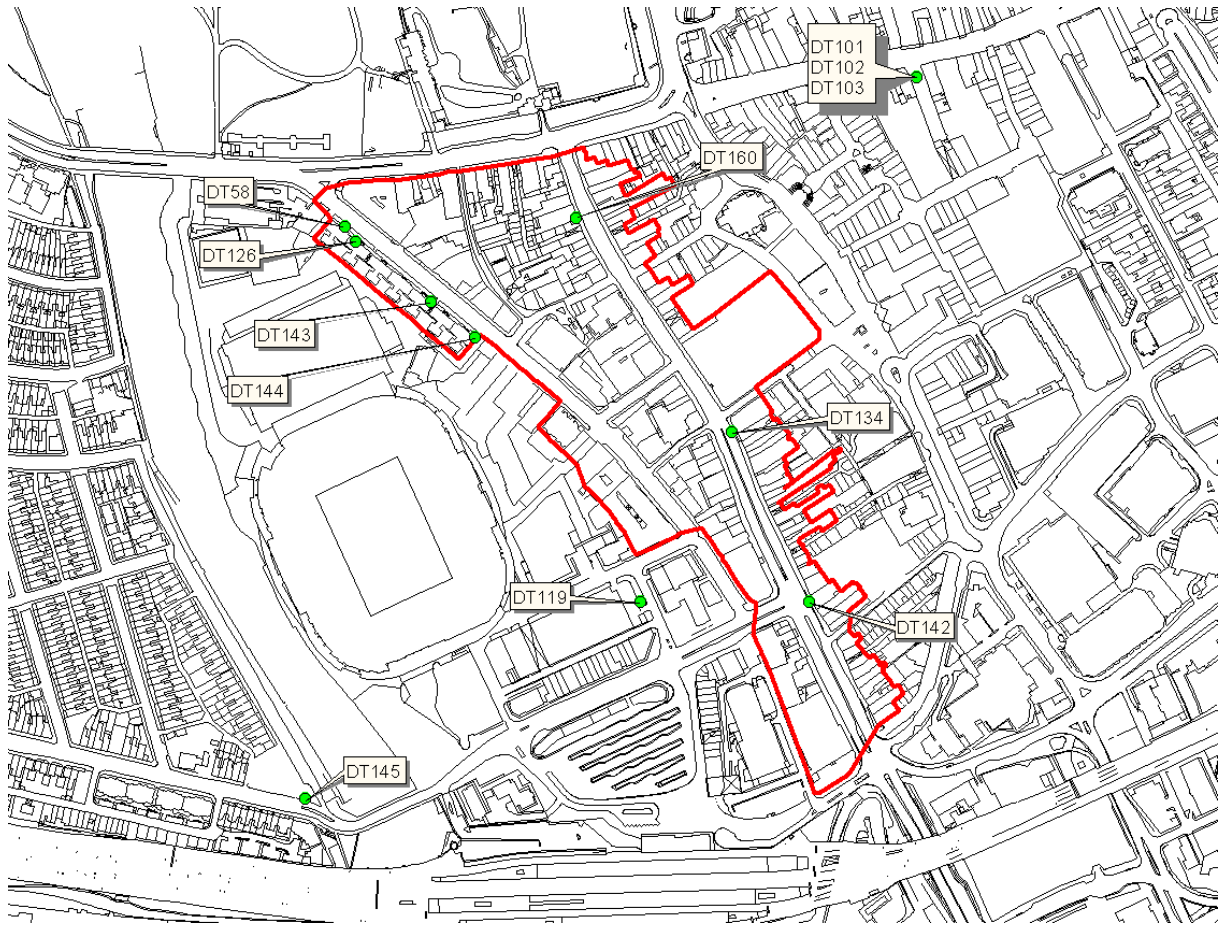


Figure 2.4 Map Showing Location of Diffusion Tubes in and around the Ely Bridge AQMA

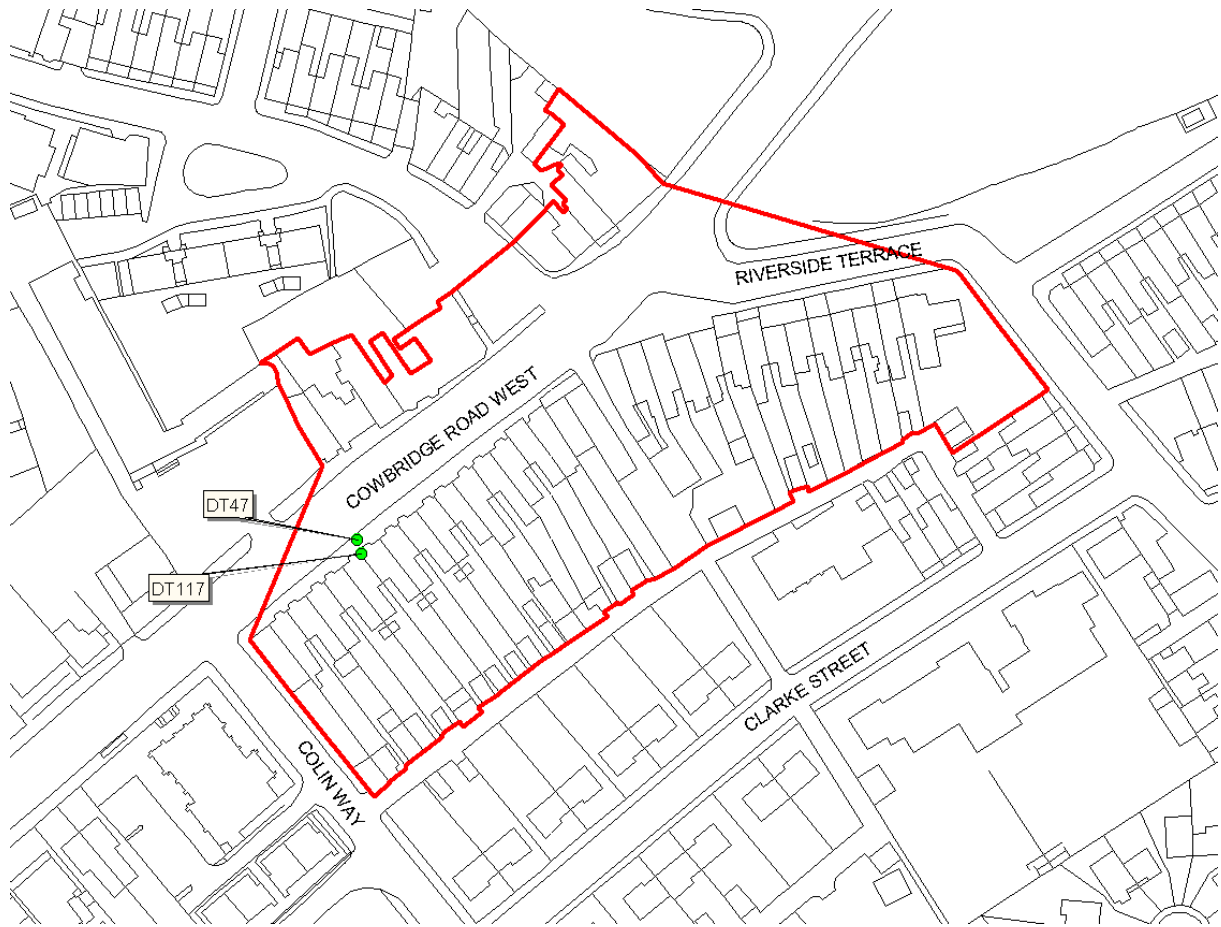


Figure 2.5 Map Showing Location of Diffusion Tubes in and around the Stephenson Court AQMA

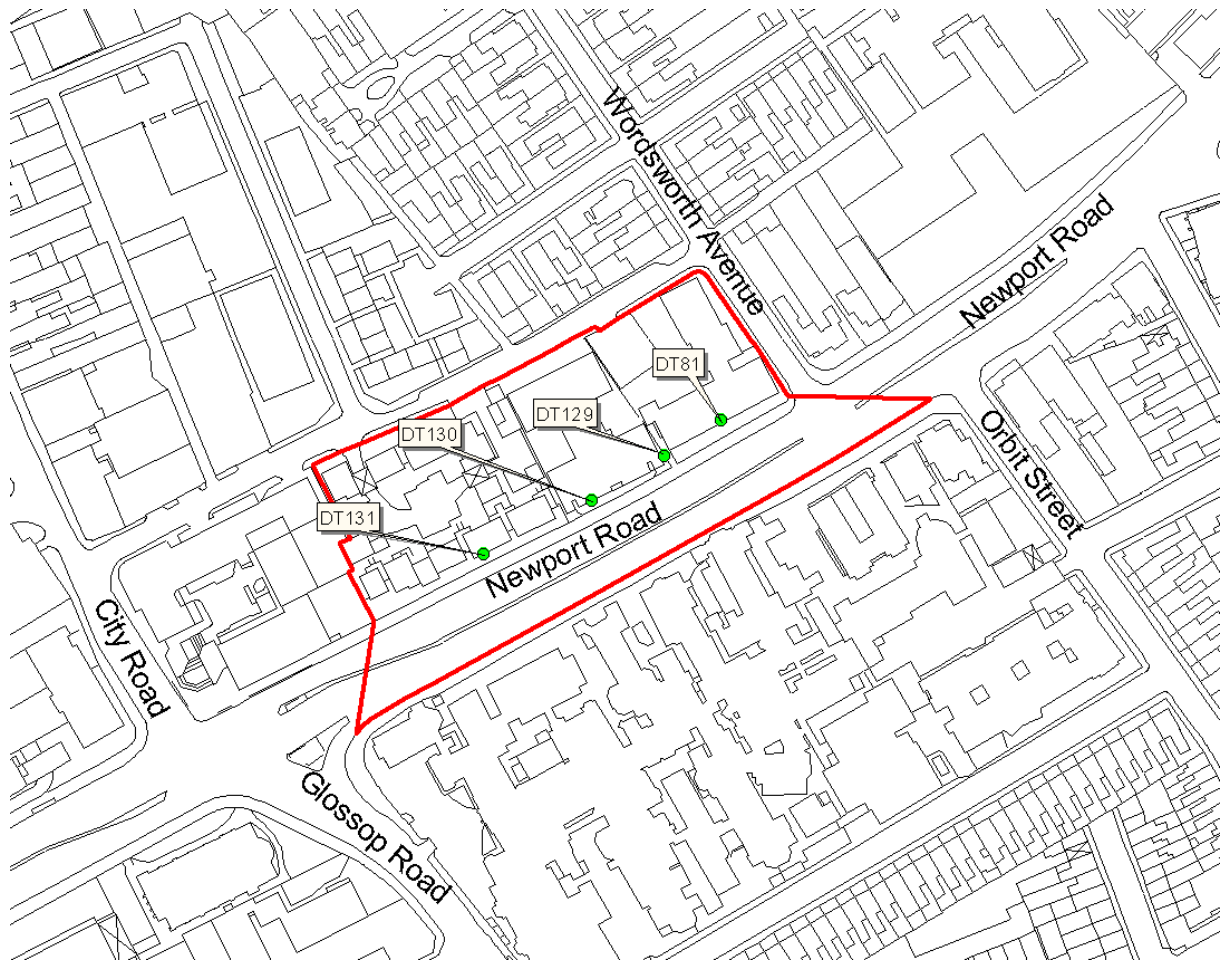


Figure 2.6 Map Showing Location of Diffusion Tubes in and around the Llandaff AQMA

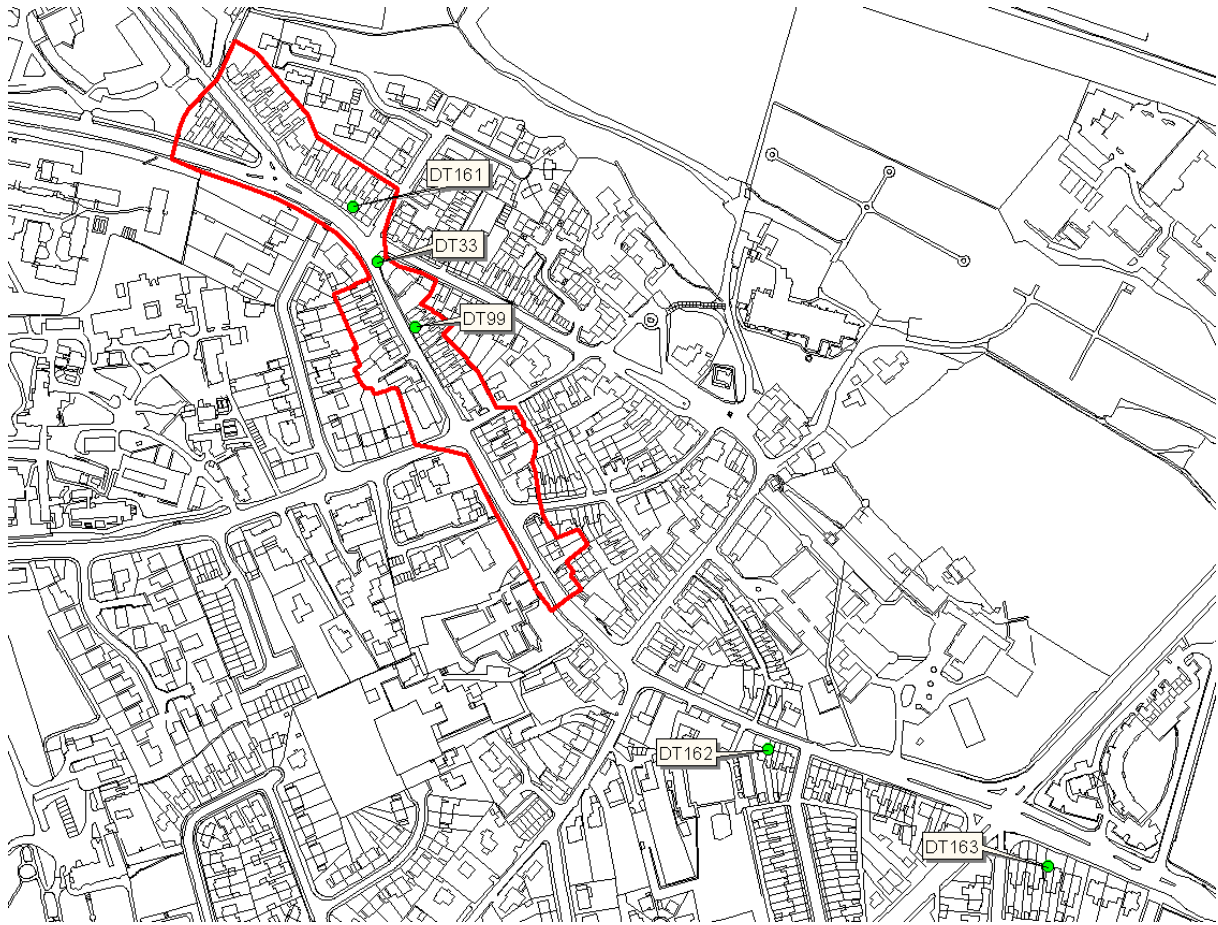


Figure 2.7 Map Showing Location of Diffusion Tube at Cardiff Road



Figure 2.8 Map Showing Location of Diffusion Tubes in Cathays area

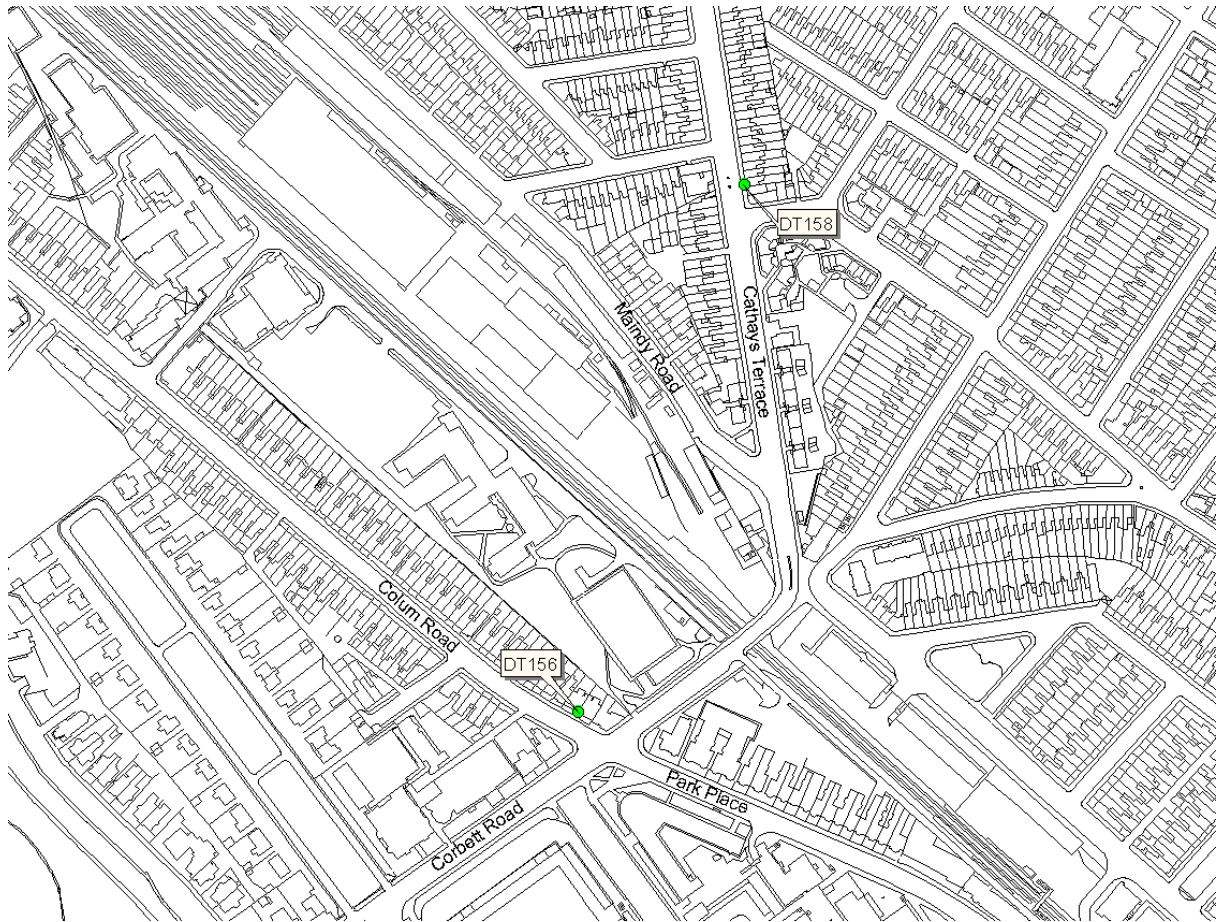


Figure 2.9 Map Showing Location of Diffusion Tube in City Road



Figure 2.10 Map Showing Location of Diffusion Tubes in Riverside area

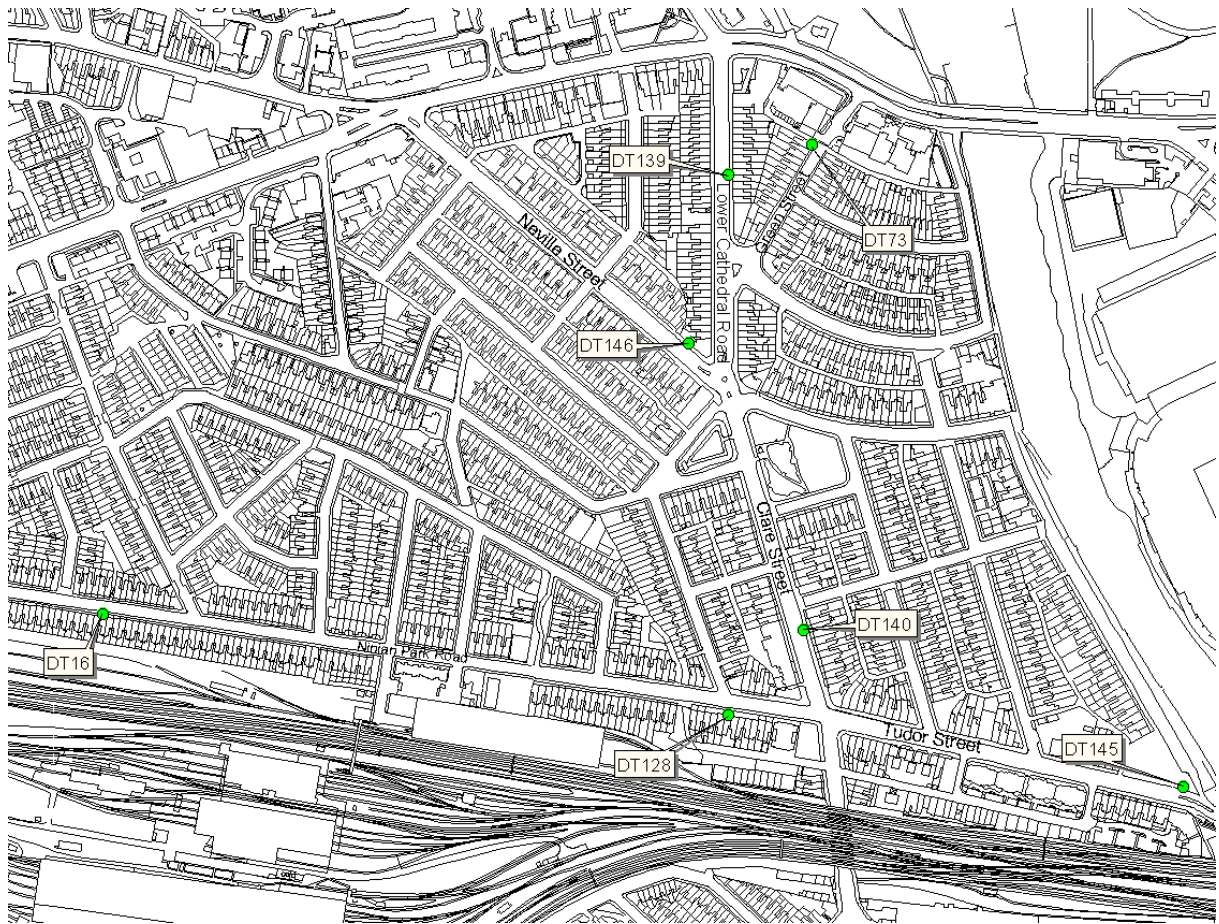


Figure 2.11 Map Showing Location of Diffusion Tube at Cowbridge Road West

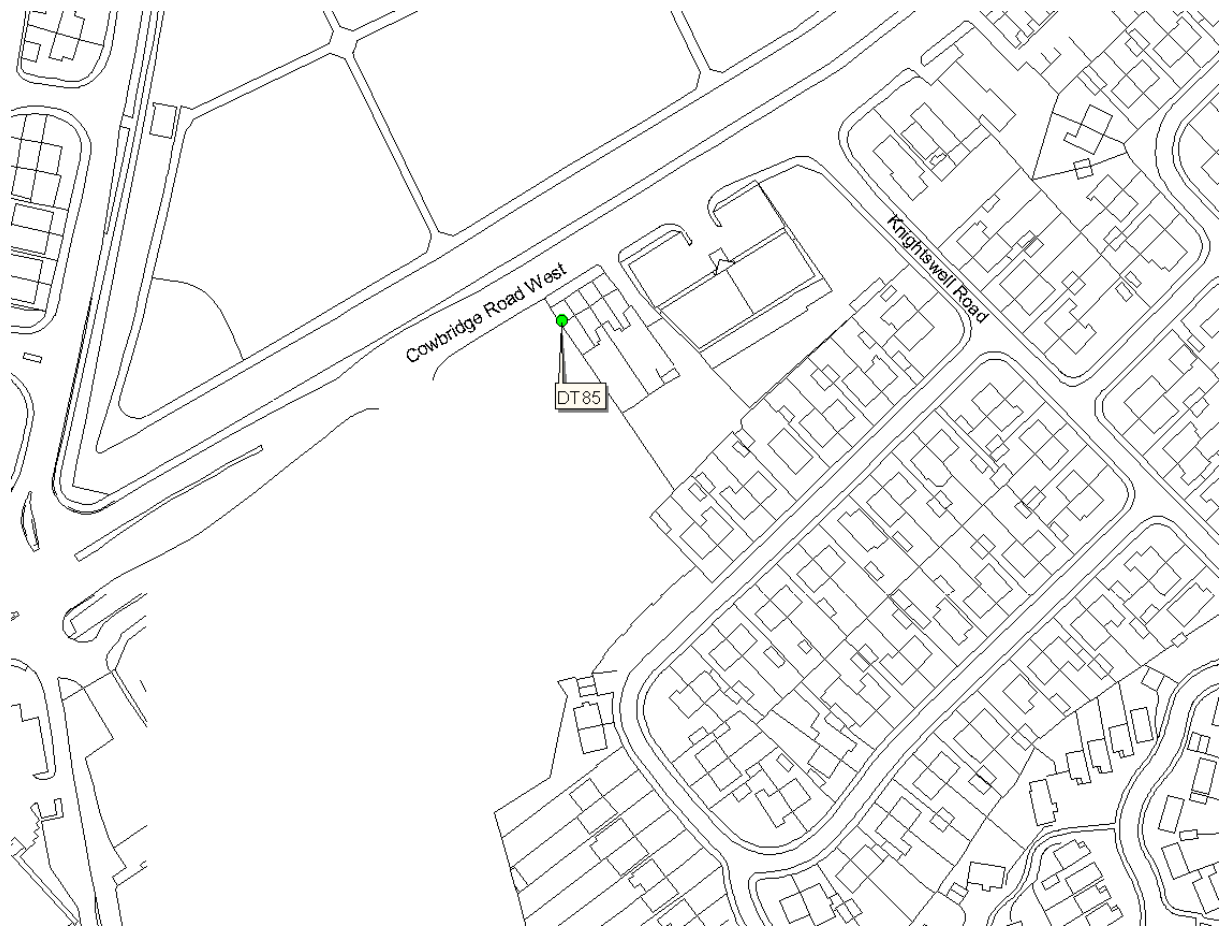


Figure 2.12 Map Showing Location of Diffusion Tube in Mackintosh Place



Figure 2.13 Map Showing Location of Diffusion Tubes in Fairoak Road

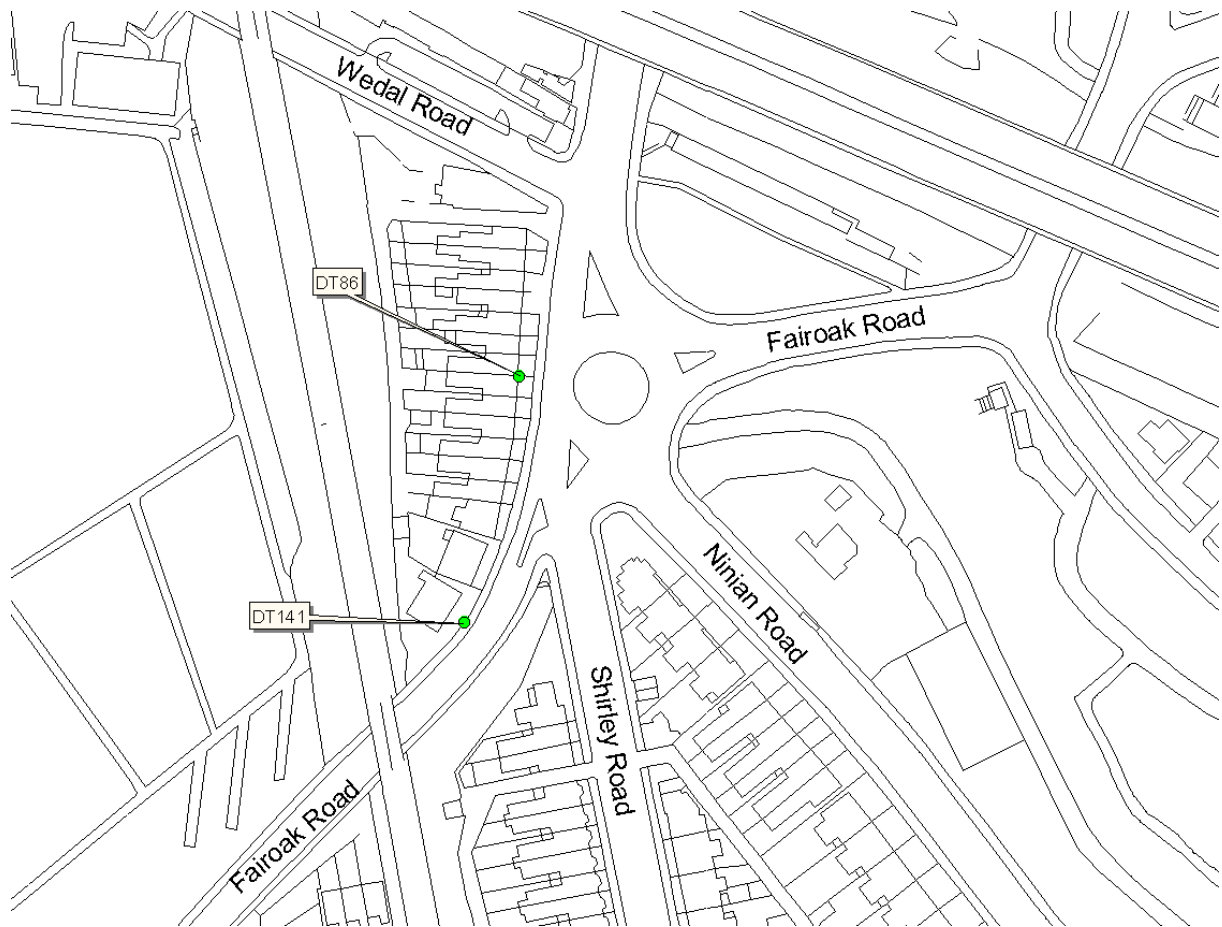


Figure 2.14 Map Showing Location of Diffusion Tubes in Heath area



Figure 2.15 Map Showing Location of Diffusion Tube in James Street

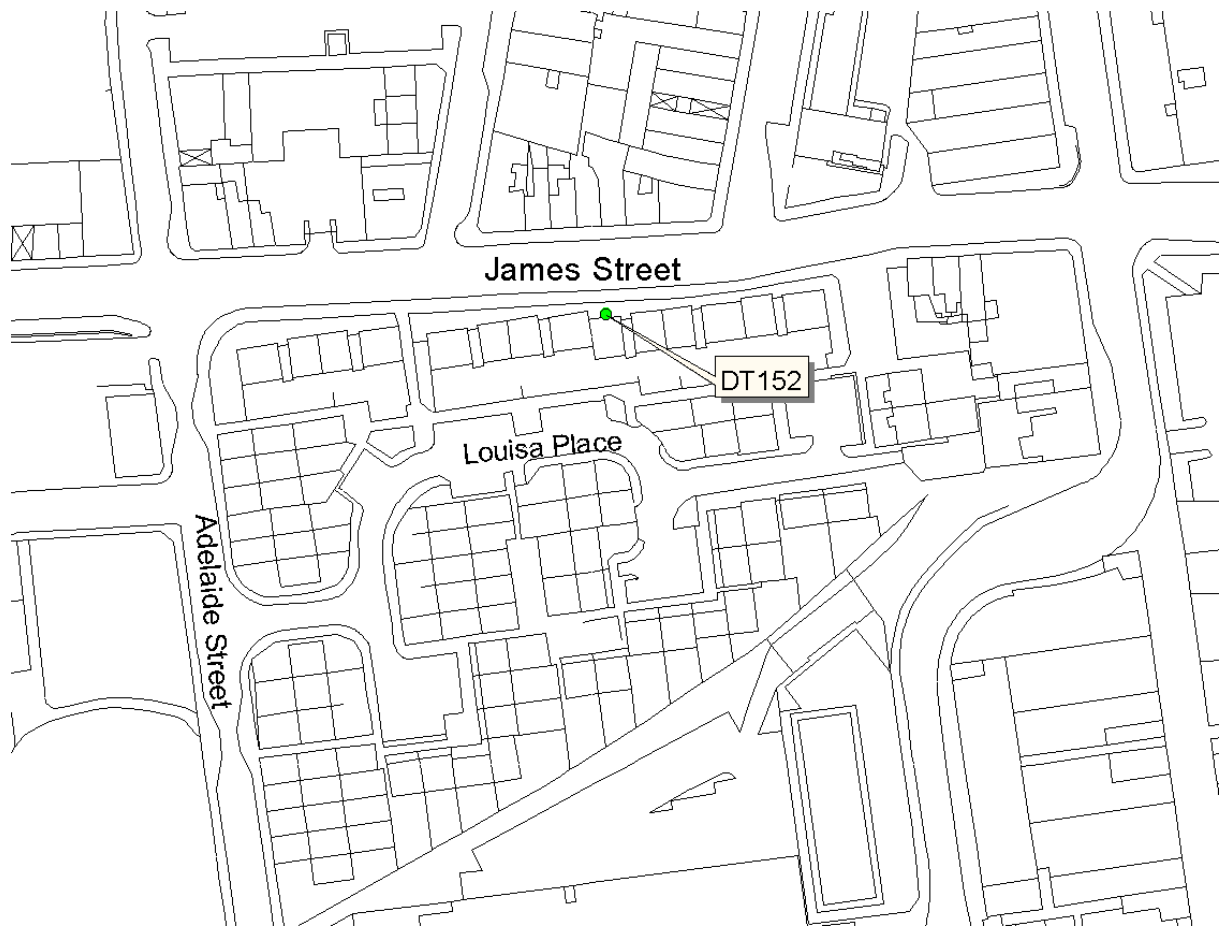


Figure 2.16 Map Showing Location of Diffusion Tubes in Leckwith area

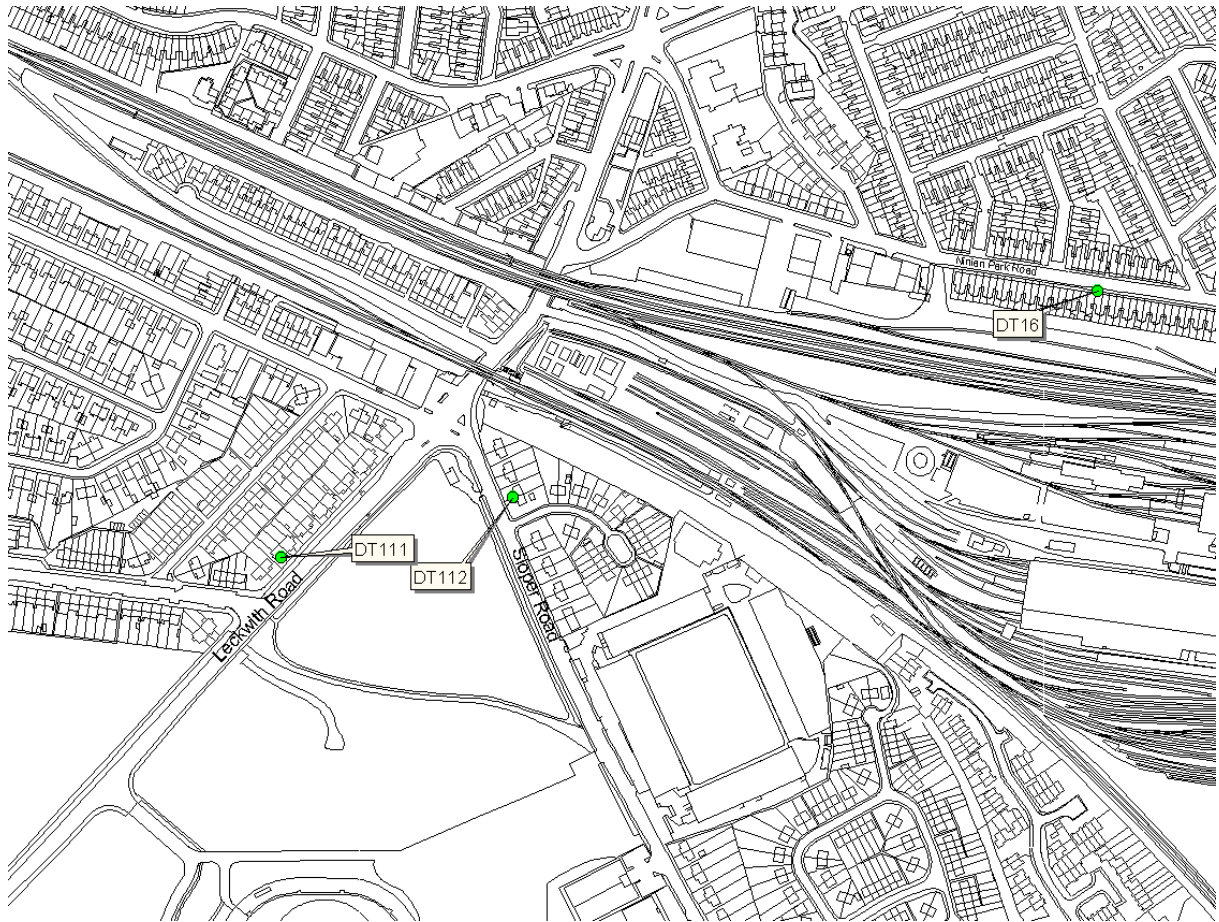


Figure 2.17 Map Showing Location of Diffusion Tube in East Tyndall Street

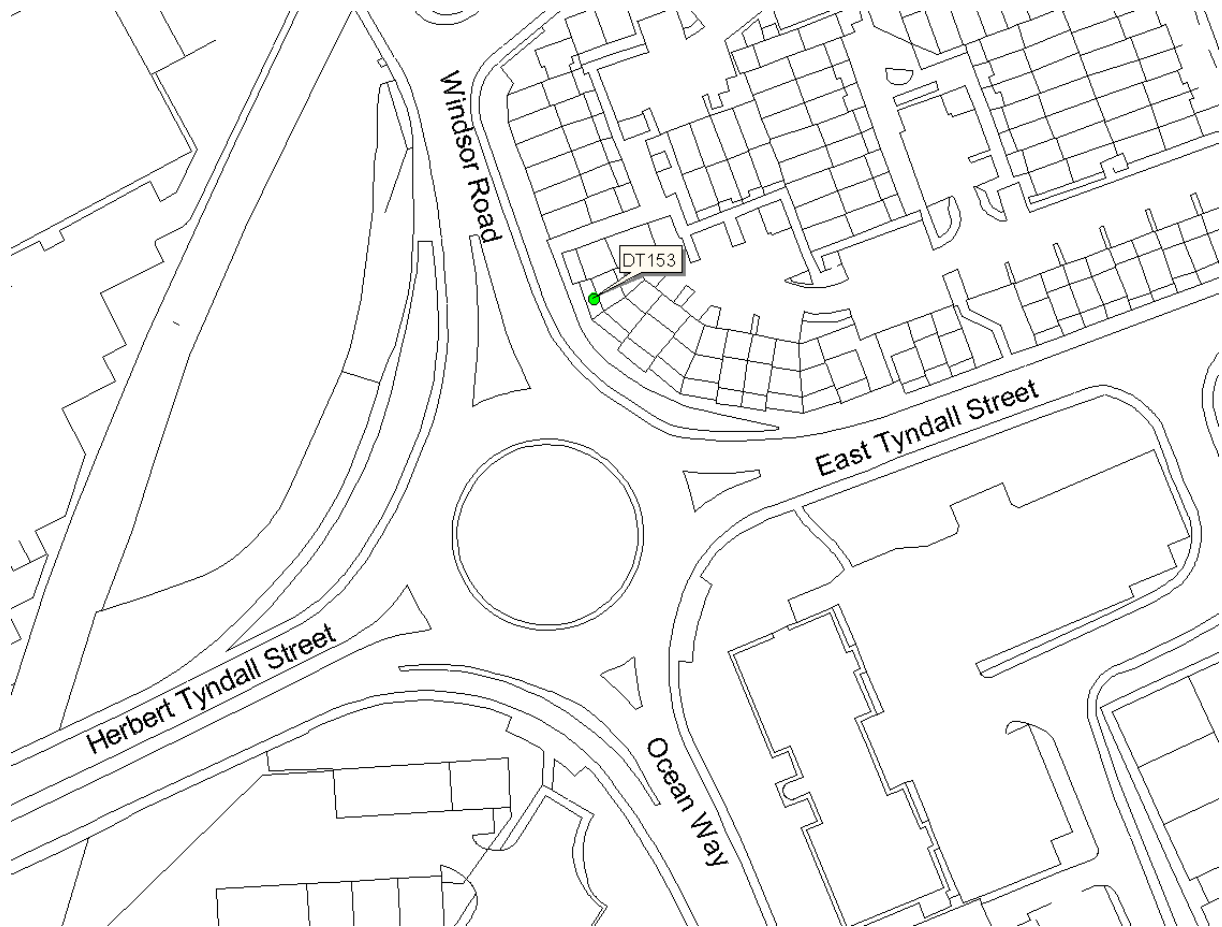


Figure 2.18 Map Showing Location of Diffusion Tubes in Newport Road



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



Figure 2.20 Map Showing Location of Diffusion Tube in Western Avenue

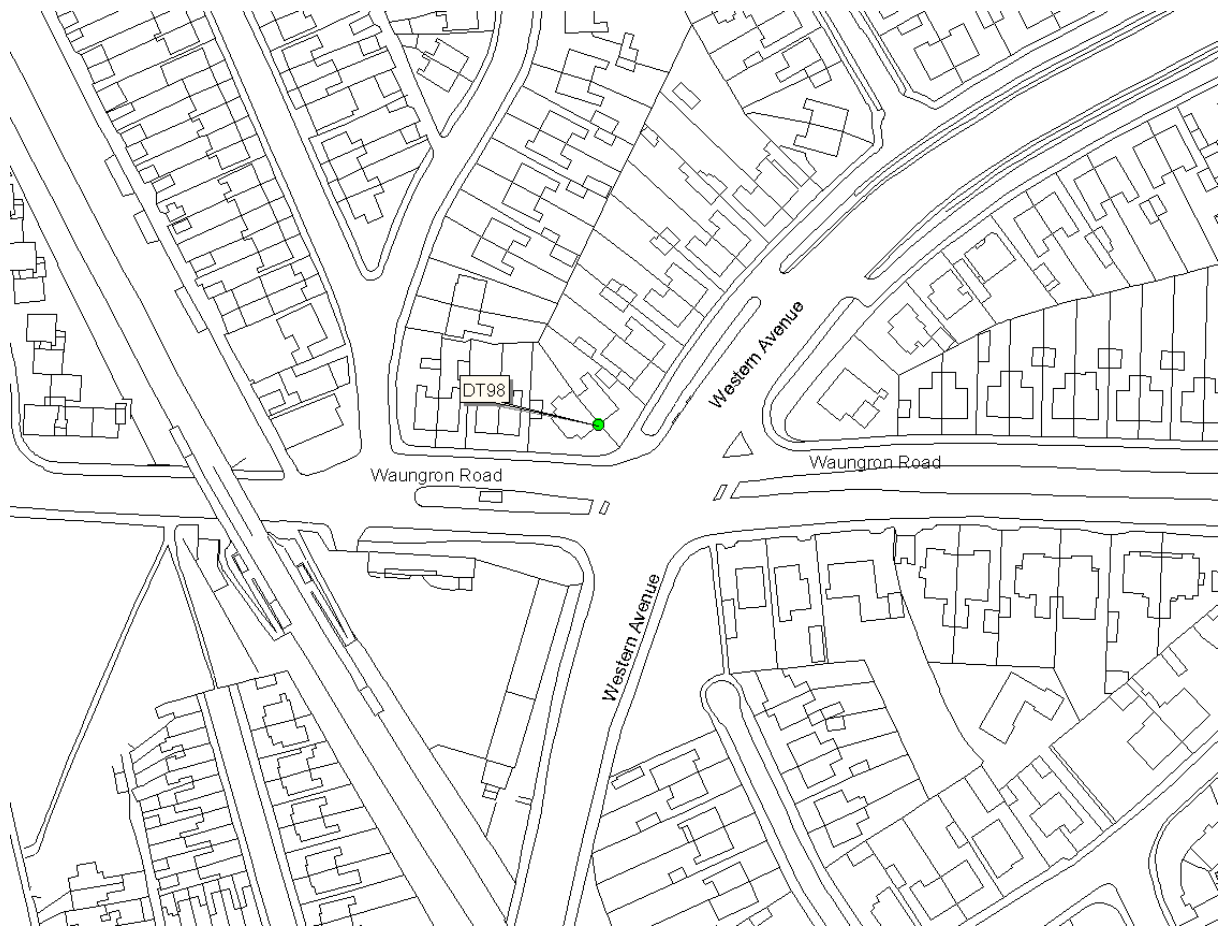


Figure 2.21 Map Showing Location of Diffusion Tubes in Cowbridge Road East and Llandaff Road



Figure 2.22 Map Showing Location of Diffusion Tubes in Ocean Way

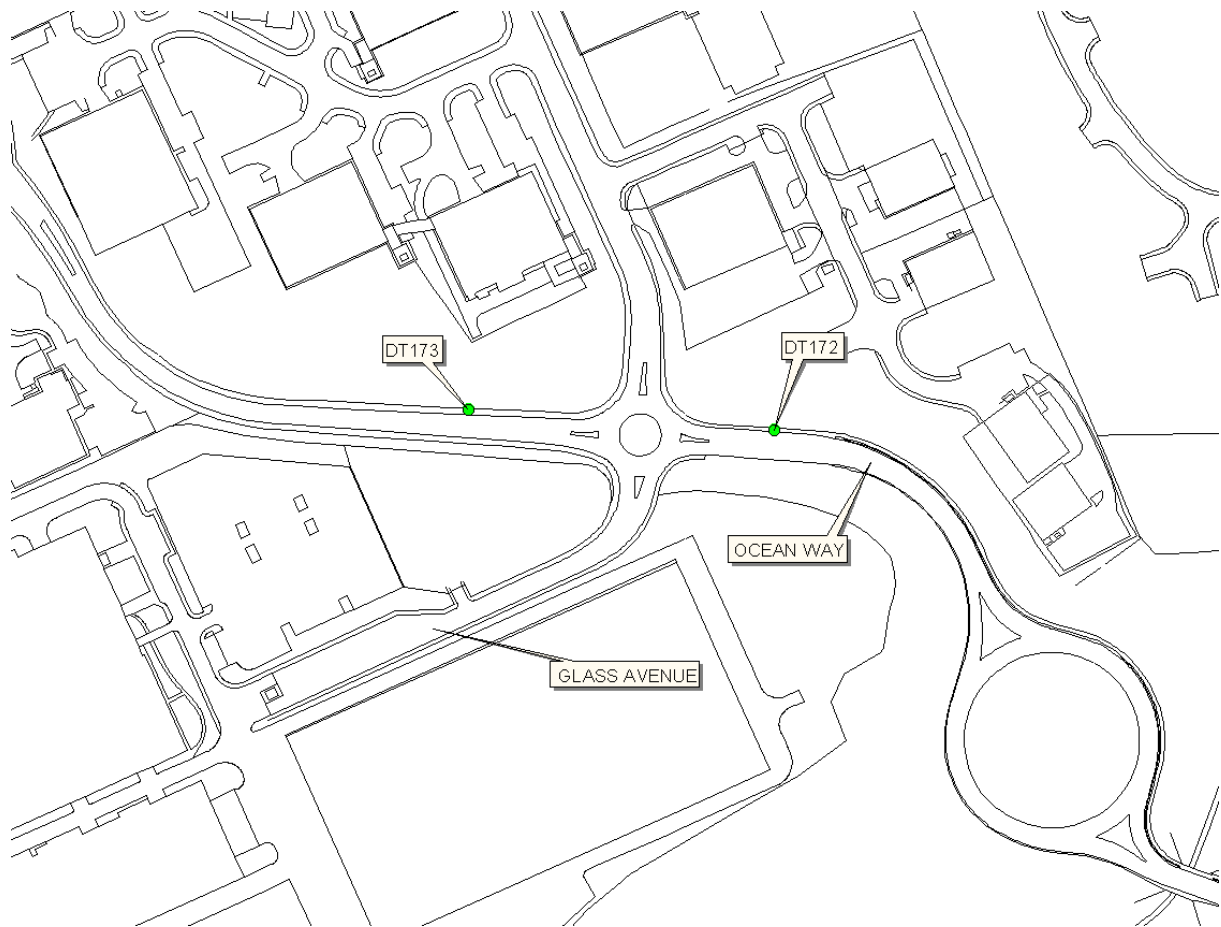
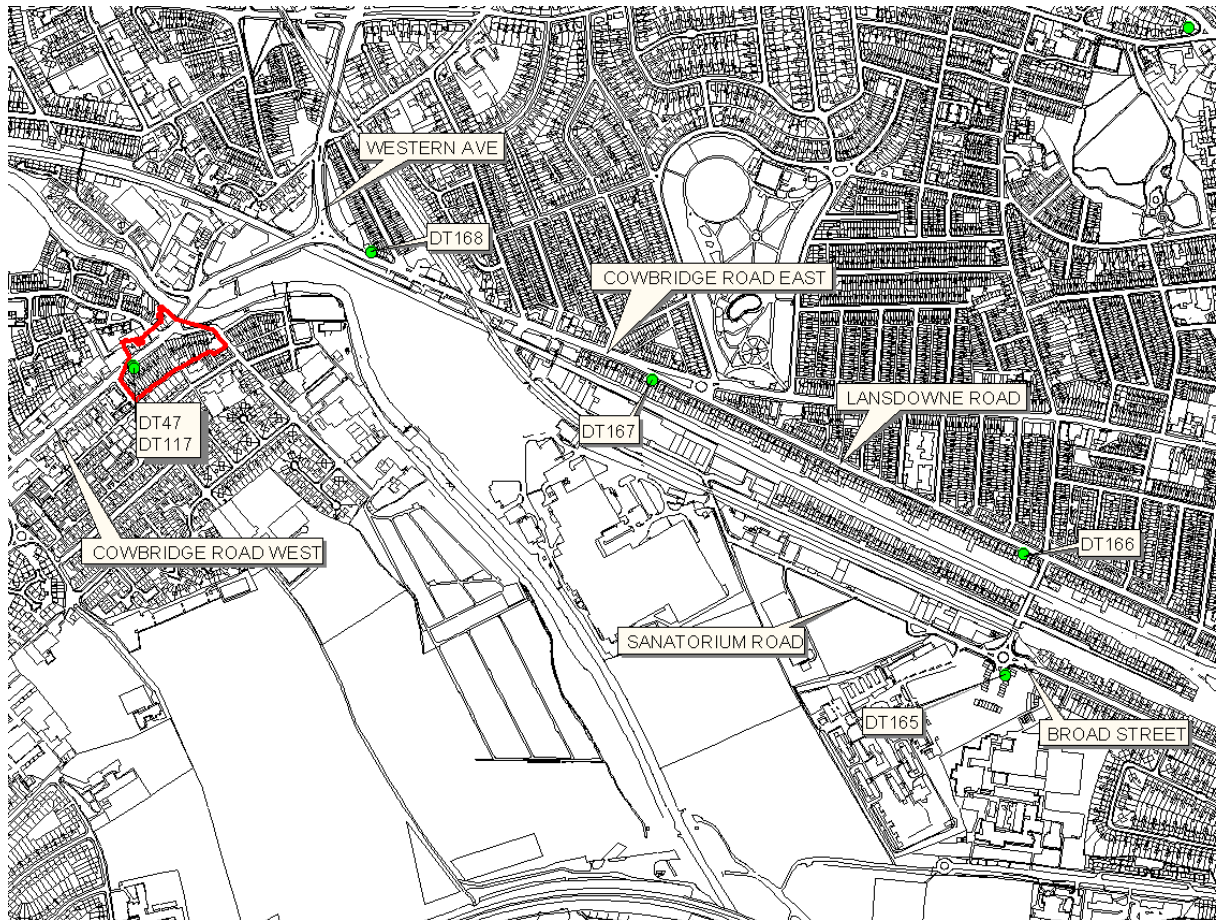


Figure 2.23 Map Showing Location of Diffusion Tubes in Tremorfa area



Figure 2.24 Map Showing Location of Diffusion Tubes in area of former Papermill, Canton



Area outlined in red is boundary of Ely Bridge AQMA

Results from nitrogen dioxide diffusion tubes can be uncertain due to the variety of preparation and analytical methodologies in use and due to systematic 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 Council's 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 tubes are located at various sites throughout the city and are 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 2013. 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 2013 Nitrogen Dioxide Measurements at Cardiff Centre AURN

Month	2013					
	101	102	103	Tube	AURN	
Jan	44	40	37	40.3	46.6	R
Feb	35	37	35	35.7	35.2	R
Mar	33	32	30	31.7	29.9	R
Apr	23	28	27	26.0	25.2	R
May	25	22	24	23.7	14.6	R
Jun	22	25	22	23.0	11.9	R
Jul	25	21	24	23.3	15.4	R
Aug	25	29	26	26.7	21.0	R
Sep	30	29	30	29.7	20.6	R
Oct	36	36	35	35.7	22.0	R
Nov	43	43	41	42.3	38.1	R
Dec	33	38	39	36.7	36.5	R to end of Dec 2013
Ave	31.2	31.7	30.8	31.2	26.4	

R = Ratified data

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

The Bias Adjustment Factor so calculated for 2013 from Cardiff Council diffusion tube data and ratified nitrogen dioxide data from the Cardiff Centre AURN site is 0.85. This is consistent with previous years' figures.

The calculated BAF and DTB values from 2002 to 2013 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
2013	0.85	+18.2%	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_14-Final-v2.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 (0.85) 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 2013 monitoring was carried out for nitrogen dioxide, particulate matter (PM₁₀), 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 (NO₂)

Nitrogen dioxide was measured during 2013 at one site equipped with an automatic analyser and by a network of 68 diffusion tubes. The results are given and discussed below.

Automatic Monitoring Data

Data from the Cardiff Centre AURN site for 2013 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 NO₂: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2013 %	Annual Mean Concentration (µg/m ³)				
					2009	2010	2011	2012	2013
Cardiff Centre AURN	Urban Centre	N	96.47	96.47	31	33	27	27	26

Figure 2.25 Trends in Annual Mean NO₂ Concentrations Measured at Automatic Monitoring Sites

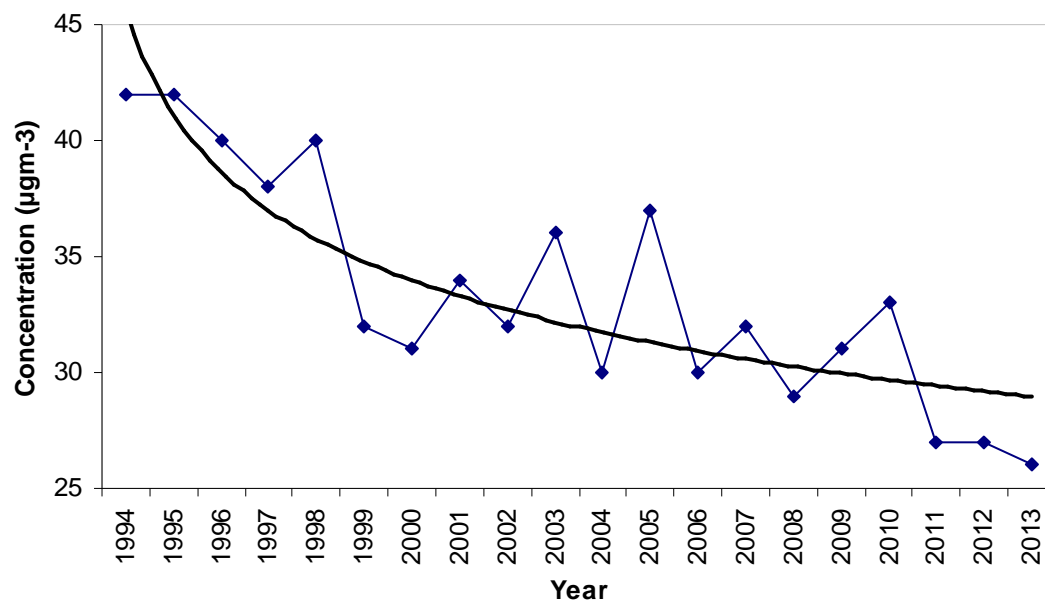


Table 2.4 Results of Automatic Monitoring for NO₂: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2013 %	Number of Hourly Means > 200µg/m ³				
					2009	2010	2011	2012	2013
Cardiff Centre AURN	Urban Centre	N	96.47	96.47	0	0	0	5	0

Diffusion Tube Monitoring Data

During 2013, monitoring for nitrogen dioxide was carried out using a network of 68 nitrogen oxide diffusion tubes. Three of these tubes (Sites 101, 102 and 103) are placed at the Cardiff Centre AURN site for the purposes of bias adjustment. Results for the diffusion tubes for 2013 are given in Table 2.5 below. The results have been adjusted for bias using the correction factor (0.85) given in Table 2.1.2 above.

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

The data given in Tables 2.5 and 2.6 are bias adjusted “as measured” with the exception of Site 134. Data capture for this site was only 25% (i.e. 3 monthly measurements out of 12) 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.

Sites 169 – 173 inclusive were commissioned at the beginning of July 2013. The annual mean concentrations reported are “as measured” rather than annualised as there are no nearby sites at similar locations with which to make a valid comparison.

The mean concentrations measured at the three façade-based sites (169-171) are significantly below the Objective and all three sites have complete 6-month continuous datasets covering the second half of 2013. It is likely that the annual mean concentrations for the whole of 2013 would be very similar to those reported for the half year. This is also the case with the two kerbside sites 172 and 173. Monitoring at all five sites will continue for the foreseeable future as they were commissioned to monitor the effects, if any, of a significant industrial development in the locality. Data for the full 2014 calendar year will be reported in the 2015 Updating and Screening Assessment.

Table 2.5 shows that 11 of the 68 monitoring sites recorded a concentration of NO₂ above the 40µg/m³ annual mean Objective in 2013. Of these 11 sites, 8 are inside one of the four AQMAs.

Of the 3 sites (numbers 74, 140 and 172) not currently in an AQMA where the measured concentration of NO₂ was above the 40µg/m³ annual mean Objective in 2013, none are at locations representative of relevant exposure, each being a kerbside site.

Site 74 has been discussed in previous reports; it is not representative of relevant exposure and remains in place to record long-term trends on the immediate local road network. Site 172 was new in July 2013 and is placed on Ocean Way to monitor potential impacts of traffic resulting from industrial developments in the area. The site is not representative of relevant exposure, the nearest being >650m away.

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). Both sites are shown in Figure 2.10 above.

It is possible to estimate the decrease in nitrogen dioxide concentration with increasing distance from the kerb 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 2013 monitoring data gives a calculated façade concentration at the nearest relevant location of $33.2\mu\text{g}\text{m}^{-3}$ which is comfortably below the Objective.

There are 10 façade-based diffusion tube sites with complete annual mean datasets 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 12 years.

The plot seems to indicate a very slow, gradual increase in nitrogen dioxide concentrations in earlier years, possibly influenced by the noticeable concentration peaks in 2003, 2007 and 2010. In more recent years concentrations appear to be stable year-on-year.

There were no annual mean concentrations measured in 2013 which were greater than $60\mu\text{g}\text{m}^{-3}$ and consequently there is little risk of the hourly-mean Objective being exceeded at any site.

Given the above and monitoring data presented, it is considered that there is no justification to proceed to a Detailed Assessment for any location.

Table 2.5 Results of NO₂ Diffusion Tubes 2013

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.85
16	Ninian Park Road	Façade	N	N	12	31.3
33	Mitre Place	Kerbside	Y	N	12	49.6
44	City Road	Kerbside	N	N	10	33.2
45	Mackintosh Place	Kerbside	N	N	12	36.8
47	Ely Bridge	Kerbside	Y	N	11	48.0
49	Penarth Road	Façade	N	N	12	32.1
56	Birchgrove Village	Kerbside	N	N	12	35.4
58	Westgate Street	Kerbside	Y	N	12	52.4
73	Green Street	Kerbside	N	N	11	24.9
74	Station Terrace	Kerbside	N	N	12	47.8
81	Stevenson Court	Façade	Y	N	12	37.2
82	104 Birchgrove Road	Façade	N	N	11	32.1
85	497 Cowbridge Road West	Façade	N	N	11	26.7
86	19 Fair oak Road	Façade	N	N	12	38.8

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.85
96	Manor Way Junction	Façade	N	N	11	35.5
97	Newport Road (premises)	Façade	N	N	12	34.5
98	Western Avenue (premises)	Façade	N	N	12	28.3
99	Cardiff Road Llandaff	Façade	Y	N	12	38.9
100	188 Cardiff Road	Façade	N	N	12	32.6
101	Cardiff Centre AURN	Urban Centre	N	Y	12	26.5
102	Cardiff Centre AURN	Urban Centre	N	Y	12	26.9
103	Cardiff Centre AURN	Urban Centre	N	Y	12	26.2
106	30 Caerphilly Road	Façade	N	N	12	34.8
107	Lynx Hotel	Façade	N	N	9	34.6
111	98 Leckwith Road	Façade	N	N	12	25.2
112	17 Sloper Road	Façade	N	N	12	30.7
115	21 Llandaff Road	Façade	N	N	12	35.5
117	25 Cowbridge Road West	Façade	Y	N	12	44.9
119	Havelock Street	Kerbside	N	N	11	33.2
124	287 Cowbridge Road East	Façade	N	N	12	26.1

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.85
126	Westgate Street Flats	Façade	Y	N	10	44.0
128	117 Tudor Street	Façade	N	N	12	34.7
129	Stephenson Court 2	Façade	Y	N	12	32.8
130	Burgess Court	Façade	Y	N	12	39.0
131	Dragon Court	Façade	Y	N	12	43.9
133	St Mark's Avenue	Kerbside	N	N	12	37.8
134	Sandringham Hotel	Façade	Y	N	3	33.4 ^a
139	Lower Cathedral Road	Kerbside	N	N	12	34.1
140	Clare Street	Kerbside	N	N	12	42.2
141	Fairoak Road 2	Kerbside	N	N	12	37.7
142	Pure Rugby	Kerbside	Y	N	10	46.3
143	Windsor House	Façade	Y	N	12	42.1
144	Marlborough House	Façade	Y	N	12	39.0
145	Tudor Street Flats	Façade	N	N	12	34.5
146	Neville Street	Façade	N	N	11	30.9
147	211 Penarth Road	Façade	N	N	12	32.0
148	161 Clare Road	Façade	N	N	12	29.3
149	10 Corporation Road	Façade	N	N	11	34.5
152	James Street	Façade	N	N	12	31.0

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.85
153	Magic Roundabout	Façade	N	N	12	33.0
156	2a/4 Colum Road	Façade	N	N	12	34.9
157	47 Birchgrove Road	Façade	N	N	12	29.0
158	64/66 Cathays Terrace	Façade	N	N	11	30.2
159	IMO façade replacement	Façade	N	N	10	38.8
160	High Street Zizzi	Façade	Y	N	11	30.3
161	52 Bridge Road	Façade	Y	N	12	39.1
162	58 Cardiff Road	Façade	N	N	12	27.6
163	118 Cardiff Road	Façade	N	N	12	25.4
164	725 Newport Road	Façade	N	N	12	25.4
165	6 Heol Tyrrell	Façade	N	N	12	19.4
166	163 Lansdowne Road	Façade	N	N	11	34.9
167	359 Lansdowne Road	Façade	N	N	12	31.7
168	570 Cowbridge Road East	Façade	N	N	10	27.9
169	43 Clos Hector	Façade	N	N	6 (50%)	18.0
170	11 Pengam Green	Façade	N	N	6 (50%)	22.1

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %)	2013 Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Bias Adjustment factor = 0.85
171	23 Tweedsmuir Road	Façade	N	N	6 (50%)	22.5
172	Ocean Way 1	Kerbside	N	N	6 (50%)	49.5
173	Ocean Way 2	Kerbside	N	N	6 (50%)	33.7

^a = annual mean for site 134 (2013) has been "annualised" as full calendar year data capture was less than 75%

Table 2.6 Results of NO₂ Diffusion Tubes (2009 to 2013)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
			2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)	2013 (Bias Adjustment Factor = 0.85)
16	Façade	N	31.1	32.8	32.1	30.9	31.3
33	Kerbside	Y	52.3	53.5	55.0	49.8	49.6
44	Kerbside	N	38.1	44.1	39.2	34.8	33.2
45	Kerbside	N	42.7	39.9	36.8	36.8	36.8
47	Kerbside	Y	49.6	58.3	53.0	51.1^a	48.0
49	Façade	N	31.7	35.5	31.9	27.9	32.1
56	Kerbside	N	36.8	37.6	31.5	33.9	35.4
58	Kerbside	Y	49.5	52.4	54.9	49.5	52.4

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
			2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)	2013 (Bias Adjustment Factor = 0.85)
73	Kerbside	N	27.1	29.3	28.0	25.6	24.9
74	Kerbside	N	44.7	54.1	48.0	50.1	47.8
81	Façade	Y	40.7	45.6	40.6	40.6	37.2
82	Façade	N	29.2	33.2	28.2	28.5	32.1
85	Façade	N	27.9	29.7	28.2	27.3	26.7
86	Façade	N	41.0	42.6	39.9	40.3	38.8
96	Façade	N	35.2	39.4	34.5	35.4	35.5
97	Façade	N	37.5	41.9	35.4	37.8	34.5
98	Façade	N	31.4	32.8	29.1	26.9	28.3
99	Façade	Y	41.7	48.6	39.8	34.5	38.9
100	Façade	N	36.0	38.3	34.8	33.7	32.6
101	Urban Centre	N	31.6	31.7	26.7	25.8	26.5
102	Urban Centre	N	31.3	32.7	28.0	26.1	26.9
103	Urban Centre	N	30.4	33.1	27.4	25.8	26.2
106	Façade	N	37.5	37.5	34.0	35.7	34.8
107	Façade	N	39.0	43.9	36.4	37.6	34.6

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
			2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)	2013 (Bias Adjustment Factor = 0.85)
111	Façade	N	24.2	29.0	24.5	23.7	25.2
112	Façade	N	31.6	36.6	30.2	30.6	30.7
115	Façade	N	40.5	42.8	38.7	37.7	35.5
117	Façade	Y	43.3	51.6	46.5	42.6	44.9
119	Kerbside	N	34.3	37.6	40.2	33.7	33.2
124	Façade	N	26.4	31.4	27.0	25.5	26.1
126	Façade	Y	40.0	48.7	45.4	39.9	44.0
128	Façade	N	36.4	38.6	36.7	35.1	34.7
129	Façade	Y	36.0	39.6	36.2	34.9	32.8
130	Façade	Y	44.9	46.7	44.4	41.5	39.0
131	Façade	Y	46.7	49.5	47.3	47.9	43.9
133	Kerbside	N	41.2	49.7	39.5	39.3	37.8
134	Façade	Y	45.7	48.8	45.1	37.2 ^a	33.4 ^a
139	Kerbside	N	35.2	40.6	34.3	34.3	34.1
140	Kerbside	N	43.7	48.9	42.5	41.7	42.2
141	Kerbside	N	40.3	43.0	40.0	47.6	37.7

Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
			2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)	2013 (Bias Adjustment Factor = 0.85)
142	Kerbside	Y	-	58.8	48.7	47.6	46.3
143	Façade	Y	-	48.6	43.8	41.5	42.1
144	Façade	Y	-	46.2	42.9	39.5	39.0
145	Façade	N	-	39.7	34.6	33.8	34.5
146	Façade	N	-	33.5	29.4	29.5	30.9
147	Façade	N	-	34.3	31.1	31.0	32.0
148	Façade	N	-	34.2	29.0	27.8	29.3
149	Façade	N	-	36.5	34.1	33.0	34.5
152	Façade	N	-	35.1	32.8	32.5	31.0
153	Façade	N	-	36.1	35.0	36.2	33.0
156	Façade	N	-	38.2	33.4	32.6	34.9
157	Façade	N	-	33.9	33.1	31.6	29.0
158	Façade	N	-	34.8	31.5	28.8	30.2
159	Façade	N	-	41.9	38.7	39.9	38.8
160	Façade	Y	-	36.0	32.6	31.4	30.3
161	Façade	Y	-	-	-	43.0	39.1

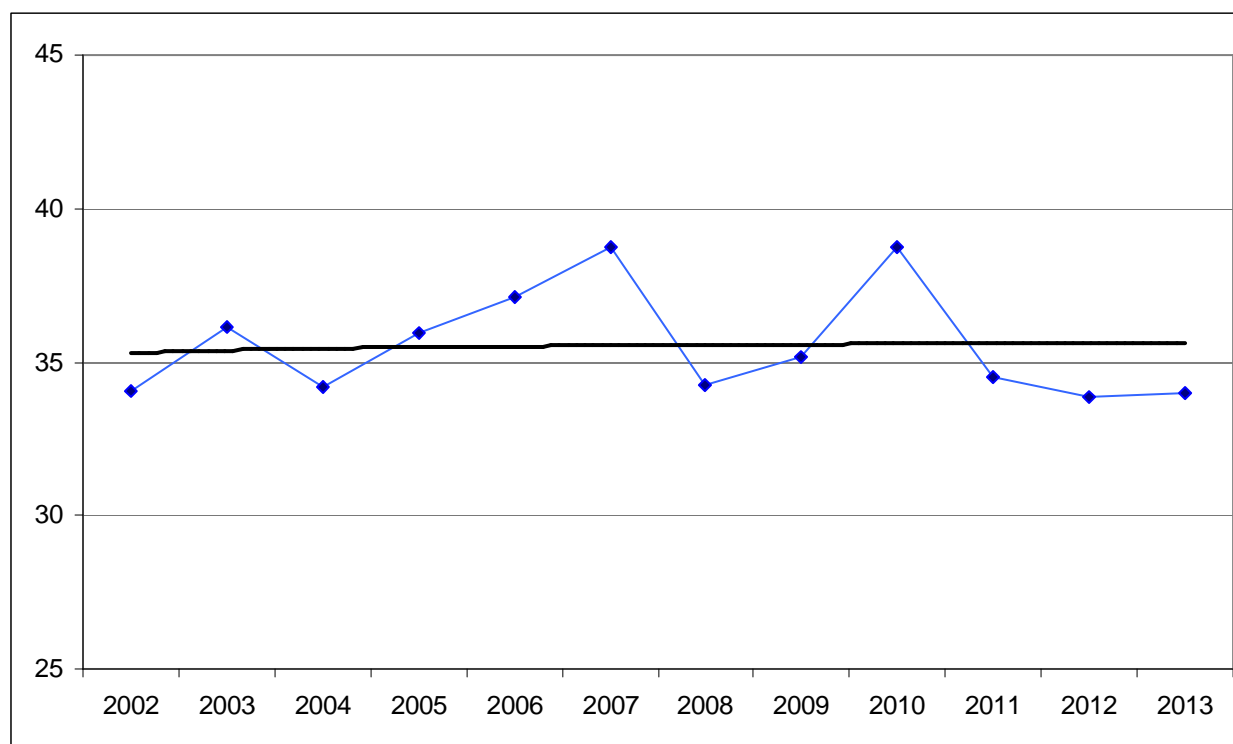
Site ID	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
			2009 (Bias Adjustment Factor = 0.89)	2010 (Bias Adjustment Factor = 0.92)	2011 (Bias Adjustment Factor = 0.88)	2012 (Bias Adjustment Factor = 0.86)	2013 (Bias Adjustment Factor = 0.85)
162	Façade	N	-	-	-	28.5	27.6
163	Façade	N	-	-	-	27.5	25.4
164	Façade	N	-	-	-	-	25.4
165	Façade	N	-	-	-	-	19.4
166	Façade	N	-	-	-	-	34.9
167	Façade	N	-	-	-	-	31.7
168	Façade	N	-	-	-	-	27.9
169	Façade	N	-	-	-	-	18.0
170	Façade	N	-	-	-	-	22.1
171	Façade	N	-	-	-	-	22.5
172	Kerbside	N	-	-	-	-	49.5
173	Kerbside	N	-	-	-	-	33.7

^a = annual means for Site 47 (2012) and Site 134 (2012 and 2013) have been "annualised" as full calendar year data capture was less than 75%

Table 2.7 “Annualisation” Calculation for Site 134 in 2013

Tube Corrected	Tubes Used	Periods used	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)	Average	Measured Mean	Corrected Mean
134	73 160	Jan, Sep, Dec	24.9 30.3	29.8 34.8	0.84 0.87	0.855	39.1	33.4

Figure 2.26 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



2.2.2 Particulate Matter (PM₁₀)

During 2013 PM₁₀ 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 that there would have been more than 35 exceedences of the 50µgm⁻³ daily mean standard at the Cardiff Centre site.

As for previous years, there no exceedence of either of the National Air Quality Standards in 2013.

Figure 2.5 shows a generally downward trend in annual mean concentrations of PM₁₀.

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2013 %	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m ³)				
						2009	2010	2011 ^a	2012	2013
Cardiff Centre AURN	Urban Centre	N	92.05	92.05	Y	18	21	22	18	19

^a = Annual mean for 2011 has been “annualised” as in Box 3.2 of TG(09) as full calendar year data capture was less than 75%

Figure 2.27 Trends in Annual Mean PM₁₀ Concentrations

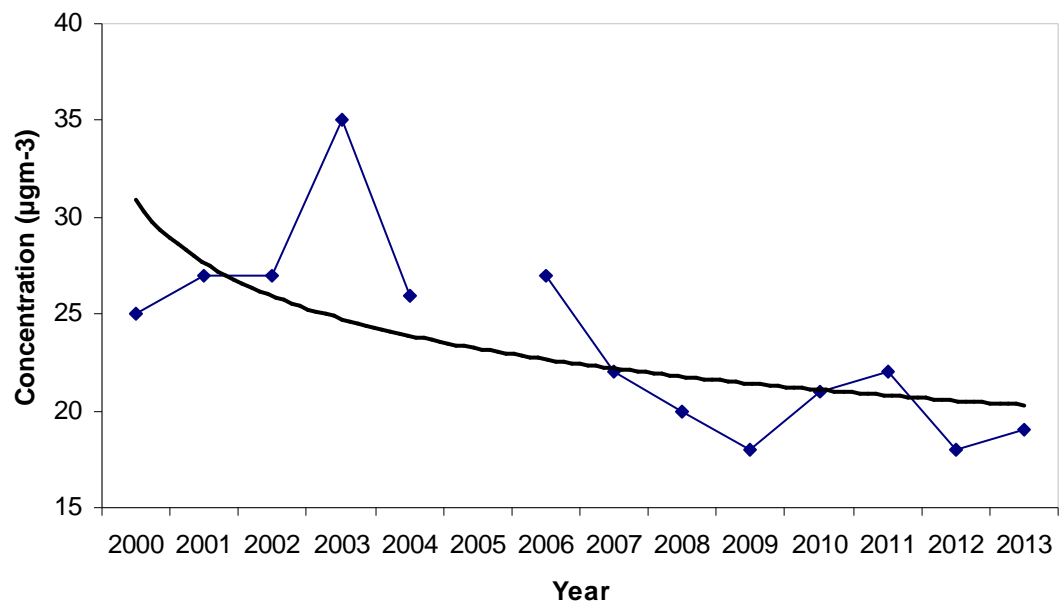


Table 2.9 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2013 %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m ³				
						2009	2010	2011 ^a	2012	2013
Cardiff Centre AURN	Urban Centre	N	92.05	92.05	Y	6	3	3	5	3

^a = data for 2011 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 (SO₂)

Sulphur dioxide was measured at the Cardiff Centre AURN automatic monitoring site during 2013. 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 2013.

Table 2.10 Results of Automatic Monitoring for SO₂: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % ^a	Valid Data Capture 2013 % ^b	Number of:		
					15-minute Means > 266µg/m ³	1-hour Means > 350µg/m ³	24-hour Means > 125µg/m ³
Cardiff Centre AURN	Urban Centre	N	95.17	95.17	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 2013.

2.2.5 Other Pollutants Monitored

During 2013 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, all data presented is classified as “verified”.

Table 2.11 Results of Monitoring for Lead (2011 – 2013)

Site	2011 ($\mu\text{g}/\text{m}^3$)	2012 ($\mu\text{g}/\text{m}^3$)	2013 ($\mu\text{g}/\text{m}^3$)
Cardiff Llandaff	0.011584	0.007414	0.00875
Cardiff Rumney	0.009054	0.008243	0.01078

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 2013.

Data capture at for the whole year at the Cardiff Centre AURN site was 93.18% 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 2013 the data capture was 96.1%. There were 21 measured exceedences of the Air Quality Standard (8hr running mean $> 100\mu\text{g}/\text{m}^3$) over 4 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

City of Cardiff Council has examined the results from monitoring in its area.

Concentrations within three of the four AQMAs still exceed the annual mean objective for nitrogen dioxide. However, there is increasing evidence showing compliance with the objective in the fourth AQMA. It is concluded that, for the present time, all four AQMAs should remain.

Concentrations outside of the AQMAs are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

Cardiff Council has considered road traffic sources extensively in earlier reports; the monitoring network is very largely focused on measuring concentrations of nitrogen dioxide close to many of them. These have been considered either in earlier reports or discussed earlier in this report.

New monitoring sites were been commissioned at the start of 2013 and further sites were commissioned at the start of July 2013. Data from these sites is reported herein. Additional sites were also commissioned at the start of 2014 and data from these will be reported in due course.

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 2013 Progress Report which are of significance in terms of air quality.

The proposed “Viridor” energy from waste site is under construction. Monitoring is in place in the Tremorfa area of the city and also on Ocean Way (the main transport link to the site) to assess the effects, if any, on local 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 2013 Progress Report. 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 is 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

The Council continues to monitor the impact of proposed developments and recent developments already underway or in use. For example, the nitrogen dioxide diffusion tube monitoring network was expanded in July 2013 to include residential properties in the Tremorfa area. This is to measure the impact (if any) from both on-site emissions and road traffic resulting from the proposed Viridor Energy from Waste plant discussed in previous reports. This development is currently under construction and monitoring will continue for the foreseeable future.

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

In addition to the above, the following developments may either be of significance in respect of local air quality or be a proposed development where air quality is a consideration

1. Northgate House, Kingsway, City Centre

A planning application was received in late 2013 to convert office accommodation with a basement nightclub into residential accommodation. The development would introduce relevant exposure adjacent to a heavily-trafficked road in the city centre where previously there was no such exposure. The premises is not located within an existing AQMA.

An air quality assessment was submitted during the application process which concluded that the annual mean concentration of nitrogen dioxide is likely to be exceeded at the location.

The planning consent, granted in early 2014 despite objections on air quality and noise grounds, recognised both issues. The consent was conditioned to require the incorporation of mitigation measures to reduce exposure within the development.

The monitoring network was expanded at the beginning of 2014 to include Kingsway adjacent to this development (to confirm or otherwise the findings of the air quality assessment) and sites on Castle Street. It is considered likely that annual mean concentrations of nitrogen dioxide along the whole of this road link will be above the annual mean Objective.

The impact of this development in terms of Local Air Quality Management will be assessed in the 2015 USA report, when monitoring data for 2014 will be available. It is recognised that this development will likely require the declaration of a new AQMA (or expansion of the existing Cardiff City Centre AQMA) and that an Action Plan with viable, practical measures to address the air quality issue could prove very difficult to develop and expensive to implement even if practical measures were to be identified.

It is likely that any future plans for residential developments fronting onto the Kingsway/Duke Street/Castle Street road link will be resisted.

2. Site of former Paper Mill, Sanatorium Road, Canton

Outline planning consent has been granted for a mixed use development on the site of the former Arjo Wiggins papermill on Sanatorium Road, Canton. The Council's monitoring network was expanded at the beginning of 2013 (Sites 165 – 168) in response to this development and results are reported herein. It should be noted that the substantive development has yet to commence so the reported results are for the "before" scenario.

Development of the initial plans has resulted in proposals to split the site 1/3-2/3, with no through traffic permitted other than public transport. The largest proportion of vehicle movements entering/leaving the development will be via Sanatorium Road.

The initial plans included the provision of a new bus-only, left-in, left-out junction joining Cowbridge Road East between the Ely Bridge roundabout and Riverside Terrace. However, the splitting of the development means that 1/3 of the vehicular traffic would need to access/leave the site via the proposed new junction at Ely Bridge. Plans for the junction were amended to make the junction multi-directional and available to all road traffic.

Given the proximity of the proposed new junction to the Ely Bridge AQMA an Air Quality Impact Assessment was submitted in support of the plans. It was concluded that, in an extreme, worst case scenario, the proposed new junction would cause a very small negative impact on air quality within the AQMA and that, in planning terms, this impact was insignificant.

The impact of this new junction, if any, within the AQMA is being monitored by the Council's existing nitrogen dioxide diffusion tubes within the AQMA.

3. Central Business District/Central Bus Station

Plans are currently being developed for a new "central business district" centred on Callaghan Square to the south of St Mary Street and the main railway line. This could also include provision of a new/replacement Central Bus Station.

Air quality is a fundamental consideration in these plans as any changes to the existing bus station arrangements and routes to and from it will impact upon the Cardiff City Centre AQMA and the Westgate Street part of it in particular.

These plans could provide a substantial part of an Air Quality Action Plan for the AQMA.

4. Dumballs Road "Hybrid" Site

An application for a mixed-use "hybrid" development on Dumballs Road off Penarth Road and reasonably close to the site being considered for the "central business district". The proposals include retail, office and other commercial uses, restaurant-type use and approximately 700 dwellings.

The application and its potential impacts are, at the time of writing, being assessed. Dumballs Road is currently lightly-trafficked and air quality is not an immediate cause for concern at the site. However, potential impacts on traffic

and dwellings on Penarth Road and on Cardiff City Centre AQMA will be the focus of considerations.

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.keepingcardiffmoving.co.uk/your-sustainable-travel-city>

At the time of writing the APRs are available up to and including 2012.

http://www.keepingcardiffmoving.co.uk/uploads/documents/163/original/APR_2012_final.pdf?1375976687

8 Climate Change Strategies

The Council published the “Carbon Lite Cardiff Action Plan” in June 2010.

Carbon Lite has run its course and has been superceded by “One Planet Cardiff” which has its own dedicated website with the vision document and delivery plan. Links to both the Cardiff Council website and the One Planet Cardiff website are below:

<http://www.cardiff.gov.uk/ENG/Your-Council/Strategies-plans-and-policies/Sustainable-Development-and-Energy/Pages/Sustainable-Development-and-Energy.aspx>

<http://www.oneplanetcardiff.co.uk/>

9 Implementation of Action Plans

There were four AQMAs in Cardiff at the end of 2013, namely:

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

Each of these has been declared as a result of road-traffic derived nitrogen dioxide (annual mean).

The Cardiff City Centre AQMA incorporates the former St Mary Street AQMA and an Action Plan for this area was adopted in February 2010. The measures contained therein have been fully implemented. Essentially, the plan was to create a pedestrian-friendly environment north of the junction with Wood Street to Castle Street. The works have been completed and monitoring remains in place to assess the effectiveness of the Plan.

The Stephenson Court AQMA came into force on 1st December 2010. There is no formal Action Plan as yet for this AQMA.

Initial plans designed to remodel the adjacent junction and the feasibility of moving the bus stops adjacent to the residential accommodation were investigated but recently come to nought due the failure of a funding bid to Welsh Assembly Government and the reluctance of bus operators to accept the relocated bus stops.

A second plan for the junction is being implemented in July 2014; this includes plans for a remodelled central reservation, an east-bound bus-lane and the west-bound bus-lane moved further east. There will also be reduced access for traffic entering the AQMA via the right-turn from Glossop Road.

Concentrations of nitrogen dioxide at the four monitoring sites within the AQMA (Sites 81, 129, 130 and 131) appear to have fallen slightly in recent years to the extent that three were compliant with the Objective in 2013. It is therefore proposed to monitor the effects of the above road-layout changes on air quality and review the implications with regard to an Action Plan in the light of 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 for both have been recently submitted. It would appear that no Action plan for the Llandaff AQMA is necessary at the present time. Development of an Action Plan for the Cardiff City Centre AQMA will be closely allied to plans for the Central Bus Station and the local road network more generally.

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 1st 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

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

It is possible that the Action Plan will be reassessed as a result of the proposed new additional junction on Cowbridge Road West, planned to be located just east of the AQMA.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Monitoring data for 2013 in conjunction with data from 2009 onwards indicates that there is no need to proceed to a Detailed Assessment for any pollutant at any location.

10.2 Conclusions relating to New Local Developments

Section 5 details a number of local developments which have either gained planning consent recently or for which a planning application has been received.

Monitoring is in place to aid the assessment of these potentially significant developments. The outcomes will be reported in due course

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. Continue monitoring within and around the existing AQMAs and other areas of concern
2. Continue monitoring within the Stephenson Court AQMA to assess the impact, if any, of the road-layout changes being implemented in July 2014 and develop a viable Air Quality Action Plan for the AQMA at that time.
3. Continue working towards developing a viable Air Quality Action Plan for the City Centre AQMA in conjunction with plans for a revised Central Bus Station and Central Business District
4. Submit an Updating and Screening Assessment in 2015.

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 (NO₂)) Order 2000
4. The County Council of the City and County of Cardiff (The Newport Road Air Quality Management (NO₂)) Order 2000
5. The County Council of the City and County of Cardiff (The Cardiff West Air Quality Management (NO₂)) Order 2000
6. The County Council of the City and County of Cardiff (The St Mary Street Air Quality Management (NO₂)) Order 2002
7. The County Council of the City and County of Cardiff (Ely Bridge Air Quality Management (NO₂)) Order 2007
8. The County Council of the City and County of Cardiff (Stephenson Court Air Quality Management (NO₂)) Order 2010
9. The County Council of the City and County of Cardiff (Cardiff City Centre Air Quality Management (NO₂)) Order 2013
10. The County Council of the City and County of Cardiff (Llandaff Air Quality Management (NO₂)) 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
30. Cardiff Council 2014 Further Assessment for Cardiff City Centre
31. Cardiff Council 2014 Further Assessment for Llandaff
32. Cardiff Council 2014 Detailed Assessment for Fair oak Road Roundabout

Appendices

Appendix 1 2013 NO₂ Diffusion Tube Monitoring Data

City of Cardiff Council

DATE	16	33	44	45	47	49	56
2013							
JAN	43	64	54	55	76	42	51
FEB	40	56	43	42	63	43	43
MAR	36	38	35	42	56	33	36
APR	34	58	39	39		34	45
MAY	29	57	29	34	39	33	27
JUN	27	49	28	34	53	31	33
JUL	30	48	26	33	46	32	28
AUG	33	53		40	40	33	38
SEP	31	62	33	37	49	42	38
OCT	40	61		49	64	36	42
NOV	47	78	52	57	69	52	57
DEC	51	77	52	58	67	42	62
AVE	36.8	58.4	39.1	43.3	56.5	37.8	41.7

DATE	58	73	74	81	82	85	86
2013							
JAN	62	42	57	52	49	44	52
FEB	54	33	48	48	45	38	46
MAR	50		50	44	44	31	36
APR	57	23	53	41	35	27	45
MAY	62	19	43	43	25	26	45
JUN	55	24	50	39	33	25	32
JUL	52	19	53	40		25	39
AUG	65	23	57	18	28	25	44
SEP	62	27	60	42	27	29	45
OCT	68	32	64	45	36	32	45
NOV	79	44	76	62	49	43	58
DEC	74	36	63	51	45		60
AVE	61.7	29.3	56.2	43.8	37.8	31.4	45.6

City of Cardiff Council

DATE	96	97	98	99	100	101	102
2013							
JAN	49	51	46	61	49	44	40
FEB	45	42	37	52	44	35	37
MAR	47	43	35	55	36	33	32
APR	44	41	28	47	37	23	28
MAY	32	32	28	35	26	25	22
JUN	34	37	26	44	33	22	25
JUL	29	34	28	32	29	25	21
AUG	35	35	27	32	34	25	29
SEP	43	37	29	40	37	30	29
OCT	39	38	34	49	41	36	36
NOV	57	49	41	55	48	43	43
DEC	48	48	41	48	47	33	38
AVE	41.8	40.6	33.3	45.8	38.4	31.2	31.7

DATE	103	106	107	111	112	115	117
2013							
JAN	37	52	52	41	49	49	69
FEB	35	40	22	28	42	43	56
MAR	30	34	53	39	36	32	65
APR	27	41	40	26	33	40	64
MAY	24	30	38	21	33	35	43
JUN	22	33		30	30	33	48
JUL	24	28	35	26	30	30	47
AUG	26	38		19	27	38	37
SEP	30	37	39	22	36	44	44
OCT	35	45	42	33	31	45	52
NOV	41	55		36	46	57	55
DEC	39	58	45	35	40	55	54
AVE	30.8	40.9	40.7	29.7	36.1	41.8	52.8

City of Cardiff Council

DATE	119	124	126	128	129	130	131
2013							
JAN	52	44	48	48	46	48	59
FEB	42	36	49	44	43	66	55
MAR	44	36		42	42	39	44
APR	33	32	54	41	35	45	48
MAY	32	23	51	34	34	44	51
JUN	36	23	46	33	29	41	43
JUL	35	22	45	34	29	38	40
AUG	33	24		36	35	45	52
SEP	36	26	54	34	37	50	58
OCT	38	28	53	45	39	24	48
NOV	49	40	61	48	48	62	63
DEC		34	57	51	46	49	58
AVE	39.1	30.7	51.8	40.8	38.6	45.9	51.6

DATE	133	134	139	140	141	142	143
2013							
JAN	53	59	57	64	51	65	50
FEB	47		50	58	50	55	47
MAR	48		45	57	41	47	40
APR	41		34	52	43	54	48
MAY	39		31	37	41	49	47
JUN	34		36	47	40	39	46
JUL	38		29	40	40	44	46
AUG	36		30	38	37		52
SEP	44	24	32	35	46		48
OCT	44		37	53	44	61	54
NOV	57		53	55	53	66	62
DEC	53	55	47	59	46	65	54
AVE	44.5	46.0	40.1	49.6	44.3	54.5	49.5

City of Cardiff Council

DATE	144	145	146	147	148	149	152
2013							
JAN	51	50	48	54	44	48	46
FEB	49	50	46	43	43		41
MAR	40	42	42	50	43	59	45
APR	40	35	31	29	35	32	33
MAY	48	33		27	22	38	31
JUN	43	35	29	34	31	31	32
JUL	38	34	27	32	25	31	31
AUG	40	31	24	31	27	32	29
SEP	47	40	29	29	28	41	32
OCT	50	41	36	38	34	39	37
NOV	54	52	46	44	44	51	45
DEC	51	44	41	41	38	45	36
AVE	45.9	40.6	36.3	37.7	34.5	40.6	36.5

DATE	153	156	157	158	159	160	161
2013							
JAN	46	51	42	46	53	44	57
FEB	42	50	39	42	44	39	54
MAR	45	56	33	44		32	42
APR	34	38	33	31	45	30	43
MAY	28	33	31	24	38	30	35
JUN	33	38	26		39	34	38
JUL	34	32	20	23	40	27	38
AUG	32	26	27	23	32	30	39
SEP	39	36	33	28		36	48
OCT	40	38	34	39	47		44
NOV	50	50	46	48	59	49	59
DEC	43	45	45	42	60	41	55
AVE	38.8	41.1	34.1	35.5	45.7	35.6	46.0

City of Cardiff Council

DATE	162	163	164	165	166	167	168
2013							
JAN	41	44	45	38	52	49	
FEB	37	39	35	32	44	41	
MAR	33	28	37	28	38	40	36
APR	28	34	27	19	35	33	31
MAY	25	28	21	16	38	31	28
JUN	25	27	21	15	28	31	30
JUL	27	24	23	15		31	28
AUG	25	26	20	13	33	32	28
SEP	31	28	25	19	40	34	33
OCT	35	23	29	21	40	40	34
NOV	43	41	37	29	53	44	42
DEC	40	46	39	28	51	42	38
AVE	32.5	32.3	29.9	22.8	41.1	37.3	32.8

DATE	169	170	171	172	173
2013					
JAN					
FEB					
MAR					
APR					
MAY					
JUN					
JUL	16	13	17	41	35
AUG	14	20	21	57	36
SEP	19	26	25	59	34
OCT	21	25	25	57	38
NOV	34	39	39	72	55
DEC	23	33	32	63	40
AVE	21.2	26.0	26.5	58.2	39.7

Appendix 2
LTP APR Implementation Tables

Appendix A: Implementation Progress 2011/12 and Rolled Forward Implementation Programme 2012/13–2017/18

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	2010/2011 Entry	New 2011/12 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
	THEME A: WIDENING TRAVEL CHOICES					
	TOPIC: A1 WALKING IMPROVEMENTS					
A1.1	Walking Strategy & Schemes	See individual project entries for update of Walking Schemes.	Walking Strategy will continue to be monitored and reviewed.	A walkable neighbourhoods plan will be developed to respond to the requirements set out in the Active Travel Bill.	Various funding sources for Strategy Schemes.	1,2,3,4,5
A1.2	Pedestrian Improvement Schemes	10 pedestrian crossing schemes implemented in 2010/11	10 pedestrian crossing schemes implemented.	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	Centenary Walk (formerly City Centre Prestige Walk)	Scheme complete	Scheme complete	Scheme complete	No funding required for capital works.	2,3,4

ID	MEASURE	2010/2011 Entry	New 2011/12 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	Implementation of Public Rights of Way Improvement Plan (ROWIP)	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.	During 2011/2012 works continued to improve Cardiff's Rights of Way Network. Significant works include: <ul style="list-style-type: none"> •Installation of 120no. Environmentally friendly steps at Footpath Lisvane 4, improving access onto the Craig and completing a excellent local circular walk; •Resurfacing of 100m of Footpath Radyr 19 with stone to dust topping, improving its previous boggy state; •The resurfacing of 50m of Footpath Whitchurch /98 with a stone to dust topping has been undertaken. The resurfacing has improved disabled access from Fforest Fawr into the Sculpture Trail in Fforest Fawr; •The Pentyrch-Cregiau Circular Walk was officially opened by the Lord Mayor in June 2011 with 65 guests attending; •Work has commenced on the Fforest Fawr Circular 	The REWHIP document is valid until 2018 and following consultation with the Cardiff Local Access Forum, a review of the Business Plan is now proposed for a 5 year review (2013) superseding its 3 year review. Following this review, an annual review will take place in February/March of each year until its completion in 2018.	Funding is obtained from the following sources: <ul style="list-style-type: none"> • Local Authority revenue; • Welsh Government grant administered via Countryside Council for Wales; • 'Countryside on your Doorstep' programme, administered by the Council's Strategic Planning (Countryside) Team; • Charitable Organisations. 	4

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
			<p>walk with the installation of waymarking furniture and information boards;</p> <ul style="list-style-type: none"> •3no. wooden, environmentally friendly pedestrian footbridges have been installed at Footpath Wentloog 7 to connect Wentloog Road to the Coastal Path at Rhymney Great Wharf; •Work has commenced on the digitising of the Definitive Map to create an up to date digital record of the Rights of Way network; •Further to the Wildlife and Countryside Act, 1981 Definitive maps were required to be produced for those areas considered as excluded under the 1949 Act. Following a review of historical maps, Cardiff County Council has completed the Definitive Map for the Excluded Area of Cardiff. The map is available for the public to view at the Brindley Road Council offices during office hours. 			

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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	Cardiff Walking for Health Scheme	There are currently 13 weekly walks in the city. Seasonal joint walks have been held and newsletters have been produced.	There are currently 11 weekly walks in the city that have provided 565 walks with over 5,500 participants through the year. In 2011/12 a further 26 Walk Leaders were trained for Cardiff and	To take forward the current programme of walks. To work towards turning more of the walks into independent walking groups. To assist in developing walking across the city with a wide range of	Funding will now continue until March 2013 (£15,000 per year). This funding will sit within the LAPA.	1,3

ID	MEASURE	2010/2011 Entry	New 2011/12 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
			<p>an additional 102 walkers joined the scheme. Three of our walks (Rhiwbina, Roath and Llanishen) have formed an independant club. Seasonal joint walks have been held and newsletters have been produced. A 10,000 step walk challenge was held for Cardiff Council and Cardiff & Vale UHB employees with over 700 people participating.</p>	<p>partners.</p>		
A1.7	<p>Strategic Recreational Routes (see also A1.8)</p>	<p>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.</p>	<p>During 2012/13: - Phase 1 Taff Embankment crossing completed, Phase 2 to be developed and implemented. - Bike ramp on railway rolled forward for implementation. Missing link on Dunleavy Drive developed for implementation. - Route 4 signage installed directing cyclists between city centre and the bay trail. Further design work for the Ely-Taff Trail link to be progressed.</p>	<p>-Taff Trail improvements planned for 2011/12 include: additional signing from local destinations; Taff Embankment/Penarth Road crossing improvement (phase 1). - Ely Trail improvements planned for 2011/12 include: bike ramp on railway bridge (as part of temporary alternative route); feasibility work and investigations re. 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;</p>	<p>LA Capital</p>	<p>1,4</p>

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
				additional signage on the route itself.		
A1.8	Coastal Access Route	Following the completion of the feasibility study, ground work has commenced on several sections of the proposed route of the Cardiff Coastal Path.	During 2011/2012 works on the Cardiff Coastal Path included: •Resurfacing with stone to dust topping between Ocean Way and Rover Way; •3no. Creation Orders are underway for sections of the path; •Significant works to waymark the Coastal Path have been undertaken and are subject to an ongoing review; •The purchase of 3no. rubber benches for the installation on the scenic sections of the Coastal Path has been undertaken.	The Cardiff Section of the All Wales Coastal Path has been completed and had its official opening in May 2012. Subsequent work involved will be to divert, where possible, sections of the path previously not able to be constructed on the preferred desire line. The future maintenance of the Coastal Path is also to be assessed.	Funding is obtained from the following sources: • Countryside Council for Wales; • Welsh Government.	1,2,4
	TOPIC: A2 CYCLING IMPROVEMENTS					
A2.1	Cycling Strategy	See individual project entries for update of Cycling Schemes.	Year 1 of 5 year programme successfully delivered to budget. Phase 1 of Route 3 and Phase 3 of North Cardiff Community Route implemented. Advanced	Development of 5 year programme to deliver cycling improvements to and across the city centre. Development of a Strategic Cycle Network Plan.	LA Capital. STC Funding	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
			design work completed for future years schemes.			
A2.2	City Centre Cycle Route Study	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 done on cycling in pedestrianised areas such as Queen Street.	LA revenue.	1,2,3,4,5
A2.3	Cycle Audit Procedure	Ongoing	Cycle audits now carried out as part of 'combined' audits including audits for a range of uses and users.	Ongoing	Incorporated as part of works programme.	2
A2.4	Strategic Cycle Network	Strategic Cycle Network Plan developed. Concept design, consultation, detailed design, and prioritised programme of implementation for 2010/11 developed.	SCN developed and approved at Executive November 2011. 5 year programme developed and first year of programme delivered.	2011/12 - Strategic Cycle Network to be presented at Executive Business Meeting in September 2011 for approval. 5 yr programme developed as part of A2.1 to be based on routes/schemes identified in Strategic Cycle Network Plan.	LA capital, P.	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
A2.6	Cycle Stands Implementation Programme	Cycle stand locations identified across district centres throughout the city. Over 100 new stands installed.	Surveys undertaken to identify additional locations for cycle stands. 86 stands installed in 2011/12.	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	River Ely Cycle/Footbridge, Cogan Railway Station (Pont y Werin scheme)	Pont y Werin completed and opened. Initial monitoring demonstrates pedestrian and cycle use is increasing.	Monitoring of scheme continues. Figures show very high usage. Links to Pont y Werin to be developed by the Vale.	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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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	Cardiff Bike Scheme	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.	The operation of the scheme was suspended by the operators in December 2011 for commercial reasons. The scheme was withdrawn from Cardiff on 23rd December 2011. Work to scope a potential replacement subject to funding has been commenced.	Undertake work to evaluate potential for a replacement scheme subject to funding.	WG STC Grant	1,2,3,4,5
A2.9	Bike It	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 scheme works with 24 schools in Cardiff, helping pupils overcome barriers to cycling to school. The first year of the Bike It project September 2010 - July 2011 achieved 31% of pupils cycling to school once a week up from 11% before the project started.	The Bike It scheme intends to work with 6 additional Bike It schools in 2012/13 (30 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
TOPIC: A3 BUS IMPROVEMENTS						
A3.1	City Centre Transport Interchange	This will be taken forward as part of the redesign of the area around Central Station.	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	Not known	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
				on the final facility.		
A3.3	Core Bus Network: A470 Bus Priority Measures	TG funding obtained to model and design section from Pantmawr Rd to Tyn-y-Parc Rd sections, together with start of works on site.	No further updates.	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	Core Bus Network: A469 Bus/Cycling/Walking Priority Measures	Scheme on hold for foreseeable future. No change.	To be examined as part of Bus Network review	Will be examined as part of Bus Network review. No funding.	Business Plan indicates (ECO5/5) TG Funding for this.	1,2,3,4,5
A3.5	Core Bus Network: Cowbridge Road East and West Bus Priority Measures (Western Corridor)	TG funding obtained to model western corridor junctions approaching the city centre.	TG funding obtained for provision of inbound bus lane on approach to Ely Bridge roundabout.	TG funding to construct Ely Bridge scheme. Future bids to be made via Sewta for TG funding for both design and implementation.		
A3.6	Core Bus Network: Newport Road (out to St Mellons) Bus Priority Measures	Detailed design completed for sections to Southern Way junction, except for Clifton St to Albany Rd section. Bus lanes implemented.	No further updates.	Remainder of scheme on hold.	LA capital.	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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	Core Bus Network: Pontprennau Corridor Bus Priority Measures	No change	No change.	No change.	TG funding sought.	1,2,3,4,5
A3.8	Core Bus Network: Leckwith Corridor Bus Priority Measures	No change	No change	No change.	TG funding sought.	1,2,3,4,5
A3.9	Cogan Corridor (Penarth Rd) Bus Priority Measures	No change	No change	No change.	TG funding sought.	1,2,3,4,5
A3.10	Infrastructure Improvements to Bus Services (stops, shelters, boarders)	10 new bus shelters installed. 17 new bus boarders provided.	9 new bus shelters installed - 18 new bus boarders provided	Aspiration to provide 3 new bus shelters, for the 1 year remaining on the street furniture agreement and 10 new bus boarders per annum. Part of a new Street Furniture Agreement to include 5 new shelter to be provided annually for the term of the new agreement.	LA capital, TG, P.	1,2,3,4,5
A3.11	Supported Bus Services Review	Reviewed on ongoing basis. Services with poorest value terminated April 2010.	Reviewed on an ongoing basis.	Reviewed on ongoing basis. Services not representing good value for money will be terminated.	LA revenue.	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
A3.12	Local Bus Strategy	No change	No change	Continue implementation through RTP.	LA revenue, Sewta.	1,2,3,4,5
A3.13	Bus Quality Partnerships	Implementation delayed due to slippage in works.	No progress	First phase to be agreed.	LA revenue and capital.	1,2,3,4,5
A3.14	Cardiff Smartcard Project	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
A3.15	Bus Rapid Transit	N/A	The feasibility of Bus Rapid Transit routes investigated.	Progressing Bus Rapid Transit routes will be assessed in the preparation and delivery of the Local Development Plan and the Community Infrastructure Levy and is dependent upon funding.	Infrastructure Planning for the LDP subject to availability of funding	1,2,3,4,5
TOPIC: A4 RAIL IMPROVEMENTS						
A4.1	Queen St Station Capacity Improvements (Sewta)	Now a WAG scheme, stakeholder meetings to establish scope of works and interface with Cardiff Area Signalling renewal to take	Scheme approved and in Network Rails HLOS	To be progressed by WAG through Network Rail. Completion in 2014/15	Direct funding from WG to Network Rail.	1,2,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
		place. No change (pending new Government's spending review).				
	TOPIC: A5 PARK AND RIDE					
A5.2	Leckwith Park and Ride	Commenced operation October 2009	Potential lorry park constructed.	Further phases of construction, subject to funding. Revenue opportunities to be explored.	P.	1,2,3,4,5
A5.3	Detailed proposals and designs for Park and Ride 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	Park & Ride sites submitted as recommendations for the National Travel Plan including Park & Share at Nantgarw.	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
	TOPIC: A6 POWERED TWO WHEELERS					
A6.1	Powered Two Wheelers Parking Needs Study	On street parking bays in the city centre are being reviewed and relocated as a consequence of the proposed "bus box".	The daytime ranks in the city centre have 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	LA revenue, P.	2,4,5

ID	MEASURE	2010/2011 Entry	New 2011/12 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
				that the new scheme provides adequate provision for the numbers of taxis currently observed in the area and also required to facilitate the demand.		
	TOPIC: A7 TAXIS AND PRIVATE HIRE					
A7.1	City Centre Taxi Rank Accessibility Improvements	The daytime ranks in the city centre have now been agreed at Officer / Executive Member level.	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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
	TOPIC: A8 PASSENGER AND WATER TRANSPORT					
A8.1	Cardiff Bay Infrastructure Development: Moorings, Water Taxi Landing Stages, Slipways.	No further updates.	Grant funding obtained to develop a new water bus landing at the Porth Teigr development which included relocating the landing pontoon from Clarence Road bridge which was rarely used. This was completed in July 2012 ready for the opening of the new Dr Who attraction.	No further updates.	WG, P (Aquabus, Cardiff Cats).	3,4,5
	TOPIC: A10 RAPID TRANSIT					
A10.3	Options for the Replacement of Herbert St Bridge and Rail Link to Cardiff Bay Station	No progress made.	No progress made	No further updates.	WG.	4,5
	TOPIC: A11 ACCESSIBLE TRANSPORT (incl. Community Transport and Transport for the Mobility Impaired)					

City of Cardiff Council

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A11.1	Ring and Ride Service Extension Countywide	No change	No change	No further update.	Part LA revenue, part LTSG.	1,2,4
A11.2	Shopmobility Scheme	The organisation continued to provide a wheelchair hire service for visitors to Cardiff city centre.	Funding provided to extend hours of operation.	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	Transport Support and Services for Learners aged 16-19: Preparation of Transport Policy Statement and Implementation of Associated Projects	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.	The Passenger Transport Team have taken over responsibility for the administration of Transport for learners aged 16 to 19 (16+ Passport to Travel Scheme). However as a result of a Category Management Review which has involved developing relationships with public bus & train operators to improve the system, processing and types of passes available for the students, this has delayed the new Passenger	Review and update statement as necessary.	LA revenue.	1,4

City of Cardiff Council

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			<p>Transport Policy which is being developed to encompass all aspects of passenger Transport Provision within the Council. The new policy will be out for consultation in November 2012, with the aim of having it approved and in place for April 2013.</p>			
A11.4	<p>Review of school transport</p>	<p>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.</p>	<p>Following the creation of the Central Transport Service, and as part of the WLGA/WAG 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 new Passenger Transport Team. This has included the centralisation of the administration of Non Statutory School bus services (Countyride School Buses), Children & Adult Services Transport requirements and also adhoc taxi requirements throughout the Council. The Passenger transport Team</p>	<p>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</p>	<p>LA revenue. WLGA/WG.</p>	<p>1,3,4</p>

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
			<p>have been heavily involved in a Council wide Category Management review of all the Passenger Transport Service requirements to identify and maximise saving opportunities and efficiencies by the centralisation of the co-ordination and administration of these services. As a result of this review the Council is in the process of re-tendering all the contracts covered by the Passenger Transport Team via a new Framework contract allocation system and these contracts will be in place from January 2013. In addition to these tenders the Council is also developing an electronic reverse e-auction system to allocate future contracts that should be in place for September 2013 onwards.</p>	<p>that require a driver. In November 2011 a new Framework Agreement will be tendered ready for September 2012.</p>		
	<p>TOPIC: A12 DRIVER CHOICES</p>					

City of Cardiff Council

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A12.1	Council's Journey Sharing Scheme	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.	The scheme had 1504members on March 31st 2012 with 325 members in 154 car journey groups. The scheme had 457 Cardiff Council employees registered.	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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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	Continue to roll out Council Journey Share Scheme to businesses in Cardiff on a closed group basis	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.	The Journey Share Scheme now has 13 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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
A12.3	Car Club	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.	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 292 private members on 31st March 2012. There were 12 Corporate Member Organisations.	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
TOPIC: A13 FREIGHT						
A13.1	Wales Freight Strategy	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
TOPIC: A14 SAFE ROUTES IN COMMUNITIES						
A14.1	Llanrumney High School SRTS	Scheme complete.	Scheme complete.	No further updates.	N/A	1,2,4,5
A14.2	Cardiff West SRTS Initiative (5 schools)	Scheme complete.	Scheme complete.	Changes in modal shift to be monitored by Traffic Management.	Business Plan indicates (EC05/5) Transport Grant Funding for this.	1,2,4,5

City of Cardiff Council

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					WG funded entire project. No further funding required.	
A14.3	Ely Area Safer Routes to Schools (Ely, Caerau and Michaelston-Super-Ely Safe Routes in Communities)	Scheme completed March 2011	Scheme complete.	Ongoing monitoring	WG funded.	1,2,4,5
A14.4	Christ the King Primary School SRTS	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	Whitchurch High School	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

City of Cardiff Council

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A14.6	Willows High School - cluster group	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	Bryn Deri Primary School	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	Ton yr Ywen Primary School	Cycle stands installed. School Safety Zone 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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
A14.9	Cardiff High School	School Safety Zone installed. Celyn Ave Pedestrian Crossing complete.	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

City of Cardiff Council

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A14.1 2	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
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. Crossing and traffic calming installed on College Road 2010/11.	School Safety Zone installed. Crossing and traffic calming installed on College Road.	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

City of Cardiff Council

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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
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

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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 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 Zone 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
A14.2 1	Coed Glas School	Scheme complete 2010/11	Scheme complete.	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

City of Cardiff Council

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A14.2 2	Llanishen High	School Safety Zone planned for summer 2011.	School Safety Zone planned.	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	WG grant for £220,000 awarded for Corporation Road area.	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.	School Safety Zone planned for summer 2011.	School Safety Zone planned.	Scheme to be installed 2011/12	Funding sourced from RTCG	2,3,4
A14.2 5	Bryn Hafod	School Safety Zone planned for summer 2011.	School Safety Zone planned.	Scheme to be installed 2011/12	Funding sourced from RTCG	2,3,4

City of Cardiff Council

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	TOPIC: A16 TRAVEL PLANS (School, Workplace and Personalised)					
A16.1	Travel Plan for Council Premises	A Travel Plan for Lamby Way was approved by officer decision on 31st January 2010.	Travel Plan updates have been undertaken for County Hall, City Hall and Willcox House and Global Link, in line with the ongoing review of Council premises through the Our Space programme. An updated Travel Plan has been produced for Brindley Road and Bessemer Close to incorporate the new Operational Premises opening next to the Brindley Road site.	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	School Travel Plans	61 schools have now completed school travel plans.	61 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. Schools requesting cycle storage facilities, School Safety Zones or traffic calming measures	LA revenue.	1,2,4,5

City of Cardiff Council

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A16.3	Travel Plan Promotion and Support for Local Businesses and Organisations (including car share)	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 Coordinator.	Initial monitoring of Travel Plans due to return figures in 2011 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 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
A16.4	Develop a Best Practice Travel Plan Advice Pack for Developers	The Travel Plan Toolkit resources have been reviewed and updated following feedback from users to ensure it remains relevant and useful.	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.	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

City of Cardiff Council

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	TOPIC: A17 TRAVEL AWARENESS CAMPAIGNS					
A17.1	Keeping Cardiff Moving Travel Awareness Campaign	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 site has received 62,129 visits up to 31st March 2012.	The website will be developed to provide information about the Sustrans Personalised Travel Planning Project.	WG revenue	1,4
	TOPIC: A18 TRAVEL AND TRAFFIC INFORMATION					
A18.1	Central Bus Station Public Transport Information	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	Bus Enhancements - Passenger Information (RTI in shelters and buildings)	Veolia to be fitted if funding available from TG. Cardiff Bus fleet to be upgraded as funding made available.	N/A	Continue installation where funds available.	TG, P and LA capital.	1,3,4,5
A18.3	Provision of Real Time bus information on the internet	Discussions ongoing.	N/A	Service Level Agreement terms to be agreed.	LA revenue.	1,3,4,5

City of Cardiff Council

ID	MEASURE	2010/2011 Entry	New 2011/12 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
A18.4	Traffic Management Information for the General Public - website and leaflets	On street parking bays in the city centre are being reviewed and relocated as a consequence of the "bus box".	N/A	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	Provision of Car Journey Time Information and CCTV Images on Main Routes into Cardiff on the Internet	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.	Journey Time management system requires funding.	P, O.	1,3,4,5
	THEME B: MANAGING TRAVEL DEMAND					
	TOPIC: B1 INTEGRATION OF LAND USE PLANNING AND TRANSPORT					
B1.1	Input into Cardiff's emerging Local Development Plan	1. Assessment of all candidate sites against LDP Vision & Objectives and LDP Assessment sub factors completed. 2. Initial inputs to LDP Preferred Strategy	1. Provide detailed input to site master planning of key development sites as part of production of LDP Deposit Plan. 2. Provide detailed input to development of	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	LA revenue.	1,2,3,4,5

City of Cardiff Council

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		considered - further inputs to be provided as document is developed (for publication in October 2012.) 3. Initial modelling, trip assignment and network impact assessment undertaken with further refinement required prior to publication of Preferred Strategy.	infrastructuere plan and CIL associated with Deposit LDP. 3. Provide detailed input to transport strategy, transport policies and other related documents as part of development of LDP Deposit Plan.	Strategy, by March 2012. 3.Undertake modelling, trip assignment and impact assessment of development of LDP Deposit Plan.		
B1.2	Transport input into Development Control Process	Ongoing - policy-related comments provided on a range of planning applications.	Ongoing - policy-related comments provided on a range of planning applications.	To continue to provide observations as required.		1,3,4,5
B1.3	Supplementary Planning Guidance for Developer	SPG utilised on an as need basis in accordance with tests in Reg 122 (2) of CIL Regulations	Ensure a SPG is applied to all relevant planning proposals and to maximise developer	Determine application of SPG to decision making in light of introduction of Community	LA revenue.	1,3,4,5

City of Cardiff Council

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	Contributions for Transport		contributions in accordance with tests in Reg 122 (2) of CIL Regulations	Infrastructure Regulations in April 2010.		
	TOPIC: B2 PARKING AND ENFORCEMENT					
B2.4	Coach Parking Facilities	No update.	N/A	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	Integrated Parking Strategy	The Strategy was approved in April 2006. No further updates.	N/A	No further updates.	Funded through the progress of other schemes.	1,3,4,5
	TOPIC: B4 TELEWORKING					

City of Cardiff Council

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B4.1	Council's Homeworking Initiative	The corporate homeworking policy is still embedded within and across the organisation. A successful 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.	Current review of homeworking policy in connection with the 'Ourspace' Project. This review includes mobile working, home working and flexiabile working. Ongoing.	A successful 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. Details of the TBS exercise and other WLB initiatives were presented to the meeting of the Works Council in December 2009.	No external funding, LA revenue.	1,5
	THEME C: NETWORK MANAGEMENT					
	TOPIC: C1 TRAFFIC					

City of Cardiff Council

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	MANAGEMENT SCHEMES AND ASSESSMENT					
C1.1	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)	18 other traffic management schemes implemented in 2010/11 including Safe Routes in Communities	Continued implementation.	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
	TOPIC: C2 INTELLIGENT TRANSPORT SYSTEMS					
C2.1	Intelligent Transport Systems Strategy	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

City of Cardiff Council

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C2.2	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)	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	Strategy manager upgrade to COMET to provide state machine operation and improved graphical interface complete	1. Incremental enhancement of graphical systems ongoing as the traffic signal and signing network grows. 2. Funding required for virtual server upgrade.	O.	1,2,3,4,5
C2.3	Real Time Information and Intelligent Bus Priority System (using Automated Number Plate Recognition, specially adapted CCTV cameras, Selective Vehicle Detection & GPS on buses)	Ongoing	Ongoing.	Ongoing	TG.	1,2,3,4,5
C2.4	Driver Information (including VMS &	1.) Development of strategic map, showing existing and	1.) Development of strategic map, showing existing and	The strategic plan showing existing and proposed sign	P.	2,3

ID	MEASURE	2010/2011 Entry	New 2011/12 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
	Website information)	<p>proposed sign locations continues to be ongoing.</p> <p>2.) As part of 106 contributions the following VMS has been installed on A48 Eastern Av E/B prior to Pentwyn.</p> <p>3.) As part of 106 contributions the following VMS are scheduled to be procured, A4232 Gantry and Central Link</p> <p>4.) As part of Llanedeyrn Interchange capital works the following VMS has been installed on A48 Eastern Av E/B prior to Llanedeyrn Interchange.</p> <p>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.</p> <p>6.) A further 3 Car Park Management Signs have been procured and are awaiting installation subject to subject</p>	<p>proposed sign locations continues to be ongoing.</p> <p>2.)As part of 106 contributions a VMS has been installed on the A4234 Central Link. A VMS on the A4232 gantry 3 has been procured and is awaiting installation following agreement on gantry fixing structure.</p> <p>3.) The Car park management information signing system providing real-time car park spaces data linked to city centre car parks continues to be maintained and managed. An additional 2 signs have been installed on Boulevard De Nantes and one sign on Cowbridge Road East.</p> <p>4.) The comprehensive RPS signing system and rising bollard system associated with the S278 Porth Teigr swing bridge works is now operational.</p>	<p>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>		

City of Cardiff Council

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		to funding. 7.) A comprehensive RPS signing system and rising bollard system associated with the S278 Porth Teigr works is currently being installed.				
C2.5	Incident Detection & Management (including VMS, Q Loops, website information & CCTV)	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	Provision of ANPR system for incident detection and real time journey times through the existing CCTV system is 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
	TOPIC: C3 ROAD SAFETY MANAGEMENT AND EDUCATION					
C3.2	Urban Safety Management Area studies and projects	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.	Continued implementation.	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	LA revenue, LA capital, TG, WG, other WG, P, O.	1,2,3,4

City of Cardiff Council

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				<p>Road, Pantbach Road refuge, Bryn Celyn Primary School, Ton Yr Ewen Primary School, Forrest Farm Road. <u>Junction Improvements</u> - Ton-Yr-Ywen 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</p>		

City of Cardiff Council

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				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.		
C3.3	Programme of Traffic Education and Road Safety Initiatives	Continuation of all relevant schemes and local support given by road safety team to national programmes and campaigns in conjunction with partner organisations.	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.	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	Enforcement cameras - extension of operation	2 sites on Newport Road/Rover Way installed awaiting BT connections to the CTO.	Sites complete and commissioned.	Continue to monitor accident data for sites and survey community concern sites as required.	Self-financing.	1,2

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C3.5	Home Zones	Ongoing assistance to Housing and Neighbourhood Renewal Team.	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.	Dependant on sources identified by Neighbourhood Renewal. Still awaiting Home Zone Regulations from National Assembly for Wales.	2,3,4
	TOPIC: C4 IMPROVED DIRECTION SIGNING					
C4.1	Visitor Signage Strategy for Cardiff Bay	Pont y Werin is now open to the public and new and improved signage is in place to assist users.	Additional pedestrian signage has been included as part of the Porth Teigr development. Porth Teigr and Dr Who have been added to other signage within the area.	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

City of Cardiff Council

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C4.2	Directions Signing Policy Review	Most car park signage has now been implemented.	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	Pedestrian Signage Strategy for City Centre	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 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.	No new wayfinders have been installed and therefore the city centre scheme has not been extended since the original wayfinders were put in place in 2009-10, because of lack of funding.	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

City of Cardiff Council

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	TOPIC: C5 EVENTS MANAGEMENT					
C5.1	Events Management Strategy for Cardiff	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.	No change.	Ongoing.	LA revenue & sponsorship.	2,3,4
	TOPIC: C6 AIR QUALITY MANAGEMENT					
C6.1	Air Quality Management Areas (AQMA)	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.	There are three Air Quality Management Areas in Cardiff (St Mary Street, Ely Bridge and Stephenson Court). Monitoring data has indicated that additional AQMAs are required for Westgate Street and the Llandaff area due to road-traffic emissions.	The Air Quality Action Plan for St Mary Street, i.e. the implementation of a "pedestrian-friendly environment" and the removal of most of the traffic from the AQMA has been completed. Action Plan for Ely Bridge AQMA is being implemented. Action Plan for Stephenson Court AQMA is under consideration. Formal declaration of AQMAs for Westgate Street and for Llandaff is anticipated in early	Main air quality monitoring and Learian Streetbox/SCOOT system all funded internally from LA revenue.	1

City of Cardiff Council

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C6.2	Air Quality Strategy	The implementation of the Air Quality Strategy has continued.	The implementation of the Air Quality Strategy has continued.	2013. Implement Air Quality Strategy and redraft as and when necessary in accordance with local and national policies and strategies.	LA revenue.	1
C6.3	Air Quality Improvements in AQMAs	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.	Removal of most of the traffic from within the St Mary Street AQMA has brought about an improvement to the point where air quality standards are being met along the pedestrianised part of the road link. There has been no improvement in the air quality in the other two AQMAs.	Monitoring will continue in each of the current and proposed AQMAs and at other locations in Cardiff where data is required to inform the review and assessment process.	LA revenue.	1
C6.4	Council's Green Fleet and Introduction of Alternative Fuel Vehicles	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.	N/A	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
TOPIC: C7						

ID	MEASURE	2010/2011 Entry	New 2011/12 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
	MAINTENANCE-HIGHWAYS AND BRIDGES					
C7.1	Highway Assessments & Maintenance Programme	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.	N/A	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	Bridge Assessments and Strengthening Programme	Capital funding allocated for the design and construction 7 schemes. These include:- Expansion joint replacement Leckwith Viaduct, strengthening feasibility study Station Rd. Llandaff North, Vehicle incursion measures at Mardy Road and 4 bridge strengthening schemes. Park Road Strengthening scheme completed 2010/11. Doyle Avenue strengthening scheme completed 2010/11. Station	Replacement of Lake Road North & Lake Road West bridges brought forward to coincide with other traffic schemes. Construction complete. Design and contract documentation for works to Penarth Road bridge complete. Feasibility report for Station Road Bridge Llandaff North Complete.	Funding allocation included in medium term financial plan 2012/13. Further works are programmed through to 20017/18 including Windsor Rd. replacement & Station Rd. replacement. Penarth Rd. bearing replacement and re-surfacing works programmed 2012/13, stage 2 detail feasibility of Windsor Road ongoing 2012/13.	LA capital and revenue.	2,3

City of Cardiff Council

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		Road Feasibility study completed 2010/11. Penarth Road Bridge refurbishment design and contract documentation completed 2010/11. Lake Road North & West strengthening design and contract documentation complete 2010/11.				
	TOPIC: C8 HIGHWAY IMPROVEMENT SCHEMES					
C8.1	Eastern Bay Link (Major)	The scheme remains a policy aspiration of the Council.	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

City of Cardiff Council

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C8.5	Llanedeyrn Interchange Study	Phase 1 traffic signal improvements were completed in May 2010.	Phase 2 deferred until an appropriate time in the future when the economy recovers.	Phase 2 traffic signal improvements will be considered in future years dependent upon funding.	Subject to availability of funding	1,2,3,4,5
C8.6	Newport Road/ City Road/ Glossop Road	Concept and preliminary design undertaken as a 'Making Better Use' scheme through Sewta.	Detailed design and Member and Public Consultation undertaken.	Progressing the scheme is dependent upon funding and priorities agreed with Sewta.	WAG TG and GCF	1,2,3,4,5
THEME D: IMPLEMENTATION						

City of Cardiff Council

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D1	South East Wales Transport Alliance Regional Transport Plan	Final Regional Transport Plan approved January 2010.	Delivery of Actions and Schemes set out in the Regional Transport Plan.	Delivery of Actions and Schemes set out in the Regional Transport Plan.	LA revenue.	1,2,3,4,5
D3	Revise and Update Countywide Multi-modal Model	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	Model has been used to assess impacts of strategic candidate sites and growth scenarios as part of the LDP Preferred Strategy.	Further modelling is ongoing as part of the LDP Preferred Strategy. More detailed optioneering to be undertaken in connection with the LDP Draft Deposit Plan during 2013-2015.	Funding Source: P, LA (incl. Partnership), WG, LA revenue.	1,2,3,4,5
D5	Integrate Control Room with Police and Community Safety Officers (Smart City Hub)	Co-location has been operational for 18 months with Police and community safety officers	Data sharing agreement, no progress as Data Protection OM has left.	Develop processes ANPR, Parking enforcement. Develop processes ANPR, Parking enforcement Ongoing. Setup data sharing agreement.	Joint LA Rev and SW Police	
D6	Neighbourhood Area Transport Study Report	N/A	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

City of Cardiff Council

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D7	Road Safety Auditing	Preparation of the Cardiff Road Safety Audit Manual and training of audit team.	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

THE COUNTY COUNCIL OF THE CITY AND COUNTY OF CARDIFF

**PART IV, ENVIRONMENT ACT 1995
LOCAL AIR QUALITY MANAGEMENT**

**Detailed Assessment
Fairoak Road Roundabout, Plasnewydd, Cardiff
May 2014**



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Report Reference number	LAQM.2014DA
Date	June 2014

Executive Summary

Part IV of the Environment Act 1995 places a statutory duty on local authorities to review and assess the air quality within their area and take account of Government guidance during such time.

Detailed Assessment is a requirement for local authorities that have identified areas for further assessment an Updating and Screening Assessment (USA). Where an Updating and Screening Assessment has identified a risk that an air quality objective will be exceeded at a location with relevant public exposure the authority is required to undertake a Detailed Assessment. This Detailed Assessment has been undertaken in accordance with the Technical Guidance LAQM.TG(09).

The aim of the Detailed Assessment is to identify with reasonable certainty whether or not an exceedence is occurring or is likely to occur. Only following a Detailed Assessment should an Air Quality Management Area (AQMA) be declared.

The Council's 2013 Progress Report identified a monitoring location at residential accommodation adjacent to the roundabout at the Fairoak Road/Ninian Road roundabout in Plasnewydd where the National Air Quality Standard for nitrogen dioxide (NO₂) annual mean concentration has been exceeded. In the absence of other sources, this will be as a result of local road traffic emissions.

The site at this location has been included in the Council's monitoring programme since 2002.

This Detailed Assessment focuses on the period since 2008; six years is considered a reasonable period over which to base an assessment and additional monitoring in the locality was commissioned at the beginning of 2008. Monitoring data since 2002 is included for completeness. The assessment gives priority to monitoring data from the site based at residential accommodation, this being considered "relevant exposure" for the assessment of air quality with regard to the annual mean concentration of nitrogen dioxide.

Cardiff Council intends to consult on the proposal to not declare an Air Quality Management Area at the present time. However, given the annual mean concentrations of nitrogen dioxide being measured in the area and the Council's proposal to relocate a Civic Amenity Site closer to the assessment area, it is proposed to continue monitoring in the area for the foreseeable future. The Council will undertake a further detailed assessment of air quality should future years' monitoring data indicate a need.

Contents

Item	Page
1.0 Introduction	2
1.1 Aim of Report.....	2
1.2 Introduction to Local Air Quality Management.....	2
1.3 Objectives for Nitrogen Dioxide.....	2
1.4 Relationship between Nitrogen Oxides and Nitrogen Dioxide	3
2.0 Methodology.....	4
2.1 Scope of Report.....	4
3.0 Monitoring of Nitrogen Dioxide in Cardiff	4
3.1 Local Monitoring Networks.....	4
3.2 Diffusion Tube Bias Adjustment	6
3.3 Nitrogen Dioxide Monitoring at Fair oak Road Roundabout.....	6
3.3.1 Site Description	6
3.3.2 Monitoring Sites	7
3.3.3 Background Concentrations	10
3.3.4 Monitoring Data.....	10
3.3.5 Discussion of Monitoring Results.....	11
4.0 Estimated Population Exposure.....	11
5.0 Sources of Nitrogen Oxides.....	11
6.0 Planned Local Developments	12
7.0 Conclusions.....	13
8.0 Consultation	13

List of Tables:

Table 1	UK Nitrogen Dioxide Objectives and Applicable Areas.....	3
Table 2	Details of Diffusion Tube Monitoring Sites.....	8
Table 3	Monitoring Data from Fair oak Road Roundabout, 2002 – 2007	10
Table 4	Monitoring Data from Fair oak Road Roundabout, 2008 – 2013	10

List of Maps:

Map 1	Location of Cardiff Centre AURN Site	5
Map 2	Location of Cardiff Council’s Diffusion Tubes in 2013	5
Map 3	Monitoring Site locations in and around Fair oak Road Roundabout.....	9

1.0 Introduction

1.1 Aim of Report

The Council's 2013 Progress Report identified a monitoring location at residential accommodation adjacent to the roundabout at the Fairoak Road/Ninian Road roundabout in Plasnewydd where the National Air Quality Standard for nitrogen dioxide (NO₂) annual mean concentration had been exceeded in 2012 and in a number of preceding years.

The aim of this Detailed Assessment is to determine whether the nitrogen dioxide National Air Quality Standards are being exceeded currently, and/or if there is a risk of doing so in future years. Should either of these be the case then the Detailed Assessment should determine whether or not an AQMA should be declared.

1.2 Introduction to Local Air Quality Management

Part VI of the Environment Act 1995 requires local authorities to periodically assess the air quality within their area against objectives in the Air Quality Strategy for England, Scotland, Wales, and Northern Ireland.

The structure of the reviews and assessment are set out in the statutory guidance made under the Act. The current guidance is Technical Guidance LAQM.TG(09).

The Detailed Assessment is a requirement of review and assessment of air quality for local authorities that have identified areas where there is a risk of exceedence of an air quality standard or objective.

Monitoring in recent years has shown exceedences of the annual mean nitrogen dioxide National Air Quality Standard at residential accommodation in the vicinity of Fairoak Road roundabout and the Council's 2013 Progress Report concluded that a Detailed Assessment for this area was needed.

There are currently four AQMAs in Cardiff:

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

Each of these has been declared because of exceedences of the annual mean National Air Quality Standard for nitrogen dioxide and the primary source of nitrogen oxides in each case is road traffic emissions.

1.3 Objectives for Nitrogen Dioxide

Table 1 shows the two National Air Quality Standards for nitrogen dioxide and relevant locations where they apply.

Table 1 UK Nitrogen Dioxide Objectives and Applicable Areas

Annual Mean: $40\mu\text{g m}^{-3}$	<p>Applies: Where the public have regular exposure e.g. facades of residential properties, schools, hospitals, libraries</p> <p>Not: Where the public have limited access, residential gardens and kerbsides</p>
1-hour mean: $200\mu\text{g m}^{-3}$ (not to be exceeded more than 18 times per year)	<p>Applies: Anywhere the public may spend an hour of more. E.g. residential gardens, shopping areas, bus stations, railway stations, car parks</p>

This report assesses measured concentrations of nitrogen dioxide in comparison to the National Air Quality Standard for the annual mean concentration of nitrogen dioxide in the vicinity of the Fair Oak Road Roundabout.

Annual mean concentrations of nitrogen dioxide in the area of the Fair Oak Road Roundabout area are not sufficiently high for there to be a risk that the 1-hour mean Objective concentration is being exceeded.

1.4 Relationship between Nitrogen Oxides and Nitrogen Dioxide

Nitrogen dioxide (NO_2) is principally a secondary pollutant formed by atmospheric reactions between the primary pollutant (nitrogen oxides) and oxidising substances in the air - primarily ozone.

Atmospheric reactions between nitrogen oxides and ozone generally mean that when nitrogen dioxide levels are high, ozone levels are low and vice-versa. The reaction is cyclical in nature in that oxides of nitrogen scavenge low-level (tropospheric) ozone to form nitrogen dioxide whilst the NO_2 later acts as a donor molecule contributing the additional oxygen atom to form ozone from O_2 under the influence of sunlight. There is a complex relationship between emissions of NO_x and resulting concentrations of NO_2 depending on the amount of available atmospheric oxidants, such as ozone, and the amount of sunlight.

The highest concentrations of NO_2 in the UK generally occur during either winter episodes of poor dispersion (such as stable high-pressure weather events and temperature inversions) when emissions are higher or during summertime photochemical smog episodes.

The main cause of the exceedance of the annual mean air quality objective for NO_2 is emissions from road vehicles. These contribute directly to local concentrations of pollutants and also to background concentrations of this pollutant.

2.0 Methodology

2.1 Scope of Report

A Detailed Assessment should be based on new, appropriate, air quality monitoring (and/or modelling), which has been validated and ratified. It should indicate the spatial extent of any identified exceedence and, if there is an identified exceedence, indicate a tentative AQMA boundary. An AQMA boundary can be larger than the predicted area of exceedence but it must include those areas within which people might reasonably be exposed.

Technical Guidance LAQM.TG(09) places emphasis on monitoring pollutant concentrations as opposed to the more unreliable approach based on dispersion modelling and theoretical assessment of roadside pollutant concentrations. This Detailed Assessment uses monitoring data for local concentrations.

A Detailed Assessment should conclude by identifying whether an Air Quality Management Area (AQMA) should be designated within the area assessed. Under section 83(1) of the Environment Act 1995 local authorities have a duty to declare (by means of an official order) an AQMA in those areas where the air quality standards or objectives are not being met.

3.0 Monitoring of Nitrogen Dioxide in Cardiff

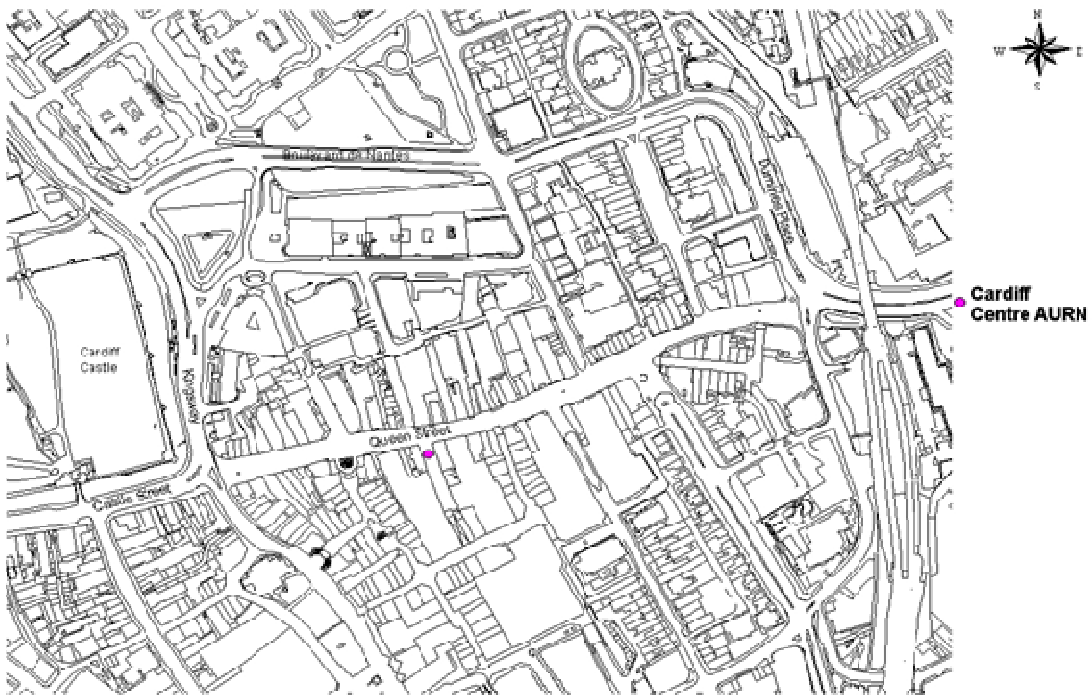
3.1 Local Monitoring Networks

Nitrogen dioxide continues to be monitored extensively in Cardiff. In addition to the permanently located chemiluminescent analyser at DEFRA's Cardiff Centre AURN site, the Council's operates a network of 73 nitrogen oxide diffusion tubes in 2014. There were 68 diffusion tubes in the network in 2013.

Nitrogen dioxide is currently monitored both inside and outside of Cardiff's four current AQMAs. Three of the diffusion tubes are used in a co-location study at the Cardiff Centre AURN site to provide bias-adjustment factors for the remainder of the local diffusion tube network.

Map 1 shows the location of the Cardiff Centre AURN monitoring site and Map 2 shows the Council's diffusion tube monitoring sites during 2013.

Map 1 Location of Cardiff Centre AURN Site



Map 2 Location of Cardiff Council's Diffusion Tubes in 2013



3.2 Diffusion Tube Bias Adjustment

Measurement of nitrogen dioxide by diffusion tube can be unreliable due to the 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.

The Council's diffusion tubes are prepared, extracted and analysed by Cardiff Scientific Services. The tubes are prepared using the 50% TEA in acetone method.

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 monitoring station's sample inlet duct. The results are used to determine the local "Bias Adjustment Factor" and "Diffusion Tube Bias" for measurements made by diffusion tube compared to the more accurate measurements made by chemiluminescent analyser.

Technical Guidance advises that 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

3.3 Nitrogen Dioxide Monitoring at Fairoak Road Roundabout

3.3.1 Site Description

Fairoak Road Roundabout is located in the Plasnewydd Ward of Cardiff adjacent to Roath Park. The area features a mix of residential properties and open parkland, with Roath Park Lake to the north beyond the A48/Eastern Avenue.

The roundabout is fed by four roads, i.e. Fairoak Road to the south and north, Ninian Road and Lake Road West. Wedal Road joins Lake Road West immediately north of the roundabout and Shirley Road joins Fairoak road immediately to the south. The local road network is therefore complex in layout. The roundabout can get busy during the week, particularly at peak times, with commuter traffic from the residential areas to the north travelling to the City Centre and the Civic Centre to the south.

In terms of topography, the roundabout can be considered to be at the bottom of an east-west valley; Ninian Road and Fairoak Road (north of the roundabout) run eastwards are "at level" with the roundabout. Lake Roads East and West to the north rise gradually away from the roundabout, as do Fairoak Road to the south and Shirley Road, only considerably more steeply. Fairoak Road to the south features in the Cardiff Half-Marathon where its steepness near to the end of the race has earned it rather more colourful epithets.

There is a terrace of residential accommodation immediately to the east of the roundabout and residential accommodation on Ninian Road which, when compared to that adjacent to

the roundabout, is both further away and elevated due to the local topography. There is open parkland opposite the residences on Ninian Road. There is also residential accommodation on Shirley Road, but, again, this is more distant when compared to that adjacent to the roundabout and those houses closest to the roundabout are also elevated.

The railway line to the rear of the terrace of houses adjacent to the roundabout serves local trains but there is no station in the immediate locality.

There is residential accommodation beyond the railway line on Wedal Road and also a small Council Depot and a Civic Amenity Site.

3.3.2 Monitoring Sites

The Council has been monitoring nitrogen dioxide concentrations at 19 Fair oak Road (Site 86) since the beginning of 2002. Data has shown small degrees of fluctuation about the National Air Quality Standard of $40\mu\text{g}\text{m}^{-3}$ since that time. These have been discussed in the Council's annual reports since that time, but a consistent pattern of exceedence has not been found. The situation has been afforded some uncertainty due to road and utility works in the vicinity in recent years; including lengthy works at the entrance to Roath Park adjacent to the roundabout and junction realignment works in 2012/2013, both of which disrupted traffic flows and caused vehicle queuing at various times.

Site 86 (19 Fair oak Road) is at the façade of residential accommodation immediately adjacent to the Fair oak Road roundabout. This was augmented in 2008 by monitoring at a kerbside site (Site 141) at the boundary of elevated residential accommodation adjacent to the Fair oak Road junction with Shirley Road. Significant vehicle queuing can occur at this point, particularly during the evening peak period, due to vehicle lane priorities giving primacy to vehicles entering from Shirley Road,.

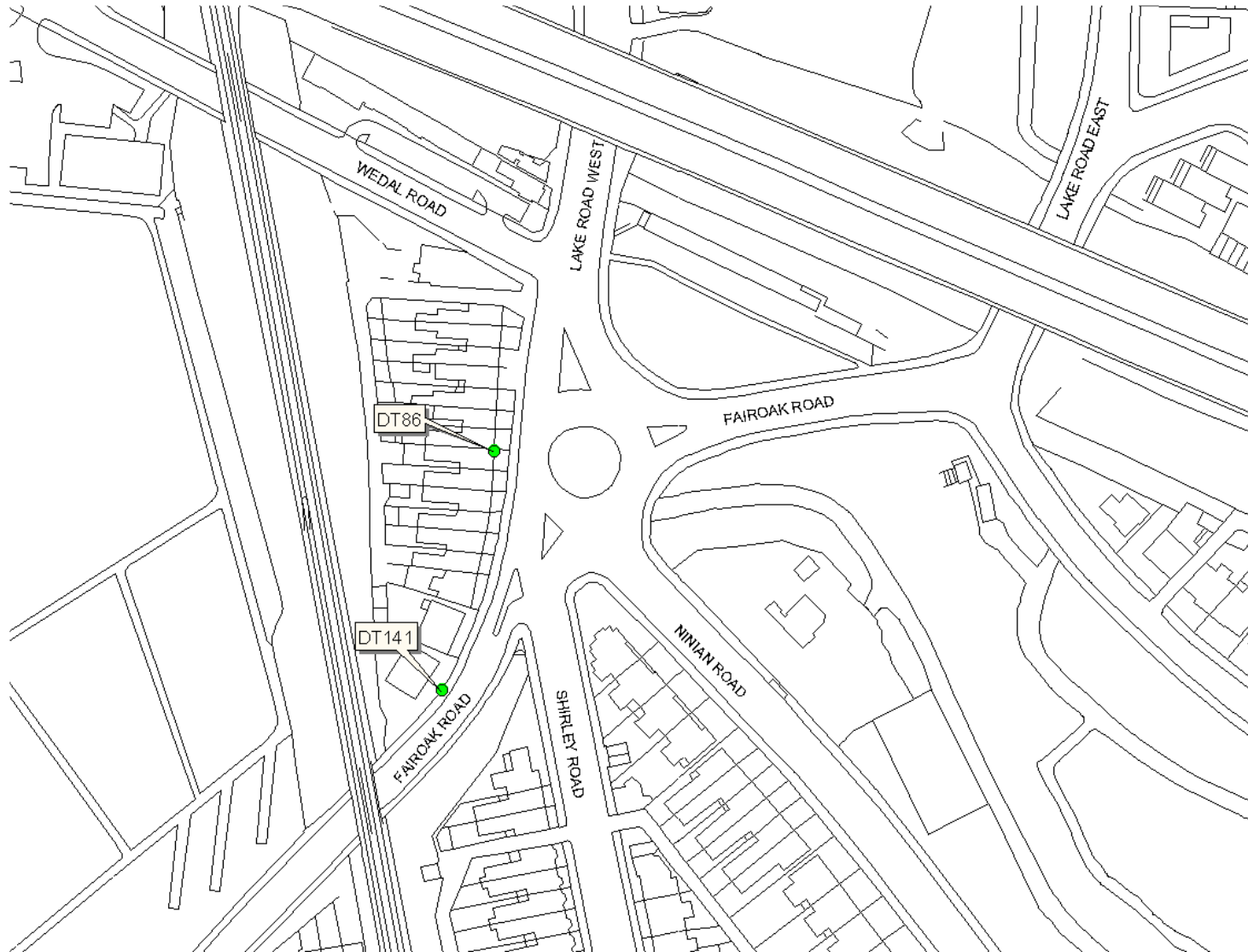
Site 86 is representative of relevant exposure with respect to the annual mean Objective for nitrogen dioxide whereas Site 141 is not.

Monitoring site details are given in Table 2 and Map 3 shows the location of the monitoring sites within the local area.

Table 2 **Details of Diffusion Tube 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?
86	19 Fair oak Road	Façade	318452	178805	1.5	NO ₂	N	N	Y 0.10m)	10m	Y
141	Fair oak Road 2	Kerbside	318438	178742	2.0	NO ₂	N	N	N (5m)	1.5m	Y

Map 3 **Monitoring Site locations in and around Fairoak Road Roundabout**



3.3.3 Background Concentrations

Background concentrations of nitrogen dioxide can contribute a significant proportion of total nitrogen dioxide. National maps of background concentrations are available here:

<http://laqm.defra.gov.uk/maps/2010htm>

Background concentrations are available on a 1km x 1km grid for the whole country.

Site 86 diffusion tube is at grid-reference 318452,178805 and the national map for the 1km x 1km grid-square in which it is located gives a value of 24.8 $\mu\text{g}/\text{m}^3$ for the 2013 background concentration of nitrogen dioxide.

3.3.4 Monitoring Data

Table 3 below gives the ratified, bias-adjusted monitoring data for Site 86 between 2002 and 2007. Table 4 gives the ratified, bias-adjusted monitoring data for Sites 86 and 141 between 2008 and 2013, i.e. since both sites have been operational.

Table 3 Monitoring Data from Fairoak Road Roundabout, 2002 - 2007

Site ID	Site Type	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$					
		2002 (Adjustment Factor = 0.94)	2003 (Adjustment Factor = 0.875)	2004 (Adjustment Factor = 0.81)	2005 (Adjustment Factor = 0.84)	2006 (Adjustment Factor = 0.85)	2007 (Adjustment Factor = 0.88)
86	Façade	39.7	38.6	40.6	40.4	42.3	43.9

Figures in **bold text** indicate exceedences of the 40 $\mu\text{g}/\text{m}^3$ annual mean Objective

Table 4 Monitoring Data from Fairoak Road Roundabout, 2008 - 2013

Site ID	Site Type	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$					
		2008 (Adjustment Factor = 0.84)	2009 (Adjustment Factor = 0.89)	2010 (Adjustment Factor = 0.92)	2011 (Adjustment Factor = 0.88)	2012 (Adjustment Factor = 0.86)	2013 (Adjustment Factor = 0.85)
86	Façade	40.3	41.0	42.6	39.9	40.3	38.8
141	Kerbside	35.3	40.3	43.0	40.0	40.4	37.7

Figures in **bold text** indicate exceedences of the 40 $\mu\text{g}/\text{m}^3$ annual mean Objective

It should be noted that in the Council's 2013 Progress Report the annual mean nitrogen dioxide concentration measured at Site 141 in 2012 was reported as 47.6 $\mu\text{g}/\text{m}^3$. This was incorrect, the correct concentration being as given above.

It is considered unlikely that, had the correct concentration been reported, that this would have altered the conclusion of the 2013 Progress Report, i.e. proceed to a Detailed

Assessment for this area, as the year-on-year results to the end of 2012 indicated a need for one.

3.3.5 Discussion of Monitoring Results

It has previously been discussed, most notably in the Council's 2011 Progress Report, that nitrogen dioxide concentrations in 2010 across the Council's monitoring network were elevated when compared to previous years' data. This was also the case regionally and has been attributed to increased fuel usage during a particularly prolonged period of very cold weather during November and December. When considering the likelihood of future exceedences, data from this year has to be treated with caution.

The data 2011 onwards show a minor (circa 1%) exceedence at both sites in 2012 but compliance in 2011 and 2013. Although compliant with the annual mean Objective, it is possible that nitrogen dioxide concentrations in 2013 were adversely affected by the installation of pedestrian crossing & traffic-calming measures which resulted in increased vehicle queuing, particularly at peak times, during the works.

For Site 86, which is representative of relevant exposure, the concentration measured in 2013 was the lowest since 2003.

4.0 Estimated Population Exposure

The Council's "Published and Working" Electoral Register June 2014 has 54 registered electors living in the 17 residential premises on Fair oak Road in the vicinity of the roundabout (numbers 1 – 33, odd numbers only). This figure includes only people aged 18+.

The 2011 Census data for Fair oak Road indicates that approximately 21% of the population of Fair oak Road is aged under 18.

A reasonable estimate that the population of the 17 residences adjacent to the roundabout is about 70.

5.0 Sources of Nitrogen Oxides

There are no industrial sources of nitrogen oxides in the area. The only potentially significant combustion source of nitrogen oxides is the multi-flue stack serving gas-fired boilers at University Hospital of Wales. The multi-flue stack is more than 1.3km WNW of the roundabout. Due to its location, elevated discharge point and the prevailing south-westerly wind, this is not considered to have a significant effect upon annual mean concentrations in the vicinity of the roundabout.

Emissions of nitrogen oxides from road traffic will be the dominant source of nitrogen oxides in the vicinity of the roundabout.

The most recent classified traffic counts on the local road network were made in February 2012, i.e. before the works to install pedestrian crossings and traffic-calming measures were undertaken. The traffic counts are given in Appendix 1. These indicate that almost 3,900 cars use the six roads in both the morning (08:00 - 09:00hrs) and evening (17:00 - 18:00hrs) peaks. This can cause some congestion on the roads entering the roundabout at

peak times. Lower traffic flows during the remainder of the day do not generally result in vehicle queuing.

Cars are the dominant vehicle type, reflecting the largely residential nature of the areas to the north of the roundabout. This is likely to be commuter traffic travelling to the City Centre/Civic Centre/University and University Hospital of Wales in the morning and returning in the evening. There will also be some school-generated traffic. There is little by way of Heavy Goods Vehicle (HGV) or bus traffic in the vicinity, even at peak hours. Light Goods Vehicle (LGV) traffic adds between 5 – 10% onto car numbers on each of the roads at peak hours.

The busiest road in both peak periods is Lake Road West, generally having around twice as much traffic as any of the other 5 roads. In the evening peak period all bar a small percentage of the traffic (i.e. left-turning traffic from Wedal Road) entering Lake Road West will have travelled around the roundabout and in front of the houses and diffusion tube monitoring Site 86.

Further traffic counts are planned for July/August 2014, i.e. one year following the installation of pedestrian crossings and traffic calming measures.

6.0 Planned Local Developments

The nature of the area around the Fair oak Road Roundabout is well established, being open parkland allied to mature residential properties. For the most part, there is little scope for new residences, new roads or other developments that might increase local emissions of nitrogen oxides.

The exception to this is on Wedal Road, which features a mixture of land uses along its length. These include a Council Depot, residential accommodation, a Household Waste Recycling Centre, a retirement home and a public house. The council is developing plans to move and expand the Household Waste Recycling Centre on the site of the depot. The Household Waste Recycling Centre at Waungron Road in Fairwater has already closed to facilitate this.

It is possible that this proposed development will increase road traffic in the area. The Planning Application for this development has yet to be received but it is anticipated that it will include both road traffic and air quality assessments. Of particular concern will be both the increased traffic flows and the access arrangements, i.e. whether it is planned to allow right-turns off Wedal Road into the new site. If such right-turns are not allowed then traffic arriving from the west on Wedal Road will be obliged to negotiate the junction with Lake Road West and the Fair oak Road Roundabout before re entering Wedal Road. There is therefore potential for adverse air quality impacts at the residences closest to the roundabout and at monitoring Site 86.

Looking further ahead, the Council's draft Local Development Plan includes a number of large currently undeveloped areas in the north of Cardiff with the potential to be used for large-scale housing developments. Whilst there are no firm plans or planning applications made for these sites as yet, the potential for significant development should be recognised. Given the potential for such developments and the constraints of the road network, it is possible that, should development be permitted and take place, that there may be adverse impact upon traffic levels at the Fair oak Road Roundabout.

7.0 Conclusions

When considering the need for an AQMA, weight should be given to the most recent monitoring data. The available monitoring data, particularly from 2011 onwards, shows that:

- concentrations of nitrogen dioxide in 2011 and 2013 were compliant with the annual mean Objective.
- there was a very small exceedence (circa 1%) of the annual mean Objective at both sites in 2012.
- the annual mean nitrogen dioxide concentration measured at Site 86 in 2013, which is a relevant location for the purpose of local air quality management, was the lowest measured since 2003.
- whilst acknowledging that it isn't a legitimate measure of compliance, the average concentrations at Sites 86 and 141 over the three years between 2011 and 2013 are below the annual mean Objective
- taken as a whole, the monitoring data suggest that recent concentrations are tending to be lower than in previous years

There are concerns with regard to proposals to relocate and expand the Household Waste Recycling Centre on Wedal Road as this could increase road traffic in the generally and, in particular, on Fair oak Road Roundabout. This could, in turn, adversely affect nitrogen dioxide concentrations at the facades of the residential accommodation adjacent to Fair oak Road Roundabout.

The extent of any possible increase in local road traffic, and subsequent impact of local air quality, is not known at the present time. Should a planning application be received then the anticipated road traffic and air quality impact assessments will inform the situation.

There is also the potential for increased road traffic in the area should the Local Development Plan be adopted and planning consents granted for large-scale residential developments in the north of Cardiff.

The Council will continue monitoring for nitrogen dioxide at the two sites reported herein and may seek to expand the monitoring network along Wedal Road in the future to measure the impact, if any, of the proposed Household waste Recycling Centre relocation and expansion and other potential developments further afield.

The Council will keep the situation with regard to air quality at Fair oak Road Roundabout under review in annual Progress Reports. However, the available monitoring data, particularly the most recent, suggests that it is not necessary to declare an AQMA at the present time.

8.0 Consultation

Cardiff Council would welcome views on the proposal not to declare an Air Quality Management Area at Fair oak Road Roundabout at the present time but to keep the situation under review.

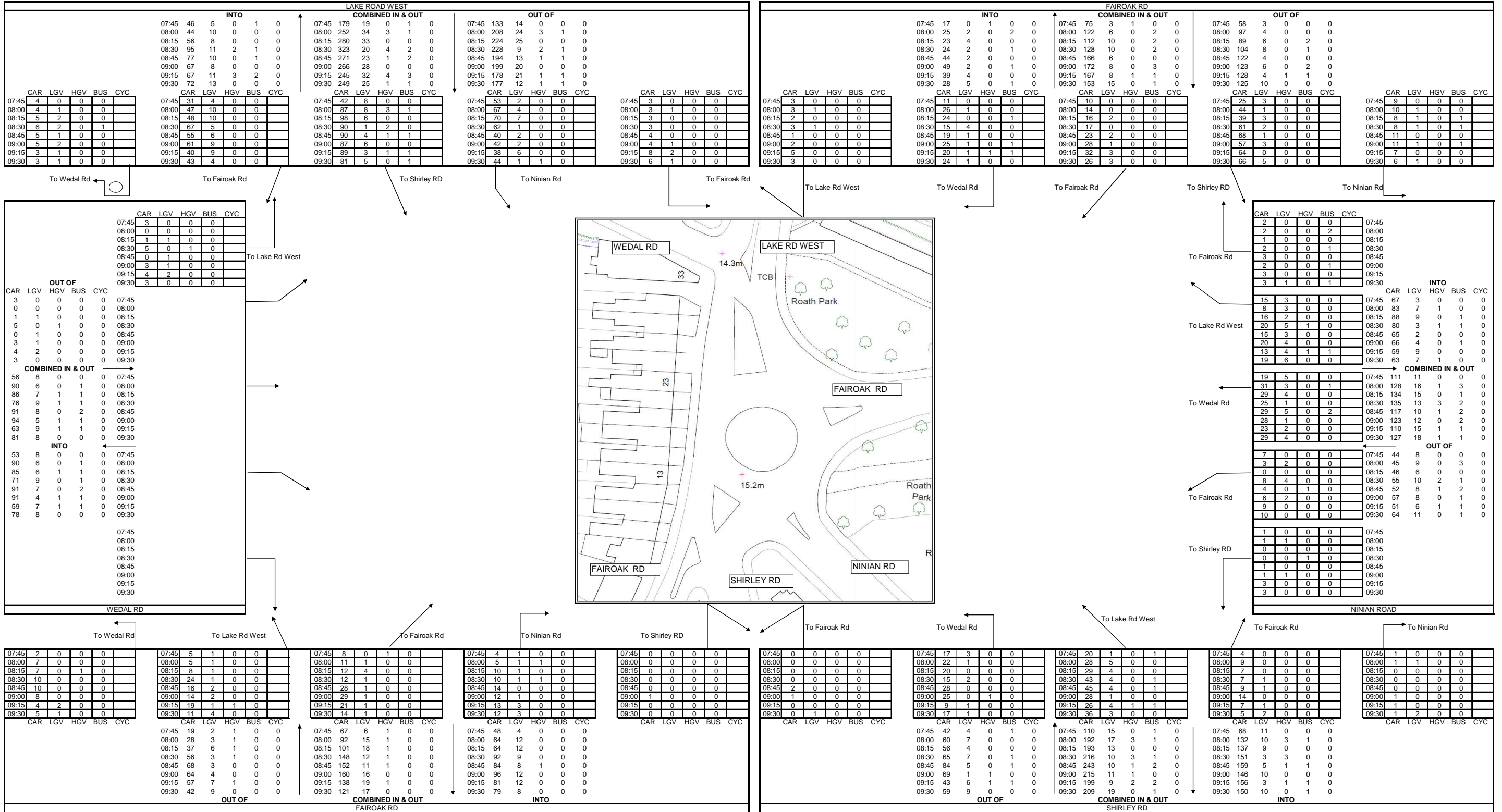
Appendix 1
Classified Traffic Counts – February 2012

AM Peak Hour Junction Survey 07:30 - 09:30

Subject: LAKE ROAD WEST - FAIROAK ROAD - NINIAN ROAD - SHIRLEY RD - FAIROAK ROAD - WEDAL ROAD

Date: 07/02/2012

Day: TUESDAY

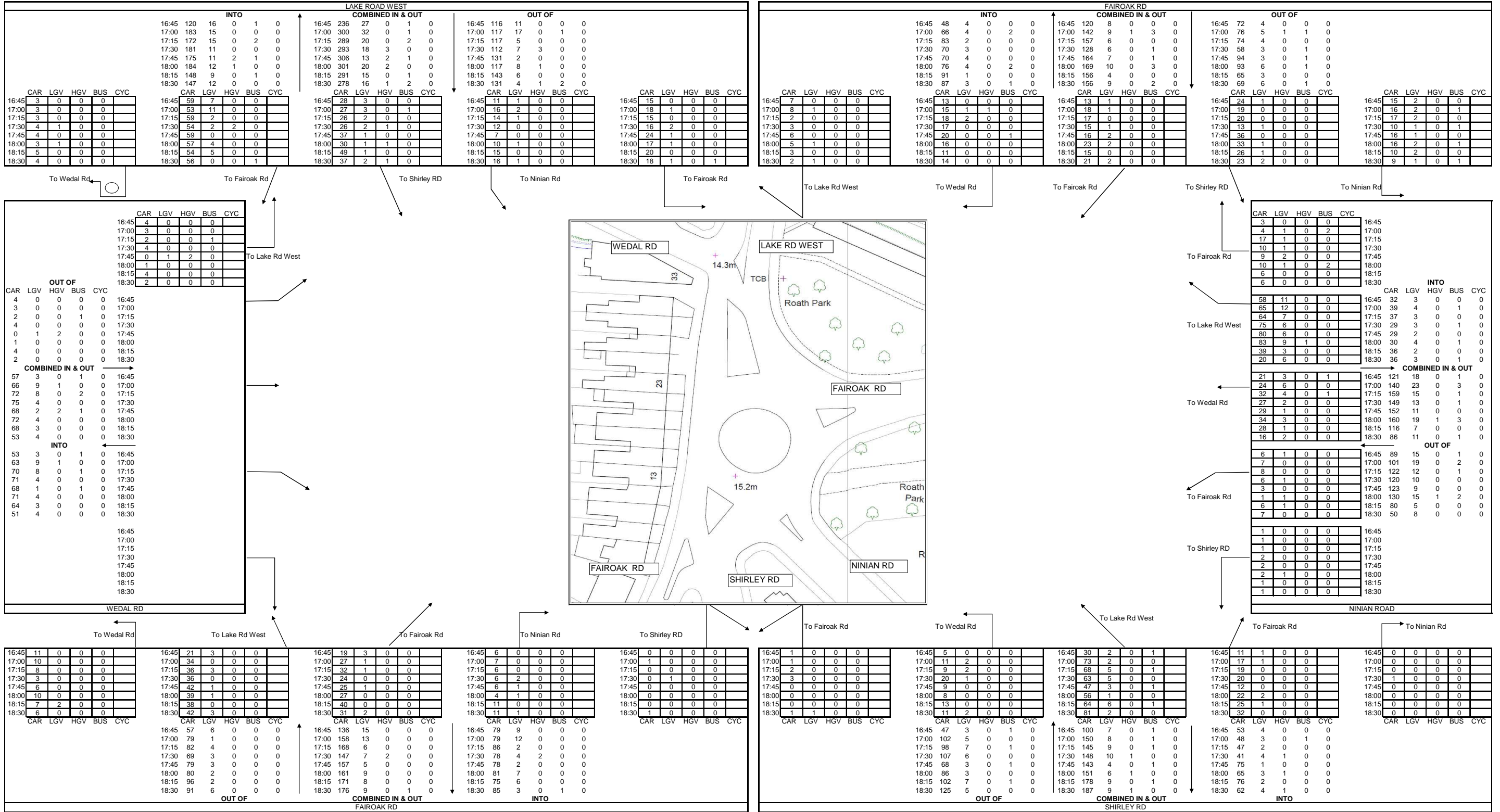


PM Peak Hour Junction Survey 16:30 - 18:30

Subject: LAKE ROAD WEST - FAIROAK ROAD - NINIAN ROAD - SHIRLEY RD - FAIROAK ROAD - WEDAL ROAD

Date: 07/02/2012

Day: TUESDAY

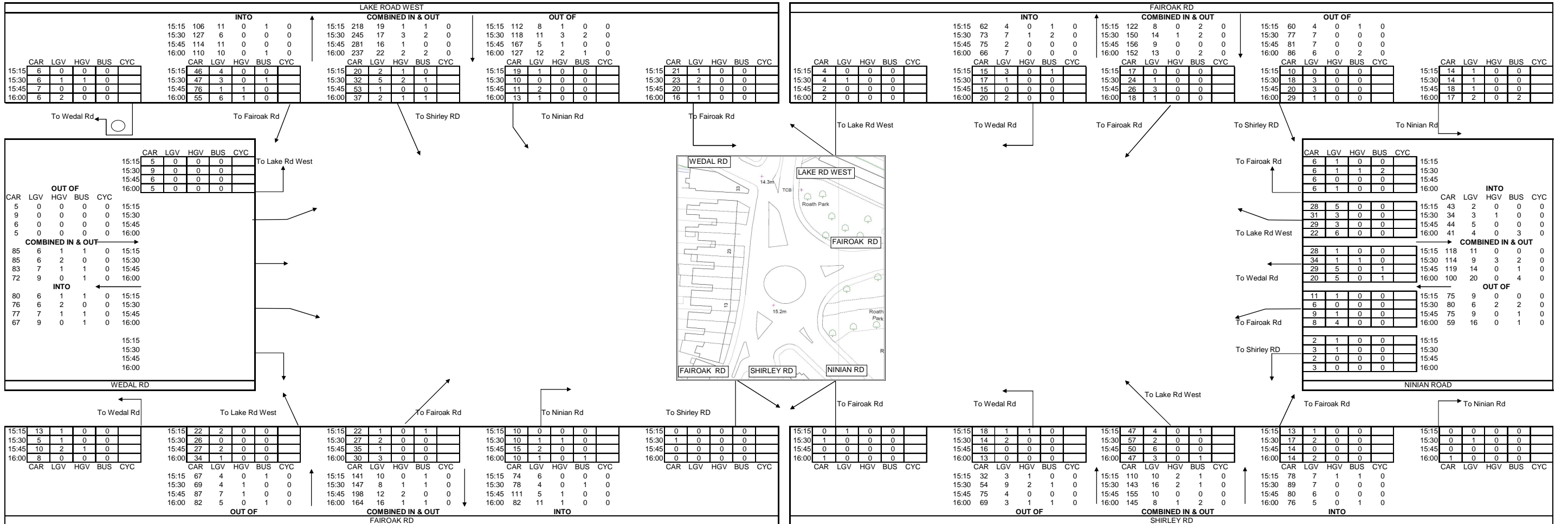


SCHOOL Peak Hour Junction Survey 15:00 - 16:00

Subject: LAKE ROAD WEST - FAIROAK ROAD - NINIAN ROAD - SHIRLEY RD - FAIROAK ROAD - WEDAL ROAD

Date: 07/02/2012

Day: TUESDAY



SATURDAY 3 Hour Junction Survey 16:30 - 18:30

Subject: LAKE ROAD WEST - FAIROAK ROAD - NINIAN ROAD - SHIRLEY RD - FAIROAK ROAD - WEDAL ROAD

Date: 12/05/2012

Day: SATURDAY

