THE COUNTY COUNCIL OF THE CITY AND COUNTY OF CARDIFF

PART IV, ENVIRONMENT ACT 1995
LOCAL AIR QUALITY MANAGEMENT

ELY BRIDGE AQMA
AIR QUALITY ACTION PLANS
FEBRUARY 2009

CARDIFF
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THE COUNTY COUNCIL OF THE CITY AND COUNTY OF CARDIFF

SECTION 84(2)b, THE ENVIRONMENT ACT 1995

LOCAL AIR QUALITY MANAGEMENT

AIR QUALITY ACTION PLAN REVIEW

THE ELY BRIDGE AIR QUALITY MANAGEMENT AREA

Executive Summary

In accordance with Part 4 of The Environment Act 1995 ("the Act") and following an extensive Review and Assessment of Air Quality, The County Council of the City and County of Cardiff declared THE Ely Bridge Air Quality Management Area; this came into force on 1st February 2007.

The Air Quality (Wales) Regulations 2000 set Standards and Objectives for eight key pollutants. The Review and Assessment process has shown that the annual average concentration nitrogen dioxide consistently exceeds that National Air Quality Standard (NAQS) of 40µgm^{-3} at residential property within the Ely Bridge area.

The Act places an obligation the Council to work towards achieving the NAQS and to do this by developing an Air Quality Action Plan (AQAP) to address the problem. The Ely Bridge AQMA is a small part of the former Cardiff West AQMA, for which an Air Quality Action Plan was published in November 2002.

This document presents an updating of the November 2002 Action Plan, which was developed to complement the traffic and emission reduction measures contained in the Cardiff Local Transport Plan 2000 – 2016 (LTP).

The LTP contains short-term and longer-term measures many of which are designed to reduce the need for road-transport and therefore cut traffic emissions.

The principal source of emissions which caused the AQMAs to be declared is road traffic and the high concentrations of nitrogen dioxide identified by the review and assessment process in the Ely Bridge area were found at the houses closest to Cowbridge Road West.

The 2002 action planning process considered a range of options to address the poor air quality. Cowbridge Road West was not considered suitable for options such as pedestrianisation to be practical or viable. The range of available options proved to be limited to traffic management measures such as using an air quality monitoring system as input to the Council's SCOOT traffic management system and queue relocation.

This review of the 2002 Action Plans has not identified any new short-term measures that could be used to reduce nitrogen dioxide concentrations in the area.

The Council will continue to implement the short-term and long-term measures in the LTP which will help air quality locally and will continue to report progress annually.

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1.0 Introduction

Following its declaration of three Air Quality Management Areas (AQMAs) in December 2000, Cardiff Council published Air Quality Action Plans (AQAPs) to address to the poor air quality within them in November 2002.

The AQMAs were known as The Philog, Newport Road and Cardiff West AQMAs and each was declared following a review and assessment process which predicted exceedence of the annual mean air quality Objective for nitrogen dioxide ($40\mu gm^{-3}$ to be achieved by the end of 2005) in each of the areas.

Following declaration of the AQMAs, monitoring of nitrogen dioxide concentrations within the AQMAs was intensified and this monitoring showed concentrations to be consistently below the objective at relevant locations such as the façades of residential accommodation within all three of the AQMAs other than a small part of the Cardiff West AQMA in the vicinity of Ely Bridge.

Following a review of the AQMAs, The Philog and Newport Road AQMAs were revoked at the beginning of February 2007 and the Cardiff West AQMA was considerably reduced in size and renamed as the Ely Bridge AQMA.

As a result of these changes the AQAPs published in November 2002 require updating to reflect the changes in the number and geography of Cardiff's AQMAs. The Council is also taking this opportunity to review the measures contained in the 2002 Action Plans for applicability within the Ely Bridge AQMA.

2.0 Strategic and Legislative Air Quality Framework

2.1 The Environment Act 1995

Part IV of The Environment Act 1995 ("the Act") provides the legislative backbone to the characterisation and strategic improvement in UK air quality.

Section 80 of the Act requires central government to prepare a statement ("strategy") containing policies with respect to the assessment or management of air quality. This is the legislation which has led to the publication of the National Air Quality Strategy.

Section 82 of the Act requires local authorities to periodically review air quality in their areas having regard to Standards and Objectives prevailing at that time and to identify any parts of their areas which are not meeting the Standards and Objectives.

Section 83 of the Act requires local authorities to designate an AQMA in those areas where the Standards and Objectives are not being achieved.

Section 84 of the Act requires local authorities that designate an AQMA to continue to review air quality within the areas, make an assessment of the likely future air quality within the AQMA(s) and to prepare a report of this review/assessment within twelve months of the AQMAs coming into force. This section also requires those local authorities that have declared an AQMA to prepare an action plan (AQAP) to address the issues.

2.2 National Air Quality Strategy

The National Air Quality Strategy (NAQS) was first published in 1997. It was updated in 2000 and updated again in 2007

The NAQS sets the "air quality scene" for the UK, giving information such as the known adverse health effects of the key pollutants, current national trends in air quality/pollution and it highlights initiatives and developments currently being taken at the national level to cut emissions of the key pollutants and their precursors. The NAQS also discusses its relationship with other initiatives and strategies, such as sustainability.

These national measures are sufficient on their own to secure air quality objectives in many areas of the UK. However, the Strategy acknowledges that local "hotspots" exist where national measures alone are not sufficient to secure the achievement of certain Objectives. It is for this reason that the "Local Air Quality Management" (LAQM) regime came into being; its purpose is to enable more detailed study of local hotspots and to enable local authorities to develop local strategies and plans to address them.

The 2007 Air Quality Strategy retains the previous strategy's objectives and also sets an agenda for the longer term, with a specific aim for finding out more about how air pollution impacts upon health. It also acknowledges that policies which address both air pollution and climate change could deliver very large reductions in air pollution until 2050.

2.3 Air Quality (Wales) Regulations 2000

These Regulations give legal status to the air quality Standards and Objectives in Wales. Standards and Objectives are set for eight key pollutants, seven of which are designated as suitable for local control.

A summary of the 2000 Regulations' Standards and Objectives is given in Table 5, Appendix 1.

2.4 Local Air Quality Management

The Act requires each local authority periodically to review air quality in its area having regard to any relevant Regulations applying at the time.

The pollutants prescribed in The Air Quality (Wales) Regulations 2000 are *benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide, ozone, particulates (PM_{10}), and sulphur dioxide.* The Review and Assessment process has to be undertaken for each of these pollutants, with the exception of ozone. Ozone is a transboundary pollutant for which local control measures are inappropriate; it is a secondary pollutant which, due to its complex, slow, chemical formation reactions, tends to form away from the sources of its primary precursors.

Each the Pollutants for which Objectives have been set in the Regulations have known adverse health effects at very high concentrations as follows:

Nitrogen dioxide, Sulphur dioxide and Ozone
These gases irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases.

Particles
Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of the condition of people with heart and lung diseases.

Carbon monoxide
This gas prevents the normal transport of oxygen by the blood. This can lead to a significant reduction in the supply of oxygen to the heart, particularly in people suffering from heart disease.

Lead
This has toxic biochemical effects which may cause problems in the synthesis of haemoglobin and have effects upon the kidneys, gastrointestinal tract, etc. However, the greatest concern is with regard to the intellectual development of children.

Benzene, 1,3 butadiene
Both are genotoxic carcinogens and known to induce cancers such a leukaemia.

The primary objectives of the review and assessment process are:

a] to identify those areas at the local level where national policies and actions appear unlikely, of themselves, to secure the Objectives; and

b] to ensure that air quality considerations are integrated into Cardiff County Council's decision making processes such as land use planning, traffic management and economic development.

A series of General and Technical Guidance Notes are published and, from time to time reviewed, by Central Government. These form the basis of the methodology for Local Air Quality Management (LAQM).

2.5 Sustainability in Cardiff

The 2002 Action Plans referred to Cardiff's Local Sustainability Strategy which had been published in November 2000. This Strategy acknowledged the link between sustainability and poor air quality. One of the Strategy's key "performance indicators" was "the number of low air pollution days" using DEFRA's "Air Quality Banding System".

The Council's current Sustainable Development Action Programme for 2006 - 2009 does not specifically mention Air Quality. However, the synergies between Air Quality and Climate Change (which is addressed in Programme) are acknowledged and understood and the Council will seek to include Air Quality when the Programme is next revised.

2.6 Local Development Plan

The Cardiff Local Development Plan 2006 -2021 underwent consultation for a six-week period from 16 October to 27 November 2007. When finalised and adopted, it will set out policies and proposals for the future development and use of land in Cardiff up to 2021. It will replace the existing structure and local plans for the city and form the basis for decisions on individual planning applications.

The consultation documents included an "Initial Sustainability Report" in which Air Quality is a key Sustainability Objective. The stated Air Quality Policy Aim is:

"Take account of the effects of development upon air quality and vice versa, and meet mandatory standards for air quality."

It states that the LDP might assist in delivering policy aims by:

- Include policies on the location of potentially polluting developments, make provision for types of development that may cause pollution and separate incompatible land uses.

- Locate development so as to minimise travel demand, particularly by cars and other motor vehicles, and where it is accessible by a range of forms of travel/transport, including walking, cycling, use of public transport and alternatives to movement of freight by road.

3.0 Understanding the Causes of Poor Air Quality in Cardiff

The Review and Assessment process has provided a focus for air quality monitoring within Cardiff and the monitoring network has expanded and evolved to reflect both the needs and the findings of this work.

Over the years, the Review and Assessment process has confirmed a number of features common to each of those areas where AQMAs have been declared within Cardiff; they are discussed below.

Monitoring data given for the Cardiff Centre AURN and Briardene Road Safety Centre monitoring sites has been measured by automatic analyser. Monitoring data for all other sites has been gained by nitrogen dioxide diffusion tube. Diffusion tube data has been bias-adjusted using factors given and discussed in annual progress reports.

3.1 Traffic and Topography

High traffic flows do not appear of themselves to be enough to cause high levels of air pollution. Local topography and congestion/queuing are hugely significant in determining whether emissions from road vehicles are translated into locally elevated pollutant concentrations.

The monitoring data in tables 1 and 2 overleaf serve as examples.

Briardene Road Safety Centre site was located about 2.5 miles north of the city centre. It was decommissioned during early 2008 as it has served its purpose. The site was classified as "roadside" and it was equipped with a continuously recording automatic analysers. The St Mary Street and High Street are "kerbside" diffusion tube sites.

There are significant differences in local topography. The Briardene Road Safety Centre is relatively open in aspect and, with the exception of about 1 – 1.5 hours during the morning peak, there is little or no vehicle queuing apparent in the vicinity. For the most part, traffic is free flowing at around 30mph, this being governed by northbound and southbound speed cameras close to the monitoring site.

Table 1 **Briardene Road Safety Centre**
North Road, Gabalfa
Annual Average Daily Traffic flow = ~50,000 vehicles

Year	2002	2003	2004	2005	2006	2007
Briardene	23	28	24	28	30	27

Annual average nitrogen dioxide in microgrammes per cubic metre

Table 2 **City Centre**
St Mary Street and High Street, Cathays
Annual Average Daily Traffic flow = ~9,500 vehicles

Year	2002	2003	2004	2005	2006	2007
St Mary Street	59	61	58	62	60	58
High Street	71	74	73	66	68	70

Annual average nitrogen dioxide in microgrammes per cubic metre

Conversely, St Mary Street and High Street have 4 and 5 storey buildings along the whole length of the road link together with several junctions and a number of pedestrian crossings along its length. The road-link was closed to private vehicles at the beginning of August 2007; buses and taxis are permitted access, as are delivery vehicles for a time-limited period. As can be seen from the data, this doesn't seem to have resulted in significant changes in pollutant concentrations.

Generally, for there to be an air quality problem in Cardiff locations need to have each the following:

- reasonably high traffic flows
- vehicle queuing for significant periods of the day
- buildings close to the road

3.2 Background NO_2 Levels

Air pollution monitoring in Cardiff has expanded since the start of the LAQM regime. There are currently 59 diffusion-tube monitoring sites (three of which are at the same site) compared to 42 at the end of 1999. The monitoring programme has evolved with time and new sites are preferentially located on the façades of buildings wherever possible as these are the locations at which assessments of exposure are required.

However, monitoring is still carried out at a number of "background" locations as information from such sites can be helpful in characterising the local area and the extent of local pollution "hotspots".

Data from two background sites in the city centre are given in Table 3 overleaf.

The Cardiff Centre AURN is 195m from the nearest road (Kingsway/Castle Street adjacent to Cardiff Castle) and the Green Street site is approximately 50m distant from the busy Cowbridge Road East. The Green Street site was originally commissioned to assess the exposure of residents in the area to nitrogen dioxide. It was not expected that this site would show nitrogen dioxide levels close to background.

Table 3 Nitrogen Dioxide Concentrations at Sites Representative Of Urban Background Locations

Site	2002	2003	2004	2005	2006	2007
Cardiff Centre AURN	32	35	30	35*	30	32
Green Street	23	25	24	25	26	30

Annual average nitrogen dioxide in micrograms per cubic metre
** Data missing from 6th May to 6th November due to site refurbishment*

The Cardiff Centre AURN is 195m from the nearest road (Kingsway/Castle Street adjacent to Cardiff Castle) and the Green Street site is approximately 50m distant from the busy Cowbridge Road East. The Green Street site was originally commissioned to assess the exposure of residents in the area to nitrogen dioxide. It was not expected that this site would show nitrogen dioxide levels close to background.

These results, together with recent data from diffusion tube sites on the facades of buildings close to "kerbside" diffusion-tube sites would seem to confirm findings nationally that elevated pollution concentrations are only found close to the kerb (between 10 and 20m) and the concentrations diminish rapidly with increasing distance from a road source.

4.0 The Ely Bridge AQMA

Maps of the locality and the Ely Bridge AQMA are provided in Appendix 2.

4.1 The Geography of the AQMA

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.

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4.2 Local Air Quality

Measurements of nitrogen dioxide at (and close to) residential accommodation in these areas along Cowbridge Road West to the south-east of the AQMA give concentrations well below the National Air Quality Standard. Table 4 below gives examples of monitoring data from such sites.

Table 4 Nitrogen Dioxide Concentrations on Cowbridge Road West Outside of the Ely Bridge AQMA

Site	2002	2003	2004	2005	2006	2007
Grand Avenue/CRW	35	39	35	38	-	-
497 Cowbridge Road West	29	27	28	26	27	28

Annual average nitrogen dioxide in microgrammes per cubic metre

The "Grand Avenue/CRW" site was a kerbside site, located about 1.5m from Cowbridge Road West and about 10m from the facade of the nearest residential accommodation. The site was decommissioned at the end of 2005 as it was not representative of relevant exposure.

The site at 497 Cowbridge Road West is located on the facade of residential accommodation which is closest to the busy Culverhouse Cross interchange. The site is representative of relevant exposure and was commissioned as a result of concerns following the approval of plans for a large B & Q store (with associated car parking) next door to the residential premises together generally increased retail activity within the vicinity of the Culverhouse Cross interchange.

The AQMA is in place as a result of monitoring at a kerbside and a facade location within the area declared as the Ely Bridge AQMA.

Table 4 Nitrogen Dioxide Concentrations within the Ely Bridge AQMA

Site	2002	2003	2004	2005	2006	2007
Ely Bridge	55	55	52	54	60	59
25 Cowbridge Road West	-	-	42	47	49	48

Annual average nitrogen dioxide in microgrammes per cubic metre

The Ely Bridge site is located on street furniture less than 0.5m from the kerb. The site at 25 Cowbridge Road West is located on a down-pipe on the facade of the residential accommodation which is approximately 2.5m from the kerb.

Concentrations at both sites are elevated when compared to the National Air Quality Standard and there is no doubt as to the validity of the AQMA declaration. Of particular note is the significant and consistent difference in concentrations at the two sites despite them being located close together.

4.3 Local Land Use

The local areas around Cowbridge Road West are, in the main, residential although there is some light industrial use in the area surrounding the AQMA, principally on Dyfrig Road. This area is accessed via the light-controlled junction with Riverside Terrace.

Generally, there is little scope for significant new development in the immediate vicinity of the AQMA although a mixed-use redevelopment of a brown field site once used by Arjo Wiggins paper mill is due to commence in the near future.

There is very little potential for new road-build in or near to the AQMA. At the time that the 2002 Action Plans were developed there was the possibility of an additional road-link between the Peripheral Distributor Road and the Western Avenue/Cowbridge Road West/Cowbridge Road East junction. At that time it was very much at the "desirability study" stage rather than "feasibility" study stage. It does not currently seem that this road-link will be constructed.

Generally, it is the nature of the area that there is little free land available in the immediate area of the AQMA for the development of uses which could either beneficially or adversely affect air quality significantly.

In the past 20 years or so there has been a great-deal of local retail development in the Culverhouse Cross area of Cardiff at the south-western end of Cowbridge Road West. These developments have, in general, been granted following Appeal to the Welsh Office/National Assembly for Wales following refusal of consent by either Cardiff Council or The Vale of Glamorgan Council.

These retail developments followed the opening of the Peripheral Distributor Road link between the M4 at J33 and Culverhouse Cross in the early 1980s. There is little doubt that that this, together with the Culverhouse Cross retail development, has attracted additional road trips through the Ely Bridge area.

At the time that the 2002 Action Plans were being developed it was thought possible that major developments such as the Sports Village on the Ferry Road peninsula, an Ikea store on Ferry Road the new Cardiff City football stadium could have some adverse influence influence on roiad traffic levels, and therefore air quality, within the AQMA. . However, the Ikea store has had no measurable impact on air quality even within its immediate vicinity. The new Cardiff City football stadium is almost complete and the Sports Village is under construction. There has been no adverse impact on nitrogen dioxide concentrations during the construct phase of either.

5.0 The 2002 Action Plans

The Action Plans formulated in 2002 contained measures that covered two broad categories:

1. measures contained within the Local Transport Plan 2000 – 2016 and other policies and strategies
2. measures specific to the Air Quality Action Plans

5.1 Local Transport Plan 2000 - 2016

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

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

5.2 Options for Measures Additional to the Local Transport Plan

The 2002 Action Plans considered transport options in three distinct sections for each of the three AQMAs:

- reducing traffic
- changing vehicle mix
- reduction of emissions.

These measures were additional to those long-term measures given in more detail in the Local Transport Plan and are those for which potential was identified by the working group which formulated the 2002 Action Plans. These options are discussed below as they relate to the Ely Bridge area of the former Cardiff West AQMA.

Identified Options:

1. Reducing Traffic

Traffic management

All of the major traffic junctions within Cardiff are controlled by the SCOOT traffic management system. This includes junctions along Cowbridge Road West and those within the AQMA. There remains no scope for extending its use within the AQMA.

Rerouting

Cowbridge Road West is a part of the "inner box" route through the city and there are no suitable parallel routes except the M4 some miles north. This does not give the same level of access to the city areas, nor is it appropriate for intra-city trips.

At the time that the 2002 Action Plans were developed there was the possibility of an additional road-link between the Peripheral Distributor Road and the Western Avenue/Cowbridge Road West/Cowbridge Road East junction. This road link, known as the "Ely Spur" appears in the Local Transport Plan although very much at the "desirability study" stage rather than "feasibility" study stage. It does not currently seem that this road-link will be constructed.

Telematics
The 2002 Action Plans identified the possibility of adding indicative air quality monitoring equipment to the SCOOT. This system was under trial in a number of UK towns and cities, including Leicester and Stoke, and provided an additional data input for SCOOT to automatically manage the local traffic flows and could be used to trigger measures such as traffic gaiting during periods of elevated pollution levels.

It was considered that there was scope for using this system in the former Cardiff West AQMA (of which Ely Bridge was a part) to relocate traffic queues to the more open areas beyond Grand Avenue. This is considered a viable short-term measure to be used until the long-term Local Transport Plan measures take effect.

Cut through traffic
Cowbridge Road West is one of the major radial routes through the city is enclosed by well established residential areas. It was not considered desirable to use measures which will force traffic from the main routes onto local residential roads as this would adversely affect road safety.

Parking policy
In the long-term demand could be reduced by parking controls in the central area of Cardiff.

Road Pricing policy
NAW have indicated that road pricing is unlikely to be approved in Wales.

2. Changing Vehicle Mix
Mode shift
In the long term mode shift will assist traffic reduction. This is a long term option addressed in the Local Transport Plan.

Park & Ride
It was considered that the the use of park and ride at Culverhouse Cross or Leckwith could reduce traffic demand at Ely Bridge. A Park and Ride scheme is currently in use at Leckwith at Sloper Road, close to the new Cardiff City Stadium and the Ninian Park football ground.

3. Reducing Emissions
Travel plans
With particular regard to schools, this was considered a long-term option as is a measure included in the Local Transport Plan.

Speed controls
Cowbridge Road West and all of the roads which feed into it are subject to 30 mph limits. There was considered to be no scope for modified speed limits to reduce emissions without adversely affecting traffic management systems.

5.3 2002 Viable Measures Additional to the Local Transport Plan

The only viable short-term improvement measure identified in the 2002 Action Plans was the addition of air pollution monitoring equipment to the Council's existing SCOOT traffic management system in the Ely Bridge area. The monitoring equipment used is based upon the "Signal (formerly Learian) Streetbox" and measures NO_2 locally with the data being used as an input parameter to the computer-controlled traffic management system.

A number of Streetboxes were purchased and installed at locations in the city. One of these was installed at the junction of Heol-y-Felin and Cowbridge Road West, i.e. inside the former Cardiff West AQMA but outside the current Ely Bridge AQMA. This location was the closest at which a Streetbox could be located to Ely Bridge as system needs to be in reasonably close proximity to a UTC control box. After a lengthy commissioning process where a number of unforeseen teething troubles surfaced, the systems are now returning reliable data.

However, the systems have not been set up to control traffic light phasing. This is for a number of reasons:

- Nitrogen dioxide is a secondary pollutant. There is a time-lag between its formation and the emission of its precursors from road vehicles, meaning that polluting events could be over before the Streetbox/SCOOT system responds.
- The location of the Streetbox is outside the Ely Bridge AQMA and nitrogen dioxide concentrations at the monitor will not be representative of those within the AQMA.
- There is not real-time automatic analyser available for comparing concentrations within the Ely Bridge AQMA to those at Heol-y-Felin.
- The advice from traffic engineers is that traffic flows are already optimised using existing SCOOT input parameters and there is little scope for changes that would improve vehicle emissions locally.

There is considerable doubt that the Streetbox monitors will be used for the purpose intended. It is hoped that they will be relocated to within Cardiff's other AQMA (St Mary Street) where there is a pressing need for real-time monitoring data.

5.4 New Measures Additional to the 2002 Action Plans

It has not been possible to identify new short-term traffic reduction or traffic management measures over and above those previously identified in the 2002 Action Plan for the former Cardiff West AQMA.

Measures for rerouting traffic, including possible road-build such as the completion of the Peripheral Distributor Road by the Eastern Bay Link, are included in the Local Transport Plan, as are long-term measures designed to encourage modal shift. Many of these have been implemented since the 2002 Action Plans were formulated, including the extension of Cardiff's cycle-route network and bus-priority measures at junctions, and are on-going.

Details of progress in implementing the 2002 Action Plans has been documented in the Action Plan Progress Reports submitted to Welsh Assembly Government.

6.0 Discussion

The Ely Bridge AQMA is centred on one of the city's main distributor roads passing through well established residential areas. These are the very roads that the traffic should be using for safety reasons.

In the long-term it is expected that a combination of national measures to cut emissions to air and measures contained in the Local Transport Plan will cut emissions such that the air quality Objectives will be achieved. The aim of this action planning process has therefore been to look for short-term measures that could be used in addition to those already identified for the long-term.

It is the nature of Cowbridge Road West that the traffic passing through the Ely Bridge AQMA is moving from one destination to another. Consequently, options for dealing with the air quality problem such as pedestrianisation or road closures are either not viable for it or would have undesirable social outcomes. The volume of traffic using the road in peak periods means that other options such as dedicated bus lanes are not viable. Bus priority measures and measures design to encourage modal-shift are being phased-in under the Local Transport Plan.

Options for additional short-term measures have proved to be limited as active traffic management via the SCOOT system is already in place and no viable short-term measures have come to light in the six years since the 2002 Action Plans were formulated. Improvements in local air quality within the Ely Bridge AQMA will require the longer-term measures contained in the Local Transport Plan to take effect.

7.0 Conclusions

Cardiff has a very comprehensive Local Transport Plan, developed with the local environment very much to the fore. It is often the case that measures taken to improve facilities for alternative modes of transport and traffic demand restraint also have a positive impact on local transport emissions. These measures will, in themselves, deliver local emission improvements over and above measures taken at the national level, such legislation requiring improvements in vehicle emissions and control over emissions from large combustion plant.

One consequence is the small number available options to improve air quality at the local level where the principal source of emissions is road traffic. Within the Ely Bridge AQMA the choice of available options is limited to traffic management measures already in the Local Transport Plan.

Monitoring will continue in order to assess the effectiveness short-term and longer term measures contained in the Local Transport Plan and progress in implementing these will continue to be reported annually.

Appendix 1

National Air Quality Standards and Objectives

Table 5 Standards and Objectives in Air Quality (Wales) Regulations 2000

Pollutant	*Standard*	*Objective*
Benzene	16.2ugm^{-3}, measured as running annual mean	16.2ugm^{-3} by 31/12/2003.
1,3 - Butadiene	2.25ugm^{-3}, measured as running annual mean	2.25ugm^{-3} by 31/12/2003
Carbon monoxide	11.6mgm^{-3}, measured as running 8-hour mean	11.6mgm^{-3} by 31/12/2003
Lead	0.5ugm^{-3}, measured as annual mean 0.25ugm^{-3}, measured as annual mean	0.5ugm^{-3} by 31/12/2004. 0.25ugm^{-3} by 31/12/2008
Nitrogen dioxide	200ugm^{-3}, measured as 1 hour mean 40ugm^{-3}, annual mean	200ugm^{-3} by 31/12/2005 (maximum of 18 exceedences) - PROVISIONAL OBJECTIVE 40ugm^{-3} by 31/12/2005 - PROVISIONAL OBJECTIVE Annual national Objective for the protection of vegetation and ecosystems of 30 ugm^{-3} for 31/12/2000. ***NOT TO BE INCLUDED IN REGULATIONS/LAQM***
Ozone	100ugm^{-3}, measured as running 8-hour mean	100ugm^{-3} by 31/12/2005 - ***PROVISIONAL AND NOT TO BE PART OF REGULATIONS/LAQM***
Particles (PM_{10})	50ugm^{-3}, measured as 24-hour mean 40ugm^{-3}, measured as annual mean	50ugm^{-3} by 31/12/2004, maximum of 35 exceedences per year 40ugm^{-3} by 31/12/2004
Sulphur dioxide	350ugm^{-3}, measured as 1 hour mean 125ugm^{-3}, measured as 24 hour mean 267ugm^{-3}, measured as 15-minute mean 20ugm^{-3}, measured as annual mean 20ugm^{-3}, measured as winter average (1 Oct to 31 Mar)	350ugm^{-3} by 31/12/2004, not to be exceeded more than 24 times per year. 125ugm^{-3}, by 31/12/2004, not to be exceeded more than 3 times per year 267ugm^{-3} by 31/12/2005, not to be exceeded more than 35 times per year National annual Objectives for the protection of ecosystems of 20ugm^{-3} for 31/12/2000. ***NOT TO BE INCLUDED IN REGULATIONS/LAQM*** National winter Objectives for the protection of ecosystems of 20ugm^{-3} for 31/12/2000. ***NOT TO BE INCLUDED IN REGULATIONS/LAQM***

Appendix 2

Maps

Map 1 - Ely Bridge AQMA and Cowbridge Road West

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Ely Bridge AQMA

Map 2 - Ely Bridge AQMA