



Bridgnorth District Council

Air Quality Action Plan

Technical Report No: BV/AQ/AGGX0725/EC/2482

September 2008



For the benefit of business and people

DOCUMENT INFORMATION AND CONTROL SHEET

Client

Bridgnorth District Council
 Environmental Health
 Westgate
 Bridgnorth
 WV16 5AA

Project Manager Emma Waites
 Tel: 01746 713155
 Fax: 01746 764414
 Email: ewaites@bridgnorth-dc.gov.uk

Environmental Consultant

Bureau Veritas
 Great Guildford House
 30 Great Guildford Street
 London
 SE1 0ES

Project Manager Erwan Corfa
 Tel: 0207 902 6191
 Fax: 0207 902 6149
 Email: erwan.corfa@uk.bureauveritas.com

Project Team Erwan Corfa
 Sharon Atkins
 Lakhu Luhana

Principal Author Erwan Corfa

Document Status and Approval Schedule

Issue	Status	Description	Prepared by: Erwan Corfa Signed/Dated	Reviewed by: Sharon Atkins Signed/Dated
0	Draft Report v0	Issued to client by email	18 July 2007	18 July 2007
1	Draft Report v1	Issued to client by email	9 October 2007	9 October 2007
2	Draft Report v2	Issued to client by email	05 March 2008	07 March 2008
3	Final Report	Issued to client by email	18 September 2008	18 September 2008

CONTENTS

EXECUTIVE SUMMARY.....	1
1 INTRODUCTION AND AIMS OF THE ACTION PLAN.....	4
1.1 PROJECT BACKGROUND	4
1.2 LEGISLATIVE BACKGROUND	4
1.3 SCOPE OF THE ACTION PLAN	5
1.4 REPORTING OF THE ACTION PLAN	6
1.5 FUTURE CHANGES	6
2 OVERVIEW OF AIR QUALITY IN BRIDGNORTH.....	7
2.1 FIRST ROUND OF REVIEW AND ASSESSMENT	7
2.2 SECOND ROUND OF REVIEW AND ASSESSMENT	7
2.2.1 <i>Updating and Screening Assessment</i>	7
2.2.2 <i>Detailed Assessment</i>	7
2.2.3 <i>Further Assessment</i>	8
2.3 THIRD ROUND OF REVIEW AND ASSESSMENT	8
2.4 AIR QUALITY MANAGEMENT AREA	9
2.5 MONITORING DATA	10
2.5.1 <i>Continuous monitoring in Pound Street</i>	10
2.5.2 <i>NO2 Diffusion Tubes</i>	11
3 EXISTING POLICIES AND STRATEGIES TO IMPROVE AIR QUALITY.....	14
3.1 BRIDGNORTH DISTRICT LOCAL PLAN	14
3.2 BDC LOCAL DEVELOPMENT FRAMEWORK	15
3.3 SHROPSHIRE LOCAL AGENDA 21 (LA21) STRATEGY	16
3.4 BRIDGNORTH DISTRICT COMMUNITY STRATEGY.....	16
3.5 SHROPSHIRE DRAFT CLIMATE CHANGE STRATEGY	16
3.6 SHROPSHIRE ENVIRONMENT STRATEGY	16
3.7 SHROPSHIRE SECOND LOCAL TRANSPORT PLAN (LTP2)	17
4 FINANCING	19
5 CONSULTATION.....	21
6 ACTION PLAN MEASURES	22
6.1 THE STAKEHOLDER STEERING GROUP	22
6.2 PROPOSED DIRECT MEASURES FOR THE BRIDGNORTH TOWN CENTRE AQMA.....	22
6.3 PROPOSED INDIRECT DISTRICT-WIDE MEASURES TO IMPROVE AIR QUALITY.....	29
7 IMPLEMENTATION AND MONITORING.....	34
8 DEFRA ACTION PLANNING REQUIREMENTS COMPLIANCE CHECKLIST	35
9 GLOSSARY OF TERMS.....	37
10 REFERENCES	38
11 RESULTS OF CONSULTATION	40

List of Figures

Figure 2.1 – AQMA in reinPound Street, Bridgnorth	10
---	----

List of Tables

Table 1.1 - AQS Objectives and Standards for England	5
Table 2.1 - Source apportionment of NO _x concentrations in the AQMA (monitoring sites)	8
Table 2.2 - Summary of the second and third rounds of Review and Assessment for BDC in Bridgnorth	9
Table 2.3: Annualised NO _x and NO ₂ annual mean concentration at Pound Street in 2005	11
Table 2.4: NO ₂ diffusion tubes results – Bridgnorth DC – 2005-2006	12
Table 6.1 - Summary of direct measures proposed for the AQMA	27
Table 6.2 – Summary of Proposed Indirect District-wide Measures to Improve Air Quality	32

Disclaimer

Bureau Veritas HS&E Limited completed this Report on the basis of a defined programme of work and terms and conditions agreed with the Client. We confirm that in preparing this Report, we have exercised all reasonable skill and care, taking into account the project objectives, the agreed scope of work, prevailing site conditions and the degree of manpower and resources allocated to the project.

Bureau Veritas HS&E Limited accepts no responsibility to any parties whatsoever, following the issue of the Report, for any matters arising outside the agreed scope of the work.

This Report is issued in confidence to the Client and Bureau Veritas HS&E Limited has no responsibility to any third parties to whom this Report may be circulated, in part or in full, and any such parties rely on the contents of the report solely at their own risk.

Unless specifically assigned or transferred within the terms of the agreement, the consultant asserts and retains all Copyright, and other Intellectual Property Rights, in and over the Report and its contents.

Any questions or matters arising from this Report should be addressed in the first instance to the Project Manager.

Executive Summary

This Air Quality Action Plan is the culmination of the Second Round of the local air quality Review and Assessment for Bridgnorth District Council (BDC). The process of Local Air Quality Management (LAQM) Review and Assessment has been set down in Part IV of the Environment Act 1995, which forms part of the Government's response to European Directives on Air Quality to which the UK Air Quality Strategy responds.

BDC undertook the First Round of Review and Assessment between 1998 and 2002, which concluded that all the Air Quality Strategy (AQS) Objectives were expected to be met by the target dates and no Air Quality Management Area (AQMA) was required.

The Second Round of Review and Assessment started with the Updating and Screening Assessment (USA), completed by BDC in 2003. The USA concluded that a Detailed Assessment was required for nitrogen dioxide (NO₂) due to road traffic emissions in Bridgnorth Town Centre. The Detailed Assessment was completed in 2004 and concluded that the annual mean NO₂ AQS objective was likely to be exceeded at receptors on Pound Street and the junction of Pound Street, Salop Street and Whitburn Street.

Subsequently, an AQMA was declared in April 2005 in Pound Street, and continuous monitoring of NO₂ was carried out to monitor concentration levels within the AQMA. The results, reported in 2005, confirmed that the NO₂ annual average AQS objective in Pound Street was unlikely to be met and that the AQMA was still required.

Furthermore, results of the air quality Further Assessment (2006) in Pound Street showed that NO₂ levels were still likely to exceed the annual mean AQS Objective within the AQMA. The report concluded that the dominant source of NO_x was the heavy-duty vehicles, and that a maximum 19% reduction of NO_x levels was required in Pound Street to meet the NO₂ AQS objectives.

In parallel to the Detailed Assessment and Further Assessment in Pound Street, The USA 2006 highlighted two other exceedences of the NO₂ annual mean AQS objective in Bridgnorth, in Whitburn Street (near junction with High Street) and Underhill Street by Lavington Court. The USA concluded that a Detailed Assessment for those two areas was required. Whitburn Street assessment was included in the Further Assessment 2006 (as this street is linked to the AQMA in Pound Street), with conclusions that an AQMA was not required for Whitburn Street. The Detailed Assessment for Underhill Street was released end of 2007. The report, based on detailed dispersion modelling, confirmed that the NO₂ annual average AQS objective was likely to be exceeded at Lavington Court and also further north at the facade of properties by the bridge. However, as model verification was based on a single diffusion tube, it was decided to install additional monitoring sites along Underhill Street prior to declaring an AQMA. The report was submitted to Defra and conclusions were approved early 2008.

In compiling this Action Plan, Government Policy Guidance LAQM.PG (03) and guidance from the NSCA (National Society for Clean Air and Environmental Protection) has been referred to, alongside guidance provided by the Department for Environment, Food and Rural Affairs (Defra) through its Air Quality Action Plan Help Desk.

The aim of this Action Plan is to identify how Bridgnorth District Council will use its existing powers and work together with other organisations in pursuit of the annual mean nitrogen

dioxide AQS Objective. Measures are proposed to improve air quality both within the AQMA and across the District as a whole.

- Shropshire County Council (SCC) is responsible for the management of the local road network and as such has an important role in the consideration of any direct actions proposed for the AQMA in order to reduce road traffic emissions. Bridgnorth District Council will work together with SCC to improve air quality within the AQMA and throughout the District.

The main direct measures proposed for the AQMA are:

- New road infrastructure to bypass adjacent residential properties, reduce traffic at the Whitburn Street High Street junction and improve traffic flows within the area - Whitburn Street Relief Road
- Consideration of a Traffic Management Plan for Bridgnorth Town Centre including a 1-way system in Whitburn Street –further improve traffic flows and reduced queuing at the roundabout in the AQMA
- Consider restrictions on loading/delivery vehicles using Whitburn Street if necessary following implementation of the traffic management plan.
- Seek improvements to emissions standards for Council Fleet and Public Service Vehicles
- Investigate potential for Park and Ride in Bridgnorth
- Review of Bridgnorth car park strategy to encourage people to use the most appropriate car parks and prevent recirculation (reducing traffic flow through the AQMA)
- Continued implementation of School Travel Plans for Bridgnorth schools, (as much school traffic passes through AQMA)

The indirect measures to contain traffic growth and improve air quality across the whole town are:

- Improve facilities for cycling and walking within Bridgnorth
- Implementing a car-sharing scheme in Bridgnorth
- Encourage uptake of Workplace Travel Plans for major employers in Bridgnorth
- Implementing BDC's Travel Plan
- Ensure air quality is taken into account in the planning process
- Work with developers to improve sustainable transport links serving new developments
- Develop advice to assist with air quality assessments of development proposals
- Commitment to continue AQ monitoring through LAQM

- Promotion and education – Make air quality information more accessible
- Increase awareness of transport and air quality issues in Bridgnorth
- Promote and implement energy efficiency measures in Bridgnorth

1 Introduction and aims of the Action Plan

1.1 Project Background

Bridgnorth District Council (BDC) has drawn up, with the assistance of Bureau Veritas, a Local Air Quality Management Action Plan for the Air Quality Management Area (AQMA) within Bridgnorth Town Centre identified through the second round of review and assessment of air quality. The Action Plan is required to be undertaken as part of the Local Authority statutory duties as defined within Part IV of the Environment Act, 1995.

Bureau Veritas has undertaken previous review and assessment reports for BDC, which include the Detailed Assessment (2004) and the Further Assessment (2006) in Bridgnorth. Bureau Veritas has also carried out the Updating and Screening Assessment 2006 on behalf of the Shropshire Local Air Quality Management Group, which includes BDC.

1.2 Legislative Background

Part IV of the Environment Act, 1995, places a statutory duty on Local Authorities to periodically review and assess the air quality within their area. This involves consideration of present and likely future air quality against air quality standards and objectives.

The latest Air Quality Strategy (AQS)¹ released in July 2007 provides the over-arching strategic framework for air quality management in the UK and contains national air quality standards and objectives established by the Government to protect human health. The objectives for nine pollutants (benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide, sulphur dioxide, particulates - PM₁₀ and PM_{2.5} - and ozone) have been prescribed within the Air Quality Strategy based on The Air Quality Standards (England) Regulations 2007².

The Air Quality Standards (England) Regulations 2007² came into force on 15th February 2007. This brings together in one statutory instrument the Governments requirements to fulfil separate EU Daughter Directives through a single consolidated statutory instrument, which is fully aligned with proposed new EU Air Quality Directive (CAFE – Clean Air For Europe)³. The Environment Act 1995 gives local authorities duties and responsibilities that are designed to secure improvements in air quality, particularly at the local level. Part IV of the Act requires each local authority within the UK to periodically review and assess air quality in its area, and determine whether the prescribed objectives are likely to be achieved by the relevant future year.

The AQS objectives set in regulation in England are shown in Table 1.1.

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007), Published by Defra in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland

² The Air Quality Standards Regulations 2007, Statutory Instrument No 64, The Stationary Office Limited

³ <http://ec.europa.eu/environment/air/cafe/index.htm>

Table 1.1 - AQS Objectives and Standards for England

Pollutant	Air Quality Objective		AQS	2007 Regulations
	Concentration	Measured as	Date to be achieved by	
Benzene	16.25 µg/m ³	Running annual mean	31.12.2003	
	5 µg/m ³	Annual mean	31.12.2010	01.01.2010
1,3 Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003	
Carbon monoxide	10 mg/m ³	Maximum daily 8-hour mean	31.12.2003	
Lead	0.5 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	01.01.2010
	40 µg/m ³	annual mean	31.12.2005	01.01.2010
Particles (PM ₁₀) (gravimetric) ^a	50 mg/m ³ not to be exceeded more than 35 times a year	24 hour mean	31.12.2004	
	40 mg/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	

a. Measured using the European gravimetric transfer sampler or equivalent.

The AQS objectives take into account EU Directives that set limit values which member states are legally required to achieve by their target dates. The UK's AQS objectives are equal to, or more stringent than the EU limit values (no Member State may promulgate air quality standards that are weaker than the EU Limit Values).

The locations where the AQS objectives apply are defined in the AQS as locations outside buildings or other natural or man-made structures above or below ground, where members of the public are regularly present and might reasonably be expected to be exposed [to pollutant concentrations] over the relevant averaging period of the AQS objective. Typically these include residential properties and schools/care homes for longer period (i.e. annual mean) pollutant objectives and high streets for short-term (i.e. 1-hour) pollutant objectives.

1.3 Scope of the Action Plan

The purpose of the Action Plan is to provide the means through which a Local Authority, through joint working with the County Council and other relevant organisations, can deliver viable measures that will work towards achieving the Air Quality Objectives within an AQMA. The aim is also to encourage active participation in the achievement of Action

Plan measures by consulting the local community and raising awareness of air pollution issues.

Local authorities are required to prepare a written Action Plan for an AQMA, setting out the action plan measures they intend to take forward and the potential costs and benefits of these measures. The Further Assessment provides the technical backup for the measures to be included within the Action Plan. The Action Plan should refer to the findings of the Further Assessment in terms of source apportionment (i.e. where emissions are coming from) so that action plan measures are targeted appropriately.

The Action Plan should contain simple estimates of the costs and benefits and timescales for implementing the proposed action plan measures, so that measures can be prioritised for implementation and subsequently monitored. The Action Plan should also indicate how far the measures would work towards achieving the Air Quality Strategy Objectives.

1.4 Reporting of the Action Plan

The AQMA in Bridgnorth was declared in 2005 for nitrogen dioxide (NO₂) in Pound Street, including the junction with Salop Street and Whitburn Street. The Detailed Assessment carried out in 2004 showed that road traffic emissions are the main contributor to exceedences of the annual mean objective for NO₂.

Shropshire County Council (SCC) is the relevant transport authority for roads on the local network, and will work jointly with BDC on transport measures. County Councils have a duty under section 86 (3) of the Environment Act 1995 to put forward proposed actions which they themselves can implement to work towards meeting the air quality objectives in an AQMA. SCC should include these measures within the air quality section of the Local Transport Plan (LTP).

The Action Plan reflects the relevant organisational responsibilities for actions within the AQMA and proposed measures (Section 6) are reported as:

- Direct actions proposed for the Bridgnorth Town Centre AQMA (responsibility of SCC and BDC);
- Indirect measures to reduce NO₂ levels throughout the Bridgnorth town area, including the AQMA (responsibility of SCC and BDC).

1.5 Future changes

It should be noted that under Government proposals, Bridgnorth District Council is amalgamating into a new Unitary Authority for Shropshire. This amalgamation is occurring during 2008 and 2009. The responsibility for implementing the actions of this Action Plan will become the responsibility of the new Unitary Authority that replaces Bridgnorth District council.

2 Overview of air quality in Bridgnorth

The main sources of air pollution in Bridgnorth Town Centre are road traffic emissions from major roads, notably the B4364 providing access to the town centre from the west through Ludlow Road/Salop Street, and the B4373, main access from the north through North Gate, then passing through the town centre (Whitburn Street and Pound Street).

2.1 First Round of Review and Assessment

BDC undertook the First Round of Review and Assessment between 1998 and 2002. The First Round involved the assessment of the sources of the seven air pollutants of concern to health described in section 1.2. Predicted concentrations were compared with UK air quality objectives, and it was concluded that all the AQS Objectives were expected to be met by the target dates and no Air Quality Management Area (AQMA) was required.

2.2 Second Round of Review and Assessment

A summary of BDC's second round of review and assessment of air quality, which commenced in 2003, is shown in Table 2.2. The individual stages are summarised briefly with respect to outcome below.

2.2.1 Updating and Screening Assessment

The Updating and Screening Assessment (2003) was the first phase of the second round review and assessment. Similar to Stage One of the previous round, there was consideration to the seven pollutants of concern to health and an assessment was made as to whether Air Quality Objectives for these pollutants would be met.

BDC completed this in November 2003 with the conclusion that a Detailed Assessment was required for nitrogen dioxide (NO₂) due to road traffic emissions in Pound Street in Bridgnorth Town Centre. This conclusion was reached on the basis of available NO₂ diffusion tube monitoring data which highlighted potential exceedences of the annual mean Objective.

2.2.2 Detailed Assessment

The Detailed Assessment was completed in December 2004. Detailed dispersion modelling was carried out and results were verified against new available monitoring data. The Detailed Assessment concluded that the annual mean NO₂ AQS objective was likely to be exceeded at receptors on Pound Street and the junction of Pound Street, Salop Street and Whitburn Street and it was recommended that an AQMA be declared on Pound Street. The AQMA was declared in April 2005 and continuous monitoring of NO₂ was carried out in Pound Street to monitor concentration levels within the AQMA in order to confirm the findings of the Detailed Assessment.

Results of the 6-months continuous monitoring in Pound Street were reported in December 2005. The report included the annualisation of the monitoring data based on other regional monitoring patterns and confirmed that the NO₂ annual average AQS objective in Pound Street was unlikely to be met, with concentrations projected from monitoring in the region of 44µg/m³ to 47µg/m³. This confirmed the results of the Detailed Assessment, which predicted concentration in the range of 40-44µg/m³ in Pound Street.

2.2.3 Further Assessment

The Further Assessment was completed in November 2006. The results showed that NO₂ annual average concentrations were still likely to exceed the Air Quality Strategy objective within the AQMA. Source apportionment (see Table 2.1) indicated that the heavy-duty vehicles were the dominant source of NO_x in the AQMA, contributing up to 45% of overall NO_x concentrations, while representing only 7% of the vehicle fleet.

It also concluded that a maximum NO_x reduction of 24.4µg/m³ (equivalent to a 19% improvement in NO_x) was required⁴ in Pound Street in order for the NO₂ annual mean AQS objective to be met at the worst-case receptor location. Consequently, the proposed action plan measures aim to reduce the levels of NO_x/NO₂ within the AQMA by this amount.

Table 2.1 - Source apportionment of NO_x concentrations in the AQMA (monitoring sites)

ID	Location	X (m)	Y (m)	Predicted Total NO _x 2005 (µg/m ³)	Background contribution (%)	LDV contribution		HDV contribution	
						µg/m ³	%	µg/m ³	%
CM1	Junction Pound St/St Mary's St	371375	293070	128.2	33%	31.2	24%	54.7	43%
ND13	Pound Street	371345	293081	130.7	32%	32.1	25%	57.0	44%
ND25	Citizens Advice Bureau	371355	293140	114.4	37%	34.2	30%	37.7	33%
ND28	50 Whitburn Street	371323	293132	90.7	48%	25.5	28%	21.5	24%

2.3 Third Round of Review and Assessment

In parallel to the ongoing assessment of the AQMA in Pound Street, the Third Round of Review and Assessment started in 2006 with a new Updating and Screening Assessment, which was included in a joint document with all Shropshire Local Authorities, commissioned by the Shropshire Local Air Quality Management Group. The report was completed in June 2006 and concluded that a Detailed Assessment was also required for nitrogen dioxide outside the AQMA, at Whitburn Street and Underhill Street by Lavington Court. The assessment of Whitburn Street was included in the Further Assessment 2006 (see section 2.2.3). This concluded that although monitoring results were still above the AQS objective at diffusion tube ND1 in Whitburn Street, all buildings at ground level are commercial properties and this location is not relevant of public exposure. The Detailed Assessment for Underhill Street was completed at the end of

⁴ Equivalent to an NO₂ reduction of 3.3µg/m³ (8% improvement in NO₂)

2007. Detailed dispersion modelling confirmed the likely exceedence of the NO₂ annual average AQS objective at Lavington Court. Exceedences were also predicted further north in Underhill Street at the façade of properties near the bridge, although no monitoring data was available at these locations to verify the results. Projections to 2010 also showed that concentrations would still be at risk of exceeding the AQS objective by this date. However, model verification was based on a single diffusion tube monitoring site, and therefore, the report concluded that further monitoring was necessary prior to declaring an AQMA in Underhill Street. The report was submitted to Defra and the conclusions were accepted early 2008. The Council has therefore decided to install a NO_x / NO₂ continuous monitoring analyser and additional NO₂ diffusion tubes along Underhill Street, which will help to support the conclusions of the modelling work.

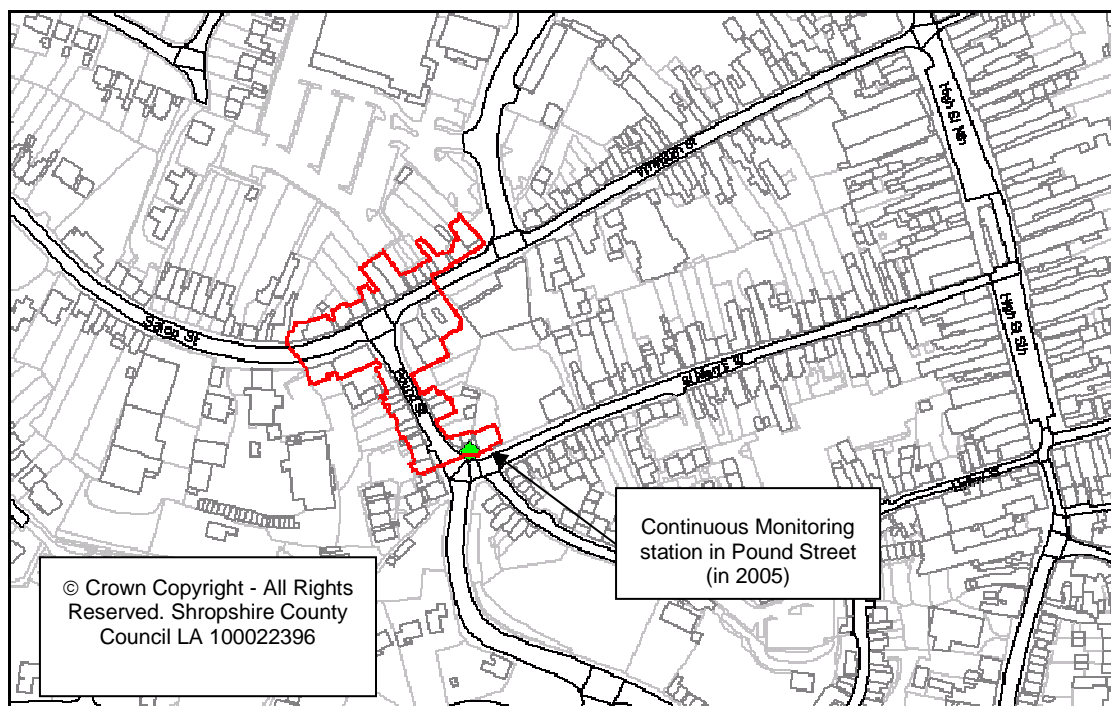
Table 2.2 - Summary of the second and third rounds of Review and Assessment for BDC in Bridgnorth

Updating and Screening Assessment (2003)	Identified Sources requiring Detailed Assessment	Detailed Assessment (2004)	Updating and Screening Assessment (2006)	Further Assessment (2006)
SO ₂		Exceedence of the annual mean NO ₂ Objective resulted in declaration of Pound Street and the junction of Salop Street / Whitburn Street in Bridgnorth in April 2005 AQMA due to road traffic emissions	Exceedence of the annual mean NO ₂ Objective in Whitburn Street and Lavington Court, Bridgnorth, outside the current AQMA – Detailed Assessment required	1 - Support for continuance of the AQMA → Action Plan required 2 –AQMA for NO ₂ in Whitburn Street is not required 3 – Confirmation that a Detailed Assessment for NO ₂ is required in Lavington Court
NO ₂	Road Traffic →			
PM ₁₀				
Carbon monoxide				
Benzene				
1,3 Butadiene				
Lead				

2.4 Air Quality Management Area

Following the Detailed Assessment in 2004, the Department for Environment, Food and Rural Affairs (DEFRA) accepted the findings of the report, and BDC declared an AQMA in Bridgnorth town centre for NO₂ in April 2005. The AQMA encompasses properties along Pound Street, and at the junction of Pound Street with Salop Street and Whitburn Street. The AQMA is shown in Figure 2.1.

Figure 2.1 – AQMA in Pound Street, Bridgnorth



2.5 Monitoring data

2.5.1 Continuous monitoring in Pound Street

There is currently no continuous monitoring in Bridgnorth, although a new monitoring station will be installed in Underhill Street in Bridgnorth at the end of 2008. A continuous NO_x monitoring station was installed at the junction of Pound Street and St Mary's Street from 26 April to 14 October 2005, within the current AQMA (see Figure 2.1). Data was annualised using the three closest automatic monitoring stations from the Automatic Urban and Rural Network (AURN)⁵ based on the last 4 years of data to account for

⁵ Air Quality Monitoring in Bridgnorth Town Centre (Pound Street) - Nitrogen Dioxide - CS/AQ/AGGX0372/2375, November 2005

variability in meteorological conditions. The NO₂ annual mean concentration for the year 2005 was between 43.7µg/m³ and 46.5µg/m³, which was above the NO₂ annual average AQS objective of 40µg/m³. There were 2 exceedences of the NO₂ hourly mean AQS objective, which was below the yearly 18 exceedences permitted. The annualised average is provided in Table 2.3, for the highest annualisation factor (based on year 2004). Data capture was high during the monitoring period (around 99%).

Table 2.3: Annualised NO_x and NO₂ annual mean concentration at Pound Street in 2005

OS Grid coordinates (m)	NO _x 2005 annual mean (µg/m ³)	NO ₂ 2005 annual mean (µg/m ³)	Number of NO ₂ hourly means > 200 µg/m ³	Data Capture (%)
371375, 293070	85.2	46.5	2	99

2.5.2 NO₂ Diffusion Tubes

Bridgnorth District Council currently monitors NO₂ at 47 sites across the District, based on a network of diffusion tubes (40 are located in Bridgnorth). The diffusion tubes are supplied and analysed by Gradko International Limited utilising the 20% TEA⁶ in water preparation method. Gradko International participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre.

A bias correction factor has been applied to the data, which is an estimate of the difference between diffusion tube concentrations and continuous monitoring, the latter assumed to be a more accurate method of monitoring. The Review and Assessment Helpdesk⁷ provides average bias factors based on national surveys of co-located sites. The average bias factor for this Gradko International method was 0.98 in 2006. The results for year 2005, 2006 and projection to year 2010 are shown in Table 2.4.

The NO₂ annual average AQS objective of 40µg/m³ was exceeded in 2006 at five locations within Bridgnorth town centre, two of which are within the AQMA (ND13 Pound Street and ND28 outside 50 Whitburn Street). Diffusion tubes ND1 in Whitburn Street East and ND20 near Whitburn Street/High Street junction, also exceeded the objective. Site ND1 was scrutinised in the Further Assessment 2006, and it was concluded that it did not represent relevant public exposure. Tube ND20 is on the façade of a commercial premise and therefore does not represent public exposure either.

⁶ TEA-Triethanolamine

⁷ www.uwe.ac.uk/aqm/review/

ND16 in Lavington Court was also above $40\mu\text{g}/\text{m}^3$. This was already highlighted in the USA 2006 and was reconfirmed in the Further Assessment 2006. A Detailed Assessment in this area is in progress.

The data corresponds with the results for the previous year 2005, when four of the five sites referred to above exceeded the AQS objective (the fifth one, site ND20, was under, but very close to the AQS objective).

Table 2.4: NO₂ diffusion tubes results – Bridgnorth DC – 2005-2006

Tube ID	Tube Location	Annual Mean 2005 ($\mu\text{g}/\text{m}^3$)	Annual Mean 2006 ($\mu\text{g}/\text{m}^3$)	Bias corrected 2006 ($\mu\text{g}/\text{m}^3$)	Data capture 2006 (%)	Projected to 2010 ($\mu\text{g}/\text{m}^3$)
ND1	Whitburn St. East	42.0	42.5	41.7	100	36.1
ND2	Church Street	26.2	23.7	23.3	100	20.1
ND3	Princess Drive	15.4	14.6	14.3	100	12.4
ND4	Morfe Road	15.6	14.4	14.2	100	12.3
ND5	Kidderminster Road	32.0	30.8	30.2	100	26.1
ND6	Maypole/Crewes	12.3	12.5	12.3	100	10.6
ND7	Admirals Park	19.8	18.8	18.4	100	16.0
ND8	Tong Island M54	29.1	28.5	28.0	100	24.2
D9	Town Hall	30.5	31.0	30.4	100	26.4
ND10	Moat Street	37.7	36.9	36.2	100	31.4
ND11	27 Whitburn Street	28.2	31.7	31.1	100	26.9
ND12	St. Mary's Street	26.4	23.6	23.2	100	20.1
ND13	Pound Street	45.6	45.8	45.0	100	38.9
ND14	West Castle Street	25.8	26.6	26.1	100	22.6
ND15	Ebenezer Row	32.9	32.9	32.3	100	27.9
ND16	Lavington Court	42.2	42.3	41.5	100	36.0
ND17	Underhill Street	28.3	28.0	27.5	100	23.8
ND18	Charles Fox	30.7	29.2	28.7	100	24.8
ND19	Mill Street	39.5	36.7	36.0	100	31.1
ND20	Bryan & Knott B/N	39.7	41.4	40.6	100	35.2
ND21	Nat West B/N	25.5	27.4	26.9	100	23.3
ND22	Wetherspoon	34.2	33.7	33.1	100	28.6
ND23	Simply The Best	36.3	38.0	37.3	100	32.3
ND24	Travel Wallet	35.8	38.8	38.0	100	32.9
ND25	Citizens Advice Bureau	33.4	26.3	25.8	100	22.3
ND26	Majestic Cinema	29.8	31.8	31.2	100	27.0
ND27	Smithfield	29.8	28.2	27.7	100	23.9
ND28	Whitburn Street	54.2	54.0	52.9	100	45.8
ND29	ADJ Rutters	35.1	34.7	34.0	100	29.5
ND30	10 Salop Street	29.2	25.2	24.8	100	21.4
ND34	Southalls Tobacconist	28.2	25.1	24.6	100	21.3
ND35	Trevor Philips	28.6	28.7	28.2	100	24.4
ND36	WH Smith	27.1	26.5	26.0	100	22.5

Tube ID	Tube Location	Annual Mean 2005 ($\mu\text{g}/\text{m}^3$)	Annual Mean 2006 ($\mu\text{g}/\text{m}^3$)	Bias corrected 2006 ($\mu\text{g}/\text{m}^3$)	Data capture 2006 (%)	Projected to 2010 ($\mu\text{g}/\text{m}^3$)
ND37	The Shakespeare	32.0	31.8	31.2	100	27.0
ND38	Old Post Office	25.9	25.9	25.4	100	22.0
ND39	Bridge 55	30.5	30.2	29.6	100	25.6
ND40	Market House	23.2	23.2	22.7	100	19.7
ND41	Elcock Reisen	31.4	31.7	31.1	100	26.9
ND42	Westgate House	25.5	25.2	24.7	100	21.4
ND43	Opposite Endowed School	35.4	34.1	33.5	100	29.0
ND44	Maypole	11.7	12.5	12.3	100	10.6
ND45	Delphside	16.6	17.3	16.9	100	14.7
ND46	High Street - Club	20.4	21.1	20.7	100	17.9
ND47	Broseley - C.E. Primary	12.4	12.7	12.5	100	10.8
ND48	B/N Library	28.4	29.1	28.5	100	24.7
ND49	45 Listley Street	26.8	24.5	24.1	100	20.8
ND50	30A Salop Street	35.5	37.8	37.1	100	32.1

In bold: exceedences of the annual mean AQS objective

3 Existing policies and strategies to improve air quality

There are a number of related policies and strategies, at the local and regional level, that can be tied in directly with the aims of the Air Quality Action Plan. These would help contribute to overall improvements in air quality across the District and in Bridgnorth.

3.1 Bridgnorth District Local Plan

The Local Plan is a statutory document consisting of a written statement and proposals map, which together provide detailed planning policies and proposals to guide development throughout the District. Bridgnorth District Local Plan, which was adopted in July 2006⁸, covers the period 2006 to 2011. However, the Local Plan will be progressively replaced by the documents currently being prepared under the new development plan system, the Local Development Framework (LDF).

To achieve the aims of the Air Quality Action Plan, it is important to have a Local Plan that recognises the importance of air quality in terms of the environmental impact of development and the need for sustainable transport measures. The Local Plan incorporates the following policies, which are related to transport:

District-wide policies:

Policy S6: "To minimise the need to travel and improve access to housing, jobs, services and facilities, proposals for new development should, where deliverable and appropriate, be sited and designed to:

- Facilitate travel by a variety of transport methods
- Maximise access by pedestrians, cyclists and public transport and make appropriate use of existing transport provision
- Extend the existing network of pedestrian and/or cycle routes by providing new and improved links between where people live and where they may wish to walk or cycle to, such as nearby town centres, schools, employment areas, public open space and into the wider countryside."

Policy D1.10: "All new development should, where applicable, not unduly harm amenities of the area through air or noise pollution".

Policy D5: "The District Council will encourage schemes to lessen the conflict between the interests of pedestrians, commercial traffic, cyclists and private cars where this is possible without damage to historic character by:

- Town centre enhancements and strategies
- Pedestrian priority schemes

⁸ <http://www.bridgnorth-dc.gov.uk/EnvironmentAndPlanning/Planning/Planning-LocalPlans>

- Traffic calming measures
- New and improved car parking provision
- Provision for cyclists”.

Policy D6: “New Development will only be permitted where:

- The local road network and access to the site is capable of safely accommodating the type and scale of traffic likely to be generated
- If required, the relevant transport assessment has been carried out and shown to be acceptable in terms of accessibility by sustainable modes of travel and also in terms of traffic impacts.”

Policy D10: “For larger scale developments, where high levels of public use and access can be expected, developers are encouraged to devote at least 1% of development cost to the provisions of works of art or other appropriate environmental features within the development”.

Bridgnorth policies

Policy Brid19: “The Council will encourage the implementation of traffic management measures to reduce congestion and improve pedestrian conditions.”

Policy Brid20: “An area of 0.31 hectares between the existing Severn Street public car park and Severn Side South is allocated for public car parking.”

Policy Brid21: “The Council, in co-operation with the Highway Authority, will investigate the provision of suitable alternative lorry parking facilities for Bridgnorth.”

3.2 BDC Local Development Framework

The adoption of the Planning and Compulsory Purchase Act 2004 resulted in the progressive replacement of the old system of Structure Plans and Local Plans with a new Local Development Framework (LDF) system, which will comprise of a series of Local Development Documents (LDDs). These documents will be more concise than current Local Plans and include a core strategy.

At a local level, the Local Development Framework will be used to set out the spatial strategy, policies and guidance for the District. The new proposals are intended to speed the plan making process up by producing more focused, flexible, and slimmer plans. These include undertaking a Strategic Environmental Assessment / Sustainability Appraisal that needs to be undertaken alongside plan preparation, and the need to prepare a Statement of Community Involvement, which will allow the community to be more involved in the planning process. This Statement will identify how the Council intend to consult on the plan and in particular target those groups that are traditionally hard to reach.

Local Authorities first have to produce a Local Development Scheme (LDS) that will set out the documents to be included in the LDF. BDC adopted its LDS in March 2005⁹, which covers the period to January 2010.

3.3 Shropshire Local Agenda 21 (LA21) Strategy

LA21 originated from the Earth Summit in Rio de Janeiro in 1992. It incorporates the concept of sustainable development – meeting current needs without compromising the needs of future generations. The LA21 process enables communities to take an active role in conserving their local environment and improving their quality of life.

Shropshire County Council adopted its LA21 Strategy "*Sustainable Shropshire*" in December 2000. The Strategy aims to protect the health and safety of individuals and groups within the community, improve public transport, and make cycling and walking safer and more attractive. This has been largely superseded by the Community Strategy and (draft) Climate Change Strategy.

3.4 Bridgnorth District Community Strategy

The Bridgnorth District Community Strategy has been drawn up for BDC by the Bridgnorth District Community Partnership. It includes representatives from the Council and public, private, voluntary and community sectors. The Environment is listed as a key issue within the Strategy, and in particular local air quality. The document promotes a series of measures that would ease traffic congestion in Bridgnorth.

3.5 Shropshire Draft Climate Change Strategy

As a result of the Council's work under the Councils for Climate Protection (CCP) programme, SCC has completed an emissions inventory of the main greenhouse gases (GHG) in the County, and produced a draft Climate Change Strategy for Shropshire in July 2002. The Strategy aimed at cutting 10% of greenhouse gases emissions by 2010, following identification of key actions that could be undertaken. These actions included focusing on the reduction of GHG from transport, which has clear links to proposed measures to improve local air quality.

3.6 Shropshire Environment Strategy

Shropshire Environment Strategy is included within the Second Local Transport Plan (see section 3.7). The LTP describes the environmental vision and objectives for Shropshire, of which the improvement of air quality is a major concern, especially in the Air Quality Management Areas. The Environment Strategy also focuses on improving local environment quality and reducing the impact of traffic, as well as reducing air pollution in line with the UK Air Quality Objectives.

⁹ www.bridgnorth-dc.gov.uk/EnvironmentAndPlanning/Planning/LocalDevelopmentFramework7 - The LDS is reviewed annually, and an updated version came into effect in July 2006

The Environmental Strategy is based on a series of international, national, regional and local policy documents which set out the policy drivers for the LTP, some of which are directly linked to air quality matters:

- International and European policy
 - Kyoto Protocol, 1997 (ratified 2004): requires industrialised countries to cut their combined greenhouse gas emissions by 5.2% by 2012 (from a 1990 baseline)
 - Strategic Environmental Assessment (SEA) Directive: requires Local Authorities to show that they have taken account of the environmental effects of relevant new strategies and plans
- National Policy
 - Climate change, the UK Programme – DETR November 2000: to cut the UK's CO₂ emissions by 20% by 2010 and 60% by 2050 (from a 1990 baseline). The measures to meet these objectives include notably reducing unnecessary car journeys and encouraging greater use of public transport.
 - The National Air Quality Strategy, which sets the objectives for the main air pollutants to protect public health.

3.7 Shropshire Second Local Transport Plan (LTP2)

The White Paper 'A New Deal for Transport'¹⁰ set out new policy initiatives to create a better, more integrated sustainable transport system. This included greater emphasis on public transport, and cyclist and pedestrian accessibility, with initiatives such as Safer Routes to School, Green Transport Plans and Quality Partnerships between the Local Authority and transport operators. This was to be achieved through Local Transport Plans (LTP) with a five-year strategy for the implementation of local and regional transport measures. LTPs are required to be consistent with County Structure Plans, to ensure consistency and sustainability in transport proposals.

SCC in partnership with the District Authorities has completed the Local Transport Plan for Shropshire. The first LTP covered the period 2001 to 2006. The second Local Transport Plan (LTP2), covering the period 2006 to 2011, was finalised in 2006, and includes the environment (including air quality) as one of four shared strategic aims. It specifically addresses the reduction of the impact of traffic on local communities. LTP strategies and initiatives are likely to have a significant impact on local air quality and therefore need to be closely co-ordinated with Air Quality Action Plans.

The LTP2 set out a number of measures that were being considered by SCC and BDC for inclusion in an Action Plan for the Bridgnorth AQMA:

- Time restrictions on HGVs using Pound Street

¹⁰ DfT - <http://www.dft.gov.uk/about/strategy/whitepapers/previous/anewdealfortransportbetterfo5695>

- Restrictions on delivery/ loading vehicles using Whitburn Street, which can affect traffic flow
- Trial of a park and ride scheme
- Continued implementation of school travel and safer routes to school measures for the three large schools based on Innage Lane, as traffic going to these schools passes through the AQMA
- Review of the town car park Strategy, to encourage people to use alternative car parks, reducing traffic flow through the AQMA
- Seek to introduce cleaner buses and coaches for both public services and school travel services
- Improve enforcement of waiting restrictions on Whitburn Street following introduction of decriminalised parking enforcement
- Measures such as improved signage to encourage re-routing of traffic to avoid the AQMA

The LTP2 also focuses on the delivery of the Local Transport objectives in specific areas through Area Plans for larger market towns and rural areas within the County. Bridgnorth Area Plan contains the following key actions that would help improve air quality in Bridgnorth:

- Focus on improving sustainable transport linkages between residential areas, schools and economic sites such as Bridgnorth town centre and Stanmore industrial estate
- Investigate ways in which public transport linkages to nearby rail stations could be improved
- Support BDC in pursuit of the completion of the Whitburn Street Relief Road linked to new development
- Work with the BDC to develop and implement an Air Quality Management Area Action Plan to address the air quality issues arising in the town centre
- Investigate the potential for HGV restrictions and routing to accommodate the new livestock market
- Develop a parking strategy for the town, incorporating decriminalised parking enforcement
- Investigate potential for Park & Ride or formal promotion of town centre bus services linking to car parks

One of the targets of the Local Transport Plan is to restrict traffic growth in Shropshire. The LTP1 delivery report showed that traffic growth on inter-urban roads in Shropshire has been constrained to just 6.6% over 5 years (2000/01 to 2005/06), which was well within the target of a maximum of 10%. SCC will continue to seek restraining traffic growth in Shropshire, and especially in Bridgnorth, which will help to reduce the impact of traffic-induced air pollution in Bridgnorth. Particularly, the 2nd LTP has set a target for traffic levels in AQMAs, including Pound Street / Whitburn Street in Bridgnorth (key indicator LTP8b). The target, which is to be achieved by 2010/11, is to restrict further traffic growth in the AQMA, and achieve a reduction in the proportion of HGVs to 4% (7% in Pound Street in 2005).

4 Financing

Direct measures proposed for the AQMA are the responsibility of Bridgnorth District Council (BDC) and Shropshire County Council (SCC), and will require to be assessed in more detail for their cost-effectiveness through feasibility studies. These will largely be funded through the Shropshire LTP.

Indirect general measures to improve air quality in the area will be funded by BDC, such as air quality monitoring and promotional activities, or by SCC through the Shropshire LTP.

The 2nd LTP proposes provisional allocation of capital funding for the period 2006/7 – 2010/11 split between Shrewsbury, the Market Towns, and rural areas in Shropshire. As one of the main market towns in Shropshire, Bridgnorth will be allocated part of the funding:

Market Towns 5-year total allocation (provisional)

- Environmental quality and regeneration: £1,542,000, split between the following categories:
 - Town centre enhancements: £895,000
 - Traffic sign reviews and HGV routing: £500,000
 - Implement air quality action plans: £26,000
 - Other: £31,000
- School Travel: £806,300, split between the following categories:
 - School travel plan co-ordination: £67,500
 - Safer routes to school co-ordination: £63,000
 - Safer routes to school: £557,000
 - Training, education and promotion: £118,800
- Parking and congestion: £622,000, split between the following categories:
 - Parking management including residents parking: £480,000
 - Maximising network efficiency: £142,000
- Passenger Transport: £974,000, split between the following categories:
 - Public transport information: £527,000
 - Rail enhancements: £257,000
 - Developing Park & Ride in market towns: £100,000
 - Bus passenger infrastructure: £90,000
- Travel Behaviour: £107,600, split between the following categories:

- Workplace travel plans: £60,000
- Sustainable transport marketing and campaigns: £47,600
- Cyclist and PTW improvements: £812,000 split between the following categories:
 - Cycle network enhancements: £777,000
 - Cycle and PWT parking: £15,000
 - Information and publicity: £20,000
- Safety and speed management: £473,000, split between the following categories:
 - Local safety schemes: £245,000
 - 20 mph zones and other speed management: £168,000
 - Road safety strategy development: £60,000

BDC will work together with SCC to review current schemes and priorities for the area in the light of the findings of the review and assessment of air quality.

5 Consultation

Under Schedule 11 of the Act, Local Authorities are required to consult on their draft LAQM Action Plan. It is important to the success of the Action Plan to involve all local stakeholders, including local residents, community groups and local businesses in drawing up the Action Plan, in addition to their active participation in implementing the Action Plan measures. The Action Plan has been drawn up for consultation with relevant environmental health and transport representatives from BDC.

The following is a list of statutory and non-statutory consultees to which this Plan or a summary of the Plan has been sent:

- The Secretary of State
- The Environment Agency
- Primary Care Trusts
- BDC Councillors and Officers
- Shropshire County Council
- Bridgnorth Town Council
- Neighbouring Local Authorities
- Local schools
- Relevant local businesses, community groups and forums
- Other relevant local stakeholders

All comments from both Statutory and non-statutory consultees received on the draft Action Plan have been considered and incorporated where appropriate into this document (see Appendix 1).

6 Action plan measures

6.1 The Stakeholder Steering Group

Policy Guidance LAQM.PG(03)¹¹ suggests that a steering group should be set up by Local Authorities to take forward the development of the Action Plan. The stakeholders of the steering group should include Local Authority Officers from different departments within the Council, especially:

- Environmental Health
- Transport Planning
- Land Use Planning
- Corporate Policy

In addition, the steering group should include the organisations that have a key role in delivering the Action Plan measures; in this case, Shropshire County Council. The stakeholders will participate in the drawing up the Action Plan and achievement of the action plan measures.

The two sections below outline the proposed direct measures for the Bridgnorth Town Centre AQMA and indirect measures to improve air quality throughout the District.

6.2 Proposed Direct Measures for the Bridgnorth Town Centre AQMA

The following provides the outcome of discussions with BDC and SCC representatives with respect to a number of Action Plan measures that have been proposed to reduce NO_x/NO₂ emissions in the Bridgnorth town centre AQMA, in pursuit of the NO₂ annual mean AQS objective.

A summary of the direct measures for Bridgnorth town centre AQMA is shown in Table 6.1. The ranking of options has been based on professional judgement through the assessment of a number of considerations; including the costs and benefits of all the options, feasibility and acceptability, and whether they will achieve the Air Quality Objective. It is likely that the NO₂ annual mean Objective will only be achieved through a combination of measures.

DM1: New Road Infrastructure

The Bridgnorth District Local Plan includes consideration to the completion of the Whitburn Street Relief Road adjacent to Sainsbury's Supermarket, which has been planned since 2005. The relief road will link North Gate to the bottom of Whitburn Street through the Old Smithfield area.

The new relief road is unlikely to reduce total levels of traffic at the Salop Street/Pound Street/ Whitburn Street junction. However, it will significantly reduce traffic at the eastern end of Whitburn Street (by around 66%) and will significantly reduce congestion at the

¹¹ www.defra.gov.uk/environment/airquality/local/guidance/pdf/laqm-pg03.pdf

junction with High Street. This should reduce the number of vehicles backing up Whitburn Street and help to improve air quality.

There may also be a small reduction in HGV movements through the junction. A small number of HGVs may currently access the supermarket via Innage Lane, Victoria Road and Salop Street due to the height restriction of the North Gate arch, They are expected to use the relief road when operational.

DM2: Traffic Management Plan including the implementation of a one-way system in Whitburn Street

A Traffic Management Plan for Bridgnorth Town Centre is to be considered following the completion of the Whitburn Street Relief Road. SCC will investigate a variety of measures, including the implementation of a one-way system in Whitburn Street. This would restrict traffic from travelling westbound from High Street to the new relief road. This would reinforce the traffic reduction achieved on this link by the relief road, enable more space to be provided for delivery vehicles and aid the flow of traffic. It should have beneficial impact on air quality in the AQMA. This measure could be part of a Traffic Management Plan for Bridgnorth.

The Traffic Management Plan for Bridgnorth is likely to be implemented within two years of the completion of the Whitburn Street Relief Road.

DM3: Review of Bridgnorth Car Parking Strategy

A review of the car parking strategy in Bridgnorth has been proposed in the 2nd LTP. Enhancements in the parking strategy could help reduce traffic flow in the AQMA, through a mix of local plan policies (through the Local Development Framework) pricing regime at the BDC owned town centre car parks, and changes to the availability and pricing of on-street parking. A more integrated parking pricing policy could be used to encourage encouraging people to use the most appropriate car parks and prevent traffic re-circulating through the AQMA in search of free parking. Improved interactive car park signing could also be considered.

DM4: HGVs delivery time restrictions

The Further Assessment 2006 concluded that HGVs were the main contributors to NO_x levels in the AQMA, with up to 45% of the total NO_x annual mean concentration. Time restrictions on HGVs requiring access for loading/delivery in Whitburn Street and passing through the AQMA could potentially be implemented. There are a number of shops in Whitburn Street, and restriction of business delivery times should reduce HGV emissions significantly and potentially ease traffic congestion, which would help reducing the overall levels of NO_x in the AQMA.

This is a possible measure included in the 2nd LTP and could either focus on the peak hour traffic to maximise the impact of such a measure, or be more stringent (i.e. 8am to 6pm). The impacts of any such scheme on local traders would need to be carefully considered. SCC will investigate the necessity and feasibility of introducing such a scheme after the completion of the Whitburn Street Relief Road and associated actions.

DM5: Emissions Standards for Council Fleet and Public Service Vehicles

BDC and SCC will seek improvements to buses and coaches public services in order to improve emissions standards. In addition, the District and County Council will lead by example by continuing to improve emissions within their own fleets.

More stringent emissions standards for taxis could also be investigated as part of the requirements of receiving a licence through the Certificate of Compliance. Consideration could be given to opportunities to initiate further checks on emissions and setting of minimum emissions standards for taxis through the licensing system.

This measure would lead to reductions in emissions of NO_x and PM₁₀ by improving emissions standards of vehicles in the public service sectors.

DM6: School Travel Plans

School Travel Plans (STPs) aim to promote safer, healthier and more environmentally friendly school journeys based on a series of measures like the reduction of the number of car trips to and from schools. SCC has been helping schools in the County to develop a STP since 2000. Most schools in Bridgnorth have already produced a STP. SCC has already implemented a major safer routes to school scheme for the three large schools based around Innage Lane in Bridgnorth. Further School travel developments at these and other Bridgnorth schools may help in reducing traffic in Bridgnorth AQMA.

DM7: Trial of Park & Ride Schemes

There are proposals in the 2nd LTP which have the potential to improve local air quality through a possible trial of Park & Ride scheme, or formal promotion of town centre bus services linking to car parks, over the 5 year period of the LTP. This possible measure has the potential to increase uptake of public transport and reduce traffic in the AQMA at peak hours.

SCC will investigate the potential for a Park & Ride scheme in Bridgnorth. The feasibility study should be carried out by 2010. It is acknowledged that the outcome of the investigation may be that the implementation of P&R is not feasible in Bridgnorth. Traffic to the town centre is dispersed as it comes from three directions, therefore there may not be sufficient volume of passengers at any one site to sustain a park and ride service. To have a significant impact, low emissions buses and coaches would be required to avoid worsening air quality in the town centre.

DM8: Voluntary agreement with Superstore in Whitburn Street

Traffic data (based on 7am -7pm traffic counts) have shown that a significant proportion of HGVs (43%) entering Whitburn Street from Pound Street or Salop Street go to the Sainsbury's superstore. The possibility of a voluntary agreement with the supermarket regarding delivery vehicles could be investigated. Possible measures to focus on could be the use of cleaner vehicles, the re-routing of delivery traffic or changing of delivery times. This may have a beneficial impact on the AQMA in Pound Street.

Direct Measures considered but dismissed on the grounds of cost-effectiveness and feasibility

Low Emission Zone (LEZ) or Clear Zone

A Low Emission Zone (LEZ) is a geographic zone defined for an area where vehicles of an acceptable emissions standard (normally Euro III) can enter and move around. The concept is held widely as a way of achieving air quality objectives within large urban area where economies of scale can be achieved with respect to set-up and operating costs.

A Clear Zone is a defined urban area, usually a City, which exploits new technologies and operational approaches to improve quality of life and support economic growth, whilst minimising the adverse impacts of its transport systems.

Both measures have been considered for the AQMA, but have been deemed unfeasible, as there would be no other way to redirect traffic using Pound Street.

Pedestrianisation

A proposal to further improve the environment for pedestrians through the reallocation of road space to pedestrians has been considered for Bridgnorth town centre. Pedestrianisation aims at removing traffic emissions along specific streets, which can help by cutting pollution levels in AQMAs. However, pedestrianisation is not feasible for Pound Street and the junction of Salop Street/Whitburn Street, as this is a main access to the town centre from the West. Pedestrianisation of other nearby street in the town centre (High Street) is not deemed as beneficial, as it is likely to lead to additional traffic in the AQMA.

Develop Bridgnorth Quality Bus Partnership

A Quality Bus Partnership (QBP) is a partnership developed between Local Authorities and bus operators to improve bus services through a variety of measures, such as real-time information, priority measures, bus station redevelopment, provision of low floor buses, etc. Implementation of a QBP should encourage the use of more sustainable transport modes and have a positive impact on air quality levels.

All buses operating through Bridgnorth at present are subsidised through the County Council (except the Arriva Wolverhampton service), and therefore bus service improvements are secured without the necessity for a QBP. Moreover, measures to reduce the impact of buses on air quality are already considered in Direct Measure DM5 (Emissions Standards for Council Fleet and Public Service Vehicles).

Roadside Emissions Testing

Under the Roadside Vehicle Emissions (Fixed Penalty) Regulations 2002, Local Authorities are able to undertake roadside emissions testing of vehicles. The aim is to identify those vehicles that make a disproportionate contribution to emissions through poor maintenance with on-the-spot fines for those that fail.

However, this type of measure is deemed impractical for Local Authorities, as the benefits do not justify the costs. It is not considered as a cost-effective measure for inclusion in the BDC AQMA Action Plan and has therefore been dismissed at this stage. Voluntary roadside emissions testing may be considered as part of BDC's promotional and educational activities.

Idling engine emissions

The Road Traffic (Vehicle Emissions)(Fixed Penalty) (England) Regulations 2002 permit all English Local Authorities to take action against drivers who leave their vehicle engines running unnecessarily when parked. The Local Authority can issue a fixed penalty (£20) to any driver blatantly running their engine unnecessarily and who refuses all reasonable requests to switch off.

Idling vehicles are considered as a significant issue in the AQMA due to queuing vehicles at the narrow junction with Salop Street/Whitburn Street. However, it is not deemed as feasible or cost-effective for BDC to enforce this type of measure for stop/start congestion related to idling of vehicles at a junction.

Table 6.1 - Summary of direct measures proposed for the AQMA

Action	Description	Organisation responsible	Date to be achieved by	Cost	Funding	Air quality improvement in AQMA	Other potential impacts	Rank (based on cost-effectiveness)
DM1	New relief road infrastructure to bypass Whitburn Street and improve traffic flows within the area - Whitburn Street Relief Road	SCC/ BDC (planning)	6-9 months	High	Developer Funding	High (But implementation will enable further traffic management improvements)	Reduced congestion, safer roads	1
DM2	Implementation of Traffic Management Plan including a 1-way system in Whitburn Street – Potential traffic reduction and reduced queuing at the roundabout in the AQMA	SCC	Within 2 years of completion of relief road (2010)	Low-Moderate	SCC- LTP Capital	High	Reinforce impact of relief road, reduced congestion, safer roads	2
DM3	Review of Bridgnorth car park strategy to encourage people to use alternative car parks (reducing traffic flow through the AQMA) – Proposed in LTP2	BDC (SCC)	2 years after completion of relief road (2010)	Low	BDC +SCC (cost neutral to implement)	High	Promotion of sustainable alternatives, socio-economic implications of increased charges	3
DM4	Implementation of restrictions on loading/delivery vehicles using Whitburn Street – Proposed in LTP2	SCC	Necessity be considered after implementation of the Whitburn Street relief road and traffic management changes	Low	SCC- Revenue	Moderate (dependant upon effect of relief road)	Negative impact on traders, Reduced noise and congestion, safer roads	4
DM5	Seek improvements to buses and coaches in Bridgnorth through Emissions Standards for Council Fleet and Public Service Vehicles – Proposed in LTP2	BDC/SCC/transport operators	LTP2 period (ongoing-2011)	High	SCC Revenue/ BDC	Moderate	Newer, better quality vehicles, better for passengers	5

Action	Description	Organisation responsible	Date to be achieved by	Cost	Funding	Air quality improvement in AQMA	Other potential impacts	Rank (based on cost-effectiveness)
DM6	Implementation or improvement of School Travel Plans for the 3 schools based on Innage Lane (as traffic going to these schools passes through the AQMA) – Proposed in LTP2	SCC	ongoing	Low	SCC LTP Capital and revenue	Low	Better health of school children	6
DM7	Investigate potential for Park and Ride in Bridgnorth – Proposed in LTP2	SCC/BDC	Feasibility study to be undertaken by 2010	High	SCC LTP capital and revenue +BDC (car park revenue)	Low	Potential reduction in noise, reduced congestion, safer roads	7
DM8	Investigate potential for a Voluntary Agreement with Superstore in Whitburn Street to reduce traffic / emissions from delivery vehicles	BDC		Low		Low	Potential reduction in noise, reduced congestion	8

The costs are provided as: 'Low' (up to £1 million); 'Moderate' (between £1 million – £5 million); and, 'High' (greater than £5 million)

The air quality improvements are provided as: 'Low' (<0.2µg/m³); 'Moderate' (between 0.2 – 1 µg/m³); and, 'High' (greater than 1 µg/m³)

6.3 Proposed Indirect District-wide Measures to Improve Air Quality

There are indirect measures that can be implemented by SCC and/ or BDC, aimed at improving the air quality throughout the District. These will reduce background pollution concentrations and indirectly will work towards achieving the Air Quality Objectives within the Bridgnorth town centre AQMA.

IM1: Cycle and Walking Strategies

The Shropshire LTP sets out strategies to improve cycling and walking facilities throughout Shropshire and increase the proportion of journeys made by these modes. In Bridgnorth high town the scope for encouraging cycling is limited to a certain extent by the very hilly geography. However, there are plans to improve infrastructure in the town including provision of further cycle parking facilities.

IM2: Implementing a car-sharing scheme in Bridgnorth

Car-sharing schemes aim at reducing the number of cars on the roads by promoting the share of car journeys for similar trips (work or other), and so reducing traffic emissions. Investigation could be made into the potential effectiveness of a car-sharing scheme. This could be considered by SCC as part of its travel planning work. A scheme could be web based and possibility be part of a wider countywide scheme. Car sharing would be more effective if promoted in Bridgnorth through incentives such as preferential parking space. This could be explored through workplace travel plans and the public car park strategy review.

IM3: Workplace Travel Plans

SCC promote the uptake of Workplace Travel Plans by employers. The authority could put additional emphasis on encouraging the involvement of major employers in Bridgnorth to encourage modal shift away from the private car. This could help reducing the number of journeys to work and so reduce traffic emissions in Bridgnorth. Grants are available from SCC to help support Travel Plan initiatives.

IM4: Implementing Bridgnorth Council Travel Plan

A Travel Plan is a general term for a package of measures tailored to the needs of an organisation to introduce greener, cleaner and sustainable travel choices and reduce the reliance on the car. It involves the development of a set of mechanisms, initiatives and targets that together can enable an organisation to reduce the impact of travel and transport on the environment.

To lead by example, Bridgnorth District Council is planning to develop and implement its own Travel Plan, which will aim to reduce the employee's reliance on car for travelling to work. As an example, the Council owns two pool bikes, which they promote for staff journeys into town.

Land Use Planning

Section 3.1 summarises the main policies of Bridgnorth District Local Plan (2006), which will contribute to improvements in air quality. Policies have been incorporated to ensure

developments with the potential to cause environmental impacts are adequately assessed and to refuse development proposals where there are unacceptable impacts (Policy D6).

IM5: BDC Environmental Health will continue to work closely with the Planning Section to ensure that air quality is taken into account in the planning process when located in or close to the AQMA or in areas marginally below air quality objectives

Land use planning has a key role in delivering sustainable transport systems within the area by influencing the location, scale, density, design and mix of development and encouraging alternative modes of travel.

IM6: BDC will continue to work together with developers to improve sustainable transport links serving new developments

To provide support to local plan policies, the development of planning guidance for air quality assessments of developments and, in particular, for development which may impact on an AQMA is recommended in the Policy Guidance LAQM.PG(03).

IM7: BDC will develop advice to assist with air quality assessments of development proposals.

Local Air Quality Management

IM8: Air Quality Monitoring

The air quality monitoring network in BDC provides information and greater understanding of air quality within the District. NO₂ diffusion tubes are installed at 47 sites within the District, three of which are located in the AQMA so that modelled predictions can be verified and the progression of action plan measures can be monitored and assessed.

BDC will continue their commitment to local air quality monitoring within the District and ensure a high standard of data is achieved to assess against air quality objectives.

IM9: Promotion and Education

It is important that information on air quality be provided in a clear and accessible way. The Council web site www.bridgnorth-dc.gov.uk provides details on air quality within the District and summaries of LAQM Review and Assessment Reports are available for viewing.

BDC will make details of the Action Plan measures and annual progress reports available on the website to ensure broad access to the consultation and implementation process.

IM10: Promote and implement energy efficiency measures

The Bridgnorth District Council Housing Strategy 2007 – 2012 sets out the measures to improve the quality and availability of housing in the District.

One of the various aspects of the strategy is delivering the Home Energy Conservation Act Strategy (HECA). The HECA Strategy promotes energy efficiency in the District and aims to deliver a 30% improvement in home energy efficiency by 2011.

There has been good progress with an estimated 17% improvement in energy efficiency in the period April 1996 – March 2006.

Many options to improve energy efficiency and reduce carbon emissions will have direct synergies with the improvement of local air quality.

IM11: Increase awareness of transport and air quality issues in Bridgnorth

The awareness of transport issues in Bridgnorth and their direct link to air quality matters could be increased through newsletters, websites and leaflets to be provided to businesses.

Table 6.2 – Summary of Proposed Indirect District-wide Measures to Improve Air Quality

Action	Description	Organisation responsible	Funding	Measure of progress	Date to be achieved by
IM1	Improve facilities for cycling and walking within Bridgnorth	SCC	SCC- LTP Capital	% modal shift to cycling/walking – No miles of new cycle lanes/routes	ongoing
IM2	Investigate the feasibility and potential effectiveness of a car-sharing scheme in Bridgnorth	SCC	SCC- LTP Capital	Implementation of scheme – number of people using car-sharing in Bridgnorth	2009
IM3	Encourage uptake of Workplace Travel Plan for major employers in Bridgnorth	SCC	SCC- LTP Capital	Number of Work Travel Plan	ongoing
IM4	Implementing BDC's Travel Plan	BDC	Additional funds required	Completion of the Travel Plan; progress against targets	ongoing
IM5	Ensure air quality is taken into account in the planning process	BDC	Existing BDC budgets	Examples of planning applications with air quality conditions / assessments	ongoing
IM6	Work with developers to improve sustainable transport links serving new developments	BDC	Existing BDC budgets	Examples of planning applications where improvements secured	ongoing
IM7	Develop advice to assist with air quality assessments of development proposals	BDC	Additional funds required	Completion of planning advice	2008
IM8	LAQM: Commitment to continue AQ monitoring through LAQM	BDC	Existing BDC budgets/LAQM Grant	Number of monitoring sites/ % data capture	ongoing
IM9	LAQM: Promotion and education – Make air quality information accessible	BDC	Existing BDC budgets/LAQM Grant	Availability of recently published reports on the website	Ongoing

Action	Description	Organisation responsible	Funding	Measure of progress	Date to be achieved by
IM10	Promote and implement energy efficiency measures in Bridgnorth	BDC	Existing BDC budgets	% improvement in energy efficiency SAP rating	Ongoing
IM11	Increase awareness of transport and air quality issues in Bridgnorth	SCC	Shropshire LTP	No of newsletters or leaflets dispatched	Ongoing

7 Implementation and monitoring

BDC will work jointly on the Action Plan measures with the relevant partners including SCC, transport operators, schools and local businesses. To secure the necessary air quality improvements there must be involvement by all local stakeholders and BDC will actively work to encourage community participation in the process.

The implementation and effectiveness of the Action Plan will be carefully monitored through monitoring of NO₂ at relevant receptor locations within the AQMA. In addition, traffic flow changes on the key roads (Pound Street, Salop Street, Whitburn Street) will also be assessed through the review and assessment process, and the uptake of local measures such as Travel Plans will be monitored. Indicators have been provided for the indirect measures to be undertaken by the Council to monitor progress annually.

The Action Plan will be integrated into the LTP to provide additional support to the proposed measures and allow the principal measures to be monitored annually through the LTP process. This will enable assessment of the success of Action Plan measures, which have been implemented and consideration to additional measures as appropriate. Annual trajectories will be set within the LTP for the principal measures to enable progress to be monitored.

There will be regular review and assessment of the action plan proposals to evaluate progress and this will be reported annually.

8 Defra Action Planning Requirements compliance checklist

WORK AREA	CONSIDERED/INCLUDED	LOCATION IN ACTION PLAN/ COMMENTS
Adherence to Guidelines and Consideration of Policies		
Statutory Consultees consulted?	Yes	Section 5
Consulted with other Local Authorities and internal departments?	Yes	Section 5
Statement of Pollutant causing AQMA?	Yes	Section 2.2.2
Principle sources of pollutants identified?	Yes	Section 2.2.3
Have other Local Authorities' plans and policies been considered?	Yes	Section 3
Options timetable included?	Yes	Section 6
Have options been costed?	Yes, where possible at this stage	Section 6
Have the impacts been assessed?	Yes, where possible at this stage	Section 6
Checklist of Measures		
Have options been considered?	Yes	Section 6
How many options considered?	9 Direct, 11 General	Table 6.1 and Table 6.2
Transport impacts assessed?	Yes, where possible at this stage	Section 6
Have air quality impacts been assessed modelled or measured?	Yes, where possible at this stage	Section 6
Have socio-economic impacts been assessed?	Qualitatively	Section 6
Have other environmental impacts been assessed?	Qualitatively	Section 6
Have costs been considered?	Yes, where possible at this stage	Section 6
Appropriateness and Proportionality		
Do measures seem appropriate to the problem?	Yes, but further investigation required	
Have the measures been assessed?	Yes	Section 6
Are the measures likely to succeed?	Further investigation required	
Have wider impacts been assessed?	Qualitatively	Section 6

Was the costing method appropriate?	Costing methodology as per guidance LAQM.PGA (05)	Table 6.1
Is it likely that the AQMA objective will be met?	Further investigation required	
Do the chosen options comply with Government Policies?	Yes	
Implementation		
Are measures realistic?	Yes, but further investigation required	
Have responsibilities been assigned to the relevant party?	Yes	Table 6.1 and Table 6.2
Does the assigned party have the necessary powers?	Yes	
Is the financing secure and identify who pays?	Funding to be identified for some measures	Table 6.1 and Table 6.2

9 Glossary of terms

Abbreviation	Full name
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
SCC	Shropshire County Council
BDC	Bridgnorth District Council
DEFRA	Department for Environment, Food and Rural Affairs
DETR	Department for Transport and Regions
DOE	Department of the Environment
HGV	Heavy Goods Vehicles
LA21	Local Agenda 21
LAQM	Local Air Quality Management
LDD	Local Development Documents
LDF	Local Development Framework
LEZ	Low Emission Zone
LTP	Local Transport Plan
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NSCA	National Society for Clean Air
µg/m ³	Micrograms per cubic metre

10 References

DOE (1997) The United Kingdom National Air Quality Strategy, The Stationery Office

DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working together for Clean Air, The Stationery Office

DETR (2000) The Air Quality Regulations 2000, The Stationery Office

DEFRA (2002) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, The Stationery Office

DEFRA (2003) Policy Guidance LAQM.PG(03)

NSCA (2000) Air Quality Action Plans

NSCA (2001) Air Quality: Planning for Action

Bridgnorth District Local Plan 1996-2011 – Written Statement – Adopted Plan - July 2006

Bridgnorth District Council – Local Development Scheme – June 2006 (revised)

Shropshire’s Local Agenda 21 Strategy – “Sustainable Shropshire” – December 2000

Bridgnorth District Community Strategy 2005-2010

Shropshire County Council – Draft Shropshire Climate Change Strategy – July 2002

Shropshire County Council - Local Transport Plan 2001/06

Shropshire County Council – Local Transport Plan 2 2006/11

Bridgnorth District Council - LAQM Further Assessment – November 2006

Bridgnorth District Council Housing Strategy 2007 to 2012 – Final Draft March 2007

Appendix 1

Consultation on the Draft Air Quality Action Plan - Responses

The Bridgnorth Draft AQAP was made available for consultation from the 1st June until the 18th July 2008, though submissions up to the end of July were accepted.

The methods of consultation were:

- A full copy on the Council website with a short online questionnaire for responses,
- Paper copies made available at the District Council Offices, Library and Town Council Offices,
- A short leaflet being produced, made available at council offices, on line, sent to local schools, major local businesses,
- A briefing note for District Council Councillors,
- An item in the Councils own newsletter,
- A briefing note for the Town Council, followed by a short presentation to a Council meeting and question and answer session,
- Small information boards put in the Air Quality Management Area,
- Press releases to both local newspapers, both of whom carried articles on the draft plan and consultation exercise,
- Press release to local radio stations, of which both Beacon radio and radio Shropshire ran items in their news bulletins,
- Letters to Statutory consultees,
- Briefing item for Shropshire County Council Community Action meeting of 10th June, that looked at road safety and traffic management in Bridgnorth,
- A full consultation of Defra, The Department for Environment, Food & Rural affairs.

Results of Consultation

Eight responses were received from private individuals, the Town Council, and local businesses. These responses are broadly summarised below:

- The congestion in Whitburn Street and Pound Street is largely due to the mini roundabout at the top of Pound Street and parked delivery vehicles along Whitburn Street. It is suggested that there should be no stopping or unloading of delivery vehicles at peak times.
- There are congestion and possibly air quality problems outside the AQMA, specifically in the Low town area of Bridgnorth caused by congestion, parked delivery vehicles, and turning traffic at St Johns Street and Mill Street. It is suggested this area is examined for air quality.
- Cycling and walking to schools in Bridgnorth is not encouraged due to the unsafe nature of certain roads for pedestrians and lack of safe crossing places. Specifically Oldbury Wells Lane has been identified as being not safe for cycling, and there are no pedestrian crossing points on Ludlow Road.

- New developments could be better planned to improve access to and provision of walking and cycling facilities.
- Buses park with idling engines, both within the town and at schools where they provide school transport.
- Cycling could be encouraged by the provision of cycle racks in the town, and the poor state of road surfaces is seen as a disincentive to cycling.
- Support for a Park and Ride scheme for Bridgnorth, which should be implemented as soon as possible to reduce traffic in the town centre.
- The legislation on idling vehicles could be enforced as vehicles are seen in the town centre left with engines running.
- Emission testing of vehicles entering Bridgnorth could be undertaken as an advisory measure to encourage drivers to maintain their vehicles.
- Support for the idea of a one-way system for Whitburn Street to reduce congestion.
- Restrict the use of Pound Street by buses to reduce congestion and emissions.
- A weight limit for Pound Street could discourage HGVs from using this route to access High Town.
- Support for a Park and Ride for Bridgnorth, but questioning if this would be viable.
- Better road signage in the town and promote use of the relief road.
- Support for the Whitburn Street Relief Road, air quality monitoring, awareness raising and integration of air quality and planning.
- Restrictions on vehicles using Low Town and Underhill Street accessing High Town. (This would help to reduce vehicles passing Lavington Court where indications are that air quality may also be in excess of the annual mean Air Quality Strategy objective for nitrogen dioxide).
- Support for the proposal for Park and Ride, but with a site to the East side of the river.

Response from Defra

“The actions are clearly thought through, timetabled and realistic in scope, though the effects of the key action of the Whitburn Relief Road are unclear, and other actions depend on this. The council should consider studying these effects more closely.

The plan presents a further eleven actions that will indirectly affect air quality in the council’s domain, including continued NO₂ monitoring by diffusion tube.

The plan acknowledges the key role that other local stakeholders will play the plans implementation and sets out a clear strategy for monitoring of success and integration into other local plans, including the LTP.

Conclusions:

This is a good plan. It is comprehensive and includes suitable actions to address the issues in question. It treats the financial and organisational issues involved and presents a scheme to implement and monitor its effects. It dismisses actions that are disproportionate to the problem.

One action that requires further examination is the impact of the Whitburn St Relief Road, whose effects on air quality have not been quantified. The council should consider presenting clear evidence as to why this action would improve air quality¹².”

¹² Note: the impact of the Relief Road is to be investigated further in the Updating and Screening Assessment (USA) due in 2009