

# Air Quality Action Plan for Newport



**Final Draft**

Prepared for

**Newport City Council**

by



**Version 2.0 July 2007**

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## 0 SUMMARY

As of 1<sup>st</sup> November 2005 Newport City Council has seven declared Air Quality Management Areas (AQMA). The AQMA were declared because assessments of air quality predicted that the annual mean objective for nitrogen dioxide is not likely to be met by the target date of December 2005. A major contributor to the levels of pollution was found to be road traffic and Newport City Council therefore declared seven AQMA.

The City Council intends to use this AQAP to inform the development of a Regional-level Local Transport Plan, steered by SEWTA, and containing transport measures for implementation across the 10 Authorities in South East Wales.

This AQAP describes the air quality assessment process that has taken place in Newport to date, identifies the role of traffic in the current problem and sets out a range of transport-focussed measures that could help improve air quality. In total 42 actions were considered. Many of these are based on measures have already begun to be implemented or are in the planning stage, and have been drawn from existing plans and policies. Some new measures have been suggested to complement planned and ongoing activity.

Consultation on this plan has been carried out both internally within the Council and externally with Stakeholders and the Public. Following consultation, additional work has been undertaken and a number of measures chosen to be taken forward for implementation. These measures are summarised in the table below.

**Table 0.1 - Summary of measures targeted at AQMA**

Measure	Current status
<b>Malpas Road AQMA</b>	
1) Real time monitoring of buses	Ongoing, introduced 2007
2) Bus priority on AQMA corridors	Ongoing, introduced 2007
5) to 8) Parking management across city and in AQMA	Action (5), 2007-2010 Deferred (6-8)
25) Park & Ride (4 Sites)	Action 2008-2009
26) to 27) Cycling infrastructure and promotion	Ongoing (26) Action (27)
28) to 30) Walking infrastructure & promotion	Action
32) Promote 'smarter choices'	Ongoing
33) High intensity 'smarter choices'	Ongoing
39) Real-time bus information	Action 2008
<b>Caerleon Road AQMA</b>	
1) Real time monitoring of buses	Ongoing, introduced 2007
2) Bus priority on AQMA corridors	Ongoing, introduced 2007
5) to 8) Parking management across city and in AQMA	Action (5), 2007-2010 Deferred (6-8)
9) Investigate delivery restrictions on Caerleon Road	Action 2007-2010
25) Park & Ride (4 Sites)	Action 2008-2009
26) to 27) Cycling infrastructure and promotion	Ongoing (26) Action (27)
28) to 30) Walking infrastructure & promotion	Action
32) Promote 'smarter choices'	Ongoing
33) High intensity 'smarter choices'	Ongoing

39) Real-time bus information	Action 2008
<b>Caerleon High Street AQMA</b>	
12) HGV controls in Caerleon Village	Ongoing
21) School bus contracts	Action at next contract renewal
22) Investigate implementing a Bus Quality Partnership along Caerleon High Street	Action
26) to 27) Cycling infrastructure and promotion	Ongoing (26) Action (27)
28) to 30) Walking infrastructure & promotion	Action
31) Caerleon rail station	Action 2013
32) Promote 'smarter choices'	Ongoing
33) High intensity 'smarter choices'	Ongoing
34) Caerleon Village School Travel Plan	Action 2007/08
35) Caerleon Village Safe Routes to School	Action 2007/08
42) Caerleon Village visitor centre	Action 2007/08
<b>Motorway AQMAs</b>	
15) Variable speed limit on existing M4	Action partial scheme 2007/08, complete scheme 2008/09
16) New M4	Action 2014
<b>General Newport wide</b>	
3) Introduce Bus Box	Ongoing
4) Improve interchange	Ongoing
17) Improve emission performance of NCC fleet	Ongoing
18) NCC Driver training	Ongoing
19) Expand alternate week refuse collection	Ongoing
36) Active work-place travel planning	Ongoing
37) Implement NCC travel plan	Ongoing
38) Annual awareness events	Ongoing
40) Planning decisions	Ongoing
41) Mixed use developments	Ongoing

# 1 INTRODUCTION AND AIMS OF THIS PLAN

## 1.1 Background

As of 1<sup>st</sup> November 2005 Newport City Council has seven declared Air Quality Management Areas (AQMA). The AQMA were declared because assessments of air quality predicted that the annual mean objective for nitrogen dioxide (NO<sub>2</sub>) was not likely to be met by the target date of December 2005. A major contributor to the pollution in these areas was found to be road traffic.

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. The concept of Local Air Quality Management (LAQM) and the process of 'review and assessment' were established in the 1997 National Air Quality Strategy (NAQS).

For each air quality objective, local authorities have to consider whether the required level of pollution concentration is likely to be achieved by the due date. Where it appears likely that the air quality concentration (i.e. the amount of pollution) is going to be higher than the limits a local authority must declare an Air Quality Management Area. Following the declaration of an AQMA, the authority must then carry out a further assessment of existing and likely future air quality. The Authority must then develop an Air Quality Action Plan which sets out the local actions that can be taken to work towards improved air quality and meeting the objectives. This document forms the Air Quality Action Plan for Newport.

## 1.2 Objectives and status

The City Council intends to use this AQAP to inform the development of a Regional-level Local Transport Plan, steered by SEWTA, and containing transport measures for implementation across the 10 Authorities in South East Wales.

This AQAP describes the air quality assessment process that has taken place in Newport to date, identifies the role of traffic in the current problem and sets out a range of transport-focussed measures that could help improve air quality. In total 42 actions are put forward. Many of these are based on measures already under consideration, and have been drawn from existing plans and policies. The City Wide Transport Strategy, part of the recent Master Plan for Newport is particularly relevant. New measures have been suggested to complement planned and ongoing activity.

An initial evaluation of the 42 actions has been undertaken, with methodology and the results presented in this document. The method is one which, while quite simple, is possible to apply to all the actions contained in the Plan without extensive data collection, modelling or further analysis. It is therefore a screening assessment to identify particularly promising measures, and give a guide to their likely effectiveness. Further assessment would be required as actions are taken forward, and is likely to be inherent in their development.

Initially a draft Plan was produced to provide NCC Environmental Health Department with a method to consult within the Council on the means by which the organisation can work towards improved air quality. This internal consultation was followed by consultation with

Council Members and subsequently the Public and other stakeholders. This includes the communities affected by poor air quality and included in the Air Quality Management Areas. Once consultation was complete, changes were made to take account of consultees views and this final Plan produced for submission to Welsh Assembly Government. These changes included carrying out additional source apportionment work and reviewing the options included in the plan in light of this.

This final Air Quality Action Plan includes a list of agreed actions and details of timescales and funding for the measures, and provides an assessment of the improvements that can be expected if the measures are implemented.

### **1.3 Contents and layout**

Policy Guidance LAQM.PG(03)5 published by the Government in 2003, provides guidance on the development of action plans. The AQAP is expected to include the following:

- quantification of the source contributions to the predicted exceedences of the objectives, to allow the action plan measures to be effectively targeted;
- evidence that all available options have been considered on the grounds of cost-effectiveness and feasibility;
- how the local authority will use its powers and also work in conjunction with other organisations in pursuit of the air quality objectives;
- clear timescales in which the local authority and other organisations and agencies propose to implement measures within the action plan;
- quantification of the expected impacts of the proposed measures and, where appropriate, an indication as to whether the measures will be sufficient to meet the air quality objectives; and
- how the local authority intends to monitor and evaluate the effectiveness of the action plan.

Chapter 2 provides the background to air quality, sources of pollution and amount of improvement required to meet the objectives for pollution concentrations. Chapter 3 provides a brief summary of the main background documents (Plans and policies) relevant to the Plan. Chapter 4 describes the various options available to the Council to implement in and around the AQMA, and generally across Newport. It also includes some options that will need to be progressed by other Organisations, which the Council can support. A list of suggested actions is set out in this Chapter.

Chapter 5 contains the option assessment tables, whereby the list of actions that can be undertaken by the Council are assessed. Air quality, cost, feasibility and wider impacts are taken into account during the assessment and time-scales for implementation set out. Some actions require further investigation before a decision can be taken if it is appropriate to proceed. These are clearly identified. Chapter 6 outlines how the plan will be taken forward, and outlines the options proposed to be implemented. Chapter 7 sets out the details of the consultation carried out on the Plan.

## 2 AIR QUALITY MANAGEMENT IN NEWPORT

### 2.1 Summary of review and assessment

#### 2.1.1 Overview of process

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. The concept of Local Air Quality Management (LAQM) and the process of ‘review and assessment’ was established in the 1997 National Air Quality Strategy (NAQS). In 2000, Government reviewed the NAQS and set down the revised Air Quality Strategy for England, Scotland, Wales and Northern Ireland<sup>2</sup> (AQS). This established a revised framework for air quality objectives for seven pollutants, which were subsequently prescribed into Regulation in 2000 via the Air Quality Regulations 2000<sup>3</sup>. These were subsequently amended in 2004.

Local authorities assess air quality against a number of Air Quality Objectives, which are set by Government through the Air Quality (Wales) Regulations 2000 (as amended) for seven main pollutants as listed below:

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Benzene
- Sulphur Dioxide (SO<sub>2</sub>)
- 1,3 Butadiene
- Particles (PM<sub>10</sub>)
- Lead

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

- Stage 1 Review & Assessment of Air Quality (December 1998)
- Stage 2 Review & Assessment of Air Quality (October 1999)
- Stage 3 Review & Assessment of Air Quality (June 2001)
- Declaration of seven Air Quality Management Areas (December 2002)
- Stage 4 Review & Assessment of Air Quality Management Areas (December 2003)

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

- Air Quality Updating and Screening Assessment (May 2003)
- Air Quality Detailed Assessment (July 2004)
- Revoked four Air Quality Management Areas and amended three (December 2004)
- Air Quality Progress Report (September 2005)
- Declaration of four new Air Quality Management Areas (November 2005)

All above documents are available for viewing in the Environmental Health public register at Newport City Council.

This AQAP covers the AQMA declared in the first and second round of local air quality review and assessment. The third round of local air quality review and assessment is currently underway.



### 2.1.2 Original AQMA

As part of the National Air Quality Strategy, a Stage 3 Review and Assessment for Air Quality was undertaken in 2001. The recommendations made in the Stage 3 led to the declaration of 7 Air Quality Management Area's in December 2002.

The monitoring and modelling indicated that these areas would exceed the National Air Quality Objectives for nitrogen dioxide (NO<sub>2</sub>) by the end of 2005, with annual average concentration being greater than 40 µg/m<sup>3</sup>. The primary source of NO<sub>2</sub> in these areas was from traffic emissions, and particularly from the M4 motorway and its immediate arteries.

### 2.1.3 Stage 4 Review and Assessment

Continuous data gathered from two new monitoring stations led to improved modelling data. This in turn has resulted in a more comprehensive understanding of NO<sub>2</sub> concentrations and in the areas that actual exceedance of the 2005 objective are likely.

Modelling work undertaken for Stage 4 Review and Assessment recommended that 4 of the above AQMAs should be revoked, and the remaining 3 should be considerably reduced.

The remaining 3 AQMA are:

- *Glasllwch* (2 address points)
- *Shaftesbury* (3 address points)
- *St Julians* (2 address points)

These AQMA are adjacent to the M4 motorway, and the main source of pollution is road traffic. The above AQMAs were declared on the 21st December 2004. Maps of these locations can be found in Appendix A.

### 2.1.4 Update and Screening Assessment

Subsequent to Stage 4 Review and Assessment, it was required to undertake an Update and Screening Assessment (USA). The purpose of this was to identify any significant changes that had occurred in each Council's area since the first round of Review and Assessments was completed. The USA looked at areas outside of the current AQMAs and in areas where it was felt that Air Quality Objectives might not be met.

The USA recommended 7 areas for Detailed Assessment. Advanced Modelling work undertaken for the Detailed Assessment forecasted that based on current traffic volumes and sensitive receptor locations, all the above locations should be declared as AQMAs based on their likely exceedance of the 2005 NO<sub>2</sub> Objective. However, the modelling work that was undertaken did not take into account the effect that the newly completed Southern Distributor Road would have traffic volumes at the above locations. With revised traffic volumes taken into account, modelling indicated the NO<sub>2</sub> Objective would be met at several of the above locations, that is, they would have annual NO<sub>2</sub> average concentrations of less than 40 µg/m<sup>3</sup>.

Some locations, three in total, were predicted to have concentrations above the 40 µg/m<sup>3</sup> and were therefore declared as new AQMA.

### 2.1.5 New Air Quality Management Areas

New AQMAs declared in those remaining areas that will not be positively affected by the SDR are:

#### *High Street, Caerleon*

The focus of the AQMA is a number of properties at the southern end of the High Street in the village of Caerleon. The ‘canyon effect’ of the properties facing onto the road causes higher than usual NO<sub>2</sub> concentration to occur. There is a slight incline at the southern end of the High Street on the corner with The Hanbury Arms public house which may have an impact on tailpipe emissions. A plan of the site can be found in Appendix A.

**Figure 2.1 - Looking north along Caerleon High Street AQMA**



The key issue is congestion and standing traffic along the High Street at peak times. This includes during the school run and in summer when the number of visitors increases to this historic area. The flow of traffic on the road is quite heavy, however, during both peak and off peak periods. A zebra crossing north of the AQMA on the High Street can occasionally lead to stationary traffic along the High Street.

#### *Buckland Cottage*

This AQMA is centred on a single property within 30 metres of the M4 carriageway, off Chepstow Road. This is affected by high levels of traffic emissions on the M4.

#### *Malpas Road*

The Malpas Road is a distributor Road that connects Junction 26 of the M4 and suburban settlements to the north of the motorway with Newport city centre. It is a major bus route

with a number of local and interurban services connecting with Newport. The flow of traffic along the road is busy both during the off peak and congested at peak times.

The lower end of Malpas Road, the area of the AQMA, south of the junction with Brynglas Road, suffers from the ‘canyon effect’ at its peak when traffic is queuing and at a standstill. A mixture of commercial and resident properties face along the road and are subjected to higher than usual NO<sub>2</sub> concentrations. Malpas Road is a major bus route into the city. A plan of the site with the AQMA boundary shown can be found in Appendix A.

**Figure 2.2 – Looking north along Malpas Road AQMA**



### *Caerleon Road*

Caerleon Road connects Junction 25 of the M4 with Newport City centre. The AQMA is located at the lower end of Caerleon Road north of the signal controlled junction with Durham Road / Duckpool Road. The flow of traffic along the road is quite busy during the off peak and congested at peak times. A range of commercial premises make up this district centre, with a large number of residential properties also facing the road. Narrower than Malpas Road, a northbound bus stop located south of the AQMA may have an adverse affect on pollution concentrations as traffic builds up behind stationary buses.

**Figure 2.3 – Looking north along Caerleon Road towards AQMA**

Maps of these four AQMA can be found in Appendix A.

#### 2.1.6 Future works

Future works required as part of the third and future rounds include:

- Air Quality Detailed Assessment (if required) (Due April 2007 & 2010)
- Air Quality Progress Report (Due April 2007, 2008, & 2010)
- Air Quality Update and Screening Assessment (Due April 2009)

More detail on the LAQM process and information on the specific AQMA can be found in the Stage IV Review and Assessment report: 'Newport City Council Air Quality: Detailed Assessment' (July 2004).

A requirement under Part IV of the Environment Act 1995 Section 84 is that Local Authorities produce an Air Quality Action Plan (AQAP) for each Air Quality Management Area, setting out the most cost effective measures to improve air quality within each area. The Action Plan is an important and significant aspect of the LAQM process, playing a key role in helping the UK Government to deliver the air quality objectives and the EU limit values. This document forms the draft Air Quality Action Plan for Newport.

## 2.2 Source of emissions and improvement required in AQMA

### 2.2.1 Required pollution reduction

Table 2.1 below gives the maximum monitored concentration within each AQMA for 2005, projected from 2003/2004 monitored data, the maximum provisional monitored concentration within each AQMA for 2005, and an estimate of the maximum predicted modelled concentration at receptor locations within the AQMA. These values do not necessarily

correspond to the same location within each AQMA. The corresponding approximate percentage reduction in NO<sub>2</sub> concentration required in order to meet the annual average objective of 40µg/m<sup>3</sup> is also given. Note that the provisional monitoring data have not been ratified.

**Table 2.1 – Maximum estimated concentrations in each AQMA**

AQMA	Estimated concentration of NO <sub>2</sub> (µg/m <sup>3</sup> )			% reduction required
	Monitored (Projected to 2005)	Provisional monitored (2005)	Modelled (2005)	
Glasllwych (M4)	41.3*	47.7	111.4**	5-65
Shaftesbury (Malpas Rd) (M4)	50.6*	51.3	76.1**	20-50
St Julian's/ Denbigh Rd (M4)	52.5*	41.3	88.9**	5-55
High Street, Caerleon	44.5	55.3	48	10-30
Buckland Cottage (M4)	46	54.2	43.5	10-25
Malpas Road	50.6	61.9	50.9	20-35
Caerleon Road	52.5	54.1	40	0-25

\* These AQMA were amended in 2004. These monitoring data are from sites that were within the AQMA prior to 2004, but now fall outside the current extent of the AQMA.

\*\* These modelled predictions were carried out as part of the Stage 3 R&A. Subsequent monitoring data has indicated that these are likely to be an over prediction. Therefore the range of reduction required is likely to be much less than shown in these cases.

For the non-M4 AQMA it can be seen that pollutant concentrations are required to fall by up to 30%. The reductions required for the M4 Motorway AQMA are less simple to predict, as consistent data are not available. Based on the provisional monitored data from 2005 only, the extent of the reduction required ranges from approximately 5% to 20%.

#### 2.2.2 Source apportionment as part of Stage 4

As part of the Stage 4 assessment a source apportionment exercise was carried out to quantify the contribution to the total NO<sub>x</sub> concentration due to:

- background from sources outside the local area;
- emissions from moving traffic; and
- emissions from stationary traffic, for example traffic waiting at traffic lights, bus stops and pedestrian crossings.

Table 2.2 gives the concentrations of NO<sub>x</sub> apportioned to each source, and the corresponding percentage of the total at four Newport AQMA. Source apportionment analysis has not been carried out for the remaining three Motorway sites, but the assumption is that the background levels will be broadly similar to the other AQMA (e.g. Buckland Cottage) with the remainder two-thirds of pollution due to traffic moving on the M4.

**Table 2.2 – Source of pollution at each AQMA**

AQMA	Concentration of NO <sub>x</sub> (ug/m <sup>3</sup> )				% of total		
	Background	Moving traffic	Stationary traffic	<b>Total</b>	Background	Moving traffic	Stationary traffic
High Street, Caerleon	42	58	56	<b>156</b>	27	37	36
Buckland	37	71	0	<b>108</b>	34	66	0

Cottage (M4)							
Malpas Road	47	68	63	<b>179</b>	26	38	35
Caerleon Road	41	12	68	<b>121</b>	34	10	56

The table shows that for all four sites traffic is a major contributor to the NO<sub>x</sub> concentration levels, accounting for at least two-thirds of the pollution in these AQMA. At the Buckland Cottage site approximately a third of the NO<sub>x</sub> concentration is background sources, with the remainder due to moving traffic (from the M4).

At both the High Street Caerleon and Malpas Road sites approximately a quarter of the NO<sub>x</sub> concentration is background. The remaining contribution to NO<sub>x</sub> concentrations is equally split between moving and stationary traffic.

At the Caerleon road AQMA approximately a third of the NO<sub>x</sub> concentration is background, with the remainder due to traffic. However, due to the extreme congestion at this site, the largest contribution is due to stationary traffic.

It is clear that traffic forms a major contributor to pollution levels in these four AQMA. Monitoring will continue in the future to determine if any increase or reduction occur and determine the impacts of transport and development in these areas.

### 2.2.3 Additional source apportionment

Additional source apportionment work was carried out using the Highways Agency DMRB screening tool to determine the relative contributions of each vehicle class to the emissions of NO<sub>x</sub>. The diurnal profile of emissions was examined to determine the pattern of emissions throughout the day.

Source apportionment was carried out for each of the following roads:

- The M4 motorway (Glasllwych, Shaftesbury, St Julians and Buckland Cottage AQMAs);
- Caerleon High Street (Caerleon High Street AQMA);
- Caerleon Road (Caerleon Road AQMA); and
- Malpas Road (Malpas Road AQMA).

Traffic count data for each road was used to calculate the Annual Average Daily Traffic (AADT) for the road, and the DMRB screening tool was used to calculate the contribution to annual NO<sub>x</sub> emissions from the road for each vehicle class and to predict the contribution to annual NO<sub>x</sub> concentrations at receptor locations within each AQMA.

Traffic count profiles were used to assess the diurnal pattern of traffic movements. For each vehicle class a diurnal profile of traffic movements has been produced to show how the flow of traffic, and therefore pattern of emissions, varies across the day. To determine which vehicle class makes the greatest contribution to emissions at which times of the day the proportion of emissions for each vehicle class has also been assessed for the am peak, inter-peak (midday), and pm peak, where appropriate data were available.

*The M4 motorway (Glasllwych, Shaftesbury, St Julians and Buckland Cottage AQMAs)*

Table 2.3 below shows the traffic on the M4 motorway and the calculated emissions of NO<sub>x</sub> per kilometre from traffic on the M4 motorway, broken down by vehicle class.

**Table 2.3: Traffic and emissions of NO<sub>x</sub> per kilometre (tonnes/year) on the M4 motorway**

Vehicle Class	Traffic composition (%)	Emissions of NO <sub>x</sub> per km	
		Tonnes/year	%
Car	74	13,470	27
LGV	13	4,887	10
Bus	1	1,251	2
Rigid HGV	4	6,616	13
Artic HGV	7	24,132	48
Total	100	50,355	100

The table shows that the majority of NO<sub>x</sub> emissions are due to articulated HGVs, a group which makes up only 7% of traffic on the M4 motorway.

Four AQMAs have been declared as a result of emissions from traffic on the M4 motorway. Table 2.4 below shows the calculated concentration of NO<sub>x</sub> due to traffic on the M4 motorway at the nearest receptor to the M4 motorway within each AQMA, broken down by vehicle class.

**Table 2.4: NO<sub>x</sub> concentrations at receptor locations in the M4 AQMAs**

Vehicle Class	Concentration (ug/m <sup>3</sup> )				Percentage (%)			
	Buckland Cottage	St Julians/Denby Road	Glasllwch	Shaftesbury	Buckland Cottage	St Julians/Denby Road	Glasllwch	Shaftesbury
Car	26.1	21.7	24.6	18.8	13	14	15	15
LGV	23.0	18.1	24.2	18.1	12	12	14	14
Bus	8.9	4.0	4.2	3.0	4	3	2	2
Rigid HGV	71.2	59.4	65.0	40.3	36	38	39	31
Artic HGV	68.7	51.2	49.7	48.9	35	33	30	38
Total NO <sub>x</sub>	197.9	154.3	167.8	129.0	-	-	-	-
Total NO <sub>2</sub>	33.3	28.6	30.1	25.5	-	-	-	-

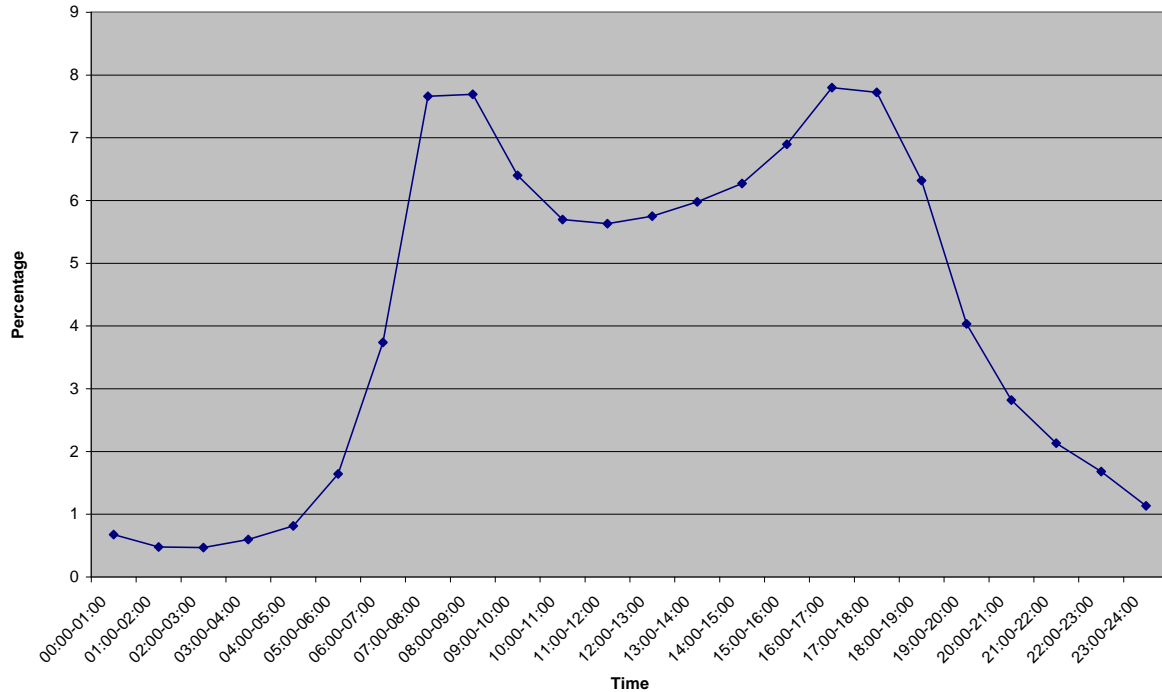
The greatest contribution to NO<sub>x</sub> concentrations is from HGVs. When combined, emissions from the two classes of HGVs are responsible for around 70% of the NO<sub>x</sub> concentration due to motorway traffic at the closest receptor location in each AQMA. This is significant, given that HGV traffic makes up only approximately 12% of traffic on the M4 motorway.

Car traffic makes up approximately 75% of the traffic on the M4, however the contribution to NO<sub>x</sub> concentrations is around 15%. Note that LGV traffic, which only forms around 13% of all traffic, contributes to the NO<sub>x</sub> concentrations almost as much as car traffic.

Figure 2.4 shows the diurnal profile of traffic flows for the M4, this shows the percentage of the total daily traffic that travels along the road each hour. Table 2.5 shows the percentage of emissions due to each vehicle type at the am peak, pm peak and interpeak. This shows that

throughout the day the greatest contribution to emissions is due to artic HGVs, and that the contribution from cars is also significant during the am and pm peaks.

**Figure 2.4: Diurnal profile of traffic flows along the M4**



**Table 2.5: Percentage of emissions along the M4 by time of day**

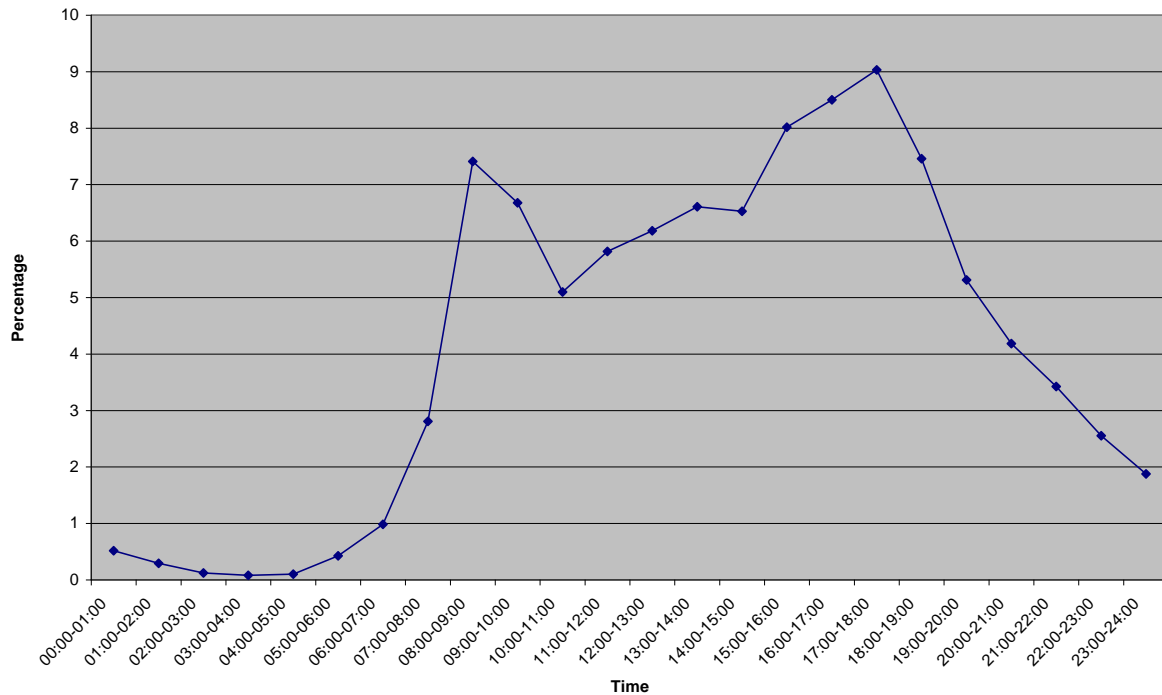
Vehicle Class	Percentage (%)		
	Am peak	Inter-peak	Pm peak
Car	31	10	40
LGV	11	2	10
Bus	2	13	2
Rigid HGV	14	7	8
Artic HGV	43	67	40

*Caerleon High Street (Caerleon High Street AQMA)*

Figure 2.6 shows the diurnal profile of traffic flows for Caerleon High Street, calculated using vehicle count data recorded on Caerleon High Street. This shows the percentage of the total daily traffic that travels along the road each hour.

**Figure 2.6: Diurnal profile of traffic flows along Caerleon High Street**





Morning and evening peaks due to commuter traffic are generally seen between 7am -9am and 4pm -6pm. The broad peak from 3pm to 6pm in the afternoon, seen on Figure 2.6, is likely to be related to school-run traffic.

Table 2.6 shows the traffic emissions during the am peak and pm peak, broken down by vehicle class. To calculate these percentages turning count data collected in Caerleon at the junction of Station Road / Usk Road / Mill Street / High Street were input to the Highways Agency DRMB screening tool.

**Table 2.6: Percentage of total NO<sub>x</sub> emissions by time of day**

Vehicle Class	NO <sub>x</sub> emissions (%)		
	Am peak (07:30-09:30)	Inter-peak	Pm peak (15:00-18:00)
Car	25	Not available	29
LGV	2	Not available	1
Bus	62	Not available	60
Rigid HGV	6	Not available	6
Artic HGV	6	Not available	4

The table shows that in both the morning and the evening peak the majority of NO<sub>x</sub> emissions (around 60%) are from bus traffic.

The average breakdown of traffic by vehicle class over the day was not available, therefore to calculate the annual contribution to the emissions and concentrations on Caerleon High Street the vehicle class breakdown from the peak times has been used. In reality this may not be the best representation of the average vehicle class breakdown because it does not take into account the different traffic composition over the course of the day (for example there will be fewer buses at night, when car traffic is likely to be more dominant).

Table 2.7 below shows the composition of the traffic on Caerleon High Street and the calculated emissions of NO<sub>x</sub> per kilometre, broken down by vehicle class.

**Table 2.7: Traffic and emissions of NO<sub>x</sub> per kilometre (tonnes/year) on Caerleon High Street**

Vehicle Class	Traffic composition (%)	Emissions of NO <sub>x</sub> per km	
		Tonnes/year	%
Car	87	828	27
LGV	2	46	2
Bus	10	1,837	61
Rigid HGV	1	178	6
Artic HGV	0.4	141	5
Total	100	3,030	100

Table 2.8 below shows the calculated concentration of NO<sub>x</sub> due to traffic on Caerleon High Street at the nearest receptor to the road within the AQMA, broken down by vehicle class.

**Table 2.8: Contributions to NO<sub>x</sub> concentrations in the Caerleon High Street AQMA**

Vehicle Class	Concentration (ug/m <sup>3</sup> )	Percentage (%)
Car	5.2	28
LGV	0.3	2
Bus	10.5	56
Rigid HGV	2.3	12
Artic HGV	0.5	3
Total traffic NO <sub>x</sub>	18.8	-
Total traffic NO <sub>2</sub>	6.2	-

These tables show that although buses form only 10% of the traffic along Caerleon High Street they are responsible for 56% of NO<sub>x</sub> concentrations within the AQMA.

#### *Caerleon Road (Caerleon Road AQMA)*

Table 2.9 below shows the traffic on Caerleon Road and the calculated emissions of NO<sub>x</sub> per kilometre, broken down by vehicle class.

**Table 2.9: Traffic and emissions of NO<sub>x</sub> per kilometre (tonnes/year) on Caerleon Road**

Vehicle Class	Traffic composition (%)	Emissions of NO <sub>x</sub> per km	
		Tonnes/year	%
Car	56	791	23
LGV	41	1,546	45
Bus	2	645	19
Rigid HGV	0.3	79	2
Artic HGV	1	401	12
Total	100	3,462	100

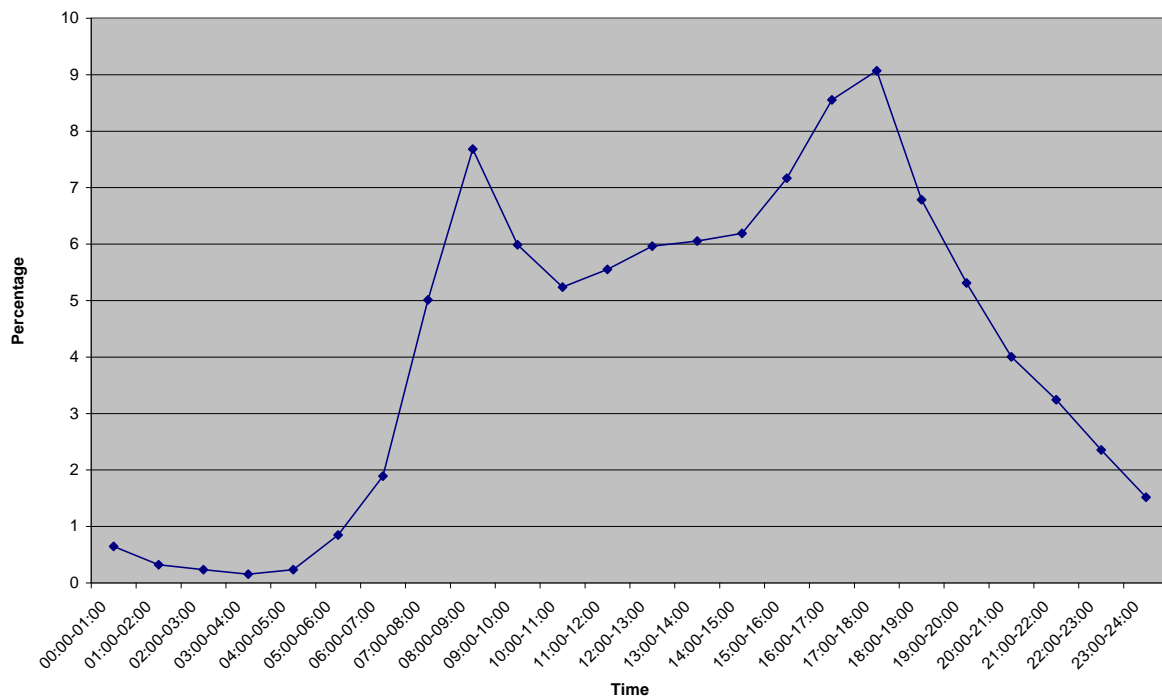
Table 2.10 below shows the calculated concentration of NO<sub>x</sub> due to traffic on Caerleon Road at the nearest receptor to the road within the AQMA, broken down by vehicle class.

**Table 2.10: Contributions to NO<sub>x</sub> concentrations in the Caerleon Road AQMA**

Vehicle Class	Concentration (ug/m <sup>3</sup> )	Percentage (%)
Car	4.9	24
LGV	9.5	47
Bus	3.6	18
Rigid HGV	1.0	5
Artic HGV	1.3	7
Total NO <sub>x</sub>	20.3	-
Total NO <sub>2</sub>	6.6	-

Figure 2.7 shows the diurnal profile of traffic flows for Caerleon Road, this shows the percentage of the total daily traffic that travels along the road each hour. Table 2.11 shows the percentage of emissions due to each vehicle type at the am peak and pm peak. This shows that, although overall the greatest contribution to NO<sub>x</sub> concentrations is from LGVs, at both peak times the greatest contribution to emissions is due to buses, with a significant contribution from cars.

**Figure 2.7: Diurnal profile of traffic flows along Caerleon Road**



**Table 2.11: Percentage of emissions along Caerleon Road by time of day**

Vehicle Class	Percentage (%)		
	Am peak	Inter-peak	Pm peak
Car	23	Not available	28
LGV	1	Not available	1
Bus	66	Not available	69
Rigid HGV	9	Not available	2

Artic HGV	1	Not available	0
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### Malpas Road (Malpas Road AQMA)

Table 2.12 below shows the traffic on Malpas Road and the calculated emissions of NO<sub>x</sub> per kilometre, broken down by vehicle class.

**Table 2.12: Traffic and emissions of NO<sub>x</sub> per kilometre (tonnes/year) on Malpas Road**

Vehicle Class	Traffic composition (%)	Emissions of NO <sub>x</sub> per km	
		Tonnes/year	%
Car	82	2,409	40
LGV	14	1,035	17
Bus	3	1,456	24
Rigid HGV	2	793	13
Artic HGV	0.4	383	6
Total	100	6,076	100

Table 2.13 below shows the calculated concentration of NO<sub>x</sub> due to traffic on Malpas Road at the nearest receptor to the road within the AQMA, broken down by vehicle class.

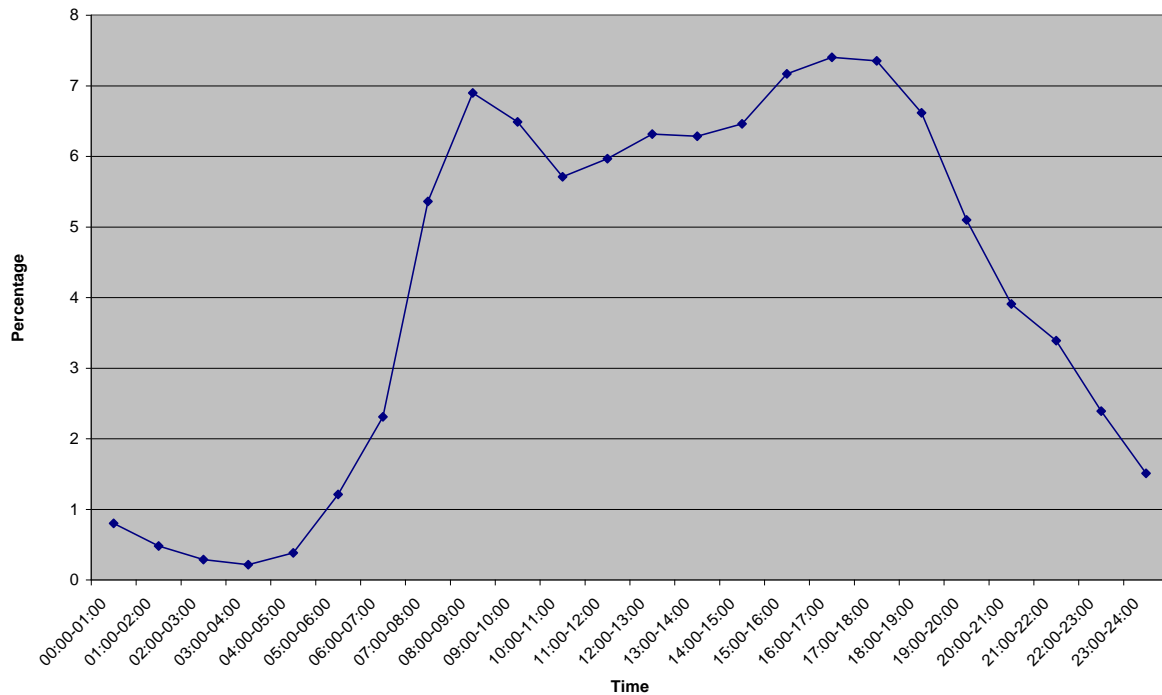
**Table 2.13: Contributions to NO<sub>x</sub> concentrations in the Malpas Road AQMA**

Vehicle Class	Concentration (ug/m <sup>3</sup> )	Percentage (%)
Car	11.3	31
LGV	6.3	17
Bus	8.0	22
Rigid HGV	10.1	27
Artic HGV	1.3	3
Total NO <sub>x</sub>	37.0	-
Total NO <sub>2</sub>	10.5	-

Table 2.13 shows that there is no clear dominant source, with the contribution to NO<sub>2</sub> concentrations being approx 30% Cars; 30% HGVs; 20% LGVs; and 20% Buses.

Figure 2.8 shows the diurnal profile of traffic flows for Malpas Road, this shows the percentage of the total daily traffic that travels along the road each hour. Table 2.14 shows the percentage of emissions due to each vehicle type at the am peak, pm peak and interpeak. This shows that the greatest contribution is from cars, although throughout the day no one source dominates.

### Figure 2.8: Diurnal profile of traffic flows along Malpas Road



**Table 2.14: Percentage of emissions along Malpas Road by time of day**

Vehicle Class	Percentage (%)		
	Am peak	Inter-peak	Pm peak
Car	37	41	57
LGV	17	18	13
Bus	24	24	24
Rigid HGV	15	11	4
Artic HGV	7	6	2

## 2.3 Monitoring

In order to evaluate the effectiveness of the Action Plan the City Council will continue to monitor Nitrogen Dioxide levels in the seven AQMA with diffusion tubes and continuous analysers. This will help understand whether the expected and required reduction in levels is occurring and whether the EU limit values are likely to be met by 2010.

Each action identified by this Plan should be reviewed annually in order to assess either its progress towards implementation (if a medium to long-term action) or the impact it is having if it is in place. The framework for reporting the results of this review is the Annual Progress Reports. If it appears that action on pollution levels will not be sufficient then the actions contained within the Plan should be reviewed and the potential for further measures revisited.

### 3 RELEVANT PLANS AND POLICIES

#### 3.1 Existing plans

##### 3.1.1 Local Transport Plan

The Local Transport Plan (LTP) was produced in 2000. It covers a period of July 2000 to June 2006. The plan sets out to address a variety of existing problems that include worsening traffic congestion and air quality related to road transport with a broad package of measures to enable better travel options in Newport and its environs. The decline of alternative modes of travel i.e. walking, cycling and public transport and simultaneous increase and dominance of car travel is recognised as a problem. The LTP also acknowledges a number of opportunities in particular through regeneration and development with reference to key documents such as the draft Unitary Development Plan (UDP). The corporate vision focuses on safety, health and quality of life as key priorities.

The June 2005 Annual Progress Report (APR) in discussion regarding the objectives of the LTP makes specific reference to the ongoing work with the AQMA noting those that have been revoked or reduced and the new areas that have been declared. It also details the ongoing work carried out as part of the Local Air Quality Management (LAQM) process.

For the next period of local transport planning a Regional Transport Strategy is being formulated, taking into account the needs across the region. It is being co-ordinated by the South East Wales Transport Authority (SEWTA), and Newport City Council are providing input on the projects and the planned programme of work.

##### 3.1.2 Unitary Development Plan

The Unitary Development Plan (UDP), November 2005, sets transport in the wider context of development and economic growth in Newport. It covers the period 1996 to 2011 and when adopted will replace the existing Structure and Local Plans.

The principles of the document are based on sustainability and the acknowledged need to strike a balance between development and economic growth, with the impact that this has on the local environment, including the transport system and air quality. The plan emphasises the need for an enhanced public transport system and measures which support more sustainable modes of transport. It recognises the need to address issues of accessibility and lists three key elements that are pertinent to this AQAP, namely an Integrated Land Use and Transportation Strategy, the Southern Distributor Road and the M4 Relief Road.

More specifically the UDP makes reference to planned development and measures that will have a direct or indirect impact on the Caerleon village AQMA. These measures are the re-development of St Cadoc's Hospital site, which will include a new walking and cycling route. This route will link housing on one side of the village to schools on the other. Other plans include an assessment of the Caerleon one-way system and river bridge. It is proposed to construct a railway station at Caerleon, linking the village by rail to Newport, and walking and cycling links along the rail route to the centre of Newport.

### 3.1.3 Master Plan

The Master Plan – Newport 2020 Unlimited Vision framework document is a long term view and assessment of the relationship between the local and regional economy and physical (land use) and transport issues facing Newport over the next 15 to 20 years. The plan addresses those areas, their interrelationships and lists a number of key priorities that have emerged as a result of the work under the key headings of Accessibility, the Environment (including Air Quality) and Development. The document was produced on behalf of Newport Unlimited and released in April 2004.

Newport Unlimited is a private company founded by NCC, the Welsh Development Agency (WDA) and the Welsh Assembly Government (WAG). Its role is to promote regeneration in Newport and develop the local economy. Newport Unlimited will manage £50 million of public investment over a 5 year period to realise the objectives of the plan.

### 3.1.4 Citywide Transport Strategy

The Citywide Transport Strategy (CTS) is a regeneration strategy for the centre of Newport and is part of Master plan. It is divided into five themed packages:

1. *Creating a sense of place.* This includes projects that improve the City Centre environment and steers towards a redress of the balance of road hierarchy and priority towards walking, cycling and public transport.
2. *Improving the City's Gateways.* This embraces projects that develop important arrival points such as the rail station, bus station and car parks in the city.
3. *Developing a Hierarchy of Transport Networks.* This comprises projects that try to improve public transport priority and vehicle accessibility to the city centre.
4. *Improving connectivity between development areas.* This identifies projects that will enable development to occur in high priority areas in a sustainable manner.
5. *Regional Improvements.* This includes transport connections in the wider context of the region.

A number of measures and proposals within the CTS are related indirectly or directly to transport issues related to the AQMA and are discussed in greater depth in relation to the options suggested in Section 4.

### 3.1.5 A Community Strategy for Newport

The Community Strategy for Newport (Building Our Future Together 2005 – 2015) deals with regeneration and creating a city that is a “better place to live, work and visit”. One of its component parts is looking at the access needs of Newport and the future that includes proposals such as the M4 Relief Road, the extension of the Southern Distributor Road as well as taking in to account the needs of members of the community who do not have access to a car and promoting alternatives to car-borne travel such as walking, cycling and public transport. The strategy also makes reference to the city centre bus and rail stations and car parking and issues such as congestion and the highway infrastructure that the document considers to be a physical barrier to movement, particularly for walkers and cyclists.

A number of strategic objectives are identified in the “Priorities for Action” section of the chapter “An Accessible City” and a number of other plans are referenced including the City Centre Master Plan, LTP, UDP, CTS, Regional Public Transport Plan (SEWTA) and Economic Development Strategy.

## **3.2 Major infrastructure and development**

### **3.2.1 Southern Distributor Road (SDR)**

The recently opened Newport SDR has reduced traffic volumes within southern parts of Newport City. Traffic forecasts for 2011 indicated that it would similarly reduce traffic on some areas that were at risk of exceeding the air quality objective limits.

### **3.2.2 M4 Relief Road/M4 Project**

The New M4 Project - which has subsumed the former M4 Relief Road scheme - is within Phase 2 of the present Trunk Road Forward Programme. Schemes could be ready to start by April 2010 subject to the completion of statutory procedures and the availability of finance.

The proposed privately financed toll road is planned to run south of Newport. It will connect Castleton, Junction 29 of the M4 near Cardiff, and Magor, Junction 23A just outside Newport, with one intermediate junction at Newport, located east of the River Usk. It is part of the Welsh Assembly Government’s 15 year transport plan.

The road will include at least two large interchanges (east and west), which will create at least two additional major routes into the city. This is likely to take pressure of the existing routes and potentially improve air quality in these areas. It is thought that the main influence on air quality would be the potential congestion relief that the new road would provide for the current links in southern Newport and the existing M4 around Newport and the tunnels. With the exception of Caerleon High Street, it is likely to have a significant effect on all remaining AQMA’s.

However, there is still much uncertainty regarding the development and the expected conditions on the existing stretch of the M4 as the new road is likely to be tolled.

The planned programming for the Project from 2007 is the publication of Draft Orders in 2008 and a possible Public Local Inquiry in 2009. The current plan is for the new relief road to be finished around 2014. Funding issues have yet to be resolved.

The actual magnitude of any potential air quality enhancement is likely to be included as an output from a future air quality model.

### **3.2.3 Development in East Newport – The Eastern Expansion Area**

The development potential of East Newport is discussed in the CTS and is regarded as a key element of the Growth Strategy. The key aim of the strategy is to develop economic growth to counter the decline and closure of the steelworks site in the area. In transport terms, it is considered that improved accessibility and links including the expansion of the Southern



Distributor Road will have a positive impact on traffic flow in Newport, including the city centre, and improve congestion.

There are two large residential / commercial developments planned for the eastern side of the city as described in Newport's UDP. The eastern expansion area will include the redevelopment of the former steel works at Llanwern and also a green field development nearby, near Llanwern Village.

Both areas will form part of the Transport Development Area Concept and will therefore be planned around more sustainable transport infrastructures. This will include a new railway station at Llanwern as well as a direct link with the M4 junction at Magor to the east. This creation of additional transport infrastructure is likely to provide additional routes into the city and take pressure of existing routes particularly from the existing M4 links. This is likely to impact on all M4 AQMAs as well as the AQMA sites at Malpas Road and Caerleon Road.

### 3.2.4 City Centre Bus Box

The proposed city centre 'Bus Box' seeks to improve the movement and efficiency of bus services around the central area of Newport and address the wider issue of road hierarchy by creating a single direction priority 'loop' through the city centre retail core. It is part of a package of public transport improvements planned for the city centre. The key aim is to provide better public transport access to the central area for local and regional bus services. Furthermore, it will connect the upgraded existing 'local' bus station and the proposed new 'regional' bus station located adjacent to Queensway and the railway station.

### 3.2.5 Newport City Centre Redevelopment

Newport city centre is currently undergoing a phased redevelopment focusing on the Central Business District; this includes provision of additional parking and a more integrated transport system. This will include a new bus terminal linked to the train station. Expansion of walking and cycling routes are also underway. An application for additional funding (SEWTA) has been made for improving the links between Caerleon and the city centre during 2007.

In accordance with Welsh Assembly Government requirements planning applications for larger developments are expected to incorporate a Transport Assessment and Travel Plan. It is therefore expected that future developments will encourage more sustainable travel options. This is likely to include improved pedestrian and cycle connectivity, and links to public transport, and help reduce the dependence on private cars.

Civil parking enforcement is under consideration by Newport City Council which, if taken up, is expected to result in more proactive enforcement and increased officer numbers. This will enable better enforcement of bus lanes, bus stops and double parking in high street areas, all of which have a negative effect on traffic flow and therefore air quality.

## 4 MEASURES TO DELIVER AIR QUALITY IMPROVEMENTS

### 4.1 Identification of options

A range of options may be available to Newport City Council and its partners for working towards improved air quality in the seven AQMA and across the wider area. Measures have been identified by reviewing existing plans and policies (see Chapter 3), looking at the results of the source apportionment exercises to identify appropriate options and contacting key officers in relevant Council Departments, Welsh Assembly Government and Newport Transport. Meetings and site visits have taken place to discuss particular AQMA.

We have also taken into account the types of measures which have been considered in other urban areas, in similar situations and consulted NSCA guidance documents.

### 4.2 Options considered for improving air quality

#### 4.2.1 Introduction

A range of options have been identified, which have been organised under five themes:

1. Managing the network;
2. Improving vehicle emissions;
3. Promotion and provision of alternatives;
4. Information and awareness; and
5. Land-use and non-transport measures.

These themes are expanded on in the sub-sections below, with proposed measures and a summary of actions.

#### 4.2.2 Managing the network

Changes to the road network can have a significant impact on vehicle emissions. This might be by changing the route of a road, changing junction layouts, installing/removing parking opportunities or giving priority to one mode of transport over another.

##### *Bus priority and interchange*

Demand for road space and congestion along major routes, particularly during rush hour periods, is a major issue in Newport. This affects all vehicles including buses, which can become delayed and unreliable. When operating properly buses are an efficient way of using road-space and meeting the transport needs of many urban areas, such as Newport. However, buses, like most vehicles, emit much higher levels of pollution in slow moving traffic. Bus priority, in the form of bus lanes, is one way of enabling buses to move more efficiently across the network. They are one of the most effective ways of improving bus journey times and reliability, which can make public transport more attractive and therefore provide a more realistic alternative to more people's private car use.

Both Malpas Road and Caerleon Road are ‘Primary Bus Routes’ into the City Centre. Bus lanes are already in place along Malpas Road, south of M4, however there is no room for a bus lane along Caerleon Road.

NCC introduced real-time monitoring of buses in 2007. Newport City Transport (NCT) buses have monitoring equipment installed on them that collects details of the location, schedule, and number of passengers onboard each bus. The monitoring will be linked to an intelligent bus priority system along Caerleon Road, which will control traffic light priority for the buses. Real-time information will also be displayed in bus shelters. Depending on the success of this initial project, the intelligent bus priority system could also be linked to traffic lights near Malpas AQMA in the future.

Prioritisation of buses in the city centre with the planned ‘Bus Box’ seeks to improve the movement and efficiency of bus services. It will change the road hierarchy in the central area of Newport by creating a single direction priority ‘loop’ through the city centre retail core. One section of this loop will be converted into a pedestrian boulevard.

Complementary measures planned as part of a wider bus strategy include an upgrade of the existing ‘local’ bus station and the construction of a new ‘regional’ bus station located adjacent to Queensway and the railway station.

Within the Citywide Transport Strategy it is predicted that the expected impacts of implementation of these schemes will be to improve local bus connections across Newport. Furthermore it predicts that the new proposals will improve bus-rail interchange in the city centre and make bus travel more attractive to car drivers.

#### **Actions**

- 1) Introduce real-time monitoring of buses
- 2) Introduce intelligent bus priority system linked to real-time monitoring of buses along Caerleon Road
- 3) Introduce the city centre Bus Box
- 4) Improve interchange with local bus, regional bus and rail stations

#### *Parking Management*

A parking strategy is being developed as part of the Citywide Master Plan and CTS. The current documents consider a range of parking issues for the city and sets out a number of policy areas that the parking strategy should look to address:

- Revised parking guidelines;
- Decriminalised parking enforcement;
- Introduction of a central area Controlled Parking Zone (CPZ);
- Revised charging regime; and
- Consolidation of off-street car parks.

The accompanying review of parking provision and closer management of parking policy provides an opportunity to create more appropriate levels of parking where required, tackle illegal parking and consider the particular needs of areas suffering air quality problems.

The lower part of Caerleon Road suffers from some illegal parking on single yellow lines and near junctions west of Caerleon Road between York Road and Orchard Street. Parking

provision is necessary along this part Caerleon Road, which functions as a small district centre with commercial and shopping premises. Parking is unrestricted along the northbound carriageway of Caerleon Road, which means it can be used as long-stay parking should drivers wish. This may not be the best use of the available spaces to serve business interests on the road, which may be better served by short-stay parking. There is a risk that poor parking could obstruct buses attempting to pull away from the bus stop, heading north. The road is quite narrow, and does not allow two-way flows of traffic when a bus has pulled into the bus stop. This means traffic queues behind, waiting to accelerate again when clear.

The Malpas Road is a very heavily trafficked route, with high levels of bus, car and HGV use. There are instances of illegal parking on the double yellow lines on the northbound carriageway north of Malpas Road Presbyterian Church, which may affect traffic flow at peak times. There is an area of parking bays north of the AQMA adjacent to the southbound carriageway without parking restrictions. There are waiting time restrictions on the parking bays at the southern end of Malpas Road, which appear to function efficiently.

Decriminalised parking enforcement means parking offences become enforceable by the local authority rather than the police. This can lead to much more active enforcement of parking regulations to reduce illegal parking and the problems this causes. Decriminalising parking restrictions along Caerleon Road are due to be considered within the next 3-4 years, after completion of the City Centre Regeneration. Currently only two traffic wardens patrol the city centre; therefore NCC may take over enforcement of waiting restrictions and CPZs.

An investigation of parking issues on the lower part of Caerleon Road should focus on the best location of the bus stop and if a longer or repositioned parking bay would help buses pull close to the kerb-side (maximising overtaking space).

Refurbishment of several parking areas, including Park Square car park, Kingsway multi-storey, and Cambrian multi-storey off Clarence Place, will be undertaken as part of the City Centre Regeneration. This will lead to changes in car parking provision, including the provision of 500+ new parking spaces and improvements to existing facilities.

<b>Action</b>
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- 5) Review decriminalised parking enforcement, to reduce illegal parking problems in Newport
- 6) Investigate parking problems and bus bay on Caerleon Road
- 7) Manage parking demand and provision as part of Route Hierarchy and associated bus improvements on Malpas Road
- 8) Manage central area parking to support economic growth with demand management for long-stay commuter parking
- 9) Investigate the possibility of delivery time restrictions and/ or dedicated unloading bays on Caerleon Road to minimise double parking. Only possible once parking offences are decriminalised (civil parking enforcement).

### *Traffic Signal Coordination (SCOOT)*

SCOOT (Split Cycle Offset Optimisation Technique) is a tool for controlling traffic signals in urban areas and managing traffic flows. The system responds automatically to changes in traffic flow through junctions via detectors embedded in the road surface. It can be used to

improve traffic flows, as it reacts to unusually high (or low) amounts of traffic on one arm of the junction, and co-ordinates with other junction up or down stream.

SCOOT is currently used along Corporation Road and in the Queensway City Centre Area. SCOOT could be used on the junctions along Malpas Road (Junction of Durham Road and Duckpool Road) and Caerleon Road to smooth traffic flows, and provide priority to buses. The Malpas Road AQMA is located in an area where the only traffic lights nearby are on a pedestrian crossing; therefore there are no lights nearby that could be added to the SCOOT System. However, the nearby Harlequin roundabout is scheduled for improvements during 2007-2008. This will include the installation of additional traffic lights and all lights being connected to the same sequence. This is expected to improve traffic flow on roads leading to the roundabout (including Malpas Road) and to reduce the amount of queuing traffic.

<b>Action</b>
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| 10) Introduce SCOOT on corridors with AQMA |
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#### *Route hierarchy and management*

The CTS proposes, as part of its Travel Demand Measures, the need to reduce vehicle speeds on major routes or roads in to the city. The routes identified include the Malpas Road which is a major bus route and distributor road into the city centre from the M4 and towns such as Malpas and Cwmbran, north of the M4.

A key policy measure is to identify the strategic status and purposes of different roads and their importance to particular modes and create a clear hierarchy. This is part of a wider policy to reduce the dominance of cars within the city centre whilst maintaining accessibility. It is recommended that the work on the Malpas road focus on opportunities to promote public transport and other modes, such as walking and cycling. The Malpas Road and Caerleon Road are both fairly short stretches of road and so are not appropriate for general application of speed controls.

<b>Action</b>
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|--|
| 11) Promote clear mode hierarchy for Malpas Road, and other major routes |
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#### *Enforcement of HGV weight restrictions*

Caerleon Village has a number of industrial sites in the local area that generate heavy goods vehicle (HGV) traffic. There is also a weight restriction in place on through-traffic to try and reduce other (non-local) traffic using village roads. Much of the HGV traffic in the village is legitimate traffic to the industrial and commercial sites off Ponthir Road, but a proportion may still be through-traffic ignoring the weight restriction. The Caerleon Strategic Planning Study (Summary of Traffic Data) completed last year concluded that HGVs do not cause significant traffic congestion in Caerleon. However, HGVs tend to be perceived by local residents as a traffic problem, probably because large vehicles using narrow streets have a short and memorable impact.

The options for dealing with through-traffic by Newport City Council may well be limited, but could encompass:

- upgraded signing in advance of Carleon Village (at alternative route-turnings), and at entrance to village itself;
- production of a ‘freight atlas’ for Newport, showing recommended/sensitive routes and publicising this information widely across the region;
- payment for Police time to actively enforce the weight ban;
- implementation of an enforcement system based on future Traffic Management Act powers, which may require all legitimate HGV’s to apply for permits and Council Enforcement operators to operate a camera detection system.

To reduce the impact of legitimate traffic travelling to the local sites, options include:

- persuade HGV operators travelling to the sites off Ponthir Road to make a long detour up to Llantarnam and then back down through Ponthir, or
- introduce an order to force HGVs to use Heidenheim Drive and then Ponthir.

The cost of these measures will need to be balanced against the scale of the problem, likelihood of success, cost of action and acceptability of the measure (to local residents and businesses). For example, additional signing may be considered by some living in the area to bring with it visual intrusion, and have a low impact on those drivers wishing to use the Village as a through route. It will be important to consult local businesses (trading estate, local construction etc) and gain their support for the specific aims of the ban and suggestions for improving the levels of compliance, should this be found to be a problem.

<b>Action</b>
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|---|
| 12) Investigate what options exist for enforcing the weight restriction in Caerleon Village if required<br>13) Assess the feasibility and likely success of introducing a traffic order to divert HGVs from entering Caerleon |
|---|

### *Bypass for Caerleon Village*

One theoretical option to reduce road traffic in Caerleon Village is to provide a bypass. This would remove through-traffic that does not need to serve the village. Depending on its location a bypass might provide a route for some local traffic to avoid the High Street, but not all. A bypass would however involve considerable land-take, cost and wider environmental impacts. There is also a possibility that improved road links would attract more traffic to the area with negative impacts in locations prior to the bypass link.

<b>Action</b>
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| 14) Consider bypass for Caerleon Village |
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### *Speed reduction on M4 Motorway*

The Network Management Division of the Welsh Assembly Government (WAG) has proposed to implement a variable reduced speed limit on the M4 between Junctions 24 and 28, through the Newport area. There is strong interest in implementation at the soonest opportunity, i.e. in the short term.

A study on the best way to implement the speed reduction is underway, focussing on traffic flow and safety issues.

A study carried out by the Highways Agency acknowledges the link between vehicle speeds and air quality, showing that vehicles produce higher levels of emissions at very low and very high speeds<sup>1</sup>. The main objective of the scheme will be to smooth the flow of traffic to reduce times of congestion and queuing currently experienced at peak times. Smoothing the traffic flow should produce a reduction in vehicle emissions, as it will reduce the incidence of braking and re-acceleration. Therefore, it is thought that a reduction in emissions could result from slower speeds on the M4.

This action could benefit the four AQMA that are adjacent to the M4 motorway.

<b>Action</b>
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- |  |
|--|
| 15) Support WAG in the introduction of a variable speed limit between junctions 24-28 of the M4. |
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#### *New M4 relief road*

The proposed privately financed toll road would take a route south of Newport. It would connect Castleton, Junction 29 of the M4 near Cardiff, and Magor, Junction 23A just outside Newport, with one intermediate junction at Newport, located east of the River Usk. It is part of the Welsh Assembly Government's 15-year transport plan, and is likely to be built by 2014.

It is likely that the main environmental gain would arise from the congestion relief that the new road could provide to the southern area of Newport and to the existing M4 as it passes through Newport, and particularly at Brynglass Tunnels/Malpas interchange. This would be to the benefit of the four AQMA that are located next to the current M4 motorway, and the Malpas Road AQMA, provided demand management was then applied to the existing M4 (to reduce travel levels).

It is a controversial project, with the risk that the problem is moved to a new area, creating new AQMAs. The assessment of environmental impacts should ensure that any such problems are clearly identified, and these should be taken into account in the detailed scheme planning.

<b>Action</b>
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- |   |
|---|
| 16) Support building of the new M4 (relief road), with suitable consideration of environmental impacts and demand management on existing M4 |
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#### 4.2.3 Improving vehicle emissions

Options to reduce emissions from individual vehicles; vehicle owners can contribute to improved air quality across the city and within the individual AQMA.

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<sup>1</sup> <http://www.highways.gov.uk/knowledge/1804.aspx>

### *Newport City Council Fleet*

Newport CC currently leases, owns and operates some 500+ vehicles of various types and sizes (cars, vans, tipper trucks, road-sweepers, community bus, agricultural). The largest number of the vehicles is diesel fuelled, from the older pre Euro I to Euro III, which produce various levels of NOx and PM as by-products, the likes of which contribute to air pollution.

NCC has within the fleet some 41 vehicles fuelled by Liquid Petroleum Gas (LPG) at present, in an attempt to move some of the previously diesel vehicles to cleaner fuels. The experience to date has been mixed in terms of fuel efficiency, reliability and support from vehicle manufacturers and suppliers. Further moves to LPG have been placed on hold as current experience is reviewed and alternative fuels are assessed along with the fact that vehicle manufacturers are deferring from providing the option of LPG.

The Council has been investing in new diesel engines at Euro III level where it can, along with low sulphur diesel fuel, while preparing for the next stage of diesel engines at Euro IV level which are several step-changes cleaner than the older design engine models as mentioned above. There is an ongoing interest in hybrids, which do offer a number of benefits. Most are car derived and function on an electrical/petrol combination, but are not available in commercial chassis and body styles at the moment, which could limit take-up by the Council.

Engine stop/start function will probably be the lead option in the commercial field initially. NCC will continue to monitor the options for moving to cleaner fuels, such as bio-ethanol. The Council will implement fuel additive systems for some new RCVs (Refuse Collection Vehicles) and street cleaning vehicles (improving fuel efficiency and hence emissions).

A computerised fleet management system will be installed during 2006 which will enable better monitoring of vehicle and driver performance, including fuel efficiency. Driver training will be investigated in 2006 for opportunities to improve fuel efficiency and safety through more appropriate driving styles, initially for community / social transport services and schools.

Additionally, the Council could expand the alternate week refuse collection. This will reduce the number of bin vehicles on the roads and cut the congestion caused by traffic behind the refuse collection trucks.

<b>Actions</b>
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- 17) Improvements to emission performance of Council fleet
  - a. Continue to operate existing LPG vehicles in council fleet
  - b. Continue to replace older vehicles with newest equivalents
  - c. Implement a computerised fleet monitoring system, to better manage fuel efficiency and fleet control
  - d. Monitor options for hybrid and bio-fuels for Council fleet
  - e. Implement a fuel additive system, and evaluate applicability to other parts of the fleet
- 18) Implement driving training for PCV fleet, and evaluate applicability to other parts of the fleet
- 19) Expand the alternate week refuse collection



### *Bus fleet*

Buses play an essential role in providing public transport alternatives to the car, and an efficient use of road space and fuel when operating efficiently. However, buses do produce their share of pollutants and it is important the Plan considers and assesses what can be done to improve emission performance by vehicle types.

The majority of buses in the area are operated by Newport Transport, including local and cross district services. Retrofitting buses with particulate traps has already taken place and some 17 vehicles have been fitted with this soot-reducing technology. All NCT buses on the network are less than 7 years old and all double-decker buses have been taken out of the fleet. This has involved a lot of investment by the bus company. Most of the buses are diesel and it would not be appropriate to replace the buses with cleaner alternatives at this time as alternative fuels to diesel are not considered to be economical at present.

Therefore the main options are for the bus companies in Newport to continue the current practice of cleaning up the fleet by renewal and retrofitting as necessary, and to investigate other options to improve efficiency and reduce emissions.

Many of the school buses are older than average and are likely to have high pollutant emission levels. The source apportionment exercise has shown that bus emissions make a significant contribution to pollutant concentration along Caerleon High Street. When the school renews their bus contracts it may be possible to stipulate that only vehicles of a certain age (possibly under 3 years of age) can be used, for school transport, on this route. This clause could be included during contract renewal with the bus companies. However, long contract periods may be required to make such investments feasible, and the costs to operate the service may rise.

Another possibility to address emissions from buses along Caerleon High Street would be to implement a 'Bus Quality Partnership'. For this to work efficiently it would probably require a new on-street infrastructure, electronic information, bus priority, etc to be provided by the Council in exchange for emissions improvements.

<b>Actions</b>
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- 20) NCC to encourage bus companies to operate vehicles in cleanest ways possible and to continue to improve emissions performance of fleet:
  - continue to retrofit particulate traps in remaining suitable vehicles
  - continue to invest in new, cleaner vehicles as part of planned fleet renewal
  - Investigate options for fuel additives to increase fuel efficiency (and reduce emissions)
  - Monitor the options, availability and cost of NOx reduction equipment (e.g. SCR)
- 21) On renewal of the school bus contracts with local bus companies, stipulate that only vehicles of a certain age (possibly under 3 years of age) can be used for school transport on this route.
- 22) Investigate the possibility of implementing a 'Bus Quality Partnership' with operators that serve routes along the Caerleon High Street.

### *Anti- idling regulations*

These are usually applied to places where drivers wait in vehicles e.g. level/bridge crossings, loading bays and taxi ranks. Councils can produce penalties for drivers who do not switch off their engines after remaining stationary for a number of minutes under the Road Traffic (Vehicle Emissions) (Fixed Penalty) Regulations 2002 (Statutory Instrument 2002 No. 1808). These powers might be used to encourage drivers to switch off when stationary at sensitive location in the city centre such as taxi ranks, loading areas and bus stations.

An alternative to further regulation may be to encourage action on a voluntary basis. For example, some cities have installed signs in sensitive locations and negotiated with bus companies or taxi owners to observe the need for emission reductions from their vehicles.

<b>Action</b>
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|--|
| 23) Introduce idling engines regulations and / or promote ‘switch off when stationary’ |
|--|

### *Freight Quality Partnership (FQP)*

There are benefits to be gained from local authorities and industry working together and gaining a better understanding of freight distribution needs and the impact of actions by either organisation. The key aim is to develop a working relationship between local authority and industry to ensure that both the need for efficient movement of goods is met, supporting local and regional economies; and the environmental, safety and noise considerations of local communities are taken into account.

In some areas FQP have been used to address specific issues. Freight is an issue along Caerleon Road (LGV traffic in particular) and on the M4. NCC has no statutory powers to enforce a FQP and successful operation relies on the good-will of companies involved. The businesses on Caerleon Road are small and NCC considers that these organisations are therefore are unlikely to be members of a freight transport association. Similarly much of the freight traffic on the M4 would be hard to target due to uncertain origins and destinations. This could make it difficult to coordinate such a partnership.

SEWTA are looking at developing a FQP the whole of the South Wales area through the Strategic Quality Partnership. Newport City Council are likely to consider working in SEWTA if this partnership is developed.

Other issues raised relating to this measure included problems with noise complaints raised by local residents and delivery vehicles operating during unsocial hours.

<b>Action</b>
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|--|
| 24) Consider establishing a freight quality partnership to provide a forum for discussion with HGV operators |
|--|

#### 4.2.4 Promotion and provision of alternatives

Good alternatives to private car use are essential if Newport is to function efficiently and grow economically, where people can travel round the city quickly, easily and at a reasonable cost. Travelling to work, services and leisure facilities by public transport, walking and

cycling for a slightly greater proportion of the time could have a major impact on congestion, reducing transport emissions and therefore improving air quality.

### *Park & Ride*

Four Park & Ride sites are identified in the CTS as part of a wider ‘Recommended Local Public Transport Strategy’. These are proposed for areas to the north, east, south east and south west of Newport. The principle would be to encourage car users to park at locations on the outskirts of a city and use a bus for the remainder of their journey to the centre.

The concept was tested in Newport during the 2005 ‘In town without my car’ week. The scheme operated between 7am and 7pm during the week Monday 19<sup>th</sup> – Saturday 24<sup>th</sup> September. The locations used were Tredegar House car park – just off junction 28 of the M4 and Granville Street Car Park – in the centre of town. Buses ran with 15 minutes frequency along the Southern Distributor Road, Usk Way and Kingsway.

The anticipated impact of permanent Park & Ride in Newport is a reduction in the number of private cars travelling towards the city centre. This could reduce traffic both at peak commuting hours and at weekends, when shoppers wish to visit the city. Major routes could see improvements in congestion as a result, including Malpas Road and Caerleon Road.

This has been highlighted in the LTP as a long term issue, which primarily depends on land availability. Tredegar, Coldra, and Malpas Park & Rides are to be assessed after the City Centre Regeneration is finished in 3-4 years.

<b>Action</b>
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25) Support Park and Ride, as detailed in the LTP

### *Cycling infrastructure and promotion*

There is the potential for improvement in air quality by increasing the proportion of trips made by alternative modes such as the bicycle and encouraging individuals to use this mode in preference to the car when possible. The bicycle is a ‘zero emission’ mode of transport when compared to motorised vehicles. The benefits above and beyond this on health to the individual are recognised in the CTS which includes recommendations for a cycling strategy.

At a strategic level improvements to cycling facilities and increases in proportion of trips would have a benefit across the city.

Specifically in the AQMA, a cycle path due 2007/2008 will run from Newport city centre (Malpas) to Caerleon Village via a riverside route. The path will be linked to a proposed railway footbridge to allow access from the housing estates in north Caerleon to the schools in the south, and to Malpas in the West. It will also link up the University Campuses (Allt-yr-yn, Caerleon, City Centre). In Caerleon the path will enter Home Farm Estate and use the proposed footbridge to cross the railway line and into the secondary school area.

Although construction of the footbridge may depend on the development of the proposed St Cadoc’s Housing Scheme, which is still on the drawing board, an alternative route is also being considered.

The route will reduce the cycling distance between Newport and Caerleon by approximately 50%, and should reduce the number of parents using vehicles on the school run. This is a positive step to promoting cycling in the area and can help link with longer-distance routes through the National Cycling Network (NCN).

It is important for Newport City Council to promote cycling as part of its Civic Centre travel plan and to be seen to be leading by example. Key stakeholders for this measure include Sustrans and SEWTA.

Action
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- |  |
|--|
| <ul style="list-style-type: none"> <li>26) Improve cycle network across Newport</li> <li>27) Improve cycling links between Caerleon Village and Newport</li> </ul> |
|--|

### *Walking infrastructure and promotion*

Walking, like cycling is a healthy, sustainable and low cost alternative to the car, particularly over shorter distances. The benefits of walking are identified in the CTS and a number of policy initiatives are suggested including to maintain existing footways and public rights of way, a review of walking routes, improve the standard of pedestrian crossings in the city, a review of links to bus stops and Safe Routes to Schools schemes. Encouraging walking over other modes will have positive impacts across the city, and not just within the AQMA. A citywide Cycling and Walking Strategy for Newport is being developed in parallel with the next (regional) Local Transport Plan<sup>2</sup>.

For the AQMA the CTS outlines a number of ‘Local Pedestrian Priority Areas’ across Newport. These include zones adjacent to the AQMA on Malpas Road, Caerleon Road and on the north side of Caerleon Village, which will provide alternatives to those who wish to walk rather than use motorised transport.

As part of the St Cadoc’s Hospital site redevelopment, Newport City Council has stipulated that the developer should ensure access through the site for walking and cycling. This will be aimed primarily at linking a major housing estate with schools on the other side of the village, and providing a Safer Route to School.

Action
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|---|
| <ul style="list-style-type: none"> <li>28) Promote walking with improved pedestrian facilities across Newport</li> <li>29) Implement walking route improvements adjacent to three non-motorway AQMA</li> <li>30) Implement Safe Route to School (walking and cycling) through Caerleon Village</li> </ul> |
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### *Caerleon Village Railway Station*

A new rail station is proposed at the St Cadoc’s Hospital site, and is linked to the St Cadoc’s Housing Scheme.

The new station will provide a commuter link into Newport as well as leisure opportunities (for tourists visiting the village). It will improve links for students travelling to the

<sup>2</sup> Source: Local Transport Plan Implementation Working Group minutes, 28th September 2005.

University Site in Caerleon. A rail alternative should enable some mode shift from car onto public transport for visitors to and commuters from Caerleon Village.

The station redevelopment is dependent on the Health Care Trust disposing of the St Cadoc's site. It is anticipated that if developed the station would have an overall positive impact on reducing the number of car borne trips made between Caerleon and Newport, and would help ease congestion between Newport and Caerleon.

Action
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31) Support building of St Cadoc's Railway station and footbridge
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#### 4.2.5 Information and awareness

##### *Smarter choices and travel plans*

Travel Plans and travel awareness campaigns aim to reduce the negative impacts of car journeys, particularly single occupancy vehicle travel, through initiatives that lessen their impact and encourage modal shift e.g. car sharing, providing pool cars, and encouraging use of alternatives such as public transport, cycling and walking. This can be helped by incentives such as providing cycle parking, showers and changing facilities in the workplace, flexible working arrangements such as teleworking and discounted bus and train tickets. Travel Plans can be extremely cost-effective and have proved very successful in reducing levels of car use. To have widespread impact they do require significant resources and continued promotion if the benefits are to be substantial and sustained. This is recognised in Governments increasing promotion of 'soft-measures' or 'Smarter Choices' as they are increasingly known.

The level of impact these measures will have is closely related to the intensity with which they are applied. With significant amounts of investment and continued application of these campaigns it has been suggested (by DfT-sponsored research) that up to 10% of current journeys (by car) could be switched to more sustainable modes.

The school journey affects public transport patterns, causes localised congestion around schools and contributes to increases in road traffic, particularly in the morning peak period and to some extent in the afternoon peak. Anecdotal evidence suggests that this problem is significant in Caerleon, particularly in the morning peak, with parents dropping off children at school. This is supported by the source apportionment exercise described in Section 2.2.3. It will be important to make continued progress with school travel plans at Caerleon Endowed Infants & Junior School and Caerleon Comprehensive School. A *Safe Routes To School* initiative is to be introduced in Caerleon to promote the safer ways to get to school and is funded by the Transport Grant Scheme (£50,000 received last year). The Caerleon cycle route should be a benefactor. The travel plan should link with the new Safe Routes to School Projects at these locations.

Action
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32) Promote 'smarter choices' in personal, commuter and business travel across Newport
33) High intensity application of 'smarter choices' campaigns across Newport

### *School travel planning (Caerleon Village)*

Travel Plans have already been issued by the schools in Caerleon, and these may be reissued and promoted as part of *Safe Routes To School* in order to re-educate the local people to avoid using their vehicles. The intention should be to make a real impact on travel behaviour and influence change i.e. significant modal shift to walking and cycling.

There are a number of wider benefits that can be included in school travel planning:

- Improvements in road safety skills;
- Increased independence for children;
- General benefits to children's health and fitness;
- Improved attendance and ability to learn;
- Greater knowledge of environmental and citizenship issues, particularly in relation to the local environment;
- Enhanced social inclusion, and
- Increased awareness of the potential for change.

Any increase in school travel planning activity should be implemented in parallel with existing school travel plans and build towards the planned *Safe Routes To School* route in Caerleon Village.

It is possible that many of the parents drop their children off at school and continue to their work place outside Caerleon. It has been suggested that a 'drop off' point at a car park away from the schools would reduce traffic in the centre of the village. The railway station may be a possible location.

<b>Action</b>
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| 34) Review and promote school travel plans<br>35) Support the <i>Safe Routes To School</i> initiative |
|---|

### *Business travel planning*

Take up of travel plans by business is a key part of supporting 'smarter choices' in travel and part of the general travel awareness movement.

Business travel planning involves a number of stakeholders, including employees and employers. NCC can play a part in encouraging business travel plans via planning conditions, and working directly with business through travel planning forums.

NCC is currently developing a staff travel plan for its Civic Centre site, and so can contribute to this measure.

It will be important to identify key businesses in Newport to develop new travel plans, through partnership organisations such as SEWTA and continue to develop existing travel plans with organisations such as Lloyds, the ONS etc.

Benefits to business from actively taking part in staff travel planning can include:

- Improved staff health, wellbeing and retention;

- Good public relations;
- Financial savings on travel costs; and
- Better estate management e.g. less demand for parking spaces

Business travel planning could result in significant modal shift to more sustainable modes if pursued vigorously by organisations in Newport. This will be necessary to fully realise the benefits of improved public transport, walking and cycling infrastructure.

<b>Actions</b>
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|---|
| 36) Active workplace travel planning<br>37) Implement NCC travel plan |
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*Annual awareness raising events (e.g. In Town without my Car)*

Annual awareness raising events can promote and heighten the link between transport and air quality. An example of this is the ‘In Town without my car’ event which had three parts in Newport, when it took place in September 2005:

- Ad Bikes Campaign;
- Car crushing;
- Park and Ride.

Publicity surrounding such events builds public awareness and engages local people. It is important build on existing events such as In Town Without My Car and to promote other key events in the travel plan calendar e.g. Bike Week, Bike to Work Day.

<b>Action</b>
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|--|
| 38) Continue annual awareness events e.g. ‘In town without my car’ Day |
|--|

*Provision of real time information at bus stops*

Real Time Passenger Information (RTPI) enables bus users to know when the next bus is due and if there are any delays in services. It is in effect live timetable information. It is often used as part of a package of measures to enhance bus services, in an effort to encourage modal shift to buses by commuters and leisure passengers.

In Newport, proposals in the CTS include RTPI as part of a package of enhanced bus stop facilities along proposed Bus Priority Corridors into the city. The Malpas and Caerleon Road are specifically identified amongst these corridors.

The expected benefits and impacts of implementation are to improve information provision to bus users and thus build public confidence in using bus services, for both users and current non users. Implementation and successful operation will require cooperation between NCC and participating bus operators.

<b>Action</b>
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|--|
| 39) Implement real time passenger information at bus stops along Bus Priority Corridors. |
|--|

#### 4.2.6 Land use and non-transport measures

##### *Air Quality in land-use planning*

The Planning Department considers all new applications against criteria aimed at supporting sustainable development in Newport. Consideration is given to suitable transport links, regeneration and environmental impacts. Air quality is one consideration and planning applicants can be directed to undertake an air quality assessment in areas where there is a risk of worsening air quality. The City Council will continue to exercise these powers to ensure that air quality is taken into account during the planning process. This is a long-term measure, but one that can have a significant impact if air quality considerations are fully integrated.

<b>Action</b>
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| <p>40) Continue to stipulate air quality assessments for planning applications in sensitive areas, and take air quality into account when making planning decisions</p> |
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##### *Mixed use developments*

NCC considers mixed-use development to be an important part of reducing the need for travel and encouraging residential development in new areas of the city, previously used mostly by business. The aim is to develop mixed communities that are closer to existing transport links and make more efficient use of space.

<b>Action</b>
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|--|
| <p>41) Continue to promote mixed-use development</p> |
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##### *Visitor centre and parking provision (Caerleon Village)*

Parking for visitors can be a problem in Caerleon, particularly at weekends and other peak periods, such as Bank Holidays, when the village experiences large numbers of visitors.

The objective of this measure would be to identify a suitable visitor car park on the outskirts of the village that will encourage visitors to park and walk the last part of the journey. It is anticipated that this could ease traffic flow and avoid creating localised congestion. Public consultation will be key in identifying a suitable location for the parking.

<b>Actions</b>
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|---|
| <p>42) Investigate and develop a suitable visitor car park for Caerleon Village</p> |
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The options identified above are taken through an initial appraisal process, set out in the next section.



## 5 OPTION ASSESSMENT AND PRIORITISATION OF MEASURES

### 5.1 Methodology

It is necessary to evaluate the options generated by the preceding phase in order to understand their value for taking forward actions as part of a final Action Plan and via the LTP. Taking account of available Defra guidance an assessment has been carried out against four criteria:

- Potential air quality impacts (reduction in emissions or concentrations);
- Cost of measure;
- Feasibility or practicability of option; and
- Wider, non-air quality impacts.

It is necessary to allocate timescales to the likely implementation of options. In some cases the option might require a number of phases, and begin with study or design work. A clear timescale for each option is an important part of the developing Action Plan, as this will determine the alignment with the LTP process (and beyond). These timescales may need adjusting, for example as individual measures are investigated further, or as funding issues are resolved.

The assessment method for air quality and costs follows a semi-quantified approach. Evaluation of impacts has been based on professional judgement, drawing on research to date and examples from other project or Plans.

The method used is to rate each measure against the three of the criteria on a low-medium-high rating scale. These ratings are linked to defined cost ranges, suggested level of feasibility and an indication of air quality impact. Costs are judged against two categories to clarify whether these are ‘cost to the Council’ or ‘cost to others’.

It has proved difficult to assign values to the amount of air quality improvement for each of the 42 measures in the absence of detailed modelling and the potential for other factors to influence final air quality concentrations. Given the level of uncertainty over final outcomes, the ratings provide an indication as to those measures that should be prioritised. Every measure identified in the Plan and put forward has been done so with the intention of reducing overall traffic emission and therefore contributing to improved air quality. The air quality impact of those measures that are prioritised is discussed in greater detail in Section 6.

A range of wider non-air quality impacts are noted for each measure. These identify other consequences that might arise from taking forward an action, and can be negative or positive. It is possible to consider social, wider environmental and economic impacts.

From the LAQM.PG(03) it is clear that a full cost-benefit analysis (CBA) process is not required for an Action Plan. Rather, the Plan should have regard to both costs and benefits of any measures being considered, and a cost-effectiveness rating should be applied to illustrate how a range of air quality impacts may arise from differently costed options. A cost-effectiveness rating for each measure has therefore been assigned. This is calculated from the multiplication of semi-quantitative ratings assigned to each option from: air quality impact; cost; feasibility/practicability. An overall cost-effectiveness score enables one more method of comparing options.

The output of this methodology has been summarised and documented via assessment tables, which provide an overview of the relative standing of each option. Finally, based on the cost-effectiveness scoring, the groups of measures are ranked, so the most promising options are clearly identified. The outputs provide a recommendation on the options that should be prioritised in the Local Transport Plan from a perspective of improving air quality.

High-impact option identified during the assessment phase are indicated through their cost-effectiveness score and ranking. It is likely, given the current status of air quality, that no one single action will be sufficient to meet air quality objectives. It is likely that a series of actions will be required. The options that could be implemented to improve air quality are set out in the subsequent chapter on taking the Plan forward.

A spreadsheet tool is available within NCC containing the workings of this approach. In the future, new or revised actions can be added, rated and assessed in the same manner for comparison in order to add further breadth to the Plan and keep it relevant to the developing LTP process.

## 5.2 Option assessment tables

KEY	Rating	Value
Air Quality Impact	Low Medium High	1 2 3
Cost (to Council)	Low <£100K Medium £100-500K High £500K - £1.5million Very High > £1.5 million	5 4 3 2
Feasibility	Low Medium High	1 1.5 2

A) Managing the Network										
Measure	Impact		Cost		Acceptability		Cost effectiveness	Implementation		
	Transport	A) Air Quality	B) Cost to Council	Cost to others	C) Feasibility	Wider impacts	D)=AxBxC	Timescale	Lead	Priority
1) Real time monitoring of buses	Improved information for bus priority and passengers	Low	Medium	Low	High	+facilitate actions 2 and 37	8	Medium	NCC/SEWTA	7
2) Bus priority on AQMA corridors	Speed bus journeys, reduced bus emissions	Medium	Medium	Low	High	+Social Inclusion ++Economic benefits	16	Medium	NCC/SEWTA	2
3) Introduce Bus Box	Speed bus journeys, reduce other traffic flow	Low	Medium	Low	Medium	+Safety +Economic +Public realm	6	Medium	NCC/SEWTA	9

4) Improve interchange	Improve attractiveness of Bus use	Low	Medium	Low	High	+ Accessibility	8	Short	NCC/SEWTA	7
5) to 8) Parking management across city and in AQMA	Reduce blockages and pinch-points	Medium	Medium	Low	Medium	-Access by residents +Access to shops	12	Medium	NCC	4
9) Investigate delivery time restrictions and/ or dedicated unloading bays on Caerleon Road	Reduce blockages	Low	Low	Low	Medium	None – investigation at this point	7.5	Medium	NCC	8
10) SCOOT on AQMA corridors	Smooth traffic flow, reduce queues	Low	Low	Low	Low	+Less congestion for general traffic	5	Short	NCC	10
11) Route hierarchy improvements for Malpas Road	Reduced car traffic, increased bus, walking, cycling	Medium	Medium	Low	Medium	+Health benefits +Economic benefits	12	Medium	NCC	4
12) HGV controls in Caerleon Village	Possibly fewer HGV	Low	Low	Low	Medium	None – investigation at this point	7.5	Short	NCC	8
13) HGV traffic order in Caerleon Village	Relocating HGVs	Low	Low	Low	Medium	None – investigation at this point	7.5	TBC	NCC	8
14) Bypass at Caerleon	Remove some through traffic	High	Very High	Low	Low	+Time saving -Land loss	6	Long	SEWTA/NCC	9
15) Variable speed controls on existing M4	Smoother Flow, lower speeds	Medium	Low	Medium	High	+Time saving in peak periods +Safety benefits	20	Short	WAG	1
16) New M4	Relocate traffic, reduce congestion on some existing routes	Medium	Low	High	Medium	+Time saving -Land loss -Pollution in new areas	15	Long	WAG/Private Consortium	3

<b>B) Improving vehicle emissions</b>										
	Impact		Cost		Acceptability		<b>Cost effectiveness</b>	Implementation		
	Transport	<b>A) Air Quality</b>	<b>B) Cost to Council</b>	Cost to others	<b>C) Feasibility</b>	Wider impacts	D)=AxBxC	Timescale	Lead	Priority
17) Improve emission performance of NCC fleet	Reduced vehicle emissions	Low	Low additional cost	None	High	+CO2 saving +Cost savings	10	Short- Medium	NCC	5
18) NCC Driver training	Reduced vehicle emissions, fuel saving	Low	Low	None	High	+Safety +Cost saving	10	Short	NCC	5
19) Expand alternate week refuse collection	Reduced vehicle use, reduced congestion at collection times	Low	Low	None	High	+Cost saving +Encourage recycling	10	Short	NCC	5
20) Encourage bus fleet renewal	Reduced bus emissions	Medium (if taken up)	Low (if negotiation only)	Medium	Medium	+Accessibility +Acceptability of Public Transport	15	Medium	NCC, Bus Operators	3
21) School bus contracts	Reduced bus emissions	Medium	Low	Medium	Medium		15	Medium	NCC, Bus Operators	3
22) Consider BQP on Caerleon High Street	Reduced bus emissions	Low (Medium if implemented)	Low (Medium if implemented)	Low (Medium if implemented)	Medium	None – investigation at this point	7.5	Medium	NCC, Bus Operators	8
23) Anti-idling regulation/awareness	Reduce local vehicle emissions	Low	Low	Low	Low (if enforced through fines)	+Fuel saving	5	Medium	NCC	10
24) Freight Quality Partnership	Cleaner vehicles, considerate deliveries	Low	Low	Medium	Low	+Economic benefits +Noise	5	Medium	NCC	10

<b>C) Promotion and provision of alternatives</b>										
Option	Impact		Cost		Acceptability		Cost effectiveness	Implementation		
	Transport	<b>A) Air Quality</b>	<b>B) Cost to Council</b>	Cost to others	<b>C) Feasibility</b>	Wider impacts	D)=AxBxC	Timescale	Lead	Priority
25) Park & Ride (4 Sites)	Increase use of Public Transport	Medium	High	Low	Medium	-Land-loss +Economic benefits	9	Long	NCC/SEWTA	6
26) to 27) Cycling infrastructure and promotion	Reduced use of motorised vehicles.	Low	Medium	Low	High	+Health benefits	8	Short-Medium	NCC	7
28) to 30) Walking infrastructure & promotion	Mode shift to walking	Low	Medium	Low	High	+Health benefits +Accessibility improvements	8	Short-Medium	NCC	7
31) Caerleon rail station	Mode shift to rail	Low	Low	Medium	Medium	+Economic benefits +Accessibility improvements	10	Medium	NCC/Developer	8

<b>D) Information and awareness</b>										
Option	Impact		Cost		Acceptability		Cost effectiveness	Implementation		
	Transport	A) Air Quality	B) Cost to Council	Cost to others	C) Feasibility	Wider impacts	D)=AxBxC	Timescale	Lead	Priority
32) Promote 'smarter choices'	Increased use of sustainable modes	Low	Low	Low	High	+Health	10	Ongoing-Short	NCC	5
33) High intensity 'smarter choices'	Large increase in sustainable transport	Medium	Medium	Medium	Medium	++Health +Noise ++Urban environment	12	Medium	NCC could provide a lead. All business and public organisations involved.	4
34) Caerleon Village School Travel Plan	Reduced car travel to school	Medium	Low	Low	High	++Health +Noise	20	Medium	Caerleon Village schools. Parents.	1
35) Caerleon Village Safe Routes to School	Reduced car travel to school	Medium	Low	Low	High	++Health +Noise	20	Medium	NCC, Caerleon Village schools.	1
36) Active work-place travel planning	Increase in sustainable travel	Low	Medium	Medium	High	+Health +Cost saving	8	Ongoing-Short	NCC, but needs co-operation from Business	7
37) Implement NCC travel plan	Increase walking, PT and cycling	Low	Low	Low	High	+Health +Cost saving	10	Short	NCC	5
38) Annual awareness events	Promote longer term changes	Low	Low	Low	Low	+Cooperation between organisations	5	Ongoing-Short	NCC with partners and interest groups	10
39) Real-time bus information	Improves perceived time-keeping of buses	Low	Medium	Low	High	+Image of PT +Convenience	8	Medium	NCC in partnership with Bus Operators.	7

<b>E) Land use and non-transport measures</b>										
Option	Impact	Cost			Acceptability	Wider impacts	Cost effectiveness	Implementation		
	Transport	A) Air Quality	B) Cost to Council	Cost to others	C) Feasibility		D)=AxBxC	Timescale	Lead	Priority
40) Planning decisions	Can help ensure adequate transport links	Low	Low	Low	High	+	10	Ongoing	NCC	5
41) Mixed use developments	Reduce distance travelled & improve PT access	Low	Low	Low	High	+Economic benefits	10	Ongoing	NCC	5
42) Caerleon Village visitor centre	Reduce visitor traffic through Village	Low	Low	TBC	Medium	+Economic benefits	7.5	Medium	NCC/Caerleon Parish Council	8



## 6 TAKING THE PLAN FORWARD

### 6.1 Summary of options and discussion

Table 6.1 summarises the status of each of the proposed options following the option assessment exercise and consultation process.

#### 6.1.1 Summary Table

**Table 6.1 - Summary of measures targeted at AQMA**

Measure	AQMA	Status description	Current status	Timescale
1) Real time monitoring of buses	Malpas/ Caerleon Road	This has now been implemented on all major routes into city. WAG funding confirmed for 2007/08.	Ongoing	Introduced 2007
2) Bus priority on AQMA corridors	Malpas/ Caerleon Road	Bus priority is in operation on Malpas Road, south of the M4. There is not enough room for a bus lane on Caerleon Road.	Ongoing	Introduced 2007
3) Introduce Bus Box			Ongoing	
4) Improve interchange			Ongoing	
5) to 8) Parking management across city and in AQMA	Malpas/ Caerleon Road		Action (5) Deferred (6-8)	2007-2010
9) Investigate delivery restrictions on Caerleon Road	Caerleon Road	Action 5 will need to be implemented before this is possible.	Action	2007-2010
10) SCOOT on AQMA corridors	Malpas/ Caerleon Road	Already in operation for city centre and several major routes. Not applicable for Malpas Road (no lights), M4 or Caerleon AQMA.	Rejected	
11) Route hierarchy improvements for Malpas Road	Malpas/ Caerleon Road	Considered impractical.	Rejected	
12) HGV controls in Caerleon Village	Caerleon High	Existing controls (7.5t) except for access.	Ongoing	

	Street	Additional restrictions unlikely.		
13) HGV traffic order in Caerleon Village	Caerleon High Street	HGVs do not cause significant traffic congestion in Caerleon and are not a major contributor to emissions on Caerleon High Street	Rejected	
14) Bypass at Caerleon	Caerleon High Street	Unlikely – Cost issues and archaeological impacts on Roman remains (amphitheatre etc) surrounding town	Rejected	
15) Variable speed limit on existing M4	Motorway	A partial scheme for variable speed limit at Malpas should be in place by the fourth quarter of 2007/8 financial year with the completed scheme (Phase 1&2) being in place in the following financial year.	Action	Partial scheme 2007/08, complete scheme 2008/09
16) New M4	Motorway	Still under consideration – Air quality modelling of new route underway (ARUP)	Action	2014
17) Improve emission performance of NCC fleet			Ongoing	
18) NCC Driver training			Ongoing	
19) Expand alternate week refuse collection			Ongoing	
20) Encourage bus fleet renewal	Malpas/ Caerleon Road	Newport Buses renewed their fleet relatively recently and all vehicles are less than 5 years old. Stagecoach are currently introducing cleaner fuel vehicles.	Rejected	
21) School bus contracts	Caerleon High Street	Recommended that contract will specify that only vehicles under a certain age to be used on specified routes	Action	Next contract renewal
22) Investigate implementing a Bus Quality Partnership along Caerleon High Street	Caerleon High Street	This is a new measure and timescales are to be confirmed.	Action	TBC
23) Anti-idling regulation/ awareness			Rejected	
24) Freight Quality Partnership		SEWTA are looking at developing a FQP the whole of the South Wales area through the Strategic Quality Partnership. Newport City	Rejected	

		Council are likely to consider working in SEWTA if this partnership is developed.		
25) Park & Ride (4 Sites)	Malpas/ Caerleon Road	New Stations planned for Caerleon and Llanwern. Expansion of Park and Ride at Newport Station (160 to 250 car parking spaces). Tredegar, Coldra and Malpas Park and Ride to be assessed after completion of City Centre regeneration.	Action	2008/09
26) to 27) Cycling infrastructure and promotion	Malpas/ Caerleon Road Caerleon High Street	Improvement underway WAG funding confirmed for 2007/08	Ongoing (26) Action (27)	2007/08
28) to 30) Walking infrastructure & promotion	Malpas/ Caerleon Road Caerleon High Street	Improvement underway WAG funding confirmed for 2007/08	Action	2007/08
31) Caerleon rail station	Caerleon High Street	SEWTA Rail Strategy – Station opening 2013	Action	2013
32) Promote ‘smarter choices’	Malpas/ Caerleon Road Caerleon High Street		Ongoing	
33) High intensity ‘smarter choices’	Malpas/ Caerleon Road Caerleon High Street		Ongoing	
34) Caerleon Village School Travel Plan	Caerleon High Street		Action	2007/08
35) Caerleon Village Safe Routes to School	Caerleon High Street	WAG funding confirmed for 2007/08	Action	2007/08
36) Active work-place travel planning			Ongoing	
37) Implement NCC travel plan		Draft Plan under consideration	Ongoing	
38) Annual awareness events			Ongoing	
39) Real-time bus information	Malpas/	Already operating on main bus corridors. Will	Action	2008

	Caerleon Road	expand onto local routes; WAG funding confirmed for 2007/08.		
40) Planning decisions		Partially implemented following WAG guidance	Ongoing	
41) Mixed use developments		Partially implemented following WAG guidance	Ongoing	
42) Caerleon Village visitor centre	Caerleon High Street		Action	2007/08

### 6.1.2 Discussion

It is important that action is taken across Newport, to reduce the risk of air quality worsening in other areas. Such actions are included above and in the measure descriptions and assessment tables in Chapters 4 and 5. They include such actions as parking management, improved public transport interchange and the city centre bus box.

Some measures are likely to have only a small impact on air quality on their own, whereas concerted action taken on multiple fronts can lead to a cumulative impact of greater significance.

The option of a bypass for Caerleon High Street was included for comparison purposes, but was found to be unacceptable on the basis of other environmental impacts and cost. The alternative actions of walking and cycling routes, parking provision and behavioural change, particularly surrounding travel to school, are more acceptable options.

The options for HGV control in Caerleon Village were proposed for further investigation in the draft version of this Plan; subsequent work to investigate the use of an HGV traffic order in Caerleon Village has led to the Council rejecting the option. Existing controls, to limit vehicles above 7.5t except for access, will remain in place.

NCC has been identified as the lead organisation for many of the actions, as this is the main focus of a Local Authority Action Plan. However, the steps needed to improve air quality are everyone's responsibility. A number of other organisations are identified:

- SEWTA for many of the transport infrastructure measures;
- WAG for the M4 Motorway;
- Bus companies, for fleet renewal and real-time information systems;
- Business and public bodies in Newport who can implement staff travel plans.

It will be important for NCC to lead by example and implement their staff travel plan, apply planning conditions wherever possible to improve air quality and continue their fleet management improvements.

## **6.2 Key actions for implementation**

Following the analysis and comparison of the full range of options, consultation on the Plan has led NCC to propose the following key actions for implementation.

### **Motorway**

Action 15: Support WAG in the introduction of a variable speed limit between junctions 24-28 of the M4 (Timescale: 2007 -2009).

Action 16: Support building of the new M4 (relief road), with suitable consideration of environmental impacts and demand management on existing M4 (Timescale: 2014).

### **Malpas Road/Caerleon Road**

Action 1&39: Introduce real-time monitoring of buses (completed) and real-time bus information (Timescale: 2008).

Action 2: Introduce intelligent bus priority system linked to real-time monitoring of buses along Caerleon Road (Completed: 2006/2007).

- Action 5: Review decriminalised parking enforcement, to reduce illegal parking problems in Newport (Timescale: 2009/2010).
- Action 9: Investigate delivery restrictions on Caerleon Road (Timescale 2007 - 2010)
- Action 25: Support Park and Ride, as detailed in the LTP (Timescale: 2008/2009).

### High Street, Caerleon

- Action 21: On renewal of the school bus contracts with local bus companies, stipulate that only vehicles of a certain age (possibly under 3 years of age) can be used for school transport on this route (Timescale: next contract renewal).
- Action 22: Investigate the possibility of implementing a ‘Bus Quality Partnership’ along the Caerleon High Street bus route. (Timescale: tbc).
- Action 26-30: Improve cycling/walking routes between Newport and Caerleon (Timescale: 2007/2008).
- Action 31: Support building of St. Cadoc’s Railway Station and footbridge (Timescale: 2013).
- Action 34: Review and promote school travel plans (Timescales: 2007/2008).
- Action 35: Implement *Safe Routes to School* (walking and cycling) through Caerleon Village (Timescale: ongoing).

These are the options that the relevant NCC departments consider will provide the best balance of cost, impact and practicability and have been prioritised from the full list of 42 options.

## 6.3 Impacts of key actions

The impacts of the key actions identified above have been considered in greater detail, so as to determine the likely overall impact on air quality in each of the AQMAs.

### 6.3.1 Motorway

#### **Action 15: Support WAG in the introduction of a variable speed limit between junctions 24-28 of the M4 (Timescale: 2007 -2009).**

Analysis of speed controls on the M25<sup>3</sup> indicates that emissions could reduce by 2 to 8%.

#### **Action 16: Support building of the new M4 (relief road), with suitable consideration of environmental impacts and demand management on existing M4 (Timescale: 2014).**

There is no estimate from the Welsh Assembly Government of the likely reduction in traffic on the M4 due to the M4 relief road at present. Because the new M4 is likely to be a toll road we can usefully draw a comparison with the M6 and M6 relief road. The M6 toll road evaluation report<sup>4</sup> shows an overall reduction in traffic after 1 year of 3-11%, with some increase in traffic around the access points due to extra traffic accessing the toll road. The proportion of HGVs shows little change though, so it seems that the relief road has resulted mainly in light vehicle re-routing.

### Impacts

<sup>3</sup> **Speed-control and incident-detection on the M25 Controlled Motorway (Summary of Results. 1995-2002)**, TRL, 2005

<sup>4</sup> **Post Opening Project Evaluation M6 Toll After Study: Traffic and Safety Summary**, Atkins, 2005

The impacts of the actions have been estimated based on the above information; as follows:

- Action 15: reduction in emissions of 5%
- Action 16: reduction in total traffic flow of 7%, with this reduction consisting of cars and LGVs only.

To estimate the reduction in the concentration of NO<sub>2</sub> in 2010 that might be brought about by these measures a screening exercise was carried out using the DMRB tool.

For action 15 it was calculated that a 10% reduction in the number of articulated HGVs on the M4 would bring about a 5% reduction in emissions. This exercise indicates that Action 15 could bring about a reduction in NO<sub>2</sub> concentration of around 0.5-1µg/m<sup>3</sup>.

For Action 16 the traffic data were adjusted to give a total reduction in traffic of 7%, with reduction allocated to cars and vans only. This exercise indicates that Action 16 could bring about a reduction of around 0.5µg/m<sup>3</sup>.

Both actions implemented together could bring a reduction in NO<sub>2</sub> concentrations within the AQMAs of around 1µg/m<sup>3</sup>.

### 6.3.2 Malpas Road/Caerleon Road

#### **Actions 1,2,5,9 and 39:**

Action 1&39: Introduce real-time monitoring of buses (completed) and real-time bus information (Timescale: 2008).

Action 2: Introduce intelligent bus priority system linked to real-time monitoring of buses along Caerleon Road (Completed: 2006/2007).

Action 5: Review decriminalised parking enforcement, to reduce illegal parking problems in Newport (Timescale: 2009/2010).

Action 9: Investigate delivery restrictions on Caerleon Road (Timescale 2007 - 2010)

The measures will have an impact both in terms of the decreased no of cars due to increased bus use from bus priority measures; and the decreased congestion/queuing due to bus priority and parking enforcement.

The SEWTA Transport Grant Bid 2006/2007 indicates that the bus priority measures are expected to lead to an increase in patronage of around 6%. In the absence of demand management measures this may increase the people able to travel on the route rather than lead to a decrease in vehicle numbers. This reinforces the importance of many of the ongoing measures, such as promoting smarter choices, in supporting these key measures.

The TRAMEC emissions calculator<sup>5</sup> has been used to examine the emissions along each road for normal ‘suburban’ traffic and the emissions for the same road with a bus lane in place. This gives an emissions reduction of around 5-9% due to reduced congestion. No bus lanes are due to be installed, however the measures will all work to reduce congestion along Malpas Road and Caerleon Road.

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<sup>5</sup><http://www.dft.gov.uk/pgr/roads/network/research/tmairqualityresearch/trafficmanagementandairquali3926?page=4>

### **Action 25: Support Park and Ride, as detailed in the LTP (Timescale: 2008/2009).**

There could be impacts along the Malpas Road and Caerleon Road due to both the increased no of buses due to P&R and the decreased no of cars due to P&R.

Work carried out in Winchester<sup>6</sup> has estimated that the Winchester Park and Ride facility has the potential to reduce rush hour traffic flows on the Park and and Ride corridors by between 8 and 12%. Similar work carried out for a proposed Park and Ride site in Leicester<sup>7</sup> estimates a reduction in car traffic of up to 2% on the main corridors. This also states that the impact of the rerouted traffic associated with the park and ride is generally confined to the main Park and Ride corridors with little impact identified outside these routes. However, other studies of the impacts of Park & Ride<sup>8</sup> have shown that in the absence of demand management measures any extra capacity generated by a scheme can be filled by other traffic; and this reinforces the importance of many of the ongoing measures, such as promoting smarter choices, in supporting these key measures.

### **Impacts**

The impacts of the actions have been estimated based on the above information; as follows:

- Actions 1,2,5,9 and 39: decreased cars-negligible impact; reduced congestion-reduction in emissions of 5%.
- Action 25: reduction of 10% in rush hour car traffic; equivalent to a reduction in total car traffic of approximately 5%

To estimate the reduction in the concentration of NO<sub>2</sub> in 2010 that might be brought about by these measures a screening exercise was carried out using the DMRB tool. This showed that a 5% reduction in emissions could bring about a reduction in NO<sub>2</sub> concentration within the AQMAs of around 0.1-0.2µg/m<sup>3</sup>; and a reduction in total car traffic of 5% could bring about a reduction of around 0.05-0.1µg/m<sup>3</sup>.

Both actions implemented together could bring a reduction in NO<sub>2</sub> concentrations within the AQMAs of around 0.2µg/m<sup>3</sup>.

### 6.3.3 High Street, Caerleon

#### **Actions 21 and 22**

Action 21: On renewal of the school bus contracts with local bus companies, stipulate that only vehicles of a certain age (possibly under 3 years of age) can be used for school transport on this route (Timescale: next contract renewal).

Action 22: Investigate the possibility of implementing a ‘Bus Quality Partnership’ along the Caerleon High Street bus route.

<sup>6</sup> <http://www3.hants.gov.uk/south-winchester-park-and-ride/reasons.htm>

<sup>7</sup> **LEICESTER PARK AND RIDE ENVIRONMENTAL STATEMENT September 2006**

[http://www.leics.gov.uk/index/community/community\\_services/environment\\_and\\_heritage/community\\_services\\_planning/planning\\_applications/eplanning\\_searchform/eplanning\\_resultpage/eplanning\\_detailpage.htm?appno=2006/0967/01&map=f](http://www.leics.gov.uk/index/community/community_services/environment_and_heritage/community_services_planning/planning_applications/eplanning_searchform/eplanning_resultpage/eplanning_detailpage.htm?appno=2006/0967/01&map=f)

<sup>8</sup> **THE ECONOMIC AND ENVIRONMENTAL ROLES OF PARK AND RIDE**, Dr Graham P Parkhurst, ESRC Transport Studies Unit, Centre for Transport Studies, University College London <http://www.cts.ucl.ac.uk/tsu/gp1.htm>



The source apportionment work showed that bus traffic makes a significant contribution to pollutant concentrations along Caerleon High Street. This is based on the national fleet profile for buses, as included in the DMRB model. It is known that many of the school buses are very old and are therefore likely to have high pollutant emission levels. Replacing an old bus with a newer bus can give a significant reduction in emissions, as shown in the Table below. This shows that replacing the use of a 12 year old (Euro 1) bus with one that is 3 years old (Euro 3) gives a 50% reduction in NO<sub>x</sub> emissions.

**Table 6.2 - Typical pollutant emissions from buses**

Euro Standard	Dates	NO <sub>x</sub> emissions g/veh km*
Pre-Euro	pre 01/10/93	21.2
Euro 1	01/10/93 - 01/10/96	14.8
Euro 2	01/10/96 - 01/10/01	10.6
Euro 3	01/10/01 - 01/10/06	7.4
Euro 4	01/10/06 – 01/10/08	5.2
Euro 4+	01/10/08 onwards	3.0

\* reference speed = 16km/hr, temperature = 9.5°C

To accurately quantify the overall impact on emissions that would result from stipulating the age of school buses on this route would require further investigation of the current bus fleet profile. An estimate of potential emissions reductions has been made in order to quantify the order of magnitude of the benefits in terms of a reduction in concentrations of NO<sub>2</sub>.

#### **Actions 26-31, 34 and 35**

Action 26-30: Improve cycling/walking routes between Newport and Caerleon (Timescale: 2007/2008).

Action 31: Support building of St. Cadoc's Railway Station and footbridge (Timescale: 2013).

Action 34: Review and promote school travel plans (Timescales: 2007/2008).

Action 35: Implement *Safe Routes to School* (walking and cycling) through Caerleon Village (Timescale: ongoing).

Building of St. Cadoc's Railway Station and footbridge will provide new infrastructure to allow an increase in rail travel to and from Caerleon, and a new walking route across Caerleon. There are five schools in Caerleon (Caerleon Comprehensive School; Caerleon Endowed Infants; Caerleon Endowed Juniors; Caerleon Lodge Hill Infants) so school travel plans have the potential to make a significant impact. The Caerleon traffic data summary report<sup>9</sup> indicates that at peak times 71-75% of the non-HGV traffic in Caerleon is not through traffic. This means that this is local traffic, and therefore measures targeting travel by residents of Caerleon have the potential to make a significant impact.

In the sustainable travel towns project in Peterborough 'My Travelchoice' the interim evaluation report<sup>10</sup> showed that a 13% shift away from private car use had been achieved through the project. This project involved an Individualised Travel Marketing campaign.

<sup>9</sup> Caerleon Strategic Planning Study – Summary of Traffic Data, Capita Symonds, December 2005.

<sup>10</sup> <http://www.peterborough.gov.uk/pdf/trans-travchoice-pcc-interimresearchreport2006.pdf>

These proposed actions, implemented together, could give a mode shift away from private car use and towards other modes. The level of mode shift achieved in Caerleon would depend on the level of the campaign undertaken by the Council.

### Impacts

The impacts of the actions have been estimated based on the above information; as follows:

- Actions 21 and 22: reduction in emissions of 5%.
- Actions 26-31, 34 and 35: reduction in local car traffic of 10%, assumed equal to a reduction in total car traffic of 7%.

To estimate the reduction in the concentration of NO<sub>2</sub> in 2010 that might be brought about by these measures a screening exercise was carried out using the DMRB tool.

This exercise indicates that a reduction in emissions of 5% could bring about a reduction in NO<sub>2</sub> concentration of around 0.1-0.2µg/m<sup>3</sup>; and a reduction in car traffic of 7% could give a reduction in NO<sub>2</sub> concentration of around 0.1µg/m<sup>3</sup>

Both actions implemented together could bring a reduction in NO<sub>2</sub> concentrations within the AQMA of around 0.25µg/m<sup>3</sup>.

## 6.4 Impact of the plan

Section 6.3 above discusses the impact in each AQMA of the key measures contained within the plan. There are also a number of ongoing measures and other measures that will be put into place across the wider Newport area. It is estimated that the combined impact of all these ongoing and area wide measures is likely to reduce concentration by around 1-2 µg/m<sup>3</sup>.

Table 6.3 shows an estimate of the concentration of NO<sub>2</sub> in 2010 at each of the AQMAs.

**Table 6.3: Estimated concentration of NO<sub>2</sub> (µg/m<sup>3</sup>)**

AQMA	Provisional monitored (2005)	Monitored (projected to 2010)	With Newport area measures	With Newport area measures and key measures
Glasllwych (M4)	47.7	39.3	37.8	36.8
Shaftesbury (Malpas Rd) (M4)	51.3	42.2	40.7	39.7
St Julian's/ Denbigh Rd (M4)	41.3	34.0	32.5	31.5
High Street, Caerleon	55.3	45.5	44.0	43.8
Buckland Cottage (M4)	54.2	44.6	43.1	42.1
Malpas Road	61.9	50.9	49.4	49.2
Caerleon Road	54.1	44.5	43.0	42.8

The table shows that the measures in the action plan are expected to work toward improving air quality in Newport, and within the AQMAs, but may not lead to the target limit values being met in all AQMAs by 2010.

The measures will still be of benefit, however, in reducing concentrations locally. It should be noted that some measures, particularly on Caerleon High Street, target peak hour emissions (the school run and school buses, for example) and therefore the local impact on short term concentrations of NO<sub>2</sub> will be greater than the impact on the annual average concentration.

The impacts of many of the measures will become clearer as the measures are progressed, and the benefits for some measures will depend to what degree NCC and its partners are able to progress the measures. For example, travel awareness, travel plans and walking/cycling measures have the potential to make a significant difference, but not at low levels of application.

## 7 CONSULTATION

This AQAP describes the air quality assessment process that has taken place in Newport to date, identifies the role of traffic in the current problem and sets out a range of transport-focussed measures that could help improve air quality. In total 42 actions are considered. Many of these are based on measures already under consideration, and have been drawn from existing plans and policies. Additional actions have been suggested to complement planned and ongoing activity.

An objective of this Plan is to provide NCC Environmental Health Department with a method to consult the other relevant Departments, Council Members and the Public on the means by which Newport City Council should work towards improved air quality.

During production of the draft plan, internal consultation took place within the relevant Departments of Newport City Council, including Planning; Transport; Planning & Economical Regeneration; Public Protection & Environmental Service; Highways; Regeneration & Implementation; Economic Development; and Education Services.

Comments and feedback from the internal consultation were incorporated into a revised draft plan, which was subsequently subject to external stakeholder and public consultation. This included the communities affected by poor air quality and covered by the Air Quality Management Areas. Consultee organisations included, but were not limited to:

- Welsh Assembly Government;
- Newport Local Health Board (NLHB) /NPHS;
- Public transport companies (bus, rail);
- SEWTA;
- Schools and Education Committees;
- LTP Implementation Group;
- Public (via Ward Councillors);
- Adjacent Authorities (Cardiff CC; Torfaen BC; Monmouthshire BC; Caerphilly BC)

As a result of this consultation process some changes were made to the draft plan, and this final plan was produced. Most notably, the revised plan includes a detailed source apportionment exercise which has led to the inclusion in the Plan of two additional measures.

Detailed feedback was received from the Welsh Assembly Government and this has been considered when producing this final Plan. The feedback states that in order for the final AQAP to be accepted, the Council should address the following points:

1. Take clear ownership of the plan and include further details on how the plan has been derived.  
Response: Further details on how the plan has been derived are included in Section 1 and Section 4 of this report.
2. Undertake additional work on source-apportionment in respect of delineating the contributions from different vehicle classes, and in respect of conveying the diurnal

pattern of occurrence of emissions. This will ensure the measures are both applicable and proportionate to the extent and nature of the problem.

Response: Further source apportionment work has been carried out and is presented in Section 2.2.3. The results of this exercise have led to the identification of additional options for inclusion in the Plan.

3. Undertake further detailed assessment of measures in terms of changes in emissions and any impact on pollutant concentrations in order to determine whether compliance with the 2010 limit values will be achieved. Ideally, this will include consideration to the benefits in air quality brought about by the existing (now expiring) Local Transport Plan.

Response: An assessment of the impacts of the key measures and the overall impacts of the Plan on concentrations of NO<sub>2</sub> within the AQMAs is given in Sections 6.3 and 6.4. As the Plan and the measures progress it will be possible to determine more accurately the impacts of the measures.

4. Include details on the outcome of the current consultation exercise, in order to convey how consultation has influenced the content of the plan.

Response: Full details of the consultation exercise are given in Section 7 of the Plan.

5. Include further information on committed funding of measures and/or where additional funding would be sought.

Response: Further information on timescales and funding is given in Table 6.1.

6. Give closer consideration to implementation timescales

Response: Further information on timescales and funding is given in Table 6.1.

# **Annex A – Plan of AQMA**