Environment Act 1995

Air Quality Action Plan 2011

Birdlip – Air Balloon Roundabout

COTSWOLD
DISTRICT COUNCIL

Executive Summary

Producing an Action Plan is a requirement of the Environment Act 1995. It follows the work carried out to assess the air quality in the area around the Air Balloon junction and the consideration of whether compliance with the air quality objectives, as set out in the Air Quality Regulations 2000 and Air Quality (England) (Amendment) Regulations 2002 have been achieved.

The Air Quality in the area around the Air Balloon junction is not meeting the national air quality objectives for Nitrogen Dioxide pollution.

|n developing the Action Plan various options that could impact on the area and the air quality within the Air Quality Management Area at Birdlip have been considered. In addition, the cost effectiveness of each action has been considered and the options have been ranked them according to effectiveness.
This Action Plan was consulted on with residents and relevant organisations over the Summer of 2011, and the responses received have been reflected in the final version of the Action Plan.

There are three properties of concern within the AQMA with permanent residents (or the potential for permanent residents). There are at least three residents in the two Air Balloon Cottages and at present there are no permanent residents in the Air Balloon Pub but there is potential for this to change in the future

A Further Assessment carried out in 2010 included a source apportionment assessment and identified that within the AQMA nitrogen dioxide concentrations on both the A417 westbound and A417 southbound are substantially influenced by HGV vehicles. This is to be expected due to the high numbers of HGV's using this route (>10%), the slow traffic speeds due to the roundabout and the influence of the local road gradient on engine loading. To achieve the annual mean objective (based on measured 2009 concentration at the worst-case location) a reduction of nitrogen dioxide of greater than a 31.6 µg/m3 is required. To achieve the compliance with the annual nitrogen dioxide objective this would require a reduction of 52.4% of the HGV road traffic component. Hence for any action to be effective, it must impact upon either the quantity of HGV's or their speeds. A copy of this document can be obtained by contacting Cotswold District Council Tel: 01285 623000 email: pollution@cotswold.gov.uk.

This A417/A419 route is a strategic trunk route managed under contract by Road Management Services (Gloucester) Ltd (RMS), whose income is by way of the volume of traffic using the route. The Highways Agency remains responsible for network improvements (apart from major maintenance schemes) and various legal obligations. Therefore RMS Ltd would remain a major partner in any schemes affecting traffic flow.

The Air Quality Management Area is within the Cotswold Area of Outstanding Natural Beauty, This area was designated in 1966, and the area was extended in 1990. The purpose of the designation is to ensure the conservation and enhancement of the natural beauty of the Cotswolds. The Cotswolds Conservation Board, a statutory body is responsible for managing the AONB.

The route remains outside the control of the local authority; therefore any reduction in pollution can only be achieved by the Council's strategic partners taking actions and supporting initiatives to reduce emissions. Cotswold District Council will continue to monitor, and report on air quality within the Air Quality Management Area and encourage and promote actions and initiatives which will reduce emissions. Cotswold District Council will also promote the reduction of emissions through its own policies.

Air Quality Action Plan

1.Introduction

Cotswold District Council declared an Air Quality Management Area (AQMA) in 2008 in respect of nitrogen dioxide at the Air Balloon Roundabout junction on the A417. Air quality has been monitored and assessed in this area, the results indicate that nitrogen dioxide levels are exceeding the National Air Quality Objective of 40µgm3 (expressed as an annual mean) and it is also likely that the 1-hour objective of 200 µgm3 (not to be exceeded more than 18 times a year) is being exceeded. The elevated levels of nitrogen dioxide pollution are due to traffic emissions as this is a busy junction on a major trunk route with difficult topographical features and a high mix of heavy goods vehicles. There is relevant public exposure as there are residential properties within the area. In February 2011 the Air Quality Management Area Order was amended to reflect the fact that there might be breaches of both the annual mean and the 1 hour mean objectives for nitrogen dioxide.

This Action Plan is the summary of consideration given to ways that the levels of nitrogen dioxide pollution at this location could be reduced. It reflects, where appropriate, the responses Cotswold District Council received to the public consultation on the draft version of the plan.

2.The A417 and Road Management Services (Gloucester) Ltd.

The A417 is part of the A419/A417 Swindon to Gloucester strategic trunk route, which links the M5 and M4 motorways. The A419/A417 was upgraded between 1996 and 1998 as part of the Government's Design, Build, Finance and Operate (DBFO) programme. The contract was awarded to Road Management Services (Gloucester) Ltd (RMS) a consortium of four companies comprising AMEC, Alfred McAlpine, Brown and Route and Dragados.

The DBFO length of the A419/A417 between the M4 at Swindon and the M5 at Gloucester is approximately 32.31 miles (52 kilometres) long, 29.2 miles (47km) of the carriage way is dual and 3.12 miles (5km) of the road is single carriageway.

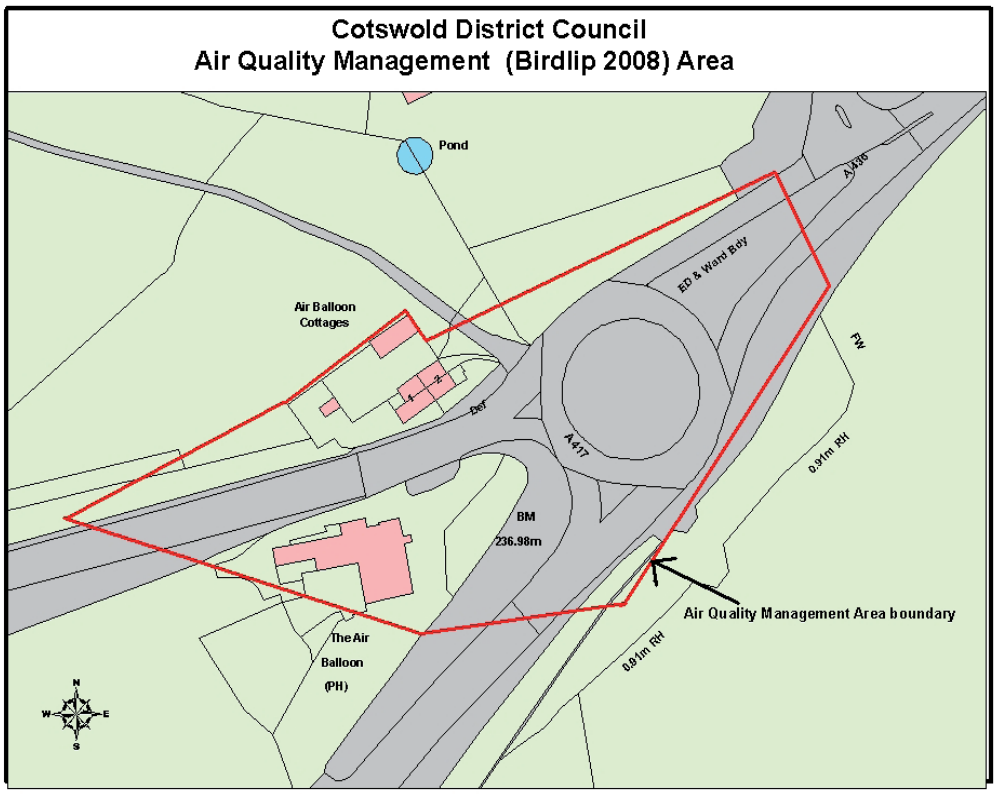
It is important to note that within the AQMA the road is primarily single carriage way and this has the effect of slowing traffic down on the route and congestion does occur particularly at peak times.

RMS's concession lasts for a period of 30 years and included in the contract was the construction of three new sections of road, which has now been completed, and the operation and ongoing maintenance of the existing road. The payments to RMS are based on the number of vehicles using the road and the distance they travel on it. There is no direct payment of tolls by road users.

The Highways Agency remains responsible for network improvements (apart from major maintenance schemes) and various legal obligations.

Road management Services (Gloucester) Ltd will need to be a partner in any schemes which are implemented as part of the Birdlip Air Quality Management Area, particularly those which could impact on traffic flows and hence their income stream.

Map showing the extent of the Air Quality Management Area



3. Action Pan Working Group

An action plan working group was set up by Cotswold District Council. The group consists of officers from Cotswold District Council, Highways Agency, Gloucester County Council Highways, the portfolio holder for Housing and Communities at Cotswold District Council, the ward member for Coberley. A consultant from the Air Quality Management Resource Centre of the University of West of England has also attended in an advisory capacity.

A number of meetings have been held to discuss the development of an action plan for the air quality management area at the Air Balloon Roundabout, Birdlip.

Over two meetings in July and September 2009 the group considered both the problem and the options for reducing vehicle emissions at this location. This work forms the basis of the Action Plan.

The draft action plan was then the subject of a public consultation exercise, which was launched on the 3rd August 2011 and closed on the 30th September 2011. The consultation attracted considerable interest in the local media. Responses were received from both individuals and a number of organisations. A resume of those responses is included at Appendix 1.

As a result of the responses received, a number of options have been discounted. These are listed at Appendix 2

4. Description of the Options forming the Air Quality Action Plan

1. Compulsory Purchase Properties

There are two cottages that could be purchased within the area and this would remove the receptors from the air quality management area. There is also a Public House which may also need to be considered, depending on whether customers or staff are exposed to pollution for a significant period of time. The air quality would continue to be poor but there will be no relevant exposure and thereby no need for an AQMA. The owner of the Public House may be willing to enter into an undertaking that the building would not be used as sleeping accommodation for either staff or customers. It may also be necessary to limit the area of the garden of the public house used by customers, to ensure that customers are not subjected to high levels of nitrogen dioxide.

	Proposal	Comments
1a	Purchase No's 1 and 2 Air Balloon Cottages	Will remove the need for an air quality management area as there would be no receptors for relevant exposure. Will limit the exposure of the residents to the poor air quality at the Air Balloon junction. Supported by residents and Ward Councillor. Opposed by Gloucestershire NHS. Will not have any impact on the overall air quality in the area although it would remove the need for an Air Quality Management Area. People using the junction will still be exposed to poor air quality which can have a significant impact on health. Uncertainty of relevant exposure at the public house, which may also need to be purchased if an agreement on a satisfactory undertaking could not be reached with the owners. There would be a socio-economic impact if this business is included as this provides a valuable service for travellers and employment to local residents. The cost of purchase is likely to be high, particularly if the public house needs to be included, however compared to the cost of either major road or rail improvements, these costs would be small. Purchase could only be by agreement as there are no identified legislative powers to purchase these properties on the grounds of Air Quality Management. The Statutory Agencies may not have the powers to purchase properties on Air Quality grounds even if by agreement with the owners.

2. Improve the Existing Traffic Flow, by either traffic management measures or upgrading the road network.

It is believed that there are a number of measures that could be implemented which could improve traffic flow and so reduce congestion and pollution. However driver behaviour is difficult to predict and any of these options should be modelled before being implemented, to ensure that they have the intended impact.

	Proposal	Comments
2a	Introduce variable speed limits on the A417 to smooth traffic flow through the Air Quality Management Area. It is believed that the use of variable speed limits could smooth the flow of traffic on the A417 between Nettleton and the junction with the A46 North of the Air Balloon roundabout and so reduce congestion and waiting at the Roundabout.	This proposal is favoured by the Cotswold Conservation Board. Other agencies including the Highways Agency and Gloucestershire County Council Highways also support the proposal Modelling would need to be done to determine if the proposal would have any significant impact. To be effective the variable speed limit would need to be enforced.
2b	Modify signage and road layouts to encourage traffic travelling to and from Cheltenham to use A46 or A435. This would enable better flow on the A417 but may have a negative impact on the A46 and A435	Modelling would need to be done to determine if the proposal would have any significant positive impact on the Air Balloon junction or negative impacts elsewhere. This proposal received some support from other agencies – subject to the outcome of modelling.
2d	Improve the junctions on Air Balloon Roundabout and A417, prohibiting turns from the A436 on to the A417 towards Gloucester and from the A417 North bound onto the A436. This would mean that some traffic would have to divert routes slightly to make the turns, some alterations and signage would be required for junctions. This may make drivers select alternative routes; it is only likely to add 5 to 10 minutes journey time	Modelling would need to be done to determine if the proposal would have any significant positive impact on the Air Balloon junction or negative impacts elsewhere. This option received support from most other agencies – subject to the outcome of modelling.
2e	Upgrade the non duelled section of the A417. The "preferred" route to alter and improve this section of this major trunk route, which lies to the South East of the Air Balloon roundabout, has been under discussion for some time.	This option is supported by a number of agencies, subject to the impact being tested by modelling. This option is opposed by the Cotswold Conservation Board. This option is not included in the Highways Agency's programme of works within the next 10 years and is not seen by them as a feasible option due to the cost.

3. Encourage the use of alternative forms of transport to reduce traffic flows at the Air Balloon Roundabout

Any measure to encourage the use of public transport, or the rail network for the movement of freight can assist in reducing traffic flows, congestion and air pollution at this junction. These options were generally well supported by individuals and organisations responding to the consultation process.

	Proposal	Comments
3a	Support for the duelling of the strategic rail link at Kemble, this is a high cost option that is currently being reviewed by National Rail. This would encourage the use of rail as a preferable option for travel. The A417 is often used by commuters to London who travel to Swindon railway station because of the reliability and frequency of train services. By supporting the duelling of the rail track in this area, the frequency and availability of trains to London from Gloucester and Cheltenham should be increased thereby making road journeys to Swindon unnecessary	This option is generally well supported, and increasing the capacity of this rail line could encourage the use of rail by commuters and freight as an alternative to road transport. Funding for this project was announced in March 2011 and work is scheduled to be completed in Spring 2014. However promoting the improved service and increased capacity on the Cheltenham to Swindon line, once work is completed will be essential to ensure that traffic flows at the Air Balloon Junction are reduced as a result of this project.
3b	Encouraging the development and use of local travel plans to support the wider sustainability impacts of climate change as well as making some improvement to local air quality. CDC will consider reviewing its planning policy to include the need for travel plans at the planning application stage, in support of this option.	Travel Plans are a key feature of the County Council's Local Transport Plan 2011 - 2016 submission and this work will support other work to reduce congestion and pollution at the Air Balloon Junction. Good examples of Transport Plans already exist locally. For example the National Star College (an important learning facility for those with physical and learning difficulties which is close to Birdlip) has been implementing a green travel plan since Spring 2010.
3c	Encourage Bus Routes by developing high quality express service bus links between Gloucester, Cheltenham and Cirencester.	This is a long term aspiration and significant work will be required by Gloucestershire County Council to set up effective routes and then to market these. The aim would be to encourage drivers to use public transport and so reduce the number of road trips on the A417

3d	Implement the Gloucestershire County Council 'Smarter Choices' Programme?	Smarter choices' are techniques for influencing people's travel behaviour towards more sustainable options such as encouraging school, workplace and individualised travel planning. They also seek to improve public transport and marketing services such as travel awareness campaigns, setting up websites for car share schemes, supporting car clubs and encouraging tele-working. 2011-2026, due to the current financial climate, funding for Smarter Choices measures will be limited. However, as stated in the LTP, bids to other potential funding sources will be considered.

5. Cost Effectiveness of these Options

Calculation of cost effectiveness.
Each option has been scored for its impact on improving Air Quality (AQ) and the cost of implementation using the following scoring criteria:

Air Quality improvement Impact	
Very High	5
High	4
Medium	3
Low	2
Very Low	1

Cost	
Very High	5
High	4
Medium	3
Low	2
Very Low	1

Cost Effectiveness (CE) has been calculated by dividing the Air Quality Impact by the Cost. Hence a measure which had a high impact but low cost would score 5÷1 = 5 whereas a high cost measure which had a low impact would score 1÷5 = 0.20

Each option has also been scored for feasibility (F) as follows:

Feasibility	
Very likely	5
Likely	4
Possible	3
Unlikely	2

Each cost effectiveness score was then multiplied by the feasibility score to give the final score and then multiplied by 4 to give a score out of 100.

Each option was also assessed for the timescale in which it could be implemented and the non air quality impacts as follows:

Timescale for implementation	
< 1 year	5
	4
< 5 years	3
	2
> 5 years	1

Non Air Quality Impacts			
+ve		-ve	
Very High	5	Very High	-5
High	4	High	-4
Medium	3	Medium	-3
Low	2	Low	-2
Very Low	1	Very Low	-1

TOption 1 (Purchase of properties) differs from the other options in that it would remove the need to declare an Air Quality Management Area, but would have no impact on Air Quality at the Air Balloon Roundabout.

An options matrix has been used to score each option. This information has been used to form the prioritisation of each option.

6. AQAP Options Matrix

		(a)	(b)	(c)	(d)	(e)	(f)	(g)
Proposed Measure		Air Quality Impact	Cost	Cost Effectiveness	Feasibility	Final score	Non AQ Impacts +ve or -ve	Timescale
		1 = Low 5 = High	1 = Low 5 = High	(a÷b)	1 = Low 5 = High	(cxd)4	1 = Low 5 = High Negative impacts shown as	Short = <1yr Med = <5yr Long = > 5yr
1a	Compulsory purchase of properties at Air Balloon Roundabout (Impact on Air Quality Management Area)	0	2	0	1	0	1	S
2a	Introduction of variable speed limit on A417 to smooth traffic flow through the Air Balloon roundabout	1	2	0.5	4	8	2	M
2b	Modify signage and road layouts to encourage traffic travelling to and from Cheltenham to use A46 or A435	2	3	0.66	5	13.2	1	S
2c	Install traffic lights at junction of A436 (Cheltenham Road) with Air Balloon roundabout so traffic on A417 takes priority	1	2	0.5	4	8	1	M
2d	Improve the junctions on Air Balloon Roundabout and A417, prohibiting turns from the A436 on to the A417 towards Gloucester and from the A417 North bound onto the A436.	1	4	0.25	4	4	1	S
2e	Upgrade the non dualled section of the A417 to the South of Birdlip	1	5	0.2	5	4	5	M
3a	Construct additional track on Gloucester – Swindon rail line to increase capacity	1	5	0.2	5	4	5	S
3b	Develop enhanced requirements for travel plans (review planning policy)	1	1	1	1	4	4	M
3c	Encourage bus routes	1	1	1	4	16	4	M
3d	Implement the GCC smarter choices programme	1	1	1	5	20	5	S – L

7. Implementation of the Action Plan

The A417/A419 route remains outside of the control of Cotswold District Council and therefore any reduction in pollution can only be achieved by the Council's Strategic partners taking the actions proposed and supporting initiatives to reduce emissions.

Cotswold District Council will continue to monitor and report on the air quality within the air quality management area and will encourage and promote actions and initiatives which will reduce emissions in the area.

Cotswold District Council will also promote the reduction of emissions through its own policies.

Copies of the Action Plan will be provided to the Council's strategic partners including the Highways Agency and Gloucestershire Highways Authority.

Cotswold District Council will continue to meet with the working group to monitor progress and encourage steps towards implementation of the action plan

Appendix 1.
Resume of Responses from Consultees

Birdlip Air Quality Management Area
Responses to Consultation on Action Plan

Respondent	Summary
Local Resident (1)	Only solution is to purchase Air Balloon cottages, these have been blighted for many years.
Local Resident (2)	Only solution is to purchase Air Balloon cottages, these have been blighted for many years.
Cotswold Conservation Board	Believe that traffic flow/speed management is key Traffic should be diverted when problems at junction
Ward Councillor Paul Hodgkinson	Only solution is to purchase Air Balloon cottages. Other measures are worthwhile but will only have limited impact
NHS Gloucestershire	Air Quality is key determinant of health so NHS is supportive of action. Would like more information on types of vehicle and journeys Don't support purchase of properties. Don't support restricting HGV's to inside lane. Reservations about impact of LEZ on local economy. NHS would want more information on impact of traffic schemes. Support public transport and rail initiatives
Natural England	Air pollution may impact on local habitats Don't support purchase of properties Support improving junction
Highways Agency	Support improvements to Roundabout and have requested funding to investigate potential improvements. Don't support purchase of properties, Dualling of A417, 'steep gradient signs or limiting HGV's to out of peak hours.
Local Resident (3)	Thinks that prohibiting some turns at roundabout will lead to rat running and move problem to more populated area. Proposes alternatives of: • Reopening lay-by on downwards stretch • Create a lay-by on uphill section before Cold Slad to allow lorries to cool down • Slow traffic south of Nettleton • Create Park and Rides at Barrow Wake and other locations.
Gloucestershire County Council	Route is of strategic importance and any measures to tackle AQ must be carefully considered. Many measures will increase problems elsewhere, suggest they should be evaluated using GCC Saturn traffic model. Support 'Brown Route' scheme for upgrading non dual section of A417 Funding to support public transport is very limited.

Resident (No address given)	Supports LEZ Thinks that prohibiting some turns at roundabout will lead to rat running and move problem to more populated area. Believes best solution is dualling A417
Resident (No address given)	Doesn't support any suggestion, proposes realigning the lanes on the roundabout to create 'feeder lanes' as low cost solution.
Gloucestershire Echo (Comments logged on website)	13 comments, these can be summarised as follows: 3 - No value/abusive 2 – Opposed to any measures which would decrease speeds 7 – Support dualling A417, flyover at roundabout or similar measures. 1 – Supports variable speed limits.

Appendix 2
Options discounted following the Consultation Exercise

Option	Reason(s) for removal from Action Plan
Better driver information and incident management	
Enhance the use of the Highways Agency (HA) incident support unit– the HA would make more response units available along A417 allowing a faster response to breakdowns and accidents etc. This will enable normal flows traffic to be resumed more quickly.	The Highways Agency has now implemented this proposal.
Install and develop use of CCTV surveillance in the area to better inform variable message signage (VMS) of hold-ups (Option 16) – This will enable the HA to route traffic away from the congested area sooner thereby reducing the likelihood of long delays.	The Highways Agency has now implemented this proposal.
Construct hard standings for breakdowns on the A417– This will allow vehicles to pull off the road in a breakdown situation and therefore traffic will resume normal flow more quickly.	No support from Consultees for this proposal. Little land available for construction of hard standings.
Install more VMS Signage– By providing VMS signage earlier on strategic routes vehicles will be able to take alternative routes, thereby allowing the road to flow freely more effectively.	The Highways Agency has now implemented this proposal
Managing HGV's	
Limit HGV's to the inside lane on Southbound carriageway approaching the Air Balloon Roundabout	Legislative powers to restrict HGV's to the inside lane may not exist. (this would create problems as HGV's would be changing lanes to make right hand turns impractical and dangerous)?

Create a Low Emission Zone (LEZ) for HGV's meeting EU standards (Option 3) – This could be used as a local transport incentive promoted by Gloucester County Council Highways. Vans and good vehicles with an unladen weight of more than 1.205 tonnes which did not meet Euro 4 emission standards would be required to pay a charge in advance to pass through the Air Quality Management Area, those not paying would be subject to a penalty charge. Cars, motor bikes and light vans weighing less than 1.205 tonnes unladen weight would be exempt. Payments and penalty charges could be administered by similar automated payment and penalty charge systems to those used for the Central London Congestion Charge and the Greater London Low Emission Zone. Experience from Europe indicates that whilst a low emission zone is most effective in reducing levels of particulates, particularly PM10's, levels of nitrogen dioxide can be reduced by up to 20%. There is also evidence that the more recent EURO standards for HGV's are not being as effective in reducing levels of nitrogen dioxide as was hoped. Such a scheme would have a wider impact on air quality generally. The enforcement may be difficult although it may be possible to partner with another scheme such as the Greater London Low Emission Zone. The LEZ would need to be widely advertised so the vehicles not meeting the standard had the option to take alternative routes rather than pay the charge.

Limit HGV's to outside peak hours (Option 7) – This would help to improve the flow of traffic at peak hours however it would create longer HGV trips. It may have a negative impact on local trade and may be prohibitively costly to transport companies. The enforcement of this option would need to be considered. Again this would need to be widely advertised so the vehicles not meeting the standard could take alternative routes.

Install signs to inform HGV drivers about the steep gradient (Option 11) – There is a belief that

Appendix 3

Cotswold District Council's Supporting Polices

Cotswold District Council has aspirations within its policies to reduce carbon emissions and use of natural resources. These are demonstrated in the council's car parking strategy and its green travel plan

Extract from CDC's car parking strategy:

"To provide a leadership role in the reduction of carbon emissions and use of natural resources."

To be achieved by:
- Reducing the Council's own Carbon emissions through the introduction of alternative technologies
- Incentivising use of low carbon vehicles
- Supporting the County Council in achieving modal transfer and sustainable transport strategies.

The specific actions identified for to support alternative forms of transport and a commitment to climate change are:

"Support the County Council in its promotion of bus use and raise the profile of alternative methods of transport, particularly 'green' transport in proposals for development."

"Consider provision of charging points for electric vehicles as part of wider scale car park improvements."

"Consider introducing Charging concessions for green vehicles."

"Consider the design and construction of car parks during planning development and improvements to ensure that, where possible, they are adapted to changing climate."

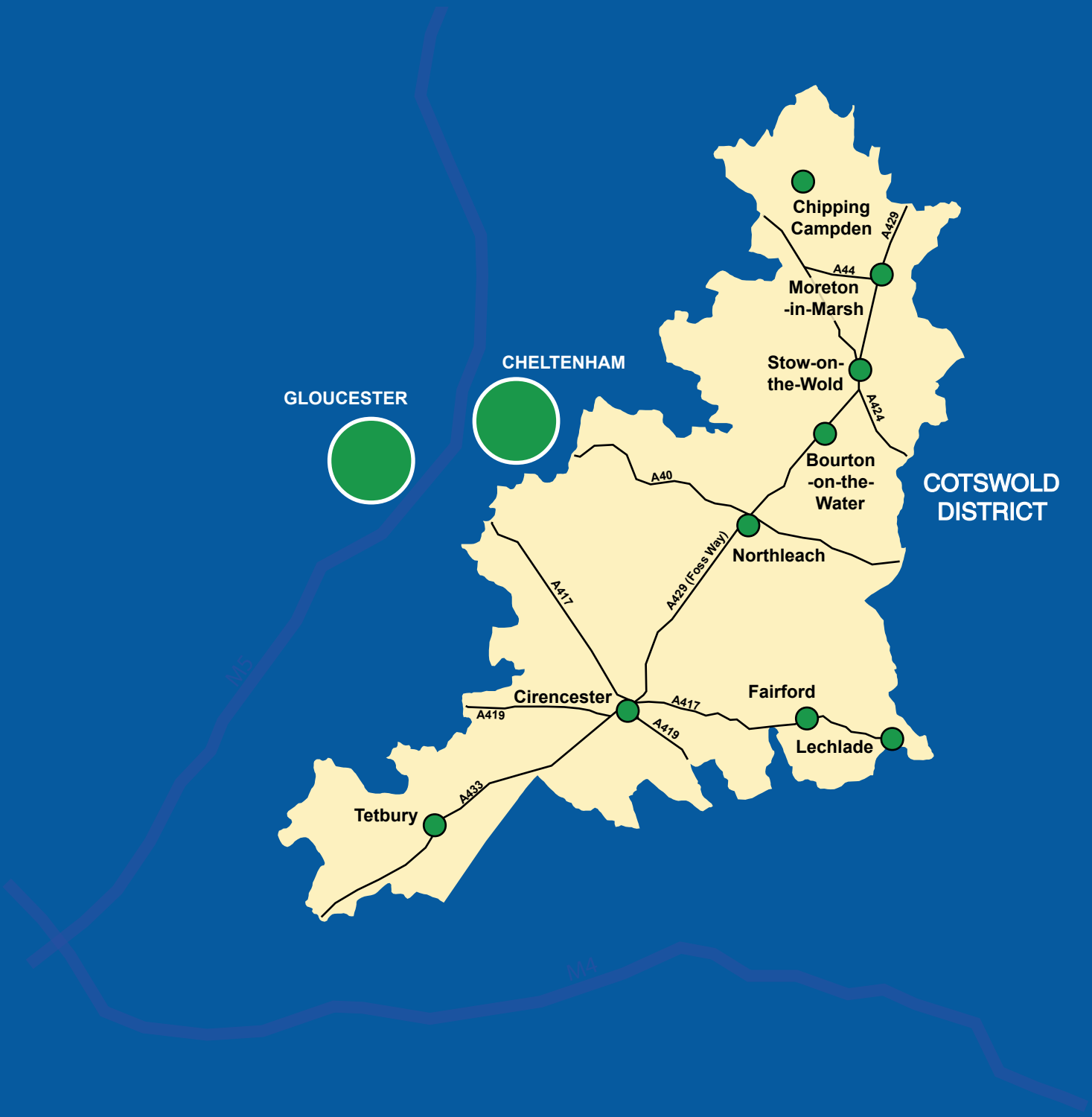
Green Travel Plan

Cotswold District Council's Green Travel Plan was approved in August 2010. The Green Travel Plan supports and encourages staff, councillors and partners to minimise environmental impacts by choosing sustainable ways of working and travelling. Travel is integral to the delivery of the Council's services so it cannot be cut out entirely however there is scope for improvement and change to increase the sustainability of the Council's business practices. As a result of the Green Travel Plan the Council has LPG vans, has signed up to the Cycle scheme and provides tele-conferencing capabilities. Projects to be implemented from the Green Travel Plan during 2011/12 include pool cars, pool bikes, and a car sharing scheme.

Conclusion

Cotswold District Council is not in a position to take action directly to resolve the issue of poor air quality at this location, as this is a major trunk route. However, the council will continue to support any measures proposed or taken by its strategic partners that will influence the reduction of pollution. Within the council's own policies, it will strive to improve and promote the reduction of emissions.

The Cotswold District



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