Horsham District Council

SUSSEX-air
Air Quality Partnership

DRAFT

Horsham District Council

Cowfold Air Quality Action Plan

Local Air Quality Management
Environment Act 1995

September 2013

Executive Summary

Part IV of the Environment Act 1995 requiries local authorities to review and assess current and future air quality in their area against air quality objectives established in the National Air Quality Strategy. Where those objectives are not likely to be met then the local authority is required to designate an Air Quality Management Area (AQMA) at the relevant locations. The local authority must then draw up an Action Plan setting out the measures it intends to take to comply with the air quality objectives within the area covered by the AQMA.

In December 2011 Horsham District Council declared an Air Quality Management Area (AQMA) in part of Cowfold village based on exceedence of the annual mean air quality objective for nitrogen dioxide.

This draft Air Quality Action Plan (AQAP) Report for Cowfold identifies a range of possible measures aimed at improving air quality within Cowfold. The draft report has been prepared by Horsham District Council in conjunction with West Sussex County Council. The draft AQAP will be subject to full public consultation. The feedback from the consultation process will be used to develop the final Action Plan, setting out what will be done to reduce nitrogen dioxide pollution in Cowfold.

The final Action Plan report will describe the rationale behind the measures including the costs and benefits and provide a timetable for implementation. The effectiveness of measures and progress with implementation will be the subject of annual review as part of the Local Air Quality Management review and assessment process.

"Poor air quality reduces the life expectancy of everyone in the UK by an average of 7 to 8 months and up to 50,000 people, a year may die prematurely because of it."

"Nationally and locally air quality is a major issue. Poor air quality probably causes more mortality and morbidity than passive smoking, road traffic accidents and obesity. "

UK Parliamentary Environmental Audit Committee, March 2010

Any comments or queries regarding this report should be addressed to:

Environmental Health & Licensing Department
Horsham District Council
Park House
North Street
Horsham
West Sussex
RH12 1RL

e-mail: publichealth.licensing@horsham.gov.uk
Tel: 01403 215292
Fax: 01403 215461

Contents Page

Appendicies

Index of Tables

Index of Figures

1. Introduction

1.1 Purpose of the Air Quality Action Plan

The purpose of this Air Quality Action Plan (AQAP) is to set out what is being done to reduce nitrogen dioxide pollution concentrations in Cowfold village. The document has been produced by the Environmental Health Department, in conjunction with West Sussex County Council and the Cowfold AQAP Steering Group. The action plan has been prepared in accordance with the Council's Local Air Quality Management obligations under the Environment Act 1995.

1.2 Review and Assessment of Air Quality

Under Part IV of the Environment Act 1995, local authorities are required to Review and Assess (R&A) air quality on a regular basis. Pollution levels within the local authority area are set against air quality objectives which are prescribed in both European and national legislation for the protection of human health and the environment.

Where those objectives are not likely to be met then the local authority is required to designate an Air Quality Management Area (AQMA) at the relevant locations. The local authority must then draw up an Action Plan setting out the measures it intends to take to comply with the air quality objectives within the area covered by the AQMA.

Within the last two years Horsham District Council has declared two Air Quality Management Areas (AQMAs) in Storrington and Cowfold. Both AQMA's are within rural villages with relatively narrow roads and residential properties in close proximity to the kerbside. In both cases the villages are transected by busy 'A' roads carrying significant volumes of traffic and with periods of congestion at peak times. One other village in the district has been close to exceeding the AQ objectives and is being kept under close review.

1.3 The Air Quality Objectives

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) sets out a framework to achieve cleaner air to protect human health and the environment. The strategy sets a series of standards and objectives for a range of air pollutants based on associated health effects, based on recommendations made by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). The 'standards' are pollutant concentrations below which health effects are unlikely, even for sensitive groups within the population. The 'objectives' are the target dates by which the 'standards' must not be exceeded.

The air quality objectives are only applicable where members of the public are likely to be present and different objectives are set depending on the length of public exposure. For long term exposure such as residential properties, hospitals, schools etc. the objectives are based on annual mean and 24 hour objectives. For short term exposure where the public are likely to be present for only an hour or more the objectives are based on 1 hour averaging periods. The air quality objectives applicable to Local Air Quality Management (LAQM) in England are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.

Table 1: Air Quality Objectives, included in Regulations, for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Air Quality and Health

At relatively high concentrations, nitrogen dioxide (NO_2) acts as an irritant causing inflammation of the airways and, by affecting the immune cells in the lungs, can increase susceptibility to respiratory infections. However, concentrations in ambient air are generally much lower than those associated with such effects.

Evidence suggests that ambient (outdoor) concentrations of nitrogen dioxide can increase the sensitivity of asthmatics to allergens and therefore increase the likelihood of asthma attacks and longer term exposure to nitrogen dioxide can increase the likelihood of respiratory illnesses in children. (Committee on the Medical Effects of Air Pollutants 2011).

2. General Description of Cowfold

Cowfold is a village and a civil parish located in the east-central part of Horsham District at the intersection of the A272 and A281 roads.

In the past Cowfold formed a part of the Wealden iron industry, due to an abundant supply of timber for smelting. Currently the village is predominantly residential in character with a population of around 1864 people. There are a small number of shops and offices in the centre of the village.

The village centre is at the intersection of the A272 and A281 roads which form 'The Street'. This section of road is bounded at each end by two mini roundabout junctions approximately 100 metres apart between which is a pelican crossing for pedestrian access. The Street is formed of a combination of commercial and residential premises arranged around the historic church of St. Peters. The short stretch of road between the roundabouts and the A272 and A281 routes coming into the village suffer from congested traffic, particularly at peak times, but also carry consistently high traffic flow throughout the day.

The A272 running through Cowfold forms a link between Billinghurst to the west and Haywards Heath to the east. The A281 forms a link between Horsham town to the north and Henfield/A23 to the south.

There is a relatively high volume of heavy goods vehicles passing through the village The A272 is a Highways Authority (WSCC) designated preferential lorry route The village has a traffic flow of approximately 18800 (24 hour weekday average). The percentage of Heavy Duty Vehicles (over large Transit size) is 4.2% (annual percentage over a 7 day week). This equates to 786 heavy duty vehicles (HDV's) each week day on average.

The general location of Cowfold and it's relationship to the major road links are shown in Figures 1, 2 and 3

Figure 1: Aerial Map of Cowfold Village (satellite 2012 Google Map data**)**

Figure 2: Cowfold Village Road Map. (2012 Google Map data)

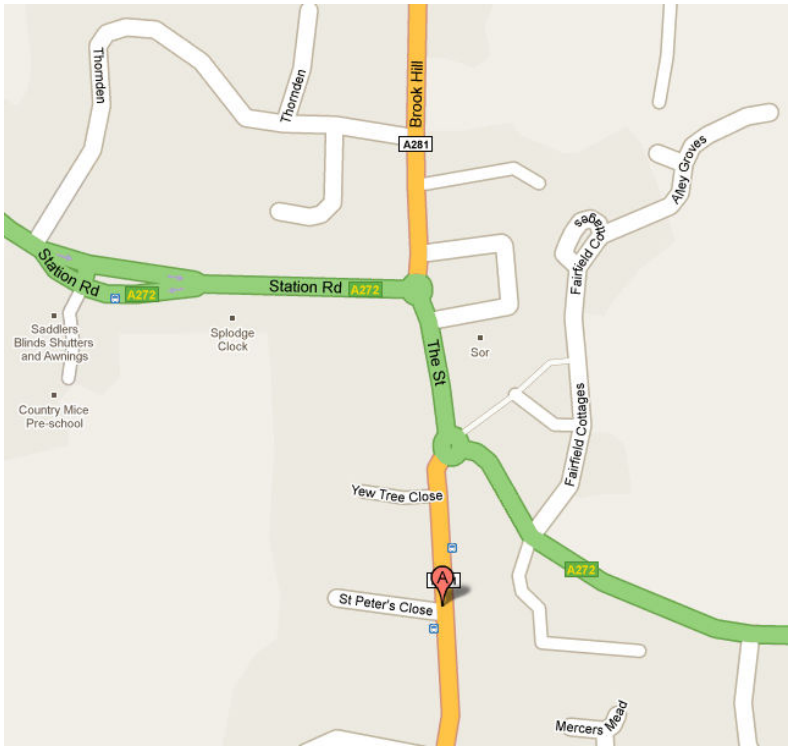


Figure 3: Map of Cowfold Local Road Network. (2012 Google Map data)

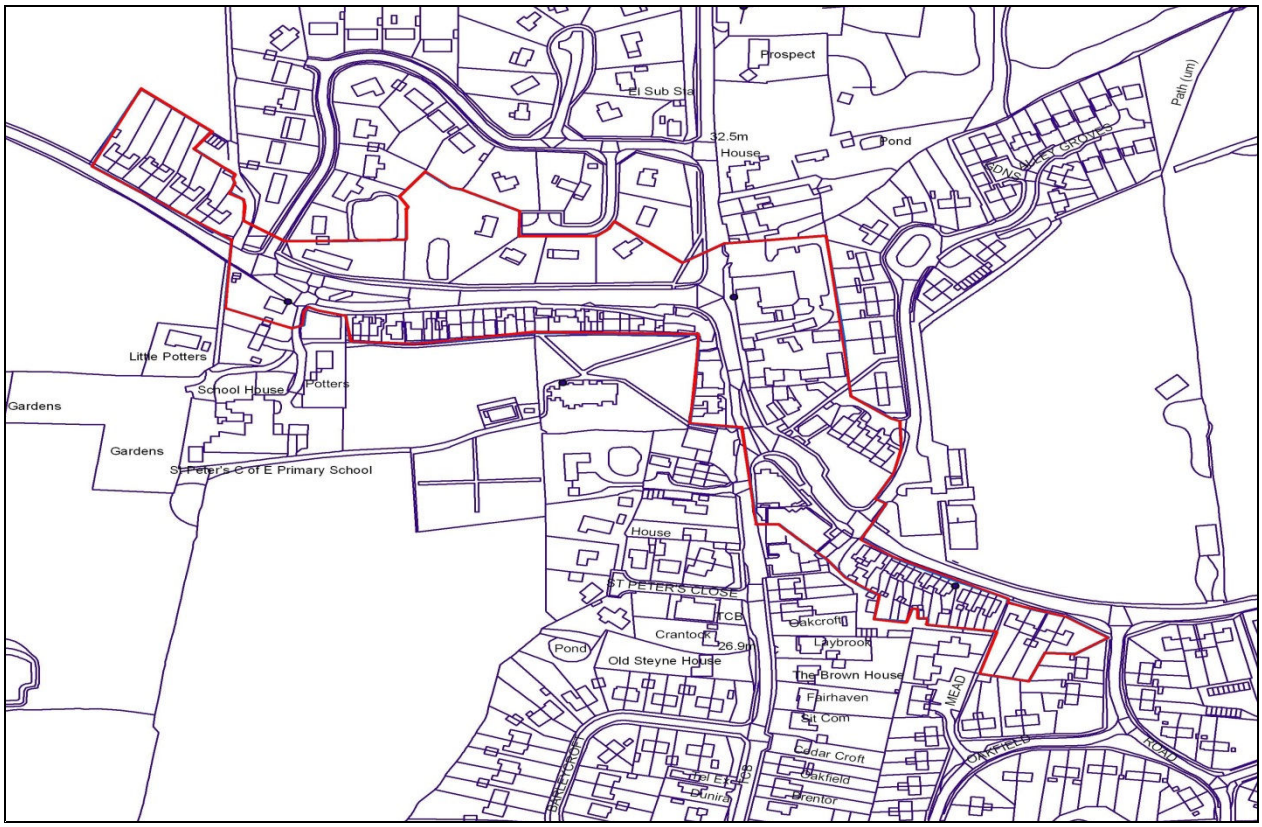
2.1 Cowfold Air Quality Management Area

The Detailed Assessment report for Cowfold was produced in March 2011. The report summarised the monitoring and modelling data available for the area and concluded that an AQMA would need to be declared on the basis of exceedences of the annual mean air quality objective for nitrogen dioxide along the The Street, Station Road and Bolney Road, essentially following the route of the A272 as it passes through Cowfold village.

The AQMA was extended to incorporate the areas where nitrogen dioxide concentrations were close to exceeding the annual mean AQ objective. There were no exceedences of the six other pollutant objectives.

The Cowfold Air Quality Management Area (AQMA) was formally declared by Council Order, which came into effect on 1st December 2011. The AQMA encompasses properties either side of the A272 road that passes through the village, as shown in Figure 4 below.

Figure 4: Cowfold Air Quality Management Area



3. Further Assessment Report for Cowfold AQMA

The Further Assessment report for Cowfold was submitted to Defra in October 2012 and confirmed the following:

- Monitoring results for 2011 and detailed dispersion modelling have confirmed that the AQMA in Cowfold is justified on the basis of the continued exceedence of the annual mean air quality objective for nitrogen dioxide. The results have confirmed that the boundary of the AQMA is appropriate under current circumstances.

- Source apportionment calculations have identified road traffic as the most significant local source of nitrogen dioxide, with cars and light vehicles contributing 63% of the emissions and heavy duty vehicles 37%.

- The report estimates that a reduction in total vehicle emissions of 25% will be necessary in order to comply with the annual mean air quality objective for nitrogen dioxide at the worst-case receptor location in 2011.

- The Further Assesssment report will be circulated to all consultees and will provide the basis for further development of the Air Quality Action Plan for Cowfold AQMA.

- The current monitoring regime will be maintained and further updates provided annually as part of the Review & Assessment process.

- There are 7 residential properties within the area of exceedence of the annual mean AQ objective for nitrogen dioxide (40µg/m³), and a further 29 properties within 10% of the air quality objective (36µg/m³ contour) (based on the Further Assessment modelled data for 2010)

The source apportionment calculations are useful in determining the likely impact of proposed action plan measures, and for targetting the proposed measures effectively.

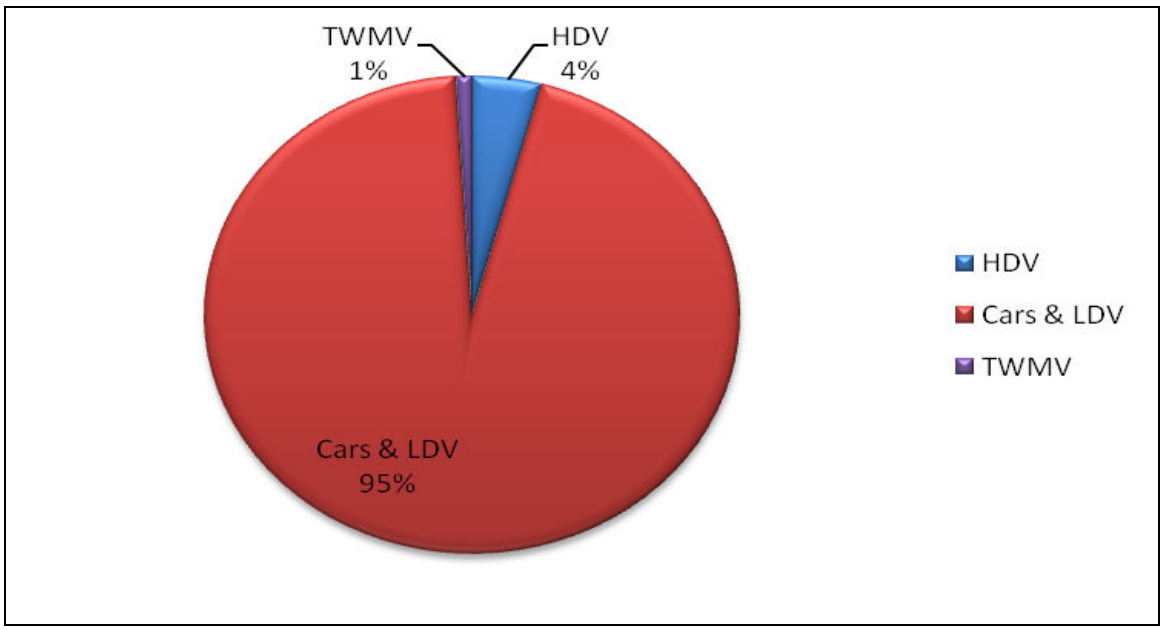
4. Source Apportionment

In 2011, the main road through Cowfold village, known as The Street, had an estimated Annual Average Daily Traffic (AADT) flow of 18,805. The percentage of Heavy Duty/Diesel Vehicles (over large transit size) was 4.18%. This equates to an average of 786 heavy duty vehicles (HDV's) each day.

There are no significant industrial processes within, or close to, the Cowfold AQMA that are likely to emit significant concentrations of NOx. There may be some NOx emissions from domestic sources but these are considered to have relatively small impact when compared to that generated by road traffic.

Figure 5 shows the proportion of each vehicle category as a percentage of total traffic.

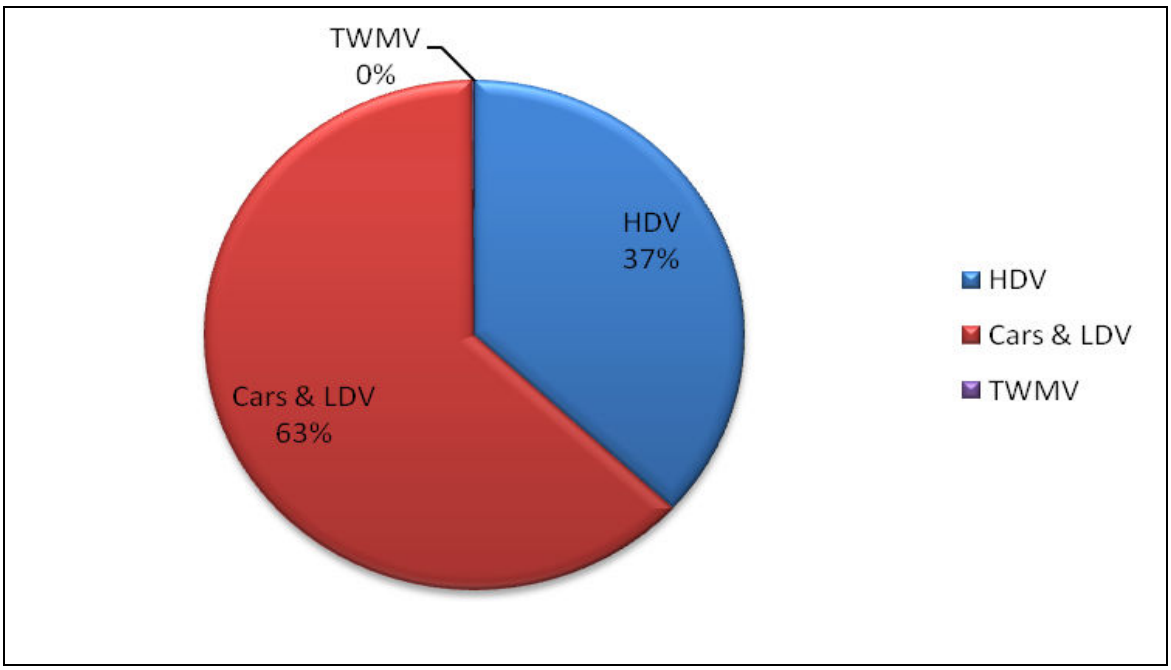
Figure 5: Estimated Annual Average Daily Traffic Flow by Vehicle Class at The Street, Cowfold 2011



Categories: Cars & LDV includes : cars, taxis, light goods vehicles and vans
HDV includes: buses, coaches, minibuses and HGVs,
TWMV:Two wheels motor vehicles.

Figure 6 and Table 2 show the contribution of each vehicle class to the total annual average NOx emissions at The Street for 2011.

Figure 6: Road Traffic NOx Emissions by Vehicle Class, The Street, Cowfold 2011



Categories: Cars & LDV includes : cars, taxis, light goods vehicles and vans
HDV includes: buses, coaches, minibuses and HGVs,
TWMV:Two wheels motor vehicles.

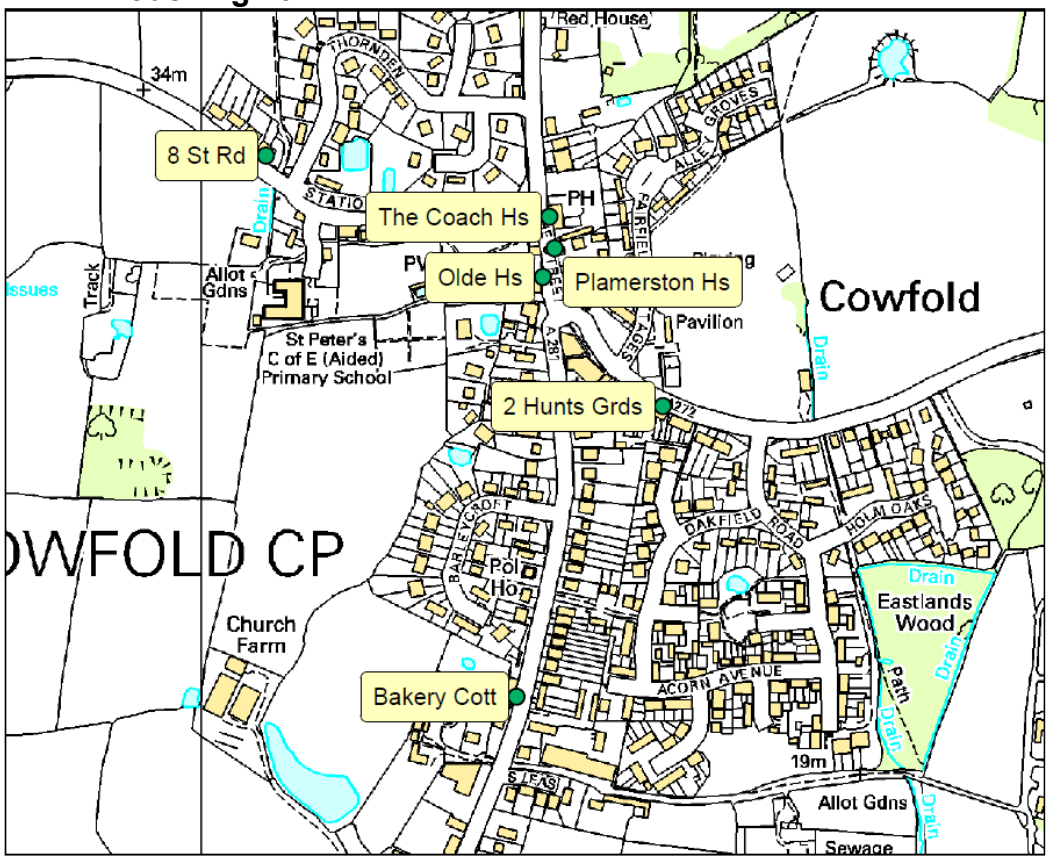
Table 2: Estimated Annual traffic flow and average annual NOx emission at The Street, Cowfold 2011

Vehicle Type	Traffic flow (AADT)	%	Emission NOx (tonne/year)	%
Cars & LDV	17835	95	0.58	63
HDV	786	4	0.34	37
TWMV	184	1	0.001	>0.01
Total	18805	100	0.910	100

4.1 Relative Vehicle Contribution to Nitrogen Dioxide Concentrations at Specific Receptor Locations in Cowfold.

To provide an overview of source contributions at different locations within the Cowfold AQMA, six specific receptors have been selected as shown in Figure 7. They represent the worst-case locations for NO_2 as well as providing a geographical spread across the modelled area.

Figure 7: Specific Receptor Locations for Cowfold Source Apportionment Modelling 2011.



A number of different sources contribute to the concentration of a pollutant at any given location. In addition, the concentration of nitrogen dioxide (NO_2) is affected by chemical reactions which take place in atmosphere. Due to non-linearity of the chemical reaction the contribution of different sources to the total NO_2 concentration cannot be determined. However, the contribution of the total oxides of nitrogen ($NOx = NO + NO_2$) can be calculated. The contribution of different sources to total NO_2 concentration will be related to the contribution of each source to the total NO_x concentration.

The relative contribution of each vehicle group to the total road NO_x concentration at each receptor was established by modelling the concentration of NOx for each vehicle category individually. The total modelled NO_2 concentration was apportioned to background and road components. The road NO_2 component was then further apportioned into source categories according to the relative contribution of each source to the total road NOx. [(1)] The contribution of each source will vary depending on the relative location of the source and receptor.

Table 3 sets out the contribution of traffic related sources apportioned to the following categories:

- Cars & LDV (including cars, taxis, light duty vans)
- HDV (including buses, coaches, minbuses and HGV)
- Two wheel motor vehicles
- Background contribution

Table 3 summarises the results at specific (worst-case) receptors representing public exposure.

Table 3: Modelled Annual Mean (2011) Nitrogen Dioxide Concentrations at Specific Receptors and the Relative Contribution of each Source to the Total.

Receptor Reference	Receptor Address	Annual Mean Concentration NO2 µg/m^3				
		Background	Cars & LDV	HDV	TWMV	Total
10	8 Station Rd	8.15	10.3	6.2	0.03	24.7
12	The Coach Hse	8.15	17.7	10.2	0.04	36.1
18	Palmerston Hse	8.15	17.26	10.3	0.04	35.8
22	Olde House	8.15	20.0	11.8	0.04	40.0
25	Bakery Cottage	8.15	6.7	2.8	0.06	17.8
43	2 Huntscroft Gardens	8.15	24.72	14.2	0.04	47.1
Receptor Reference	**Receptor Address**	**% Contribution to Total NO2**				
		Background	**Cars & LDV**	**HDV**	**TWMV**	**Total**
10	8 Station Rd	33	41.9	25	0.1	100
12	The Coach Hse	22.5	49	28.4	0.1	100
18	Palmerston Hse	22.9	48	29	0.1	100
22	Olde House	20.4	50	29.5	0.1	100
25	Bakery Cottage	45.9	38	15.8	0.3	100
43	2 Huntscroft Gardens	17.3	52	30.6	0.1	100

1) calculation method was extracted from Monmouth County Council Air Quality Further Report Assessment prepared by AQC, 2008 and published as a good example at Defra Review and Assessment website.

Figure 8: Relative contribution of each vehicle type to modelled annual mean NO_2 concentration (µg/m^3) at specific receptors - Cowfold 2011

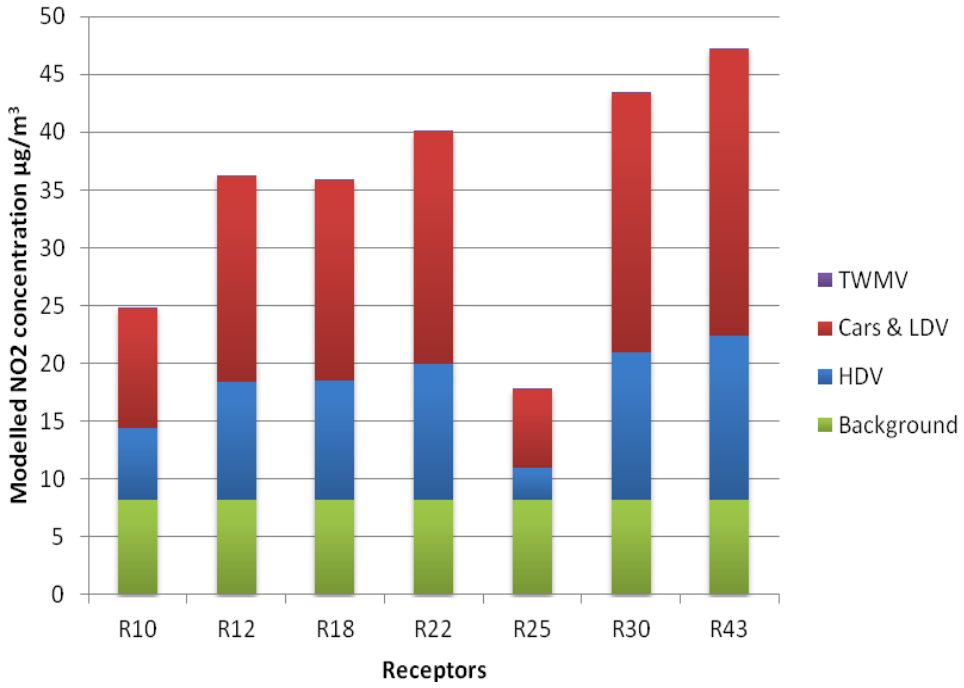


Figure 9: Relative % contribution of each vehicle type to Modelled Annual Mean NO_2 concentration (µg/m^3) at specific receptors, Cowfold 2011.

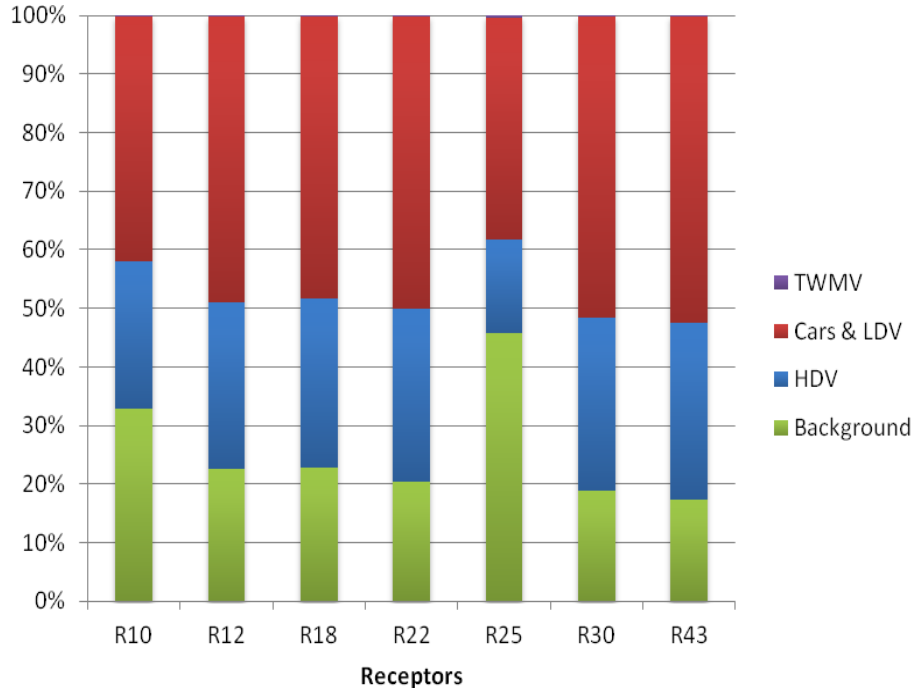


Table 3 and Figures 8 and 9 show that for each receptor the most significant proportion of the road component can be attributed to emissions from cars and HDV's. In all but one of the receptor locations (R25) nitrogen dioxide from the road traffic component significantly exceeds that of the background component.

5. Air Quality Improvements Required.

5.1 Required Nitrogen Dioxide Concentration Reduction.

A requirement of the Further Assessment is to determine the amount of NOx/NO_2 reduction required at the worst-case receptor location, within the exceedence area, in order to meet the annual mean objective level for NO2 of 40ug/m^3. The worse case receptor has been selected on the basis that other receptors will require less reduction.

The highest predicted nitrogen dioxide concentration in 2011, within the Cowfold AQMA, is at Receptor 43 (2 Huntscroft Gardens) at 47.1 µg/m^3.The required reduction in NO_2 concentration at this receptor is therefore 7.1µg/m^3.

As this is the worst-case location, the required reduction at all other receptors will be less. The calculation of required NO_2 reduction for Receptor 43 is shown in Table 4 below.

5.2 Required NOx Emission Reduction.

To reflect the required reduction in emissions, it is more useful to consider oxides of nitrogen (NO_x). This can be done by following the methodology set out in the Monmouth County Council Air Quality Further Assessment Report, prepared by AQC, 2008 and published as a good example at DEFRA Review and Assessment website.

In order to determine the required reduction in NO_x emissions, the NO_2 annual mean AQ objective of 40µg/m^3 was calculated to be equivalent of 75.67µg/m^3 road-NOx concentration (based on the local background NOx and the latest NOx/NO_2 conversion calculator).

The predicted road-NOx concentration at the worst-case receptor is 99.5µg/m^3. Therefore, the maximum predicted road-NOx reduction required to comply with the AQ objective is approximately 23.83µg/m³ (road-NOx). At this receptor local emissions would need to fall by 24% to comply with the annual mean nitrogen dioxide objective of 40µg/m³.

As this is the worst-case location, the required reduction at all other receptors will be less. The calculations for required reduction in NOx and NO_2 concentrations at the worst-case receptor are shown in Table 4.

Table 4: Required NOx and NO_2 Concentration Reduction at Worst-case Receptor Location.

Receptor Reference	Receptor location	Modelled road-NO_x for year 2011 (µg/m^3)	Road-NO_x (equivalent to NO_2 objective (40 µg/m^3)	Required Reduction road-NO_x (µg/m^3)	% Reduction road-NO_x Conc.	Modelled NO_2 (µg/m^3)	NO_2 AQ objective (µg/m^3)	Reduction required (µg/m^3)
43	Huntscroft Gardens	99.5	75.67	23.83	24	47.1	40	7.1

6. Traffic Management Planning

Within Cowfold village pollution concentrations are affected by a number of factors including traffic volume and vehicle type, traffic flow patterns and congestion. Action Plan measures to reduce pollution concentrations are likely to include traffic management measures designed to improve traffic flow and, where possible, reduce traffic volume. In order to gauge the theoretical effect of changes in traffic on nitrogen dioxide concentrations at the worst-case location, stepped reductions in each vehicle category were calculated, based on predicted concentrations. The results are presented in Table 5 below.

Table 5: Predicted Improvement in Annual Mean Nitrogen Dioxide Concentrations at Worst-Case Receptor, Cowfold (2011)

Vehicle type	% Reduction in Road NOx Emissions	Predicted Annual Mean concentration of NO_2 ug/m^3 at the worst-case location
Cars & LDV	10%	45.5
	25%	42.8
	50%	38.0
	100%	26.5
HDV	10%	46.2
	25%	44.8
	50%	37.5
	100%	36.9
All traffic	10%	44.5
	25%	40.2
	50%	32.0
Do nothing	0	47.1

The results in Table 5 highlight the fact that exceedence of the annual mean nitrogen dioxide objective at the worst-case receptor within the Cowfold AQMA is considerable, and that only very substantial reductions in total vehicle emissions are predicted to reduce modelled concentrations to a level where the annual mean objective would be met.

The modelled predictions indicate that a greater than 25% reduction in traffic emissions in all vehicle classes would be necessary to reduce NO_2 concentrations to below 40µg/m³. The results also demonstrate that targeting individual vehicle classes in isolation would not achieve the required reduction in NO_2 concentrations at the worst-case receptor.

7. Conclusions from 2012 Monitoring Data

The results of the automatic and diffusion tube monitoring for 2012 within Horsham District indicate that the UK air quality objective for annual mean NO_2 continued to be exceeded at 4 monitoring sites all of which are located within the existing Storrington and Cowfold AQMA's.

Air quality monitoring in Horsham District as a whole in 2012 showed a slight increase in nitrogen dioxide concentrations at the majority of monitoring locations, when compared with 2011 data. Overall the trend in Horsham District over the past 5 years appears to show a gradual reduction in annual average nitrogen dioxide concentrations.

8. Relevant Plans and Policies

8.1 The National Planning Policy Framework

The previous South East Plan has been superceded by the National Planning Policy Framework (NPPF) which sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development, balancing the need for economic growth with social and environmental requirements.

Horsham District Council are in the process of reviewing the adopted Core Strategy (2007) to take account of changes to national policy and update local housing numbers.

8.2 West Sussex Local Transport Plan 2011 – 2026 (WSTP)

The WSTP provides the strategic direction for transport in West Sussex. It provides the County Council's approach to maintaining, managing and investing in transport. The strategies most relevant to air quality are:

- To reduce the negative impacts of transport on public health
- To encourage and enable physically active travel such as walking and cycling through behaviour change initiatives and provision of information and education

Reducing the negative impacts of transport on public health

The transport network can affect public health by contributing to poor air quality and noise, and affecting travel behaviour leading to inactivity and obesity. The County Council aims to reduce the negative impacts of transport on public health by:

- Working with district and borough councils when AQMAs are declared to develop Air Quality Action Plans (AQAPs) which include engineering, monitoring and promotional activities
- Implementing actions in the AQAP's for new and existing AQMAs

- Providing information for air quality monitoring and forecasting

- Encouraging healthy travel behaviour through school travel, healthy schools and other behaviour change initiatives such as School Travel Planning and Travelwise

- Including new infrastructure in an Infrastructure Plan which encourages and promotes healthy behaviour such as walking and cycling

Encourage and enable physically active travel through behaviour change initiatives

Where transport infrastructure is in place, there are a range of behaviour change activities and initiatives which have been shown to increase its use. The County Council aims to do this by:

- Using school travel planning to coordinate a range of behaviour change activities, skills training and investment priorities to encourage physically active travel behaviour in young people
- Introducing or supporting innovative behaviour change initiatives such as Bikeit and Easit where there are clear benefits and funding is available
- Promoting walking and cycling through school and workplace travel plans and through promotion of national events such as walk to school events, walking buses, bike week and Travelwise week
- Ensuring that places of work, education, leisure and food retail opportunities are located together in new developments.

9. Cowfold AQMA – Draft Action Plan 2013

9.1 Action Plan Background

The Further Assessment report shows that whilst Cowfold is characterised as a small village in a rural location, it has areas of poor air quality predominantly attributable to traffic emissions. The extent of the exceedence of the AQ objective for nitrogen dioxide at the worst-case location is such that emissions will need to be reduced by approximately 25% to meet the UK AQ objective. It is clear, therefore, that the Cowfold Action Plan needs to be both ambitious and well researched to achieve any significant improvements in air quality.

For many local residents traffic congestion in Cowfold has been acknowledged as a long term problem and the number of heavy duty vehicles using the A272 through the village is seen as having a significant negative impact not only on air quality but also in terms of noise and safety.

Clearly the Action Plan needs to address air quality problems in Cowfold, however it is equally important that AP measures do not significantly compromise air quality in other areas due to the addition of displaced traffic. For this reason an important step in the development of the AP will be to undertake an analysis of traffic makeup and patterns of movement to ensure that we are developing AP measures based on the most accurate traffic data available.

We are also aware that growth in traffic and the increase in diesel vehicles as a proportion of the national fleet also has an impact on the road network at a local level, possibly even counteracting the benefits of local measures in the longer term. In recognising this, and the fact that Horsham District Council has several acknowledged areas of poor air quality, the Action Plan has been broadened to incorporate district-wide measures to reduce traffic emissions.

There are, therefore, two overriding principles to the AP:

- **Cowfold specific measures to manage local traffic and to promote alternative transport options;**
- **District wide measures to reduce traffic emissions and mitigate the impacts of development on air quality.**

9.2 Proposed Air Quality Actions – Cowfold Specific Measures.

The Cowfold-specific draft action plan measures have been incorporated into two main project areas, a traffic management feasibility study and the promotion of alternative transport options.

9.2.1 The Cowfold Traffic Management Feasibility Study.

Horsham District Council has submitted two grant bids to secure Defra funding via the Air Quality Grant for 2012-2013 and for 2013-2014 to fund an independent traffic management feasibility study in Cowfold to be undertaken by an air quality consultant. Unfortunately both bids have been unsuccessful due to limited fund availability and high demand from other local authorities. In the absence of grant funding the analysis of traffic management options will need to be undertaken 'in-house' utilising existing air quality and traffic data to investigate various traffic management options in coordination with the Highways Authority at West Sussex County Council. The aim of the analysis will be to identify potential congestion reduction measures and to improve vehicle flow through the village.

It is important to acknowledge that actions taken in addressing traffic movements through Cowfold may have impact on neighbouring areas. For this reason the impact of any traffic management scenarios on the surrounding road network will also need to be assessed.

It is important that the Council assesses the full costs, benefits and cost effectiveness of any proposed traffic management options. The study will be extended to assess these aspects should any of the scenarios be identified as having a significantly beneficial impact on air quality and there being a realistic prospect of the scenario being adopted, based on technical feasibility and local acceptability. This will provide the Council with a robust impact assessment on each of the options to inform the final decision making process.

The options to be tested as part of the traffic management study were agreed by the Cowfold AQAP steering group members as described in Table 6.

Table 6: Cowfold Traffic Management Study Scenarios

Cowfold Traffic Management Study		
Scenario		**Description**
1		Utilising latest available traffic flow data and air quality monitoring data.
2		Modelled prediction of traffic volume for future year without imposition of any traffic management measures.
3		Feasibility study will indicate whether imposition of a 20mph speed restriction through the AQMA would improve air quality by smoothing flow and reducing congestion.
	Assess impact of Low Emission Zone (LEZ) in Cowfold for a future year (2015).	The LEZ would limit access to the village for specific vehicle types not meeting specified emission standards (e.g. Euro V).
5	Assess impact of 'gating' option.	Controlling traffic flow through the Cowfold AQMA by means of traffic light 'gates' outside the village.
6	Assess impact of providing improved signage for a future year (2015)	Use of variable message signage (VMS) on strategic routes outside the village to discourage through traffic during periods of congestion within the AQMA.
7	A combination of the above measures	Assessment of impact on air quality of combining measures.

9.2.2 Congestion Improvement Measures.

Additional measures to reduce traffic congestion within Cowfold are being investigated by Horsham District Council in conjunction with the highway authority, West Sussex County Council. The proposals will be presented as part of the planned consultation with Cowfold residents and local business representatives. The full consultation on the draft Action Plan will be conducted as soon as the traffic management study outcomes are available for presentation. Once the public and local business reaction to the proposed congestion improvement measures are assessed the detailed engineering solutions and costings will be sought from the highway authority. The proposed measures are detailed in Table 7 below:

Table 7: Congestion Improvement Measures – Cowfold

Congestion Improvement Measures	Lead Authority	AQ Impact	Cost
Review options for redesign of the two roundabout junctions in Cowfold to reduce congestion on A272.	WSCC	High	High
Review pedestrian crossing on 'The Street' to establish the benefit in changing from existing 'Pelican' to 'Puffin' crossing on traffic flow. See notes below.	WSCC	Low	Low
Review on-street car parking provision and possible re-designation of spaces as dedicated loading bays, to reduce number of vehicles stopping on the carriageway.	WSCC	Medium	Medium

Description of Pedestrian Crossings

The current pedestrian crossing in the centre of Cowfold village is a 'pelican' crossing. There may be some benefit in updating the crossing to a 'puffin' type as this is a more 'intelligent' system which could reduce unnecessary traffic stops. The crossing types are described as follows;

Pelican crossings have red/amber/green signals facing drivers, and red man/green man signal heads on the opposite side of the road to the pedestrians waiting to cross. A pedestrian push button unit operates these.

Puffin crossings differ from Pelican crossings as they do not have a flashing green man/flashing amber signal. The overall crossing time is established each time by on-crossing pedestrian detectors. The demand for the crossing is still triggered by the push button unit but kerbside pedestrian detectors are fitted to cancel demands that are no longer required (when a person crosses before the green man lights).

9.2.3 Promotion of Alternative Transport Options.

Cowfold village serves a local population of approximately 1800 residents Public transport options are limited and private car use is the primary mode of transport.

The Cowfold action plan steering group have agreed a number of proposed actions and measures designed to reduce vehicle emissions by promoting the use of alternative transport options and facilitating the uptake of low emission vehicles. The measures will be subject to local consultation before possible inclusion into the final action plan. The range of measures under consideration are presented in table 8 below:

Table 8: Cowfold-Specific Action Plan Measures – Promotion of Alternative Transport Options.

ACTIONS	DESCRIPTION	Lead Authority
Working with local businesses	**Alternative Refuelling Options:** Consider value of providing an electric vehicle charging point within the village. Ensure compatibility of any EV charging points to enable link to "Charge your Car" pay as you go network. Encourage development of CNG refuelling network across the district via private companies and as part of a district alternative fuel strategy (See District-wide AP measures). **Improve local bus service –** Liaise with local PSV operators to restrict vehicles entering AQMA to Euro V standard. Consider subsidising strategic bus services to village schools via grant funding/Section 106 contributions to address 'school-run' traffic peaks. Investigate provision of local real-time bus information at bus stops to promote use of existing services, including the hourly Horsham to Brighton route facilitating onward connections by rail. **Transport Plans/ Travel Plans:** Promote to existing businesses and new developments innovative solutions: e.g. low emission incentives; driver training; car share schemes; car clubs. **Freight Delivery Partnership:** Encourage use of alternative lorry routes; investigate opportunities for local and shared deliveries; Encourage use of low emission delivery vehicles within AQMA, provide links to CNG refuelling strategy.	HDC WSCC
Smart Choices	**Encouraging walking and cycling**: Seek funding for improvements to safe local walking, cycling, horse riding paths, improve signage. Liaise with WSCC and Sustrans to improve facilities and encourage uptake. **Working with schools:** Work with WSCC to enhance school travel plans, identify safety improvements to encourage walking, cycling walking buses etc. Contribute to air quality awareness education programmes. Link to WSCC LTP3 initiatives.	WSCC /HDC

9.2.4 Time Scale for Implementation of Cowfold Air Quality Action Plan.

The proposed Cowfold traffic management study was originally dependant upon securing funds from the current Defra grant application. In light of the Defra grant application having been rejected on 30th August 2013, it will be necessary to consider other options to obtain required traffic data and to seek alternative means for assessing the impact of the proposed traffic management options on air quality. Once the necessary information has been gathered, the draft action plan for Cowfold will be presented for public consultation with a period of 3 months thereafter to gather and fully assimilate all comments and suggestions. We are therefore proposing to submit the final action plan to Defra by April 2014.

9.3 District-Wide Measures to Reduce Traffic Emissions and Mitigate the Impacts of Development on Air Quality.

Horsham district currently has two Air Quality Management Areas, in Storrington and Cowfold. Both locations are villages on 'A' road routes with high traffic volumes and residential properties close to the kerbside. There are several other villages within the district which share similar characteristics and at least one village where pollution levels have been close to exceeding the air quality objectives.

Traffic volume in West Sussex has been growing at a rate of 18% since 1990 (in line with the national trend) and there continues to be a significant demand for additional housing. There are 4000 residential units currently being developed at two allocated sites in the north of the district. The South East Plan sets a target of 650 houses per year as part of the housing allocation, however over previous years this target has not been met and additional development across the district will be necessary in order to fulfill the overall commitment. It is anticipated that adjoining Authorities have a similar requirement for growth in the residential sector.

Clearly the need for development is linked to economic growth and the presumption in favour of development is intrinsic to the new National Planning Policy Framework (NPPF). However, the associated growth in traffic puts additional pressure on the local road network and can, in some cases, exacerbate air quality problems within settlements lying on busy routes. As many of the villages are conservation areas there is little or no scope for moving or redesigning receptor locations, and it is therefore important that the impact of traffic growth on the local road network is fully considered and action taken to minimise vehicle emissions wherever possible.

Given that Horsham district has acknowledged areas of poor air quality and a significant demand for new development, it was considered appropriate to include district-wide action plan measures to reduce traffic emissions on the local road network and to mitigate the impacts of development on air quality. There are two key measures proposed in this respect:

- **The development of a local Air Quality Planning Policy Guidance document.**
- **The adoption of a District Emission Reduction Strategy.**

9.3.1 Air Quality Planning Policy Guidance

The current Horsham District Council planning core strategy was formally adopted in 2007, prior to declaration of either of the two AQMA's. Whilst the authority was aware at the time that the core strategy was being written that air quality may be an issue within the district, there were no formal AQMA declarations and consequently policy statements in respect of air quality are limited.

In view of the change in the air quality status of the district, and the withdrawal of the general planning guidance on air quality (Planning Policy Statement 23: Planning and Pollution Control) as part of the new National Planning Policy Framework (NPPF), there is a need for local planning guidance on air quality.

The Environmental Health department have commissioned a consultant to work with officers from Environmental Health and Strategic Planning to develop a planning guidance document designed to assist developers. The guidance document will establish the principle of Horsham district as an 'Emission Reduction Area' and require developers to use 'reasonable endeavours' to minimise emissions and, where necessary, offset the impact of that development on the environment. The guidance will set out a range of locally specific measures to be used to minimise and/or offset the emissions from new development, and require the cumulative impact of all relevant committed developments to be assessed as part of the planning application.

The air quality planning policy guidance will be based on the principles of the DEFRA good practice guidance – '*Low Emission Strategies: Using the Planning System to Reduce Transport Emissions*'. The document was published in January 2010 as part of the Local Air Quality Management (LAQM) Technical Series. The Low Emission Strategy approach can be summarised as follows:

- Integrated, evidence based approach to residual, road transport emission reduction via the simultaneous assessment and mitigation of both regulated air quality pollutants and Greenhouse Gases (GHG);

- Improve residual road transport emissions via the accelerated uptake of cleaner fuels and technologies;

- Recognition of road transport emissions creep, due to the aggregated impact of development schemes, and the need to improve assessment methods for establishing impact and options for mitigation;

- Recognition of the incremental benefits of individual development schemes and residual road transport emissions improvement, aggregated across an area;

- Pro-active, integrated approach to land-use planning with other key, local authority low emission strategies to reduce road transport emissions i.e. transport plans, community/social fleet emission improvement strategies, economic development and procurement strategies;

- Achieve development scheme acceptability through the implementation of reasonably practicable on and off-site low emission mitigation measures, including the consideration of compensatory damage costs (off-set tariff), required by a combination of planning conditions and obligations;

- Consideration of the use of Community Infrastructure Levy, where adopted, or in situations where it is likely to be triggered, for the implementation of low emission, road transport infrastructure.

Horsham District Council Strategic Planning team is in the process of reviewing the adopted Core Strategy to take account of changes to national policy. The new document is known as the Horsham District Planning Framework (HDPF). As part of this review, the existing Environmental Quality policy (CP2) has been updated to consider the impact of development on air quality and to reinforce the need to minimise emissions from development. The new policy identifies the whole district as an 'Emission Reduction Area' requiring all development to give due consideration to Air Quality Planning Guidance which

is currently being prepared. The Preferred Strategy document has been out to consultation, closing on the 11th October. The full document is available to view and download at http://www.horsham.gov.uk/environment/planning-policy.aspx

Following consultation, Draft Policy 25: Environmental Protection will be reviewed in light of the comments received. The final version of the policy will be included in the Submission draft of the document which is scheduled for Spring 2015. The timetable for adoption of the Horsham District Planning Framework is set out below;

Preferred Strategy consultation: currently running until the 11th October
Proposed Submission consultation: Spring 2014
Adoption of Document: Summer 2015

The Horsham planning guidance will be framed in a local context with the following aims and objectives :

Table 9: Air Quality Planning Policy Guidance - Aims and Objectives

Action Plan Measure	Actions	Description	Objectives
Air Quality Planning Policy Guidance		Guidance Objectives: • To prevent AQ in current AQMA's deteriorating. • To prevent any new areas being declared. • Reducing the need for car-based travel. • To improve overall air quality of the district by encouraging the uptake of Low Emission Technologies as stated in District Emission Reduction Strategy.	* reducing pollution through promotion of alternative transport modes * encouraging uptake of new technologies through planning process * simplifies planning process * CO2 reduction * promotion of environmentally friendly public transport, * increase profile of green transport and fuel, * promote research and development * set technical requirements for AQAssessment in agreement with Sussex-wide planning guidance.
	Offsetting approach	• Where negative impacts of the development cannot be fully mitigated a contribution towards local AQ initiatives could be required via S106/CIL. • Dependant on the scale of the development, larger AQ infrastructure projects to be identified for CIL list.	* Fund air quality improvements projects via S.106 Agreements / Community Infrastructure Levy contributions. * NPPF requires sustainable transport provision & duty to work towards AQ objectives.
	Links to Sussex wide Planning Guidance & Low Emission Strategy Guidance.	• AQ assessment methodology • AQ impact assessment.	* Continuity across the Sussex area. * Adds 'weight' to guidance.

9.3.2 District Emission Reduction Strategy

The aim of the district emission reduction strategy will be to coordinate local policies, initiatives and opportunities to reduce emissions of air pollutants and green house gases in Horsham district. The strategy will primarily focus on reducing emissions from transport using the local road network by facilitating the uptake of cleaner fuels and technologies and encouraging modal shift from private car use towards more sustainable transport options. It is intended that the strategy will centre on three main action plan initiatives:

- District-wide alternative fuel strategy
- District-wide fleet improvements (public and commercial)
- Smarter choices - promoting techniques for influencing people's travel behaviour towards more sustainable options.

The strategy will link to the air quality planning guidance document in reducing emissions from development and will identify local measures towards which offset contributions from development could be directed.

In addition to reducing air pollutants such as nitrogen dioxide, there is a recognised link between air pollution and green house gas emissions from combustion processes. The emission reduction strategy will also therefore support the Council's climate change commitments as road transport accounts for approximately a third of carbon dioxide emissions across the Horsham District. The climate change strategy commits the Council to achieving the following targets:

- For the District - aim to reduce carbon dioxide emissions by 26% up to 2020 and 80% by 2050 (against a 1990 baseline)
- For the Council - aspire to reduce carbon dioxide emissions by 42% by 2020 and become carbon neutral by 2050

The development of an emission reduction strategy will require partnership working with West Sussex County Council and the Horsham District Council Sustainability and Strategic Planning teams. This will enable existing emission reduction initiatives and programmes to be 'tapped into' to avoid duplication of effort. There may also be opportunities on a district or county wide level to examine options for alternative fuel strategies and improvements to local authority and commercial vehicle fleets.

On a local level the Action Plan steering groups will be able to encourage Parish Councils to adopt the strategy and to work with the local community and businesses to promote and coordinate efforts to reduce emissions.

The primary District Emission Reduction Strategy document will be developed by Horsham District Council in coordination with WSCC over the next 12 months. Provided that the strategy is adopted, the progress and development of individual initiatives and programmes will be ongoing, dependant on funding. The strategy will be linked to the air quality planning guidance where appropriate. Updates on strategy initiatives will be reported annually via the Defra Local Air Quality Management (LAQM) Progress Reports.

The aims and objectives of the District Emission Reduction Strategy proposal are summarised in table 10 below.

Table 10: District Emission Reduction Strategy - Aims and Objectives

Action Plan Measure	Actions	Description		Objectives
District Emission Reduction Strategy	District-wide alternative fuel strategy	**To reduce emissions on local road networks**. This measure incorporates: CNG strategy, EV points strategy and possible use of other fuel sources. (LPG, BIOfuels). For new and refurbished filling stations require one alternative refuelling option for every four pumps to generate district wide refuelling network. Provide improved infrastructure to encourage the uptake of LEV's. Rationalise districts LE fuel assets e.g. biomethane.	HDC	*increase profile of green transport and cleaner fuels, *HGV emission reduction, *installation / promotion of EV charging points encourage via planning process. *Encourage provision of small CNG refuelling stations for local commercial fleet owners. * Link to Govts investment in gas refuelling (£9m) *Scope to provide infrastructure to convert Council fleet to CNG/Biogas with long term revenue, AQ & GHG benefits.
	District-wide fleet improvements (public and commercial)	**Public/Commercial transport fleet improvements**: Improve bus technology through negotiation with local bus companies or through tender. Improvements to HDC fleet and public service vehicles operating across district e.g. waste collection. Taxi fleet improvements through licensing. Fleet improvement agreements with new development via encouragement of uptake of low emission vehicles, local deliveries or shared deliveries, car share scheme, pool car scheme. Link to CNG, Biofuels and EV strategy.	HDC	* reduce emissions, reduction congestion, * revenue benefits *increase profile of green transport and fuel, * promote research and development, *HDC to lead by example, * Fewer polluting vehicles * contributes to Council's GHG commitment.
	Smart choices	**Promotion and encouragement of sustainable transport options**: via planning to require submission of travel plans incorporating Car Clubs / Car share / Pool car schemes. Negotiate with local businesses to produce travel plans. Promotion of cycling and walking: Village Centre secure bike parking. Provision of bike racks as a part of new developments. Improvements to walking and cycling routes. Improved cycle route signage.	WSCC / HDC	* reduces traffic congestion and traffic emissions during peak periods * health benefits * Safety improvements.

9.3.3 Road Infrastructure Improvements

The volume of traffic passing through villages, particularly in the south of the District, is influenced to some extent by problems associated with the main A27 trunk route. The A27 runs parallel to the coast originating in Wiltshire and passing through West Sussex before terminating in East Sussex. It is purported that the section between Portsmouth and Lewes is one of the busiest trunk roads in the UK.

The high volumes of traffic passing through villages like Storrington and Cowfold are at least partly attributable to drivers avoiding renowned bottlenecks on the A27 at Arundel and Worthing, where there is considerable congestion particularly at peak times.

Proposals to improve the route have been ongoing for many years. A proposed scheme to bypass Arundel was dropped in 2003 although the junction at the end of the dual carriageway has been partly made into an underpass. At Worthing the possibility of a bypass has been discussed since 1967, even getting as far as passing the inspector's report at a public inquiry; however the plan was subsequently dropped in 1996 due to rising costs.

In considering all possible action plan measures to improve air quality within the Storrington and Cowfold AQMA's, as well as within other villages in the district, the steering group considered it important to include the improvement of the A27 as an action plan measure. Responsibility for major road schemes, including the A27, lies with the Highways Agency. Therefore the action plan measure will be to campaign to the Highways Agency for improvements to the A27 on air quality grounds. This reinforces one of the key priorities of the current WSCC Local Transport Plan (LTP3) which states;

"*Our highest priorities will tackle the key issues we face and bring about radical improvements to quality of life for the people and businesses in the County. Our highest priorities are: 1. Improvements to the A27 trunk road and complementary public transport improvements to the current bottlenecks at Chichester, Arundel and Worthing (not currently programmed) to increase capacity, improve reliability and safety and increase the competitiveness of local businesses and attract investment."*

The action plan steering group will determine the most effective means of actioning this measure and progress will be reported via the Defra Local Air Quality Management (LAQM) Progress Report.

Current highway improvements to the A23 between Warninglid and Handcross to the east of Cowfold may reduce some traffic movements through the village.

9.3.4 Air Alert – Air Pollution Early Warning System

AirAlert is a service, provided by the Sussex Air Quality Partnership (SAQP), that sends alert messages to vulnerable people in Sussex informing them that poor air quality is predicted in their area. The service is free and can be accessed via a simple registration process. As an existing service aimed at protecting the health of individuals it is a valuable resource, particularly in areas where air quality is poor, and for this reason it has been adopted as a district –wide action plan measure.

The technical and forecasting, message delivery, web services and support for the service is provided by The Environmental Research Group (ERG) at King's College London. The group provides daily updates of air pollution across Sussex and provides the airAlert web services and support on behalf of the Sussex Air Quality Partnership.

The University of Brighton has provided the research and evaluation of the service since the pilot in 2006. The university has undertaken questionnaires and focus groups with participants, to assess their response to receiving messages, their actions and gather information on whether the information assisted patients to self-manage their health.

AirAlert was extended to schools as a pilot service in 2007. The key objectives of airAlert-4-schools service is:

1. To reach out and inform vulnerable young people.
2. To establish an effective delivery service for health and environmental information for schools.
3. To engage young people and education professionals in the use of health and environmental information.

In May 2011 a new study was launched to find out if air pollution alerts benefit vulnerable people with breathing difficulties. The joint project involves partners from the Sussex Air Quality Partnership, the Environmental Research Group (ERG) at King's College London and St George's, University of London (both members of the MRC-HPA Centre for Environment and Health). The project will focus on the public health benefits from air pollution alert services that deliver messages to vulnerable people and their carers when high air pollution levels are expected. This targeted information can prompt people to take their medication or avoid air pollution sources, similar to the way to hay-fever suffers might routinely manage their conditions during the spring and summer.

As part of the action plan, the airAlert service will be promoted to local residents, GP surgeries, health support groups and schools. Where possible funding towards the costs of the service, currently wholly funded by Sussex-Air, will be sought through AQMA grant and other funding opportunities.

10. Preliminary Assessment of Proposed Action Plan Measures.

The draft action plan covers a wide range of options, both on a local and on a district-wide scale. As part of the development of an action plan Defra require authorities to demonstrate that they have considered all options that are open to them in pursuit of the air quality objectives, and to rank each option according to cost and the likely improvements to air quality. At the preliminary stages of drafting an action plan it is not always possible to accurately cost many of the measures proposed, and in some cases further research is required to assess the likely impact of an action on air quality before a decision can be taken as to whether it should be developed further.

Defra have provided a system of ranking based on 3 descriptors of 'High', 'Medium, and 'Low'. These may be assigned using quantitative information if actual costs and air quality benefits have been determined, or using best professional judgment if not. In the case of this first draft action plan for Cowfold, a preliminary cost/benefit assessment of the measures has been carried out but will be revised and updated once the results of the traffic management options have been appraised and feedback from the public consultation exercise evaluated. The refinement of this information will help with the process of deciding on the measures to be adopted into the final action plan.

The list of proposed measures and the preliminary ranking in terms of cost and benefit to air quality are provided in Table 11.

TABLE 11: HORSHAM AIR QUALITY ACTION PLAN v.1 - ASSESSMENT & PRIORITISATION OF MEASURES

ACTION PLAN MEASURES		OBJECTIVE	LEAD AUTHORITY	AQ IMPACT	COST	TIMESCALE
DISTRICT WIDE MEASURES	Air Quality Planning Guidance	Mitigation of air quality impact of development	HDC	Medium	Low	Planning Phase - 2012 Implementation Phase - 2014 for adoption of Horsham District Planning Framework.
	District Emission Reduction Strategy	Development of alternative fuel strategy/ Improvements to public & commercial fleets/ Smarter choices. To reduce transport related emissions to air.	HDC/WSCC	Medium	High	Planning Phase - 2013 Implementation Phase - 2014 - ongoing
	A27 Improvements	Improve A27 at Worthing & Arundel and maximise use of main trunk road.	HA/WSCC	High	High	Ongoing / Highly dependant on Govt. funding
	AirAlert	AQ warnings to individuals with respiratory / cardiac conditions	Sussex-Air	Low	Low	Ongoing
COWFOLD SPECIFIC MEASURES	Traffic Management Study	Vehicle restriction options/measures to reduce traffic congestion & improve flow.	HDC / WSCC	High	High	Planning phase - 2013 Implementation phase - 2014 dependant on funding availability
	Congestion Improvement Measures	Improvements to existing arrangements to reduce traffic congestion.		Medium	Medium	
	Promotion of Alternatives	Local initiatives to incentivise the uptake of low emission vehicles.	HDC / WSCC	Low	Medium	Planning phase 2013. Implementation dependant on funding.

Cost bandings: 'High' is greater than £200K; 'Medium' is between £50K and £200K and 'Low' is less than £50K.

11. Discussion.

The Further Assessment report for Cowfold concluded that there is significant and sustained exceedence of the annual mean air quality objective for nitrogen dioxide, which can be primarily attributable to traffic emissions. Based on 2011 monitoring and modelled data it will be necessary to reduce emissions in the centre of Cowfold village by 25% in order to comply with Government's AQ objective. The Further Assessment report for Storrington indicates a similar level of exceedence and there are other areas of the district where air quality is significantly compromised. Local authorities have a duty under the Environment Act 1995 to work towards compliance with the AQ objectives and an obligation to protect the health of individuals within the district adversely affected by poor air quality.

The most effective and expedient way of improving air quality within the Cowfold AQMA would be to reduce traffic congestion and, where possible, improve traffic flow. However, a 25% reduction in traffic emissions will be very difficult to achieve in practice and could cause the air quality problem to be displaced to other vulnerable locations. Therefore the primary proposed action, specific to the Cowfold AQMA, is a traffic management study which will assess a number of options for reducing traffic congestion and restricting more polluting vehicles. The recommendations of the study will be subject to full public consultation and implementation of any agreed measures will be dependant on the availability of sufficient funding.

Traffic management schemes in isolation are unlikely to be sufficient to achieve the necessary reduction in emissions and any gains are also likely to be counteracted to some extent by year on year traffic growth and the impact of new development. It is also important to take action to reduce the risk of air quality worsening in other areas and therefore a suite of other actions and measures have been proposed on a more strategic, district-wide level to reduce emissions from the transport network as a whole. These measures include the air quality planning guidance document, coupled with an emission reduction strategy, and a combination of other integrated measures intended to encourage and facilitate the uptake of low/zero emission transport options.

The successful implementation of the action plan will require significant commitment from all stakeholders including Horsham District Council, the highway authority, the parish council and the local community. The action plan steering group will be responsible for appraising the action plan options and for deciding which measures will be incorporated into the final report. The action plan is a 'live' document and will be reviewed annually as part of the progress reporting process to ensure that the aims and objectives are being met and that it is updated in line with new guidance and current practice.

12. Consultation Process for Air Quality Action Plan

Following publication of the Detailed Assessment for Cowfold, Horsham District Council set up two working groups to progress the Cowfold Action Plan. An officer-lead technical group to produce the Further Assessment Report and draft Action Plan and a Member-led steering group to review the information and agree and monitor the measures incorporated into the Action Plan.

The steering group comprises of the local district Councillors and cabinet member, the County Council Councillor, parish council representatives and officers from West Sussex County Council Highways and Rural Area Community and Economic Development departments. Advisory members to the steering group include Sussex Police, Environment Agency, South Downs National Park Authority, HDC Economic Development, HDC Strategic Planning, HDC Environmental Co-ordination officer. The full list of the Steering group and Technical Group representatives are provided in Appendix 1. The coordination of each stage in the development of the action plan rests with the AQAP steering group.

The draft action plan will be presented for public consultation as soon as the Cowfold traffic management options appraisal has been completed. The consultation will be conducted over a period of 8 weeks and will include a public exhibition within the village. The draft action plan will be published on the Council's website and a press release issued to draw attention to the consultation. The document will be circulated to all external consultees as set out in Chapter 5 of the Local Air Quality Management Policy Guidance document LAQM.PG(09):

External Consultees

- Secretary of State
- Defra
- Environment Agency (Sussex Area Office)
- South Downs National Park Authority
- All neighbouring local authorities – Chichester DC, Arun DC, Adur DC, Worthing BC, Mid-Sussex DC, Crawley BC, Brighton & Hove CC, Waverley BC, Mole Valley DC
- West Sussex County Council (Highways Authority)
- Local Member of Parliament
- County / District Councillors
- Parish Council
- Sussex Health Protection Agency
- Local community groups
- Local residents
- Local businesses

Internal consultees:

- Chief Executive
- Strategic Planning
- Development Management

13. References

AEAT (2003) UK NO2 Diffusion Tube Network Instruction Manual.
AEA (2009) WASP – Annual Performance Criteria for NO2 Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 103-107.
AEAT/ENV/R/2837 - QA/QC Procedures for the UK Automatic Urban and Rural Air Quality Monitoring Network (AURN) September 2009
DETR (2000) - The Air Quality (England) Regulations. HMSO
DEFRA (2002) - The Air Quality (England) (Amendment) Regulations. HMSO.
DEFRA (2007) - The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Vol 1 and Vol 2
DEFRA (2009) – Local Air Quality Management Policy Guidance, LAQM.PG(09)
DEFRA (2009) - Local Air Quality Management Technical Guidance. LAQM.TG(09)
The Environment Act (1995)
Defra - 'Low Emission Strategies Good Practice Guidance' January 2012
EPuk (NSCA) – Air Quality Management Areas: A Review of Procedures and Practice for Local Authorities
Defra/Laxen and Marner 2003 - Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites
LAQM "NOx to NO_2 conversion spreedsheet" version 2.1 (John Abbott & Sally Cooke, AEA, 24.10.2011)
DEFRA Good Practice Examples of Action Plans (Defra website)
UK Parliamentary Environmental Audit Committee, March 2010

Appendix 1

Local Air Quality Management
Cowfold AQMA

Action Plan Development – Membership of Working Parties

Steering Group

Permanent Members:
Chair – Rod Brown - Head of Planning and Environmental Services
Cllr Rogers - Cabinet Member for a Safer & Healthier District
Cllr Breacher- Deputy Cabinet Member for a Safer & Healthier District
Cllr Chowen – Local member
Cllr Clarke – Local member
Cllr Barnard - West Sussex County Council member
Peter Bradley - Service Manager, Engineering Solutions (WSCC)
Iain Steane - Transport Planner, Planning & Transport Policy Team, Strategic Planning (WSCC)
Ed Dickinson - Senior Manager - Rural Area, Community and Economic Development Service (WSCC)
Cali Sparks - Principal Community Officer, (WSCC)
Mr V Allmond – Chairman Cowfold Parish Council
John Batchelor – Chair of technical group / Environmental Health Manager
Technical Group representative – Lisa Hawtin / Adam Dracott
Admin support - tbc

Advisory Members:
Environment Agency
South Downs National Park Authority
WSCC Highways & Transport Department
WSCC Local Development Transport Planner
Sussex Police
HDC Economic Development
HDC Strategic Planning
HDC Environmental Co-Ordination Officer
Technical Group representatives

Technical Group

Chair – John Batchelor - Environmental Health & Licensing Manager
Cllr Rogers - Cabinet Member for a Safer & Healthier District
Adam Dracott – Principal Environmental Health Officer
Lisa Hawtin – Environmental Protection Officer
Peter Bradley – WSCC Highways Representative
Nigel Jenkins – Project Manager Sussex-Air Partnership
Admin support – tbc

October 2013

Appendix 2: Abbreviations and Glossary

AADT	Annual Average Daily Traffic (vehicles per day)
ADMS Urban	Atmospheric dispersion model for predicting pollutant concentrations
AQEG	Air Quality Expert Group
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network (air quality monitoring)
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EA	Environment Agency
EF	Emission Factor
EMIT	Emissions inventory tool
FDMS	Filter Dynamics Measurement System
HDV	Heavy Duty Vehicles, ie, all vehicles more than 3.5 tonnes including Heavy Goods Vehicles and buses
HGV	Heavy Goods Vehicles greater than 7.5 tonnes in weight
LA	Local Authorities
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles (includes passenger cars and other vehicles < 3.5 gross vehicle weight).
LGV	Light Goods Vehicles
µg/m³	micrograms per cubic metre in air
NO	Nitrogen monoxide, also termed Nitric oxide
NO2	Nitrogen dioxide
NO2 Road	Nitrogen dioxide minus background concentration
NOx	Oxides of Nitrogen (NO + NO2)
NOx Road	Nitrogen oxides minus background concentration
OS	Ordnance Survey
PM10	Airborne particulate matter with a (equivalent aerodynamic) diameter of ten microns (10 µm) or less
PM2.5	Airborne particulate matter with a (equivalent aerodynamic) diameter of 2.5 microns (2.5 µm) or less
QA/QC	Quality Assurance and Quality Control
TEOM	Tapered Element Oscillating Microbalance
UKAS	United Kingdom Accreditation Service
UWE	University of the West of England
WASP	Workplace Analysis Scheme for Proficiency