

## **Cowfold Air Quality Management Area scheme proposals review, September 2017**

This review note has been prepared by officers from Horsham District Council and West Sussex County Council for the Cowfold Air Quality Steering Group. It reviews the previous measures and assessments undertaken for all of the identified measures proposed to address air quality issues in Cowfold. This includes traffic management related measures, and other measures as listed below which are drawn from the Cowfold Air Quality Action Plan (September 2013), as well as other proposals highlighted by the Steering Group.

### **Summary**

There are no clear cut highway infrastructure measure solutions to the problem because of concerns about either the deliverability of the schemes proposed, a lack of evidence that there would be any material improvement to air quality, or because of concerns about the likelihood of schemes generating a business case.

### **Main review**

The following list of measures has been reviewed in this document:

#### **General traffic management measures identified in 2013 Action Plan**

- (1) Impact on air quality of imposing a 20mph speed restriction
- (2) Impact of Low Emission Zone for Cowfold
- (3) Impact of a 'gating' option for Cowfold
- (4) Impact of improved signage on strategic routes or restrictions on longer distance lorry traffic

#### **Specific congestion improvement measures identified in 2013 Action Plan**

- (5) Review options for redesign of two roundabouts
- (6) Review pedestrian crossing on 'The Street' to establish the benefit in upgrading this crossing
- (7) 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
- (8) Promotion of alternative travel options

#### **Other highway infrastructure measures**

- (9) Realignment of A272 Bolney Road adjacent to Huntscroft Cottages.

#### **District-wide measures identified in 2013 Action Plan**

- (10) Air Quality Planning Guidance

- (11) District emission reduction strategy
- (12) A27 improvements
- (13) Air Alert


### National vehicle fleet improvements


- (14) Improvements in the national vehicle fleet.


Measures have been assessed based on their anticipated air quality benefit for the Cowfold Air Quality Management Area (AQMA) on a low/medium/high (L/M/H) basis. Next step recommendations are provided in relation to each measure for the Steering Group, based on the red-amber-green scoring definitions below. Please note that few of the schemes are marked 'green' as they do not combine being a scheme that has a clear air quality benefit, and a scheme which is also deliverable.

### Next steps conclusions scoring definitions

 Scheme has a clear air quality benefit and appears to be deliverable. Scheme should be investigated further.

 Scheme appears that it may have an air quality benefit, however the scale of this benefit is unknown, and/or the deliverability of the scheme is unclear. The scheme could potentially be investigated further

 Scheme is expected to have little or no expected air quality benefit and/or is not viable

 Scheme is being developed through other delivery mechanisms

### Assessed General Traffic Management Measures

|   | Scheme  | Description  | What do we know about this scheme?   | What are the main issues associated with this scheme?  | Anticipated AQMA air quality benefit (L/M/H) | Next steps recommendations   | Supporting Evidence references   |
|---|---|--|--|--|--|--|--|
| 1 | Impact on air quality of imposing a 20mph speed restriction | Investigation of whether imposition of a 20mph speed restriction through the AQMA would improve air quality by smoothing flow and reducing congestion. | - Ricardo-AEA have previously concluded in an assessment of the Storrington AQMA that if traffic in the village centre could flow freely at an average speed of 25 to 30 mph this would give rise to lower vehicle emissions of nitrogen oxides than at 20mph. This is based on the emissions rates included in the <a href="#">Emissions Factors Toolkit</a> . In contrast research by Imperial | - It is known that the most severe air pollution problems are experienced at peak times when traffic flows are highest and average vehicle speeds are below 20mph.<br><br>- Clearer evidence is needed to understand the impact of traffic speeds on emissions from different size petrol and diesel vehicles. | Very low                                     | Given that the main pollution problems are known to exist at peak traffic flow times when average vehicle speeds are below 20mph, it is not recommended that this is a focus of Steering Group | Cowfold Air Quality Action Plan (September 2013) – Traffic Management Study Scenarios<br><br>Traffic Management Feasibility Study: |

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|---|---|---|--|---|--|--|--|
|   |   |   | <p>College found emissions of NOX and CO2 to be higher at 20mph compared to 30mph for Euro VI petrol vehicles (1.4 – 2.0 litre) but found the opposite was true for diesel vehicles of the same engine size range.</p> <p>- The average speed of the current traffic through the Cowfold AQMA is considered to be around 20-30 mph during free flowing periods and less than 20 mph during busy periods; this is mainly due to congestion caused by vehicles reducing speed or stopping to negotiate the junctions in the middle of the village.</p> |   |  | investigation.   | <p>Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)</p> <p>An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London, Centre for Transport Studies, Imperial College London (April 2013)</p> |
| 2 | Impact of Low Emission Zone for Cowfold | The LEZ would limit access to the village for specific vehicle types not meeting specified emission standards (e.g. Euro V or above).                             | <p>- Any LEZ might restrict all HGV's of pre Euro V classification from entering the village.</p> <p>- A LEZ trial was undertaken in Storrington AQMA in partnership with Siemens. The scheme could not go ahead due to the Greenzone system not functioning affectively. Signal reception problems affecting the system resulted in significant loss of data, whilst there were also problems with the categorisation of vehicles into Euro standard categories.</p>  | - Additional considerations are needed to be given to the practical enforceability of any LEZ restrictions, whether exemptions are needed for local access, and the impacts of the LEZ on local businesses and the local community.   | Expected Medium-High                         | Given the experience from the Storrington LEZ trial, and the questions of practical enforceability of any LEZ restrictions it can be expected that there would be reservations about the feasibility and effectiveness of progressing a separate LEZ in Cowfold. | <p>Cowfold Air Quality Action Plan (September 2013) – Traffic Management Study Scenarios</p> <p>Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)</p>  |
| 3 | Impact of a gating option for Cowfold   | Traffic gating would involve using traffic signals at suitable points on the entry to the village to control the inflow of traffic during busy periods, and hence | <p>- This scheme was discussed for Storrington however was not progressed due to concerns about potential impacts on 'rat running' on other traffic routes around the village.</p> <p>- There does not appear to have been a</p>   | - Driver compliance and enforceability of the traffic signal is a key concern with the proposal and it is believed that Sussex Police would hold reservations in relation to the scheme due to concerns about potential crime and disorder problems resulting from a lack of driver | Expected Medium at Huntscroft Cottages       | Given the compliance and enforcement issues associated with this scheme, and the likely difficulties in generating a   | Cowfold Air Quality Action Plan (September 2013) – Traffic Management Study Scenarios  |

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|--|--------|--|--|--|--|--|--------------------------------|
|  |        | <p>reduce congestion and emissions from stationary or very slow moving vehicles.</p> | <p>clear proposal explained behind how gating in Cowfold would work to date.</p> <ul style="list-style-type: none"> <li>- A focused scheme which attempts to reduce the amount of peak time stationary or slow moving westbound traffic outside Huntscroft Cottages (the air quality receptor exposure hot spot within the village) is a possible option.</li> <li>- This scheme could involve the use of a traffic signal at the eastern entry point to the village, linked to sensors which record when traffic queues back up to Huntscroft Cottages.</li> <li>- This proposal would not be intended as a measure that attempts to reduce the amount of westbound traffic travelling through the village, and would only be intended to re-distribute westbound queuing traffic to outside of the village. The scheme should not increase the overall time it takes eastern approach vehicles to pass through Cowfold.</li> <li>- There are none known UK examples to date where traffic signals have been used to gate traffic on the grounds solely on the purposes of air quality, rather than junction or pedestrian safety.</li> </ul> | <p>compliance and potential public order offences.</p> <ul style="list-style-type: none"> <li>- It is unlikely there will be any additional resources in place to provide dedicated officer enforcement and the scheme would need to be self-enforcing. Enforcement cameras are only installed to reduce casualties and siting of such equipment is based upon a casualty and speed based criteria. Use of cameras for enforcement of an air quality scheme would be outside both national and local guidelines.</li> <li>- There are issues with regard to the extent of any queuing introduced on the eastern entry to the village which will be a safety consideration given the national speed limit and bends in road approaching the eastern end of Cowfold.</li> <li>- Detailed testing and modelling would be required to understand whether the scheme would work in practice and improve air quality outside of Huntscroft Cottages.</li> <li>- Although the intention would need to be that the scheme would operate without increasing the overall time taken to pass through Cowfold from the eastern approach, imposition of a traffic signal could still generate re-routing issues for other rural lanes in the area which would need to be considered.</li> <li>- The costs of testing and implementing the scheme will not be insignificant. Even if the legal and enforcement issues could be overcome, and a benefit proven, it is anticipated that the likely costs of developing this scheme will make proving a business case difficult in</li> </ul> |  | <p>business case, it is not recommended that this scheme is a further focus of investigation for the Steering Group.</p> |                                |

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|   |   |  |   | the context of the apparent trend of improving air quality (see measure 14).   |  |  |   |
| 4 | Impact of improved signage on strategic routes or restrictions on longer distance lorry traffic | Changes to road signs might encourage longer distance lorry traffic to use other strategic routes such as the A23/A264/A24 to the north or the A23/A27/A24 to the south to avoid the Cowfold AQMA. Variable Message Signs (VMS) might also be considered to encourage drivers to use alternative routes at peak times when air quality problems are worse. | - The A272 is identified as a 'Local Lorry Route' within the West Sussex Advisory Lorry Route Network. This means that it is advised that the route should only be 'used for the starting or final leg of longer distance lorry trips or for travelling between built-up areas in West Sussex'. This is opposed to the 'Strategic Lorry Routes' where by it is advised that 'all movements crossing the County should use these routes with those starting or ending within the County using them in preference to local lorry routes wherever possible.'   | - The A272 is part of the West Sussex 'Local Lorry Route' Network. Whilst it is intended that longer distance 'strategic' journeys do not use the A272, the A272 is an important route connecting towns along this east-west route through the middle of the county.<br><br>- A feasibility study is needed to investigate the background of the problem, refer to available data and possibly new data on traffic flows and look into scheme design including details such as what the sign would look like, where it might be located and an estimated cost. As the A23 is not a WSCC maintained road the study would also need to cover off any additional permission required by Highways England. | Low/Medium.                                  | Funding is required to undertake a feasibility study.  | Cowfold Air Quality Action Plan (September 2013) – Traffic Management Study Scenarios |
| 5 | Review options for redesign of two roundabouts  | This scheme involves reviewing options for the operation of the roundabouts in the centre of the village.  | - Space constraints within the centre of the village mean that there are limited options for redesigning junctions to provide additional capacity.<br><br>- Opportunities to add additional approach lanes to roundabouts are limited due to space constraints, and likely impacts on pedestrian facilities and the character of the centre of the village.<br><br>- In terms of traffic signal options, whilst this may be potential to reduce the degree of queuing outside key receptor hot spots i.e. Huntscroft Cottages, by prioritising 'green time' to flows from the westbound eastern approach to the village, this is likely to create imbalanced queues and congestion on other | - There is expected to be significant cost to signalising the junctions at the centre of the village, which although having the potential to reduce air quality problems at Huntscroft Cottages is likely to create worse congestion and queuing problems on other approaches to the village.  | Expected medium                              | Due to the likely cost of signalisation problems and the extra queueing/congestion problems this is expected to create on some of the approaches to the village, it is not recommended that this is a focus for future investigation for the Steering Group. | Cowfold Air Quality Action Plan (September 2013) – Congestion Improvement Measures    |

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|---|---|---|--|---|--|--|--|
|   |   |   | approaches to the village.   |   |  |  |  |
| 6 | Review pedestrian crossing on 'The Street' to establish the benefit in upgrading this crossing    | Upgrading the crossing to the latest signal crossing technology.  | <p>- Since the Air Quality Action Plan was established this crossing has been upgraded to a Puffin crossing. This uses kerbside detectors to cancel demands on the crossing no longer required (if a person crosses before the green man lights).</p> <p>- The crossing uses 'vehicle actuation' technology. The crossing does not use microprocessor technology (Microprocessor Optimised Vehicle Actuation - MOVA) as this is not appropriate to apply in this location due to the nature of the traffic speeds.</p> <p>- Theoretically changes to pedestrian crossing operation in air quality management areas could paradoxically be approached in 2-ways during peak periods. Signals could be controlled to prioritise traffic green time to attempt to smooth flows to reduce very slow moving traffic and improve air quality at peak times, or to prioritise pedestrian green time to ensure people are not exposed to vehicle pollution for longer than necessary.</p> <p>- It is not believed that the current operation of the crossing is a main cause of traffic congestion in the centre of the Cowfold due to the nature of the mini-roundabouts.</p> | - it is not believed that any further benefit can be achieved to traffic flows in Cowfold through changes to the operation of the pedestrian crossing.                            | None/very low                                | it is not believed that any benefit can be achieved to traffic flows in Cowfold through changes to the operation of the pedestrian crossing. | Cowfold Air Quality Action Plan (September 2013) – Congestion Improvement Measures |
| 7 | Review on-street car parking provision and possible re-designation of spaces as dedicated loading | Potential changes to on-street parking and to delivery arrangements for businesses in the centre of Cowfold | <p>- It is believed that this measure was originally identified in the Action Plan in relation to delivery arrangements to the Coop before it moved to the former Old Coach House pub site.</p> <p>- There are not known to be significant</p>   | - Close monitoring of any proposals for new uses of the former Coop building will need to be made to ensure any potential impacts on air quality will be appropriately mitigated. | N/A  | Any planning applications coming forward for use of the former coop building, as well as any continuing or emerging community                | Cowfold Air Quality Action Plan (September 2013) – Congestion Improvement Measures |

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|---|---|---|---|---|--|--|---|
|   | bays, to reduce number of vehicles stopping on the carriageway  |   | on-street car parking or loading issues within Cowfold affecting air quality receptor hotspot locations through the village.  |   |  | concerns about on-street parking or loading issues should be monitored in relation to air quality impacts.   |   |
| 8 | Promotion of alternative travel options                         | This includes a number of measures focusing on working with local businesses, promoting electric vehicles, improving public transport, promoting travel plans, encouraging walking and cycling, and working with schools. | <p>- 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.</p> <p>- Although expected to be a low proportion of the overall volume of vehicle trips, engagement with Cowfold Primary School should continue in order to ensure as many local trips are made by other means to single child occupancy car use as possible.</p> | These schemes are being investigated through various delivery routes. Their direct impact on Cowfold air quality issues in the short to medium are not likely to be significant, however they form part of a wider approach of promoting a culture of using alternative travel options to single occupancy car use.   | Expected low in short term                   | These schemes and measures are being investigated through various other delivery avenues, and are subject to different deliverability and value for money considerations.  | Cowfold Air Quality Action Plan (September 2013) – Promotion of Alternative Transport Options |
| 9 | Realignment of A272 Bolney Road adjacent to Huntscroft Cottages | <p>- Re-alignment of the A272 Bolney Road away from Huntscroft Cottages (east from the junction with Fairfield Cottages).</p> <p>- Road would be re-aligned to the north.</p>   | - This scheme was primarily identified as a safety improvement scheme because of the narrow footpath adjacent to Huntscroft cottages.   | <p>- Further detailed investigation and design work would be needed to understand the distance of re-alignment required to move traffic away from the cottages receptor.</p> <p>- Depending on the degree of realignment required it is likely that this could affect the large trees and corner of the children's playpark so this scheme could impact the character of this area of the village.</p> <p>- The cost of the scheme is not known but is likely to be significant if underground utilities are present under the road and with the traffic management costs required. An initial estimate of the scheme cost is over £200,000.</p> <p>- This scheme is being assessed through the new WSCC Community Highways Scheme process and has a low benefit to cost ratio, so may not be</p> | Medium                                       | Information on the following issues is required to conclude whether this scheme is rejected or whether there are any other avenues for progressing this scheme given the initial outcome of the County Council Community Highway Scheme Process:<br>- A formal local view from the Parish Council on whether the scheme would be locally supported given the impacts on the area around Cowfold Playing Fields and the need for some Parish Council land to be dedicated to WSCC |   |

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|----|--------------------------------------|---|--|---|--|--|---|
|    |                                      |   |  | selected to be taken forward through the County Councils Integrated Works Programme (IWP). This assumes that no third party funding is available to support the scheme. |  | for the works to take place.<br>- A view from the Parish on whether there is likely to be any alternative local funding available to support the progression of this scheme. |   |
| 10 | Air Quality Planning Guidance        | The guidance provides advice to developers on how to address local air quality when making a planning application in Horsham District.  | The Planning Advice Document: Air Quality and Emissions Reduction Guidance has been completed and has been included in the Environmental Protection Policy 24 of the recently adopted Horsham District Planning Framework (HDPF).  | N/A   | Unknown                                      | Horsham District Council is looking to adopt this air quality guidance as a Supplementary Planning Document (SPD) and is progressing this.                                   | Cowfold Air Quality Action Plan (September 2013) - District-Wide Measures |
| 11 | District emission reduction strategy | Development of the Emission Reduction Strategy is progressing with a number of key projects being developed in collaboration with partners. Notably Horsham District Council is working with the Sussex Air Partnership and eV South East to provide locations within the District to house electric vehicle rapid charge points. eV South East is a public private partnership connecting eV charge points together to benefit and encourage the growth in electric vehicles (eV) in the region. | <ul style="list-style-type: none"> <li>- The level of future uptake of low emission vehicles and associated charging infrastructure is difficult to predict.</li> <li>- There is no known publically available vehicle charging infrastructure in the village.</li> <li>- Levels of impact on Cowfold are likely to be minimal in the short to medium term, however these measures can form part of wider promotion of low emission vehicles.</li> </ul> | - Unclear future uptake of low emission vehicles and demand for public charging infrastructure.   | Unknown.                                     | Horsham District Council is progressing this.  | Cowfold Air Quality Action Plan (September 2013) - District-Wide Measures |
| 12 | A27 improvements                     | - The Road Investment Strategy produced by DfT in March 2015 allocates a budget for the A27   | - This is expected to reduce traffic flows through Cowfold where longer distance traffic is avoiding the A27 due to congestion (for example longer distance  | - Highways England are currently looking at the improvement options and undertaking technical work before consultation expected in Spring 2017.                         | Unknown but expected low/medium              | - Highways England are currently looking at the improvement options and  | Cowfold Air Quality Action Plan (September 2013) - Road                   |



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|----|--|--|--|---|---|--|---|
|    |  | schemes including the A27 Arundel bypass and A27 Worthing and Lancing improvements.  | journeys between Haywards Heath and Chichester).   | - If approved, construction is currently scheduled to commence in 2021, with completion scheduled for 2023-2024.  |   | undertaking technical work before consultation in Spring 2017.   | Infrastructure Improvements<br><br>DfT Road Investment Strategy for the 2015/16-2019/20 Road Period |
| 13 | Air Alert                                  | Air pollution warning service (website, app, text message) aimed at vulnerable people, schools, health professionals and general public. | - Promotion of Air Alert is undertaken by officer support at the Sussex-air partnership.<br>- As of July 2016, there were 50 subscribers to this service across Horsham District .   | - Ensuring effective awareness of Air Alert amongst potential beneficiaries through GPs.  | N/A – this is intended as an information service during periods of forecast poor air quality. | This is being progressed by officer support at the Sussex-air Partnership.   | Cowfold Air Quality Action Plan (September 2013) - Air Alert – Air Pollution Early Warning System   |
| 14 | Improvements in the national vehicle fleet | - Improvements in the national vehicle fleet with the uptake of low emission and Euro V/VI standard vehicles                             | - Notwithstanding controversies around new vehicle emissions testing and 'real-world' performance there is an apparent improvement in the national vehicle fleet which appears to be showing up in air quality monitoring data at Cowfold and at other locations.<br><br>- Plotting a linear trend line across the available diffusion tube data for the highest exposure values at Huntscroft Cottages suggests that this should come within compliance ( $40 \mu\text{g}/\text{m}^3$ ) by 2016 and within 10% of the compliance limit by 2022/23 ( $36 \mu\text{g}/\text{m}^3$ ), notwithstanding the variability in data year-on-year.<br><br>- Some other AQMAs within West Sussex have also shown air quality improvements over the last 5-10 years of available monitoring data, including Storrington AQMA. | - Although vehicle emissions improvement over time is likely to be more complex than a simple downward linear trend, a continual improvement in vehicle fleets is expected.<br><br>- It is impossible to predict for certain the exact path of improvement in vehicle fleets and when this is expected to bring Cowfold AQMA within the compliance threshold. | Medium-High   | Steering Group partners continue to encourage Government to work with industry to seek continual improvements with the national vehicle fleet.<br><br>Given current monitoring data trends suggesting improvements in air quality within this and other AQMAs, this is important to consider against the business case for other substantial measures within the AQMA. |   |