

Storrington Air Quality Management Area scheme proposals review, June 2017

This review note has been prepared by officers from Horsham District Council and West Sussex County Council for the Storrington 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 Storrington. This includes traffic management related measures, and other measures as listed below which are drawn from the Storrington Air Quality Action Plan (October 2012), the previously commissioned Ricardo-AEA Traffic Management Feasibility Study (January 2013) as well as other proposals highlighted by the Steering Group.

Summary

The recommendations of this review note in terms of next steps are that further assessment is undertaken at the local level for the following issues – the operation of the junctions along the High Street and West Street, the operation of the two pedestrian crossings, and parking and loading. This could use video camera analysis to understand more about the causes of vehicle delay and congestion through the village understood to result in air pollution problems. This could explore the impact of the following types of potential initiatives:

- what difference installing a High Street/North Street mini-roundabout would make;
- what benefits might arise from linking together the pedestrian crossings on the High Street and at West Street, and whether these could be intelligently linked to live traffic conditions and high likely incidents of air quality problems – for example, giving increased vehicle green time at peak times when air quality issues are known to be worse.
- how much of a problem parking and delivery related congestion issues are throughout an average week and whether measures can be implemented to address these issues.

Main review

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

List of traffic management related measures reviewed:

- Prohibition of lorries turning right into School Hill from Manley's Hill and turning left into Manley's Hill from School Hill
- Review impact of imposing time restrictions for goods vehicle loading/delivery within the AQMA during peak periods
- Improvements to advisory lorry route signage around Storrington
- Review on-street car parking and loading bay provision
- Review two pedestrian crossings along the High Street/West Street
- Mini-roundabout at North Street/High Street
- Use of variable message signage (VMS) on strategic routes outside the village
- The impact of diverting HGV traffic to Old Mill Drive and Mill Lane, rather than School Hill
- Review Car Parking incentives


- Assess impact of Low Emission Zone (LEZ) in Storrington
- Assess impact of imposing a restriction on heavy goods vehicles
- Weight limit restriction on B2139 Houghton Bridge, near Amberley
- Assess impact of changing Old Mill Drive to a shared surface
- Assess impact of re-opening Nightingale Lane
- Assess impact of traffic gating option
- Assess impact on air quality of imposing a 20mph speed restriction in the village
- Improvement of the A27
- Review rail station parking


List of other measures reviewed:


- The development of a local Air Quality Planning Policy Guidance document.
- The adoption of a District Emission Reduction Strategy.
- Air Alert service
- Working with local businesses
- 'Storrington in Bloom'
- Smarter Choice Measures


Measures have been assessed based on their anticipated air quality benefit for the Storrington 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 none 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 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	Prohibition of lorries turning right into School Hill from Manley's Hill and turning left into Manley's Hill from School Hill	- There have been incidences of large lorries making turning movements between School Hill and Manley's Hill and vice versa causing congestion at the mini-roundabout due to the constrained junction. This measure proposes banning this turning movement for lorries.	<p>- Advisory signage already exists for lorry traffic entering Storrington from the A283 Washington Road needing to access "Water Lane Trading estate", whilst all traffic for West Chilington and Thakeham are advertised to use Water Lane.</p> <p>- A voluntary agreement exists for Waitrose deliveries to access Waitrose via Water Lane, Thakeham Road, and School Hill.</p> <p>- This scheme has not been assessed specifically in air quality terms. However, some conclusions may be drawn by considering analysis undertaken by Ricardo-AEA regarding an alternative proposal for reopening Nightingale Lane to the east.</p> <p>- This study used analysis of an origin-destination traffic survey conducted in May 2012 indicated that during the survey approximately 7% of the cars/LGV heading in to Storrington on School Hill turned left onto Manleys Hill; and approximately 2% of the cars/LGV heading west on Manleys Hill turned right onto School Hill. This scenario was modelled and reductions of up to 0.7 $\mu\text{g}/\text{m}^3$ in NO_2 annual mean concentrations were predicted for this scenario. Although it is noted that the EPUK guidance classifies a change of 2% (0.8 $\mu\text{g}/\text{m}^3$) as 'substantial' where annual mean NO_2 concentrations at receptor are equal to or above 44$\mu\text{g}/\text{m}^3$, the study assumption of a 0.7 $\mu\text{g}/\text{m}^3$ reduction applied to all traffic so an assumption about the level of HGV</p>	<p>There are a number of known issues with this scheme:</p> <p>- There are complications in the manner in which such a prohibition could be legally worded and signed in accordance with the Traffic Signs Regulations and General Directions as there are no permitted variants of signs that relate specifically to banning certain classes of vehicles from making specific movements.. The only specific option within available legislation that could realistically be achieved is to apply a general weight restriction to all School Hill lorry traffic , though there would be other enforceability and practical challenges with such a general weight restriction.</p> <p>- Any prohibition signage in relation to this junction needs to be of at least a minimum size (600mm diameter), be illuminated and sited within the confines of the junction. On Manley's Hill the canyon nature of the narrow street, and the conservation area nature of the buildings means it would be extremely difficult to find suitable locations that meet the legislative requirements.</p> <p>- The enforceability of any specific turning movement ban for lorries by Sussex Police is unclear. Any prohibition would need to retain access for lorries requiring local access, for example to make deliveries to residents on School Hill.</p> <p>- For any lorries that have missed signage to use Water Lane approaching</p>	Unknown but expected Low	<p>The scheme has been programmed for design in 2017/18 and delivery in 2018/19. WSCC is investigating if it is feasible to accelerate delivery of the scheme so that implementation is in 2017/18 .</p> <p>The Improvements Team at WSCC is organising a design brief. It is expected that the Team will give feedback on whether the scheme can be prioritised.</p>	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)

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			<p>traffic that would be affected would need to be made</p> <p>- Assessing the impact of any banning of this turning movement would need to make assumptions that excludes local HGV movements making local deliveries, and an assumption about level of compliance.</p>	<p>from Washington, consideration would need to be given to where they would make their turning movement to access Water Lane or Thakeham Road and the potential negative impacts of this alternative routing.</p> <p>However, the scheme is believed to have some environmental benefits including a potential positive impact on air quality in reducing the likelihood of HGV movement related congestion at the mini-roundabout. It also shows a positive impact on safety. As such, the scheme has been progressed on the IWP list of projects scheduled for 2017/18.</p>			
2	Review impact of imposing time restrictions for goods vehicle loading/delivery within the AQMA during peak periods.	Timing restrictions on loading/delivery restrictions in the AQMA at peak times.	<p>- Parking on double yellow lines remains an issue in the town centre. The most affected area is North Street near the junction with the A283 West Street.</p> <p>- Prohibition of loading/unloading, either 24 hours or at specific times, in that area would reduce congestion and have a positive impact on safety.</p> <p>- This would require a Traffic Regulation Order (TRO) to be legally enforceable and consultation with the local community and local businesses.</p> <p>- The impacts on congestion and air quality are not known at this time.</p>	<p>- The key issue with this scheme would be the impact on local businesses if delivery slots were missed. However, it has been noted that some businesses (estate agents) would not object to the ban.</p>	Unknown but expected low	Meeting to be held by WSCC with the Parish Council to discuss the extent of the loading ban.	Storrington Air Quality Action Plan (October 2012) - Congestion Improvement Measures
3	Improvements to advisory lorry route signage around Storrington	Possible improvements to advisory lorry route signage, particularly with regard to access from Washington Road to the east of Storrington	<p>- Advisory signage already exists for lorry traffic entering Storrington from the A283 Washington Road needing to access "Water Lane Trading estate", whilst all traffic for West Chiltington and Thakeham are advertised to use Water Lane.</p>	<p>- It is unclear what improvements could be made to the existing signage which exists at the Washington Road/Water Lane and Water Lane/Thakeham Road junctions and on School Hill for deliveries to Waitrose.</p>	Unknown but expected low	Further dialogue within the Steering Group to understand what improvements could be made to the existing signage to aid movements would be helpful.	

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			<ul style="list-style-type: none"> - A voluntary agreement exists for Waitrose deliveries to access Waitrose via Water Lane, Thakeham Road, and School Hill. 			Following this, if there are limited changes that appear possible then it is not recommended that this scheme is investigated further.	
4	Review on-street car parking and loading bay provision	Possible re-designation of on-street car parking spaces as dedicated loading bays, to reduce number of goods vehicles stopping on the carriageway.	<ul style="list-style-type: none"> - Two areas of investigation fall under this measure: re-designation of parking bays, and clearer no-parking restrictions and enhanced parking control enforcement. - In terms of parking enforcement, increased enforcement of current parking restrictions would not improve congestion in the High Street / West Street as yellow lines do not stop vehicles parking to load and unload and Blue Badge holders are also permitted to park on yellow lines. - However, re-designation of parking bays has not yet been investigated closely. This includes parking bays at the western end of West Street. - The potential impact of congestion related air quality issues associated with deliveries and parking is not known 	<ul style="list-style-type: none"> - The main issues with changes to provision of parking spaces or dedicated loading bays are: - potential sensitivities with regard to changes to availability of parking. - the need to meet the needs of local businesses requiring deliveries. 	Unknown but likely low as an isolated measure	A more detailed air quality assessment of changes to and re-designation of parking-bays and loading bays could be investigated further. This could be a combined assessment of some of the other measures discussed in this document, including a review of the pedestrian crossings and junctions.	Storrington Air Quality Action Plan (October 2012) - Congestion Improvement Measures
5	Review two pedestrian crossings along the High Street/West Street.	Review two pedestrian crossings along the High Street/West Street to establish whether there is any benefit in coordinating the timings of the red signal.	<ul style="list-style-type: none"> - Both crossings have previously been upgraded to Puffin crossings. They use kerbside detectors to cancel demands on the crossing no longer required (if a person crosses before the green man lights). - The crossings use 'vehicle actuation' technology but do not include microprocessor technology (Microprocessor Optimised Vehicle Actuation - MOVA) - This technology has the potential to be 	<ul style="list-style-type: none"> - The current impact of pedestrian crossing delays on congestion and air quality through Storrington, and the level of any benefits from technology changes is not known at this time. - A site study needed to explore if MOVA technology is technically feasible to deliver will cost £500-£1000 to assess site specific circumstances including speed of traffic, detection points, visibility, interactions to side roads, etc. Such assessment will provide a view on the likely benefit of the scheme as well 	- Unknown but expected Low-Medium	- A site study is needed to explore if MOVA technology is technically feasible to be delivered.	Storrington Air Quality Action Plan (October 2012) - Congestion Improvement Measures

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			able to link the two crossings and to react to dynamic sensors. For example, this may enable the green/red phase timings to react to periods of high air quality sensitivity and to prioritise traffic movement at peak times.	as recommendations on changes to the operation of the crossings (e.g. timings) under the current technology to promote smoother traffic flow. A more detailed study giving more certainty about the degree of benefit from MOVA is likely to cost in the region of £5000 due to the high survey costs in on-ground operatives trying to manually recreate the operational benefits of the technology by controlling the current crossings - The overall expected cost of the MOVA technology is £20k.			
6	Mini-roundabout at North Street/High Street	- A new mini-roundabout at North Street/High Street could help to improve traffic flows at this junction, by enabling westbound traffic on the High Street to turn more easily into North Street.	<p>- A new mini-roundabout at North Street/High Street was considered in the previous Waitrose Store Extension plans.</p> <p>- The final Sept 2012 air quality assessment report for this Waitrose scheme concluded that (page 8, para 3.6) 'the proposed development includes a new mini-roundabout at the North Street junction. This will assist westbound vehicles turning right into North Street, and will help to reduce westbound queuing along the High Street and back to Manley's Hill, thereby reducing congestion through the village. It is logical to assume there would be a small improvement (i.e. an increase in speeds); this would serve to further reduce emissions of NOx'.</p> <p>- It appears that the main problems with traffic related air pollution relate to westbound traffic travelling down Manley's Hill needing to give way to traffic coming down School Hill at the School Hill/Manley's Hill mini-roundabout and also the stop-start nature of traffic</p>	<p>There are four known issues at this stage associated with implementing a mini-roundabout at North Street/High Street junction. These are:</p> <p>- A potential reduction in the ease of pedestrians crossing North Street adjacent to the junction due to the widening of the junction which would be necessary to facilitate the introduction of the mini-roundabout.</p> <p>- There is believed to be utility provision under the carriageway on North Street immediately adjacent to the junction. If this is the case, this is likely to significantly increase the costs of any scheme (initially estimated in the order of £40k).</p> <p>- The implementation of a mini-roundabout will change the waiting restrictions at the junction of North Street, therefore businesses around the junction will need to be involved in any consultation on the scheme.</p>	Unknown but expected Low-Medium	The scheme did not meet threshold criteria for progression on the IWP list of projects (2017/18). The scheme showed a negative impact on traffic flow and scored low on pedestrian safety and low on environmental benefits. A more detailed air quality assessment by a suitable consultant of the anticipated impacts of this scheme at this junction could help to demonstrate the business case or not for this scheme if the steering group still wished to progress it in the future. This could be	Air Quality Assessment: Waitrose Extension, Storrington (September 2012)

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			through the High Street and West Street due to the regular calls at the two pedestrian crossings and vehicles parking. Within this context, the relative scale of benefits resulting from the mini-roundabout scheme appear more limited.	- No consideration appears to have been made to date of the potential air quality impact of this measure on eastbound traffic approaching the junction from West Street. Whilst the scale of this potential impact appears more limited, this should also be considered.		a combined assessment of some of the other measures discussed below, including a review of the pedestrian crossings and changes to parking and loading bay provision.	
7	Use of variable message signage (VMS) on strategic routes outside the village.	- Use of variable message signage (VMS) on strategic routes outside the village to discourage through traffic during periods of congestion within the AQMA.	<p>- Various scenarios have been assessed by Ricardo-AEA to consider the potential impact of using VMS on strategic routes outside of Storrington to discourage through traffic during periods of congestion within the AQMA.</p> <p>- It is difficult to quantify how much of an effect improved signage would have on the number of vehicles passing through Storrington. The effect of 'improved signage' has been modelled for three indicative sub-scenarios each representing a potential reduction in the number of vehicles that enter the village but do not stop. The sub-scenarios modelled were:</p> <p>a) 10% reduction in through traffic b) 25% reduction in through traffic c) 50% reduction in through traffic</p> <p>- The results indicated that a 10% reduction in through traffic resulted in a decrease of 1.1-1.4 µg/m³ on Manley's Hill near the Manley's Hill/School Hill mini-roundabout.</p> <p>- The other scenarios would provide more improvement.</p>	<p>- Realistic alternative routings to the north via the A24, A272 and A29/A284 or to the south via the A29, A27 and A280/A24 are significantly longer diversions to the route for medium distance traffic flows between Pulborough or Whiteways Cross (A29/A284/B2139 junction) and Washington roundabout (A24) which appear to be the logical positioning of any VMS.</p> <p>- Congestion on the A27 through Arundel and Worthing/Lancing is already believed to result in some longer distance traffic routing through Storrington.</p> <p>- Improvements to the A27 are believed to result in a much more significant impact in influencing the behaviour of long distance 'through traffic' drivers than VMS.</p> <p>- It appears very unlikely that a 10% reduction in traffic flows could be achieved by this measure, and any impact is expected to be very low.</p>	Unknown but expected low	- As the impact of this measure is expected to be very low, it is not recommended that this measure is investigated further.	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)

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			- However, the report notes (page 35) that 'It is difficult to quantify how much of an effect improved signage would have on the number of vehicles passing through Storrington'. The assessment does not provide any firm assessment of where through traffic diverted from Storrington would be encouraged to divert to as a result of installation of VMS.				
8	Assess the impact of diverting HGV traffic to Old Mill Drive and Mill Lane, rather than School Hill	In order to remove problems associated with HGV turning movements at the School Hill/Manleys Hill junction, diverting School Hill HGV traffic to use Old Mill Drive and Mill Lane has been suggested	- This scheme has not been assessed specifically in air quality terms.	- It would not be possible to remove all HGV traffic from School Hill due to exemptions required for local deliveries. - The complex nature of this alternative route (3 additional junctions) and the narrow nature of Mill Lane means that this routing is likely to be an undesirable alternative to School Hill.- Consideration needs to be given as to whether the road construction of these roads is suitable for the use by this class of traffic.	Unknown	This alternative routing is not believed to be desirable and is not recommended for further investigation.	
9	Review Car Parking incentives	Car Parking Standards: Preferential parking for low emission vehicles within AQMA. Graduated price parking permits (based on emission bands).	- Off street car parking tariffs are set by Horsham District Council and those currently do not differentiate between vehicles. - There are no on-street parking permits or charging in Storrington on which to base incentivisation of parking for low emission vehicles.	- The level of uptake of low emission vehicles in an around Storrington is not known. Further assessment of this would be needed but it appears likely that this would provide a marginal benefit at this point in time given the current low proportion of low emission vehicles across the vehicle fleet.	Unknown but expected to be low.	- Given the current low proportion of low emission vehicles across the vehicle fleet and the marginal incentive benefit anticipated it is not recommended that this measure is a focus of Steering Group further investigation going forward.	Storrington Air Quality Action Plan (October 2012) - Promotion of Alternative Transport Options
10	Assess impact of Low Emission Zone (LEZ) in Storrington	The LEZ would limit access to the village for specific vehicle types not meeting specified emission standards (e.g. Euro V).	- The proposed LEZ would restrict all HGV's of pre Euro V classification from entering the village. The model predictions indicated that an access restriction on Bus and HGV to Euro V or better could help achieve compliance with the NO2 annual mean objective at all locations within Storrington. It was	- The trial was undertaken in partnership with Siemens UK using their Greenzone low emission zone solution. - The scheme cannot go ahead due to the Greenzone system not operating well in a rural setting. Signal reception	Expected Medium-High	The trial was undertaken in partnership with Siemens UK using their Greenzone low emission zone solution. The scheme cannot	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality

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		<p>A scenario was considered where access to the AQMA was restricted so that the vehicle classes met the following standards in 2015:</p> <ul style="list-style-type: none"> • Rigid HGVs : Euro V or better • Articulated HGVs: Euro V or better • Buses: Euro V or better 	<p>also noted however that Euro V HGV's NOx emitted, on average greater quantities of NOx than Euro IV HGV's at low speeds.</p> <p>- The model predicted a decrease in the NO2 concentrations of about 2-3 µg/m3 on West street and about 7-9 µg/m3 on Manley's Hill near the mini-roundabout.</p>	<p>problems affecting the system resulted in significant loss of data.</p> <p>- Additional considerations were needed to be given to the practical enforceability of any LEZ restrictions, whether exemptions were needed for local access, and the impacts of the LEZ on local businesses and the local community.</p>		<p>go ahead due to the Greenzone system not operating well in a rural setting. Signal reception problems affecting the system resulted in significant loss of data.</p>	<p>Assessment (January 2013)</p>
1 1	Assess impact of imposing a restriction on heavy goods vehicles	<p>Discouraging or preventing heavy goods vehicles accessing the village by means of access restrictions, either by way of height or weight, at strategic locations outside the village was also considered by Ricardo-AEA. This is a more extreme version of the LEZ considerations.</p>	<p>- Four sub-scenarios were modelled to represent varying percentage reductions in HGV traffic passing through Storrington in 2015 as follows:</p> <ul style="list-style-type: none"> • 25% reduction in HGV • 50% reduction in HGV • 75% reduction in HGV • 100% reduction in HGV <p>- The results indicated that a 25% reduction in HGVs entering Storrington resulted in a decrease of 2-3 µg/m3 on Manley's Hill near the Manley's Hill/School Hill mini-roundabout, however a 75% reduction was needed to achieve compliance with the 40 µg.m3 NO2 annual mean objective at all locations.</p>	<p>- Implementing general access restrictions on all HGV vehicle movements through Storrington would be extremely difficult to deliver and enforce. In order to retain viability of businesses in Storrington arrangements would need to be made for smaller vehicles to undertake deliveries, which creates specific logistical problems for those businesses. In addition consideration needs to be given to how lorries could access businesses on the fringe of Storrington and further beyond, and the impact that rerouting of such vehicles has on other communities.</p>	High	<p>As it appears very unlikely that it will be possible to implement or enforce this proposal, it is not recommended that this measure is a focus of Steering Group further investigation going forward.</p>	<p>Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)</p>
1 2	Weight limit restriction on B2139 Houghton Bridge, near Amberley	<p>Suggestions have been highlighted to impose a weight limit on the B2139 at Houghton Bridge.</p>	<p>- There is currently a height restriction of 13ft on this road at the Amberley Station railway bridge.</p> <p>- Neither the B2139 or the A283 through Storrington are part of the West Sussex Advisory Lorry Route network.</p>	<p>- The only restriction which could be implemented is a general route restriction between the A29/A284/B2139 junction at Whiteways Cross and Storrington.</p> <p>- This restriction is not believed to be enforceable at this large route scale due</p>	Expected low/medium	<p>There is no technical reason to impose a weight restriction on the B2139 at Houghton Bridge,</p> <p>A general weight restriction is very</p>	

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			<p>- The feasibility of imposing a weight limit on the B2139 at Houghton Bridge has been investigated. The condition of the bridge is under regular review by West Sussex County Council in accordance with the County Council's structures inspection strategy and at this present time there is no technical reason to impose a weight restriction on this bridge.</p>	<p>to the exemptions that would be required for local access (local buses, farm vehicles, deliveries, etc).</p>		<p>unlikely to be enforceable at this scale due to exemptions required for local access.</p>	
1 3	Assess impact of changing Old Mill Drive to a shared surface	<p>Horsham District Council considered a partial closure of Old Mill Drive as part of a regeneration scheme for an existing shopping precinct area. It was agreed that the impact of this proposal should be tested by Ricardo-AEA.</p> <p>The following scenarios were considered:</p> <p>a) All Buses + HGV removed from Old Mill Drive - average speed reduced to 10 mph - 25% of traffic re-routed to School Hill.</p> <p>b) All Buses + HGV removed from Old Mill Drive - average speed reduced to 10 mph - 50% of traffic re-routed to School Hill.</p> <p>c) All Buses + HGV removed - average speed reduced to 10 mph - 75% of traffic re-routed to School Hill.</p>	<p>- Results were presented at specified receptors on Old Mill Drive and School Hill only as there was no change in predicted concentrations at any of the other receptors.</p> <p>- The results indicated that annual mean NO2 concentrations increased by up to 1 µg/m3 at some of the specified receptor locations on School Hill but were still below the 40 µg/m3 objective. The highest concentration was predicted for a receptor in School Hill (near the Manley's Hill/School Hill mini-roundabout) at 36.4 µg/m3 for scenario c) - increasing from the base of 35.8 µg/m3. The concentrations in Old Mill Drive were predicted at about 12 µg/m3.</p> <p>- The impact of this proposal was therefore not considered to be significant in air quality terms.</p> <p>- Separate assessment was also undertaken as part of the original submission air quality assessment for the Waitrose extension concerning closing Old Mill Drive to all traffic.</p> <p>- This predicted annual mean NO2 concentrations to increase by up to 0.6 µg/m3 on Manley's Hill near the mini-roundabout and decrease by 0.1-0.3</p>	<p>- The restriction of traffic on this road would necessitate the redistribution of up to 1600 vehicles per day onto adjoining roads within the AQMA.</p> <p>- Restricting buses from using Old Mill Drive would mean that an alternative bus stop would be required somewhere on the High Street. This would contribute to congestion and traffic queuing on the High Street as stopping buses would block westbound traffic; it may also however help reduce congestion as it will reduce the number of buses and HGVs stopping and waiting to turn right onto Old Mill Drive, and hence holding up westbound traffic when approaching from the east. The effects this may have on congestion on the High Street are difficult to quantify.</p>	No benefit	<p>- The results of the feasibility study and Waitrose Extension assessments have shown that the scheme is unlikely to result in air quality improvements within the Storrington AQMA.</p>	<p>Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)</p> <p>Air Quality Assessment: Waitrose Extension, Storrington (October 2011)</p>

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			µg/m3 on the High Street. Receptors at School Hill were shown to increase in the range 1.6-2.3 µg/m3.				
			-				Air Quality Assessment: Waitrose Extension, Storrington (October 2011)
1 4	Assess impact of re-opening Nightingale Lane	- Nightingale Ln is a residential road linking Manley's Hill and School Hill. The road was closed approximately 40 years ago on safety grounds. Ricardo-AEA assessed whether re-opening the road to some vehicles would offer an opportunity to alleviate congestion at the School Hill/Manleys Hill junction.	- It was proposed to re-open Nightingale Way to cars and light goods vehicles only. - The assessment predicted reductions of up to 0.7 µg/m3 in NO2 annual mean concentrations (0.7 µg/m3 reduction for the mini-roundabout of Manley's Hill and School Hill).	- As Nightingale Road was originally closed to through traffic on safety grounds, this would still be an issue if this road were to be reopened. - The impact on local residents of Nightingale Road would be a key consideration.	Low	- As the road was originally closed on safety grounds, and the anticipated air quality benefits are low, it is not recommended that scheme is investigated further.	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)
1 5	Assess impact of traffic gating option	Controlling traffic flow through the Storrington AQMA by means of traffic light 'gates' outside the village. The likely effect of the gating options on congestion in the town is not known; therefore four sub-scenarios were modelled by Ricardo-AEA to represent varying percentage reductions in congestion times in 2015: a) 25% reduction in queuing during each hour when congestion is known to occur b) 50% reduction in	- The results indicated that a 25% reduction in queuing resulted in a decrease of 3-4 µg/m3 on Manley's Hill near the Manley's Hill/School Hill mini-roundabout. The other scenarios would provide even more improvement. - The report recommended consulting a traffic engineer for additional assessment of how effective 'gating' can be at reducing congestion in Storrington. - Subsequently the implementation of the scheme was investigated, however concerns were raised by Sussex Police.	- Concerns have been raised that this is not practical to implement, in particular because it would be confusing for drivers, and would be likely to lead to driver non-compliance and 'rat running' if long-red phases would be needed to restrict movements. - The study does not conclude whether it is possible to achieve the theoretical levels of queuing through the village that it assumes.	Medium-High	As it appears very unlikely that it will be possible to implement this proposal, it is not recommended that this measure is a focus of Steering Group further investigation going forward.	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)


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		<p>queuing during each hour when congestion is known to occur</p> <p>c) 75% reduction in queuing during each hour when congestion is known to occur</p> <p>d) 100% reduction in queuing during each hour when congestion is known to occur</p>					
1 6	Assess impact on air quality of imposing a 20mph speed restriction in the village.	Ricardo-AEA study investigated whether imposition of a 20mph speed restriction through the AQMA would improve air quality by smoothing flow and reducing congestion.	<p>- Ricardo-AEA considered it unlikely that imposing a 20 mph speed limit on the AQMA would lead to an improvement in air quality. Numerical model predictions were not included for this scenario.</p> <p>- The average speed of the current traffic through the Storrington AQMA was considered to be around 20 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 allow other vehicles to park/turn. Ricardo-AEA concluded that if traffic in the town 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.</p>		None	No predicted improvement in air quality, so not recommended in air quality terms.	Traffic Management Feasibility Study: Ricardo-AEA Storrington Traffic Management Options Appraisal. Air Quality Assessment (January 2013)
1 7	Improvement of the A27	- The Road Investment Strategy produced by DfT in March 2015 allocates a budget for the A27 schemes including the A27 Arundel bypass and A27 Worthing and Lancing improvements.	- This is expected to reduce traffic flows through Storrington where longer distance traffic is avoiding the A27 due to congestion.	<p>- Highways England are currently looking at the improvement options and undertaking technical work before consultation expected in 2017.</p> <p>- If approved, construction is currently scheduled to commence in 2021, with completion scheduled for 2023-2024.</p>	Unknown but expected medium	- Highways England are currently looking at the improvement options and undertaking technical work before consultation in 2017.	<p>Storrington Air Quality Action Plan (October 2012) - Road Infrastructure Improvements</p> <p>DfT Road Investment Strategy for the 2015/16-2019/20 Road Period</p>


	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
18	Review rail station parking	Arun Valley Railway and Pulborough Parkway parking expansion: Optimise parking facilities at Pulborough main-line station. Improve public transport links/alternative	- There are ongoing development discussions regarding the potential to increase parking at Pulborough Station by providing new facilities accessed from Stopham Road to the west of the railway line.	- This scheme would be expected to have a relatively minor impact on air quality issues in Storrington.	Unknown but expected very low	As this scheme appears to have minor implications for air quality issues in Storrington no specific actions by the Storrington Air Quality Steering Group are recommended.	Storrington Air Quality Action Plan (October 2012) - Promotion of Alternative Transport Options


Other measures

Next steps conclusions red-amber-green 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.

	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
	The development of a local Air Quality Planning Policy Guidance document.	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).	Storrington Air Quality Action Plan (October 2012) - District-Wide Measures
	The adoption of a District Emission Reduction Strategy.		Development of the Emission Reduction Strategy is progressing with a number of key projects being developed in	- The level of future uptake of low emission vehicles and associated charging infrastructure is difficult to	Unknown	Horsham District Council is progressing this	Storrington Air Quality Action Plan (October

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																																													
		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.	predict. - Levels of impact on Storrington are likely to be minimal in the short to medium term, however these measures can form part of wider promotion of low emission vehicles.		work	2012) - District-Wide Measures																																													
Air Alert service	Air pollution warning service (website, app, text message) aimed at vulnerable people, schools, health professionals and general public.	<table border="1"> <thead> <tr> <th>Subscribers by registered authority</th> <th>Active subscribers</th> <th>%</th> </tr> </thead> <tbody> <tr><td>Adur</td><td>55</td><td>7%</td></tr> <tr><td>Arun</td><td>46</td><td>6%</td></tr> <tr><td>Brighton and Hove</td><td>135</td><td>17%</td></tr> <tr><td>Chichester</td><td>46</td><td>6%</td></tr> <tr><td>Crawley</td><td>45</td><td>6%</td></tr> <tr><td>Eastbourne</td><td>76</td><td>10%</td></tr> <tr><td>Hastings</td><td>49</td><td>6%</td></tr> <tr><td>Horsham</td><td>49</td><td>6%</td></tr> <tr><td>Lewes</td><td>82</td><td>10%</td></tr> <tr><td>Mid Sussex</td><td>61</td><td>8%</td></tr> <tr><td>Rother</td><td>34</td><td>4%</td></tr> <tr><td>Wealden</td><td>58</td><td>7%</td></tr> <tr><td>Worthing</td><td>59</td><td>7%</td></tr> <tr><td>Total number of active subscribers</td><td>795</td><td></td></tr> </tbody> </table>	Subscribers by registered authority	Active subscribers	%	Adur	55	7%	Arun	46	6%	Brighton and Hove	135	17%	Chichester	46	6%	Crawley	45	6%	Eastbourne	76	10%	Hastings	49	6%	Horsham	49	6%	Lewes	82	10%	Mid Sussex	61	8%	Rother	34	4%	Wealden	58	7%	Worthing	59	7%	Total number of active subscribers	795			Unknown	Horsham District Council is progressing this work	Storrington Air Quality Action Plan (October 2012) - Air Alert – Air Pollution Early Warning System
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Working with local businesses	Alternative Refuelling Options: Encourage provision of electric vehicle charging points at local business and public car parking spaces. Ensure compatibility of EV charging points to enable link to “Charge your Car” pay as you go network. Encourage development of Compressed Natural Gas (CNG) refuelling network across the district via private companies and as part of a district alternative fuel strategy (See District-wide AP	<p>Measure incorporated into Planning Advice Document. Review undertaken of HDC vehicles at Storrington transport depot to establish opportunities for upgrading/ replacing with low emission vehicles.</p> <p>HDC has successfully bid for support from the Department for Transport (DfT) under Phase Two of the ULEV Readiness Project. A grant offer was received in November 2015 from DfT in respect of three vehicles. The grant will contribute 75% of the cost of 24-month eV vehicle leases for three vehicles: one Nissan Leaf car and two Peugeot Partner vans. The grant will also cover the costs of the installation and maintenance of one charge point per</p>		Unknown but expected low	These schemes are being investigated through various other delivery avenues, and are subject to different feasibility and value for money considerations.	Storrington Air Quality Action Plan (October 2012) - Promotion of Alternative Transport Options																																													

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		<p>measures).</p> <p>Home delivery scheme: Encourage through businesses use of low emission delivery vehicles with possible link to district Compressed Natural Gas (CNG) refuelling strategy.</p> <p>Community minibus – enhance existing Storrington minibus service by replacing existing diesel fleet with Low /Zero emission vehicles. Funded by local businesses or new developments via planning contributions, possible link to CNG refuelling strategy.</p> <p>Improve local bus service – Liaise with local PSV operators to restrict vehicles entering AQMA to Euro IV/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.</p> <p>Transport Plans/ Travel Plans: Promote to</p>	<p>vehicle.</p> <p>There is currently a slow EV charger installed in Storrington. A Rapid EV charger to be installed.</p>				

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	<p>existing businesses and new developments innovative solutions: e.g. low emission incentives; driver training; car share schemes; car clubs.</p> <p>Freight Delivery Partnership: Encourage use of WSCC preferred lorry route rather than A283 through Storrington AQMA; investigate opportunities for local and shared deliveries; Encourage use of low emission delivery vehicles to local stores within AQMA, provide links to CNG refuelling strategy.</p>					
'Storrington in Bloom'	Introducing recognised pollution absorbing plants and planting methods into the village to improve air quality within the AQMA	It was established that there are no suitable sites for tree planting in West Street or the High Street so the project cannot be progressed.		Unknown	As there are no suitable sites, this strategy cannot be progressed.	
Smarter Choices	<p>Encouraging walking and cycling: Promote bike rental scheme with local cycle business, seek funding for improvements to local walking and riding paths, improve signage, provision of secure bike storage and bike racks at local car parks , train station car parks, encourage cycling/walking via promotion in local shops e.g. you 'shop we drop' schemes. Liaise with WSCC and Sustrans to</p>	<p>Preliminary review of current facilities. Further meeting with Parish Council to be arranged. Feasibility study to be considered to assess suitability of car club in Storrington by looking at demographics etc.</p> <p>Measures incorporated into Planning Advice Document for new developments. WSCC School Travel Coordinator identified key walking/ cycling routes requiring improvement. Scoping report in progress for provision of car club to village.</p>	These schemes are being investigated through various delivery routes. Their direct impact on Storrington 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.	Unknown but expected low	These schemes are being investigated through various other delivery avenues, and are subject to different deliverability and value for money considerations.	Storrington Air Quality Action Plan (October 2012) – Smart Choices

	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
		<p>improve facilities and encourage uptake.</p> <p>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.</p>					