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Traffic Calming Study – C319 West Hoathly

1 Executive Summary

The aim of this study is to develop a Traffic Management Strategy that will provide practical and deliverable strategies for the implementation of physical and softer measures to reduce the impact of vehicle speeds and to potentially discourage the use by traffic of inappropriate routes through both West Hoathly and Sharpthorne villages.

Data has been collected from a range of sources, all of which form an essential part of understanding the characteristics of the local highway network. These include an initial desk based study, numerous site visits, review of accident and traffic flow data provided by West Sussex County Council (WSCC) as well as previous traffic management studies, that highlights both WSCC and the West Hoathly Parish Council's observations and initial thoughts on the requirement of traffic calming measures.

The review of these various inputs has allowed a detailed understanding of the local traffic issues on the highway network to be built up and therefore conclusions to be reached on potential remedies for addressing local concerns and understood problems.

A number of objectives have been identified for assessment following discussions between CH2MHILL and WSCC, in consultation with West Hoathly Parish Council, as well as an initial review of background data. These objectives were then assessed against a matrix of Traffic Management measures which considered what schemes could be implemented, how issues could be solved and what schemes were or were not appropriate for the local surroundings.

From this matrix a proposed Traffic Management Strategy has been developed for the C319 which aims to address the recognised local issue. The scheme avoids speed humps and shuttle working interventions and relies on removing road signs and lining to change driver behaviour. The primary aim of the scheme is to reduce vehicle speeds on the road through West Hoathly from which various benefits should arise.

Estimated costs of implementing these strategies have also been provided. An overarching objective of the proposed strategy has been to retain and enhance the character and environment of both villages.

In delivering a successful traffic calming scheme, the importance of local engagement is acknowledged and therefore certain measures (such as village treatments and gateway features) can only be finalised with further consultation with the Parish Councils and local residents.

1 Preamble and Background

1.1 Introduction

CH2MHILL have been commissioned by WSCC to investigate issues raised by the Parish Council relating to traffic calming and safety improvement measures on the C319 running through the parish of West Hoathly. This report summarises the analysis and option development process.

West Hoathly Parish is in the County of West Sussex and the County Council is the Highway Authority for all the roads in the Parish. The Parish is rural in character, and comprises the villages of West Hoathly and Sharpthorne, together with the smaller hamlets of Highbrook, Selsfield and Tyes Cross. West Hoathly is an attractive village on high ground, preserved as a conservation area, and contains the village school, Parish Church and a popular pub/restaurant. Sharpthorne is more residential with some small commercial activity, with a number of local shops and other businesses. Sharpthorne originally grew and developed around a railway, since closed, but which is now part of the renovated "Bluebell Railway". The two villages are connected by the C319 road, which can be heavily trafficked at certain times of the day, frequently attracts high vehicle speeds, and can act as a barrier to pedestrian flow between the communities.

The C319 runs for approximately 2km through the twin communities of West Hoathly and Sharpthorne. It is subject to a 30mph speed limit which, as there is no street lighting, is by virtue of a Traffic Regulation Order enforced through statutory signage. The road attracts a noticeable volume of large commercial vehicle movements, including buses and coaches and, due to a brickworks in Sharpthorne and a stone quarry west of West Hoathly, occasional exceptional loads.

The C319 is the main route through these villages for all modes of travel through the area including catering for pedestrians, including elderly people and school children, cars, cyclists and HGVs. The road mostly has a speed limit of 30mph however there are concerns that these speeds are largely unobserved and that this is causing danger for pedestrians as well as cyclists and cars.

It would appear that flow, speed and general usage of the road is higher than might be expected on a road of this classification due to its position to the south of East Grinstead, and its use by vehicles travelling between the A22 Eastbourne Road and the M23 (for Crawley and Gatwick Airport and the M25). In effect, the road is potentially treated by some drivers as an "East Grinstead Southern By- Pass" and, as a result, carries traffic inappropriate for its status. It is not anticipated that this usage will change in the foreseeable future and it is unlikely that any scheme will significantly alter the attraction of the road for through traffic.

Parking and congestion has been reported to be a problem in West Hoathly village, and there is the normal high level of short term parking associated with the school. The village is also occasionally used by vehicles travelling between the C319 and the village of Ardingly, where the South of England Showground is located nearby. Highbrook is a small rural hamlet that is in West Hoathly parish but is situated some 2.5km south of the main communities of West Hoathly and Sharpthorne on the narrow Hammingden Lane. Selsfield and Tyes Cross are also small hamlets, situated on the C319 at the western and eastern ends of the Parish respectively. The parish council have not suggested that the conditions in the village beyond the through route require addressing

The study area has been agreed through consultation with representatives of WSCC and includes:

- Top Road between Horsted Lane and Selsfield Road to the East;
- Selsfield Road and Broadfield to the West, with the included junction of
- Church Hill between North Lane and Highbrook Lane

These particular locations have been identified to reflect local concerns on pedestrian safety and to vehicle speeds being in excess of the designated speed limit. The parish council have also raised

concerns with regard to vehicle speed on the C319 east of this area but it has been agreed that this falls outside of this study and in particular it has been agreed that it is not appropriate to include any treatment at Horsted Lane which lies to the east of the built up area of the villages at this stage. However, likely future residential development to the North of Top Road would have the effect of “moving” the entrance to the village back to the junction of Horsted Lane and hence the extent of the treatment and the gateway location should be reviewed as this development comes forward.

1.2 Scheme History

In 2011 a Traffic and Safety study was prepared for the area in question by TMS Consultancy on behalf of the West Hoathly Parish Council. This study followed earlier 2002 study and the provision of traffic calming measures in 2003.

The main focus of the most recent TMS study, was the traffic situation on the C319 that runs through the two linked settlements of West Hoathly and Sharpthorne, as the issue of speed management along this stretch, and the interaction between traffic and pedestrians, was a main concern for the local community. It was also a consideration by the Parish Council that school children and elderly parishioners were particularly at risk. The report recommended that a shared space be implemented. In comparison to the 2002 proposal that recommended a series of round-top road humps through the villages of Sharpthorne and West Hoathly. A copy of the 2011 TMS study is attached as **Appendix A** to this technical note.

Following the 2002 study, West Sussex County Council implemented traffic calming measures consisting of ‘gateway’ treatments to the highway at the entrance to both villages and further traffic management measures in the form of rumble strips and improved signing aimed at reducing the speed of traffic throughout the villages.

The local parish, have in the past raised additional concerns about the volume of HGV traffic using the roads in the area. A TRO to restrict HGVs was explored in August 2013 but was found to fall outside of policy and was therefore rejected by WSCC and the CLC.

More recently a workshop was conducted by WSCC including the Parish Council and an external consultant in May 2013. This workshop considered various types of traffic calming measures that could be undertaken, with the consensus of the group deciding that a ‘shared space’ arrangement could potentially be the most effective measure in helping maintain the village feel of the road, whilst also effectively slowing traffic. These various solutions considered are included in a letter sent to the Parish Council. These details have been included within **Appendix B** of this technical note.

1.3 Objectives of Traffic Management Strategy

The aim of this study is to consider previous ideas and to develop a Traffic Management Strategy that will provide a practical and deliverable scheme for the implementation of physical and softer measures to reduce the impact of vehicle speeds and to discourage the use by traffic of inappropriate routes through the villages of both West Hoathly and Sharpthorne.

It should be noted that this strategy also aims to address anticipated long-term traffic management issues on the local highway network due to both Sharpthorne and West Hoathly being used as a rat-run by traffic during commuting times.

1.4 Methodology

The methodology for developing a Traffic Management Strategy is based upon the need to gain an in depth understanding of local transport issues and traffic behaviour. In this case CH2M Hill have discussed issues with both WSCC and the parish council, reviewed data and studied operations along both Top Road and Church Lane which both connect with West Hoathly and Sharpthorne Village, and then considered potential Traffic Management measures to address identified issues.

A four stage approach has been adopted:

- **Stage One** - Gather information on the character and context of the identified routes into both West Hoathly and Sharpthorne Village. The speed of traffic and existing accident records through desk based research and information supplied by WSCC.
- **Stage Two** - Using the information gathered in Stage 1, CH2M Hill to report and discuss local transport issues and traffic behaviour on the designated roads that run through both West Hoathly and Sharpthorne Village.
- **Stage Three** - Identify potential traffic management measures and assess the benefits of installing such measures.
- **Stage Four** - Propose a Traffic Management Strategy incorporating the measures that have been provided with estimated costs of implementing these strategies.

1.5 Report Structure

The technical note is set out in the following structure:

- **Section Two** – discuss the data collated for the study;
- **Section Three** - provides an evaluation of options for Traffic Management measures
- **Section Four** – Sets out the recommended approach and estimated costs for the scheme.
- **Section Five** – Provides conclusions and suggested next steps

Please note that all figures and drawings discussed within this report can be found at the back of this technical note within the allotted appendices.

2 Data Collection

2.1 Introduction

This section provides details of the data collection exercises completed to help inform the proposed Transport Management Strategy. Data has been collected from a range of sources, all of which form an essential part of understanding the characteristics of the identified local highway network.

2.2 Existing Conditions

The C319 runs for some 2km through the twin communities of West Hoathly and Sharpthorne, and is subject to a 30mph speed limit along this length. Gateway location signs together with the requisite speed limit signs are present at outer ends of the two settlements and a minimum number of repeater signs are located in the village. Street lighting is not present in either community. The road passes along the edge of the residential part of West Hoathly, but passes through the centre of Sharpthorne. Between the two distinct built-up areas there is an undeveloped length of some 500m that runs through a wooded area but is subject to the 30mph speed limit.

Due to the lack of facilities in West Hoathly, particularly the recent closure of the village shop and post office and the single school location in West Hoathly, there is a noticeable pedestrian movement between the two villages, with pedestrians crossing the C319 predominately at the Church Hill/ Vinols Cross junction. There is currently a school crossing patrol at this junction, but only operating in the mornings. A Vinols Cross improvement scheme is programmed to be delivered in autumn 2015. The scheme is focused on improving pedestrian facilities at this junction with additional footways being provided as a safety scheme.

An audit of the key roads has been undertaken, utilising a range of information sources to build a detailed knowledge of each of the chosen areas, i.e. the existing traffic calming measures. This audit combined the use of map data, site visits and the WSCC website database and recorded information such as existing speed limits, Traffic Management measures, the context and character of each area and known local concerns.

A site visit was undertaken and a series of photographs were taken to document the existing traffic calming measures that are present within the study area, a copy of the site photographs has been attached as **Appendix C**. Site observations included driving the routes in question, therefore gaining a better appreciation of how the identified route operates in terms of traffic flow and behaviour and also recognise key characteristics of the area.

2.3 Data Provided by West Sussex County Council

Various data has been supplied by WSCC to further expand on the background data collated as part of the desk based study and site visits. These are discussed below and have been included within **Appendix D** of this technical note.

2.4 Personal Injury Accident Data

Personal Injury Accident data has been provided by WSCC for a five year period (January 2010 & August 2014) for the identified roads detailed in **Section 1.1** In order to identify accident cluster sites, an analysis of the accident data for the study area has been undertaken. The data, as set out in **Tables 3.1 & 3.2**, have shown that there were a total of 17 personal injuries within the study area. Of the 17 accidents

recorded, 9 were classified as slight with the remaining 8 accidents being classified as serious. It should be noted that no accidents were classified as fatal.

Severity	2010	2011	2012	2013	2014	Total
Serious	0	2	3	2	2	9
Slight	1	4	1	0	2	8
Fatal	0	0	0	0	0	0
Total	1	6	4	2	4	17

Table 3.1: Accident Severity – 5 years (2010-2014)

Accident Ref	Accident 1	Accident 2	Accident 3	Accident 4
WSCC Ref	1000379	1104324	1104344	1108058
Grid Ref	537801/132291	537504/132382	537278/132554	536801/132559
Day	Monday	Wednesday	Wednesday	Sunday
Date	18/01/2010	13/07/2011	13/07/2011	18/12/2011
Time	05:45	16:35	07:53	12:05
Light Conditions	Dark	Daylight	Daylight	Daylight
Road Surface	Ice	Dry	Dry	Ice
Weather	Fog/Mist	Fine	Fine	Fine
Severity	Slight	Serious	Serious	Slight
Factor	Driver Error	Careless/Reckless Driver	Careless/Reckless Driver	Driver Error
Description	Animal or object Carriageway	V1 (Car) travelling East out of Sharpthorne behind Mini Bus, exited 30 speed limit into National Speed Limit crossed into opposite C/W into path of V2 (Car) and caused head on collision.	V1 (Mini-Bus) parked on road awaiting collection of school pupils. V2 (Car) travelling towards Main Road junction, was about to pass V1, when pedestrian ran across the road and was hit by V2.	V1 (Car) travelling SE on Narrow Country Road, passed over brow and lost control of vehicle due to slippery road surface.
Accident Ref	Accident 5	Accident 6	Accident 7	Accident 8
WSCC Ref	1100208	1102475	1106565	1202787
Grid Ref	536064/133187	536505/132950	536475/132984	536482/132995
Day	Monday	Wednesday	Wednesday	Thursday
Date	10/01/2011	13/04/2011	19/10/2011	31/05/2012
Time	16:07	18:41	13:20	09:04
Light Conditions	Dark / No Lights	Daylight	Daylight	Daylight
Road Surface	Wet	Dry	Dry	Dry
Weather	Rain	Fine	Fine	Fine
Severity	Slight	Slight	Slight	Serious
Factor	Driver Error	Driver Error	Carless / Reckless Driver	Road Layout / Vision Affected
Description	V1 (3.5t) Failed to come to a stop and collided into V2 (Car)	V1 (Car) crossed central white line without stopping and collided into V2 (Car).	V1 (3.5t) reversing from Chapel Row onto North Lane turned right onto Chapel Lane. Against no right turn sign thus making V2 (Car) take evasive action and collided with a wall.	V1 (Car) turned right from Garage. V2 (M/cycle) was edging out of Eastbound Lane and collided with V1 at low speed.
Accident Ref	Accident 9	Accident 10	Accident 11	Accident 12
WSCC Ref	1203222	1205952	1304168	1304402
Grid Ref	537988/132368	536827/132535	537879/132322	537603/132337
Day	Monday	Saturday	Saturday	Friday
Date	25/06/2012	10/11/2012	10/08/2013	23/08/2013
Time	18:02	11:59	16:30	12:50

Light Conditions	Daylight	Daylight	Daylight	Daylight
Road Surface	Dry	Wet	Dry	Dry
Weather	Fine	Rain	Fine	Fine
Severity	Serious	Serious	Serious	Serious
Factor	Driver Error	Pedestrian Error	Careless/Reckless Driver	Driver Error
Description	V2 (Car) towing horse box east along Top Road, V1 (Car) travelling west, V3 (Car) travelling behind V2. V2 and V1 clip wing mirrors, V1 then collides with horse box-offside wheel, spinning in road and colliding head on to V3.	Pedestrian stepped from footpath into carriageway from northern side of road into path of V1 (Car). V1 then hit pedestrian with wing mirror causing him to fall over and strike his head on the road surface.	V1 (Car) overtook cyclist with on bound traffic and due to lack of room to complete manoeuvre pulled to the nearside striking the cyclist causing her to fall off.	V2 (Van) travelling westbound on Top Road slowed to give-way to oncoming vehicle due to parked vehicles on its side of the road. As V2, slowed, a Pedal Cycle travelling behind was unable to stop in sufficient time and collided with rear of V2.
Accident Ref	Accident 13	Accident 14	Accident 15	Accident 16
WSCC Ref	1204679	1403162	1402872	1404570
Grid Ref	536203/133176	536485/132994	536593/132772	537154/132486
Day	Sunday	Monday	Friday	Saturday
Date	09/09/2012	02/06/2014	23/05/2014	09/08/2014
Time	07:22	12:16	15:15	15:20
Light Conditions	Daylight	Daylight	Daylight	Daylight
Road Surface	Dry	Dry	Dry	Dry
Weather	Fine	Fine	Fine	Fine
Severity	Slight	Slight	Slight	Serious
Factor	Vision Affected	Driver Error	Driver Error	Driver Error
Description	V1 (Car) travelling eastbound, was affected by glare from rising sun and collided with pedestrian on the carriageway.	V1 (3.5t) emerged from blind private exit and pulled in front of V2 (M/cycle) travelling east and collided.	V1 (Car) travelling northbound up the Hollow, sees collection of sticks protruding slightly into carriageway, steers around but over corrects and hits V2 (Van) travelling southbound along the Hollow.	Pedal Cyclist riding south lost control of bicycle for unknown reason and collided with parked car causing significant injury to cyclist and significant damage to car.
Accident Ref	Accident 17			
WSCC Ref	1404888			
Grid Ref	537635/1322326			
Day	Monday			
Date	25/08/2014			
Time	11:35			
Light Conditions	Daylight			
Road Surface	Wet			
Weather	Rain			
Severity	Slight			
Factor	Driver Error			
Description	V1 (Car) pulled out of junction into path of V2 (Car). V2 struck R/O/S of V1.			

Table 2.2: Accident Severity – 5 years (18/01/2010-25/08/2014)

There has been an average of roughly three accidents per annum with the accidents located throughout the study area, which does not indicate a specific accident problem requires addressing.

Further analysis, presented the following breakdown per accident type:

- 9% were related to poor weather conditions
- 18% were related to overtaking
- 18% were related to pedestrians crossing
- 18% were related to a hazard on the carriageway
- 37 % were related to driver not paying attention

As **Table 2.2** above has identified, three pedal cyclists were involved in a personal injury accidents in the five-year period and these were caused by both the riders and the drivers not paying attention and therefore these incidents are not considered to be significant in terms of the existing highway layout. Over the five-year study period, only 2 accidents occurred in the dark, thus the remaining 15 accidents occurred in daylight hours.

Therefore the study area had a significantly lower number of night time accidents, when compared to daytime accidents, though a lower number would be expected given the lower volume of traffic in the night time the scale of difference suggests drivers may be more aware of other cars at night, given the general environment for the area and the lack of street lighting.

A total of 12 of the 17 accidents occurred in the dry, with three accidents being recorded as occurring in wet conditions with the two remaining accidents happening in icy environments. Accordingly, no specific pattern relating to condition of the road surface i.e. potholes (or excessive speeds for road conditions) was identified. Overall, given the volume of traffic within the study area, as detailed in **Table 2.3**, there is no identifiable pattern to indicate any accident cluster sites.

Road Name (Two-Way)	Average Vehicle Trips per day
North Lane	700
The Hollow	7,320
Church Hill	1,010
Top Road	8,094

Table 2.3: Vehicle Activity – Study Area, West Hoathly

A further comparison with the previous study undertaken by the TMS Consultancy in 2011 along the same area, which contained collision data provided by WSCC for a 3-year period to August 2011, identified that seven injury collisions occurred between Stonelands, to the west of West Hoathly and the eastern end of Sharpthorne.

One of these resulted in fatal injury, two resulted in serious injury, and the remaining five resulted in slight injury. It is not known how many of these collisions were speed related, but it is implied that a number of the collisions would be related to speed. The details of these accidents are presented in **Table 2.4** below, as well as using data sets from crash map that incorporates accidents from before the TMS report.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Slight	2	1	3	1	1	1	1	0	0	2	12
Serious	0	1	1	0	0	0	2	2	2	1	9
Fatal	0	0	0	0	1	0	0	0	0	0	1
Total	2	2	4	1	2	1	3	2	2	3	22

Table 2.4: Accident Severity (2005-2014) – West Hoathly

Therefore, looking at the above table and the accidents associated per year, it is clear to see that the current traffic calming measures have not resulted in reducing accidents and therefore could be classed as unsuccessful in highway safety terms.

2.5 TMS Consultancy Speed Volume Data (2008)

In order to determine if there is an existing problem of drivers exceeding the speed limit, a traffic volume and speed survey was commissioned in January 2008 by the Parish Council and undertaken by TMS Consultancy using an Automatic Traffic Counter (ATC) over the course of 5 days. A high degree of accuracy is possible from the survey method employed: recorded traffic flows should be within +/- 2% of actual flows and the speeds within +/- 3%. **Table 2.5** below, outlines the 85th percentile speed recorded. The 85th percentile speed is the speed at or below which 85% of the motorists drive on a given road unaffected by slower traffic or poor weather. This indicates the speed that most motorists consider safe and reasonable under ideal conditions.

Network Link	85th Percentile Speed (Mph)	
	Towards Tyes Cross	Towards Turners Hill
Selsfield Road	35.9 mph	38.0mph
Chapel Row	35.1 mph	35.6mph
Church Hill	34.0 mph	35.7mph
Top Road	37.2 mph	34.6mph

Table 2.5: Existing Data (TMC) - 2008 Speed Survey Results

2.6 Speed Volume Data (2015)

To get a more accurate understanding of current driver behavior it was agreed with WSCC that new speed data would be collected at the same locations, therefore providing a robust comparison. It should be noted that during the time of the survey, works were being conducted on the highway within the local area. However, the data as provided below was not compromised in anyway.

In order to provide a set of comparable results to the previously collected data, a traffic volume and speed survey was commissioned in February 2015 and undertaken by an independent survey company using an Automatic Traffic Counter (ATC) over the course of 5 days. **Table 3.6** below, outlines the 85th percentile speed recorded.

Network Link	85th Percentile Speed (Mph)		Mean Speed (Mph)	
	Eastbound	Westbound	Eastbound	Westbound
Chapel Row	35.6 mph	35.4 mph	31.6 mph	31.0 mph
North Lane	32.9 mph	34.9 mph	27.0 mph	32.9 mph
Top Road	34.9 mph	32.9 mph	28.9 mph	27.0 mph
Church Hill	32.5 mph	33.5 mph	25.5 mph	26.4 mph

Table 2.6 Existing Speed Data (CH2M HILL) – 2015 Speed Survey Results

As identified in both tables above, the speed limit throughout the identified study area is designated at 30mph. The data results for both tables has clearly identified that most drivers exceed the designated speed limit.

3 Option Evaluation

3.1 Introduction

Speed management measures that work well in urban areas often don't work or are unsuitable for use in a rural setting. Where efforts are made to reduce speeds, the obvious methods rely on signs, lighting, road marking and humps — all of which can be unwelcome and look out of place. In addition, fewer vehicles spread over a wide area make traditional enforcement by traffic police difficult.

However, with some innovative thinking and community action, the challenge of rural speed management can be met. This section provides a review and evaluation of the Traffic Management options considered the study area. A review of Traffic calming measures and related research is provided at **Appendix E**.

It should be noted that there are many types of traffic calming measures. Some methods rely on severe interventions, others are more subtle. Traffic calming schemes need to balance the scale of intervention against acceptable environmental intrusions. At the same time a balance needs to be taken between the costs and benefits of a scheme. A review of alternative approaches is provided in this section and a preferred Traffic Management Strategy is provided based around the issues identified and available options.

3.2 Existing Traffic Calming Measures

As a result of the previous findings from the 2002 TMS report and consultation with WSCC, there are a number of traffic calming measures already located within the study area including gateways details, rumble strips and vehicle activated signage. A series of photographs were taken to document the types and location of these existing measures (see below and **Appendix D**).



Photograph 1 – Pre-2011 Traffic 'Gateway' – Sharpthorne



Photograph 2 – Existing 2015 Traffic Calming 'Gateway'



Photograph 3 – Existing Traffic ‘Gateway’ – West Hoathly



Photograph 4 – Existing ‘Traffic Measures’ Chapel Row



Photograph 5 – Vehicle Activated Sign – Top Road



Photograph 6 – Existing ‘Rumble Strip’ Top Road

However, it is clear that the current measures are not reducing vehicle speeds sufficiently. Therefore, additional features should be considered to provide additional calming measures. The following headings provide a high level overview of various traffic calming measures that could be implemented within both villages to encourage lower traffic speeds.

3.3 Potential Traffic Calming Measures

There are a broad range of Traffic Management measures available for use in rural and village scenarios which are used in West Sussex. For any measures, careful consideration needs to be given to the nature of the area where such Traffic Management measures are to be implemented. Where practical, incorporating sensitive treatment to Traffic Management measures to take specific note of the rural or historic surroundings should be considered. In evaluating traffic management measures, it is recognised

that the implementation of common Traffic Management measures in rural locations is difficult to achieve without 'urbanising' the area. As a result it is important to ensure that the design of final schemes includes local engagement to ensure they are considered appropriate and in-keeping with the local area. Therefore, whilst this section outlines many of the standard traffic calming techniques available, it is recognised that where possible these measures should be incorporated into the surrounding environment and that a psychological approach to traffic management should be pursued as set-out in the 'Traffic in Villages Toolkit'. As the data sets have clearly identified, the works that were included within the 2003 traffic calming scheme, which comprises of 'gateways' and painted surfacing has not resulted in either lowering vehicle speeds or reducing accidents. Therefore, alternative options have been identified that could achieve the required Traffic Management objectives without having a detrimental impact on the character of this rural villages.

3.4 Psychological Traffic Calming Features (The 'Traffic in Villages Toolkit' Approach)

The toolkit emphasises that reducing speeds and minimising the adverse effects of traffic involves integrating the design and management of streets and village spaces with the special qualities of place. In doing so, traffic calming can be achieved through the provision of 'self-reading' roads that inform drivers to reduce speeds and improve drivers' awareness of their surroundings. Such measures are intended to build upon the principles of 'place making' to make villages more distinctive and influence driver behaviour when passing through villages.

3.5 Traffic Calming Measures for Speed Management

The Highways (Traffic Calming) Regulations 1999 (SI 1999 No.1026) provide a range of measures such as build-outs, pinch-points and chicanes, islands, rumble devices, overrun areas, and gateways, within 20mph zones. These features are placed so that at no point in the zone would a person be more than 50 metres from such a measure. Physical measures each have their own drawbacks including increased localised noise, visual impact on the street scene, comfort of use and impact on disabled people and other facilities such as parking or bus services. The introduction of such physical traffic calming measures could also displace traffic onto other routes and contribute to speeding/congestion problems.

It is encouraged to consider non-physical methods of speed reduction in the first instance. These might include:

- Vehicle activated speed limit signs
- Community Speed watch;
- Police enforcement;
- road safety activity;
- provision of additional repeater signs;

However, when considering any form of traffic calming for speed reduction, the following should be considered:

- the road's status within the identified Functional Route Hierarchy in order to determine what measures may be used;
- the extent of the scheme and how it would integrate into the surrounding network;
- the type of road and its historical character, including the height of buildings, whether it is in a conservation area and so on;
- the road width;
- limiting forward visibility to reproduce the effect of a bend;
- the kerbside activity – parking, cycling, pedestrians;
- the position of any bus stops and the nature of any pedestrian access;
- the existing traffic signs – do they meet current standards?
- the existing white lining.

3.6 Road Markings and Traffic Signs

The provision or revision of road markings and signs can provide a simple but effective form of Traffic Management. However, when using these in rural locations, such features should be used sparingly so as not to detract from the character of such settlements. The following measures are available for use:

Speed Roundel Markings are white thermoplastic elongated circles with the speed limit in the centre which are laid on the road carriageway surface. These can only be used with speed limit repeater signs, either at speed limit boundaries or within speed limit areas. As speed limit repeater signs are not permitted on 30mph roads with street lighting roundel markings cannot be installed in such circumstances.



Coloured Surfaces and surfaces with high skid resistance are often used at the approaches to pedestrian crossings or roundabouts to assist drivers when braking for pedestrians or other vehicles. These are usually in a contrasting colour, which may have the added effect of alerting the drivers. When implementing such measures in rural locations it is important to consider the impact of contrasting colours on the character of the surrounding area. Therefore, where possible, the use of beige surfacing is preferable in rural areas.

Changes in Surface Texture can encourage lower speeds, but it is important that the skid resistance for any material used for traffic calming is adequate for the type and speed of traffic carried.

Central Hatched Road Markings can be used to discourage drivers from overtaking and can also give the impression that the road is narrower than it is in reality. Placing them on a coloured background can give additional emphasis. They are however not a particular sensitive treatment.

Edge of carriageway road markings can be used to narrow the carriageway and bring vehicles closer together, thereby reducing traffic speeds.

3.7 Gateways and Entry Treatments

Gateways are used to signify the entry into a village or traffic calmed area and generally consist of a distinctive change in road surface, a prominent sign to alert drivers to the area and sometimes additional traffic calming measures, such as rumble devices. The use of gateways is considered to be a key tool in the implementation of Traffic Management measures in rural areas. Guidance on Gateways states that they should be as conspicuous as possible (whilst keeping with the character of the location), and their effectiveness is generally governed by this.



3.8 Vehicle Activated Devices

Vehicle Activated Signs (VAS) are used as traffic calming measures to address inappropriate speed where conventional signing has not been effective. Such signs can display a range of messages when activated by a vehicle and can display a range of messages such as the speed limit, the vehicle speed or appropriate warning signs to notify drivers of highway features ahead. They have been commonly introduced by highway authorities to address specific issues and there is evidence they can be effective if they are not used too much.



3.9 Repeater Signs

The current TSR&GD does not permit the use of repeater signs on street-lit 30mph limits or within 20mph zones. Chapter 3 of The Traffic Signs Manual – Regulatory Signs (2008) gives guidance on the appropriate size and frequency of repeater signs for each standard speed restriction and the distances given should be considered to be the maximum distance for use with repeaters.

3.10 Countdown Markers

The use of countdown markers on the approach to a reduced speed limit requires approval from the Department for Transport. The DfT consider them appropriate only in very rare circumstances and suggest that consideration in the first instance should be given to the placement of the terminal signs to negate the need to consider countdown markers.

To request approval the following are to be provided:

- Evidence of insurmountable visibility problems at the site. This should include photographic evidence;
- Evidence of other steps taken to make existing signs more visible – the removal of vegetation, repositioning the terminal signs, and so on;
- Evidence showing that the use of countdown markers is supported by the police;
- This information should be sent to the Traffic Management and Policy Team at County Hall to process the request.



3.11 Physical measures

Guidelines for the use of Carriageway Narrowing - Narrowing the carriageway may have many benefits, as drivers' perception of the safe speed for the road is affected by road width. This could facilitate pedestrian movements, although cyclists can be vulnerable where reduced road width brings them into close contact with motorised vehicles that might try to pass them.

The carriageway may be narrowed from the edges in the form of build-outs to guide vehicles towards the centre of the road, or from the centre of the road in the form of central refuges or islands, to guide vehicles away from the centre line towards the kerb. A build-out is a feature constructed on one side of the carriageway to restrict road width. Build-outs may be installed:

- on one side of the carriageway only;
- on opposite sides of the carriageway, in
- pairs, to create pinch points;
- On alternate sides of the carriageway, to create a chicane.

Build-Outs - are used to reduce speed by narrowing the road to a single lane width forcing traffic to give way – priority working.

- Reduces traffic speeds.
- Can provide safer crossing points for pedestrians.
- Can be used as part of Gateway features.
- Requires opposing traffic to keep speeds low and to have clear visibility of the opposing traffic stream.
- Need to ensure that HGV's/buses and emergency vehicles can be safely accommodated.
- Provision for cyclists to be maintained.
- May cause congestion.



Central refuges & Islands - both have the effect of narrowing the carriageway and reducing vehicles speeds, but they are installed for different purposes and under different legislation. Islands are installed in compliance with the Highways (Traffic Calming) Regulations 1999 and are not intended for pedestrian use, but may be used to protect cycle facilities or to separate traffic streams and prevent overtaking. Refuges are designed to improve pedestrian safety on wide roads by providing a central crossing point, thereby allowing pedestrians to cross each half of the road separately. They will include dropped kerbs and tactile paving to facilitate pedestrian use. It is not essential to have central hatching on the approach to islands or refuges. A single white line leading from the centre line of the road to the nearside of the refuge (thereby 'leading' the driver's eyes towards the narrower lane) can be far more effective (see Traffic Sign Manual Chap. 5, P.17 Fig.4-4).

Road Humps and Cushions- are effective methods of achieving sustained speed reduction. However, they often attract criticism for perceived noise or discomfort and must be carefully placed to achieve maximum effectiveness and maximum public acceptance. Road humps and cushions should be the last option after all other traffic calming measures have been considered. The design of any traffic calming scheme should, therefore, take into account any similar measures on the surrounding network and should examine any affected bus route in its entirety. While cushions allow greater access for bus services, they are also easy for some smaller vehicles to negotiate without slowing down. Full width humps are more effective and therefore cushions should be used with extreme caution and only where absolutely necessary.

Designers should give consideration to:

- drainage of the carriageway surface around humps;
- the choice of materials – bituminous material is preferred for safety and maintenance reasons;
- the spacing between each feature – a minimum of 60-80 metres is recommended;
- the location and nature of each feature within the streetscape;
- displaced traffic and the effect on surrounding streets;

Rumblewave Surfacing. These may be in the form of rumble strips or areas that have a vibratory and audible effect which alerts the driver that extra care is needed. It should be noted that, because of the vibration and noise, these should not be placed close to residential areas. A new type of rumble device known as rumblewave surfacing has recently been developed. This has a sinusoidal profile and provides similar noise and vibration within vehicles but less external noise, making it more suitable for use near residential areas.



3.12 Natural Traffic Calming (Naked Streets)

Standard traffic calming measures ‘urbanise’ the countryside. Some safety measures such as warning signs, white lines and concrete kerbs can encourage higher speeds by giving visual cues to drivers that in effect give drivers confidence to drive faster. Visibility splays which open up junctions can damage countryside character and can lead to higher approach speeds, making conditions more dangerous for vulnerable road users. Alternatively, narrower junctions can in the right circumstances reduce speeds and discourage rat-running. Natural traffic calming looks to protect and enhance rural features that can slow traffic. Trees and hedges, walls and buildings with frontages close to the road edge can also help to keep speeds down. Verge management can also have an impact. Bends, narrow roads and rough surfaces are rural variants of urban traffic calming measures. The presence of people and activity along the roadside have been found to be the most powerful natural deterrents to high speeds. Removing road markings and signs (known as naked streets) have been introduced and several surveys have shown that the clearer the road marking layout, the more positive drivers are in their actions and general behaviour. Accordingly removing such signage and lining has been successful in a number of locations but considerable judgement is required to minimise any risks resulting from removing signs and road markings. Consideration has to be given to traffic flows, existing vehicle speeds, location, and numbers of vehicles using the road. This approach is still not universally understood and is hence still being trialled

Below shows an example of what was undertaken by the Parish Council at Buriton in Hampshire. As can be seen, the road markings, signs and barriers were removed, and a robust palette of paving materials used to reduce the speed context and to highlight key spaces. The success of the scheme and its popularity has inspired several historic villages in the area to develop a similar approach based on the principles outlined in the ‘Traffic in Villages Toolkit’.



Photograph 1 – Pre-Traffic Calming, Buriton



Photograph 2 –Post Traffic Calming, Buriton

3.13 Assessment Matrix of Traffic Calming Options

Table 3. 1 outlines the overall advantages and disadvantage for each of the identified traffic calming measures.

Feature	Advantages	Disadvantage	Cost
Gateways	<ul style="list-style-type: none"> • Can reduce speeds by up to 5mph • Increases driver awareness of their environment • Different styles of gateway can reflect the particular character of an area • Defines the boundary of a village or town 	<ul style="list-style-type: none"> • Often limited room on verges, due to the verge width • Speed limit signs and village nameplates cannot always be placed at the same location • Department for Transport authorisation may be required for certain designs • Limited effectiveness if used in isolation 	£7,000 -21,000
Speed Limit Roundels	<ul style="list-style-type: none"> • Effective message reinforcement • Can be used in isolation (with special permission) • Inexpensive 	<ul style="list-style-type: none"> • Can fade from traffic wear • Need regular maintenance, with potentially higher long-term costs than conventional signage • Visibility is affected in poor weather conditions • Can be unpopular with motorcyclists as the white paint is slippery when wet • Can cause annoyance to residents if roundel is located within road frontage near home. 	£500 - £1000
Speed Signs	<ul style="list-style-type: none"> • Inexpensive • Clear message for drivers • highly visible to drivers 	<ul style="list-style-type: none"> • May 'urbanise' a location, especially in rural areas • Inappropriate signs are currently attracting adverse media attention • Too many signs can confuse drivers 	£500 - £800
Coloured Surfacing	<ul style="list-style-type: none"> • Relatively inexpensive • Can be used to denote an approaching change in conditions • Can be used to highlight road markings 	<ul style="list-style-type: none"> • Should not be used in isolation, as without accompanying signs no specific message is conveyed • High visual impact • Prone to fading • Can have an urbanising effect 	£500 - £1000
Dragons Teeth	<ul style="list-style-type: none"> • Creates an illusion that the road is narrower than it is • Inexpensive • Do not generate too much noise • Highly visible 	<ul style="list-style-type: none"> • Limited impact when used in isolation • Can be perceived as unsightly • Constant over-running of lines will lead to traffic wear and associated maintenance issues 	£800- £2,500.
Flat-Top Crossing/Tables	<ul style="list-style-type: none"> • Can be very effective in reducing vehicle speeds and injury accidents • Can provide pedestrian crossing places • Cover the full road width and can be installed without affecting on-street parking 	<ul style="list-style-type: none"> • Can only be used in areas with a speed limit of 30mph or less • Must be illuminated to highway lighting standards • Can cause discomfort to bus passengers and patients in ambulances and affect emergency service response times • Braking and acceleration noise plus vibration can make them unacceptable to residents • Not cycle-friendly • Drainage for flat-top style humps needs to be considered 	£7,000
Road Hump / Speed Cushion	<ul style="list-style-type: none"> • Can be very effective in reducing vehicle speeds and injury accidents • Cover the full road width and can be installed without affecting on-street parking • Can be tailored to fit different road widths and conditions • Cycle-friendly • can be designed to be bus and HGV-friendly • Better access for emergency service vehicles 	<ul style="list-style-type: none"> • Can only be used in areas with a speed limit of 30mph or less • Must be illuminated to highway lighting standards • May cause discomfort to bus passengers and patients in ambulances and affect emergency service response times • Braking and acceleration noise plus vibration can make them unacceptable to residents • Cushions may not slow HGVs, wide wheel based cars or motorcyclists 	£4,250 - £5,000

Feature	Advantages	Disadvantage	Cost
Hatched Road Markings	<ul style="list-style-type: none"> • Inexpensive • Provide lane guidance • Solid hatchings are enforceable 	<ul style="list-style-type: none"> • Not as effective when used in isolation • Will have a possible 'urbanising' effect, especially on rural roads • A minimum road width is required • Constant over-running of lines will lead to maintenance problems • White edge lining may increase driver speed 	Approx. cost: £0.50p per metre
Vehicle Activated Signs	<ul style="list-style-type: none"> • Simple, clear and easy for motorists to understand • Suitable for a wide range of locations and installation types. • Some models can be set to display different speed limits, increasing their flexibility. • Signs are blank when not activated, limiting their visual intrusion. 	<ul style="list-style-type: none"> • Not as effective when used in isolation • Without explanatory wording, does not give motorists the reason for the need to slow down • Only gives motorists a limited amount of information about their speed 	£9,500
Speed Indicating Devices	<ul style="list-style-type: none"> • Can be more informative than speed limit roundel • limited installations necessary to achieve benefits • Can be applied to almost any speed limit • Have the ability to record traffic speeds to ascertain whether a speeding issue is actual or perceived 	<ul style="list-style-type: none"> • Not as effective when used in isolation • Without explanatory wording, does not give motorists the reason for the need to slow down • Only gives motorists a limited amount of information about their speed. 	£9,500
Chicanes / Buildouts	<ul style="list-style-type: none"> • Can effectively reduce vehicle speeds • Can reduce overtaking manoeuvres 	<ul style="list-style-type: none"> • cannot be used on heavily trafficked roads • only effective on roads where the flows in both directions are balanced 	Cost per buildout £9,000. * see note below
Rumble Strips	<ul style="list-style-type: none"> • relatively inexpensive to install 	<ul style="list-style-type: none"> • research indicates minimal speed reduction of around 1 mph • Not the most appropriate traffic calming for urban areas due to noise. 	Cost £4,250 - 5,500. *see note below
Rumblewave Surfacing	<ul style="list-style-type: none"> • a quieter alternative to rumble strips • considered suitable for residential areas 	<ul style="list-style-type: none"> • minimal speed reduction (1 mph) • expensive to install compared to rumble strips • effectiveness is questionable 	Cost £4,250 - 5,500. *see note below
Central Islands & Refuges	<ul style="list-style-type: none"> • can effectively reduce vehicle speeds • can reduce over taking manoeuvres • can also provide crossing points for pedestrians 	<ul style="list-style-type: none"> • can reduce the road space available for cyclists 	Cost £15,000.* see note below
<p><i>* Note: The above costs serve as a guide to the costs involved. They do include design and consultation costs, as well as that for construction. There may be economies by combining features, say in an area-wide scheme</i></p>			

Table 3.1- Advantages and Disadvantage of traffic calming schemes

4 Proposed Traffic Management Strategy

4.1 Overall scheme

Following completion and review of the matrix of Traffic Management measures, a proposed Traffic Calming Strategy has been prepared for the study area as shown below in **Figure 4.1**.

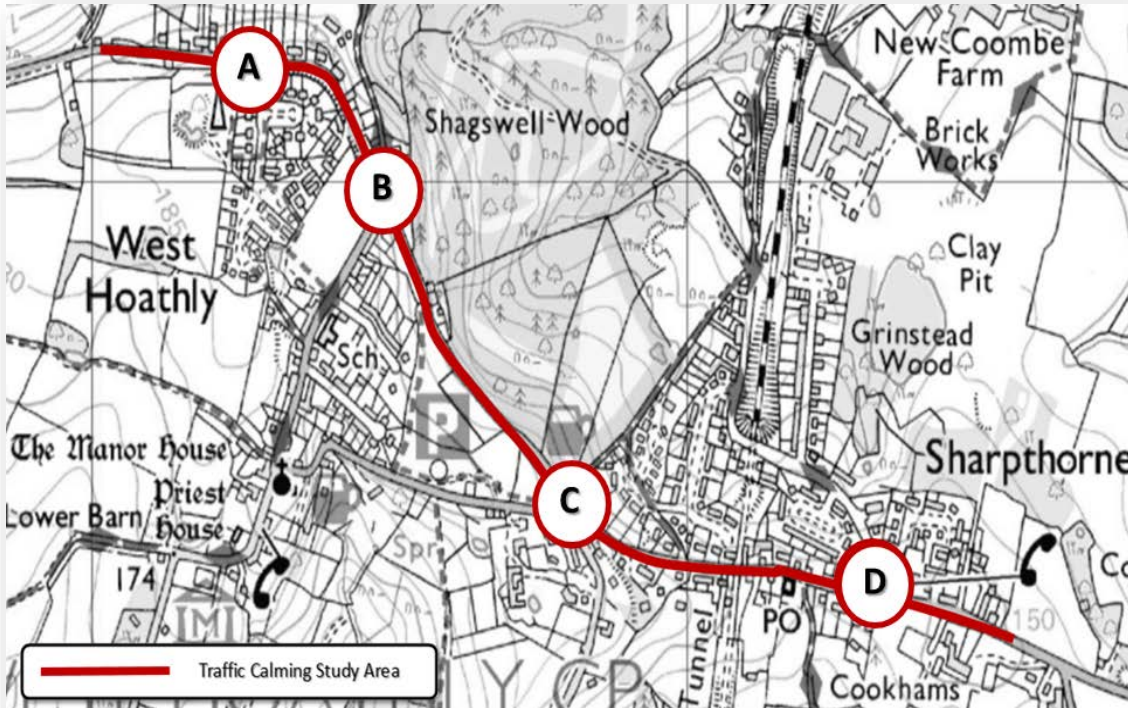


Figure 4.1- Location Plan - Proposed Traffic Management Area

4.1 Scheme Elements

The proposed scheme is based around:

- Retained but enhanced Gateways which should be designed so they are conspicuous but also acceptable to the local surroundings and residents. As a result, it is considered appropriate to allow for local stakeholders to be involved in the final design of such features.
- The retention and potential updating of the traffic calming measures implemented in 2003, comprising vehicle activated signs and rumble strips.
- Removal of the centre line along the C319 for the duration of the 30mph speed limit.
- Environmental improvements at four specific junctions through the removal of white lining and signage, creating distinct points along the C319 that are different from the remaining sections of the road to indicate to drivers the need for additional care and attention. This will help to address not only the identified issues of the locations but also provide the opportunity to enhance the quality of local environment. Note, indicative layouts have been proposed for the four sites but it is intended that the proposals and designs for these locations should be taken forward in collaboration with the local stakeholders.

One of the four treatments is Vinols Cross Scheme to be delivered autumn 2015 includes most of the proposed principles and should not be delayed or need major revision to fit the proposed concept. An estimate of costs for each identified area along the study area is provided below. These are estimates based on best practice and previous experience of the implementation of these types of measures and therefore they are representative of outline design and for information only at this stage. The proposed Traffic Management Strategy is indicated in **Table 4.1 below**;

Area	Problem Raised and addressed	Proposal	Why Selected	Cost
Gateway Enhancement	Existing gateways are low key-signage only	Upgrade of gateways; Local initiative for selection of design	Gateways required to introduce traffic calmed section. Existing gateways are not particularly effective	£15,000
Length of 30mph section of C319 between existing gateways	Traffic speeds Pedestrian and cycle environment	Remove centerline; Reduce signage to minimum required for speed enforcement	Will differentiate section through villages from rest of C319; Will introduce driver uncertainty and hence reduce speeds	£60,000 (assuming not associated with regular maintenance)
Location A- Selsfield Road j/w Broadfield	Traffic Speed on C319.	Remove all road markings, signs and barriers on carriageway;	Will introduce driver uncertainty and hence reduce speeds; Located at first junction reached for drivers arriving from West. Start of footway on C319	£19,000
Location B – North Lane j/w The Hollow Proposed Traffic Calming Measure (Drawing 6005609-008)	Traffic Speed on 319; Accident Location.	Remove all road markings, signs and barriers on carriageway;	Will introduce driver uncertainty and hence reduce speeds	£20,000
Location C- Vinols Cross Proposed Traffic Calming Measure (Drawing 6005609-006)	Traffic Speed on C319; Accident Location; Concern of crossing road	Remove all road markings, signs and barriers on carriageway; Reduce Carriageway width to 6m; Introduce additional footways and enhanced drop kerbs to incorporate bus stop and pedestrian crossing points;	Will introduce driver uncertainty and hence reduce speeds; improve safety for pedestrians to cross the road;	£26,000 (additional to 2015 improvement scheme)
Location D-- Top Road j/w Station Road Proposed Traffic Calming Measure (Drawing 6005609-007)	Traffic Speed on C319 Accident Location; Concern of crossing road	Remove all road markings, signs and barriers on carriageway; Reduce Carriageway width to 6m; Introduce drop kerbs and footway width to incorporate bus stop and potential crossing points;	Will introduce driver uncertainty and hence reduce speeds; Will improve accessibility for pedestrians to cross the road;	£33,000
Total Scheme Cost				£173,000

Table 4.1- West Hoathly – Traffic Management Strategy

The proposed strategy is illustrated on drawings provided at [Appendix E](#) along with a full breakdown of area scheme costs provided within [Appendix F](#).

The development of the strategies below has discussed how the proposed options address the speed and safety concerns raised by the initial desk based study. It should also be noted at this stage that these proposals do not represent a final strategy and further consultation will be required with the local stakeholder groups.

4.2 Detailed considerations

Main road treatment

Traffic calming through route requires a logical and comprehensive approach. It appears that the existing scheme that is limited to gateway features and a couple of vehicle activated signs is ineffective as far as reducing speeds along the complete length of the villages. Accordingly it is suggested that any new proposal should look to provide calming along the complete length of the C319 through the villages.

Preferred choice and reasons;

It is proposed that the 'naked street' is implemented along the identified study area of the C319 through the main section of the Parish, between the two existing gateway features. It is then envisaged that this stretch of highway would have all centre lines and possibly carriageway edge lines removed and keep the carriageway in a grey coloured surface dressing, until it reaches the four main junction points that would then incorporate a bluff or sandy surface dressing, thus creating a different visual appearance to the rest of the C319 route.

Discounted Options and Reasons:

A comprehensive series of speed humps would be practical along the C319. This would however lead to noise associated with the physical impact of the humps along with additional acceleration of vehicles. Humps would need to be around 100m apart to be effective and it would most likely lead to excessive driver frustration that could actually lead to more aggressive driving that may undermine any speed reduction benefits.

A slightly less intrusive approach would be to consider a series of shuttle working or pinch points that could be considered for the length of the C319 through the village. Such a scheme would be anticipated to effectively control speeds, particularly at the busiest periods. However, during off peaks vehicle speeds may not be significantly altered and there would remain the problem of additional acceleration noise. There would be some driver frustration and there would need to be a reasonable amount of reflective signage provided as there is no street lighting along the C319. Additional signage is not likely to be effective whilst additional vehicle activated signage is likely to have a diminishing impact and would be an insensitive impact on the environment of the villages.

Proposed Traffic Calming Measure - Location A: Selsfield Road j/w Broadfield (Drawing 6005609-009)

The junction of the C319 with Broadfield is the first junction reached when entering the traffic calmed section from the west. It is also the start of footway provision on the south side of the main road. There is benefit in providing a junction treatment to compliment the main line treatment at this location. There is no specific pedestrian crossing demand at this junction as the junction and footway are on the south side of the C319.

Preferred choice and reasons;

Natural Traffic Calming (Naked Streets) – Based on discussion with the Parish Council and potential difficulties in implementing a speed reduction scheme in terms of using buildouts and pinch points, it was concluded that a suitable option for the junction treatment would be a 'naked street' approach.

General Maintenance - In addition, substantial cutting back of overgrown trees and hedges should be carried out along both sides of the carriageway. A series of wooden bollards should also be incorporated along the North Lane bellmouth and carry on along the western footpath along The Hollow.

Proposed Traffic Calming Measure – Location B: North Lane j/w The Hollow (Drawing 6005609-007)

The junction of the C319 with North Lane is a priority junction incorporating a right-turn ban for vehicles exiting North Lane onto the main road. It is presumed that the right-turn ban was implemented for safety reasons due to the acute angle of the side road approach (the right turn would be a difficult manoeuvre) and poor visibility to the right. However, when turning left, a driver is required to “look over the shoulder” in order to see vehicles approaching from the right. Directly opposite the junction, there is a specialist motor garage and one private dwelling – visibility to the right from this garage access is very poor, as it is restricted by a stone wall.

Preferred choice and reasons;

Natural Traffic Calming (Naked Streets) – again when comparing the location and potential difficulties in implementing a speed reduction scheme in terms of using buildouts and pinch points, it was concluded that the a suitable option would be the ‘naked street’ approach.

General Maintenance - In addition, substantial cutting back of overgrown trees and hedges should be carried out along both sides of the carriageway. A series of wooden bollards should also be incorporated along the North Lane bellmouth and carry on along the western footpath along The Hollow.

Discounted Options and Reasons:

Central Refuges: It is not considered feasible to provide a central pedestrian refuge that is wide enough to cater for pedestrians (min. 1.50m width, preferably 2.0m width) as the traffic lanes would be too narrow, as the requirement would be 3m for each lane and would therefore not be sufficient for HGVs to safely pass, given that the carriageway is only 6.1m in width at this location.

Buildouts: It is not recommended to be an appropriate measure, given its location being situated just outside the West Hoathly garage. The reason being that, traffic calming studies have identified that buildout designs actually are limited in speed reducing. This is because vehicles actually increase their speed to get through the narrowing before an oncoming vehicle. Therefore, it has been discarded as being unsafe.

Speed Cushion – again as mentioned previously, given that the study area has no street lights present, extensive street lighting would be required throughout the “treated” length and therefore has been discounted as a feasible option, given the required costings to produce this.

Proposed Area – Location C: Top Road j/w the Hollow (Drawing 6005609-006)

This is the main pedestrian crossing desire line for pedestrians walking between the two communities of West Hoathly and Sharpthorne. As there is no footway on the south side of Top Road, east of the junction, pedestrians must cross here to avoid walking in the carriageway. It is also the site of the school crossing patrol. Specific problems are lack of footway space to accommodate waiting pedestrians, poor visibility caused by overgrown trees and hedges, the approach speed of vehicles, and the variety of different vehicle movements due to the existence of Highbrook Lane. The narrowness of the footway heading east towards Sharpthorne is also problematic as it leads to intimidation of pedestrians by passing traffic, especially by large vehicles. It should be noted, that since the earlier traffic calming features were installed the local residents and parishioners still remain unhappy with the failure of previous attempts to control traffic speeds, although several do acknowledge that the rumble strips and vehicle-activated signs have had some positive effect however vehicle speeds still remain high and the accident record hasn't diminished.

Preferred choice and reasons;

Informal Crossing – The simplest type of pedestrian crossing is the informal crossing point, which in this case will include dropped kerbs and tactile paving either side of the highway. These are generally used in

areas where a formal (controlled) pedestrian crossing cannot be justified due to the demand in both vehicle and pedestrian flows. It should also be noted that during the AM Peak, a School Crossing Patrol, operates at this junction, therefore making it the main desire line that connects both villages. A pedestrian count was undertaken on Wednesday 21st January 2015 during the following time periods of (07:00-09:00) and (15:00-18:00) and recorded the following movements;

Movement	AM Peak (07:00-09:00)		PM Peak (15:00-18:00)	
	Adult	Child	Adult	Child
Eastbound (towards Top Road)	9	0	11	6
Westbound – (towards Church Hill)	13	3	7	0
Total Movements	22	3	18	6

Table 4.2: Pedestrian Movements - Top Road j/w the Hollow

The results, clearly indicate that some form of crossing should be positioned at this location and using the guidance extracted from DfT Technical Note 2/95 'The Design of Pedestrian Crossings' it sums up the following benchmarks for types of crossing that should be used;

- Informal Crossing – 0-600 pedestrian movements per hour
- Zebra Crossing – 600-1100 pedestrian movements per hour
- Signal Controlled Crossing 1100+ pedestrian movements per hour

Therefore, as pedestrian flows fall into the bracket of 0-600 movements per hour, it has been recommended that an informal crossing point should be located here.

As, identified on drawing **6005609-006**, adjustments to the kerb-lines have been designed to provide additional standing space for the patrol and the children within the existing highway boundary on both sides of the carriageway.

Natural Traffic Calming (Naked Streets) – The intended effect is that the driver’s certainty of their own road space and confidence in priority (all created in part by the white lining) is removed, creating more caution psychologically and, therefore, lower speed. One aspect of this is often that people who work and live in the area are free to park where they need to, as their activity should have a higher priority than that of through traffic. Also, where there are no centre-lines, drivers are more wary of oncoming vehicles, which can result in a tendency to drive slower.

When investigating this type of traffic calming measure, a previous study, carried out by Wiltshire County Council, found that the effect of removing the centre line from the carriageway found that the hypothesis that “the removal of the centre line encourages drivers travelling in opposite directions to adopt inappropriate speeds for the conditions” was false. The study found that the opposite effect was observed, such that in the absence of the centre line, drivers:

- Reduce their speed when they are close to oncoming vehicles
- When they are close to oncoming vehicles, they travel marginally slower than drivers on a road with a centre line
- The study showed quite clearly that there are safety advantages to be gained by removing centre lines in 30mph zones. In addition, reducing the effective carriageway width by the addition of cycle lanes does not increase the risk of conflicts for drivers or cyclists.

General Maintenance - In addition, substantial cutting back of overgrown trees and hedges should be carried out, both at the junction and adjacent to the footway that continues towards Sharpthorne village. This would assist, not only with the problem of poor visibility, but also with the identified problem of intimidation of pedestrians by passing traffic. These overall adjustments at this junction should also allow the removal of the short length of pedestrian guardrail on the south side and should be replaced with a series of wooden bollards, therefore in keeping with the village environment.

Discounted Options and Reasons:

Central Refuges - consist of kerbing, bollards and signs in the middle of the road, enabling pedestrians to cross more easily, in two stages. Pedestrian refuges can provide a series of crossing points along a road where it would be impractical to install Zebras or signal controlled crossings at each crossing location. The recommended minimum is 1.5 m, although 2m is preferred to accommodate pushchairs, wheelchairs and cycles. The minimum through lane width for traffic is normally 3m. At this location, the width of The Hollow has been measured at 7.5m. Therefore this option has been discounted on safety reasons.

Buildouts: Build-outs are generally only effective at reducing vehicle speeds if the traffic flow is balanced and consistent, as meeting opposing traffic is what causes drivers to slow down. As this site experiences tidal flows and high speeds at off peaks, vehicles are unlikely to meet opposing traffic and so can still drive relatively quickly through the available gap. The build-out also could provide pedestrians with an increased visibility of the road. It is considered that this form of measure would not be particularly effective given the poor visibility heading southbound along The Hollow and as such has been discounted.

Speed Cushion – Speed cushions are vertical deflections in the carriageway and are often considered to be one of the most effective measures in speed reduction and can also reduce traffic flow by as much as 25%. The height of the deflection is typically 75mm. The signs and road markings for road humps are to comply with the requirements of the TSRGD. They also need to be provided over a significant length.

There are clear disadvantages to the use of road humps as they can cause passenger discomfort in buses, slow down emergency vehicles, create additional noise, vibration and pollution from decelerating and accelerating vehicles and, occasionally, can result in grounding of certain vehicles if the ramps are too steep or too high. The DfT guidance also states that *“Road humps may only be used where street lighting is present, and, where possible, individual humps should be placed close to a street light”*. Given that both Top Road and The Hollow have no street lights present, extensive street lighting would be required throughout the “treated” length and therefore has been discounted as a feasible option.

Proposed Traffic Calming Measure – Location D: Top Road j/w Station Road (Drawing 6005609-008)

Preferred choice and reasons:

Natural Traffic Calming (Naked Streets) – in keeping with the three previously mentioned locations, it is recommended to carry on with the same format, which would include removing the current road markings, and introducing an overlaid surface in a different colour to redefine the space around the T-junction. This approach would again make the driver more cautious and therefore drive at a lower speed.

Discounted Options and Reasons:

Central Refuges: Given that the carriageway is only 6.1m in width at this location it is not considered feasible to provide a central pedestrian refuge that is wide enough to cater for pedestrians (min. 1.50m width, preferably 2.0m width) as the traffic lanes would be too narrow and would not be sufficient for HGVs to safely pass,

Zebra / Signal Controlled Crossing: Although there is a footpath situated along both sides of the carriageway and there is a direct desire line to access the Sharphorne Café and the two bus stops that serve bus route 84, eastbound towards East Grinstead and westbound towards Crawley. From the site observations the route is not one that is frequented by a large number of pedestrians, therefore it has been decided that any such means of a formal crossing at this location would not be required given the lack of pedestrian demand.

Buildouts: Build-outs are only effective at reducing vehicle speeds if the traffic flow is balanced, as meeting opposing traffic is what causes drivers to slow down. As this site experiences tidal flows, vehicles are unlikely to meet opposing traffic and so can still drive relatively quickly through the available gap. The only advantage of a build-out could be, that it is used as a crossing which would allow

pedestrians to cross from the build-out to the footpath that either bus stops and the café. Which in turn would reduce the crossing distance and therefore crossing time. The build-out also could provide pedestrians with an increased visibility of the road. It is considered that this form of measure would not be particularly effective at this location and as such has been discounted.

4.4 Safety Audit

It is advised that a formal safety audit process should be considered if proposals are taken forward. The safety audit process may reasonably alter either the decision to install a traffic measure or type or the type of feature to be installed.

5 Summary and Conclusions

The perceived issues addressed by the proposed traffic calming measures reflect local concerns of existing and potential future problems impacting both villages of Sharpthorne and West Hoathly. This study has reviewed previous traffic calming initiatives and the current conditions of the study area to assess where mitigation may be needed, in particular to reduce present excessive vehicle speeds.

There is local support to tackle existing problems and enthusiasm from Parish Council and WSCC Traffic Group to consider a fresh approach towards the C319 as a route.

In place of adding more signage, cameras and barriers such as speed humps and chicanes, this study has developed the potential for introducing a more subtle form of traffic calming at West Hoathly. This form, consists of removal of all road markings and narrowing the carriageway, which in terms reduces vehicle speeds and discourages rat-running as the evidence suggestions in the Traffic in Villages: Safety and Civility for Rural Roads – A Toolkit for Communities (Dorset AONB Partnership, 2011).

These proposals have been developed with recognition of the environmental sensitivities of the area. If taken forward they need to be developed carefully in a manner that retains the nature of the area that the study covers.

The proposals should be subject to a formal safety audit and where measures are considered appropriate for further investigation, these should be further developed in consultation with local stakeholders and an on-going monitoring scheme will be agreed to assess their relative success.

If schemes are found to be unsuitable or unsuccessful in achieving their objectives, WSCC may need to review alternative measures as appropriate.

Individuals and organisations that are directly affected by traffic calming proposals must be consulted. Due consideration should be given to all views received, and the scheme amended where appropriate. The previous sections have outlined the process by which a preliminary traffic-calming scheme should be developed. The next necessary stage is to carry out comprehensive consultation initially with relevant identified key stakeholders and then with the wider population.