Eastington Village

Transport Appraisal Report

December 2014

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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Description	Date	Signed
1	Issue	December ’14	JH

Contents

1 Introduction

1.1.1 Helix Transport Consultants Ltd are appointed by Eastington Parish Council (EPC) to consider the traffic and transportation issues affecting the parish.

1.1.2 The purpose of this report is to assist in the development of the Eastington Neighbourhood Development Plan (NDP).

1.1.3 The scope of this report is set out in EPC's *Specification for Contract At: Eastington Parish For A Traffic Review.* This report constitutes the first of a 2 stage process and will provide advice and potential improvement options, based on current best practice, on a range of specific and general issues. For ease of reference the EPC specifications are summarised below:

- Northern Springhill junction with Millend Lane
  - (i) Speed of traffic & access to & from Millend Lane during school start & finish times (8.00-9.00 & 2.15-3.45)
  - (ii) Parking on Springhill & along Millend Lane during these times

- Southern Springhill junction with Millend Lane
  - (i) Speed of traffic
  - (ii) Peak hour traffic volumes
  - (iii) Lack of pedestrian crossing facility
  - (iv) Possible effect of future development up to 50 mixed houses

- Alkerton Road area
  - (i) Speed of traffic
  - (ii) Peak hour traffic volumes
  - (iii) Poor design of the area – short term parking for the local shop/businesses/pub & hotel / parishioners 'chatting' area is not optimised, and access for pedestrians and cycles is difficult.

- Claypits Road area, between Alkerton Cross & Claypits/A 38
  - (i) Speed of traffic
  - (ii) Peak hour traffic volumes
  - (iii) Pedestrian facilities

1.1.4 In line with the EPC specifications this report does not include the A419 Stroud corridor as this involves much wider countywide/M5 Junction 13/bridge strengthening issues.

1.1.5 The comments and recommendations within this report are based on site visits, on-site measurements, traffic surveys, speed surveys and parking counts.

1.1.6 Traffic and speed surveys were carried out, where these issues are raised as a concern, in order to quantify the extent of the problem. Peak-hour traffic surveys were carried out over 30 minute periods. Traffic speeds were recorded over 30 minutes or for the first 50 results. This level of information is appropriate for the observations made in this report; but not as exhaustive as would be required for highway design purposes.

1.1.7 The sections that follow detail the baseline conditions, comment on the relevant areas of concern and recommend options for how the situation may be improved.

2 Transportation Infrastructure Assets

2.1.1 The following section provides an overview of the existing transportation infrastructure for each trandport mode.

2.2 Car

2.2.1 The principal roads within the study area comprise: Grove Lane; Spring Hill / Alkerton Road; Claypits Road; and Bath Road. These roads fall within the general description of *a 'smaller road intended to connect together unclassified roads with A and B roads'*, as such, would fall within Gloucestershire County Council's road class 3.

2.2.2 Roads within the study area are subject to a variety of speed limits. Within the built up areas the roads are generally subject to a national speed limit of 30mph. The exception is Millend Lane which has a 20mph speed limit. Elsewhere, limits range between 30mph and 60mph

2.2.3 Roads within the study area vary in width. The most generously proportioned road is Alkerton Road which, in part, is based on a standard 7.3m wide road. Roads connecting to Alkerton Road are around 5.5m wide.

2.2.4 Some street lighting is provided along Alkerton Road.

2.3 Public Transport

2.3.1 A range of bus services operate in the area. The following list the stops and available services

Table 2.1 – Bus Services within Eastington Parish

Stop Location / Name	Key Features	Services	Highest Frequency Service
Claypits Road			
Opposite Hilltop Garage	• EB - Half Depth Layby; V. Narrow Footway • WB - On Street Stop; • No Pedestrian Crossing	3, 61, 167, 201, 346, 401, 506	Hourly
Puddleworth Turn	• EB - On Street Stop; Narrow Footway • WB - On Street Stop; No Footway; • No Pedestrian Crossing		
Alkerton Cross	• EB - On Street Stop; Narrow Footway • WB - On Street Stop; Narrow Footway; • No Pedestrian Crossing		

<table>
<tr><td colspan="4">Bath Road</td></tr>
<tr><td>Opposite Swallow Croft</td><td>• EB - On Street Stop; Narrow Footway
• WB - On Street Stop; No Footway;
• No Pedestrian Crossing</td><td rowspan="3">3*, 16, 167, 242</td><td rowspan="3">Daily</td></tr>
<tr><td>Middle Street</td><td>• EB - On Street Stop; V Narrow Footway; No Sign
• WB - On Street Stop; No Footway;
• No Pedestrian Crossing</td></tr>
<tr><td>Slyvern</td><td>• SB - On Street Stop; Narrow Footway
• NB - Lay-By Stop; No Footway; No Sign;
• No Pedestrian Crossing</td></tr>
<tr><td colspan="4">Alkerton Road / Spring Hill</td></tr>
<tr><td>Old Badger Inn</td><td>• NB - On Street Stop; Shelter
• SB - Lay-By Stop;
• No Pedestrian Crossing</td><td rowspan="3">3, 16, 61, 201, 242, 401, 506</td><td rowspan="3">Hourly</td></tr>
<tr><td>Opposite Springhill House</td><td>• NB - On Street Stop; No Footway
• Sb - On Street Stop; V Narrow Footway;
• No Pedestrian Crossing</td></tr>
<tr><td>Pike Bridge</td><td>• NB - Lay-By Stop; Raised Kerb; Shelter;
• SB - Lay-By Stop; Raised Kerb; Narrow Footway;</td></tr>
<tr><td colspan="4">Grove Lane</td></tr>
<tr><td>Nupend Turn</td><td>• NB - On-Street Stop; No Footway; No Sign
• SB - On-Street Stop; No Footway; No Sign;
• No Pedestrian Crossing</td><td rowspan="2">242</td><td rowspan="2">Weekly</td></tr>
<tr><td>Farm</td><td>• NB - On-Street Stop; No Footway; No Sign
• SB - On-Street Stop; No Footway; No Sign;
• No Pedestrian Crossing</td></tr>
<tr><td colspan="4">A419</td></tr>
<tr><td>Nastend Lane</td><td>• EB - On-Street Stop; V Narrow Footway (Poor Condition);
• WB - On-Street Stop; Narrow Footway;
• No Pedestrian Crossing</td><td rowspan="2">3, 61, 361, 401, 505, 506</td><td rowspan="2">Hourly</td></tr>
<tr><td>Newtown</td><td>• EB - On-Street Stop; Narrow Footway; Separated By Cycle Lane
• WB - On-Street Stop; V Narrow Footway;
• No Pedestrian Crossing</td></tr>
</table>

2.3.2 Guidance recommends a wider footway at bus stops to accommodate waiting bus passengers.

2.4 Cycle

2.4.1 The A419 and Grove Road form part of the National Cycle Route 45. Along the A419 the route is off-road and comprises a mixture of separate cycle lanes and shared footway / cycleway. Cyclists can also make use of the canal tow path.

2.4.2 Cycle Route 45 joins Spring Hill at Pike Lock and continues on-road across the A419 onto Grove Lane. Roundabouts can be a daunting prospect to the inexperienced cyclist, especially large high speed ones such as the A419 / Spring Hill junction. This junction is considered to be a significant obstacle for most cyclists between Spring Hill and Grove Lane.

2.4.3 Notwithstanding the above NCN Route 45 offers an attractive cycle route to wider employment and retail opportunities in Stonehouse and Stroud. This report comes with the general recommendation that cycle routes to the A419 should be improved. Subsequent sections recommend specific improvements that would benefit cyclists from Alkerton Road, via Millend lane and on to Spring Hill.

2.5 Pedestrian

2.5.1 Footways are provided along one or both sides of the principle roads within the built up area of Eastington Village. This provision continues into the relatively new housing areas off Swallow Croft and Victoria Drive. Where footways are not provided, along older roads and in less built up areas, pedestrians walk in the carriageway.

2.5.2 Many of the footways in Eastington are quite narrow. A conspicuous example of this is the footway along the southern radius to the Victoria Drive junction, towards the bus stop. This route is so narrow it presents a challenge to walk in single file. There is no prospect of wheelchairs or pushchairs staying on the metalled surface. Other footways appear to have been designed to the current 2.0m or historic 1.8m standard but are reduced by overgrowing vegetation.

2.5.3 This report comes with the general recommendation for a comprehensive audit of footways and subsequent programme for widening, reinstatement and clearing overgrowth.

2.5.4 Where provided, pedestrian crossings are in the form of dropped kerbs and, in some instances, tactile paving. Pedestrian refuge islands are provided along Alkerton Road and at the Alkerton Road / Bath Road roundabout.

2.5.5 There are no controlled or priority pedestrian crossings within the study area.

2.5.6 In addition to the footways and quiet roads, pedestrians benefit from a network of footpaths. Many of these can be considered recreational. Others, such as the continuation of Middle Street towards the Primary School on Millend Lane, are considered to be strategically significant. Other such paths include:

- The connection between Victoria Drive and the Co-op
- The connection between Victoria Drive and Claypits Road
- The connection between Swallow Croft and Alkerton Road

2.6 Destinations / Pedestrian Desire Lines

2.6.1 The following considers the pedestrian connections to the key destinations within Eastington Village

Alkerton Cross / The Kings Head

2.6.2 The area surrounding the Alkerton Cross, and in particular the area outside the co-op, is the focal point of activity within the village. Significant numbers of people shop and congregate in this area every day.

2.6.3 To access this area pedestrians make use of the footway network and the dropped kerb / refuge island crossings surrounding the Alkerton Cross Roundabout. Alternatively, a footpath link connects the area directly to the residential area of Victoria Drive.

Eastington Primary School / St Michaels Church

2.6.4 Pedestrian access to Eastington Primary School and St Michaels Church is via Millend Road. Within the vicinity of these two destinations Millend Lane has a narrow footway (approximately 1.0m wide) along one side. For the majority of its length Millend Road has no footway.

2.6.5 Millend Road has no specific drainage and, as a result of the camber, when it rains water and debris gathers along the edge of the footway fronting St Michaels Church. At the existing dropped kerb access to Underwood this water and debris floods the footway and can result in a very slippery surface.

2.6.6 Away from the school, to the east, Millend lane crosses the River Frome twice before heading south. This section of the road is a single lane which is shared between pedestrians and vehicles. An alternative pedestrian route is available along an earth embankment to the east of the road. This alternative is most useful when the lane is flooded; which it is prone to do. Beyond the earth embankment pedestrians have no alternative but to walk in the road.

2.6.7 Options for improving Millend Lane are considered later on in this report.

Village Hall / The Old Badger

2.6.8 The Village Hall and The Old Badger Public House are separated from the large housing area off Victoria Drive by Spring Hill. The natural pedestrian desire lines are directly across Alkerton Road from either side of Victoria Drive. These locations are also the preferred crossing points for children (accessing the primary school via Millend Lane) and bus users. There are however no facility for pedestrians crossing in this location.

2.6.9 The nearest specific pedestrian crossing points are around 80m to the south or 150m to the north. These locations are considered to be on relatively few people's desire line.

Eastington Methodist Church / Owen Harris Memorial Ground

2.6.10 The majority of visitors to the Eastington Methodist Church and Owen Harris Memorial Ground will arrive from the northeast. Pedestrians will need to cross Claypits Road. Those walking alongside Alkerton Road and Bath Road can make use of the pedestrian crossing facilities at the Alkerton Cross Roundabout.

2.6.11 Those arriving from Victoria Drive via the footpath connection near the J Broomhall Butcher shop have no nearby pedestrian crossing.

3 Design principles

3.1 Introduction

3.1.1 Current highway design philosophy seeks to balance the needs of all road users. In its introduction the manual for Streets; DfT 2007 states:

Streets are the arteries of our communities – a community's success can depend on how well it is connected to local services and the wider world. However, it is all too easy to forget that streets are not just there to get people from A to B. In reality, streets have many other functions. They form vital components of residential areas and greatly affect the overall quality of life for local people.

Places and streets that have stood the test of time are those where traffic and other activities have been integrated successfully, and where buildings and spaces, and the needs of people, not just of their vehicles, shape the area.

3.1.2 MfS is focused on lightly-trafficked residential streets, but many of its key principles may be applicable to other types of street, for example high streets and lightly-trafficked lanes in rural areas. Additional guidance on shared surface treatments suitable for very lightly trafficked residential areas is available in the *Institute of Highways and Incorporated Engineers Home Zone Design Guide.*

3.1.3 Further reading on how the MfS philosophy can be retrofit to existing high streets is contained in the *Re-Imagining Urban Spaces; DfT 2012* document. The local example of this is Stonehouse High Street.

3.1.4 The current design philosophy differs to the historic approach which sought to apply geometric standards derived for the trunk road network, to the urban environment. The historic approach tended to result in a presumption in favour of free flowing traffic and the strict segregation of vehicles from pedestrians.

3.1.5 In practice pedestrians will follow desire lines and walk in the road if footways are too narrow or crowded. The historic approach would be to use guardrailing to control pedestrians. The current approach seeks to balance road space and priority according to demand and create a pleasant and safe environment where pedestrians, cars and bicycles can coexist safely.

3.1.6 Research shows that key considerations include:

- Footway / pedestrian area width

- Speed of traffic
- Volume of traffic
- Proportion of HGV's
- Lighting

3.2 Footway / Cycleway Width

3.2.1 Current guidance recommends a minimum footway width of 2.0m. The government's publication Inclusive Mobility shows that, at this width, two wheelchair users can pass one another with relative ease. Narrower sections can be acceptable so long as people can see clearly between areas where the footway is wide enough to pass. Sections narrower than 900mm will be problematic for some wheelchairs and pushchairs.

3.2.2 Where footways are shared with cyclists the recommended minimum width is 3.0m.

3.2.3 For separate cycle lanes the recommended minimum width is 1.5m one-way (preferably 2.0m) or 3.0m for a two-way cycle lane. The recommended vertical clearance is 2.3m. This is relevant to overhanging vegetation and any high level signs.

3.2.4 In general, wider and even footways / cycleways encourage people to use these modes of travel.

3.3 Traffic Speeds

3.3.1 The MfS states:

For residential streets, a maximum design speed of 20 mph should normally be an objective. The severity of injuries and the likelihood of death resulting from a collision at 20 mph are considerably less than can be expected at 30 mph. In addition, vehicle noise and the intimidation of pedestrians and cyclists are likely to be significantly lower.

3.3.2 The *Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants, Road Safety Web Publication No.16, DfT, September 2010*; states in its conclusion:

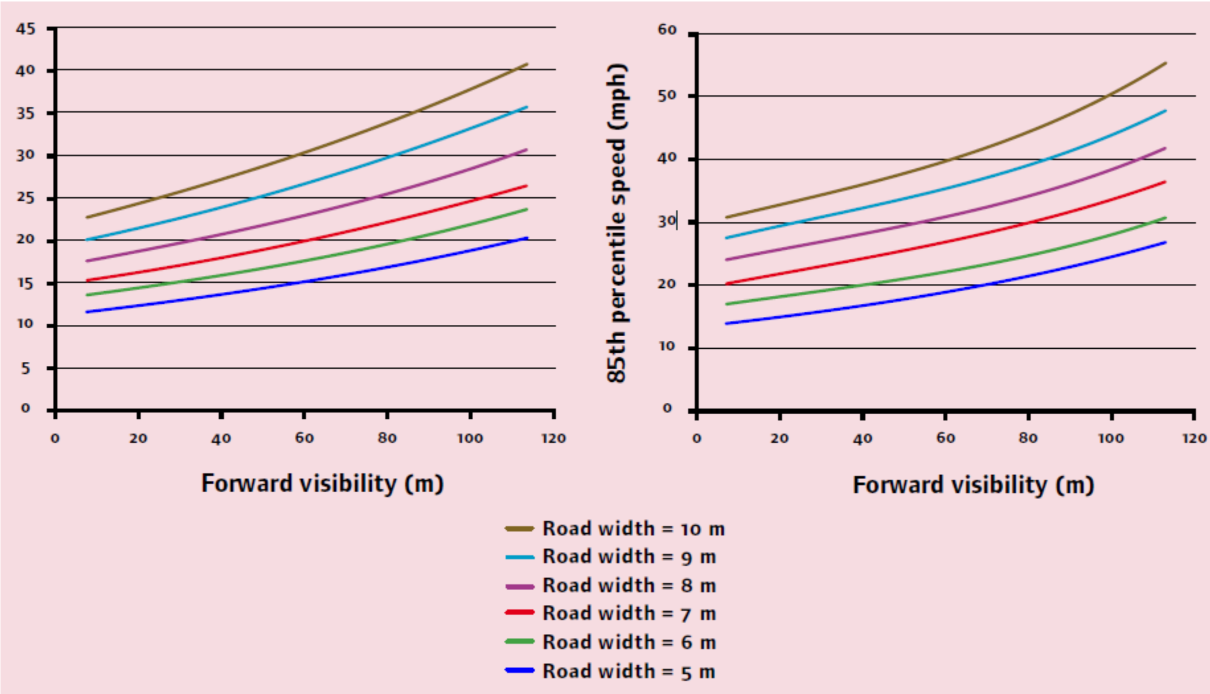
'In all of the pedestrian datasets, the risk of fatality increases slowly until impact speeds of around 30 mph. Above this speed, risk increases rapidly – the increase is between 3.5 and 5.5 times from 30 mph to 40 mph'

3.3.3 The above document references a number of UK based research papers, all of which draw slightly different fatality rates. A reasonable summation of all the data is that impacts at 20mph result in about 5% fatalities; at 30mph tis rises to around10%; and at 40mph the fatality rate is around 50%. One piece of research referenced in the Road Safety Web Publication subdivides pedestrian into groups and concludes that children fatality rates (0-14) are largely consistent with the average, but that the fatality rate for the elderly (60+) is higher at 47% at 30mph and nearly 100% at 40mph.

3.3.4 The advice in this report is that residential streets and other areas of significant pedestrian activity should have a target speed of 20mph. Elsewhere, where pedestrian activity and the need to cross the road is relatively low, a 30mph limit may be more appropriate. Speed limits above 30mph within residential areas are not advised, unless there are no frontage accesses and pedestrian crossing are controlled and well designed.

3.3.5 Target speeds of 20mph need not involve speed limits or unsympathetic traffic calming. The MfS document shows how lane widths and limited forward visibility affects vehicle speeds.

3.4 Lane Widths & Forward Visibility



Extract From MfS Showing the Relationship between Geometry and Speed

3.4.1 Fort existing roads that are relatively straight, such as those in Eastington, it is unlikely to be possible to significantly restrict forward visibility. In these instances traffic calming measures are likely to be the only option for controlling speeds.

3.5 Traffic Calming

3.5.1 Surveys that provided direct information on the relative popularity of different traffic calming measures indicated that vertical deflection such as round-top road humps, flat-top road humps and table junctions and speed cushions, are more popular than horizontal deflection, such as chicanes and mini- roundabouts.

3.5.2 The table below is extracted from *Local Transport Note 1/07; Traffic Calming* and shows the relative effect of certain traffic calming measures. Measures that do not involve horizontal or vertical deflection, for example Gateways and coloured surfaces, can have a very modest effect. When used in combination with other measures, such as rumble strips, the effect can be much greater.

Type of measure	Chapter or Section in LTN	Impact on traffic speeds * * * = largest reduction	Impact on traffic flows * * * = largest reduction	Impact on injury accidents * * * = largest reduction	Delays to emergency services * * * = shortest delay	Relative public acceptability * * * = most acceptable	Impact on vehicle emissions * * * =smallest increase		
							CO	NOx	PM
Road hump									
Round-top	4.2	* * *	* * *	* * *	*	* * *	* *	* *	* *
Flat-top	4.2	* * *	* * *	* * *	*	* * *	*	*	*
Raised junction	4.2	* * *	* * *	* * *	*	* * *	*	*	* *
Sinusoidal	4.2	* * *	* * *	* * *	*	* * *	-	-	-
'H' hump	4.2	* *	* * *	* * *	* *	* * *	-	-	-
'S' hump	4.2	* *	* * *	* * *	* *	* * *	-	-	-
Thump	4.2	* *	* * *	* *	*	* *	-	-	-
Cushion	4.2	* *	* * *	* * *	* *	* *	* *	* *	* *
Rumble device									
Area	5.1	*	*	* *	* * *	* *	-	-	-
Strip	5.1	*	*	* *	* * *	*	-	-	-
Narrowing									
Island	6.3	*	*	*	* * *	-	-	-	-
Pinch point/build-out	6.3	* to * * *	* to * *	* to * *	* * *	*	* *	* * *	* * *
Chicane									
Single lane	6.4	* * *	* *	* *	* *	*	*	* * *	*
Two-way	6.4	* *	*	* *	* *	* *	-	-	-
Gateway	7	* *	*	* *	* * *	* *	-	-	-
Mini-roundabout	8	* *	*	* *	* * *	*	* * *	* *	* *
Vehicle activated device									
Vehicle activated signs	9.1	* *	*	* *	* * *	-	-	-	
Speed cameras	9.2	* *	*	* *	* * *	* * *	-	-	
Road markings, traffic signs and furniture									
Roundels	10.2	*	*	*	* * *	* * *	-	-	
Coloured surfacing	10.2	*	*	*	* * *	-	-	-	

Extract from Local Transport Note 1/07; Traffic Calming showing Summary of measures and their relative performance

3.5.3 Where gateway features have reduced speeds, these have not been sustained over any distance. The experience is that speeds within villages have at most been reduced by 1 or 2 mph if there are no additional measures in place. For maximum benefit, gateways must be used in conjunction with other measures within the village.

3.5.4 For a 20mph zone the recommended spacing of speed control measures is 60 to 70 metres apart. For a 30mph road the recommended spacing is 60 to 90 metres apart.

3.6 Junction Visibility

3.6.1 The recommended junction visibility is based around stopping distances at the prevailing, or assumed, 85th percentile traffic speeds. Although the current stopping distances advocated in MfS are significantly lower than previous assumptions they still include a large comfort factor. It is perhaps for this reason that research presented in the Manual for Streets2 (MfS2) documents, carried out by the TMS Consultancy, finds no evidence for the assumption that a failure to provide visibility at priority junctions in accordance with MfS1 or DMRB (Design Manual for Roads and Bridges) will result in an increased risk of injury collisions.

3.6.2 At paragraph 10.5.9 MfS2 states:

'The y-distance should be based on the recommended SSD values. However, based on the research referenced above, unless there is local evidence to the contrary a reduction in visibility below recommended levels will not necessarily lead to a significant problem.'

3.6.3 Although no guidance advocates basing visibility on emergency stopping distance this is still a material consideration. For this reason this report provides the calculation of emergency as well as recommended stopping distances. It should be noted that GCC's approach is to apply HGV deceleration rates to all vehicles on bus routes. This adds a further comfort factor.

Dealing with HGV's/PSV's

3.6.4 The need to accommodate larger vehicles can, in some respect, limit the designer's options when considering lane geometry as a speed control measure. GCC recommend carriageways of no less than 6.75m for bus routes. Other guidelines recommend 6.0m minimum while the MfS show that larger vehicles can pass on carriageways of 5.5m.

3.6.5 In general, the recommend approach involves balancing the frequency and importance of large vehicle trips with the ease with which they can pass through a street. For occasional HGV access to/from quiet lanes it is generally considered acceptable for HGV's to turn across both lanes. Overrun areas can also be used to provide additional turning space for HGV’s while maintaining the appearance of constrained geometry.

4 Northern Spring Hill junction with Millend Lane

4.1 Existing Conditions

4.1.1 Millend Lane forms a priority controlled T-junction with Spring Hill. Both roads are 2-way, 2-lane, single carriageways with a footway along one side. A dropped kerb crossing is provided where Spring Hill's footway crosses the junction with Millend Lane. There is no tactile paving at this crossing.

4.1.2 Millend Lane is approximately 4.7m wide with a 1.0m wide footway along its southern side. Both the footway and carriageway are observed to be a relatively good state of repair. Millend Lane is subject to a 20mph speed limit.

4.1.3 Spring Hill is approximately 5.8m wide with a footway ranging between 0.8m – 1.0m along its eastern side. The hedge, to the rear of the footway, has been observed to overgrow and significantly reduce the available footway during the summer months. Both the footway and carriageway are observed to be in a relatively good state of repair. Spring Hill is subject to a 40mph speed limit.

4.1.4 The visibility available to drivers exiting Millend Lane, from a point 2.4m back from the give way line, was measured on-site at around 26m to the left and 27m to the right. These measurements were taken at a time when the hedge to the rear of the footpath was relatively recently cropped. In the summer months this hedge has been observed to overgrow and significantly restrict the available visibility.

4.1.5 The table below shows the results of a speed survey carried out on Spring Hill close to the junction with Millend Lane. The stopping distance has been calculated for recommended and emergency stopping.

4.1.6 Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 4.1 – Spring Hill (Nr northern jtn with Millend Lane) Speed Survey

Direction	85^{th} Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Northbound	40mph	70m	36m
Southbound	42mph	77m	40m

4.1.7 The average recorded speed was 39mph. The maximum recorded speed was 53mph. The speed survey results show that vehicles tend to travel close to the speed limit.

When this is translated into a stopping distance it is clear that the existing junction fails to provide the recommended visibility by some considerable margin.

4.1.8 The details given above describe the situation for most hours of the day. However, the situation changes dramatically during the pick-up and drop-off times at Eastington Primary School. Between around 08:00-09:00 and 14:45-15:45 Spring Hill and Millend Lane are reduced to 2-way, 1-lane, carriageways as a result of on-street parking. This parking occurs on the eastern side of Spring Hill and can extend some 150m. Millend Lane becomes a single lane to the school, and beyond.

4.1.9 Drivers and passengers join other pedestrians accessing the school along the footways described above. Children also cycle along the Spring Hill's footway which, although unlawful, is inevitable given the mix of high vehicle speeds and inexperienced riders. The result is an intense period of activity, on narrow footways, twice a day.

4.1.10 In terms of junction operation during these periods; one particularly undesirable result of the lane restrictions is drivers forced to, on occasion, reverse out of Millend Lane onto Spring Hill. Another effect of the on-street parking is to further restrict visibility from Millend Lane to the right. On the positive side the parking along Spring Hill does create more opportunities for drivers to exit Millend Lane than would otherwise be the case.

4.1.11 In general, the pick-up and drop-off periods are well managed by drivers giving way and making space for others. However, it should be acknowledged that significant delays do have the potential to lead to driver frustration which can, in turn, result in dangerous driving practice.

4.2 Recommended Improvements

4.2.1 It is the opinion of this report that the existing situation is close to the limit of what can be tolerated. Vehicle speeds are unnecessarily high and the footways unsuitably narrow.

<u>Speed Reduction</u>

4.2.2 There are a number of existing reasons to crossing Spring Hill, not least parents and children parking opposite Millend Lane, but also bus users, canal trust volunteers and recreational walkers. A permanent reduction to 30mph would significantly reduce the risk of any collision being fatal.

4.2.3 Another effect of traffic speed on pedestrians and cyclists is fear & intimidation. Slower traffic speeds will improve the amenity value (relative pleasantness) of the journey along Spring Hill and encourage these modes of travel.

4.2.4 In terms of the impact to drivers; the 40mph section of Spring Hill is approximately 800m. At this speed the journey takes 45 seconds. At 30mph the same distance would take 60 seconds. In the overall context of a typical car journey 15 seconds is immaterial.

4.2.5 <u>Provision for Cyclists and Pedestrians</u>

4.2.6 A number of students/parents walk or cycle from Newtown and Stonehouse making use of the largely off-road route. At the point where this route joins Spring Hill cyclists are expected to join the main carriageway. In practice most cyclists continue along the footway. Some make use of the route through the orchard and cemetery.

4.2.7 A number of parents with children at Eastington Primary school will have younger children in pushchairs. Currently, the footway falls well short of the minimum needed for two pushchairs to pass. For this reason it is recommended that the footway along Spring Hill and Millend Lane be widened.

4.2.8 It is unlikely that, even with speed restrictions, some young cyclists and their parents will ever feel comfortable cycling along Spring Hill. The route through the orchard is not ideal because of the gates and loose surface. It is therefore recommended that the footway along Spring Hill be widened further to also accommodate cyclists.

4.2.9 The overall recommendation is that: the footway along Spring Hill between Pike Lock and Millend Lane be widened to minimum recommended width for a shared footway/cycleway of 3.0m; and Millend Lane, along the frontage to St Michaels Church be widened to the recommended minimum 2.0m for pedestrians.

4.2.10 While some land appears to be available to the back of the footway along Spring Hill it is likely that the full recommendation will encroach beyond the adopted highway.

<u>Parking</u>

4.2.11 On-street parking can be either removed or managed. Unless a suitable alternative is provided parking restrictions will either displace the problem elsewhere or be ignored.

4.2.12 It is understood that two potential off-street parking options have been considered in the past but these have not been pursued. One of these options was to use the land opposite St Michaels Church, between Millend Lane and Spring Hill. This option was tied to an application for two dwellings. Considering just the parking element; it is understood that the concern with this option related to the prospect of inappropriate use by commuters and the fact that the field floods.

4.2.13 This report considers that the use of modern permeable pavements and/or other engineered water attenuation measure could effectively deal with the flooding issue. The potential for parking abuse could be managed by only making the parking available when the school and church require it.

4.2.14 In highway engineering terms this option would be highly effective at removing on-street parking. The current availability of this land and the acceptability of it being linked to housing is a separate issue.

4.2.15 An alternative off-street parking option previously considered is the use of a field lying to the east of the school. Access to this filed is via two narrow, one lane wide, bridges. If maintained for 2-way traffic pedestrians will need to walk with the cars. Alternatively a one-way only restriction could be applied, with the extra space given over to pedestrians. This would undoubtedly increase traffic at the southern Spring Hill / Millend Lane junction. Nevertheless, either arrangement could be made to work satisfactorily.

4.2.16 This second off-street parking option would also be highly effective at removing the parking on Spring Hill. However, it is likely that parking in front of the church will continue at current levels, given the convenience of Spring Hill for onward journeys. It is also considered that the increase in traffic passing the school entrance is a less desirable outcome, compares with the first off-street parking option.

4.2.17 If no suitable off-street parking can be found, this report considers some improvements to the existing on-street parking arrangements.

4.2.18 Firstly, off-line lay-by parking is specifically not recommended for Spring Hill. This would likely worsen the existing off-peak speeding problems while making it more difficult to exit Millend Lane. Instead, the creation of passing space is proposed to assist southbound traffic progress through the on-street parking.

4.2.19 An important consideration with any road layout is comprehension. If drivers do not understand why certain restrictions apply they are less likely to adhere to them. For Spring Hill, a scheme to create gaps in the on-street parking with periodic parking restrictions will not be understood and likely to be ignored. Instead, it is proposed that the existing bus stops be staggered with keep clear road markings provided in between. This arrangement will be seen as a measure designed to ensure space is available for vehicles to pass stationary busses and therefore more likely to be respected. When there are no busses the space will be used as a passing area. this is the recommended approach.

Junction Layout and Visibility

4.2.20 If on-street parking is to remain, it would assist greatly with the operation of the Spring Hill / Millend lane junction if there were sufficient space for at least two cars to pull off one road before being potentially blocked by opposing traffic on the next road. Therefore, this report recommends double yellow line parking restrictions for 15m along both roads, from the junction.

4.2.21 Although the accident records do not point to a particular problem at the junction the restriction on visibility is so severe that this report recommends improvements. This can be achieved by realigning / removing hedges.

5 Southern Spring Hill junction with Millend Lane

5.1 Existing Conditions

5.1.1 The southern Spring Hill / Millend Junction is in the form of a priority controlled T-junction. Both roads are 2-way, 2-lane, single carriageways with a footway along both sides. There are no pedestrian crossing facilities at or near this junction.

5.1.2 Millend Lane is approximately 5.2m wide with a 1.8m and a 2.0m wide footway along its northern and southern side respectfully. Both the footway and carriageway are observed to be a relatively good state of repair. Millend Lane is subject to a 20mph speed limit.

5.1.3 Spring Hill is approximately 5.1m wide with footways ranging between 0.8m – 2.5m. Along the front of the Village Hall the footway is approximately 1.1m wide. This is particularly relevant as it forms part of the desire line walk from Victoria Drive to Millend Lane. Spring Hill is subject to a 30mph speed limit in this location.

5.1.4 On the approach from Millend Lane the give way line projects around 1.0m into Spring Hill. From a point 2.4m back from this give way line, the visibility available to drivers exiting Millend Lane, was measured on-site to exceed 54m to the left and around 48m to the right.

5.1.5 The table below shows the results of a speed survey carried out on Spring Hill close to the junction with Millend Lane. Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 5.1 – Spring Hill (Nr southern jtn with Millend Lane) Speed Survey

Direction	85th Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Northbound	28mph	39m	20m
Southbound	26mph	36m	18m

5.1.6 The average recorded speed was 25mph. The maximum recorded speed was 35mph. The speed survey results show that vehicles tend to travel below the speed limit. When this is translated into a stopping distance it is clear that the existing junction achieves the recommended visibility.

5.1.7 However, the circumstances described above assume that vehicles use the road in the way intended by the road markings. At the time of the site visit these road markings were partially worn away. At night and when it is raining these markings are very difficult to see. On site observations indicate that most drivers are not governed by the road markings but assume that the give way line follows the natural line of the kerb. Visibility 2.4m back from the natural kerbline is very limited.

5.1.8 Traffic movements were recorded over a 30 minute period during a weekday evening peak. The results are summarised below:

Table 5.2 – Spring Hill (Nr southern jtn with Millend Lane) Traffic Survey

Survey Date: 15-Dec-14				
Survey Time: 16:47 - 17:15				
From\To	**Spring Hill (N)**	**Millend Lane**	**Spring Hill (S)**	**Total**
Spring Hill (N)	0	3	206	209
Millend Lane	2	0	2	4
Spring Hill (S)	92	5	0	97
Total	94	8	208	310

5.1.9 With reference To *DMRB Ta 79/99 Amendment No 1; Traffic Capacity of Urban Roads*, and assuming this road would fall within the Urban All Purpose Type 4 (an onerous assumption), it can be said that current demand is around 50% of the roads potential capacity. This is a relatively simplistic approach. It is likely that the road could be engineered to carry higher volumes than this. The general conclusion is that Spring Hill is not near the limits of its capacity.

5.1.10 Perceptions of high traffic volume are, however, more subjective. A pedestrians experience is influenced by: how close they are to the traffic (footway width); the noise of traffic (associated with speed); and how difficult it is to cross a road (frequency and design of crossing facilities). A cyclist on the other hand is most concerned with speeds. Within a 20mph zone it is relatively easy to keep up with the flow of traffic. Above this speed cars will try to edge past a cyclist. For motorists the concerns primarily relate to being stationary for a period of time.

5.2 Recommended Improvements

Speed Reduction

5.2.1 It is known that traffic speeds in this location are a concern to the local community. Although the observed speeds fall within the current limit this report considers that the target speed between the Village Hall and Alkerton Cross should be 20mph.

5.2.2 The ways in which vehicle speeds can be reduced are highlighted in Chapter 3. In this location it is considered that a more formalised road narrowing, at the give-way line to Millend Lane, could effect a greater speed reduction than is currently the case. It is acknowledged that this arrangement would have been conceived as an overrun area for HGV's to pass; however, this should not be an overriding consideration. A full kerb would be most effective. A nominal 25mm upstand and different surface treatment would be a compromise.

5.2.3 As an alternative, to the above, consideration has been given to changing the junction into a mini roundabout. With this option southbound drivers would be on a direct path with the centre of the roundabout. Northbound drivers would be obliged to give way to traffic from Millend lane. The overall effect would be a reduction in the speeds along Spring Hill. The concern with this arrangement is thought to be that a technically acceptable layout cannot be designed within the existing visibility constraints.

5.2.4 A secondary traffic calming event thought suitable for this location is a priority pedestrian crossing in front of the Village Hall. Such an arrangement would primarily benefit pedestrian movements from Victoria Drive to Millend Lane. Speed reduction would be a secondary effect. Suitable options would be a zebra or signal controlled crossing.

5.2.5 Provision for Cyclists and Pedestrians

5.2.6 This report recommends a priority crossing facility across Spring Road in front of the Village Hall. While technically cyclists are not permitted to cycle across a zebra crossing, suitable accommodation could be made. This report considers that either a zebra or signal controlled crossing would achieve the desired outcome in highway engineering terms.

5.2.7 Alongside a priority crossing, footway widening to 3.0m to accommodate cyclists between Millend Lane and Victoria Drive are also recommended.

5.2.8 Dropped kerbs and tactile paving across the Millend Lane bell-mouth are also recommended. This is to assist the mobility and visually impaired.

Junction Layout and Suitability for Development up to 50 Dwellings

5.2.9 The accident records, speed survey and on-site measurements indicate that this junction operates satisfactorily. However, the advanced give-way line arrangement, specifically the conspicuousness of this, is a concern. The recommendation made above, in connection with speed reduction, also stand for the continued safe and efficient operation of this junction. Especially if traffic movements to/from Millend Lane were to increase.

5.2.10 In terms of the ability of this junction to accommodate future development, reference is made to the *DMRB Figure 2/2 TD42/95; Form of Major/Minor Priority*

Junctions. This figure offers the general guidance that simple priority junctions can operate at daily 2-way traffic flows of around 18,000 vehicles along the major arm and 2,500 vehicles along the minor arm. Peak hour traffic flows are typically around 10% of daily totals. This is a very crude guidance and a lot depends on the specific geometry, distribution of vehicle movements along each arm of the junction and driver behaviour. Traditional demand:capacity modelling would likely show problems occurring at around 20 – 40% below these numbers. Driver simulation modelling would likely show capacity above this level.

5.2.11 To put the above in context, peak hour flows along Spring Hill (pro-rated from the half hourly PM Peak counts) are around 600 vehicles. Movements to/from Millend Lane are 24. Using normal trip generation assumptions 50 dwellings will add around 30 peak hour 2-way vehicle trips to the network. Even making generous allowance for peak hour variations it can be concluded with a high degree of comfort that the existing junction could satisfactorily accommodate 50 more dwellings.

6 Alkerton Road

6.1 Existing Conditions

6.1.1 This chapter considers Alkerton Road between the Alkerton Cross roundabout and the southern Spring Hill / Millend Lane junction.

6.1.2 At its northern end, opposite the Village Hall, this road is approximately 5.2m wide. Heading south, the road widens at the junction with Victoria Drive to a standard 7.3m wide. The effective carriageway narrows slightly where a pedestrian refuge island / dropped kerb crossing is provided midway along Alkerton Road. At its southern end, near the Alkerton Cross roundabout, the road also measures 7.3m.

6.1.3 The Alkerton Cross roundabout is a relatively large scale junction for a village location and appears to have been designed around the minimum geometry required for HGV's to U-turn.

6.1.4 From the pedestrian refuge island, midway along Alkerton Road, the northbound carriageway includes a broken white line around 1.0m from the nearside kerb. The purpose of this line is not immediately apparent. It is thought to be a traffic calming feature designed to make the road appear narrower than it is. It also allows improves visibility from Victoria Drive by allowing the give way line to be brought forward. There is a concern that the broken white line may be read by motorists as an indication to park straddling the footway.

6.1.5 Its location of the pedestrian refuge island on a bend has made it necessary to include road widening to accommodate the path of an HGV. The end result is that pedestrians must spend more time in the road. The location also appears less than ideal in terms of pedestrian desire lines. It is considered that relatively few people would want to cross in this particular location.

6.1.6 The footway alongside the northbound carriageway varies between 1.0m outside Bond & Co hairdressers to around 1.6m near the junction with Victoria Drive. Alongside the southbound carriageway the footway is generally around 1.8m – 2.0m.

6.1.7 On-street parking is available along the northbound carriageway from the co-op. The demand for on-street parking in this location is such that vehicles routinely park on areas where parking is specifically prohibited.

6.1.8 On-street parking also occurs along the southbound carriageway at the northern end of the road, outside the Old Badger Public House. This parking largely occurs off-line by making use of the space in front of the pub and in the diverge lane to the nearby lay-by bus stop. Neither area is strictly intended for general parking. It is also understood that further on-street, on-line parking occurs during busy periods at the pub.

6.1.9 Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 6.1 – Alkerton Road Speed Survey

Direction	85th Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Northbound	26mph	37m	19m
Southbound	27mph	37m	19m

6.1.10 The average recorded speed was 25mph. The maximum recorded speed was 38mph. The speed survey results show that vehicles tend to travel below the speed limit.

6.1.11 Traffic movements were recorded over a 30 minute period during a weekday evening peak. The results are summarised below:

Table 6.2 – Spring Hill (Nr southern jtn with Millend Lane) Traffic Survey

Survey Date: 15-Dec-14				
Survey Time: 17:21 - 17:51				
From\To	**Claypits Rd**	**Alkerton Rd**	**Bath Rd**	**Total**
Claypits Rd	2	29	50	81
Alkerton Rd	78	8	85	171
Bath Rd	41	53	0	94
Total	121	90	135	346

6.1.12 The traffic survey does not indicate a particular problem.

6.2 Recommended Improvements

Speed Reduction

6.2.1 It is known that traffic speeds in this location are a concern to the local community. Although the observed speeds fall within the current limit this report considers that the target speed between the Village Hall and Alkerton Cross should be 20mph.

6.2.2 One way that speeds can be reduced is by reducing the effective carriageway width. The proportions of Alkerton Road and the Alkerton Cross roundabout are out of keeping with the approach roads and the village location. Although GCC recommend a minimum carriageway width for new roads carry buses of 6.75m none of the approach roads to Eastington Village are this wide. A specific dimension will need to be agreed between GCC and the emergency service providers. The provisional recommendation in this report is to permanently reducing the width of Alkerton Road to 6.0m.

6.2.3 Further speed reduction can be achieved with the use of speed control measures. For a target speed of 20mph the recommended spacing of speed control measures is 60 to 70 metres.

6.2.4 Alkerton Road has some existing speed control measures. Heading east to west, the speed cushions located near Bradestone Way are around 60m from the proposed narrowing and crossing at the junction with Millend Lane.

6.2.5 Around 60m beyond the Millend lane junction is the proposed mini-roundabout arrangement at the junction with Victoria Drive.

6.2.6 60m west of Victoria Drive are more speed cushions.

6.2.7 A further 60m to the west is the pedestrian refuge island. This feature is not currently a speed reduction measure. A relatively low cost improvement to achieve speed reduction would be to raise the crossing area and create a flat topped speed hump.

6.2.8 30 m west of the pedestrian refuge island are more speed cushions. There are no more existing speed reduction measures between these cushions and the Alkerton Cross roundabout, around 90m away. To maintain the 60m spacing the recommended approach is to reposition these cushions 30m further west.

6.2.9 The strategy described above uses many of the existing features and therefore represents a relatively low cost option.

6.2.10 A more ambitions strategy would involve a new build out (pinch point) pedestrian crossings, more closely tied to the desire lines, and off-set on-street parking to create horizontal deflection. Lowered kerbs / raised table-top and a change in surface treatment are also highly effective in reducing speeds and creating a sense of place.

<u>Layout & Parking</u>

6.2.11 The highway geometry proposed in this report total 10m in width. This is made up from 2x 2.0m wide footways and a 6.0m effective carriageway. Any on-street parking will require an additional 1.8m.

6.2.12 At the eastern end of Alkerton Road, to the west of Victoria Drive, the existing highway corridor is approximately 13.5m. This therefore allows sufficient space to create footway widening and additional on-street parking.

6.2.13 The recommended mini-roundabout option at Victoria Drive will create the possibility of space for pedestrian and formal on-street parking in front of the Old Badger Pub.

6.2.14 At the western end of Alkerton Road the existing highway corridor measures 10.9m. This measurement was taken opposite Bond & Co hairdressers at a relatively narrow section of the corridor. Nevertheless this illustrates that there are areas where on-street parking and footway widening cannot occur together. A compromise is required.

6.2.15 Working with the existing layout, with no footway widening, there is sufficient space to create around 6 additional spaces alongside the westbound carriageway. These would be positioned opposite Bond & Co up to the existing speed humps.

6.2.16 Ideally the above arrangement will include a pedestrian crossing along the desire line to the Co-op. A built out will reduce the crossing distance and create local widening to the eastbound footway. It is likely that this proposal will result in the loss of 2 exiting spaces; bring the total gain to 4 spaces.

6.2.17 With the introduction of a new pedestrian crossing the existing island at the Alkerton Cross could be removed and addition space created for 3 further on-street parking spaces.

6.2.18 So far, the measures described above use the exiting layout. These recommendation, therefore, do nothing to address the existing parking abuses and problems caused by HGV deliveries at the Co-op.

6.2.19 A more ambitious proposal would be the total redesign of the Alkerton Cross junction. The existing roundabout is conspicuously large for a village location and while undoubtedly creates a focal point, the end result it to devote nearly all the public space to the car.

6.2.20 An alternative to the roundabout would be a simple priority junction. With this arrangement crossing distances are reduced and less space is taken up by the junction. The Alkerton Cross will need to be relocated for this option.

6.2.21 It is anticipated that a priority junction redesign could achieve up to 21 on-street spaces. This number includes the additional 6 along the westbound carriageway described above.

6.2.22 The gains are relatively modest compared to the existing 9 official, or up to 15 unofficial spaces. The principle benefit of a priority junction redesign would be a significant increase in the pedestrian area, a formal space for HGV deliveries and deal with the unofficial parking problem.

6.2.23 The above considers on-street parking. Alternative off-street parking is available off Victoria Drive. While close to the shops, via a footway link, access by car involves a relatively lengthy diversion from the shopping area. This arrangement is best suited to staff and longer term parking. It is recommended that maximum wait restrictions are applied at the western end of Alkerton Road and shop keepers requested to advise their customers of the alternative parking.

6.2.24 The parking off Victoria Drive is generally considered to be an underutilised resource. It is suggested that it could be designed to accommodate around 17 vehicles if individual bays are marked out.

6.2.25 It must be stressed that possible parking numbers are made without the benefit of scale plans or detailed design. The above parking numbers above must be considered indicative only. The precise number can only be determined at the design stage.

7 Claypits Road

7.1 Existing Conditions

7.1.1 Claypits Road is a 2-way, 2-lane, single carriageways with a footway along one side. There are no formal pedestrian crossing points along its length other than at the Alkerton Cross roundabout. The road is subject to a 30mph speed limit up to and including the access to the Owen Harris Memorial Ground. Beyond this the road is subject to a 40mph speed limit.

7.1.2 Measurements taken close to the access to the Owen Harris Memorial Ground (OHMG) show that the carriageway is around 6.3m wide, and the footway is around 1.3m wide. The carriageway includes a central hatched area approximately 1.3m wide.

7.1.3 Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 7.1 – Claypits Road (Nr jtn with OHMG) Speed Survey within the 30mph zone

Direction	85th Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Eastbound	37mph	63m	33m
Westbound	34mph	55m	28m

7.1.4 The average recorded speed was 33mph. The maximum recorded speed was 47mph. The speed survey results show that vehicles tend to exceed the speed limit.

7.1.5 Traffic movements were recorded over a 30 minute period during a weekday evening peak. The results are summarised below:

Table 7.2 – Claypits Road (Nr jtn with OHMG) Traffic Survey

Survey Date: 15-Dec-14	
Survey Time: 17:55 - 18:25	
Claypits Rd (EB)	42
Claypits Rd (WB)	67

7.2 Recommended Improvements

Speed Reduction

7.2.1 It is known that traffic speed along Claypits Road is a concern to the local community. The speed survey shows that traffic speeds are excessive. In the context of who and how many this effects, the OHMG has become a popular destination within the community. The expanding allotments, the new children's playing equipment and the various groups that use the building generates a lot of activity. This should result a lot of walking and cycling trips. It is considered that the facility for pedestrians and cyclists along Claypits Road is poor. The narrow footways and high vehicle speeds undoubtedly discourages the use of non-car modes of travel. This report considers that the target speed between the OHMG and Alkerton Cross should be 20mph.

7.2.2 Claypits Road is straight and relatively narrow. This limits the likelihood of significant speed reduction through geometric constraint. The recommended approach thefore involves traffic calming features at 60-70m spacing..

7.2.3 Specific measures suitable for this road might include:

- A gateway feature - as discussed earlier in this report gateways are most effective if combined with other traffic calming features, such as rumble strips;
- Horizontal deflection – it is understood the EPC control the land in front of OHMG. An off-line mini roundabout could effect a significant reduction in speed.
- Pedestrian crossing – there is a need for pedestrians to cross Claypits Road. A priority crossing and/or a raised crossing should be integrated into the overall traffic calming scheme.
- Vertical deflection – speed cushions or round topped humps would be suitable to achieve the recommended spacing.

7.2.4 Although no specific speed survey was undertaken within the 40mph section of Claypits Roads it is apparent from observation that some vehicles do exceed the speed limit. Between OHMG and the few residential properties close to Hilltops Garage there is little development and therefore few reasons to expect cyclists and pedestrians. For this reason the speed related safety concerns along this section are lower.

7.2.5 At its western end the few residential properties are mainly located along the southern side and there is little sense of a community straddling the road. Where pedestrians may want to cross is at the bus stops. These are so close to the junction that traffic speeds will be relatively low. The speed related issue at the western end of Claypits Road is thought to be one of fear and intimidation and noise.

7.2.6 To address the speed related concerns this report recommends more frequent and more conspicuous repeater signs. Roundels on the road surface and markings to give the perception of road narrowing could also be quite effective. This approach is considered to be proportional to the scale of the problem. More significant intervention may be appropriate if the problems persist.

7.2.7 Provision for Cyclists and Pedestrians

7.2.8 The recommended 20mph target speed for Claypits Road, east of the motorway, is made with a view to accommodating cyclists within the road. It seems unlikely that the alternative, to provide a 3.0m wide shared footway / cycleway can be accommodated within the exiting highway corridor. It seems similarly unlikely that large sections of the existing footway can be widened. Nevertheless, the recommendation is that the footways are widened, where possible, to 2.0m. The extent to which this is possible will depend on a detailed look at the adopted highway width and adjacent land ownership.

7.2.9 The need for a pedestrian crossing across Claypits Road is clear. The ideal location for this would be near the J Broomhall butcher. This location coincides with the end of a footpath link into the Victoria Drive housing area; the local bus stops and the Methodist Church. A crossing type which affords priority to pedestrian offers the best outcome in terms of non-car accessibility and traffic calming.

8 Bath Road

8.1 Existing Conditions

8.1.1 Bath Road is a 2-way, 2-lane, single carriageways with a footway along at least one side. There are no formal pedestrian crossing points along its length other than at the Alkerton Cross roundabout. The road is subject to a 30mph speed limit from the Alkerton Cross for around 1Km. Beyond this the limit is 60mph

8.1.2 Measurements taken close to the change in speed limit show that the carriageway is around 5.2m wide, and the footway is around 1.3m wide.

8.1.3 Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 8.1 – Bath Road (Nr jtn with OHMG) Speed Survey within the 30mph zone

Direction	85th Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Eastbound	45mph	63m	33m
Westbound	38mph	55m	28m

8.1.4 The average recorded speed was 37mph. The maximum recorded speed was 58mph. The speed survey results show an acute speeding problem.

8.2 Recommended Improvements

<u>Speed Reduction</u>

8.2.1 Traffic speeds are known to be a concern to the community where Bath Road enters Eastington Village. At this end of the Village, from Middle Street, housing only occurs along one side of the road. There is therefore little need for pedestrians to cross the road and no sense of a community straddling the road. The road is straight and visibility is good. As a result the risk of an accident involving a vulnerable road user is somewhat lower than in more built up areas. In similar circumstances a 40mph might be considered appropriate.

8.2.2 As with the western extent of Claypits Road the concern in this location is considered to relate more to noise and fear & intimidation than risk of injury

8.2.3 The suggested gateway feature would assist in lowering speeds entering the village; however, the worst speeding excesses occur as drivers exit Eastington.

8.2.4 The general advice for achieving and maintaining low vehicle speeds is to have regularly spaced traffic calming events. For straight narrow roads the options tend to be limited to (in descending order of efficacy) speed cushions / humps, pinch points / build-outs and repeater signs / road markings.

8.2.5 Although speed humps are most effective they can also generate noise; either from large vehicles travelling too fast over them or cars rapidly speeding up and slowing between humps.

8.2.6 Pinch-points and build outs are considered to be less effective than speed humps. There is also a risk of vehicles colliding into the build out, especially on relatively high speed roads. To minimise this risk these features should be made highly conspicuous with illuminated bollards, street lighting and different surface colours.

8.2.7 Taking account of the above and given the nature of Bath Road at this end of the village, this report recommends repeater signs and road markings. A subsequent evaluation period should determine whether more significant intervention is required.

9 Grove Lane

9.1 Existing Conditions

9.1.1 Grove Lane is a 2-way, 2-lane, single carriageways with no footways. Heading north the road is subject to a 50mph speed limit from the Shell Garage up to the turning to Nupend. From this point the limit is 40mph. This limit continues until the approach to the motorway bridge where it reverts to 50mph.

9.1.2 Measurements taken close to the southern change in speed limit show that the carriageway is around 5.2m wide. At the northern change of speed limit the carriageway is around 6.5m wide.

9.1.3 Speeds were recorded off-peak during free-flowing traffic conditions. The results are summarised below:

Table 9.1 – Grove Lane (Nr southern change in speed limit) Speed Survey within the 40mph zone

Direction	85^{th} Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Northbound	39mph	67m	34m
Southbound	43mph	79m	41m

9.1.4 The average recorded speed was 36mph. The maximum recorded speed was 52mph. The speed survey results show an acute speeding problem.

Table 9.2 – Grove Lane (Nr northern change in speed limit) Speed Survey within the 40mph zone

Direction	85^{th} Percentile speed	Stopping Sight Distance	
		Recommended	Emergency
Eastbound	46mph	89m	46m
Westbound	45mph	85m	44m

9.1.5 The average recorded speed was 42mph. The maximum recorded speed was 56mph. The speed survey results show an acute speeding problem.

9.2 Recommended Improvements

Speed Reduction

9.2.1 Traffic speeds are known to be a concern to the community along Grove Lane within the 40mph zone. Housing along this section of road is relatively sparse. There is just one area, to the north of the 40mph section, where development occurs on both sides of the road. At this point the community might be considered to straddle the road. The recommended target speed here is 30mph.

9.2.2 At the section of road described above Grove Lane narrows and some centreline markings have been removed. Site observations show that this arrangement is effective at reducing vehicle speeds. This effect could be enhanced by the removal of more road markings and the introduction of gateway features to reduce entry speeds.

9.2.3 This road forms part of the National Cycle Route No. 45. Signs warning drivers that cyclists may be encountered is likely to reduce average speeds further.

9.2.4 More significant speed reduction measures are considered disproportionate and not therefore recommended at this stage.

10 Other Issues

10.1 Millend Lane

10.1.1 Millend lane is a popular walking / cycling route for children and pedestrians. Recommended improvements to the footway on Spring Hill and Alkerton Road are likely to increase the appeal.

10.1.2 Generally, the existing lane is conducive to walking and cycling, however, this report identifies two areas of concern.

10.1.3 Firstly the uphill section from the mill development is narrow and has poor forward visibility. To assist with the flow of traffic and create refuges for pedestrians this report recommends the creation of passing spaces. Guidance on the subject recommends passing areas every 40m. Lanes should be 3.0m minimum; widening to 4.5m to allow passing space. A key element to the success of such an arrangement is visibility between wider areas.

10.1.4 This report recommends that, so far as is practical, the single lane sections of Millend Lane are improved in line with above geometric guidance.

10.1.5 The second area of concern relates to the straight section of Millend Lane running parallel to Spring Hill. This sections of road it too narrow to accommodate pedestrians and cars. Pedestrians must move to the grassed verge to allow vehicles to pass. Improvements, along the lines discussed above, would undoubtedly assist by creating refuge areas.

10.1.6 The alternative to walking in the road is to make use of the earth embankment on the eastern side of the road. It is understood that this structure is there specifically for people to walk along when Millend Lane floods. It is also understood that it is a protected monument and cannot be surfaced; although it does have an aggregate covering.

10.1.7 Notwithstanding the above this report recommends that the bank be surfaced as it is currently difficult to negotiate with a pushchair or wheelchair.

10.2 Middle Street

10.2.1 Middle Lane is a popular pedestrian route, especially for children accessing the school via Millend Lane. There are, however, no footways.

10.2.2 It is recommended that this lane be subject ted to a 'Quiet Lane' designation and a 20mph speed restriction with appropriate signs warning drivers to expect pedestrians and horses in the road.

10.2.3 Sections of this road are narrow with restricted forward visibility. Improvements are recommended along the lines set out above (paragraph 10.1.3)

10.3 Dealing with HGV's

10.3.1 As a proportion of total flows, relatively few HGV's were observed During the PM peak hour. Proportionally more HGV's travel through Eastington during the working day. It is apparent that larger vehicles are routing through Eastington as part of their business activity. This is often a result of satellite navigation systems.

10.3.2 It is recommended that GCC are consulted over the proposed of using HGV restriction (except for access) and / or positive HGV routing signs.