

# HS2

## Woore Village Traffic Calming and Footway Provision

Security classification: OFFICIAL

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# 1 Executive Summary

- 1.1.1 This report summarises the findings of a study to investigate the provision of permanent traffic calming measures and additional footway provision through Woore village. The study is in response to additional actions that arose at a stakeholder meeting between Woore Parish Council (WPC), Owen Patterson MP and HS2 that took place on 18<sup>th</sup> January 2019.
- 1.1.2 A number of potential traffic calming measures that could be implemented in Woore village were investigated previously as described in the 'Traffic Calming and Road Safety Provision Options – Woore Village' report. The cost estimates provided in this previous report were based on the assumption that each traffic calming measure was to be installed on a temporary basis and removed following completion of HS2 works. As part of this study, the cost estimates have been revised based on the assumption that the relevant traffic calming measures would be installed on a permanent basis, i.e. the costs of reinstating the existing layout have been removed.
- 1.1.3 This study includes an examination of potential carriageway widening on the A51 at two “narrow points” highlighted by WPC. The study concluded that it would not be feasible to introduce impactful carriageway widening at either location without requiring additional land take from residential properties adjacent to the current highway boundary. Furthermore, any carriageway widening at these locations would introduce significant disruption to road users as temporary traffic signals and lane closures would be required for the duration of construction works. At this stage, without topographical or utility data, or any resultant retaining feature designs it anticipated these works would take up to 9 months.
- 1.1.4 The study also includes an examination of potential provision of continuous footway through Woore on the A51 and A525. The study concluded that it would not be feasible to introduce continuous footway without requiring additional land take from properties adjacent to the current highway boundary.
- 1.1.5 It is noted that on the A51 Nantwich Road in Woore, both north and south of the A525 Newcastle Road, the anticipated peak month average daily HGV combined movements have fallen as part of the changes implemented at the AP2 design stage. Furthermore, total vehicle movements at this location throughout the total construction period are also expected to fall.

## 2 Introduction

### 2.1 Background

2.1.1 This report is a supplement to the following report:

- Traffic Calming and Road Safety Provision Options – Woore Village

2.1.2 Refer to the report listed above for full background information on this study.

### 2.2 Study scope

2.2.1 A meeting between Woore Parish Council (WPC), Owen Patterson MP and HS2 took place on 18<sup>th</sup> January 2019 to discuss the findings of the report listed above. This report examines a number of actions that arose from this meeting as follows:

#### Traffic calming and footway provision

- As part of the traffic calming assessment, provide an additional cost for installing a permanent & continuous footway through Woore.
- Produce a revised cost estimate for the temporary traffic calming measures proposed, based on making the traffic calming measures permanent, i.e. the cost for removing the traffic calming measures and reinstating existing would be omitted.
- Assess the potential for carriageway widening at two “narrow points” on the A51 identified by WPC.

#### Permanent bypass

- A further action to undertake an assessment of a permanent Woore Village bypass was also agreed. For further details of this assessment refer to the report ‘Woore Village Permanent Bypass’

### 2.3 Limitations of this report

2.3.1 The following points should be considered when reading this report:

- This study summarises the results of a high-level desk study examining the potential provision of traffic calming measures and additional footway in Woore village. Detailed site surveys in particular in relation to the existing carriageway widths, property boundaries, topography, and utility locations is critical to attain more design certainty.

- 2.3.2 Accordingly, the comments on potential design changes, environmental considerations, land take, cost and programme may be subject to considerable change following further design development.
- 2.3.3 However, it is our professional judgement that the overall conclusions of the report will remain broadly unchanged despite these limitations.

# 3 Study Assumptions / Design Constraints

## 3.1 Traffic Calming and Footway Provision Assumptions

3.1.1 The following assumptions formed the basis of the additional information provided regarding the potential traffic calming measures and footway provision through Woore:

- Revised costs estimates for traffic calming measures assume that all traffic calming measures are to be installed on a permanent basis.
- It is assumed that any alterations to the traffic calming, footway and carriageway provision on the “narrow points” on the A51 would need to be achieved within the existing highway boundary.

# 4 Traffic Calming and Footway Provision

## 4.1 Permanent traffic calming measures

4.1.1 HS2 has engaged with Woore Parish Council to address their concerns regarding the potential effects of HS2 construction traffic on Woore village. Woore Parish Council has suggested a number of potential measures to mitigate the effects of HS2 construction traffic. The 'Traffic Calming and Road Safety Provision Options – Woore Village' report examined the suggested mitigation proposals. The list of measures examined is summarised below in Table 1.

4.1.2 The cost estimates provided in the 'Traffic Calming and Road Safety Provision Options – Woore Village' report were based on the assumption that each traffic calming measure was to be installed on a temporary basis and removed following completion of HS2 works. As part of this study, the cost estimates have been revised based on the assumption that the relevant traffic calming measures would be installed on a permanent basis, i.e. the costs of reinstating the existing layout have been removed. Cost evaluation for each of the permanent traffic calming measures is included in Appendix A. Note: The cost estimate includes the estimated engineering cost of installing each design package on a permanent basis only. Land and property costs are not included.

Table 1: List of measures included in each traffic calming design package

Measure Type	No.	Description	Design Package 1	Design Package 2 (Recommended)
Soft Calming	1	Road marking, upgrade of gateways and upgrade of crossings	X	X
	2	Vehicle Activated Signs		X
	3	Alternative soft traffic calming measures		
Hard Calming	4	A51/A525 junction safety improvements	X	X
	5	Hard traffic calming measures on A51 north of the A51/A525 junction		
	6	Hard traffic calming measures on A51 south of the A51/A525 junction	X	
	7	Extension of hard traffic calming measures along A51, A525 and B5026		
Traffic Management	8	Alternative hard traffic calming measures		
	9	School crossing patrols		
Improvements to Footway Provision	10	Enhanced pedestrian crossing points on A51		X
	11	Footway improvements close to the Falcon Inn		X
	12	Continuous pavement along the A51, A525 and B5026		
	13	Pedestrian access to Bridgemere Garden Centre		

## 4.2 Narrow points on A51

- 4.2.1 WPC have requested an assessment of potential carriageway widening at two existing “narrow points” on the A51. (Refer to Appendix B for map of “narrow points” provided by WPC).
- 4.2.2 The assessment below is based on a high-level desk study using the site information available. Detailed site survey would be required to form a more complete assessment.

## Narrow point to the north of the A525

### Existing carriageway and Non-Motorised User (NMU) provision

- 4.2.3 Based on the information available, the existing carriageway width at the narrow point to the north of the A525 varies between approximately 5m and 6m. There is no NMU provision along this section of carriageway.
- 4.2.4 There is limited to no verge provision along this section of carriageway. Existing hedgerows and mature trees line the edge of carriageway and form the highway boundary. There are residential properties on both sides of the carriageway with the property boundaries directly adjacent to the existing vegetation. At the southern end of the “narrow point” existing residential brick walls and retaining walls of unknown form are positioned directly adjacent to the edge of the narrow hardstrips on both sides of the carriageway, restricting carriageway widening.

### Carriageway widening assessment

- 4.2.5 It would likely not be possible to achieve impactful carriageway widening without impacting land on residential properties. The existing carriageway through much of this “narrow point” is in cutting. It is likely that the earthworks (and potentially retaining walls) involved in any carriageway widening would impact the surrounding residential properties. Steep existing property accesses and in some cases significant level differences between the carriageway and residential property front and rear gardens introduce would introduce further design challenges if the carriageway were to be widened at this location.
- 4.2.6 There is existing traffic signage in the western verge (Providing a warning to drivers of a winding carriageway and a hidden access ahead). The existing signage would need to be retained if the carriageway were to be widened. This is one of the limiting factors restricting carriageway widening as sufficient spatial provision would need to be retained in the verge to ensure that vehicles would not collide with the signage.

- 4.2.7 Mitigation planting would need to be provided if the existing hedgerows and mature trees were to be removed. There is insufficient space within the existing highway boundary to widen the carriageway and provide adequate verge and mitigation planting. Spatial provision for mitigation planting would need to be made within an extended highway boundary if widening into the adjacent residential properties were to be considered.
- 4.2.8 The existing overhead utilities in the western verge would need to be relocated or undergrounded. This would have cost and programme implications and would also likely have land take implications. Detailed surveys of other utilities present at this location would also be required to determine the full scope of utility diversions required.

### Land take considerations

- 4.2.9 As outlined above, it would likely not be possible to implement impactful carriageway widening at this location without impacting land on residential properties.
- 4.2.10 If land take from residential properties were to be considered, a number of options for the extents of carriageway widening could be examined. A detailed assessment of such works is outside the scope of this study. However, as a high-level indication of the extent of permanent land take required from the adjacent residential properties, the highway boundary may need to be extended by between approximately 1.8m and 6.4m into adjacent residential properties. This is based on the following assumptions:
- **Existing cross section:** The existing cross-section width of land within the highway boundary (including highway verge and planting) varies between approximately 6.4m and 11m along this 'narrow point'.
  - **Alternative cross section:** Based on typical HS2 rural road design criteria for realignments an alternative cross section that could be considered would require a cross section width of approximately 12.8m. This is based on a 1.5m wide footway (or verge) on one side of the carriageway, a 6.8m wide carriageway, a 1.5m wide verge on the other side of the carriageway, replacement hedgerow planting assumed to be 1m wide on both sides of the carriageway and a 1m wide provision made for a retaining wall, assuming most of the widening would occur on one side of the carriageway. It may be possible to consider alternative reduced cross sections following further design development and if departures from standard were to be applied.
- 4.2.11 Additional temporary land take from residential properties would also be required to accommodate construction activities as outlined below.

## Construction and logistics

4.2.12 Any carriageway widening activities at this location would likely lead to significant disruption to road users as a result of the tight site constraints.

4.2.13 If the indicative cross-section changes outlined above were to be implemented, the key construction and logistics considerations would be as follows:

- The estimated duration for construction would be approximately 6 to 9 months. (Subject to further assessment of the scope of utility relocations and earthworks and retaining wall features.)
- Assuming that most of the widening works would take place on one side of the carriageway, the site would operate under traffic signals with a single lane running for the duration of works. Additional temporary full road closures would also likely be required to accommodate certain construction activities.
- In addition to the permanent land take required to accommodate the physical works, additional temporary land take from the adjacent residential properties would be required to accommodate construction activities. The offset of the temporary land take boundary would be between 2m and 10m from the outer engineering feature. The property specific land take requirements would be dependent on a number of features including the scope of utility relocations, retaining works required and extent of vegetation removal. It is likely that a typical offset of 5m from the outer engineering feature would be required.
  - 2m requirement. If limited retaining features are required, it may be possible to construct elements of the proposed widening from the existing carriageway, limiting the need to further encroach into residential properties. However, a detailed assessment would need to be carried out to confirm there is sufficient width to safely carry out the works, whilst providing a sufficiently wide single carriageway, space for a temporary vehicle restraint barrier, and working space. Furthermore, aiming to work from the carriageway, whilst reducing the impact on residential land take would increase the duration of on-carriageway works and the number of total carriageway closures required. Where these are required, these may only be permissible at night or weekend, increasing the associated nuisance from noise.
  - 10m requirement – If retaining features are required, the form of these will extend back beyond the retained face, by a distance that is related both to the height and type of retaining solution. If in constructing these, there is insufficient space to work from the carriageway, or a desire to reduce the impact of construction on the carriageway, then access for construction may need to be from behind the retaining feature. Additionally, fencing or planting may be required behind the retained face.
  - It is likely that, once the constraints above have been considered, a 5m working strip from the outer engineering feature may prove a reasonable compromise. However, until topographical surveys and detailed design are

completed and advice is sought from the highway authority this could not be confirmed.

## Assessment summary

- 4.2.14 On the basis of the above, carriageway widening at this location is not deemed feasible within the existing site and study constraints. Additional land take from the adjacent residential properties would be required.
- 4.2.15 It is noted that on the A51 Nantwich Road in Woore, north of the A525 Newcastle Road, the anticipated peak month average daily HGV combined movements have fallen as part of the changes implemented at the AP2 design stage. Furthermore, total vehicle movements at this location throughout the total construction period are also expected to fall.

## Narrow point to the south of the A525

### Existing carriageway and NMU provision

- 4.2.16 Based on the information available, the existing carriageway width at the “narrow point” to the south of the A525 varies between approximately 5.4m and 5.6m. There are existing footways on both sides of the A525 through the southern “narrow point”.
- 4.2.17 The existing footway width through the narrow point on the western side of the carriageway varies between approximately 1.3m and 2.2m wide. The existing footway width through the narrow point on the eastern side of the carriageway varies between approximately 1.7m and 2.2m wide. The widest section for both footways accommodates the existing signalised pedestrian crossing.

## Carriageway widening assessment

- 4.2.18 Widening the carriageway through the narrow point without reducing the footway width would not be possible within the existing highway boundary. Residential and/or commercial properties would be impacted.
- 4.2.19 There are a number of issues that would restrict any reduction in the footway width through the “narrow point” in order to widen the carriageway. The key issues are summarised below:
- HS2 Technical Standard – Roads specifies a minimum footway width provision of 1.5m, or where new/modified footway replaces an existing footway greater than 1.5m wide, it shall be the same width as the existing footway. Any footway width reduction would thereby require a departure from standards.
  - 2.0m is the desirable minimum footway width to allow a person walking alongside a pushchair to pass another pram or wheelchair user comfortably.

This is particularly relevant at this location given the close proximity to Woore Primary and Nursery School. In general, any reduction in footway width in the vicinity of Woore Primary and Nursery School may lead to negative road safety implications for pedestrians at this location.

- The existing effective width of both footways is reduced at a number of locations by the existing street furniture, lampposts, traffic signals and other utilities provisions, further restricting the ability to achieve a desirable minimum footway width provision.

## Land take considerations

4.2.20 As outlined above, it would likely not be possible to implement carriageway widening at this location without impacting land on residential properties.

4.2.21 If land take from residential properties were to be considered, a number of options for the extents of carriageway widening could be examined. A detailed assessment of such works is outside the scope of this study. However, as a high-level indication of the extent of permanent land take required from the adjacent residential properties, the highway boundary may need to be extended by up to approximately 1.4m into adjacent residential properties. This is based on the following assumptions:

- **Existing cross section:** The existing carriageway width at the “narrow point” to the south of the A525 varies between approximately 5.4m and 5.6m. It is assumed that the existing footway widths on both sides of the carriageway would be retained.
- **Alternative cross section:** Based on typical HS2 rural road design criteria for realignments an alternative carriageway width that could be considered would be 6.8m. It is assumed that the existing footway widths would be retained and relocated partially within the boundary of adjacent properties on one or both sides of the carriageway. The existing property boundary features would also need to be replaced. Alternative reduced cross sections could be considered following further design development and if departures from standard were to be applied.

4.2.22 Additional temporary land take from residential properties would also be required to accommodate construction activities as outlined below.

## Construction and logistics

4.2.23 Any carriageway widening activities at this location would likely lead to significant disruption to road users and pedestrians as a result of the tight site constraints.

4.2.24 If the indicative cross-section changes outlined above were to be implemented, the key construction and logistics considerations would be as follows:

- The estimated duration for construction would be approximately 3 to 6 months. (Subject to further assessment of the scope of utility relocations)
- Assuming that widening works would be required on both sides of the carriageway, the site would operate under traffic signals with a single lane running for the duration of works. The works would alternate between each side of the carriageway as required. Temporary footway closures would also be required accordingly.
- In addition to the permanent land take required to accommodate the physical works, additional temporary land take from the adjacent residential properties would be required to accommodate construction activities. The offset of the temporary land take boundary would typically be approximately 2m from the outer engineering feature. This may need to be locally extended to approximately 5m from the outer engineering feature during certain utility relocation and vegetation clearance activities.

## Assessment summary

- 4.2.25 On the basis of the above, carriageway widening at this location is not deemed feasible within the existing site and study constraints. Additional land take from the adjacent residential properties would be required.
- 4.2.26 It is noted that on the A51 Nantwich Road in Woore, south of the A525 Newcastle Road, the anticipated peak month average daily HGV combined movements have fallen as part of the changes implemented at the AP2 design stage. Furthermore, total vehicle movements at this location throughout the total construction period are also expected to fall.

## 4.3 Footway provision

### A51 footway provision

- 4.3.1 Within Woore village, the A51 has footways on both sides of the highway for most of its length. Where it is omitted, there is a lack of available highway land to provide it (at the north end of village) or, alternatively, infrequent housing (for example; at the southern end of Woore there are only 5 houses present on the east side of the A51). At some locations, the effective width of the footway is reduced by obstructions.

### Northern narrow point

- 4.3.2 As outlined in Section 4.2, the existing carriageway narrow point on the A51 to the north of the A525 has no NMU provision and has a carriageway width of between approximately 5m and 6m.

- 4.3.3 Any footway provision on the western side of the carriageway would impact on the adjacent residential properties. It would necessitate earthworks (and potentially a retaining wall) that would impact residential properties along the length of the provision. Footway provision is also restricted by the existing brick wall that forms the property boundary at the southern end of the narrow point.
- 4.3.4 Whilst any earthworks requirements for a footway provision on the eastern side of the carriageway would be limited, the space available within the existing highway boundary on this side of the carriageway is extremely limited. A narrow footway (approximately 0.5m to 1.0m wide) would require a departure from standards and would likely raise significant road safety issues. The existing narrow carriageway width would increase the risk of accidents involving pedestrians at this location (E.g. Due to wing mirrors overhanging the footway).
- 4.3.5 Furthermore, a footway provision on either side of the carriageway would necessitate the removal of the existing hedgerow and mature trees. There is insufficient space within the highway boundary at this location to provide adequate mitigation planting. On this basis additional land take from the adjacent residential properties would be required as part of any footway provision.
- 4.3.6 On the basis of the above, footway provision at this location is not deemed feasible within the existing site and study constraints. Additional land take from the adjacent residential properties would be required. (Refer to Paragraphs 4.2.20 to 4.2.22 for additional details on land take considerations at this location if land take from adjacent residential properties were to be considered.)

## Southern end of Woore village

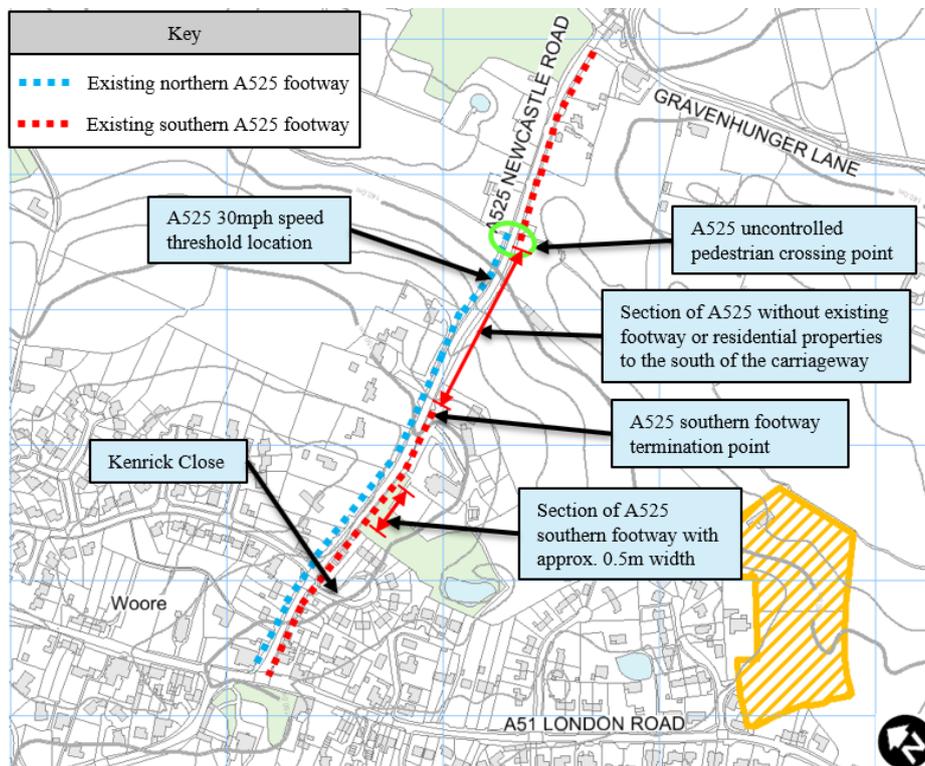
- 4.3.7 The B5026 (at Ireland's Cross) has footway facilities at its northern end which links up to the A51 pedestrian facilities without the need to cross over the A51. Again, existing highway boundaries determine what side of the highway that the provision for the footway can be located.
- 4.3.8 Between Ireland's Cross and Woore the footway provision is non-continuous due to the highway layout, residential dwelling locations and highway boundary features. The highway boundary determines which side of the carriageway a footway can be located. Therefore, between Ireland's Cross and Woore there are two locations where pedestrians are required to cross over the A51 to continue their journey using the footway. The first point is at the northern extent of Ireland's Cross and the second point being at the southern edge of Woore village.
- 4.3.9 On the basis of the above, additional footway provision at this location is not deemed feasible within the existing site and study constraints. Additional land take from the adjacent properties would be required.
- 4.3.10 If land take from properties adjacent to the highway boundary were to be considered the highway boundary would typically need to be extended by up to

approximately 1.5m into the adjacent property to accommodate a 1.5m wide footway. Most of this land take would be from agricultural land parcels. Further additional permanent land take may be required for any sections of the footway that require additional earthworks (or retaining wall features) A significant number of replacement trees and length of replacement hedgerow planting would be required to mitigate the vegetation losses brought about by these works. Additional temporary land take for construction activities between 2m and 10m (A typical requirement of 5m is considered a to be reasonable assumption at this stage – see paragraph 4.2.13 above) from the outer edge of the footway may also be required locally to accommodate activities including vegetation clearance and utility relocation. Temporary lane closures under traffic signals on the A51 would also likely be required.

## A525 footway provision

4.3.11 The existing footway provision on the A525 Newcastle road between the A51 and Gravenhunger Lane is illustrated in Figure 1. The A525 has footways on both sides of the road in the centre of Woore. The provision reduces to one side of the highway when leaving the village centre to the east. Housing is mainly located on the side of the carriageway with the existing footway side.

Figure 1: Existing footway provision on the A525 Newcastle Road



4.3.12 The width of the existing footway on the southern side of the A525 to the east of Kenrick Close narrows to approximately 0.5m wide over a length of approximately 40m. A brick wall delineating a residential property boundary is directly adjacent to the edge of the footway at this location. This narrow existing footway width is

significantly below the 1.5m desirable minimum footway width specified in the HS2 Technical Standard – Roads. It would not be possible to widen the footway provision at this location without impacting the residential property. Encouraging greater pedestrian usage of this sub-standard footway provision may lead to negative road safety implications.

- 4.3.13 The existing footway on the southern side of the carriageway terminates at a residential property driveway to the east of the village. (Refer to Figure 1) As illustrated in Figure 2, the A525 is in a slight cutting beyond this termination point. The highway boundary terminates at a brick wall at the edge of the adjacent residential property. The earthworks (and potentially retaining wall) associated with any extension of the footway along this section of the carriageway would impact the adjacent residential property.

Figure 2: Existing southern verge on the A525 Newcastle road beyond the footway termination point



- 4.3.14 On the basis of the road safety and land take issues outlined above it is not deemed feasible to provide a continuous footway on the A525 within the site and study constraints.
- 4.3.15 As highlighted in Figure 1, there are no further residential properties to the south of the A525 between the two non-continuous sections of southern footway provision. As a result, no benefit was identified for a short non-continuous section of southern footway at this location and it is therefore not recommended.
- 4.3.16 It should be noted that the typical footway width on the northern side of the carriageway is between approximately 1.2m and 1.5m on the approach to the uncontrolled pedestrian crossing point adjacent to the 30mph speed threshold and is considered to be a safer footway provision than the narrow provision on the southern side of the carriageway.

- 4.3.17 It should also be noted that on the A525 Newcastle Road in Woore, peak month average daily HGV combined movements have fallen from 524 HGVs (HB & AP1) to 256 HGVs (AP2). Furthermore, total vehicle movements at this location throughout the total HS2 construction period are expected to fall by approximately 11%.
- 4.3.18 If land take from properties adjacent to the highway boundary were to be considered the highway boundary would typically need to be extended by up to approximately 1m to 1.5m into the adjacent property to accommodate a 1.5m wide footway (and retaining wall features where required). This this land take would be from both residential properties and agricultural land parcels. Existing residential property boundary walls would need to be replaced and a significant number of replacement trees and length of replacement hedgerow planting would be required to mitigate the vegetation losses brought about by these works. Additional temporary land take for construction activities of between 2m and 10m (A typical requirement of 5m is considered a to be reasonable assumption at this stage – see paragraph 4.2.13 above) from the outer edge of the footway would also likely be required to accommodate activities including vegetation clearance and utility relocation. Temporary lane closures under traffic signals on the A525 would also likely be required in addition to temporary footway closures for the sections of existing footway.

## 5 Summary

- 5.1.1 Revised costs estimates have been developed for the traffic calming measures described in the 'Traffic Calming and Road Safety Provision Options – Woore Village' report with the revised assumption that all traffic calming measures are to be installed on a permanent basis.
- 5.1.2 The provision of carriageway widening at the “narrow points” on the A51 or continuous footway provision through Woore village were not considered feasible within the site and study constraints on the basis that these design changes would require additional land take from the surrounding land owners as the available space within the existing highway boundary is insufficient to accommodate such works. It is also noted that any such works would introduce significant disruption to road users for the duration of construction as a result of the temporary traffic management measures required to accommodate construction activities within the tight site constraints.
- 5.1.3 It is noted that on the A51 Nantwich Road in Woore, both north and south of the A525 Newcastle Road, the anticipated peak month average daily HGV combined movements have fallen as part of the changes implemented at the AP2 design stage. Furthermore, total vehicle movements at this location throughout the total construction period are also expected to fall.

# Appendix A – Permanent Traffic Calming Cost Estimate

# Appendix B – Map of narrow points on the A51 – Woore Village

Figure 3: Map of “narrow points” on the A51 - Woore village (Highlighted in orange)

