

B3105 Woolley Green – Site Assessment



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Purpose of Assessment

1. Following concerns raised by local residents about recent collisions and the impact that traffic was having at Woolley Green, a subsequent commitment was given by the Cabinet Member for Highways and Transport to investigate matters further.

Study Area

2. The assessment is based on the central area of Woolley Green. It does not encompass the area known as greater Woolley Green. The study area is shown at Figure 1.

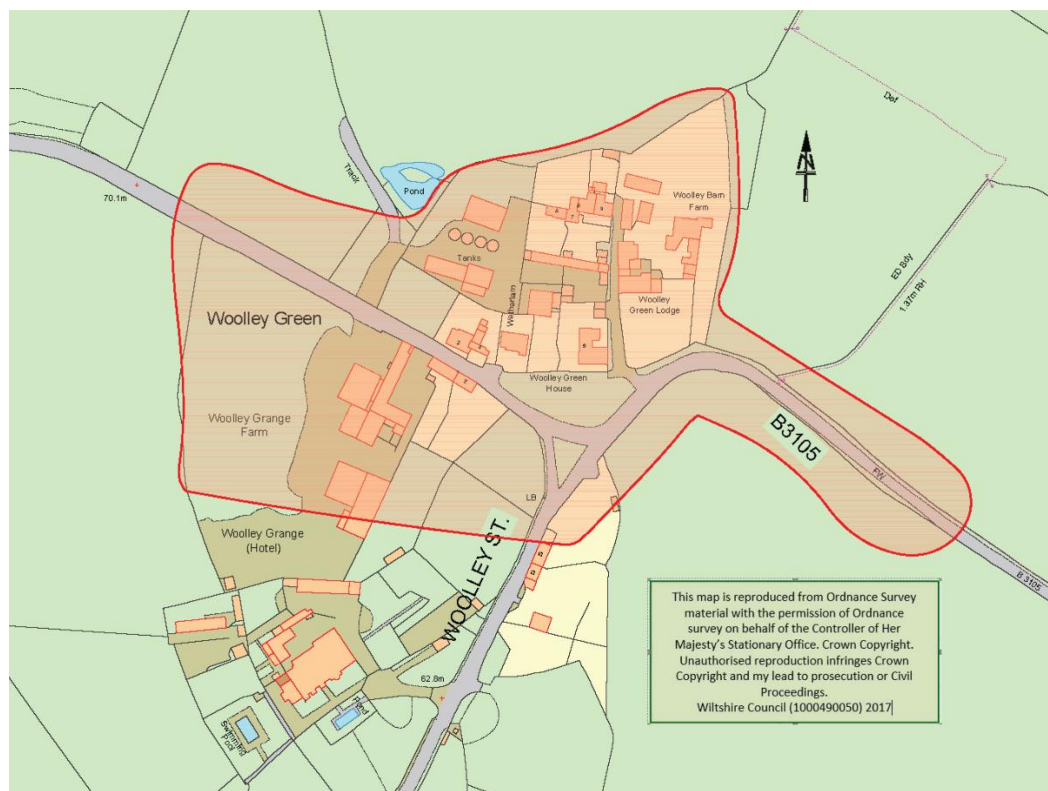


Figure 1 – Study Area

Collision Record

3. An analysis of the collision history within the study area for the five years preceding this report (01/01/2011 – 31/12/16) demonstrates a total of three personal injury collisions (PIC's). Two of the collisions are classified as 'slight' in severity and the remaining classified as 'serious'. The location and summary details for the collisions is included at 'Appendix 3'. It should be noted that a 'medical episode' is given as primary causation factor for the 'serious' collision.

A further collision was reported on the 23/01/17. An examination of the Police report indicates the driver of a vehicle travelling west along the B3105 negotiated the right hand bend and claims to have struck a pothole leading to a loss of control and the vehicle leaving the carriageway to the nearside. As a result of this action two pedestrians were injured. It should be noted that the council's database only

includes injury collisions. 'Damage only' or 'non- injury collisions' are not recorded and for the purpose of this report have not been considered.

The collision history is not at a level that necessitates the introduction of intervention measures through the Council's Local Safety Schemes (LSS) budget.

Speed Data

4. In order to assess the speed of traffic through the study area a series of driven timed runs between two fixed points on the B3105 were undertaken. The objective was to determine average vehicle speeds under both free flowing and moderate traffic conditions (following a single vehicle). The average speed in both directions under free flowing conditions was recorded at **31.3mph**. The measured speed following a single vehicle ranged between **23mph to 46mph** (westbound) and **22mph to 44mph** (Eastbound). During the timed runs it was clear the double bend provides the largest control by which the overall speed is determined through Woolley Green

Speed Restriction

5. There is currently a 50 mph speed restriction within the study area shown at Figure 1.
6. The setting of speed limits is provided in guidance published by the Department for Transport, and set out in the document Department for Transport Circular *01/13; Setting Local Speed Limits*.

This document provides information and guidance on speed limits in both rural and urban environments. For rural village environments the criteria is set out in Section 7.3, and reiterates the information previously published in its preceding documents *Circular 01/06* and *Traffic Advisory Leaflet 01/04; 'Village Speed Limits'*.

One of the fundamental principles outlined in both TA 01/04 and Circular 01/13 is the requirement for speed limits to be both 'effective' and 'credible'. In order to achieve this it's essential that clear environmental characteristics are present to ensure that motorists receive the necessary cognitive triggers to help reinforce the reasons for the posted limit. Failure to achieve recognition between environment and restriction is likely to result in poor levels of compliance and consequently the need for higher levels of enforcement.

7. For 30mph restrictions in rural areas, the guidance stipulates that it would be reasonable to expect '20' or more properties with direct frontage access over a minimum length of 600m. It also recognises there will be certain situations where the minimum levels of direct frontage development are not met whereby extra consideration can be given for community facilities, i.e. a School, Church or Village Hall etc. It also recognises that there will be situations where levels of development exist, but not to the level specified. In these circumstances there is recognition that a speed limit lower than the national speed limit may be justified, but not 30mph i.e. 40mph or 50mph. To reinforce the need for a speed limit, the guidance also outlines

that the development should provide a minimum development density of '3' properties per 100m.

8. Speed restrictions should cover a suggested minimum length of approximately 600m, however in exceptional circumstances this can be reduced to an absolute minimum of 300m. Experience has proven that limits of this length result in increased difficulties of compliance, particularly where motorists are afforded good forward visibility and are able to 'see through' the length of the restriction.

Consideration also needs to be given to surrounding restrictions to ensure that a degree of continuity is afforded to motorists, as failure to do so risks increasing disregard, not only for the particular restriction in question but for speed limits generally. Where the length between restrictions of the same level is less than 600m, consideration should be given to continuing the restriction to prevent motorists being faced with frequent speed limit changes.

Woolley Green Characteristics

9. To the south of Woolley Green the B3105 intersects the B3106 at the junction known locally as Forewoods Common. To the north the road terminates at its junction with the A363. The existing 50mph speed limit, which encompasses the study area commences from the Forewoods Common junction and terminates north of Woolley Green and to the south of the Bradford Leigh Traffic Signal junction. The speed limit reduces to 40mph at this point and extends further west to cover a distance of approximately 450m.
10. Woolley Green is a hamlet consisting of a small number of farm buildings, residential properties and the Woolley Grange hotel. The hamlet is bisected by the B3105 and has a double bend arrangement through its central area.
11. Located at the northern most bend is the junction of Woolley Street, an unclassified road leading to Bradford on Avon. The junction is characterised by a large triangular splitter island, predominately laid to grass with two large mature trees, one of which is subject to a tree preservation order (TPO). Within the splitter island are short sections of footway which link Woolley Street via an uncontrolled crossing to a small number of properties and farm on the northern side. (See Photograph 1. Overleaf). Overall forward visibility through the double bend is considered good and the wide vista engenders a degree of openness to the area. Despite this the geometric layout of the double bend provides a clear controlling factor for vehicles with typical driven speeds at or below 25mph.



Photograph 1 - Looking south across B3015 towards Woolley Street

12. The main B3015 approaches to the hamlet are adjoined by either significant hedgerows or buildings which abut the highway. The carriageway width is reasonably consistent at circa 6.0m to 6.5m in width, however the presence of the building and hedgerows do contribute to a feeling of constraint and enclosure (See photograph 2). In addition to the junction with Woolley Street, there is a private driveway leading to Woolley Barn Farm and a small number of residential properties with a further 6 private accesses to properties / fields. On both main road approaches, advance warning signs to Diagram 513 (double bend) are provided, whilst on the south eastern approach (offside) is an additional warning sign to Diagram 516/575 (road narrows on both sides). See photograph 3. Chevron signs to Diagram 515 are also located opposite both bends.



Photograph 2 – B3105 looking northwards towards Bradford Leigh Crossroads



Photograph 3 - B3105 looking North West towards commencement of double bend

13. As is common in rural environments a number of farm buildings have been converted and appear to be utilised as small business premises, however their characteristics are not sufficient to warrant the status of 'Trading' or 'Industrial Estate' .
14. A public right of way exists over the private road on the northern side, and continues in the direction of Bradford Leigh.

Development Level

15. There are approximately 15 residential properties in the study area of interest, along with 2 farms and the Woolley Grange Hotel. The layout of the hamlet is such that the majority of the development does not directly front the B3105, with access to properties being through shared private roads and driveways. Woolley Grange Hotel is accessed via Woolley Street. The result is limited frontage development, with only 7 properties considered to directly front the B3105. The development covers a length of circa 250m.

Pedestrian Provision

16. As is typical in rural environments, provision for pedestrians is generally sporadic in nature and in the case of the Woolley Green area is largely confined to Woolley Street by means of a formal footway on the western side. To assist pedestrian movement across the B3105, an uncontrolled crossing point has been provided from the triangular splitter island to an unbound surface footpath link on the north side. The crossing point is further highlighted with wooden bollards and buff coloured high friction surfacing, although as photograph 1. demonstrates, its current condition is poor and would benefit from maintenance improvements .

17. As part of the overall assessment process a 12 hour pedestrian count was undertaken on the 8th March 2017 between 0700 and 1900. The objective was to determine the numbers crossing the B3105 at the uncontrolled crossing point prior to any formal assessment against the Wiltshire Practice document. The recorded weather during the survey period was described a rainy between 0700 -0930 before turning dry for the remainder of the day. A summary table for the pedestrian count is shown at Figure 2. below.

North to South					
Pedestrian Age	Under 11	11 to 17	18 to 65	65+	Total
No. Crossing	7	8	49	17	81
South to North					
Pedestrian Age	Under 11	11 to 17	18 to 65	65+	Total
No. Crossing	9	8	45	17	79
Grand Total					160

Figure 2 - Pedestrian survey data

18. The current Wiltshire Council practise note recommends a minimum level of combined pedestrian flow for a formal crossing to be considered. As a general rule, a minimum average number of 50 pedestrians per hour over the four peak hours are required. Vulnerable pedestrians, i.e. persons aged 18 or under and 65+ are counted as double. The data summary based on the peak hour criteria is shown at Figure 3.

	PEAK HOURS				Totals
	1500 - 1600	1600 - 1700	1700-1800	1800 - 1900	
PEDESTRIANS	26	43	14	35	118
PEDS < 18 / 65+	3	7	2	7	19 (38)

Figure 3 - Pedestrian survey data – Peak Hours

19. The total number of recorded pedestrians crossing during the four peak hours was **118**, of which **19** were classed as 'vulnerable'. Counting vulnerable pedestrians as double, the calculation is as follows:

$$99 \text{ (total pedestrians - less vulnerable)} + 38 \text{ (vulnerable pedestrians} \times 2) = \mathbf{137.}$$

$$137 \text{ divided by } 4 = \mathbf{34.25} \text{ pedestrians}$$

20. The average crossing movements recorded over the four peak hours equates to 34.25 pedestrians per hour. Comparing this figure against the recommended threshold value of '50' outlined in the Wiltshire practice document, there are insufficient movements at the present time to justify the provision of a controlled crossing facility. The relatively low numbers of pedestrian movement can in part be explained by the lack of obvious attractors on either side of the B3105. Attractors can

be considered as community facilities such as shops, public houses and playgrounds etc.

21. Whilst pedestrian movement serves one part of the overall process it is imperative the minimum number of pedestrians crossing is attained. Regular drivers passing along a particular length of road will become accustomed to their usual everyday experiences. If a formal crossing is observed by drivers as underused they may become complacent and fail to register the sudden presence of pedestrians. In this instance where a driver is unexpectedly required to stop due to a red signal or where a pedestrian steps out onto a zebra crossing, the driver may not be able to react in sufficient time and this can pose a significant risk to user safety. It therefore follows that any criteria for a pedestrian crossing must take account of the pedestrian flow at the chosen location and a minimum level of pedestrian movement evident before a formal crossing facility is considered.
22. In the case of Woolley Green the minimum crossing threshold cannot be achieved. As such the introduction of a formal crossing facility cannot be considered at this time and the existing uncontrolled facility is considered suitable with regards to current pedestrian provision.

Existing carriageway, signs and road markings

23. A visual inspection of the existing carriageway, signs and road markings was carried out within the study area. In general the overall condition of the carriageway is considered as 'acceptable'. There are some isolated areas with evidence of surface stress, however there is no evidence of structural failure of the carriageway. Previous carriageway repairs are evident and appear to be holding up well. Some delamination of the surface course is also evident in smaller areas, particularly on the bend, however they do not constitute 'Category 1' defects (for a Group 1 road). The most recent SCRIM¹ data confirms the site does not currently meet the necessary intervention level for re-surfacing to be considered.
24. The verge widths within the study area are restricted due to existing hedges and stone boundary walls, this is particularly apparent on the nearside approaches to the bend. A number of signs have substandard clearance (less than 450mm) from the carriageway edge and have been damaged and knocked out of alignment to oncoming traffic. Several signs have been located on the offside where the verge widths are wider but these may not be readily apparent to drivers, especially at night. The road markings were last refurbished in 2014 and the warning lines through the bend require a degree of maintenance work to bring them up to the necessary standard.

¹ SCRIM – Sideway-force Coefficient Routine Investigation Machine

LOCAL SUGGESTIONS

25. A local resident has put forward a number of suggestions for changes at Woolley Green. A copy of the proposals with accompanying officer comments is included at **Appendix 2**.

Conclusion

26. Based on the site assessment and guidance provided in DfT *Circular '01/13'* a reduction in speed limit to 30mph on the B3015 Woolley Green would not be appropriate at this location for the following key reasons:
- i) The level of frontage development is not sufficient to justify the introduction of a 30mph restriction.
 - ii) The level of frontage development is such that the recommended minimum length of speed limit could not be achieved.
27. It is recognised the hamlet is segregated by the B3105 and whilst the road layout is such that vehicle speeds are naturally contained by the existing road geometry, the current 50mph speed limit may not provide sufficient awareness of the potential hazards or presence of residential properties.

When considering the environment in the wider context and surroundings, it is possible to draw comparisons with the environment and characteristics to the north (in the Bradford Leigh area). Consequently consideration should be given to the introduction of a limit lower than the 50mph restriction currently in place; therefore a 40mph limit is recommended. As previously noted, the limited length of the development makes the provision of an isolated speed limit unachievable.

A potential solution to enable this restriction would be to extend the existing 40mph limit at Bradford Leigh (to the north), southwards to include the hamlet of Woolley Green. It would also provide the opportunity to introduce a restriction along the length of unclassified road leading to Bradford on Avon, removing the need for terminal signs at the junction with the B3105. A plan outlining the proposal is shown at **Appendix 1**.

28. Whilst the conditions to consider the installation of a controlled pedestrian crossing are not met in this instance, it is considered that advance warning of pedestrians crossing the B3015 would provide overall benefit to the community. This should be considered as part of an overall review of signing in the Woolley Green area and be delivered in conjunction with the proposed implementation of the 40mph speed restriction outlined above.

Recommendations.

29. Consider the implementation of a 40mph limit on the B3105 through Woolley Green to link up with the current restriction to the north at Bradford Leigh.
30. Undertake a comprehensive sign review within the study area and install replacement / new signing where appropriate. The provision of advance signs to Diagram 562 to warn of the presence of pedestrians is of particular importance. Refer to Figure 4. For example of sign.



Figure 4. Example of advanced warning sign to Diagram 562

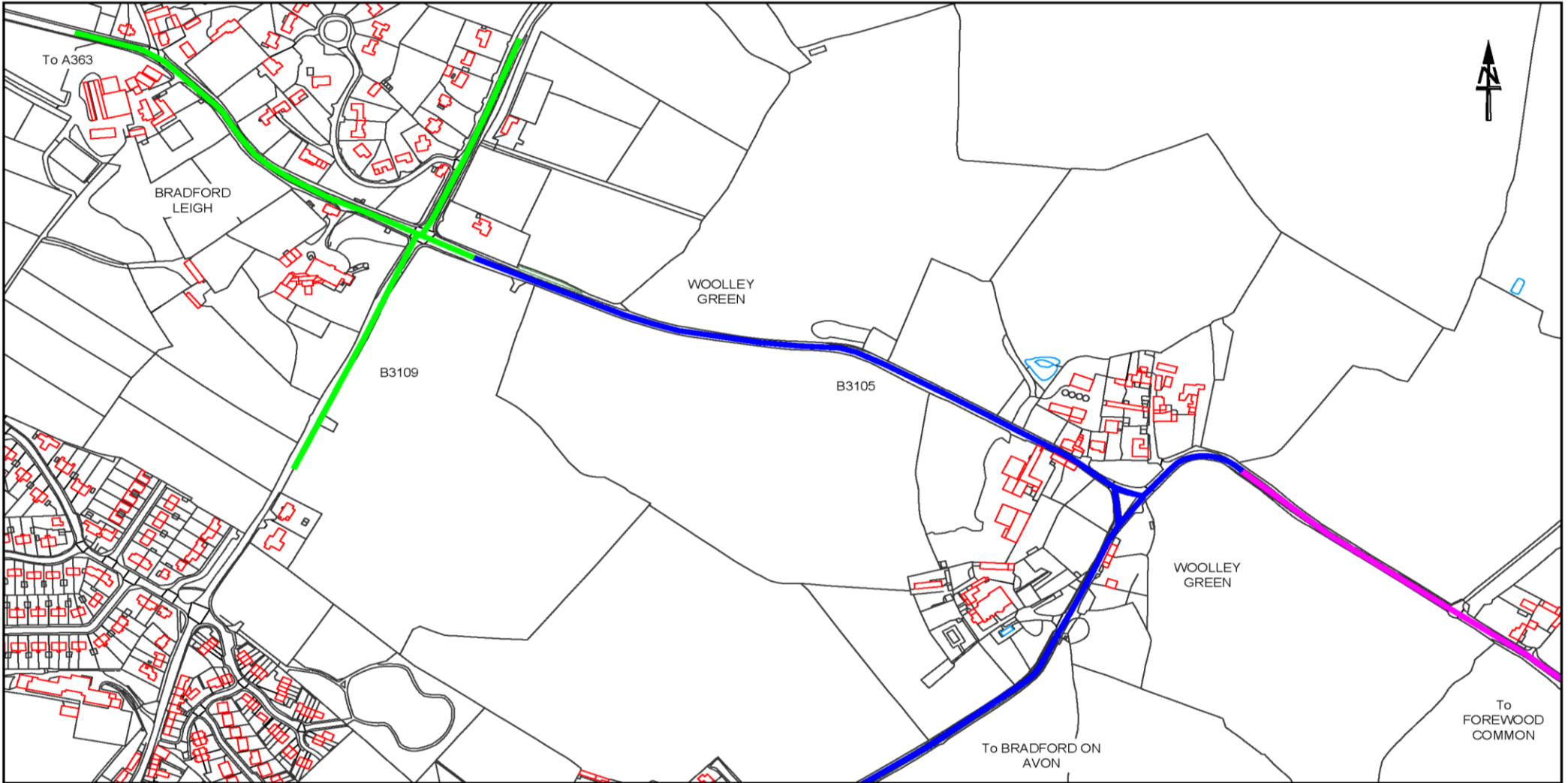
31. Refurbish the existing road markings and consider the use of additional 'SLOW's on the approach to the double bend
32. Refurbish the coloured surfacing at the existing uncontrolled crossing point.

Report prepared by:

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25th April 17



NOTES:

- █ EXISTING 40MPH RESTRICTION
- █ EXISTING 50MPH TO REMAIN
- █ PROPOSED 40MPH RESTRICTION

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 Where everybody matters
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 Wiltshire Council (100949050) 2017

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O	17/01	GTR	DMT	DMT	ORIGINAL
REV	DATE	DRAWN	CHECK	APPRV	DESCRIPTION
DRAWING PURPOSE					
ISSUE					

PROJECT:		
B3105 WOOLLEY GREEN SPEED LIMIT ASSESSMENT		
DRAWING TITLE:		
RECOMMENDATION PLAN		
SCALES:	NTS	SHEET SIZE: a3
DRAWING NO:	2017 MISC GTR 001	REVISION: 0
FILE REF:	LTRA\F ENG\BR10A\WOOLLEY	

APPENDIX 2

<u>Local suggestion</u>	<u>Officer Comment</u>
<p>I would suggest that the first course of action is to demand or organise a vehicle speed survey. This will need to monitor speeds through the area, not just at one location. This could be done using pneumatic tubes over a couple of weeks and would provide better data than a manual speed camera check (which tends to affect driver behaviour). The tubes would be located on the 'straight' approaches to Woolley Green and again in the vicinity of the crossing. This is reasonably inexpensive to organise (a 2 week survey might cost about £1,000), and the data on traffic flow and vehicle speed is generated automatically and so does not need significant analysis.</p> <p>My sketches show a variety of options, but I would have thought that the most obvious first step is to get a much lower speed limit imposed through Woolley Green. This should really be 20mph, and so a 20mph Zone would be the best thing. Unlike a 20mph limit, a 20mph Zone requires some form of traffic calming to warrant the 20mph limit - this could be achieved through raising the pedestrian crossing profile, but I actually think the natural bends in the road are sufficient to satisfy the limit. The DfT requirement for horizontal deflection to satisfy traffic calming limits is 70 degree change over 32m, which I think is about right at Woolley Green. At Norton St Philip, the 20mph area is bounded by a 30mph zone - I've tried to check the regulations on this but without much success at the moment, but it makes sense that it is not appropriate to go from a 50mph area straight into a 20mph Zone. It's possible that the whole of the B3105 from Bradford Leigh to Woolley Green would be better staying at 40mph, which minimises the number of speed limit changes (40mph at BoA - 30mph - 20mph at WG). To the east of Woolley Green, perhaps it makes sense to then go back to 50mph, which suits the Holt Road restrictions.</p> <p>This could be self-enforcing, but the use of vehicle actuated speed detection and 'slow down' signs would definitely help. These could either be placed on the 30mph approaches, or within the Woolley Green area. I chose to show them on the approaches because it possibly won't be too attractive to have them within the Green</p>	<p><i>As part of the assessment, average speeds through the B3105 Woolley Green have been established using time over distance techniques rather than point speeds. This method provides a better way of establishing typical speeds along a given length. The average driven speed recorded under free flowing conditions was 31.3mph. The average speed following a single vehicle through the study area ranged between 22 – 44mph.</i></p> <p><i>A 20mph speed restriction (limit or zone) is not possible. In this instance none of the criteria set out in the DfT guidance or in Wiltshire Council's 20mph policy are met.</i></p> <p><i>For comments on speed limits see main report. The use of 30mph buffer limits on lengths where the criteria relating to frontage development are not satisfied, cannot be supported. The use of speed limits in this way does not accord with current guidance provided by the Department for Transport. DfT Circular 01/13 'Setting local speed limits' and TAL 01/04 'Village Speed Limits'</i></p> <p><i>The use of Vehicle Activated Signs (VAS) on the approaches to Woolley Green is not recommended. Evidence both locally and nationally indicates that whilst the initial impact on drivers is good, the effect of VAS's,</i></p>

itself.

High resistance surfacing would be good, but this sometimes simply encourages greater speeds due to the improved grip. Additional 'rippling' could be incorporated (similar to that on the bends on the A46 Gloucester Road north of Bath, by Tadwick). Rumble strips could be used, but I would think this would create too much of a noise problem and would not be good for cyclists.

A mini-roundabout could be introduced, which could have the effect of forcing vehicles to slow down to consider having to give way to other traffic. This could be similar to the one in Holt on the Bradford Road/ B3106 junction. The central island would need to be over-runnable, but would be provided in suitable materials (as opposed to a simple white blob of paint).

I've shown how the Green could be modified to house a conventional roundabout - which would certainly have a beneficial impact on speeds and awareness of drivers, but of course would potentially ruin the nature of the Green. I'm not sure the tree could be retained, but an alternative landscaping arrangement could be developed. Not ideal, but a possibility.

I haven't shown a sketch, but there is finally the option for traffic signal control and a push-button for the green man crossing. I don't think this is really suitable for this location, but it is feasible.

particularly speed signs, is quickly eroded resulting in increased driver apathy. As a result Wiltshire Council targets the use of such signs to sites with proven collision history and where advance warning to drivers of specific hazards is required. I.e. bends, cross road junctions etc.

For comments on surfacing see main report

A mini roundabout is not considered appropriate for this location. Mini roundabouts operate on a 'near miss principle with vehicles entering the junction in close proximity from both the main road and side roads. Experience shows that for mini roundabouts to work successfully the overall flow on each the respective arms should be broadly comparable with a degree of turning traffic in all directions. Whilst junctions with lower side road flows can be successful, a significant absence of turning traffic tends to result in a free flowing dominant through route with little or requirement to yield to side road traffic. In this instance the predominant through flow is the B3105 with relatively low turning movement both into and out of Woolley Street. As such a mini roundabout is not considered a viable solution in this instance.

With regards to a conventional or compact roundabout arrangement, it is extremely unlikely, given current site constraints, that a satisfactory geometric layout could be achieved that adheres to current design standards without wholesale change and significant detrimental impact on the Green itself. The tree residing within the triangular island is covered by a preservation order (TPO), hence significant change that necessitated tree removal is not possible.

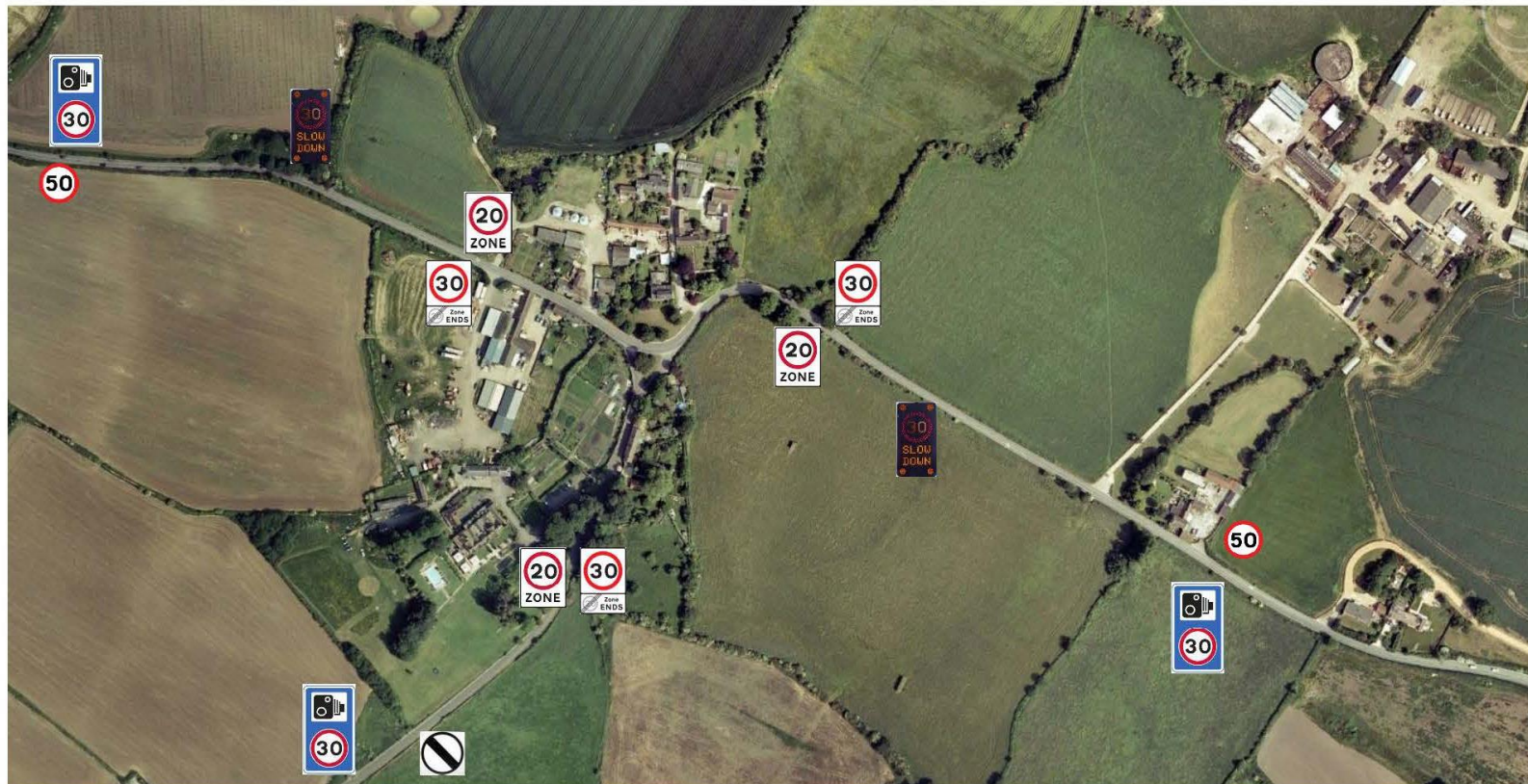
For officer comments on pedestrian crossing considerations - see paragraphs 16-22 within the main report

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Woolley Green Traffic Calming Scheme

Option 1: Reduced speed limit

Reduced speed limit, slow down indication signs (<http://sidsigns.co.uk/slow-down-sid-signs.htm>)



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Option 1-A: High resistance surfacing around existing crossing

Introduce raised pedestrian crossing

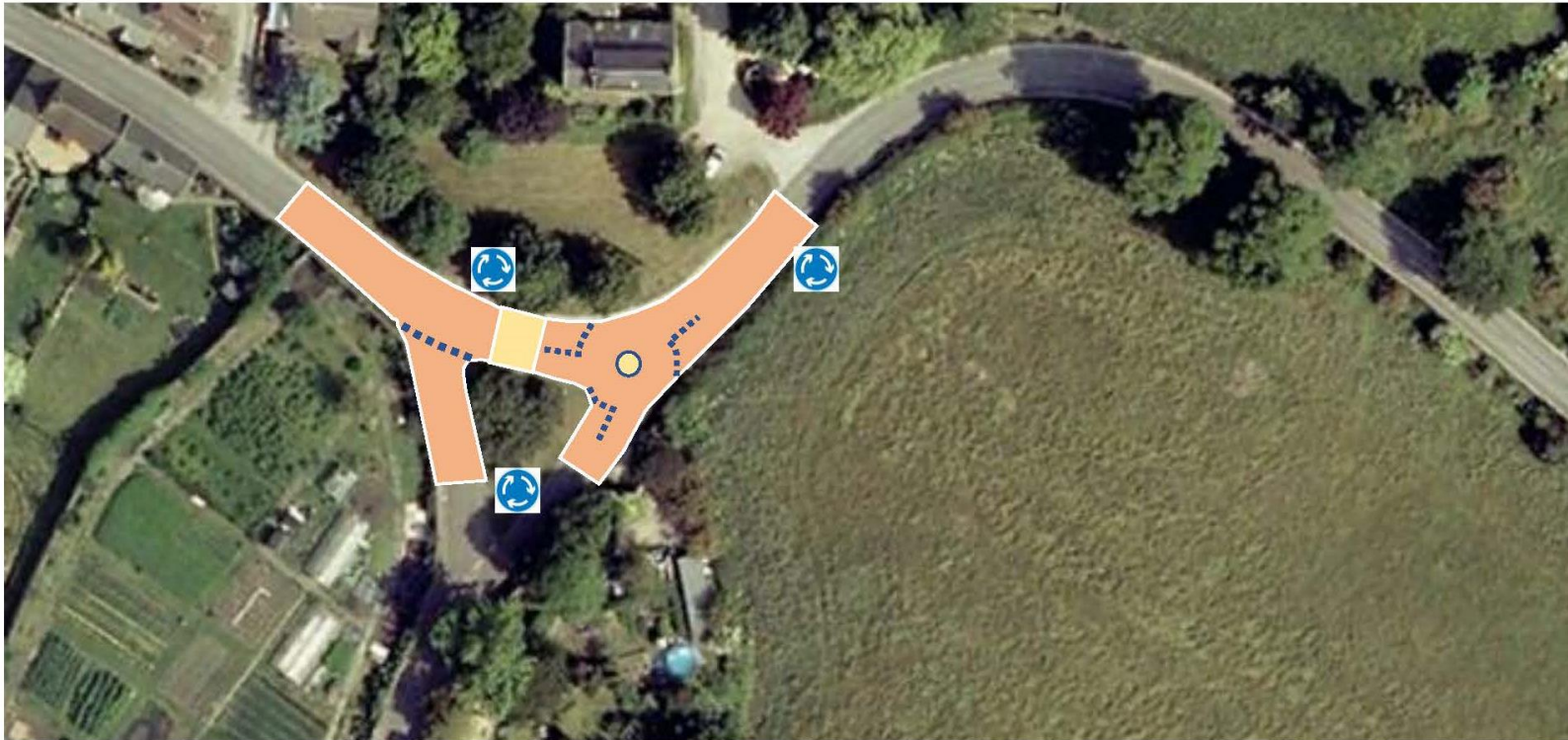


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B3015 Woolley Green - Site Assessment

Option 1-B: High resistance surfacing around mini-roundabout

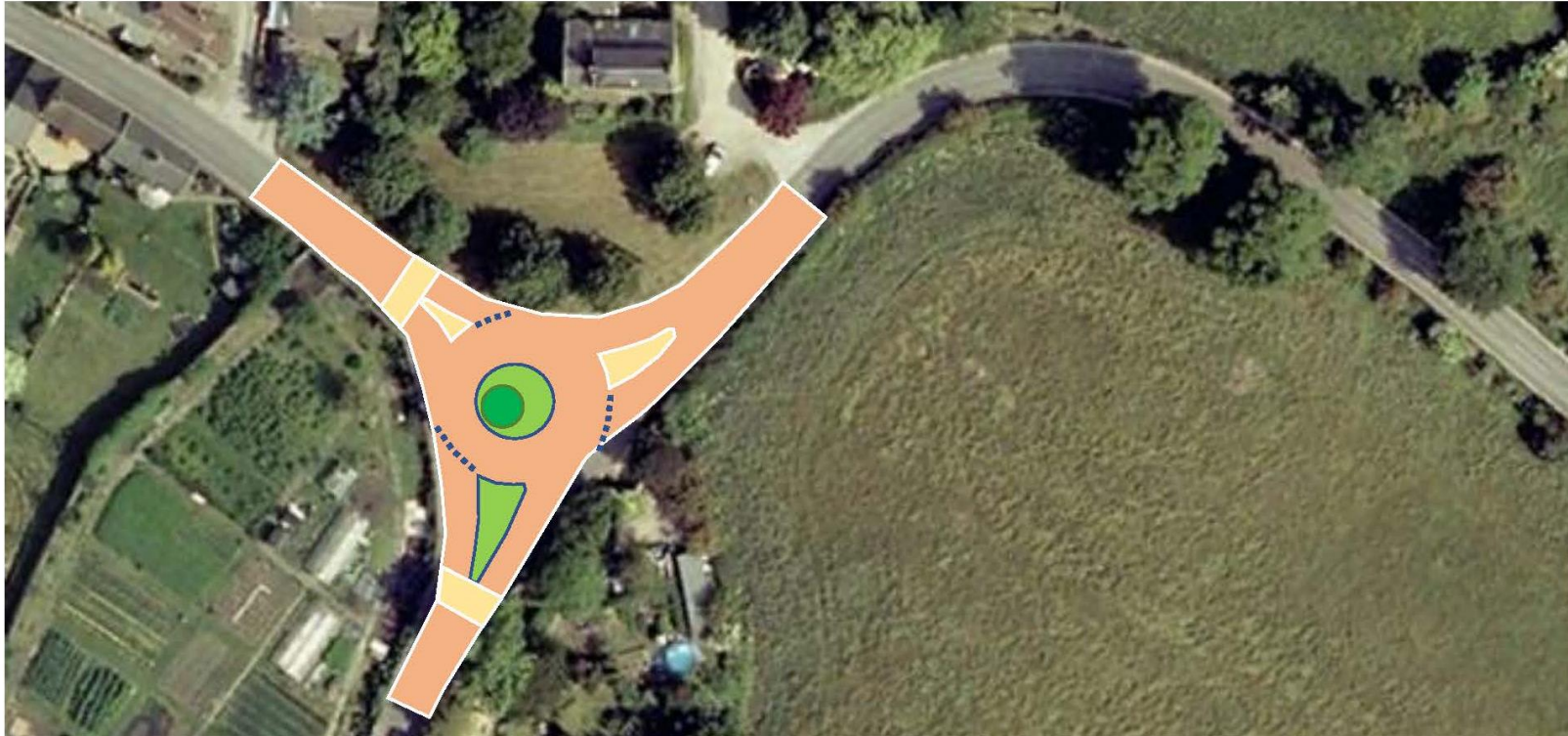
Introduce raised pedestrian crossing and mini-roundabout



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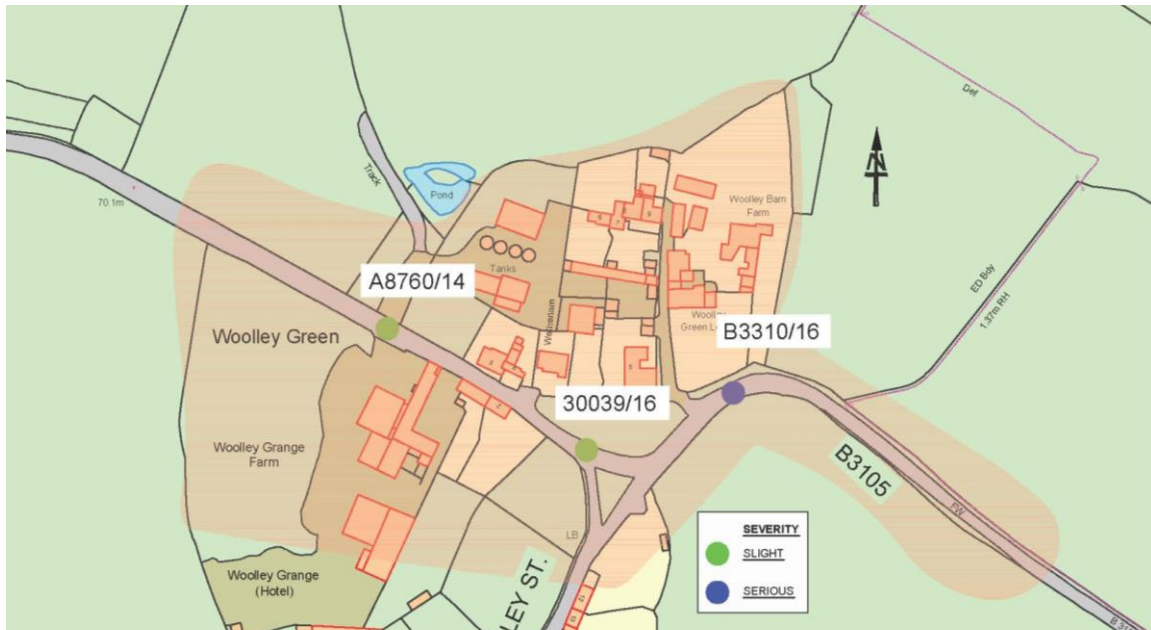
Option 1-C: High resistance surfacing around conventional roundabout

Introduce raised pedestrian crossing and refuge islands, central island might be capable of retaining existing tree.



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COLLISION DATA



Details of Personal Injury Accidents for Period - 01/01/2011 to 31/12/2016 (72) months

Selection:
Selected using Manual Selection

Notes:
Woolley Green

Police Ref.	Day	Location Description	Vehicles				Casualties		
			Veh No	Type	Manv	Dir	Class	Sex	Age
Road No.	Date								
Grid Ref.	Time								
	D/L								
	R.S.C								
	Weather								
	Speed								
	Account of Accident								

A8760/14 Wednesday 03/12/2014 1435hrs
B 3105 Daylight
E 383,694 Dry
N 161,720 Fine without high winds
 50 mph

V1 (JCB) TRAV SW PULLING OUT ONTO MAIN ROAD WITH FRONT BUCKET UP HIGH EXTENDED IN FRONT. V2 (LORRY) TRAV NW ON MAIN ROAD STRUCK NEARSIDE OF V1'S BUCKET CAUSING V1 TO OVERTURN. DEP

30039/16 Wednesday 06/04/2016 1555hrs
B 3105 Daylight
E 383,776 Dry
N 161,670 Fine without high winds
 50 mph

V3 (CAR) TRAV N HAS STARTED TO SLOWLY PULL OUT AT JCT DUE TO BLIND BEND. V1 (CAR) TRAV SE HAS SEEN V3 & BRAKED SHARPLY CAUSING V2 (VAN) TRAV SE BEHIND V1 TO COLLIDED WITH REAR OF V1. KB

B3310/16 Friday 16/12/2016 1516hrs
B 3105 Daylight
E 383,843 Dry
N 161,693 Fine without high winds
 50 mph

V1 (CAR) TRAV NW ON SHARP LH BEND. DVR OF V1 HAS SUFFERED A MEDICAL EPISODE CAUSING THEM TO PRESS ON ACCELERATOR INSTEAD OF BRAKE. V1 HAS COLLIDED WITH O/SIDE V2 (CAR) TRAV NE, CASUING V2 TO LEAVE C/WAY N/SIDE. V1 HAS CONTINUED & HIT V3 (CAR) TRAV NE
 .KB

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