

Table 1 A37 Options and Feasibility Study: Temple Cloud - 'Long List' Option Assessment

Option Ref:	Description	Opportunities and Issues	Recommendation
1	Reduction or removal of the footway on the western side of the A37 through the 'narrowing' to increase carriageway width.	<p>Opportunities</p> <ul style="list-style-type: none"> The existing footway through the narrowed section varies in width between 1.2 and 1.6 metres. Allowing for the retention of the minimum required clearance margin (450mm) would allow the carriageway running width to be increased by circa 0.7 to 1.1 metres. The present carriageway width in the 'narrowing' varies between 5.4 and 6.15 metres, so could be increased to a minimum of 6.2 metres throughout or a potential maximum in places of 7.25 metres. MfS Figure 7.1 shows that two-way passage of HGV's can just be achieved with a carriageway width of 5.5m, albeit whilst slow moving and assuming all the carriageway width can be effectively utilised. As noted later, the high hedge on the east side overhangs the highway, so making it is necessary for some HGV's to track away from the eastern carriageway edge to avoid snagging offside wing mirrors. <p>Issues</p> <ul style="list-style-type: none"> The existing footway is already sub-standard (<2.0m) so reducing it further would decrease pedestrian amenity and safety. Loss of the footway on the west side, which is the only one, would result in discontinuous provision along this part of the A37. Pedestrians would thus be forced to walk within a heavily trafficked carriageway with a significant HGV content. Significant loss of pedestrian amenity and safety for these vulnerable road users; and There are vehicular accesses to properties on the west side. Taking out the footway would in all cases severely restrict visibility for emerging drivers when measured at the normal distance of 2.4m (X-distance) back from the carriageway edge. This 	<p>DISMISS:</p> <p>This would have an unacceptable highway safety impact on pedestrians and residents, who would be forced to walk within a heavily trafficked carriageway. It would also severely restrict the visibility achievable at vehicle accesses on the west side.</p> <p>Note: MfS at this location would more than likely not be acceptable to the BANES highway team, as the A37 would be viewed as a key route and therefore DMRB would be applicable.</p>

		would be detrimental to highway safety, creating a higher risk of collision with northbound traffic on the A37 as drivers attempting egress would be forced to edge out in to an encroaching position on the carriageway without any prior visibility.	
2	Linked to Option 1, replacement of the footway on the western side of the A37 with other suitable north- south pedestrian routes for the village away from the A37, which would facilitate the removal of the existing footway on the A37	<p>Opportunities</p> <ul style="list-style-type: none"> As Option 1 in terms of potential carriageway width enhancement. <p>Issues</p> <ul style="list-style-type: none"> As with Option 1 and notwithstanding whether an alternative north-south route could be found, there would be a significant reduction in visibility for the affected vehicular accesses on the western side of the A37 to the detriment of highway safety; On the eastern side there is no pedestrian linkage between the new development (Brandown Close) and Gillets Hill Lane. Even if a link could be established, pedestrian access to/from properties on the east side to the north of those in Gillets Hill Lane would still need to route along this part of the A37. With no footway, they would be required to walk along the edge of a heavily trafficked carriageway. On the western side, Molly Close does run parallel with this part of the A37 However, it is a cul-de-sac at its northern end with no footpath connection back to the A37 or Fairview. Achieving this would involve creating a PROW across several private gardens. Even if possible with homeowner agreements, this would be a circuitous pedestrian route compared to the existing one via the western footway on the A37. As with the eastern side, properties on the west side with direct frontage access to the section of the A37 between Cameley Road and Temple Inn Lane would still require pedestrian access to/from this route. As such, removing the footway would create unacceptable safety risk. 	<p>DISMISS:</p> <p>As with Option 1 this would also severely restrict the visibility achievable at vehicle accesses on the west side. As such, it would be detrimental to highway safety.</p> <p>Furthermore, the residents of most properties fronting this section have no means of access to other pedestrian routes without first using this section of footway. As such, they would be exposed to a high risk of collision with traffic by being forced to walk within a 'live' carriageway.</p> <p>Alternative 'continuous' north-south pedestrian via Molly Close (West) and Gillets Hill Lane-Brandown Close (East) do not exist. Creating PROW would involve establishment of rights through several private gardens.</p>
3	More comprehensive widening including compulsory purchase of land to allow for	Opportunities	DISMISS:

	<p>road widening to take place whilst retaining the existing footway.</p>	<ul style="list-style-type: none"> This would remove the width restriction for HGVs through the narrow section and therefore improve the flow of vehicle movements. There could also be the opportunity to widen the existing sub-standard western footway, and or add a new footway along the eastern side. <p>Issues</p> <ul style="list-style-type: none"> Residential buildings on the western side are either built up against the highway boundary (Perrin House) or are within 2.8m of the highway boundary. As such, widening on the western side would require property demolition in some cases or encroach severely into restricted front curtilage to dwellings where set-back. Residential buildings on the eastern side are approximately 11.5m from the highway boundary, however there is a significant level difference between the carriageway and the ground levels of the gardens. This would result in the removal and replacement of the existing retaining wall (Note: Not listed according to BANES Interactive mapping). It would allow require regrading of private driveways to meet with a new kerb or channel line to the A37 shifted eastwards. 	<p>Widening either side with a loss off third party land is considered unacceptable and likely to face significant local opposition. Widening affecting the western side is particularly problematic due to short front gardens and/or buildings flanking the back edge of existing footway.</p> <p>Widening on the eastern side would pose a complex construction issue on how to build a new retaining wall whilst ensuring access to the residential units. The land rises from the A37 this side, so alterations to driveways would be required to maintain a suitable gradient and 'tie-in' to a widened carriageway on the east side.</p>
4	<p>Introducing a system of 'shuttle working' using traffic signals to allow larger vehicles to pass through unimpeded without 'passage conflict.</p>	<p>Opportunities: Refer to Drawings 674726CH.CI.59.01-01 and 674726CH.CI.59.01-02</p> <ul style="list-style-type: none"> This would manage all vehicle movement through the narrow section of the A37. It would remove HGV driver uncertainty with whether to proceed or yield, and the 'forced' slow moving passage which results, leading to 'shock-wave' queuing in both directions from the conflict point. At the southern end of the narrowing the only feasible location for installing signals is just north of the Cameley Road junction, but just south of the one-way link to Cameley Road from the A37. This will require a kerb build-out to ensure the primary signal is not obscured by a bus waiting in the stop in this location. 	<p>SHORT LIST FOR TESTING:</p> <p>Initial LinSIG modelling using the Nov-2017 data shows that a controlled section of 195m would provide insufficient capacity to cater for the existing 'peak' weekday flows. However, a shorter section of 117m could 'just' operate at practical capacity (<90% DoS). Results suggest that a cycle time of up to 180 seconds would be needed in the 7:00-8:00 am period, and circa 120 seconds in the PM peak hour. Summary results show:</p> <ul style="list-style-type: none"> 7-8 am: Mean Maximum Queues (MMQ) of 42 and 29pcu on the A37 northbound and southbound A37 approaches

		<ul style="list-style-type: none"> • Two potential locations exist for installing the signals for the northern end of the shuttle working section. However, both would require the acquisition or use by agreement of third-party land to house equipment in driveway bell-mouth areas. • Potential to widen the sub-standard footway through the shuttle worked section. <p>Issues</p> <ul style="list-style-type: none"> • Traffic data obtained from the ANPR survey (B&NES) undertaken in the narrow section in Nov-2017 shows that the 'peak' two-way flows on a weekday occur in the 7:00-8:00 am and 5:00-6:00 pm hours. The 'two-way' flows in each case were 1,200 and 1.220 vehicles/hour, suggesting that the present HGV passage conflicts create a 'ceiling' capacity on the achievable flow, Shuttle working will control the flow of 'all' traffic through the narrowing, one direction at a time. With the present arrangement two light vehicles can pass with ease, also a car and HGV on most occasions. This could result in lengthy and significant queues in both directions especially during peak hours. As such delays and queuing could increase, albeit not within the controlled section • The drawings show that, dependent on the choice of the northern stop-line/signal position, the effective length of the controlled section between stop-lines would be either 195m or 117m. TAL 1/06 Part 4 shows the inter-green times required for different distances to the 'conflict' point. In this case of the last vehicle clearing the stop-line at 'end of green', the resultant clearance time would need to safely allow the driver to clear the 'conflict' point just in front of the opposing stop-line. Using TAL 1/06 gives required 'maximum' inter-green or 'lost' times of 19 or 28 seconds between the opposing green phases. As such, there will be significant periods when no traffic is moving in either direction. • The length of the 'shuttle' working section in either case will have several private driveways accesses within it. It would not practical or desirable to signal these independently, so emerging drivers from 	<p>respectively. Associated 'mean' delays of 61 and 86 seconds; and</p> <ul style="list-style-type: none"> • 5-6 pm: Mean Maximum Queues (MMQ) of 21 and 24pcu on the A37 northbound and southbound A37 approaches respectively. Associated 'mean' delays of 69 and 55 seconds. <p>The benefit of managing the HGV traffic through the narrow section will need to be balanced against the disbenefit of needing to 'single work' all traffic through this part of the A37. Notable delay and queuing during the peak hours is highly likely, as demonstrated by the LinSIg results, albeit outside of the controlled section where the existing air quality exceedance is highest.</p> <p>Could be trialled using temporary signals with VA settings using MVD detection.</p>
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5	<p>The use of Vehicle Activated Signs (VAS) further out on the approach to the village to warn approaching HGV drivers that another HGV is currently in the narrowing</p> <p>Notes:</p> <p>It is uncertain whether a VAS would be the appropriate type of sign technology, as a research of VAS sign types on the web show them all related to speed. External input to the signs would require detection in the narrowing capable of 'recognising' an HGV, and communications links with the signs. VAS signs rely on radar detection of approaching vehicles, so a 'speed related' input trigger. This is usually a regulatory or warning sign display in accordance with TSRGD.</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • This would 'warn' HGV drivers of another HGV already in the 'narrowing'. It 'could' help to reduce HGV driver uncertainty with whether to proceed or yield, <p>Issues</p> <ul style="list-style-type: none"> • Reliant on bespoke (not existing) technology capable of detecting/recognising an HGV in the 'narrowing' and outputting a warning message to external signs. These would need to be VMS and not VAS signs. • Reliant on HGV drivers following VMS instructions. Legible for international drivers. • Locating adequate highway land (or acquiring third party land) to house VMS signs which is close enough to be effective. If the signs are too far away they are likely to be ignored. • This measure is unable to control the flow of HGV traffic in any given direction. 	<p>DISMISS:</p> <p>The sign message would be for HGV driver information only and is not a 'solution'. It presumes that HGV drivers are aware of the 'narrowing' in Temple Cloud and the reason for the warning to stop or proceed with caution.</p> <p>HGV drivers approaching the narrowing from either direction already have a clear line of sight along the restricted section, so the opportunity to gauge 'passage' conditions and whether to enter/yield on reaching the Cameley Road junction (NB) or near the driveway access to 'Lark Rise' (SB). Installing signs to forewarn HGV drivers is therefore considered to have little impact as this will not remove the passage conflict for HGV's</p>
6	<p>The introduction of priority workings</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • As with signalled 'shuttle' working, this would assist in managing all vehicle movement through the 	<p>DISMISS:</p> <p>If 'one way' working is to be implemented this will need to be actively managed given</p>

		<p>narrow section of the A37. However, it would not totally remove HGV driver uncertainty with whether to proceed or yield.</p> <p>Issues</p> <ul style="list-style-type: none"> As noted above in discussing signalled 'shuttle control', the 'priority worked' section would be quite long. As such, traffic in the non-priority 'give way' direction could have considerable difficulty in establishing a 'right of way'. This is because under heavy traffic conditions there is unlikely to be a big enough 'gap' in the controlling direction flow to allow non-priority vehicles to re-establish entry. In other words, a driver waiting to allow a 'priority' vehicle to clear the narrowing is generally likely to find another following vehicle has already entering the controlled section. Further to the above, this is likely to create driver frustration in the 'non-priority' direction, with this leading to highway safety issues with 'forced' entry or 'racing the gap'. An existing location with a long 'priority' section is the 'Sunnyside' pinch-point on the A362 between Farrington Gurney and Midsomer Norton, where predominant queuing in the non-priority westbound direction can be observed as well as the driver behaviours mentioned. Two-way traffic levels here are less than the A37, so congestion and safety issues here are likely to be magnified. As noted with signalled 'shuttle' working, 'priority' working will control the flow of 'all' traffic through the narrowing, one direction at a time. With the present arrangement two light vehicles can pass with ease, also a car and HGV on most occasions. In addition, there is less ability to manage or balance the directional capacities, with non-priority traffic likely to be significantly disadvantaged under 'peak' flow conditions. This could result in lengthy and significant queuing in this direction and an overall increase in traffic delays. 	<p>the length of the controlled section. Existing problems with a long 'narrowing' under priority control can be readily observed on the A362 at the 'Sunnyside' pinch-point. This include disproportionate queuing on the non-priority approach and road safety issues associated with these drivers attempting to 'race the gap' or force a right-of-way. This occurs under less heavy flow conditions than the A37.</p>
7	The implementation of a Clean Air Zone for this section of the A37	<p>Opportunities</p> <ul style="list-style-type: none"> The introduction of a Class C CAZ as proposed in Bath would speed-up/encourage the use of cleaner 	<p>DISMISS:</p> <p>Whilst a CAZ 'Type C' charging HGVs would specifically target the vehicle types creating</p>

		<p>HGV fleet on the A37 route through Temple Cloud. A charge could be imposed on all HGV's under Euro Class 6 (Diesel). Unlike a weight limit or width restriction (see below) it would impose no regulatory restriction on lorries on a certain size or weight.</p> <p>Issues</p> <ul style="list-style-type: none"> • ANPR data collected at the narrow section in Nov-2017 recorded a mean daily weekday two-way flow of some 336 articulated HGV and 553 rigid HGV, which equates to only 2.27% and 3.85% of the total vehicle flow. Euro-class analysis showed that 64.73% of all articulated HGV were Euro 6, whilst 43,32% of all rigid HGV were Euro 6. There would thus be a significant volume of non-compliant HGV fleet affected by a CAZ Type C (119 Artic/315 Rigid). It is assumed LCV would be excluded. • Undesirable HGV diversion impacts on surrounding local roads (A39 through Hallatrow/High Littleton/Farmborough) or wider highway network (A362 and A367). • Need for 'strategic' advance signing to warn HGV drivers of a local 'charging' CAZ covering Temple Cloud. 	<p>passage issues through the 'narrowing' and associated queuing/delay, a significant amount of this fleet (as surveyed, Nov-17) is Euro Class 6 compliant and so would be unaffected by the CAZ. As such, a significant amount of passage conflict associated with HGV's would remain.</p> <p>The introduction of a local CAZ on what is a strategic HGV route is likely to create undesirable diversionary issues affecting local roads which are less suitable. Whilst non-compliant HGV drivers will have the option of paying the charge, many will choose not to, and seek out local diversionary routes. The A39 between Whitecross Gate and Marksbury, and the A368 between Marksbury and Chelwood crossroads are examples, creating potential for additional HGV traffic through Hallatrow, High Littleton, Farmborough, Marksbury and Chelwood. Notwithstanding the benefits that might accrue in Temple Cloud, this measure is likely to attract significant concern and objections from residents in these surrounding settlements.</p> <p>Linked to the above, the absence of suitable alternative HGV routes to the A37 for north-south movements between the Yeovil area (A303(T)) and Bristol is a strategic network issue. As such, a 'point' restriction at Temple Cloud could have regional impacts, to the point that many operators may simply pay the charge when faced with the additional operating costs of significant diversion.</p>
8	Implement a width restriction for larger vehicles. TSRGD signing to diagram 629A.	<p>Opportunities</p> <ul style="list-style-type: none"> • Signing to diagram 629A could be used to give effect to an TRO prohibiting all vehicles exceeding the indicated width from being driven along a road. The order may be imposed to prevent entry to roads physically incapable of accommodating larger vehicles or to protect the environment by preventing unnecessary intrusion by large vehicles. The latter case would apply in the case of Temple Cloud as 	<p>DISMISS:</p> <p>NOTE: To be added to the detailed VISSIM /Air Quality modelling 'short-list' testing at the request of the Local Member. However, HGV displacement impact is considered excess/undesirable.</p> <p>The benefit of removing most HGV traffic from Temple Cloud would be outweighed by</p>

		<p>the narrowed section is not physically incapable of accommodating the largest articulated HGVs</p> <p>Issues</p> <ul style="list-style-type: none"> • A physical feature might need to be installed to enforce it. However, provision might be needed to permit buses to use the A37 through Temple Cloud and to permit 'required' HGV access. Where buses are to be excluded from an environmental width limit it would be preferable to impose a lorry ban with signs to diagram 622.1A. • This would require an alternative route for HGV's to 'bypass' Temple Cloud, noting the A37 is a key route between the A303(T)/A39 and Bristol. • Enforcement. • This would in effect be a regulatory ban on most HGVs routing through Temple Cloud. As such, consideration would need to be given to suitable alternative routes and advance signing to what would be a 'point restriction' on the A37 for HGV traffic. Advance signing needed as a minimum at the A37/A39 junction and the A37/A368 Chelwood Roundabout could simply encourage undesirable HGV re-routing through Hallatrow. High Littleton, Farmborough and Chelwood as a local 'bypass'. 	<p>the potential for adverse impacts on other less suitable roads than the A37 for carrying HGV traffic. The A37 is a key primary route connection between the A303(T)/A39 to the south and Bristol to the north. A more appropriate control may be a weight restriction targeting some of the largest HGVs, but again this would need to be signed well in advance and likely lead to objections.</p> <p>See also reasons for dismissal of a local CAZ, noting that a regulatory TRO prohibiting all HGVs above a certain width would have a higher impact.</p>
9	<p>Undertake significant 'cutting back' of the high hedge/vegetation on the eastern side of the narrow section between 'The Laurels' and No 1 Gillets Hill Lane to allow more effective use of the existing carriageway by HGVs. This extends in front of the boundary stone wall denoting the edge of highway, requiring some southbound HGVs to move out to a partial encroaching position within the opposing carriageway to avoid wing mirror strike and potential damage.</p>	<p>Opportunities: Refer to Drawings 674726CH.Cl.59.01-03 and 674726CH.Cl.59.01-04</p> <ul style="list-style-type: none"> • This would increase the available carriageway width for all vehicle types. • Quick and requiring minimal financial investment to implement. • Could be viewed as the first stage in long term strategy to find an acceptable solution. If this is implemented and during the monitoring period it is found to be successful, then the vegetation must be maintained according. If, however it is not 	<p>SHORT LIST FOR TESTING:</p> <p>BANES have the authority under the Highways Act 1980(?) to intervene if there is a safety concern associated with the encroaching vegetation.</p> <p>From BANES Website</p> <p>https://www.bathnes.gov.uk/services/streets-and-highway-maintenance/highways/overhanging-vegetation</p>

		<p>successful, then the next solution can be implemented.</p> <ul style="list-style-type: none"> • Short term temporary TM using shuttle signals would be required implement the vegetation clearance. This would be an opportunity to gather data and journey time information to ascertain the resilience of the local highway network on the effects of a permanent shuttle working arrangement if implemented. <p>Issues</p> <ul style="list-style-type: none"> • Disgruntled land owners with respect to the loss of screening to the A37. 	<p>Hedges and trees that grow on the boundary of the highway or on adjacent land but overhang the highway are generally the responsibility of the adjoining property or land owner. Bath & North East Somerset Council will intervene if there is a safety concern associated with the encroaching vegetation, for example, if it is forcing footway users into the road in order to pass by. This includes vegetation that causes an obstruction on adopted footways and highways or vegetation that reduces visibility on junctions, entrances and corners.</p> <p>In the event that the landowner does not remove obstructions due to overhanging trees or protruding hedges/plants after enforcement, the Authority may remedy the problem and recharge the landowner.</p>
10	Construction of a bypass to Temple Cloud	<p>Opportunities:</p> <ul style="list-style-type: none"> • This would enable all 'through' routing of HGVs to be removed from Temple Cloud, as well as a significant proportion of the light vehicle traffic. Air quality would be significantly improved along the part of the A37 through Temple Cloud by removal of most traffic. <p>Issues</p> <ul style="list-style-type: none"> • This would be a major scheme with no realistic prospect of delivery within the timescale set for achieving local air quality improvements through the AQAP • High cost of infrastructure, noting the original 'safe-guarded' line included a bypass to the west of both Temple Cloud and Clutton. • The original 'safe-guarding' (Avon CC) of a bypass route to the west of Temple Cloud and Clutton was removed in the formulation and adoption of the current B&NES Placemaking Plan. This was prompted by planning blight issues and the reasonable likelihood of delivery within the Plan 	<p>DISMISS:</p> <p>Whilst probably the most effective measure for significantly reducing emissions within Temple Cloud, the lead-time in delivering a bypass would be too long. Furthermore, the long-standing 'safeguarded' line for a bypass to Temple Cloud-Clutton was removed in the adopted B&NES Placemaking Plan (PMP). This was due to concerns about the realistic prospect of delivery with the Plan period, coupled with planning blight issues linked to the long-standing safe-guarding of the alignment to the west of Temple Cloud.</p>

		<p>period. It was not due to any acceptance that traffic related issues in either village leading to the original bypass aspiration had 'gone away'.</p>	
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