

Way		and therefore increase capacity
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## Highway infrastructure upgraded in the 2014 DM network (C Packages):

Location	Junction Type	Improvement
Fairlands Way / St Georges Way	RB	Segregated left turn from eastern approach Widened approach from south to 3 lanes Increased circulating sat flow
Fairlands Way / Lytton Way	RB	Increased northern and southern approach to 3 lanes Widen circulatory carriageway to 3 lanes Widen approaches to the roundabout
Fairlands Way / Gunnels Wood Road	RB	Segregated Northbound lane for through movements
Broadhall Way / Monkswood Way	RB	Increased eastern approach to 3 lanes Widen approaches and circulatory carriageway
London Rd / Monkswood Way	RB	Widened approach from south / Increased flare length
Fairlands Way / Grace Way	RB	Changed to Priority junction with 2 lanes westbound from Lonsdale Road with new right turn only lane in to Grace Way
Six Hills Way / St Georges Way	RB	Widen eastern approach / increase flare to 2 lanes and increase the length Widen all approaches
Hitchin Rd / Coreys Mill Lane	RB	Widen approach from north and increase number lanes for southbound movements to 3 lanes
Six Hills Way / Lytton Way	RB	Widen approaches to the junction and circulatory capacity to lanes Lytton Way and Six Hills Way approaches increase to 3 lanes
Six Hills Way / Gunnels Wood Road	RB	Increase lanes from westbound approach to 2 and widen approach Increase northbound Gunnels Wood Road approach to 2 lanes and widen at slip road north of roundabout
A1(M) J7 SB OnSlip		Increase the length and increase to two lanes onto A1(M)
A1(M) J6 – 7 NB / SB		Increase to 3 lanes
A1(M) J9 – 8 SB		Remove lane definitions so 3 lanes straight on / one lane off slip
GSK Site (Broadhall Way / GWR)	RB	Converted to signalised Priority junctions according to preferred drawings for the GSK application
Hitchin Rd / Sainsburys	Signals	Ban Right Turn into and out of Sainsburys (discussed in HM31)

## Highway Infrastructure upgraded in the 2014 DS network (D Packages):

Location	Junction Type	Improvement
London Rd / Tesco	Priority	Increased number of lanes on northbound approach
Fairlands Way / Lonsdale Rd	RB	Changed to a priority junction Increased number of lanes from the westbound approach
Clovelly Way / Redcar Drive	RB	Widened southbound approach
London Rd / Hertford Rd	RB	Widened roundabout circulating capacity

		Widened and lengthen flare for Southern approach to 2 lanes
London Rd / Monkswood Rd	RB	Widened southern approach
Gunnels Wood Road / Clovelly Way	RB	Widened western approach and increased flare to 2 lanes Widened northern approach
Six Hills Way / Valley Way	RB	Grade the RB Widened E approach and flare to 2 lanes
Six Hills Way / Gunnels Wood Road	Priority	Increased northbound direction to 2 lanes
Stevenage Rd / Chantry Lane	RB	Widened southeast approach and increased to 2 lanes Increased roundabout circulatory capacity
Fairlands Way / St Georges Way	RB	Segregated left turn from southern approach
Broadhall Way / Monkswood Way	RB	Segregated left turn from N and W approaches Widened western approach
Six Hills Way / St Georges Way	RB	Widened southern approach
Fairlands Way / Lytton Way	RB	Segregated left turn from western approach Through route for northbound direction (possibly an underpass)
Broadhall Way/Broadwater Crescent	RB	Widened western approach

**Junctions upgraded in the 2021 DM network (E Packages):**(Schemes in **Bold** are the same changes made to 2014 DS)

Location	Junction Type	Improvement
<b>London Rd / Tesco</b>	<b>Priority</b>	<b>Increased number of lanes northbound</b>
<b>Fairlands Way / Lonsdale Rd</b>	<b>RB</b>	<b>Changed to a priority junction Increased number of lanes westbound</b>
<b>Clovelly Way / Redcar Drive</b>	<b>RB</b>	<b>Widened northern approach</b>
<b>London Rd / Hertford Rd</b>	<b>RB</b>	<b>Widened roundabout circulating capacity Widened and increased length of flare for southern approach to 2 lanes</b>
<b>Gunnels Wood Road / Clovelly Way</b>	<b>RB</b>	<b>Widened western approach and increased flare to 2 lanes Widened northern approach</b>
<b>Stevenage Rd / Chantry Lane</b>	<b>RB</b>	<b>Widened southeast approach and increased to 2 lanes Increased roundabout circulatory capacity</b>
<b>Fairlands Way / St Georges Way</b>	<b>RB</b>	<b>Segregated left turn from southern approach</b>
<b>Broadhall Way / Monkswood Way</b>	<b>RB</b>	<b>Segregated left turn from northern and western approaches Widened western approach</b>
<b>Six Hills Way / St Georges Way</b>	<b>RB</b>	<b>Widened S approach</b>
<b>Fairlands Way / Lytton Way</b>	<b>RB</b>	<b>Segregated left turn from western approach Through route for northbound direction (possibly an underpass)</b>
<b>Six Hills Way / Lytton</b>	<b>RB</b>	<b>Widened eastern and southern approaches</b>

Fairlands Way / Gunnels Wood Road	RB	Northern approach widened
<b>London Rd / Kings Rd</b>	<b>RB</b>	<b>Northern approach widened</b>
Hitchin Rd / Coreys Mill Lane	RB	Converted to a signalised junction and signals optimised for 60s cycle Eastern approach reduced to 1 lane southbound direction allowed an unopposed through movement
<b>London Rd / Monkswood Rd</b>	<b>RB</b>	<b>Widened southern approach</b>
Hitchin Rd / Martins Way N approach	RB	N approach widened to 3 lanes Optimised signals
Hitchin Rd / Martins Way E Approach	RB	Increased roundabout circulatory capacity to 3 lanes
Six Hills Way / Valley Way	RB	Upgrade existing mini-roundabout to small roundabout Widened eastern approach and flare to 2 lanes
Lytton Way / Trinity Rd	RB	Increased roundabout circulatory capacity Southern approach increased from 2 to 3 lanes and widened
GSK site	Priority	Widened lanes at site
		Changed lane definitions on Southern approach (2 lanes left / 1 right)

**Junctions upgraded in the 2021 DS network (F Packages):**

Location	Junction Type	Improvement
A1(M) J7 Minor Rd approach	Priority	Western approach increased to 2 lanes and widened
A1(M) J8 SB Offslip	Priority	Northern approach increased to 3 lanes Signals Optimised
A1(M) J8 Hitchin Rd NB approach	Priority	Signals Optimised Eastern approach increased number of lanes to 3
A1(M) J8 NB Offslip	Priority	Signals Optimised Southern approach lanes increased to 3
		Segregated Left Filter with 2 lanes at signal junction
A1(M) J8 A602 EB approach	Priority	Signals Optimised
Martins Way / Grace Way	RB	Southern approach lane definitions altered (achieve through clearer road markings) Western approach widened and lane definitions altered
Fairlands Way / Webb Rise	RB	Upgraded roundabout from a mini-roundabout to a small roundabout North and south approach widened
Fairlands Way / Bedwell Crescent	RB	Northeast approach widened
Six Hills Way / Rockingham Way	RB	East and West approach widened
Six Hills Way / Homestead Moat	RB	Eastern approach widened to two lanes Upgraded from a mini-roundabout to a small roundabout
Six Hills Way / Shephall Way	RB	Eastern and western approach widened
Broadhall Way / Gresley Way	RB	All approaches widened

Broadhall Way / Broadwater Crescent	RB	Western approach increased to 3 lanes and widened
Six Hills Way / Valley Way	RB	Western approach increased to 2 lanes and widened
Fairlands Way / Chells Way	RB	Upgraded mini-roundabout to a small roundabout
Broadhall Way / Monkswood Way	RB	Northern approach widened and increased to 3 lanes with lane definitions altered Western approach increased to 3 lanes and widened Southern approach widened
Fairlands Way / St Georges Way Bypass	Priority	Eastbound direction from the roundabout widened to 2 lanes (achieve through lane markings)
Six Hills Way / St Georges Way	RB	Northern approach increased to 3 lanes Northern and western approach lane definitions altered
Graveley Rd / North Rd / Link with New Road Network North	RB	Eastern and western approach widened
Six Hills Way / St Georges Way	RB	Northern and Western approach lane definitions altered
GWR / Clovelly Way	RB	Western and Southern approach widened
London Rd / Monkswood Way	RB	Northern and Eastern approach widened
Lytton Way / James Way	Priority	Southbound approach increased to 2 lanes straight on
Hitchin Rd / Martins Way E Approach	Priority	Both approaches widened to 3 lanes
Hitchin Rd / Martins Way E Off Road	Priority	Circulating lanes increased to 3
Lytton Way / Hitchin Rd	Priority	Southbound direction straight on movement increased to 2 lanes
GSK Site		Signals Optimised Lanes Definitions altered south from Gunnels Wood Road to Broadhall Way West to 3 lanes right Lanes north to Gunnels Wood Road increased to 2 lanes
Gyratory		Two way signalised gyratory option implemented with minor junction modifications (See HM21)
Inclusion of Road Network to North of Stevenage		New proposed road network around north of Stevenage (SNAP) included
A1(M) Widening junction 7 - 8		Widening of A1(M) in both direction to 3 lanes (See HM17)

## Highway Infrastructure upgraded in the 2031 DM network (G Packages):

(Nodes in **Bold** are the same changes made to 2021 DS)

Location	Junction Type	Improvement
<b>Broadhall Way / Broadwater Crescent</b>	<b>RB</b>	<b>On the west arm of the junction, increase the number of approach lanes from 2 to 3.</b>
London Rd / Hertford Rd	RB	From the south arm of the junction introduce a filter lane to the northern junction arm so that traffic travelling from the south to the north arm does not enter the roundabout.
Six Hills Way / Lytton Way	RB	Signalise the junction to allow the large demand movement from the south to get onto the

		roundabout.
Six Hills Way / St Georges Way	RB	Introduce left filter lane from southern approach
<b>Broadhall Way / Monkswood Way</b>	<b>RB</b>	<b>Increase the Western junction arm from a 2 to 3 lane approach. Signalisation of the junction should also be a candidate for investigation.</b>
<b>GSK Site (Broadhall Way / GWR)</b>	<b>RB</b>	<b>Signals should be optimised.</b>
Monkswood Way/College/Asda	SJ	Greater signal priority for traffic exiting the west arm within the peak hours.
Martins Way/ Grace Way	RB	Widen the western arm from 2 to 3 lanes. Alter the lane definitions so that all lanes from the western arm can go straight from all 3 lanes.
<b>A1(M) Junction 8</b>	<b>RB</b>	<b>Undertake investigation to optimise signals to junction flows within peak hours.</b>
Broadhall Way / Gresley Way	RB	Widen the lane widths of all approaches. Introduce a pocket for north and south approaches therefore increasing the capacity of the roundabout.
<b>A1(M) Widening junction 7 - 8</b>		<b>Widening of A1(M) in both direction to 3 lanes (See HM17)</b>

**Highway Infrastructure upgraded in the 2031 DS network (H Packages):**

Location	Junction Type	Improvement
Hitchin Road / Martins Way (Martins Way approach)	Priority	Widen Eastern approach to 3 lanes
Lytton Way / Trinity Road	RB	Introduce a filter lane from the Eastern approach for left turn so that traffic does not enter roundabout Signalise southern approach in PM peak to allow more demand for Northbound traffic
Fairlands Way / Lytton Way	RB	Signalise Northern approach in AM peak to allow more southbound demand
Six Hills Way / Lytton Way	RB	Introduce a left filter lane from northwest approach so traffic does not enter roundabout. Northeast exit will need to be widened to allow for merge
Six Hills Way / St Georges Way	RB	Introduce left filter lane from North approach Signalise northern approach to allow more demand southbound
Lytton Way / James Way	SJ	Optimise signals Offset right turn from Southern arm in PM peak to allow more demand
GWR / Bessemer Drive	Priority	Widen Bessemer Drive to 2 lanes onto GWR Signalise junction in NB direction Prioritise Bessemer Drive in PM peak
GWR / Clovelly Way	RB	Widen width of west approach and length flare Introduce left filter lane from South approach
Broadhall Way / Broadwater Crescent	RB	Introduce part time signals on West approach. Prioritise West approach eastbound traffic
New Road Network West of Stevenage		Widen width of Bessemer Drive and Meadway roads linking into SNAP development

**Benefits:**

- The network continues to operate in a satisfactory state
- Development can be delivered

**Risks:**

- Detailed design assessments have not been carried out for each of the scheme so some may not be deliverable.
- It is difficult to make an assessment of the cost of these improvements without detailed designs being carried.
- An appropriate contributions strategy will need to be defined to ensure that this can be delivered.

**Conclusions:**

As can be seen there are a significant number of improvements that need to be made. It is not clear at this stage what final future year development assumptions may be. There is a requirement to reconcile the requirement for these improvements against the levels of development that have been proposed.

**Scheme:**

Introduce variable speed limits

**Scheme Reference:**

HM12

**Scheme Status:**

This scheme is not included in the UTP

**Purpose:**

This scheme was suggested as part of the consultation. We have undertaken some research to determine how applicable this would be in an urban environment to try and address congestion problems.

**Details:**

Variable speed limits are more commonly used on the motorway network as part of a programme of 'Managed Motorways' around England and Wales. They can be effective on motorways as regularly signage and a controlled access and egress system to the network allow users to be continually informed of the relevant speed at that time. However drivers using the motorway network tend to have very different behaviour to those navigating a local road network. A people travel through a urban network they chose the route that they consider most appropriate, traversing a number of road links which mean that the speed is constantly changing on the routes they use. With this being the case drivers tend to drive at speeds which they consider are relevant to the environment they are driving in. Physical interventions, such a road humps or chicanes can reduce speed, but would not be considered variable and cannot be turned on or off. Varying speed limits on a particular route that someone uses would only confuse drivers and would most likely not be adhered to by drivers.

To vary the speed limit on roads would require the implementation of Variable Message signs to be installed which could be updated constantly with the relevant speed for that particular time, This would be a very costly exercise and would require control centre to adjust the signs to try and maximise the capacity of the route.

**Benefits:**

- Potential small increase in capacity

**Risks:**

- Would confuse drivers by constantly adjusting speed limits
- Cost of implement system of variable message signs would be prohibitively expensive
- Adjustments to speeds on local networks has no evidential basis that it works

**Conclusion:**

When this scheme was assessed in the scheme assessment framework it only scored 1 point when scored against the LTP indicators. This therefore means it is going to be difficult to justify as it is not addressing the transport objectives of the County. Therefore given the fact that this scheme may not deliver benefits and does not contribute to transport objectives it is not being considered within the UTP.

**Scheme:**

Alter signs to discourage through traffic and work with satellite navigation companies

**Scheme Reference:**

HM14

**Scheme Status:**

This scheme is not included in the UTP

**Purpose:**

Respondents to consultation indicated that the highway network within the centre of Stevenage contained a large number of through trips. A solution, suggested by respondents, is to have additional signage on the outskirts of Stevenage, directing through traffic around Stevenage, therefore avoiding the central areas of the road network. In addition, a partnership approach could be adopted with satellite navigation companies to route through trips around Stevenage rather than through it.

**Details:**

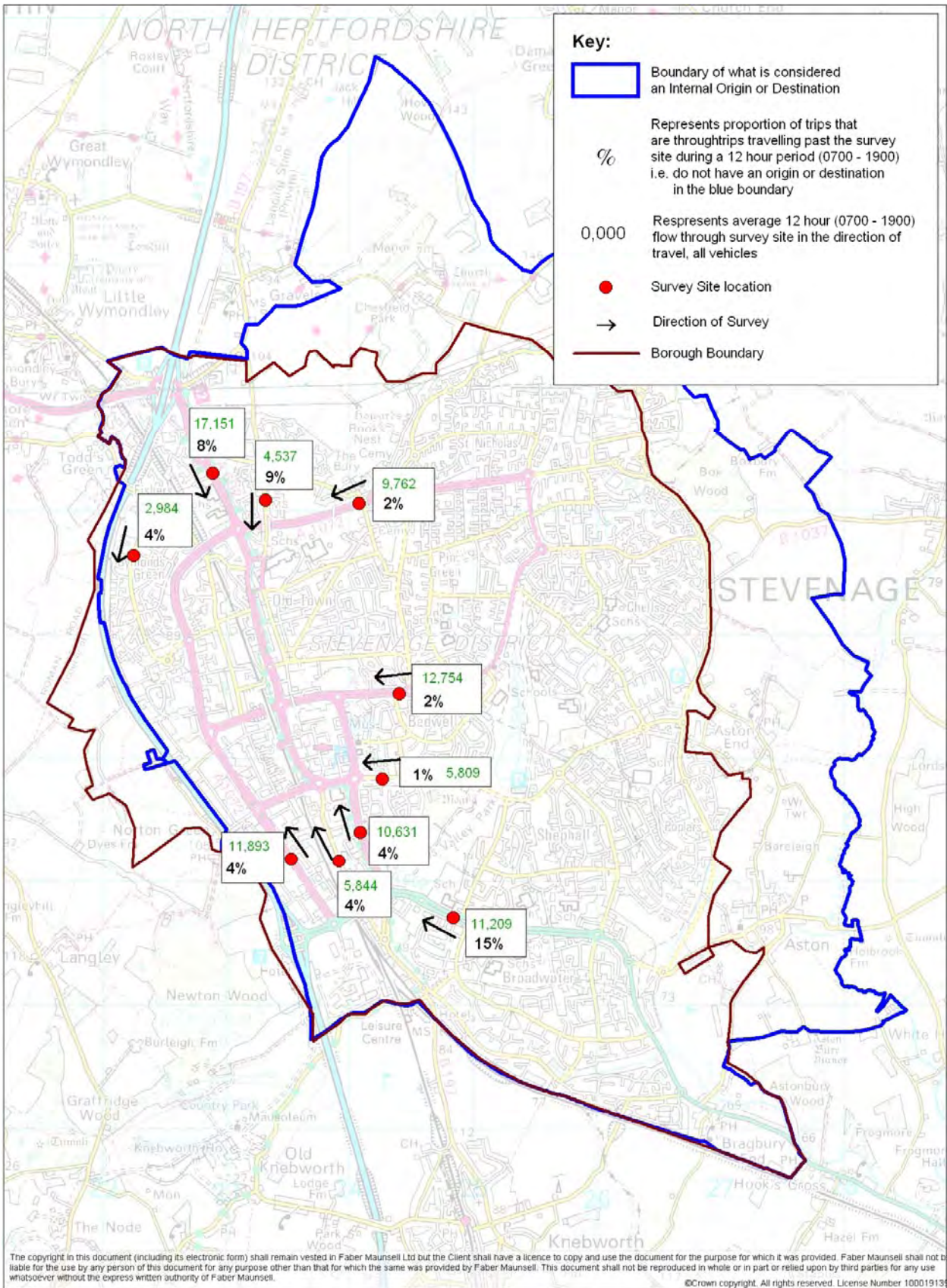
This scheme would require signage placed on the outskirts of Stevenage showing signs to key through traffic destinations, and routing traffic around the boundary of Stevenage rather than through it. Investigation should be carried out to evaluate the locations to which the existing through traffic trips are travelling to. These locations could then be placed on signs on the outskirts of the network directing travellers to use the route around the centre of Stevenage rather than through it.

This scheme would also require a partnership approach being adopted with the companies who produce satellite navigation devices. By entering into discussions with these companies it may be possible to request that the satellite navigation systems route through trips around Stevenage rather than through it.

As part of the UTP, road side interviews were carried out. As part of this interview, respondents were asked to name their origin and destination. As such, it was possible to work out the proportion of through trips at each location.



Diagram showing the proportion of through trips for each road side interview location.



Results of this analysis showed that at the majority of sites surveyed the proportion of through trips was less than 5%.

**Benefits:**

- Reduced congestion within the centre of Stevenage.

**Risks:**

- Signs have little impact;
- Satellite navigation companies refuse to avoid Stevenage town centre roads in generating routes for through traffic.

**Conclusion:**

Due to the fact that traffic from through trips forms a low proportion of trips on the network in Stevenage, it is unlikely that this scheme would have a significant impact on lowering congestion levels. However, it is important that HCC monitor the number of through trips on the network in future, and if it becomes more of a significant issue measures should be put in place to ameliorate the situation. It is not therefore proposed to bring this scheme forward through the UTP.

**Scheme:**

Introduce peak time traffic lights at town centre roundabouts

**Scheme Reference:**

HM15

**Scheme Status:**

This scheme is not included in the UTP

**Purpose:**

There are already part time signals in place at 2 junctions in Stevenage, namely A1(M) junction 8 and the junction of Hitchin Road / Martins Way. As part of HM8 we have investigated how junction capacities could be improved within Stevenage to maximise their throughput. The issues of signal timings and their introduction has been reviewed as part of this and the requirement in each of the model years and model scenarios have been defined.

**Details:**

Investigated as part of HM8

**Benefits:**

- Increase throughput of junctions
- Better control of traffic flows around the town

**Risks:**

- Would need to be controlled and monitored in some way to ensure efficiency
- Implementing a full signal control system around the town would be very expensive to implement.

**Conclusions:**

This scheme will be investigated as part of HM8 and as such is not proposed to be brought forward through the UTP.

**Scheme:**

Convert Mobbsbury Way/ Fairlands Way junction to a roundabout

**Scheme Reference:**

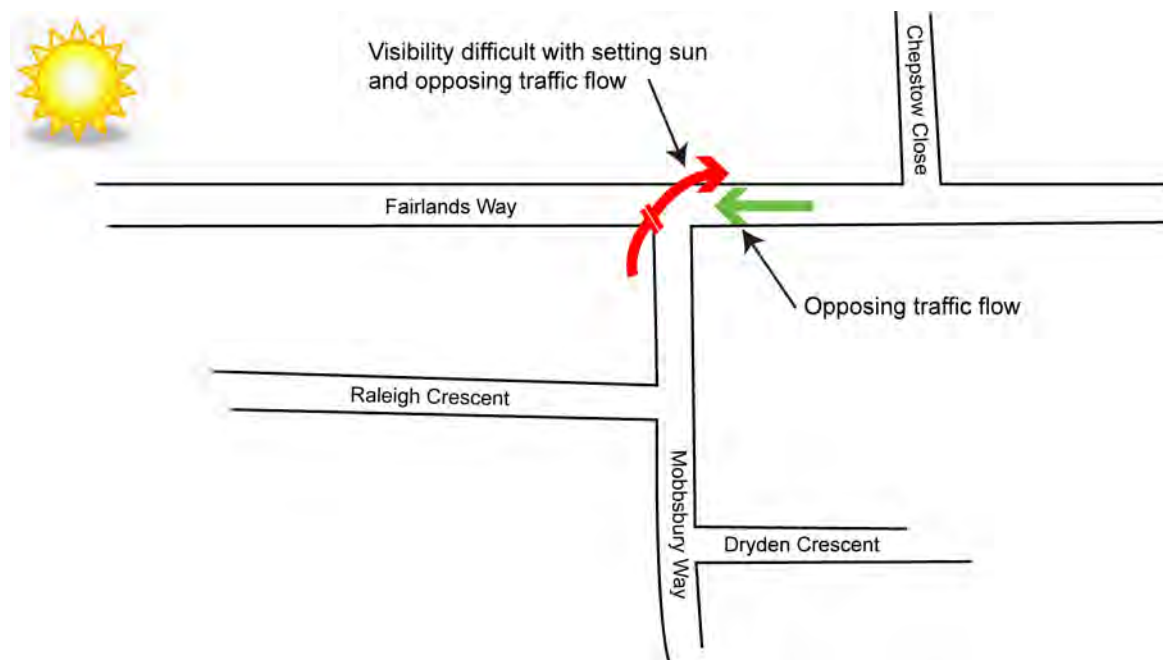
HM30

**Scheme Status:**

This scheme is not included in the UTP

**Purpose:**

An issue has been identified at the junction of Fairlands Way and Mobbsbury Way where traffic is queuing back up along Mobbsbury Way as it cannot turn right out on to Fairlands Way because of traffic opposing the movement. This is shown in the diagram below.



This issue is made worse by the fact that in the evening as vehicles are trying to turn right out of Mobbsbury Way are blinded by the setting sun when looking west to check for a safe gap to move out of the junction. In order to try and address this issue 3 options have been developed including:

- HM28 - Widen Mobbsbury Way on Approach to Fairlands Way
- HM29 - Make it left turn only out of Mobbsbury Road on to Fairlands Way

Accident records at the junction have shown that there have been 3 accidents in the last 4 years but non have cited the sun as a contributing factor to the accident. However this does not mean that there is not potentially a safety issue at the junction.

Each of these schemes is being investigated separately, but only 1 recommendation will come forward in the UTP.

**Details:**

This proposal involves the conversion of the existing give-way junction at the top of Mobbsbury Way / Fairlands Way to a mini-roundabout. This option was tested in the base year using the SATURN traffic model that has been developed to support the UTP. When this option was tested it showed that the average delay for each vehicle travelling through the junction increased from 2 seconds when the right turn out was banned (HM29) to 4 seconds per vehicle when the roundabout was in place. Implementing a roundabout at this junction would also not eliminate the problems caused by the setting sun which hampers visibility to the west for people turning right out of Mobbsbury Way.

**Benefits:**

- Reduces speeds at the junction for the eastbound and westbound approaches.
- Could improve the safety at the roundabout

**Risks:**

- Increase delay at the junction
- May not be the space on the highway to implement the scheme
- New road layout may confuse drivers and result in an increase in accidents.

**Conclusion:**

Given that the roundabout solution does not address all of the issues at this junction it is not going to be put forward as part of the UTP. A solution has been put forward in the short term to ban the right turn out of Mobbsbury Way (HM29) which addresses the issues at this junction.

## Scheme:

Ban right turn in to Sainsbury's from the north, and force traffic to do U-turn at Corey's Mill Lane and ban the right turn from Sainsbury's to the south.

## Scheme Reference:

HM31

## Scheme Status:

This scheme is included in the UTP

## Purpose:

This proposal is a modification to the Hitchin Road / Sainsbury's signalised junction. In the morning peak, traffic experiences delay in the northbound direction along Hitchin Road. This is because of the additional phase allowed for right turning traffic from Hitchin Road into Sainsbury's. It is proposed that the right turn from Hitchin Road is banned so that traffic travelling northbound along Hitchin Road is not delayed having to wait for the additional right turn phase. Following discussions the right turn out of Sainsbury's will be banned so that the southbound carriageway is unaffected by traffic signals, aiding the clearing of southbound traffic from the Junction 8 gyratory.

## Details:

In order to test the implications within the traffic model, a test was undertaken with the right turn into Sainsbury's banned at the junction. The signals were optimised accordingly, as the signal phases were altered. An additional test was run with the right turn from Sainsbury's also banned.

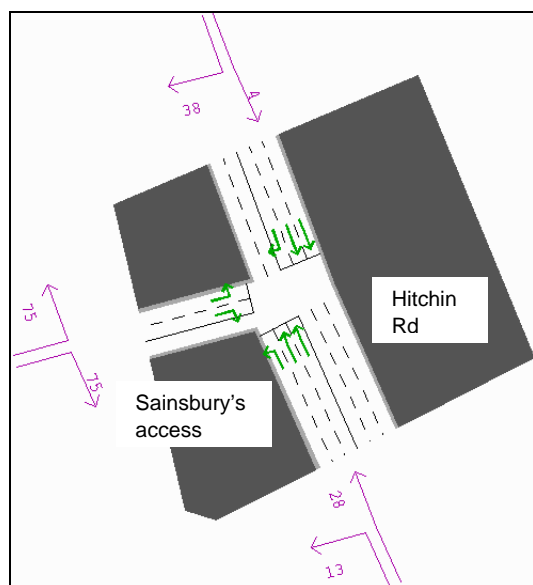
## Benefits:

Testing of the banned right turns in the 2008 base morning peak show that delay in the northbound direction was significantly reduced as a result of banning the right turn into Sainsbury's. Delay experienced by traffic travelling northbound reduced by 23 seconds per vehicle, with the left turn also experiencing 10 seconds less delay.

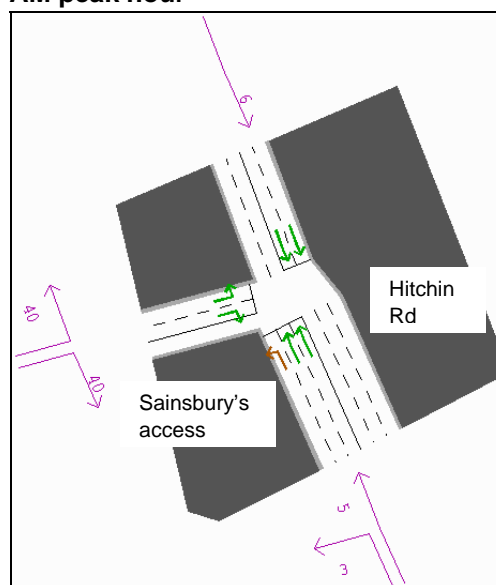
There is also a reduction in delay for traffic leaving Sainsbury's during this peak of 35 seconds.

Delay experienced in the northbound direction reduces by a further 2 seconds with the banned right turn from Sainsbury's. Delay in the southbound direction halves with only 3 seconds of delay experienced.

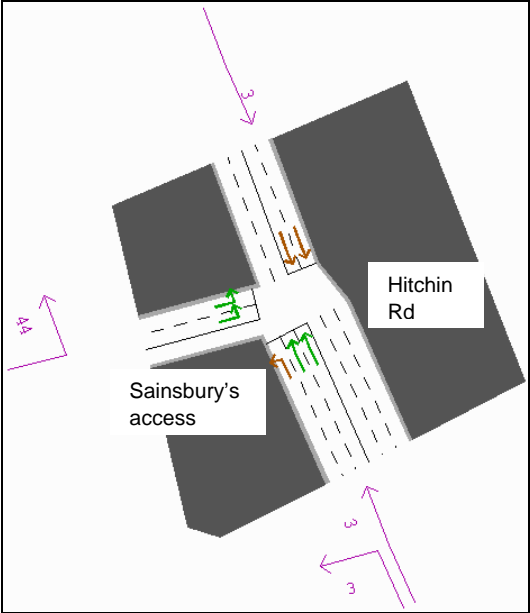
### Delay without Banned Right Turn (secs) AM peak hour



### Delay with Banned Right Turn in to Sainsbury's (secs) AM peak hour

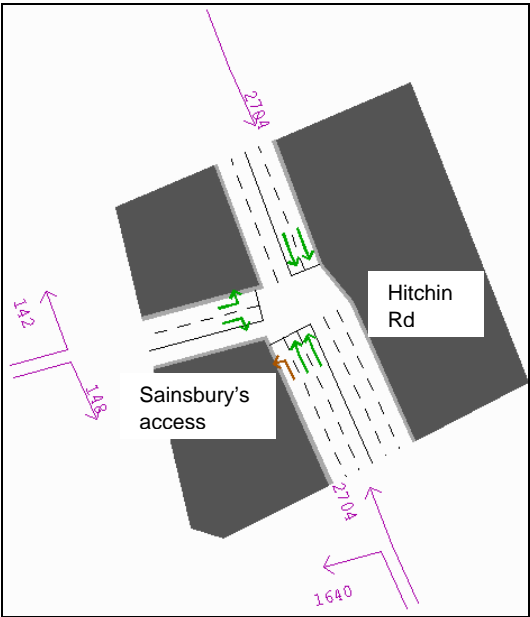


**Delay with Banned Right Turns in and out of Sainsbury's (secs)**  
**AM peak hour**

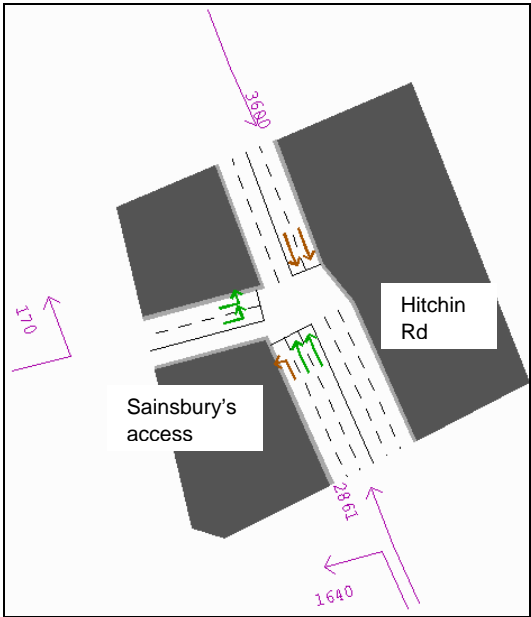


A significant benefit of the banned right turn out of Sainsbury's is the increase in the southbound capacity. This improves southbound traffic flow during busy peak periods, easing the demand on the Junction 8 gyratory caused by any blocking back from this junction.

**Capacity with Banned Right Turn (pcu/hr)**  
**AM Peak Hour**



**Capacity with Banned Right Turns (pcu/hr)**  
**AM Peak Hour**





**Risks:**

The risks associated with the banned right turn into Sainsbury's scheme is that traffic from the north will be forced to perform a u-turn at the Hitchin Rd / Coreys Mill Lane roundabout in order to access Sainsbury's. The base year testing in 2008 showed that this wasn't a problem and the future year assumptions are that flows in to and out of Sainsbury's do not increase, so it does not currently cause a problem in the future year. If any further expansion of Sainsbury's is proposed the additional traffic flows could put this junction to the south at Hitchin Rd Corey Mill Lane under significant pressure and increase the journey time of people using this junction.

**Conclusion:**

As a result of the model testing and the reduction in delay and improved capacity that the banning of the right turn into and out of Sainsbury's yields it is intended that this scheme will be brought forward through the UTP.



**Scheme:**

Improve the East-West transport links to the north of Stevenage

**Scheme Reference:**

HM3

**Scheme Status:**

This scheme is included in the UTP as a policy and scheme measure

**Purpose:**

This issue was raised through the consultation as a general comment about the need to improve these east west connections.

**Details:**

The nature of the UTP has necessitated a large number of individual schemes to come forward as part of the UTP which seek improve these connections including:

**WM17** - Introduce pedestrian crossings across Great Ashby Way

**WM19** - Provide a pedestrian crossing across Magpie Crescent to link in to Sainsbury's

**WM1** - Improve pedestrian and cyclist access to the station from the West

**WM2** - Redesign the footbridge to provide covered walkway between leisure centre and station

**WM9** - Provide an at-grade crossing across Lytton Way (under existing bridge)

**CM17** - Provide a cycle crossing over St. Georges Way

**CM6** - Introduce a crossing facility at street level over Lytton Way between the leisure centre and the rail station.

**PTM4** - Upgrade key bus stops within the study area

**PTM3** - Provide a dedicated bus/rail interchange

**PTM10** - Provide inter-connecting routes between new developments

**HM8** - Increase the throughput of major roundabouts by using either grade separation or filter lanes

All of these schemes are intended to improve the east west transport connections for all transport users.

In addition to this there could potentially be a requirement to include a new east-west highway connection to facilitate the development to the north of Stevenage. This has been tested extensively as part of the growth proposals in Chapter 9 of the main UTP. The phasing of such a scheme has been investigated as well as which sections may need to be implemented at what point in time.

**Benefits:**

- Improved connectivity between the east and the west of the town in a sustainable way.

**Risks:**

- Individual schemes cannot be delivered

**Conclusion:**

This proposal will go forward in the UTP as a policy measure as it is being delivered by a number of smaller schemes but is not a scheme in its own right. There are therefore no costs associated with this for the UTP other than the implementation of the individual schemes.

The infrastructure elements of the road scheme are being put forward as part of the UTP to be delivered alongside the development that is proposed in the area.

**Scheme:**

Build a link road parallel to the A1(M) to access Stevenage West

**Scheme Reference:**

HM13

**Scheme Status:**

This scheme is included in the UTP

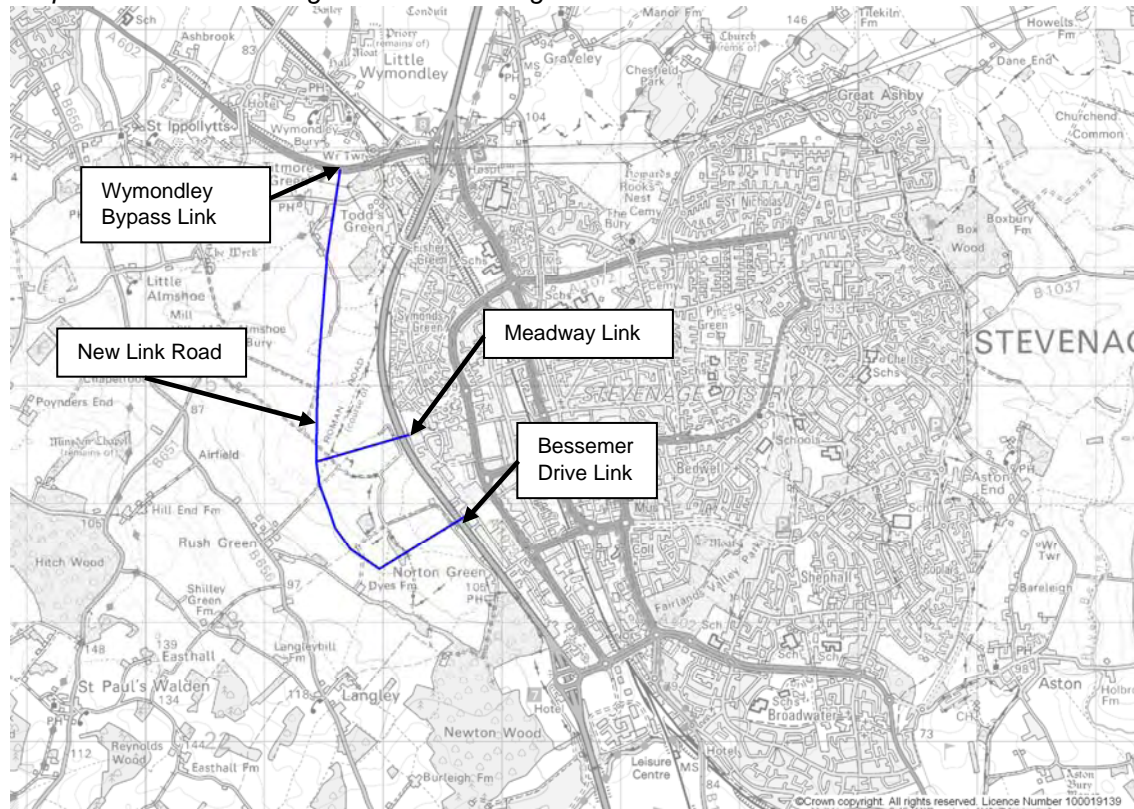
**Purpose:**

A scheme which was suggested at stakeholder consultation to try and relieve some of the pressure on the A1(M) was to build a local bypass. It would only be possible to deliver a local bypass of the A1(M) to the west of the existing route as the urban area to the east would prevent a suitable bypass location being defined. The Do Something proposals that have been tested within the traffic model have included a significant development to the west of Stevenage. In order to enable this development to come forward it is going to be necessary to provide a link for this development to the existing network. Some testing was undertaken in the model to determine the benefits associated with such a scheme, but then further variations were tested when it was established that there would be significant risks associated with trying to link in to junction 7 of the A1(M) not least cutting through a Site of Special Scientific Interest (SSSI).

**Details:**

Within the traffic model a new link road has been tested which links in with the existing road network via Bessemer Drive and Meadway, west of Stevenage and the Wymondley by-pass to the north. It is envisaged that the new development to the west of Stevenage will link in to this new link road. Although this route is only indicative at present it is shown in the diagram below. Further options were then tested within the main report (Chapter 9) which explored the options around the route of this link road and the development to the west of Stevenage.

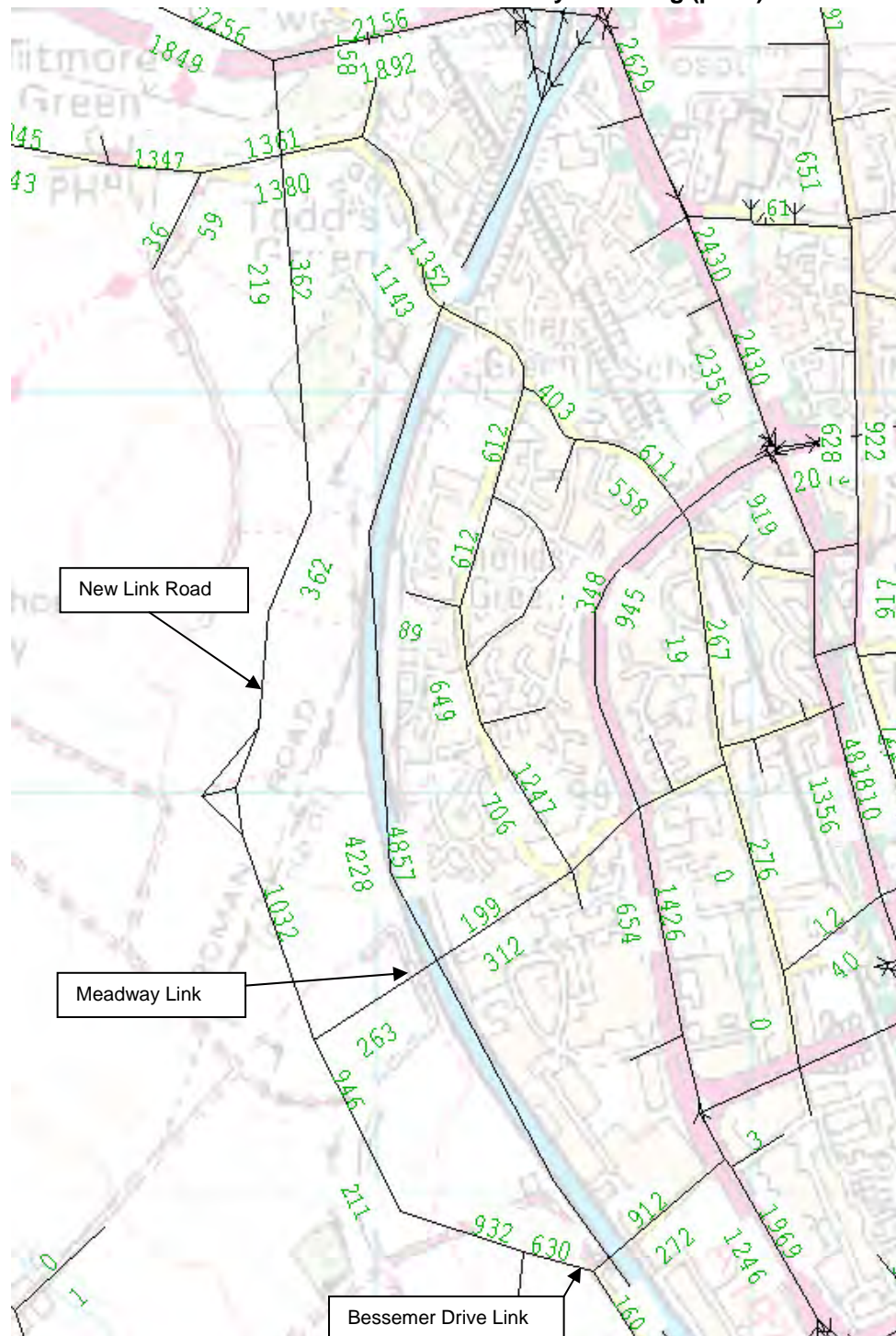
*Proposed route and linkages of the Stevenage West Link Road*



This new link road would be delivered as part of the Stevenage West Development so there would be Section 106 funding available to implement this scheme. The Stevenage West development would not be delivered until 2021 so this option has been tested as part of the 2021 Do Something scenarios.

The possibility of increasing the capacity of the A1(M) through the introduction of hard shoulder running was also investigated. This would obviously increase the capacity of the A1(M) and potentially reduce the demand for any alternative parallel links to the A1(M). Modelling was undertaken in the 2021 Do Something scenario to determine what flows this new parallel route would attract in a with motorway widening and without motorway widening scenario.

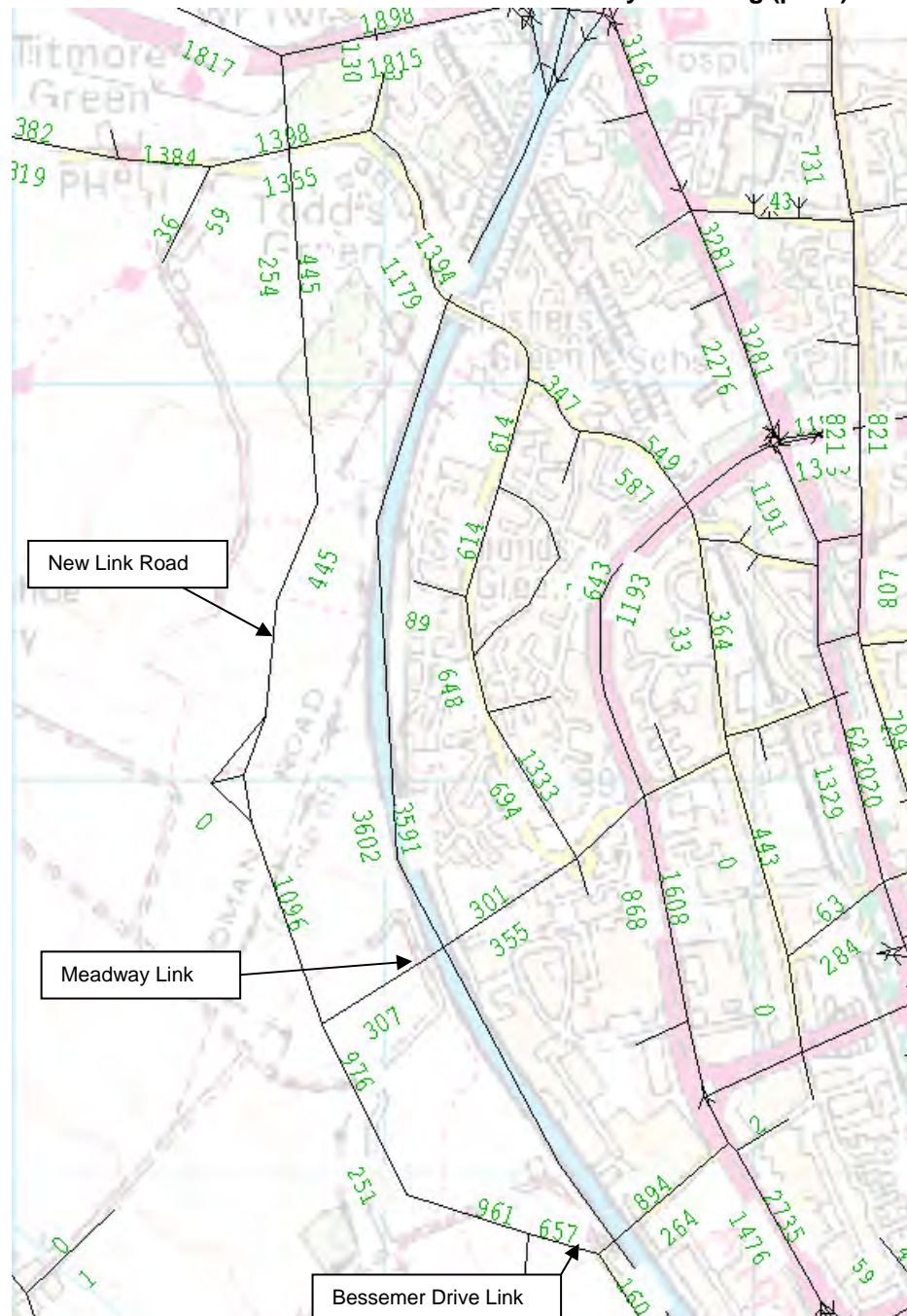
**Demand Flow on New Link Road with Motorway Widening (pcus) –Do Something 2021 – AM**



Note: Numbers on plan are traffic flow



**Demand Flow on New Link Road without Motorway Widening (pcus) –Do Something 2021 – AM**



Note: Numbers on plan are traffic flow

The flows in the morning and evening peak for the with and without A1(M) widening scenarios show that the new link road attracts over 1,000 pcus, however the majority of this demand is generated by the future year developments to the west. The percentage of through trips using the new link road as a local bypass is generally low.

## Demand on the New Link Road with and without Motorway widening in 2021

Scenario	Northbound			Southbound		
	Demand	Through Trips	% Through Trips	Demand	Through Trips	% Through Trips
AM with A1(M) widening	219	11	5	362	22	6
AM without A1(M) widening	254	19	8	445	241	54
PM with A1(M) widening	428	76	18	128	0	0
PM without A1(M) widening	490	142	29	129	9	7

Analysis of the scenario without A1(M) widening in the morning peak shows that only 8% of trips (19 pcus) northbound use the new link road as a bypass, whilst 54% (241 pcus) use it in the southbound. The demand in the southbound direction is high compared to the other direction because the bypass route is more attractive due to the high demand on the A1(M). The with A1(M) widening scenario shows that traffic using the new link road as a bypass is low with only 5% (11 pcus) northbound and 6% (22 pcus) southbound. This is because the A1(M) becomes much more attractive in the widened A1(M) scenario.

In the PM peak without A1(M) widening, 29% of trips (142 pcus) northbound use the new link road as a bypass, with 7% (9 pcus) using it in the southbound direction. The with A1(M) widening scenario shows only 18% (76 pcus) use the new link road as a bypass in the northbound direction, and no vehicles southbound.

The relief that the new route provides across Stevenage and on the A1(M) is limited, particularly in the with A1(M) widening scenario. However, there is a requirement to deliver improved access as part of the planning proposals for the West of Stevenage development. Further analysis, of the impact of the developments to the west of Stevenage, included in chapter 9 of the main UTP, has shown that the current road network will be under pressure from the new developments by 2031, so relief will need to be provided. This relief is an improvement to the existing road standard of both Meadway and Bessemer Drive, but no link in to Wymondley Bypass to the north.

### Benefits:

- Provide key linkages in to the new development west of Stevenage
- Provides relief to links within the town centre.

### Risks:

- This scheme would rely on S106 funding to come forward so is reliant on development

### Conclusion:

This scheme is being included within the UTP but as is outlined in the main UTP. It would be dependent on the West of Stevenage development coming forward.

**Scheme:**

Variable speed limits on the A1(M)

**Scheme Reference:**

HM16

**Scheme Status:**

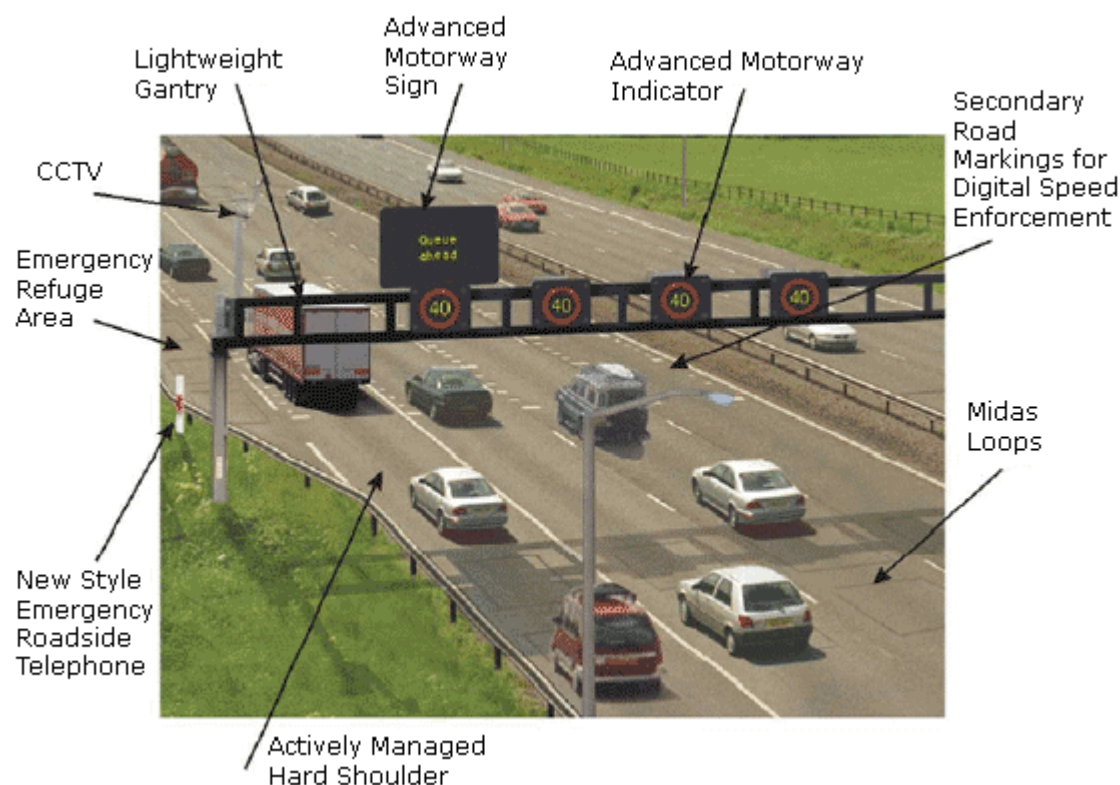
This scheme is not included specifically in the UTP but is being addressed through Active Traffic Management as part of HM17

**Purpose:**

The intention of variable speed limits is to try and maximise the throughput of the road network by managing the speed of the network more effectively. The only practical method of delivering variable speed limits on motorways is through Active Traffic Management (ATM). This is discussed in a separate solution within the UTP called 'HM17 - Hard shoulder running on the A1(M)', in relation to the use of hard shoulder running. The cost of this is significant, but there may also be other options to implement just variable speed limits without hard shoulder running, but this would require some element of ATM.

**Details:**

In order to implement variable speeds there would be a lot of infrastructure put in place to monitor the speeds. This would include the implementation of gantries along the route as shown below;

**Benefits:**

The benefits cited by the Highways Agency for ATM are:

- Reducing congestion;
- Providing more reliable journey times;
- Reducing the impact of accidents/incidents;

- 
- Increasing information for the driver;
  - Maintaining current safety levels; and
  - Reducing driver stress.

**Risks:**

- Funding cannot be identified to implement the scheme

**Conclusions:**

The benefits delivered by purely implementing variable speed limits would be minimal against what would be a significant cost. This scheme is therefore being pursued through a wider package of ATM which would include increased capacity through use of hard shoulder running.



**Scheme:**

Widening of the A1(M) including continued discussion with stakeholders

**Scheme Reference:**

HM17

**Scheme Status:**

This scheme is included in the UTP

**Purpose:**

Model testing has shown that there is going to be a need to implement some form of widening on the A1(M) between Junctions 6 - 8. This is required to provide additional capacity to accommodate the future levels of growth associated with local growth within Stevenage and North Hertfordshire and also other regional growth associated within the East of England Plan.

**Details:**

There are several ways in which this widening could be provided, but the detail of what form this widening should take has not been investigated within the UTP. The scheme recommends that widening is required and highlights the need for continued dialogue between the relevant delivery authorities, including the Highways Agency and the Government Office. It is not within the remit of Stevenage Borough Council or Hertfordshire County Council to deliver this scheme so is not deemed appropriate to promote the final form the widening should take within the UTP.

It should be highlighted that the HA have already investigated the possibility of implementing hard shoulder running on the A1(M) through Stevenage, which effectively utilises the hard shoulder during periods of high traffic flow. It was concluded that the existing hard shoulder along this section is sub-standard as well as a number of other structures at junctions and over bridges which would make continuous hard shoulder running expensive to implement. An initial costing exercise has put the cost of implementing hard shoulder running at £168m. A scheme that costs this much to implement would either need to be funded through developer contributions or be included within the Regional Funding Allocation. The current RFA funding allocations have been defined up to 2017 and no proposals for widening or hard shoulder running are included for the A1(M). This would therefore mean that any proposals for widening would need to go through the RFA process and would not be considered for funding before 2017. An alternative to this would be funding the scheme through private contributions from developers, but it is not expected that they would consider contributing the full amount to implement this scheme, with it being more likely that it would be part funded by private and public monies.

**Benefits:**

The traffic model that has been developed to support the UTP development has been used to test the impact of widening the A1(M) through Stevenage. The modelling has shown that by 2014 in the Do Minimum scenario the delays experienced by vehicles trying to access the A1(M) at junction 7 travelling to or from the south experience significant levels of delay. The Hertfordshire Infrastructure Investment Strategy highlights that the A1(M) link between junction 6 and 7 would be operating at a level approaching its design capacity by 2014. The modelling undertaken has also concluded that the level of demand between this link is going to require some form of widening to ensure that this section of the A1(M) continues to operate effectively. As part of the 2014 DM scenario we have therefore identified that this section of the A1(M) would be widened in both directions to 3 lanes. It should however be noted that the HA have already reviewed the possibility of increasing capacity through hard shoulder running and it is not likely to be in place until 2017 at the earliest, in line with the current Regional Funding Allocation. However, our modelling demonstrates that widening would be required by approximately 2014.

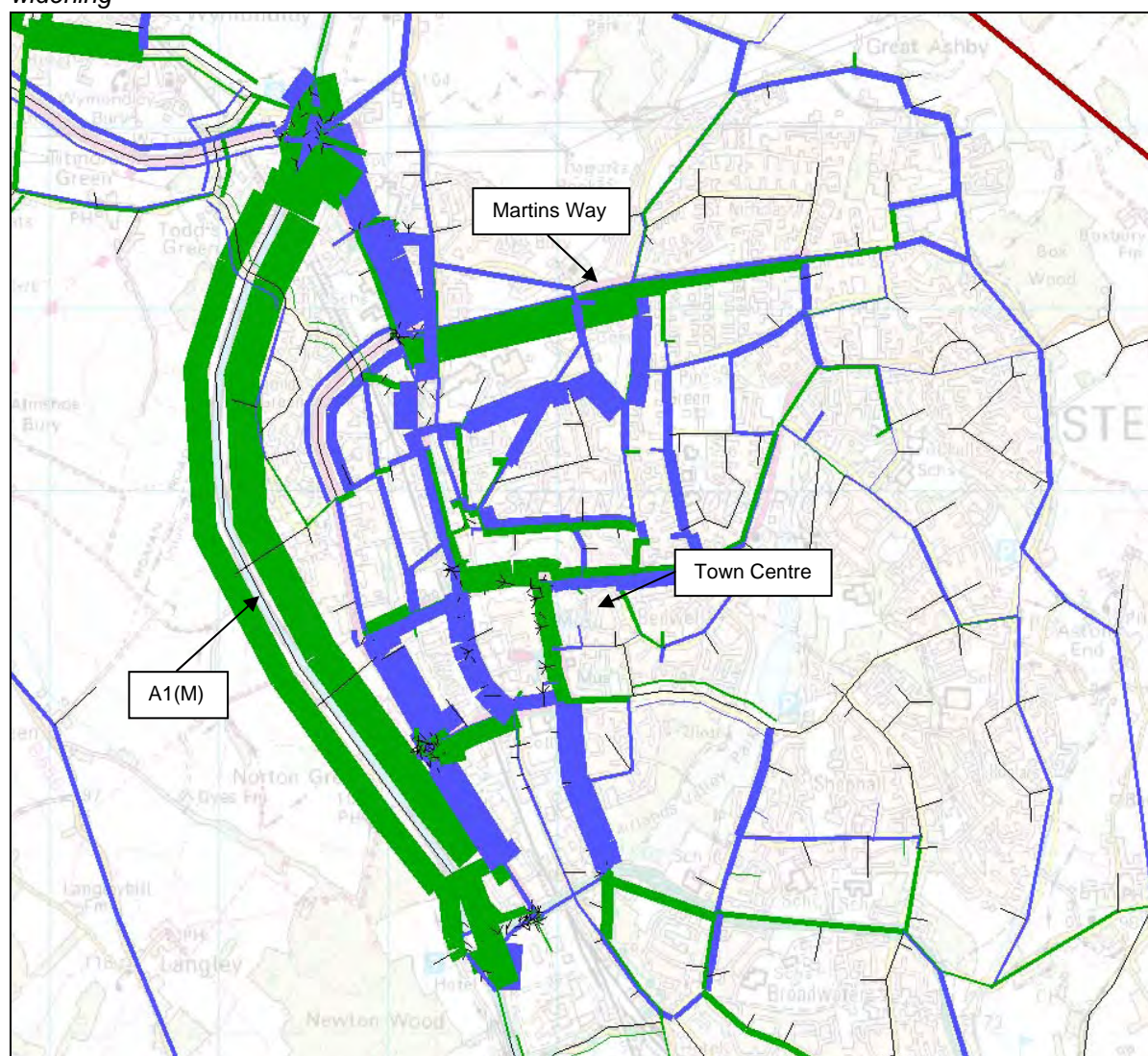
Moving beyond 2014 it has also been identified within the modelling that by 2021 there is a requirement for continuous running of 3 lanes from junction 9 through to 6 of the A1(M) in both directions (A1(M) is currently 3 lanes between junction 8 and 9). Given that we have already assumed junction 6-7 would be widened by 2014 and junction 8-9 is currently 3 lanes then this would mean that widening would be required between junction 7 and 8. The outcome of this testing showed the following impacts of widening on the surrounding area.

The model testing that was undertaken assessed the situation in the Do Minimum scenario which assumes committed developments are delivered as well as any background growth assumed with economic forecasts. It was also tested against the Do Something scenario which assumes that RSS growth will be implemented. The detail of what developments are included in the Do Minimum and Do Something scenario's are given in brief in the main UTP document and also in more detail in the '**Model Forecasting Report**' shown in **Appendix Volume 3**

## Assessment of widening in the Do Minimum 2021 scenario

*Impact of implementing 3 lane widening/ hard shoulder running from A1(M) J9 through to J6 in both directions*

*2021 AM Peak – Do Minimum – green represents an increase in trips, blue a reduction as a result of widening*



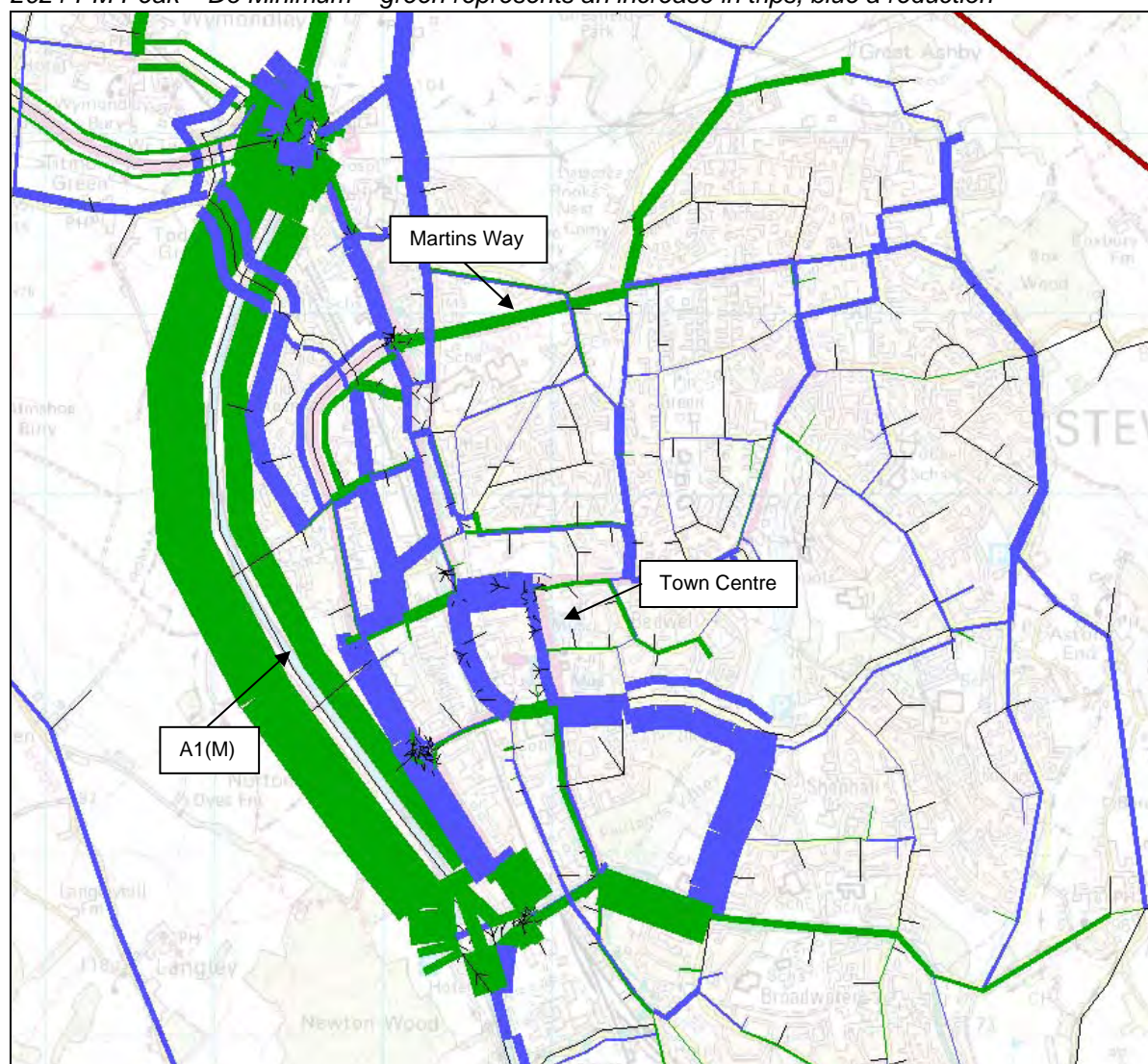


As can be seen clearly from the diagram above, in the AM peak the introduction of widening results in some significant reductions in flow within the town centre, although there are some isolated locations where traffic flows have increased such as St Martins Way. This is due to the fact that the increase in capacity from Junction 7 – 8 in both directions means that trips from the north of Stevenage which used to travel through the town centre and get on the A1(M) at Junction 7 are now routing up to Junction 8 to join the A1(M). This results in a lot of reductions in flow on the town centre routes. The key changes in flow as a result of widening in Do Minimum 2021 AM peak are:

- A1(M) J7 – J8 – Flow increases by 270pcus
- A1(M) J8 – J7 – Flow increases by 400pcus
- St Martins Way westbound – flow increases by 350pcus
- Fairlands Way westbound – flow decreases by 150pcus
- Gunnels Wood Road northbound – flow decreases by 160pcus
- Gunnels Wood Road southbound – flow decreases by 180pcus
- Hitchin Road southbound – flows decreases by 400pcus

*Impact of implementing 3 lane widening/ hard shoulder running from A1(M) J9 through to J6 in both directions*

*2021 PM Peak – Do Minimum – green represents an increase in trips, blue a reduction*



The impact of the widening is even more beneficial in the PM peak. Here the widening provides significant relief to the town centre, with trips able to leave or access the A1(M) far closer to their origin or destination, meaning there is far less local routing through Stevenage.

The key changes in flow as a result of widening in Do Minimum 2021 PM peak are:

- A1(M) J7 – J8 – Flow increases by 575pcus
- A1(M) J8 – J7 – Flow increases by 270pcus
- Valley Way southbound – flow decreases by 130pcus
- Valley Way northbound – flow decreases by 270pcus
- Gunnels Wood Road northbound – flow decreases by 250pcus
- Hitchin Road northbound – flows decreases by 140pcus

There is a shift in traffic away from residential areas (Valley Way, Walkern Rd, Grace Way, Pin Green, High St, around the Gyratory) as a result of widening. A decrease in traffic is also observed on rural roads (traffic entering from the north) when the widening is in place.

Significant reductions in journey times have also been observed with the motorway widened, thus saving travel time for motorists. As can be seen, widening of the motorway in the future year of 2021 helps maintain the status quo for journey times compared with 2008. If widening does not occur then travel time on the A1(M) between J6 – 10 by 2021 will have significantly deteriorated. The journey time SB in the morning peak already experiences some congestion according to the Base Year travel time which has been relieved by another scheme proposed at the southbound Junction 8 off-slip. This therefore shows that there is already improvement in the overall journey time between the Base Year 2008 and the 2021 without widening scenario.

## Comparison of Motorway Journey Time with and without Motorway widening in 2021

Peak	Route	2021 Widening	Time (s)	Time (s) in Base Year (2008)
AM	A1(M) J7 – 9 NB	YES	396.5	415.3
		NO	457.9	
	A1(M) J7 – 9 SB	YES	398.4	546.7
		NO	434.4	
PM	A1(M) J7 – 9 NB	YES	415.9	507.6
		NO	526.1	
	A1(M) J7 – 9 SB	YES	385.4	409.7
		NO	415.7	

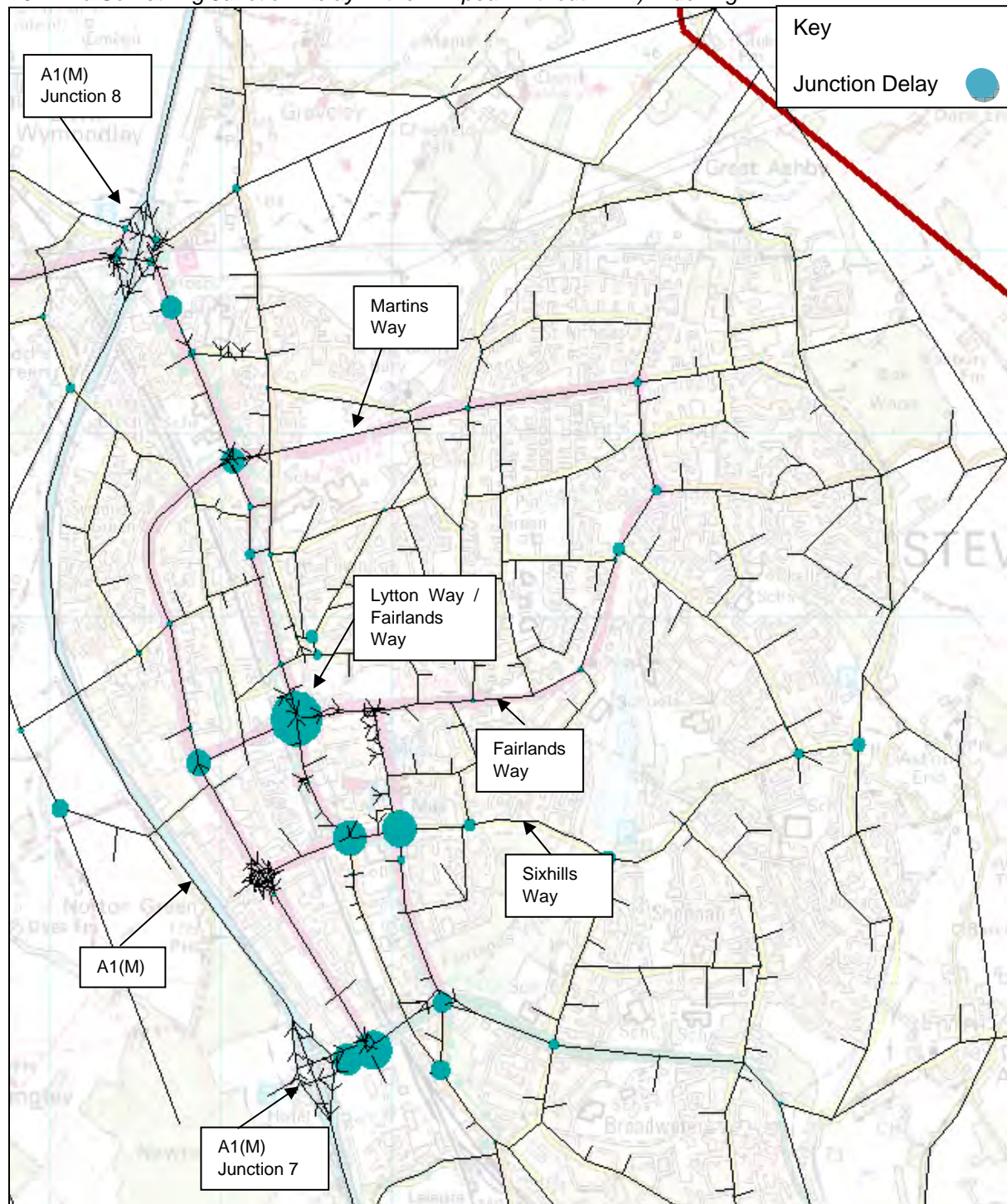
The summary of the 2021 Do Minimum continuous widening on the A1(M) shows that its implementation will significantly reduce congestion in built up areas and cause a shift of traffic away from these areas (over 250 pcus from Valley Way in PM). In addition, the widening of A1(M) Junction 6-7 should already have occurred so this would compliment this widening and help to maintain journey times for motorway travel similar to 2008.

## Assessment of widening in the Do Something 2021 scenario

As the situation moves to a Do Something scenario this sees all of the proposed future year development being implemented in line with the Regional Spatial Strategy Growth. This assumes some significant increases in the number of dwellings and amount of employment within the town, specifically to the north and west of Stevenage, placing further pressure on the town centre. The diagram below shows the impact on junction delay in the 2021 Do Something scenario.



2021 Do Something Junction Delay in the AM peak without A1(M) widening



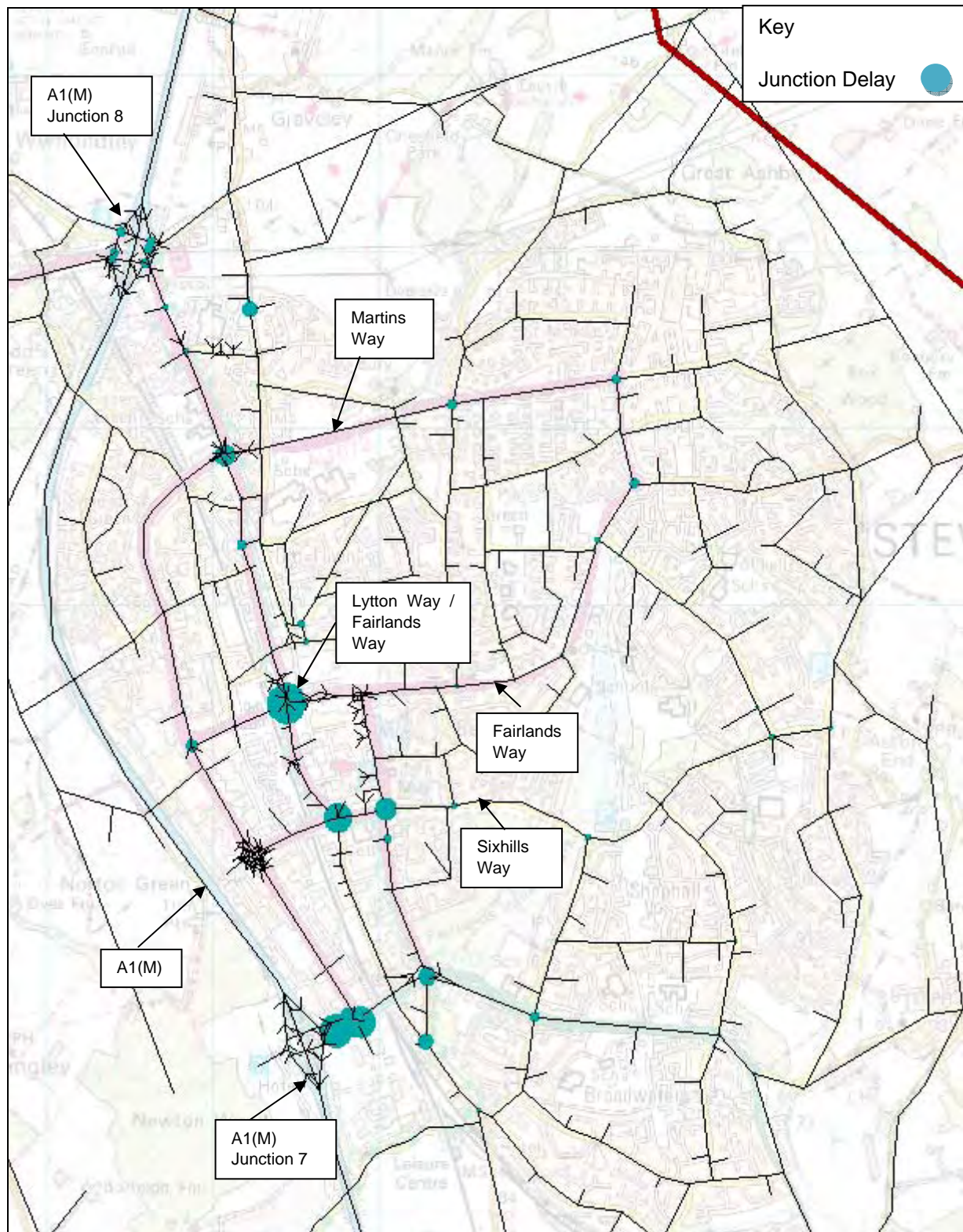
As can be seen from the diagram above there are some significant delays at key town centre locations due to the fact that the A1(M) is so heavily congested that drivers choose to route through the town centre. A large number of junctions within the town centre have already been widened, as outlined in HM8. Even with these improvements the following junctions still have significant delays;

- Lytton Way / Fairlands Way – 94 seconds per vehicle
- Six Hills Way / Lytton Way - 61 seconds per vehicle
- Six Hills Way / Monkswood Way - 62 seconds per vehicle
- Hitchin Road / St Martins Way - 42 seconds per vehicle

To try and address this delay in the town centre the primary option that has been tested is widening of the A1(M) from J6 through to J9 to 3 lanes. This has shown some significant benefits in terms of delay on key town centre junctions. It should be noted that this has been tested against a backdrop of the requirement for new road links to the north and west of Stevenage to accommodate SNAP growth. The requirements for these links is explained in more detail in Chapter 9 of the Main UTP but are required to provide access to the new development but to also provide relief for the existing road network. It is understood that not all of these links are within the boundaries of the SNAP development area, being jointly promoted by Stevenage Borough Council and North Herts District Council. However the testing undertaken so far shows a need to for these links to be included to enable the development to come forward. It is also understood that there are risks associated with delivering some of the network, particularly around the Box Wood area given that this is a Scheduled Ancient Monument, and will need to be carefully considered in any further detailed planning of this route.



## 2021 Do Something Junction Delay in the AM peak with A1(M) widening



Analysis of a scenario with widening in place shows that the junction delays within the town centre are significantly improved, to a level that would enable the network to function correctly. This is not to say that widening of the A1(M) solves all of the problems of congestion in the town centre, but it would be a

requirement should the level of development outlined in the RSS be delivered. However, the following junctions have seen a reduction in delay when the widening is implemented.

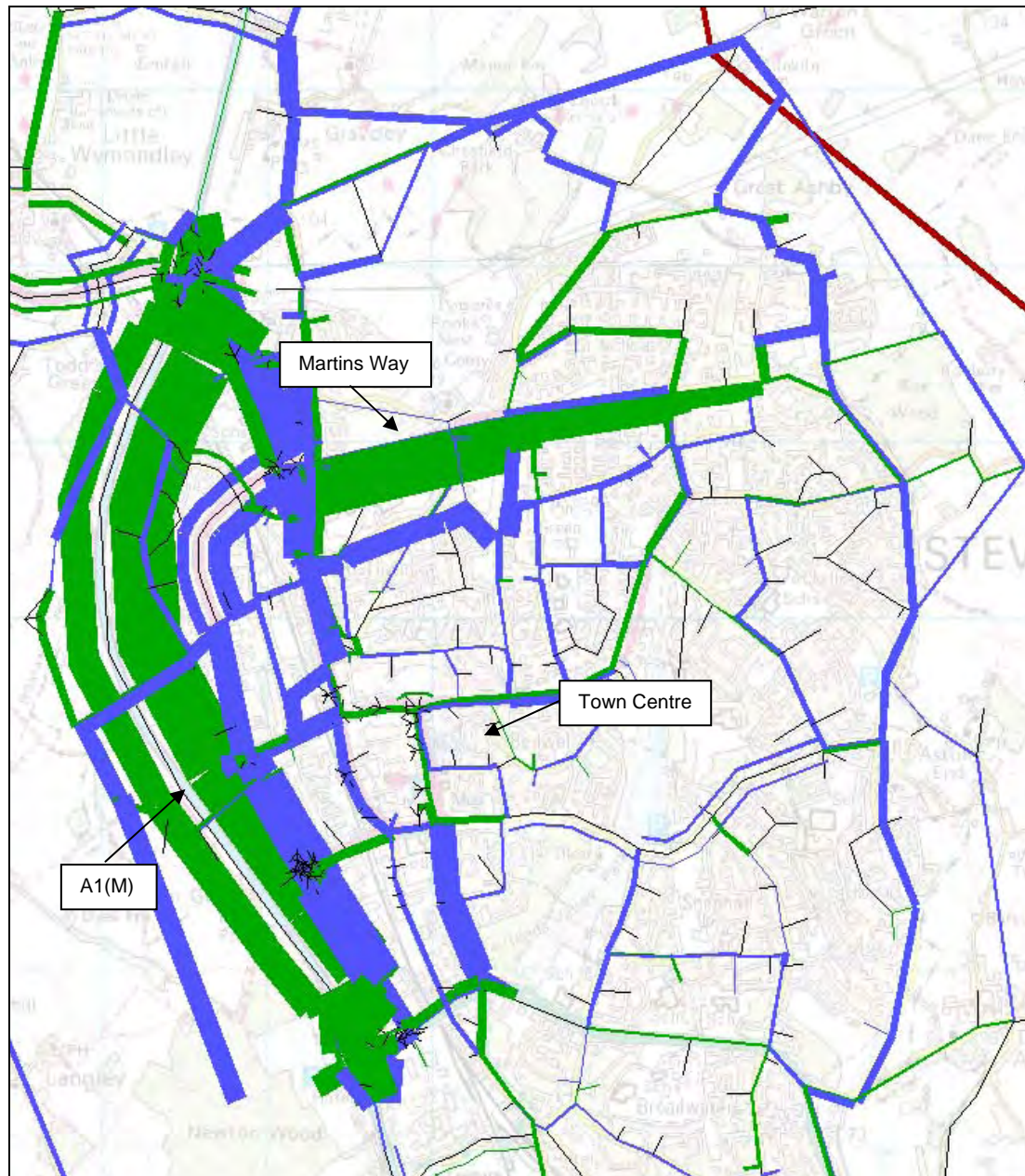
- Lytton Way / Fairlands Way - 68 seconds per vehicle (without widening 94 seconds)
- Six Hills Way / Lytton Way - 19 seconds per vehicle (without widening 94 seconds)
- Six Hills Way / Monkswood Way - 62 seconds per vehicle (without widening 37 seconds)
- Hitchin Road / St Martins Way - 0 seconds per vehicle (without widening 42 seconds)

Not only does widening have a big impact on junction delay but it also removes a lot of the traffic from the town centre links and back on to the A1(M). The diagrams below illustrate what this impact is in both the AM and PM peak



*Impact of implementing 3 lane widening from A1(M) J9 through to J6 in both directions*

*2021 AM Peak – Do Something – green represents an increase in trips, blue a reduction*

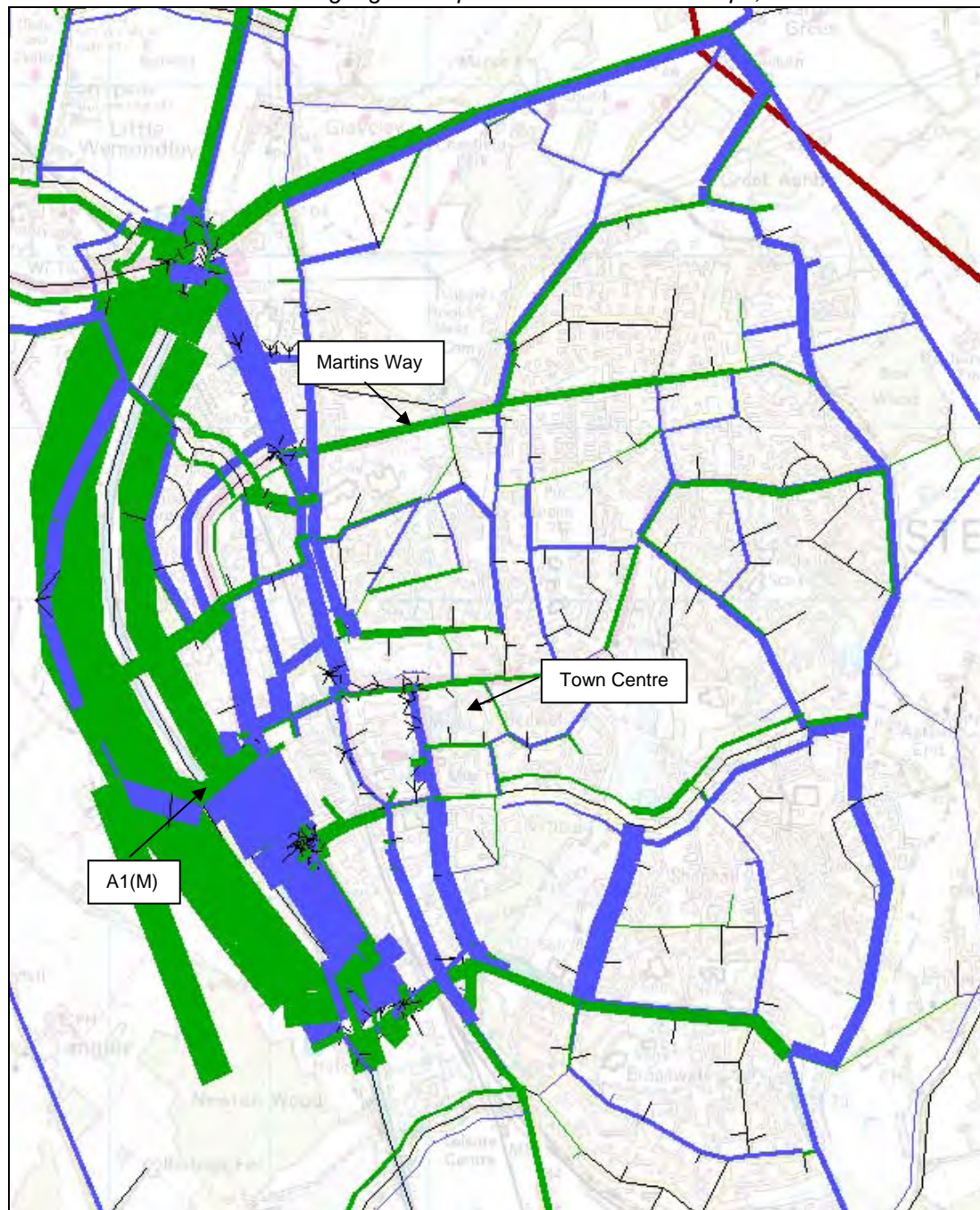


The key changes in flow as a result of widening in Do Something 2021 AM peak are:

- A1(M) J7 – J8 – Flow increases by 575pcus
- A1(M) J8 – J7 – Flow increases by 1,200pcus
- Monkswood Road southbound – flow decreases by 340pcus
- Martins Way westbound – flow increases by 975pcus (as people try to access A1(M) Junction 8)
- Gunnels Wood Road northbound – flow decreases by 460pcus
- Gunnels Wood Road southbound – flow decreases by 450pcus
- Hitchin Road southbound – flows decreases by 950pcus

*Impact of implementing 3 lane widening from A1(M) J9 through to J6 in both directions*

*2021 PM Peak – Do Something – green represents an increase in trips, blue a reduction*



The key changes in flow as a result of widening in Do Something 2021 PM peak are:

- A1(M) J7 – J8 – Flow increases by 850pcus
- A1(M) J8 – J7 – Flow increases by 400pcus
- Monkswood Road southbound – flow decreases by 120pcus
- Martins Way westbound – flow decreases by 85pcus
- Gunners Wood Road northbound – flow decreases by 800pcus
- Hitchin Road southbound – flows decreases by 260pcus



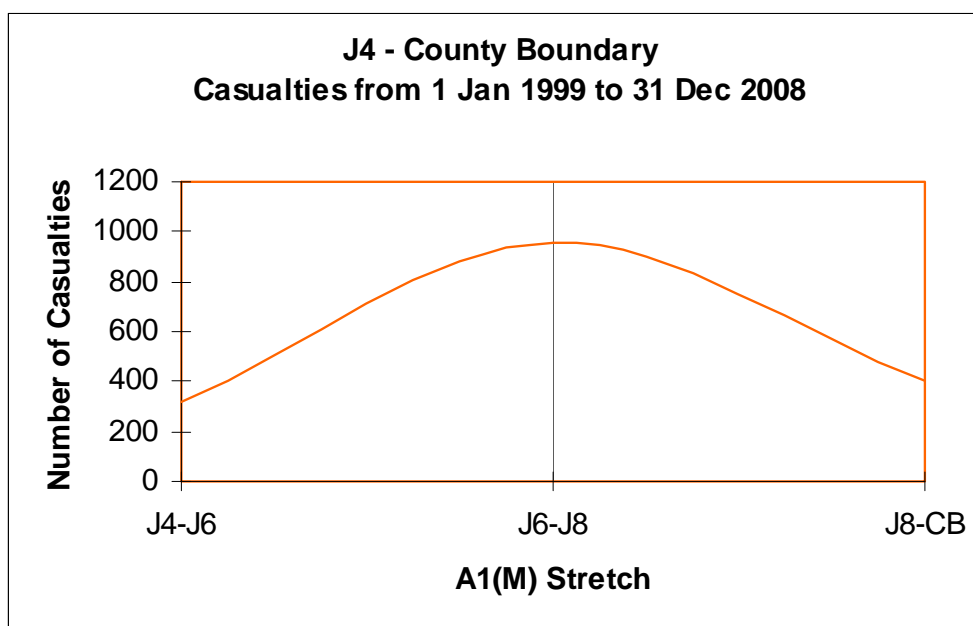
## Risks:

- Funding a scheme such as this is going to be difficult and complex. Until a contributions strategy can be defined for the developments in the area it is difficult to establish what additional funding will be required through the RFA process.
- There will be a lengthy period of disruption whilst this scheme is implemented.
- An HA study has already identified that Active Traffic Management with hard shoulder running along this section of the A1(M) is going to cost at least £168m. Finding funding for any form of widening before 2017 is going to be very difficult as the RFA process has already identified its priorities up until then and A1(M) widening is not currently one of them.

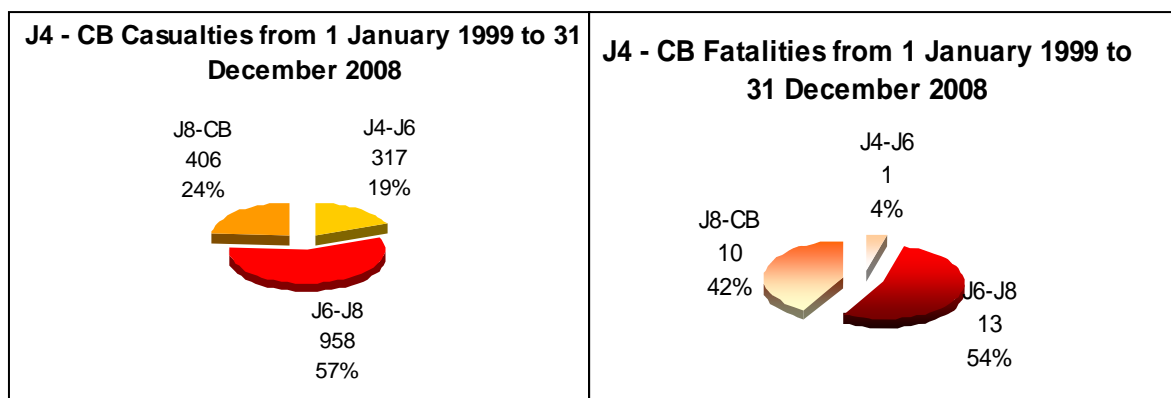
## Additional Information

As identified there are broadly 2 options available to deliver additional capacity on the A1(M) in order to accommodate the future growth in the area, traditional widening or hard shoulder running. Both options will deliver the additional capacity.

Further investigation of the operation of the A1(M) between J6 – J8 has shown that historically this section generates more accidents and casualties than adjacent sections to the north and south. This will be an important issue to consider when determining what the best option is for increasing the capacity of the A1(M) through this area. The graph below shows some analysis of the total number of casualties on the A1(M) between J4 in the south and the county boundary (CB) to the north. As can be seen there is a significant increase in accidents between Junction 6 – 8, with the number of accidents doubling on this section when compared with adjacent sections to the north and south.



This potential safety issue is further emphasised when the numbers of fatalities is analysed on this section of the A1(M).



It can be seen that the section between J6 and J8 has in excess of 50% of the casualties and fatalities for the whole stretch of the A1(M) from Junction 4 through to the county boundary. The exact cause of this increased number of accidents between Junction 6 and Junction 8 is not yet currently known, but would need to be investigated when determining the most appropriate form of widening through this section.

## Conclusion:

The modelling shows that widening of the A1(M) through this section would make conditions significantly better in the Stevenage town centre in the Do Minimum scenario. It also indicates that widening will be required by 2021 if the Do Something scenario is implemented to ensure that the RSS growth proposed to the north and west of Stevenage could be delivered. The UTP has not investigated in detail the most appropriate form of widening that would need to take place but identifies the need for it between junction 6 -7 by 2014 and between junction 7 - 8 by 2021. Although widening would improve the situation in the Do Minimum they are not an absolute necessity if a number of other junction improvements are made around Stevenage which are highlighted in HM8. However, the testing has shown that even with a number of junction improvements around the town in the Do Something scenario it will be necessary to implement widening on the A1(M) by 2021 to ensure the development can be delivered while not bringing the highway network in Stevenage to a point of gridlock. Further discussion and assessment should be undertaken with the Highways Agency and other key stakeholders to determine what the best solution for widening is in this location considering all the issues identified above.

**Scheme:**

High Occupancy Vehicle (HOV) (car pool/taxi/bus) lane on the A1(M)

**Scheme Reference:**

HM19

**Scheme Status:**

This scheme is not included in the UTP as it is addressed by HM17

**Purpose:**

The introduction of an HOV on the A1(M) was proposed at the stakeholder consultation as a solution to some of the congestion issues that have been identified along the A1(M)

**Details:**

The A1(M) provides a key north-south route for strategic trips as well as providing access to Stevenage from across the region. The Hertfordshire Infrastructure Investment Strategy (HISS) identifies that there are likely to be capacity issues on the A1 (M) J6 to J8 in both directions by 2021. As part of the UTP exercise options for increasing capacity on the A1(M) to accommodate this future growth have been tested, with the future year modelling indicating significant capacity constraints. If a lane was removed from the A1(M) to use as a HOV lane without widening, then even with an exceptionally high uptake of car sharing/ pooling the levels of congestion would be unmanageable on the network.

The alternative to this would be to accommodate an HOV lane within any proposals for Active Traffic Management (ATM) (HM17). The use of ATM would provide enough flexibility to allow an HOV lane to operate to provide benefit for those who do car share but also change the lane designation to allow all vehicles to use the lane if there was a problem elsewhere on the network or congestion levels increased to an unacceptable level.

**Benefits:**

- If an HOV lane was implemented as part of an ATM scheme then its use could be monitored and adjusted according to traffic levels.
- Could encourage car sharing or pooling by providing journey time benefits for those that do.
- Reduce the number of cars on the road

**Risks:**

- The high costs associated with implementing ATM could mean there are significant barriers to this scheme being implemented.
- Could create a significant amount of congestion on the network if not managed effectively.

**Conclusion:**

The recommendation for this scheme is therefore that it could only be implemented alongside the implementation of ATM.

**Scheme:**

Divert the A1(M)

**Scheme Reference:**

HM20

**Scheme Status:**

This scheme is not included in the UTP

**Purpose:**

This scheme was raised as part of the stakeholder consultation to address some of the congestion issues on the A1(M). A number of other schemes have been proposed on the A1(M) to address some of these capacity issues. The A1(M) provides a key strategic route of regional importance. The technical issues that would need to be addressed in diverting the current alignment of the A1(M) would be significant and it may not solve the capacity issues. A number of other schemes have been suggested to be included within the UTP to address the issues on the A1(M), including;

**HM17** - Hard shoulder running on the A1(M)

**HM13** - Build a link road parallel to the A1(M) to access Stevenage West

These are considered more practical and deliverable solutions to be put forward as part of the UTP

**Details:**

This scheme is not considered practical for delivery and is therefore not being taken forward in the UTP

**Scheme:**

Address Stevenage gyratory system including the removal of traffic from James Way

**Reference:**

HM21

**Scheme Status:**

This scheme is included in the UTP

**Purpose:**

This proposal is a modification to the current gyratory system at the north of the High Street in Stevenage. A possible option has been developed for the current one-way gyratory system to be converted to two-directional in an attempt to improve traffic flow, and open up opportunity for some possible environmental improvements. It is intended that this will rationalise traffic movements in the area and allow better control of flows in the area now and in the future.

**Details:**

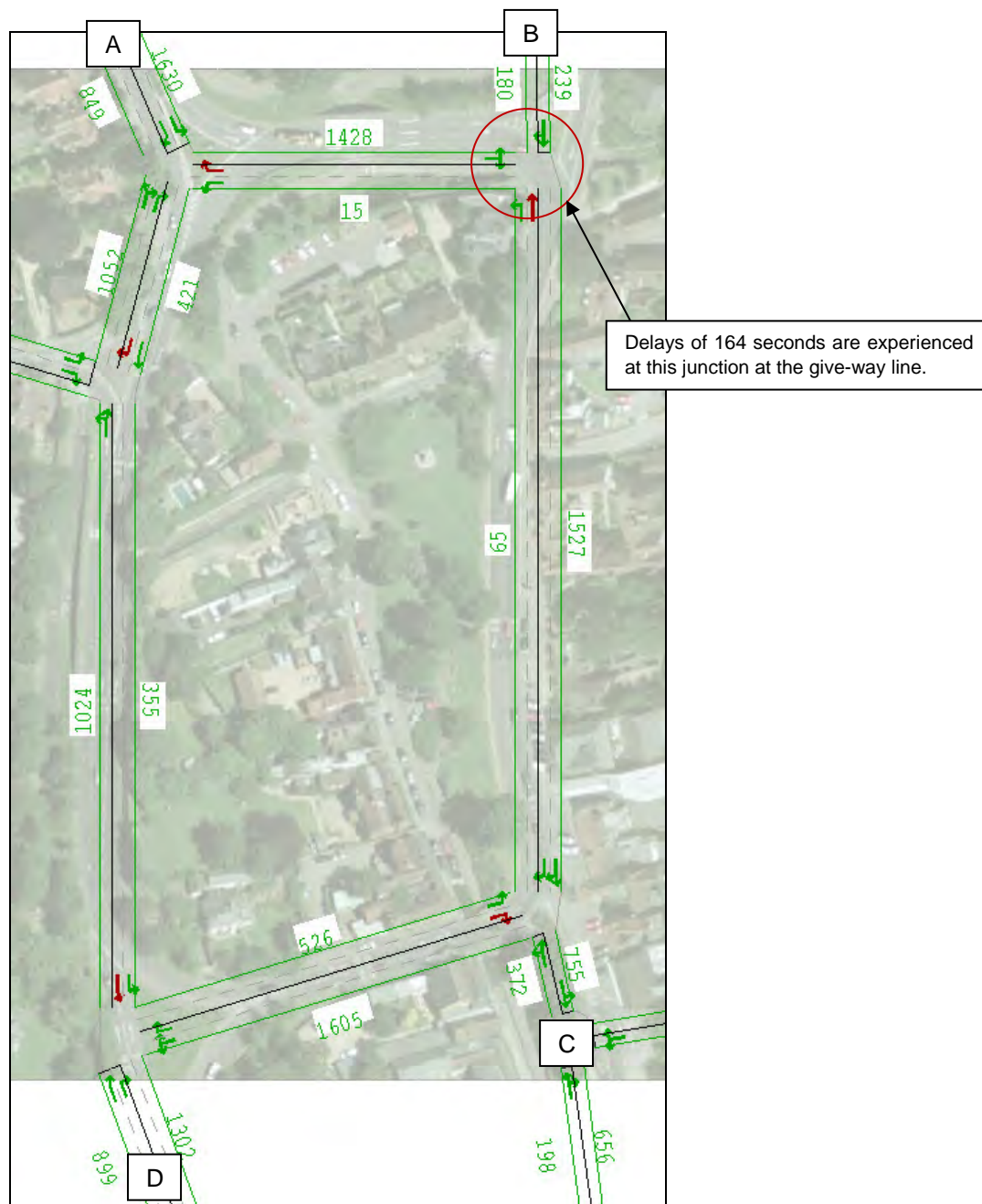
Two different options were initially tested with the gyratory system operating as two-directional:

- **Option One:** Gyratory operates as a two-way gyratory with the current give way markings in force, **Figure 1.1**.
- **Option Two:** Gyratory operates as two main roads North to South with the connecting roads giving way, **Figure 1.2**.

The traffic flows along each section of road are shown on the figures. All flows displayed are in passenger car units (pcus). PCU is a unit of measure whereby larger vehicles, i.e. HGVs, can be converted to equivalent passenger cars using a conversion factor. This allows a mixture of traffic flows to be modelled and analysed more accurately, with road capacity and operation better reflected.

These two options were tested in the morning peak for journey times around the gyratory and for the delay experienced. Journey times for movements around the gyratory (for movements B to D, A to C, D to B and C to A) (**Figure 1.1**) were recorded for each option, **Table 1.1**. Although Option One for the movements had a faster journey time than the base, the amount of delay experienced was still excessive when compared with the existing base situation (one-way gyratory). The majority of this delay was experienced at the junction of North Road and the High Street. This junction experiences delay in the base option and although Option One slightly reduces the delay, the junction is still a pinch point. Therefore it was decided that although the journey times for this option were fast, due to the high level of delay it would be an unacceptable option in the future when demand is expected to increase, causing additional pressure on the junctions.

**Figure 1.1 Option One** - Gyratory operates as a two-way gyratory with the current give way markings in force

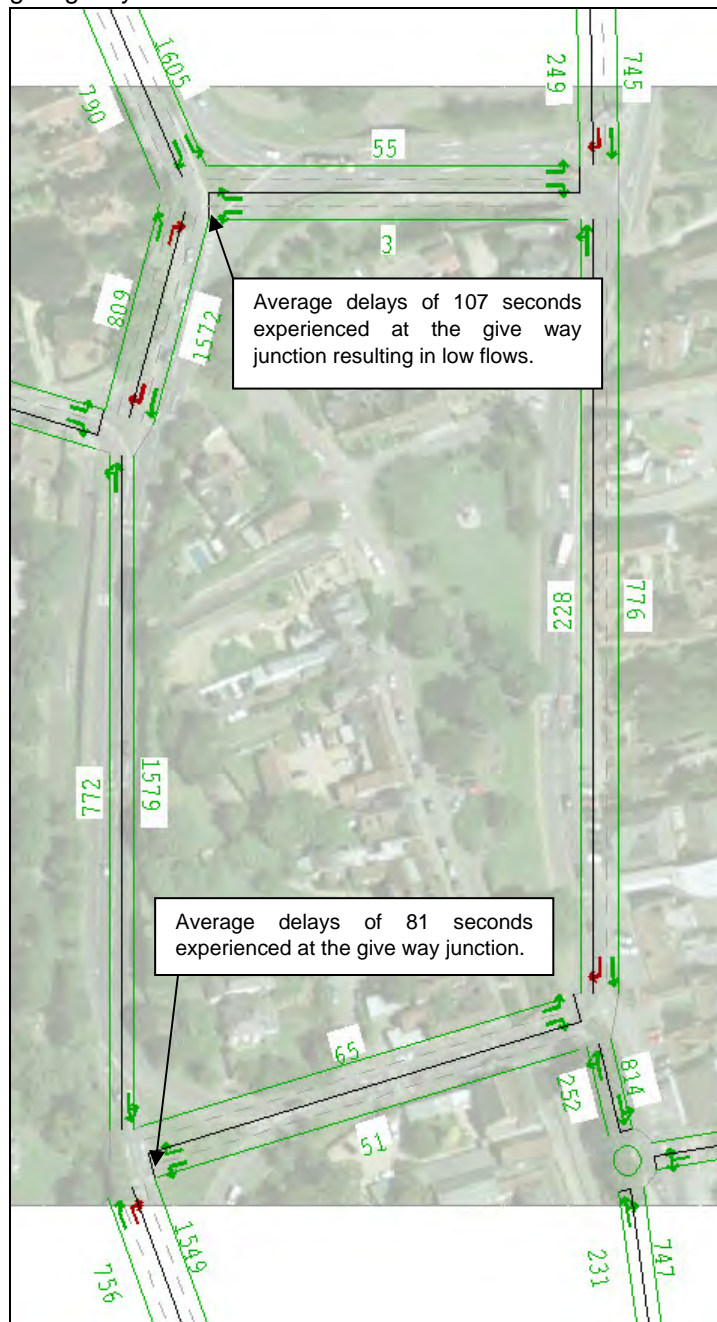


Note: Numbers on plan are traffic flow

Option Two, although not as fast as Option One overall, did successfully reduce the amount of delay experienced at the junctions. There was delay caused at the give way junctions with the two main roads on either side because of the high tidal flow on the main roads, restricting the amount of traffic flow able to exit the minor roads. Although delay for this option was low compared with the other options, the overall journey time was much slower. Therefore this option was discarded, in its current form with only priority junctions controlling movements because it did not achieve enough improvement in journey times around the gyratory to make the scheme viable or improve that situation significantly.



**Figure 1.2 Option Two** - Gyratory operates as two main roads North to South with the connecting roads giving way



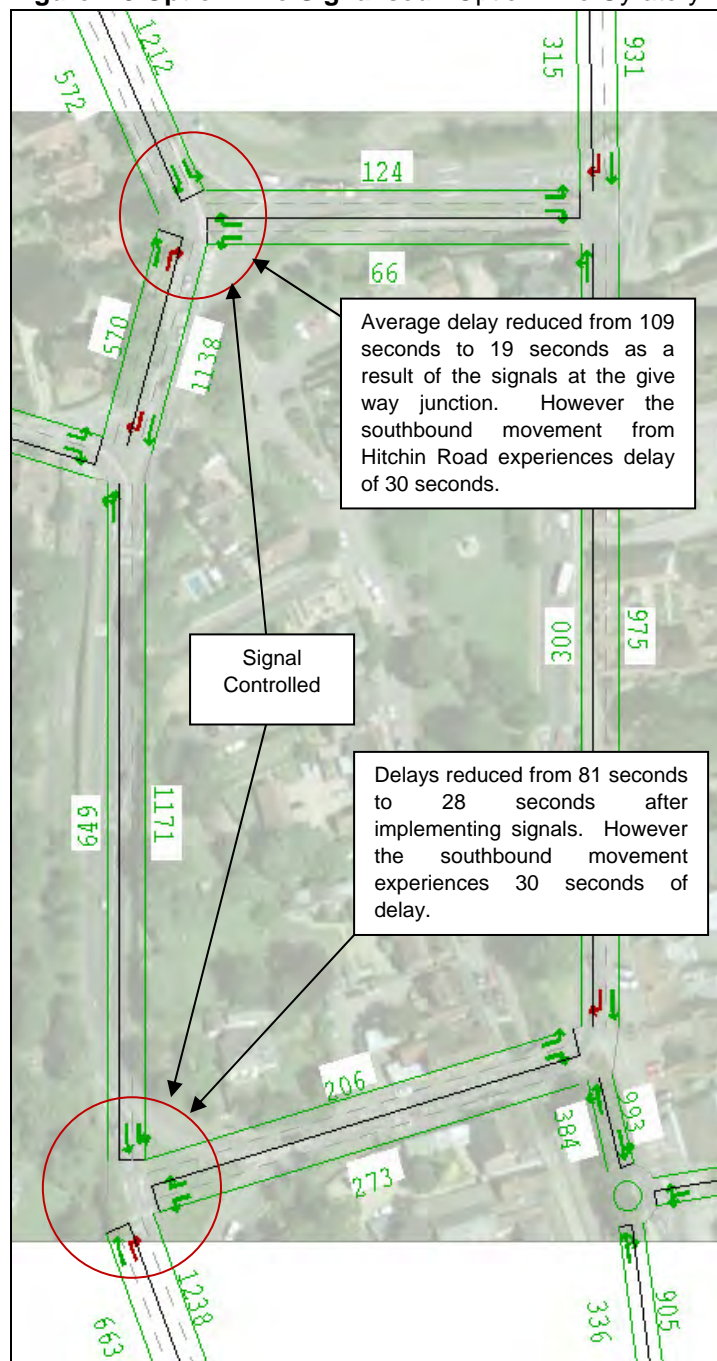
Note: Numbers on plan are traffic flow

After the assignment of these two different options it became clear that some form of control was required to keep delays to a minimum at the junctions whilst ensuring a consistent tidal flow. Therefore an option with junction control was proposed:

- **Option Two Signalised:** Option Two Gyratory with two signal controlled junctions, **Figure 1.3.** (SATURN software was used to optimise the signals using a 45 second cycle time.)

This option struck a balance between the speed of journeys around the gyratory and delay experienced. It produced journey times as fast as Option One but without the excessive delay and the journey times were much faster than Option Two with only a small increase in the amount of delay.

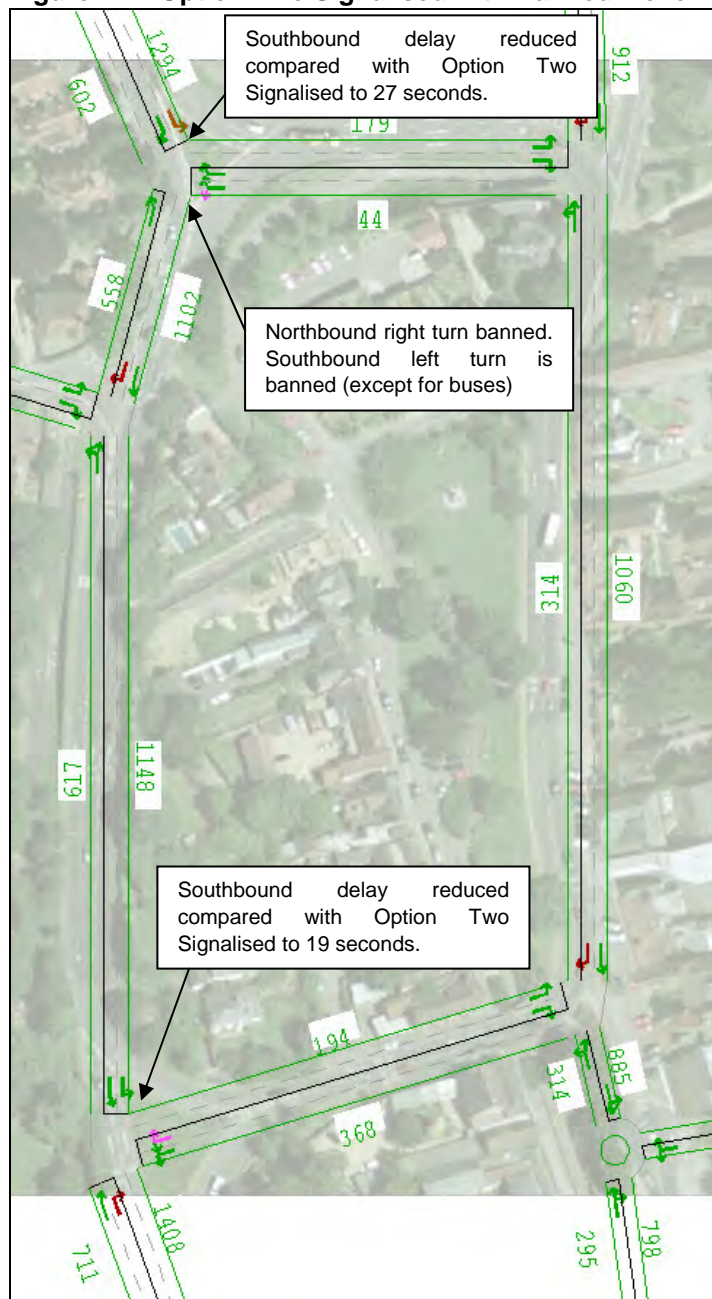
**Figure 1.3 Option Two Signalised - Option Two Gyratory with two signal controlled junctions**



Note: Numbers on plan are traffic flow

Option Two Signalised was developed because some form of junction control was required to ensure all movements were possible and did not experience excessive delay. After further investigations of this option it could be seen that certain movements caused additional delay. An option test was developed with turning movements banned in an attempt to keep a consistent flow, Option Two Signalised with Banned Movements. The banned movements are discussed and shown in **Figure 1.4**. The impact of banning certain movements was successful in that it reduced the overall journey time by 45 seconds and eased the delay compared with Option Two Signalised.

**Figure 1.4 - Option Two Signalised with Banned Movements**



Note: Numbers on plan are traffic flow

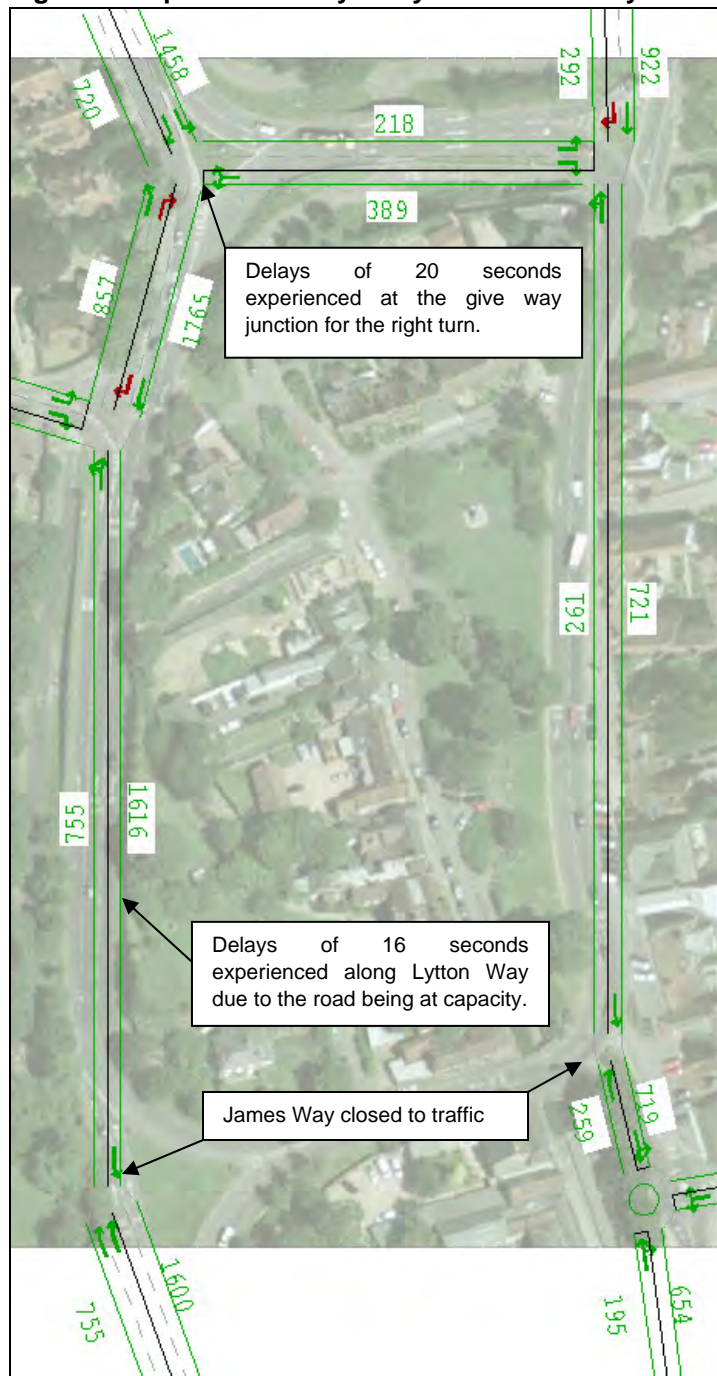
Following further investigation of the gyratory, a further option was proposed with James Way closed to traffic:

- **Option Three:** Gyratory operates as two main roads North to South with a northern connecting road giving way. James Way is closed to all traffic, **Figure 1.5**.

This option is successful in improving journey time around the gyratory and reducing delays compared with other proposed schemes. Traffic flow along Lytton Way increases compared with Option Two Signalised with Banned Movements with a reduction on North Road. This is because traffic that previously used James Way to access Lytton Way from North Road cannot so uses the northern connecting road. The closure of James Way to traffic reduces the number of junctions interacting with Lytton Way so more traffic is able to flow unopposed.



**Figure 1.5 Option Three Gyratory with James Way Closed**



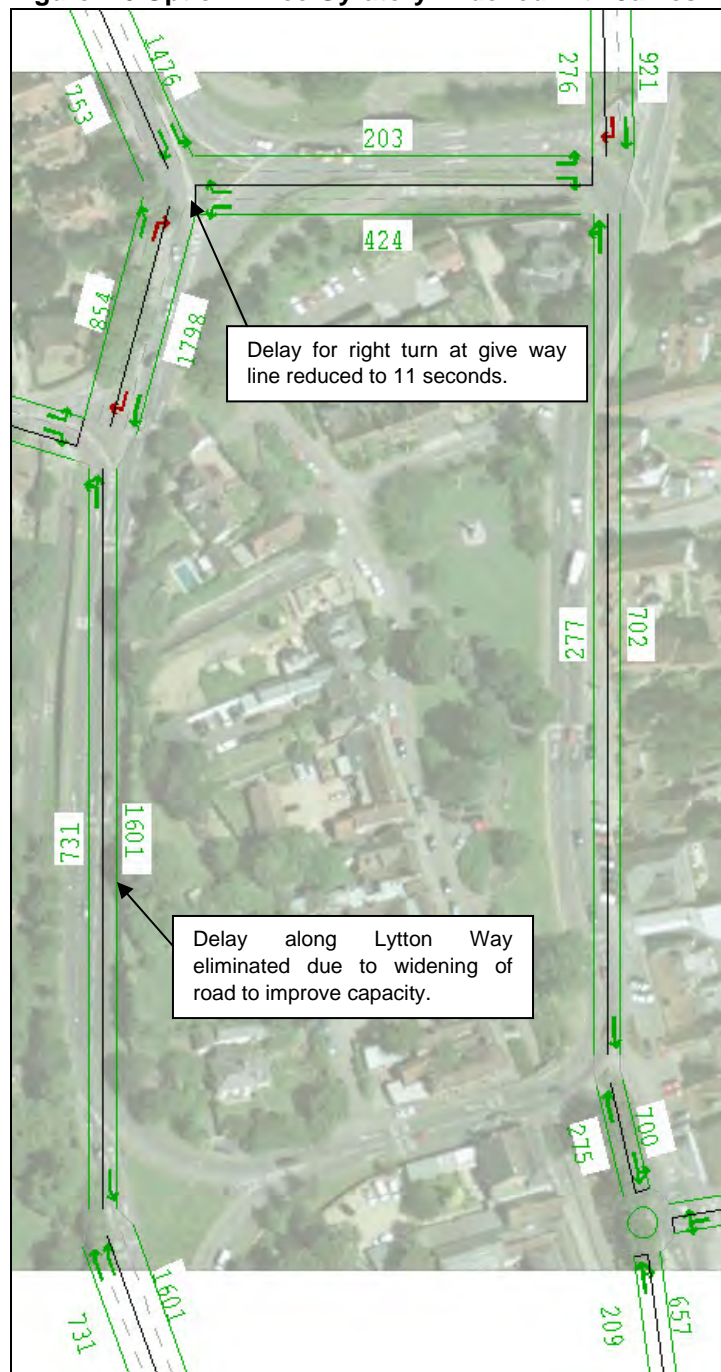
Note: Numbers on plan are traffic flow

It became clear following testing of Option Three that due to increased traffic demand on Lytton Way it operates at capacity during the peak hour. The connecting give way road in the westbound direction also operates close to capacity. Therefore an option was developed with the carriageway widened:

- **Option Three Widened:** Option Three Gyratory with the Lytton Way carriageway widened to 9m and the connecting give way road westbound two lanes at the give way line. This option with the carriageway widened is discussed and shown in **Figure 1.6**.

This scheme further reduces delays around the gyratory with the delay at the Lytton Way give way junction reduced compared with Option Three. Lytton Way also operates within capacity following widening which eliminates delay previously experienced. Following all the different option testing, this option was deemed the most appropriate proposal for improving the flow of traffic around the gyratory.

**Figure 1.6 Option Three Gyratory Widened with James Way Closed**



Note: Numbers on plan are traffic flow

As discussed the journey time to travel across the gyratory was recorded for movements A to C, B to D, C to A and D to B, **Table 1.1**. It can be seen that Option Three Widened produced the fastest journey time with only a marginal acceptable amount of delay.

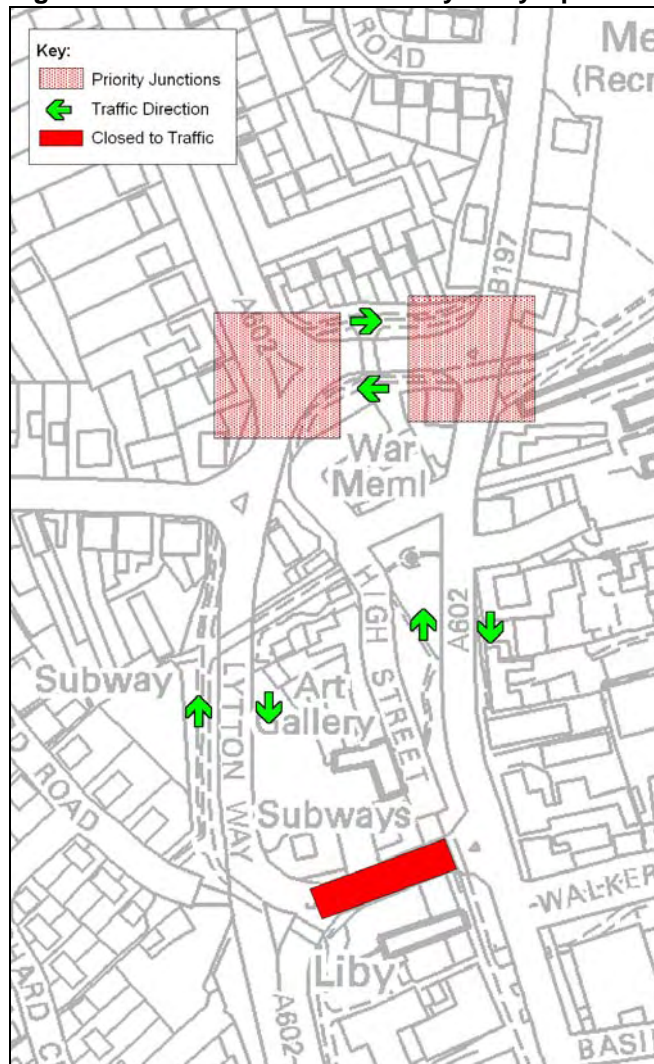


**Table 1.1 Journey Time and Delays around the Gyratory**

Gyratory Option	Total (s)	
	Time	Delay
Base	380	116
One	361	93
Two	473	66
Two Signalised	377	42
Two Signalised with Banned Movements	363	43
Three	342	58
Three Widened	331	48

The most appropriate scheme option for improving traffic flow around the gyratory is Option Three Widened, **Figure 1.7**. This option improves journey time significantly compared with the current base situation and reduces delays to a significantly lower level. It does experience some delay at the give way junctions with Lytton Way and North Road but this is negligible compared with the current base situation and other proposed schemes. The scheme does require widening of Lytton Way to ensure that the road can accommodate the traffic flows in the current year. The widening of Lytton Way to deliver this scheme would require works in conservation areas, affecting listed buildings. This would need to be considered as part of the detailed design stage of the scheme. The scheme has the faster journey times even without widening of Lytton Way so is still the most appropriate scheme option but it is expected that as traffic levels increase in the future, widening would be required.

**Figure 1.7 Preferred Scheme for Gyratory Operation**



Testing of the preferred scheme in 2021 shows that it enables the overall network to perform better compared with the current situation and Option Two Signalised with Banned Movements, **Table 1.2**. Each scenario shown below in 2021 includes the proposed UTP schemes with the only difference between the Base and the other two scenarios being the relevant gyratory design.

**Table 1.2 2021 Gyratory Network Comparison**

Gyratory Option	Average Speed (km/h)	Total Delay per vehicle (mins/veh)	Total delay based on distance travelled (mins/veh.km)
Base	29.4	5.91	0.99
Two Signalised with Banned Movements	29.7	5.78	0.97
Three Widened	29.7	5.77	0.97

## Indicative Cost:

It is not anticipated that this scheme could not be delivered in the next 5 years, so it falls in to the long term category. No costings have been derived for the schemes in the long term as this falls outside the life of this UTP

**Scheme:**

Address operational issues A1(M) Junction 8

**Reference:**

HM32

**Scheme Status:**

This scheme is included in the UTP

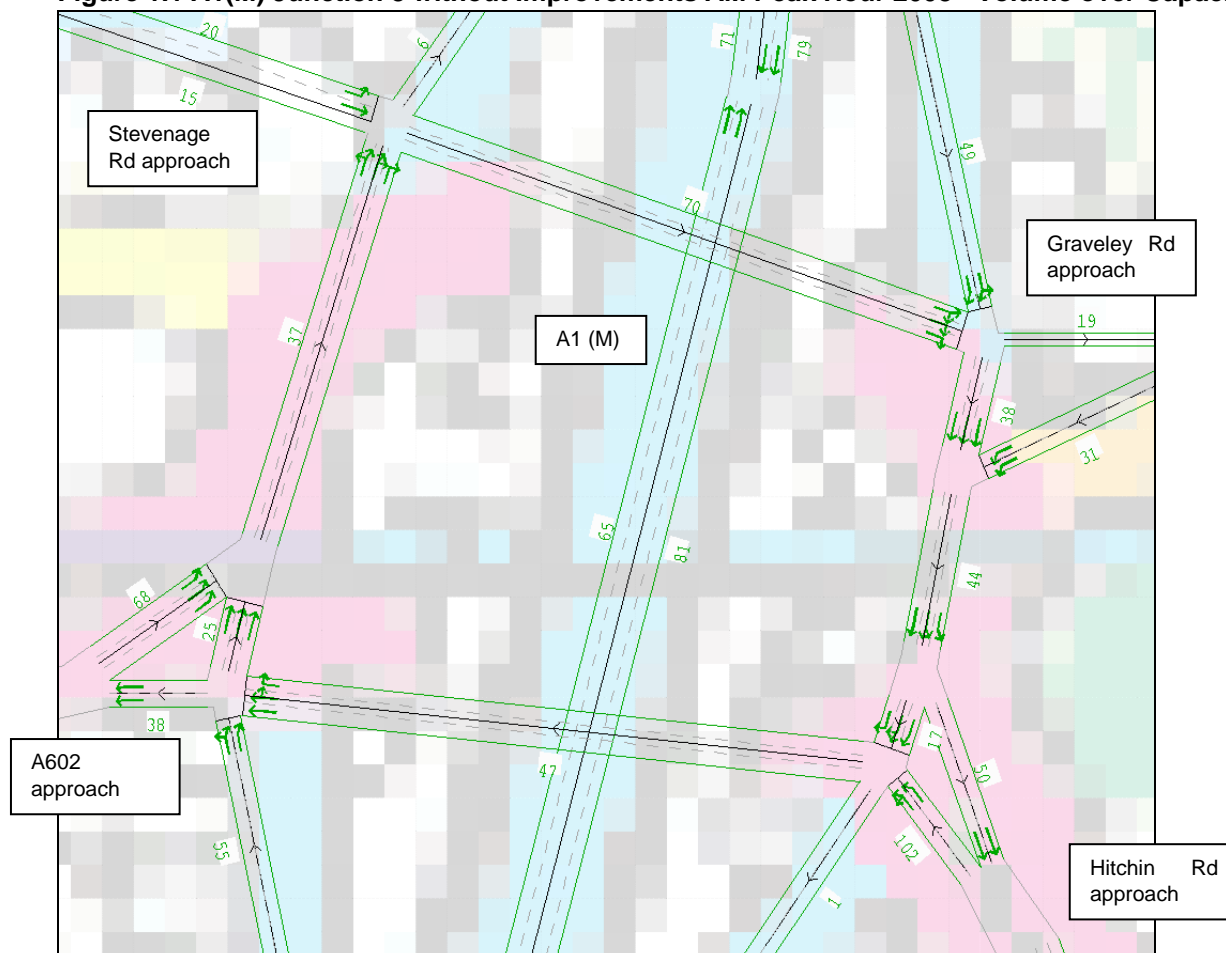
**Purpose:**

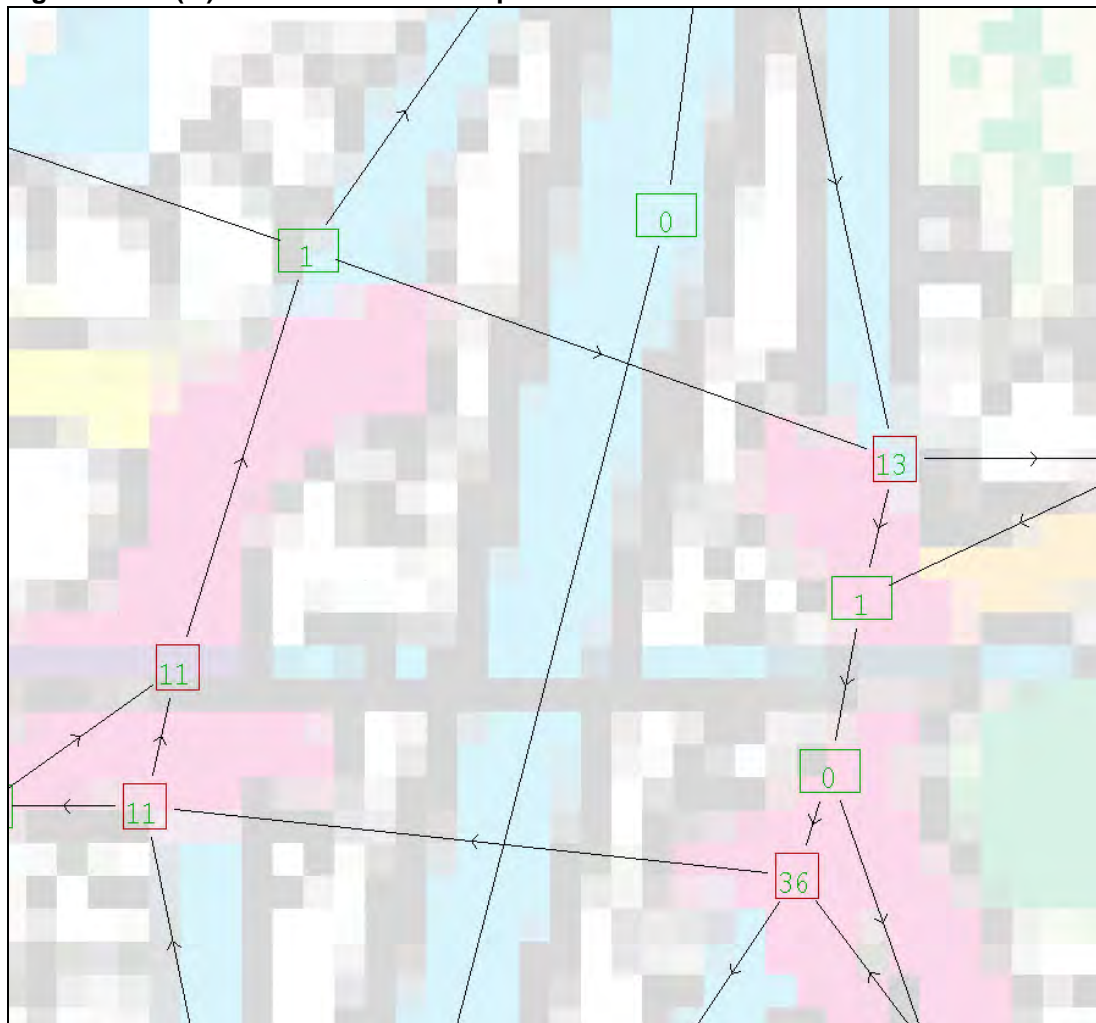
The issue at this junction is that it is operating at or near-capacity during peak periods, and with expected growth assumptions in the future this is likely to get worse. Mitigation strategies are required to relieve any current or future year congestion that arises. This proposal outlines testing of possible mitigation schemes with any major junction reconstruction assessed in detail. The junction was assessed in the morning peak because it was seen have to have worse delay and congestion.

### Details:

The junction in the 2008 base year shows signs of operating at or near-capacity with several junctions experiencing delay and the A602 Hitchin Road approach over capacity, **Figure 1.1** and **1.2**. The volume over capacity ratio shown in the diagram below indicates when a junction is approaching 100% of its design capacity. If volume over capacity is approaching and exceeding 85% of its design capacity it is generally accepted that congestion will begin to occur.

**Figure 1.1 A1(M) Junction 8 without Improvements AM Peak Hour 2008 - Volume over Capacity**



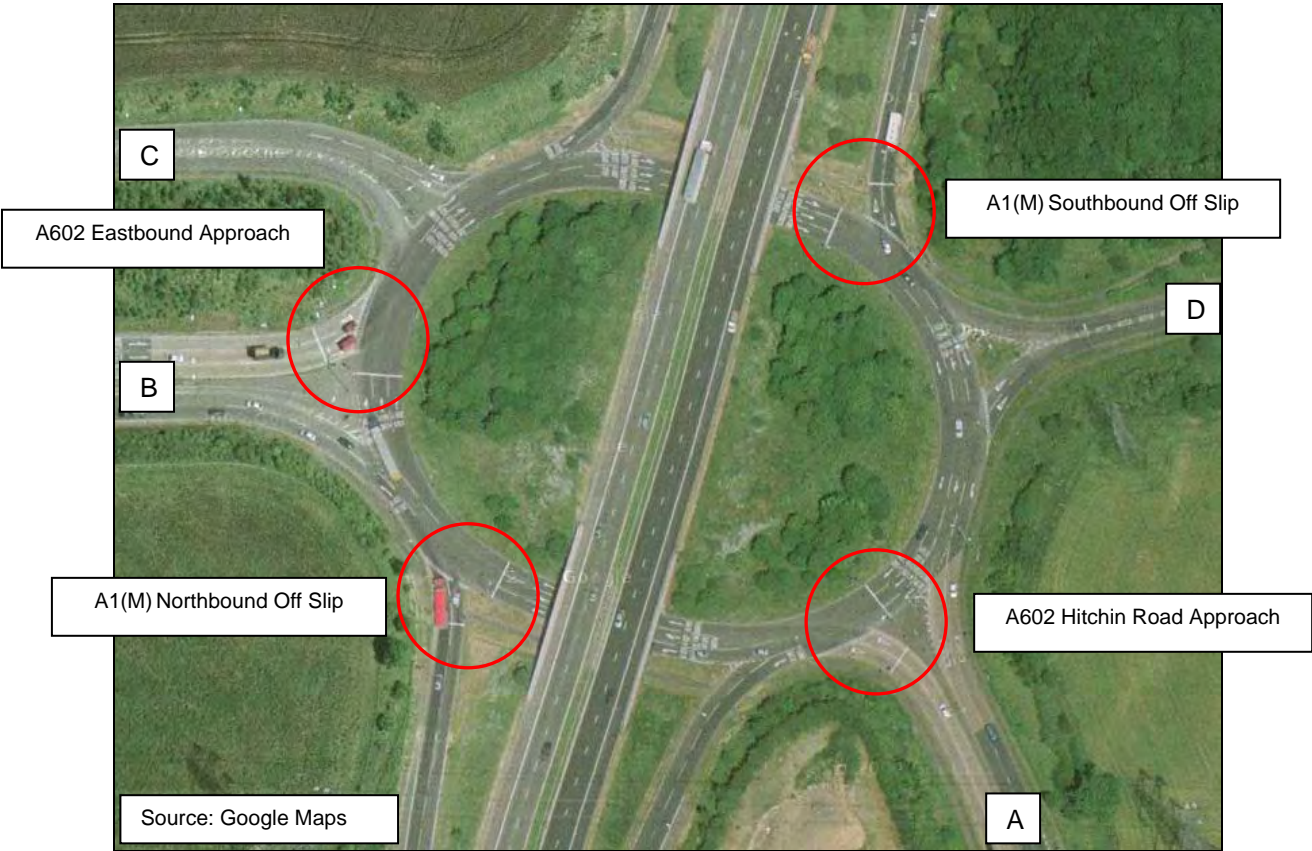
**Figure 1.2 A1(M) Junction 8 without Improvements AM Peak Hour 2008 – Junction Delay (secs)**

The junction by 2014 again comes under pressure as additional development has been introduced in the area, with delay experienced at the A602 Hitchin Road junction approach. By 2021 the junction experiences delay at several approaches with numerous arms at or near to capacity, **Figure 1.3**. Although in 2021 the northbound off slip does not experience as much delay as the southbound off slip junction or the Hitchin Road approach, it is at capacity and as a knock-on effect of improving traffic flow through these junctions, the northbound off slip junction is also affected. The Hitchin Road approach in particular acts as a throttle holding traffic back from entering the roundabout and ensuring a continual flow of traffic around the roundabout. Improving the flow of traffic through this junction will have the knock-on effect onto the other approaches to the roundabout, namely the northbound off slip approach.

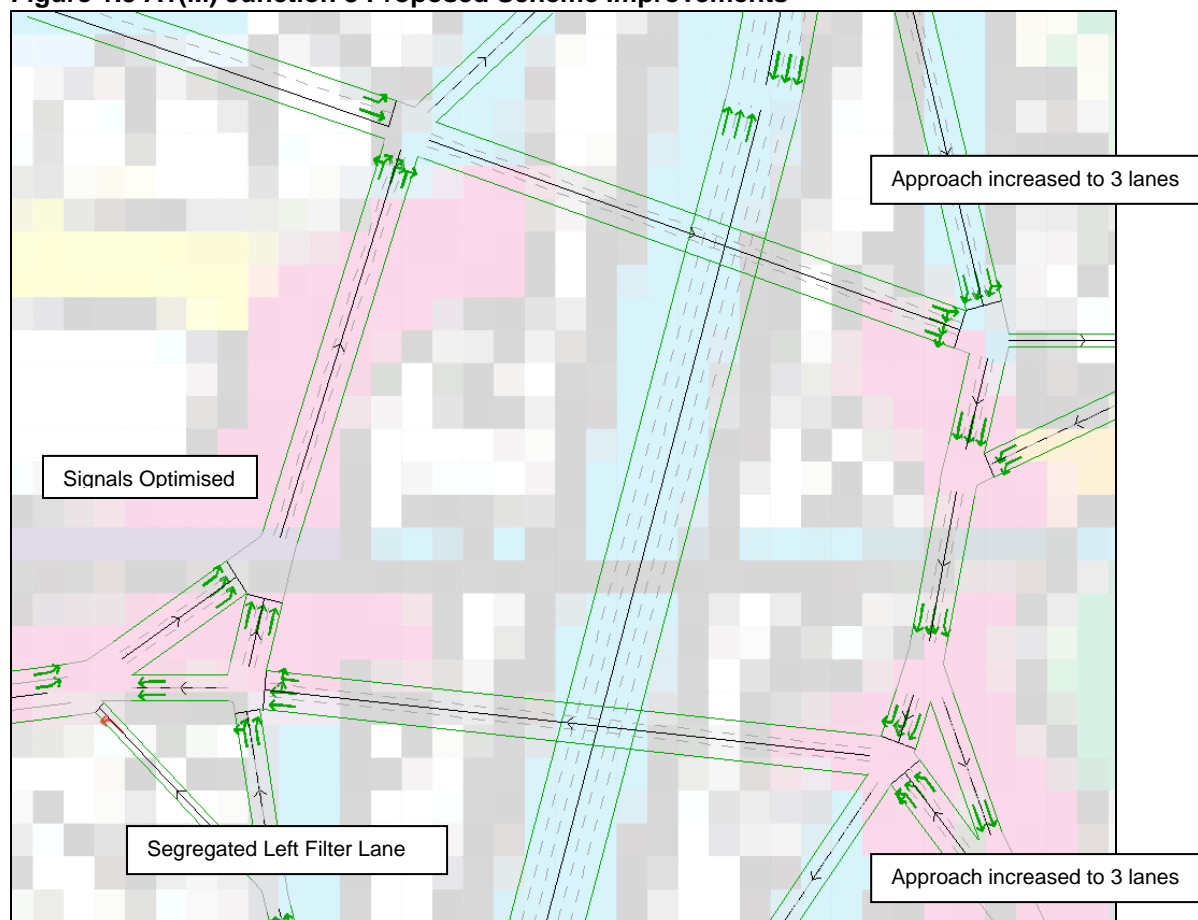




**Figure 1.4 A1(M) Junction 8 Proposed Scheme Improvement Locations**



**Figure 1.5 A1(M) Junction 8 Proposed Scheme Improvements**



**Impacts of the improvements are, Figure 1.6:**

- Reduction in over capacity links so that roads approaching and circulating the roundabout are operating under capacity
- Increased traffic flow around and through the roundabout and on the approaches
- Elimination of significant delays (greater than 30 seconds delay) at junctions
- More consistent and improved travel times through the roundabout
- Traffic routing away from minor local roads and using the major trunk roads
- Reduction in traffic on minor residential routes

Analysis of journey times through the junction show that as a result of the improvements, travel times are quicker with less delay experienced. Journey times were assessed between each of the four approach arms A, B, C, and D (excluding the motorway slips), **Figure 1.4** and **Table 1.1**.

**Table 1.1 Journey Time through A1(M) Junction 8**

Junction 8	Journey Time* (seconds)	Journey Delay (seconds)
Without Improvements	1779	1155
With Improvements	1424	786

*\*Delay is included in total journey time*

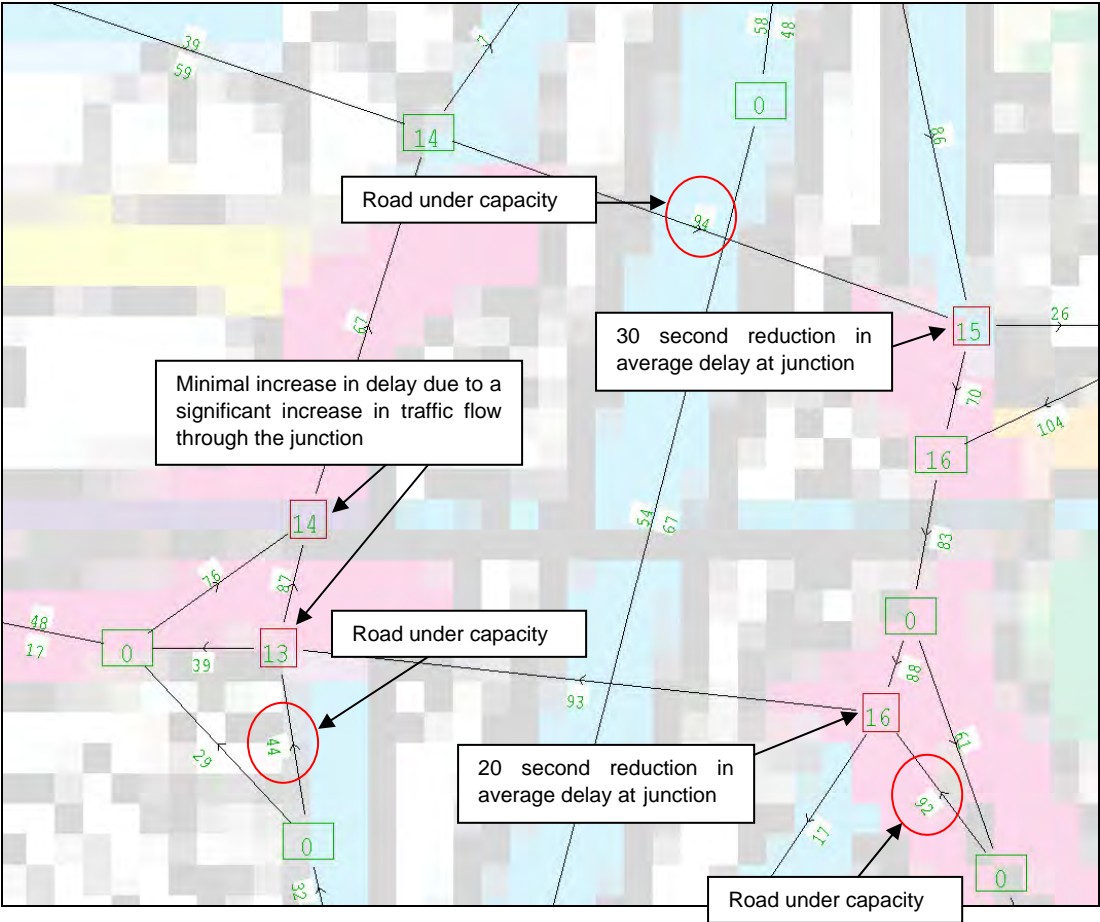
As discussed and shown in **Figure 1.7**, the introduction of improvements to A1(M) Junction 8 in the AM peak results in some significant reductions in flow within the town centre, although there are some isolated locations where traffic flows have increased such as Hitchin Road. The reason for this is due to the fact that with the reduction in delays and increase in capacity at Junction 8 trips from the north of

Stevenage which used to travel through the town centre and get on the A1(M) at Junction 7 are now routing up to Junction 8 to join the A1(M). This results in a lot of reductions in flow on minor roads around the town centre. The key changes in flow as a result of Junction 8 improvements in 2021 AM peak are:

- A1(M) J7 – J8 – Flow increases by 160pcus
- A1(M) J8 – J7 – Flow increases by 330pcus
- Hitchin Road northbound – flow increases by 700pcus
- Hitchin Road southbound – flows increases by 250pcus
- Gunnels Wood Road southbound – flow decreases by 110pcus
- Gunnels Wood Road northbound – flow decreases by 170pcus
- New Link Road North westbound – flow decreases by 100pcus
- A602 eastbound – flow increases by 180pcus
- A602 westbound – flow increases by 130pcus
- Stevenage Road (Little Wymondley) eastbound – flow decreases by 230pcus
- Stevenage Road (Little Wymondley) westbound – flow decreases by 125pcus

If the junction improvements were implemented by 2021 along with other proposed improvements then the impact on the overall network performance would be a positive one.

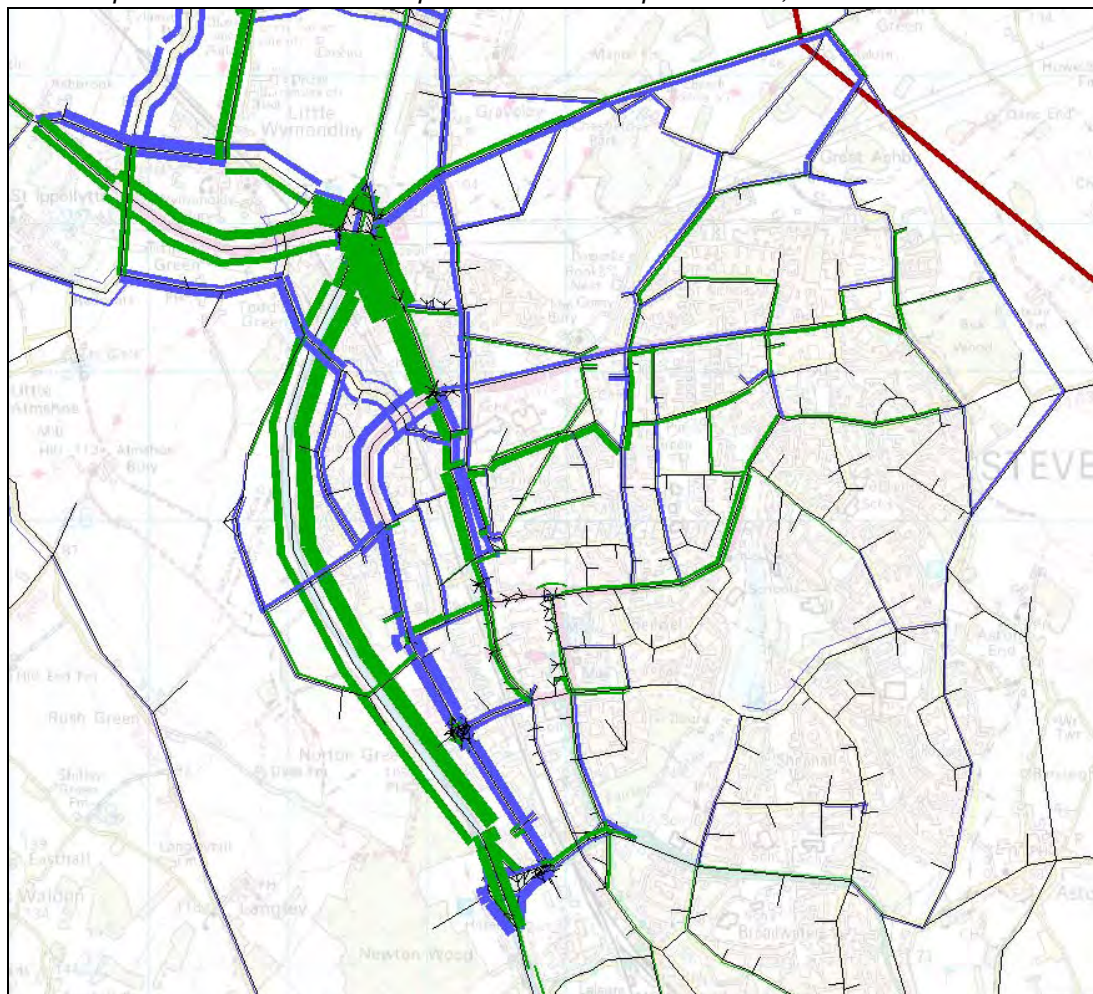
Figure 1.6 A1(M) Junction 8 with Improvements AM Peak Hour 2021 – Junction Delay (secs) and Volume over Capacity on roads





**Figure 1.7 A1(M) Junction 8 compared with A1(M) Junction 8 with Improvements AM Peak Hour 2021 – Actual Flow (pcu/hr)**

*Green represents an increase in trips as a result of improvements, blue a reduction*



The impact of improving junction 8 has been reported assuming that the A1(M) between junction 7 and 8 will have been widened by 2021. A sensitivity test has been undertaken to assess the impact of the junction 8 improvements without motorway widening.

Even without extra demand from the widening of the motorway between junctions 6 and 8, Junction 8 struggles to cope with the demand when no improvements are made, **Figure 1.8**. As a result of improvements to Junction 8, **Figure 1.9**:

- Delays are reduced at the junction
- All approach roads to the junction and the circulating road operate under capacity
- The flow of traffic around the junction is improved leading to more consistent and improved travel time

The impact on the wider network is a positive one albeit on a smaller scale compared with the motorway widened test. There is an increase in demand on the major trunk road approaches and a decrease in traffic using local roads, **Figure 1.10**. The key changes in flow as a result of Junction 8 improvements in 2021 AM peak without motorway widening are:

- Hitchin Road northbound – flow increases by 380pcus
- Hitchin Road southbound – flow increases by 50pcus
- Martins Way westbound – flow increase by 80pcus



- Great Ashby Way westbound – flow decreases by 55pcus
- Stevenage Road northbound – flow decreases by 60pcus
- A602 westbound – flow increases by 30pcus
- Stevenage Road (Little Wymondley) eastbound – flow decreases by 60pcus
- Stevenage Road (Little Wymondley) westbound – flow increases by 40pcus

**Figure 1.8 A1(M) Junction 8 No Improvements AM Peak Hour 2021 (No Motorway Widening) – Junction Delay (seconds) and Volume over Capacity on roads**

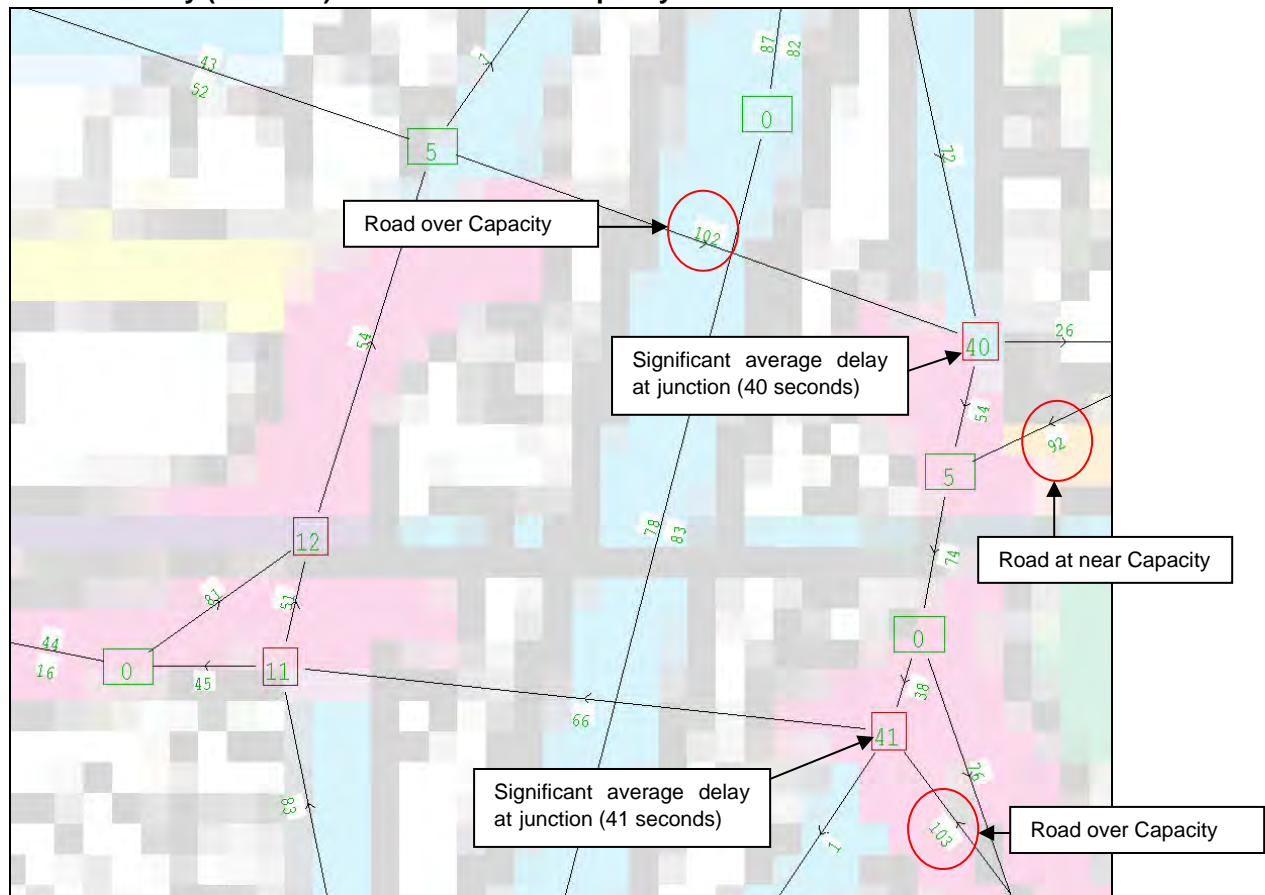
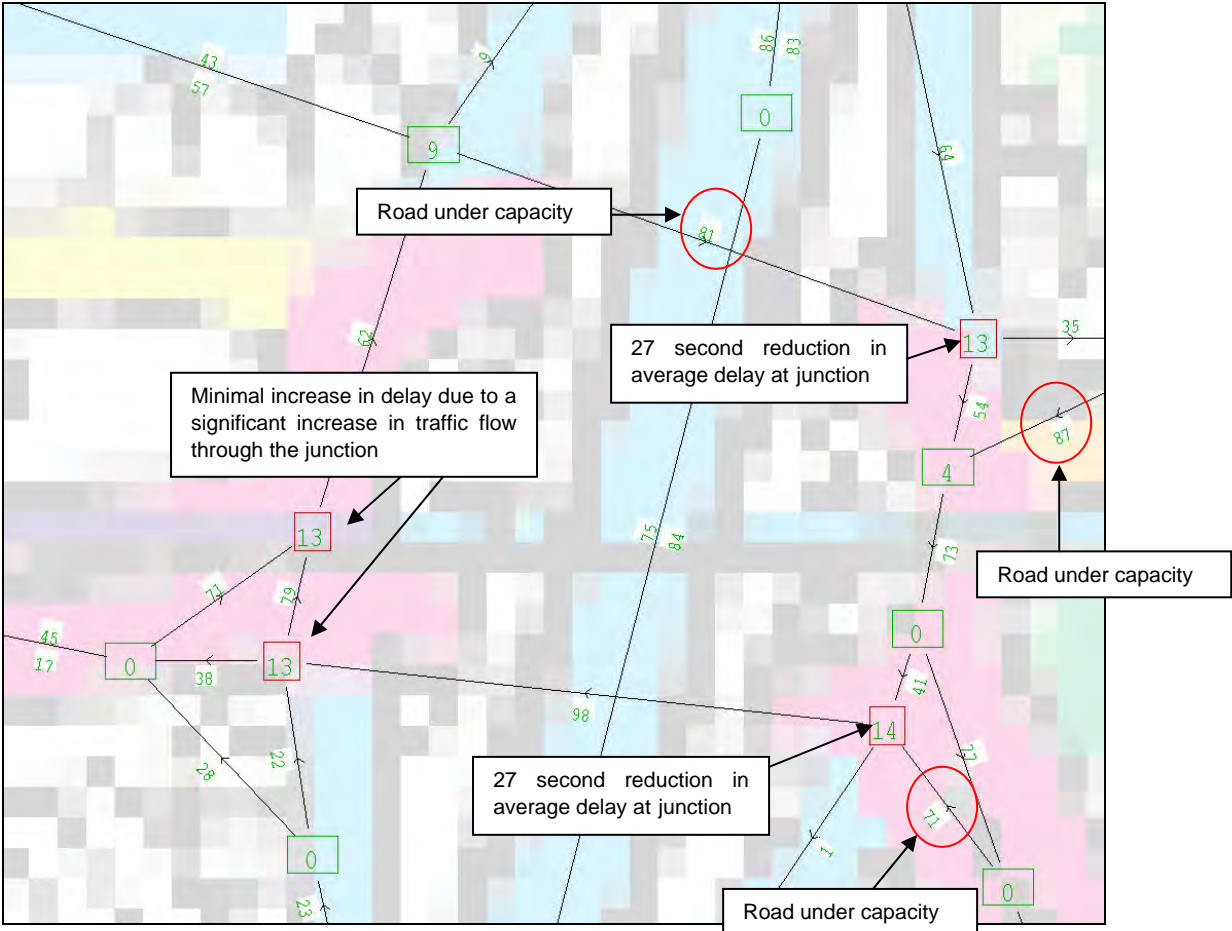
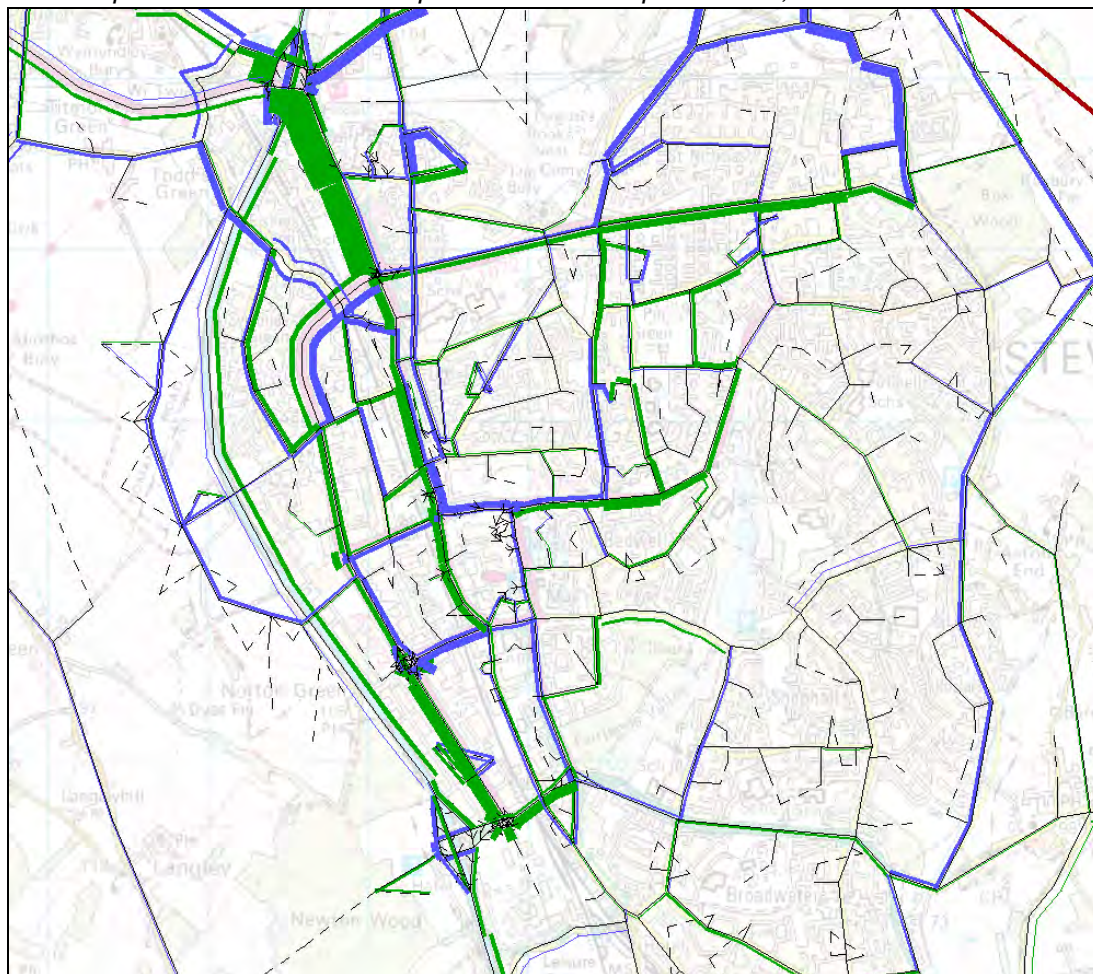


Figure 1.9 A1(M) Junction 8 with Improvements AM Peak Hour 2021 (No Motorway Widening) – Junction Delay (secs) and Volume over Capacity on roads



**Figure 1.10 A1(M) Junction 8 No Improvements compared with A1(M) Junction 8 with Improvements AM Peak Hour 2021 (No Motorway Widening) – Actual Flow (pcu/hr)**  
*Green represents an increase in trips as a result of improvements, blue a reduction*



If the motorway between junction 6 and 8 is widened by 2021 then Junction 8 will need to be improved to mitigate extra demand generated by the motorway improvements. If the motorway is not widened, Junction 8 will still need improving because it is operating at near or over capacity on several approaches by 2021 with a high level of delay experienced on the roundabout.

## Benefits:

- Increased capacity at the motorway off slip junctions, reliving pressure on A1(M)
- Increased capacity on the approach from Stevenage, reducing the impact on Stevenage
- Reduced delay and congestion on the A1(M) junction
- Improved flow around the A1(M) junction
- Improved journey times through the roundabout
- Reduced queues and delays on the roundabout and approach roads
- Traffic routes away from local roads and onto major trunk roads

## Risks:

- Compulsory Purchase Orders (CPOs) may be required to purchase the land required for any widening
- Funding a scheme involving the possibility of CPOs and widening is likely to be difficult and complex

- There will be a lengthy period of disruption whilst this scheme is implemented.
- Assumed that A1(M) Junction 7 to 8 has been widened to 3 lanes to accommodate the increase in demand around Junction 8. It has been shown that the junction will require improvements even without motorway widening occurring.

**Conclusion:**

It has been identified that this junction operates close to or at capacity currently and thus mitigation schemes are required to relieve the pressure. A scheme involving the widening of two approaches, a segregated filter lane from another approach and optimising the signals for a fourth junction have been suggested which help relieve the pressure and allow the junction to operate more efficiently. Improvements to the junction also relieve traffic demand pressures on local residential roads within Stevenage.