Highways Schemes

Highway schemes included in the UTP

Scheme Reference	Scheme Name	Timescale	Page Number
HM7	Direct goods vehicles appropriately and restrict lorries from using the High Street	Short	123
HM8	Extend the existing vehicle closures in the town centre and pedestrianise the high street	Short	127
HM13	Introduce traffic calming measures on Stotfold Road to reduce vehicle speeds	Short	131
HM19	Reduce the through movement of traffic in the town centre (*this is now progressed through HM37*)	Short	134
HM28	Review road signing within Hitchin	Short	140
HM31.1	Implement experimental ban of the right turn into Willow Lane	Short	143
HM31.2	Address issues of rat running, speeding and heavy goods vehicles on Willow Lane/Charlton Road	Short	145
HM33.29	Pirton Road – speed investigations (*addressed through HM33)*	Short	148
HM35	Introduce a package of smarter measures such as travel marketing, travel plans and car clubs to reduce reliance on the car	Short	150
HM9	Address rat runs through and around the town (*addressed through HM37, HM8, HM28 and HM33*)	Medium	156
HM15	Improve signalised junctions and pedestrian phasing throughout Hitchin (*addressed through HM37 and HM32)*	Medium	157
HM24	Introduce road narrowing and more crossings rather than speed humps (*addressed through WM2)*	Medium	159
HM27	Upgrade the roads around the employment area (*addressed through HM7 and HM32)*	Medium	160
HM31	Implement junction improvements along the A505/ A602 corridor to maximise existing capacity	Medium	162
HM32	Improve operation of Cadwell Lane junction to minimise the impact of HGV's on the local area and improve crossings	Medium	168
HM33	Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds	Medium	172
HM36	Highway infrastructure improvements identified using SHUM	Medium	178
HM37	Introduce a shared space scheme for the Town Centre	Medium	181

Highway schemes not included in the UTP

Scheme Reference	Scheme Name	Timescale	Page Number
HM34	Introduce a mini roundabout at the junction of London Road and Blackhorse Lane	Short	153
HM20	Revert one-way systems to two-way (Payne's Park / Old Park Road / Bedford Road)	Medium	185

Scheme Name	Direct goods vehicles appropriately and restrict lorries from using the High Street	
Scheme Reference:	HM7	
Problem References:	H1	Cadwell Lane is seen as being inappropriate for HGV's and causes community severance
	H4	HGV's route through residential areas
	H19	HGV's carrying freight travelling along Nightingale Road
	H26	Lorries route along the High Street
	H27	HGV's unable to negotiate Woolgrove Road bridge
Scheme Status:	This scheme is included in the UTP and is in part addressed by other specific UTP schemes	

Description of Proposals

The issue of heavy goods vehicles travelling along inappropriate routes within Hitchin was raised at the stakeholders' consultation. It was raised that goods vehicles travel through residential areas in Hitchin and along the High Street.

To address this problem, improvement to the existing HGV signage with additional signage to direct HGV's around Hitchin to use the main distributor routes will help reduce the number of goods vehicles using inappropriate routes. The improved signage in addition with the enforcement of restricting goods vehicles on the High Street will reduce the number of inappropriate vehicles on the High Street. Improved HGV management through additional and improved signage and prohibitions will improve routing so that HGV's do not travel through residential areas or along inappropriate roads. It should be noted that prohibitions will not apply to buses or coaches, or prevent HGV's requiring access.

Implementing a ban on goods vehicles along the High Street will reduce any congestion caused by HGV's and stop goods vehicles from using the High Street as a through route. This part of the scheme is addressed in more detail through HM8 which looks at closing the High Street to all traffic not just HGV's by using physical measures.

Location Plan:

Supporting Photograph(s)

Example of existing signage restricting goods vehicles from using particular roads

Example of existing signage directing traffic

Example of current signage placing restrictions on goods vehicles from using particular routes

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Issue with closures of routes could have an impact on emergency services access times so consultation would be required	Engage with emergency services early on	Y
Signs have little impact and cannot always be enforced	Enforcement of the prohibitions would be the responsibility of the Police	Y

Links to other UTP schemes:	HM8 - Extend the existing vehicle closures in the town centre and pedestrianise the High Street HM19 – Reduce the through movement of traffic in the town centre (Brand Street/Bancroft/Hermitage Road) HM37 – Introduce a shared space scheme for the town centre

Contribution to Objectives / Indicators:	UTP Objectives	1) Increase pedestrian priority across Hitchin and enhance the quality of the pedestrian environment 5) Address peak hour congestion on the highway network both for the present and in the future 6) Direct traffic more appropriately across/through the town 9) Support the economic vitality of Hitchin's shops and businesses

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
Traffic Signs	£500	£85 / unit
Posts	£600	£100 / unit
Foundations	£900	£150 / unit
Design Fees	£46,000	Provided by HCC

Works Costs	£30,000	Provided by HCC
TOTAL COST FOR DELIVERY	£78,000	

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	Y	~~N~~
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~

Other Information/Additional Notes:

Scheme Name	Extend the existing vehicle closures in the town centre and pedestrianise the High Street	
Scheme Reference:	HM8	
Problem References:	H13 CO2	Rat running within Hitchin is problematic Majority of traffic has to route through the town centre
Scheme Status:	This scheme is included in the UTP	

Description of Proposals

It was raised at the stakeholder consultation that traffic routing through the town centre causes congestion and deters pedestrians and cyclists. It was also raised that routes through the town centre are used as rat runs by drivers to avoid delays and congestion in other parts of the town. An option has been developed which will extend the existing vehicle closures in the town centre which are in force on Saturdays to the rest of the week. As part of this option the High Street will be closed to traffic so that it is more pedestrian friendly with the parking bays on the High Street removed.

Vehicle closures are often difficult to enforce unless physical measures are implemented to restrict such movements. The current vehicle restriction in place is a gate which is closed on a Saturday to stop vehicle access to the High Street. It is proposed that the gate is replaced with a system of rising bollards which would be installed on the entrance to the High Street in place of the gate. The rising bollards would be in operation 24/7 to manage through traffic whilst still allowing permit holders access to the shops for deliveries, and access to the town centre for emergency vehicles. It is intended that the closure of the High Street to vehicular traffic will be in place 24 hours a day.

Two rising bollards would be required at the entrance to the High Street to stop vehicles from travelling along the High Street. The design of the bollards and operation would need to meet the required design standard and have the provision to allow access by emergency service vehicles. This may be achieved by the use of a special key / smart card or via an intercom system. An intercom system would require an operative at a control room. Due to the nature of these installations they need to be specified, installed and maintained to a high specification, with system monitoring, remote operation and CCTV to provide an impartial evidential record of events. The rising bollard system installed would be similar to other systems in operation across the County in Hatfield, Hemel Hempstead, Hoddesdon, Ware and Watford.

The implementation of rising bollards is a relatively new development that can be effective in controlling the entry of small numbers of vehicles into a pedestrainised area. Bollards and other regulations under sections 92 of the Road Traffic Regulation Act 1984 (RTRA) may include obstructions of any description whatsoever. These may be fixed or moveable and may be placed so as to prevent the passage of vehicles at all times or at certain times only. It follows from this that rising bollards are lawful as movable obstructions if they prevent the passage of vehicles where this is prohibited by a traffic order.

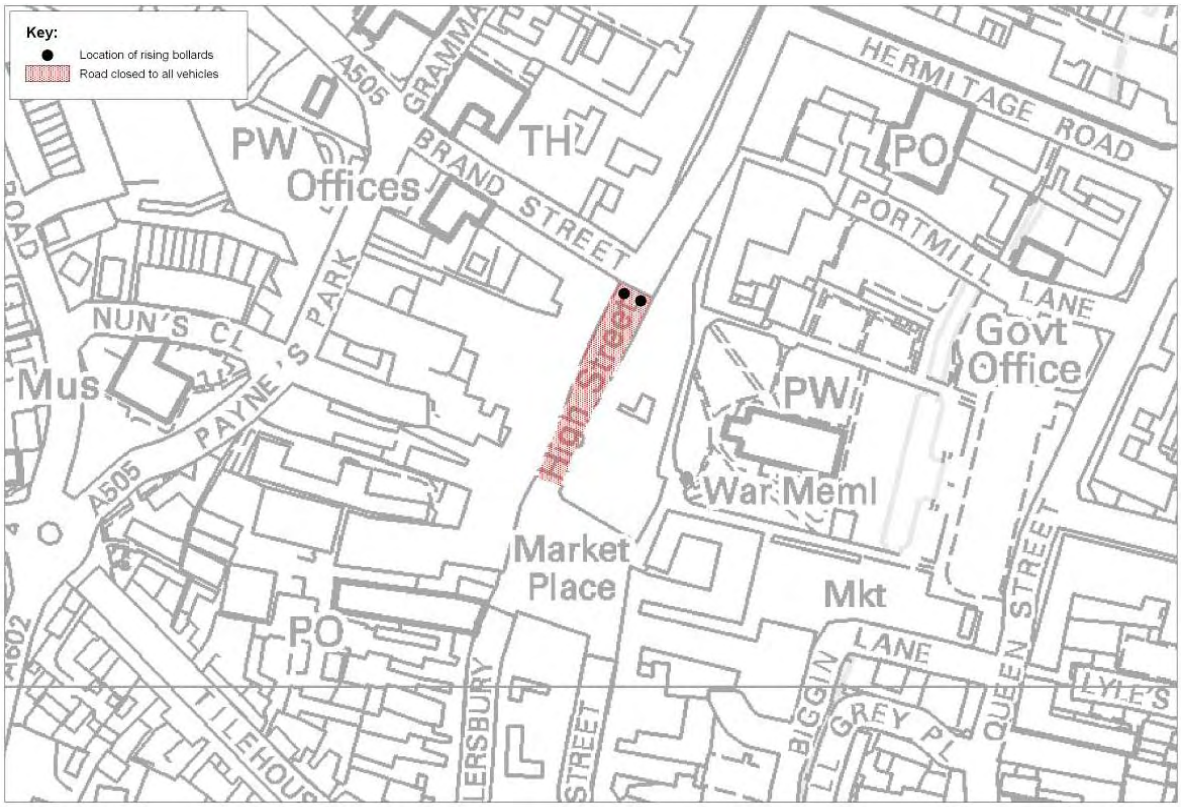
The whole life installation of rising bollards should be considered including installation, maintenance and operating costs to assess the true financial and operational benefits. It is recommended that a detailed risk assessment for the proposed scheme is completed at an early stage. This should cover the following:

- Visibility – road users should be made aware of the presence of bollards.
- Positioning – should not be sited close to traffic signals or pedestrian crossings
- Access – treatment of exits should be considered so that they are not used as unofficial entrances. Special access for emergency vehicles should be considered.
- Management – should be comprehensive so that any queries or complaints can be dealt with quickly.
- Non-Compliance – any scheme will be abused that is uncontrolled.
- Signage – should provide pre-warning in advance of bollards with operating times and vehicle

class allowed.

- Indicators – clear indication when bollards have retracted should be visible to the waiting road user.
- Safety Considerations – effect of installation on all road users, not just those in four wheeled vehicles.
- Operational Monitoring – continual monitoring should be in place to identify any modifications to the equipment or improvements to the operating system.

Location Plan/outline Scheme Plan



Supporting Photograph(s)

Current Vehicle Restriction at the High Street

Existing signage showing restrictions on the High Street

Example of a Rising Bollards System

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Issue with the closures of routes could have an impact on emergency services access times so consultation would be required	Engage with emergency services early on. Provide provision for access either with a special key or smart card.	Y
Access to the businesses in the town centre for loading and unloading	Consult with businesses so that they have access for loading and unloading during certain times	Y

Links to other UTP schemes:	HM37 – Introduce a shared space scheme for the town centre HM7 – Direct goods vehicles appropriately and restrict lorries from using the High Street HM19 – Reduce the through movement of traffic in the town centre (Brand Street/Bancroft/Hermitage Road) WM5 – Increase pedestrianisation of the town centre, in particular on market days

Contribution to Objectives / Indicators:	UTP Objectives	1) Increase pedestrian priority across Hitchin and enhance the quality of the pedestrian environment 3) Improve the accessibility of key destinations for all users 6) Direct traffic more appropriately across/through the town 9) Support the economic vitality of Hitchin's shops and businesses

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
Access Control – rising bollards	£50,000	Cost from HCC ITS strategy, July 2008
Highways CCTV	£20,000	Cost from HCC ITS strategy, July 2008

Annual operating and maintenance costs are not included		
TOTAL COST FOR DELIVERY	£70,000	

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	Y	~~N~~
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~

Scheme Name	Introduce horizontal traffic calming measures on Stotfold Road	
Scheme Reference:	HM13	
Problem References:	H5	Excessive vehicle speeds in parts of Hitchin
	H13	Rat running within Hitchin is problematic
	H18	There is seen to be a lack of enforcement of speed limits, no entry signs, traffic calming measures and TROs
Scheme Status:	This scheme is included in the UTP	

Description of Proposals

The issue of excessive vehicle speeds in Hitchin, both within residential areas and around rural areas, has been raised on numerous occasions during the preparation of the UTP. The Stotfold Road approach to the roundabout of Stotfold Road / Cambridge Road has been raised as a particular location which experiences excessive speeds. A solution to address this issue is to implement horizontal traffic calming on Stotfold Road at the approach to the roundabout.

It is proposed that horizontal traffic calming should be implemented along the length of Stotfold Road where there is housing on the approach to the roundabout. The DfT Traffic Advisory Leaflet 9/94 "Horizontal Deflections" was informed by a number of studies which have been undertaken and report on the results. The data collected from the study indicated that an increased path angle leads to a reduction in speed. In general path angles greater than 15° reduced mean speeds at the chicanes to less than 20 mph, whilst path angles of less than 10° allowed speeds of 25 mph or more. For 85th percentile speeds path angles of about 10° would allow speeds of over 30 mph, whereas path angles of 15° to 20° would result in speeds of between 20 mph to 25 mph. We would therefore propose that the path angle of the horizontal deflections along Stotfold Road was about 10° working on a single lane basis. The study also indicated that single lane working of these chicanes had the greatest impact on speeds with average mean speeds reducing to 23mph. In order to ensure that cyclists are not hindered by the traffic calming a bypass around the chicane should be provided. Examples of this are shown in the supporting photographs. Government guidance indicates that the horizontal deflections should be approximately 60 – 70m apart. This therefore means that there would need to be approximately 8 forms of horizontal traffic calming along the 500m stretch of Stotfold Road that has been identified for traffic calming. Any horizontal traffic calming measures implemented will need to be suitable for non-motorised users (i.e. cycle friendly).

Location Plan/outline Scheme Plan

Supporting Photograph(s)

Example of Horizontal Traffic Calming

Example of Horizontal Traffic Calming – Shephall Way, Stevenage

Example of Horizontal Traffic Calming

Example of Horizontal Traffic Calming

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Is there sufficient space to accommodate physical traffic calming measures?	The area selected will need to be suitable for treatment with physical traffic calming measures	Y
Speeds on the approach to the traffic calming	Signage on the approach to the traffic calming to make road user aware of reduction in speed. High friction, rumbleware surfacing can be installed on the approach to the traffic calming.	Y
Consultation with emergency services to determine issues	Consult with emergency services	Y

Links to other UTP schemes:	HM33 – Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds WM2.1 – Provide a pedestrian crossing facility at Stotfold Road / Cambridge Road junction

Contribution to Objectives / Indicators:	UTP Objectives	2) Provide a safe and high quality network for cyclists in Hitchin 7) Reduce rat running and excessive vehicle speeds across the highway network

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
Design Fees	£50,000	Provided by HCC
Works Costs	£60,000	Provided by HCC
TOTAL COST FOR DELIVERY	£110,000	

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	N
Can the scheme be delivered without third party involvement?	Y	N
Do all elements of the scheme involve standard work processes?	Y	N
Can the scheme be delivered in the short term?	Y	N

Scheme Name	Reduce the through movement of traffic in the town centre (Brand Street / Bancroft/Hermitage Road)	
Scheme Reference:	HM19	
Problem References:	H1	Rat running within Hitchin is problematic
Scheme Status:	This scheme is now progressed through UTP scheme HM37	

Description of Proposals

Respondents to stakeholder consultation indicated that rat running through the highway network in Hitchin was problematic with drivers not necessarily choosing to use the intended routes (primary routes) for their journeys through the town centre.. The through movement of trips through the town centre was raised as a particular problem due to drivers trying to avoid congestion in other parts of the network.

A solution to try and reduce the amount of rat running is to improve and change the nature and appearance of roads within the town centre to make them less attractive than the intended primary routes to travel across town. A proven mechanism to do this is the introduction of shared space routes; a place accessible to both pedestrians and vehicles that is designed to enable pedestrians to move more freely by reducing traffic management features that tend to encourage users of vehicles to assume priority. The roads identified for the Shared Space concept are:

- Hermitage Road (lined to PTM19 - Revise the boarding and alighting points of buses within the town centre);
- Brand Street; and
- Bancroft (southern end of, at the approach to Hermitage Road).

A shared space scheme removes the traditional highway priority and segregation of motor vehicles, pedestrians and other road users. Traditional traffic management features, such as kerbs, lines and signs that tend to encourage users of vehicles to assume priority are reduced to create an integrated public space, such that pedestrians, cyclists and road users become integrated. The benefits of shared space may include:

- A reduction in traffic dominance;
- Economic regeneration of the area;
- A less cluttered streetscape and hence a more attractive social environment;
- A change in pedestrian movement and activity.

Shared space is a design approach rather than a standard type of design. However, there are some design parameters that are likely to be influential in determining their performance including traffic volumes, vehicle speeds and the mix of traffic participants. The full benefits of shared space are likely to be achieved when vehicle flows are relatively low, vehicle speeds are effectively controlled and there are features in the space that encourage pedestrian activity.

Information on the roads indentified show that the current traffic levels along these routes peak at 650 vehicles/hour (two-way flow), with an average two-way flow of approximately 600 vehicles/hour on each road. There is no agreed upper limit of traffic volume for a shared space scheme, but the relatively low flows suggest that these routes would be appropriate. It is recognised that the lower the traffic flow the greater the tendency for pedestrians to occupy the space theoretically available to them.

Achieving vehicle speeds of under 20mph is likely to be important to achieving the full potential benefit of schemes. Below this speed, there is more time for drivers to perceive and react, with pedestrians having more time to take avoiding action if necessary. . Current data along Bancroft

reports the 85% percentage speed of 27mph, which is only 2mph above the consideration criteria for a 20mph speed limit. It is likely that Hermitage Road and Brand Street would have similar speeds due to the characteristics of the roads. Through the shared space scheme, slower speeds should be achieved by the design of the spaces, activities in the street or speed reduction so that a 20mph limit can be applied. The presence of pedestrians, parking and other forms of 'side friction' have been found to encourage lower vehicle speeds.

Data is not available on the current footfall in these areas, but as part of the design it would be hoped that the space would become more attractive to pedestrians by creating a strong sense of place so the balance of pedestrians to vehicles is increased.

Consideration in the design of a shared space should include vulnerable users; including and blind and partially sighted people. Level surfaces are often used in shared spaces which can cause problems for visually impaired users due to a lack of traditional segregation with other road users. However, retaining kerbs is not always an option because of the concerns of mobility impaired pedestrians (e.g. people using wheelchairs, ambulant disabled people, people carrying heavy loads, and people with pushchairs). Therefore it is important that through the design of the scheme there is a close and continued engagement with stakeholder groups, including those representing vulnerable users to ensure the best possible solution to any issues that arise.

During the public consultation exercise it was suggested that more shot stay parking could be accommodated on Bancroft to enable residents to access the shops and business in this area. It is considered that there is scope to reconfigure and increase the amount of short stay parking on Bancroft (some of the existing parking in Hermitage Road is already proposed to be relocated to here- see PTM19). This will have the effect of narrowing the carriageway width and contributing towards the shared space environment. As part of the North Herts Parking Strategy, the existing parking in Hitchin is due to be reviewed in 2011/12 and it is through this process that any changes to the parking regime in the town centre can be best examined.

Model Testing

By changing the streetscape in this area, traffic volumes and speeds would be expected to reduce, with traffic re-routeing onto other roads in the network which could be detrimental. A model test has been conducted in the 2014 Do Nothing (i.e. no other schemes proposed in the town) scenario to assess, in isolation, the impact of the shared space concept. The model assumes that the shared space scheme will have a 20mph limit with a reduced road capacity compared with the current layout.

As a result there is a decrease in traffic on Hermitage Road, Bancroft and Brand Street, with traffic re-routeing onto the A505 and one-way system around Hitchin, particularly evident in the evening peak. During the morning peak there is also a shift in traffic travelling east which previously routed through the town centre now using the A505 and other southeast routes.

Morning Peak (2014 DN Actual Flow / 2014 DN with HM19 Actual Flow) (% change):

All values are in passenger car units (pcus/hr), which effectively relates to the number of vehicles using the routes

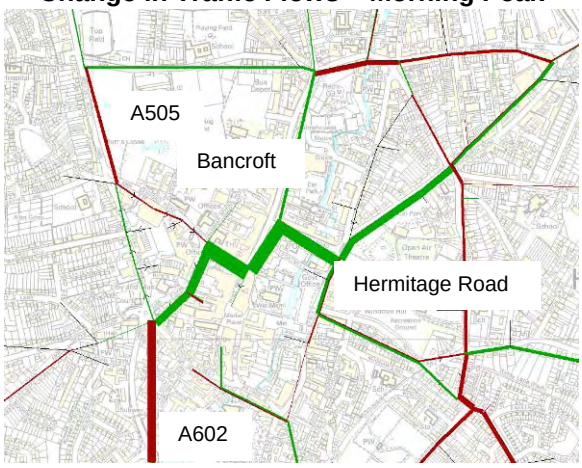
- A505 Bedford Road southbound – 1,300 / 1,400 (+8)
- A505 Bedford Road (one-way system) – 1,650 / 1,700 (+3)
- A602 Parkway northbound – 750 / 950 (+26)
- Bancroft southbound – 730 / 700 (-4)
- Bancroft northbound – 110 / 70 (-36)
- Hermitage Road eastbound – 460 / 440 (-4)
- Hermitage Road westbound – 320 / 80 (-75)
- Brand Street eastbound – 290 / 220 (-24)
- Brand Street westbound – 680 / 410 (-40)

Evening Peak (2014 DN Actual Flow / 2014 DN with HM19 Actual Flow) (% change)::

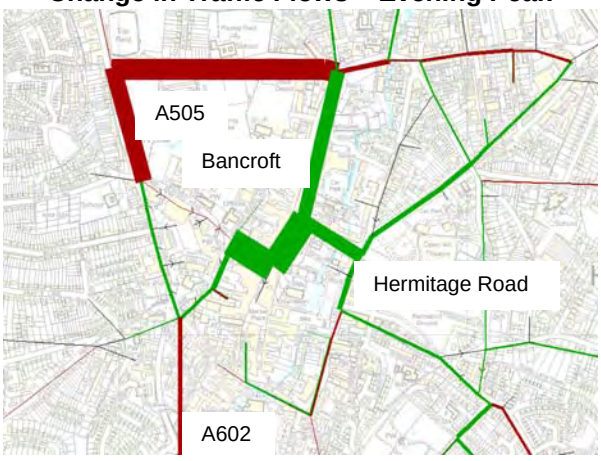
- A505 Fishponds Road eastbound – 580 / 770 (+33)
- A505 Fishponds Road westbound – 450 / 700 (+56)
- A505 Bedford Road southbound – 890 / 1,100 (+24)
- A505 Bedford Road northbound – 1,250 / 1,400 (+12)
- A505 Bedford Road (one-way system) – 1,350 / 1,370 (+2)
- A602 Parkway northbound – 1,090 / 1,130 (+4)
- Bancroft southbound – 470 / 320 (-32)
- Bancroft northbound – 420 / 270 (-36)
- Hermitage Road eastbound – 210 / 110 (-48)
- Hermitage Road westbound – 510 / 330 (-35)
- Brand Street eastbound – 450 / 190 (-58)
- Brand Street westbound – 760 / 420 (-45)

The impact of the re-routing as a result of the shared space in the town centre is shown in the figures.

Change in Traffic Flows – Morning Peak



Change in Traffic Flows – Evening Peak



Green represents an decrease in traffic as a result of limiting through traffic in 2014 Do Nothing, Red is an increase compared with 2014 Do Nothing Scenario.

As a result of the increase in flow during the peak periods on the A505 and around the one-way system, the amount of spare capacity on these roads has reduced but the roads still operate at a similar level of performance, which is represented by the volume over capacity ratio, as without the Shared Space scheme.

Morning Peak (2014 DN Volume over Capacity / 2014 DN with HM19 Volume over Capacity):

- A505 Bedford Road southbound – 105% / 105%
- A505 Bedford Road (one-way system) – 60% / 75%
- A602 Parkway northbound – 80% / 70%

Evening Peak (2014 DN Volume over Capacity / 2014 DN with HM19 Volume over Capacity):

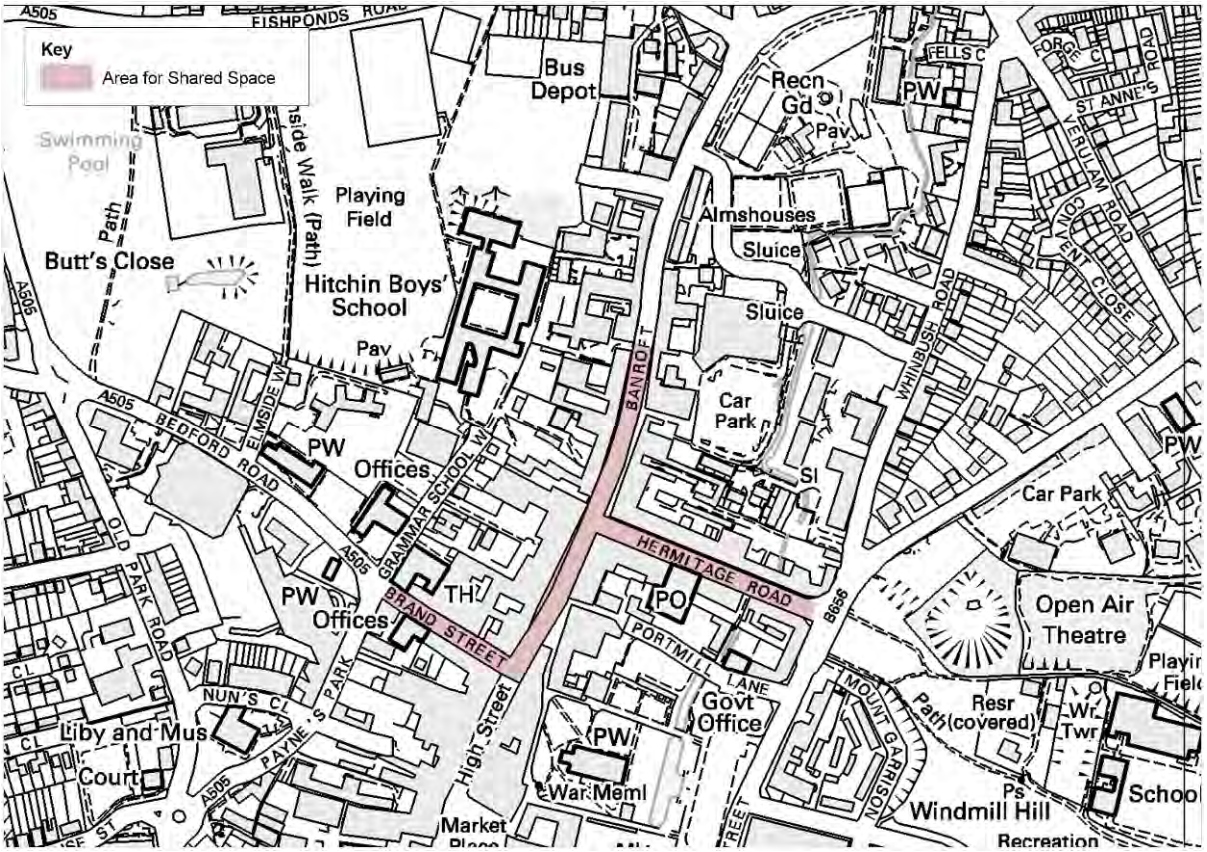
- A505 Fishponds Road westbound – 35% / 55%
- A505 Bedford Road southbound – 75% / 80%
- A505 Bedford Road (one-way system) – 50% / 60%

Implementation of shared space on Hermitage, Brand Street and the southern end of Bancroft would align the character of the town centre with that already implemented along the High Street and Market Square, making the town a more attractive place to visit and shop.

Way Forward

This scheme has close links with PTM19 (revise the boarding and alighting points of buses within the town centre) which also proposes elements of shared space for the Heritage Road and Bancroft. Following comments from local members it was decided to develop a new scheme for introducing a shared space scheme for the town centre (HM37). This consolidates the detail contained with HM19 and PTM19 and recommends a single scheme for Heritage Road, Brand Street and Bancroft, providing a high quality environment for non motorised users whilst also addressing the issues of rat running and improving bus infrastructure.

Location Plan/outline Scheme Plan



Supporting Photograph(s)

Streetscape and multiple road users on Hermitage Road

Interaction of multiple road users on Bancroft

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Lack of design guidance and evidence for shared space	Establish a multi-disciplinary team at an early stage of the scheme development to take a comprehensive approach to the design, with clear objectives of the scheme outcomes. There is also ongoing research into the design of shared surfaces in the UK. Possibly tie in with proposals for the re-development of the town centre.	Y
Consideration of vulnerable users	Close and continued engagement with stakeholder groups through the scheme development	Y
Inappropriate speeds approaching the area along Bancroft	Transition zones and gateway treatments can be useful for indicating to motorists that they are entering a place where they need to drive at a low speed and with caution.	Y

Links to other UTP schemes:	HM37 – Introduce a shared space scheme for the town centre HM7 – Direct goods vehicles appropriately and restrict lorries from using the High Street HM8 – Extend the existing vehicle closures in the town centre and pedestrianise the High Street PT19 – Revise the boarding and aligning points of buses within the town centre CM10 – Implement Route 2 (town centre to industrial area) identified through the Cycle Route Network Survey

Contribution to Objectives / Indicators:	UTP Objectives	1) Increase pedestrian priority across Hitchin and enhance the quality of the pedestrian environment 6) Direct traffic more appropriately across/through the town

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
The total outline costs are difficult to ascertain because the scheme does not solely involve improvements to the highway but a redevelopment of the surrounding space and streetscape in the areas. A breakdown of potential scheme costs involved could include:		
Consultation (including launch)	£30,000	These costs are based on a shared space scheme involving highway improvements along a length of road. (*www.dft.gov.uk)*
Surveys / Evaluation / Monitoring	£40,000	
Detailed Design	£100,000	
Construction	£850,000	Dependent on the detailed design and scale of the redevelopment in the area
Contingency	£80,000	
TOTAL COST FOR DELIVERY	£1,100,000	

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	~~Y~~	N
Do all elements of the scheme involve standard work processes?	~~Y~~	N
Can the scheme be delivered in the short term?	Y	~~N~~

Scheme Name	Review road signing within Hitchin	
Scheme Reference:	HM28	
Problem References:	H12	Road signing in Hitchin is perceived to be poor
Scheme Status:	This scheme is included in the UTP	

Description of Proposals

It was raised at the consultations that the road signage is perceived to be poor in Hitchin, with a lack of a coherent signing strategy in place. Stakeholders felt that the signing around Hitchin did not help road users manoeuvre through and around the town, particularly the one-way systems.

The signage and road marking on the one-way system has recently been improved as part of a package of improvements to the one-way system. It is proposed that a review of the road signing in Hitchin (excluding the one way system) is commissioned to understand why road signing in Hitchin is perceived to be poor. This will include a review of the number of different types of road signs and their locations in the town, or lack of, including signage for:

- Through traffic;
- Tourism;
- Local areas;
- Shopping;
- Hospitals;
- Industrial estates;
- Car parking;
- Education;
- Public transport.

The signage review should concentrate on the main routes first, followed by the local distributor network and then more local and site specific traffic signing. Where appropriate, signs should be replaced or amended to ensure continuity along a route with the aim of providing clear, concise and consistent signing while at all times seeking to reduce sign clutter.

Information provision for the car provided by road signs can contribute to many benefits if it is effective, including:

- Reducing unnecessary journeys occurring through misdirection;
- Minimising pollution and reducing green house gas emissions;
- Reducing accidents and noise disturbances
- Promoting economic development through the efficient distribution of goods and people
- Reducing on-street clutter due to the proliferation of signs;
- Improving the Highway network efficiency.

A successful signage review can help inform a signage strategy for the town which can yield benefits to car users and other traffic, by reducing journey lengths and travel times. Evidence suggests that around 6% of travel times may be accounted for by poor routeing and that inadequate destination signing may as much as double the time spent searching for unfamiliar destinations (Jeffery, 1981). Conversely, direction signing can be used to divert traffic away from environmentally sensitive routes; however drivers with local knowledge are unlikely to respond to such measures.

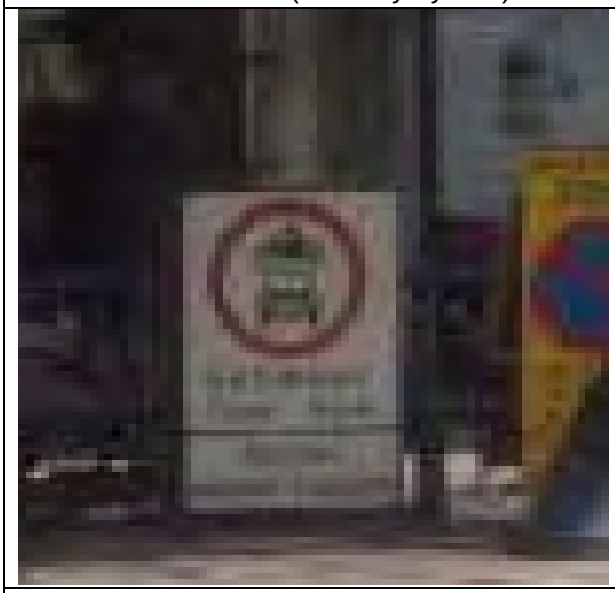
In addition to direction signs, variable message signs could be used as they enable drivers to be diverted away from known, but unpredictable congestion. They are very location-specific in their application, and hence in their benefits (Brown and Mackenzie, 1994).

Supporting Photograph(s)

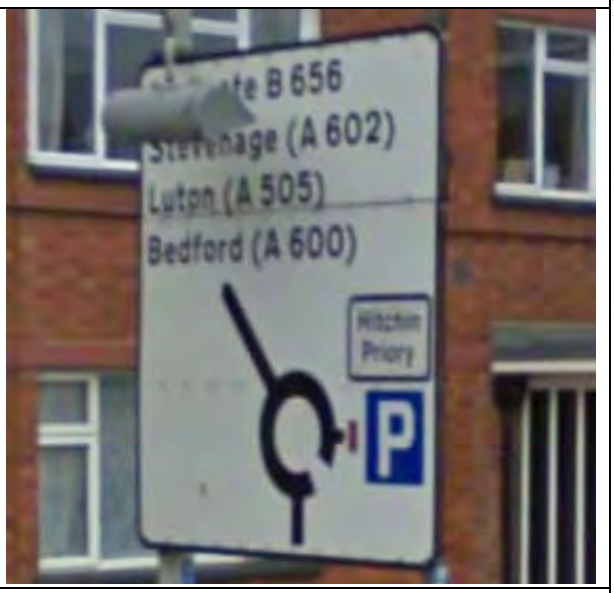
Existing view of poor signage on Walsworth Road

Example of new, high quality signage on A505 Bedford Road (One-way System)

New signage on Queen Street



Existing signage on the entry to High Street



Existing signage on B656 Queen Street

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
New signs should be visible to all road users and free from obstruction	Design and installation of new signage should be undertaken in line with current guidance	Y
Situating new signs in areas of sensitivity (i.e. residential areas)	All potential affected stakeholders should be consulted before new signs are installed	Y
Directional signage could be affected creating confusion for road users whilst signs are amended or replaced	Develop a signage and installation strategy to ensure continuity for the road user whilst signs are amended or replaced	Y

Links to other UTP schemes:	HM37 – Introduce a shared space scheme for the town centre HM7 – Direct goods vehicles appropriately and restrict lorries from using the High Street HM19 – Reduce the through movement of traffic in the town centre (Brand Street/Bancroft/Hermitage Road) HM33 – Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds PM3 – Introduce real time information for car parks to show available spaces

Contribution to Objectives / Indicators:	UTP Objectives	6) Direct traffic more appropriately across/through the town

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
Design Fees	£50,000	Provided by HCC
Works Costs	£90,000	Provided by HCC
TOTAL COST FOR DELIVERY	£140,000	

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	Y	~~N~~
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~

Scheme Name	Implement experimental ban of the right turn into Willow Lane	
Scheme Reference:	HM31.1	
Problem References:	H5	Excessive vehicle speeds in parts of Hitchin
	H13	Rat running within Hitchin is problematic
	H18	There is seen to be a lack of enforcement of speed limits, no entry signs, traffic calming measures and TRO's
	CO1	Congestion in Hitchin at peak times is a major problem
Scheme Status:	This scheme is included in the UTP	

Description of proposals

This scheme is intended to implement an experimental ban of the right turn from the A505 into Willow Lane, which is used as a rat run between the A505 and A602. This scheme has been raised by residents who live off of Willow Lane/Charlton Road who feel that banning vehicles from turning right into Willow Lane will help to reduce the traffic flows along this route and alleviate some of the congestion, speeding and rat running issues which currently occur.

An experimental traffic order to ban the right turn into Willow Lane would need to be self-enforcing, therefore requiring physical measures such as bollards to be installed across the entrance to the lane. As a result, this would also prevent vehicles travelling westbound along the A505 from turning left into Willow Lane (this movement is not considered to be in heavy demand as it is possible to gain access to Willow Lane via Wratten Road West). This scheme would require signing to be installed immediately before the Willow Lane junction in either direction, advising that the left turn and right turn movements are banned. The existing right turn lane would also need to be hatched out to discourage motorists from entering it. This measure will, however, still enable emergency vehicles to access Willow Lane.

Banning the right turn will require an experimental Traffic Regulation Order (TRO) which is used in instances such as this, to see if a potential restriction could work in practice before being considered on a more permanent basis. Experimental TRO's can be made for up to 18 months and there is an opportunity for the public to object. As part of this scheme it is proposed to carry out before and after monitoring along Willow Lane to determine the effects of banning the right turn.

Supporting Photograph(s)

Right turn in to Willow Lane (*www.google.co.uk*)

Looking west from Willow Lane towards A505 junction (*www.google.co.uk*)

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)

Links to other UTP schemes:	HM9 – Address rat runs through and around the town

Contribution to Objectives / Indicators:	UTP Objectives	5) Address peak hour congestion on the highway network both for the present and in the future 6) Direct traffic more appropriately across/through the town

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
This scheme is being funded through the JMP discretionary budget		
TOTAL COST FOR DELIVERY		

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	Y	~~N~~
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~

Scheme Name	Address issues of rat running, speeding and heavy goods vehicles on Willow Lane/Charlton Road	
Scheme Reference:	HM31.2	
Problem References:	H5	Excessive vehicle speeds in parts of Hitchin
	H13	Rat running within Hitchin is problematic
	H18	There is seen to be a lack of enforcement of speed limits, no entry signs, traffic calming measures and TRO's
	CO1	Congestion in Hitchin at peak times is a major problem
Scheme Status:	This scheme is included in the UTP	

Description of proposals

This scheme has been developed to address a number of specific problems that have been identified and communicated to the project team through consultation along Willow Lane/Charlton Road. In order to address the issues in a pragmatic and logical way the scheme has been broken in to three distinct elements as outlined below:

1. It is intended to implement an experimental road closure for the right turn movement in to Willow Lane from the A505 Offley Road to prevent motorists from using this route as a cut through to avoid travelling through the some currently congested junctions along the A505/ A602 corridor through Hitchin. It is also envisaged that closure of this route will also prevent another problem which has been identified with drivers illegally using Hawthorn Road west (contravening the no entry restriction) to leap frog the queues forming at the junction of Charlton Rd/ A602, by travelling through the housing estate. If vehicles are not able to use the Willow Lane/ Charlton Road route to travel eastbound then the temptation to use Hawthorn Road west illegally will be removed.

Before and after monitoring of traffic flows in the immediate and surrounding area would also be carried out as part of this scheme so as to determine the impact of the closure. The traffic modelling that has been undertaken as part of the development of the UTP has highlighted that there is, and will be, a lack of capacity on the A505/ A602 corridor, which is considered to be one of the contributory factors to why Willow Lane and Charlton Road are used as a rat run. It will be important as part of the experimental road closure to determine the impacts along this route. There are proposals as part of HM31 to improve the following junctions:

- A505 / B655 Pirton Road roundabout;
- A505 Upper Tilehouse St / A602 Parkway roundabout;

The modelling has shown that closure of the right turn in to Willow Lane from the A505 could have a significant impact on the performance of both the Pirton Road mini-roundabout and the Upper Tilehouse Street roundabout. Initial results have shown that in the AM peak the average delay experienced by each vehicle travelling through the junction is likely to increase from about 1 minute at present without the closure to approaching 4 minutes. This is because the junction is operating close to capacity at present and the increase of around 200 vehicle trips in the AM peak means delay increases a much faster rate. Similarly in the PM peak average delay per vehicle at this junction increase from about 1 minute to over 2 minutes.

When assumed traffic growth is added up to 2014 these problems are further exacerbated. The introduction of an experimental closure will enable us to determine, in observed conditions how the network copes and develop a suitable way forward to try and achieve a suitable outcome for all stakeholders.

2. The second part of this scheme will be to investigate the requirements for speed mitigation along Willow Lane/Charlton Road and address the issue of HGV's using the route. This will involve the examination of existing speed data (and the undertaking of new surveys if necessary during the experimental closure) in the context of the Hertfordshire Speed Management Strategy, to determine whether mitigation is justified. Once this has taken place it will be possible to develop a practicable approach for Willow Lane/Charlton Road if these issues still remain.

3. The final aspect of this scheme will be to review the outcomes of the Willow Lane/ A505 experimental closure to determine whether the issue of illegal manoeuvres has been resolved at Hawthorn Close west. If it has not then it will be necessary to explore the experimental closure of this route to prevent the problems.

Supporting Photograph(s)

Eastbound on Willow Lane (*www.google.co.uk)*

Existing No Entry signs at Hawthorne Close west (*www.google.co.uk)*

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)

Links to other UTP schemes:	

Contribution to Objectives / Indicators:	UTP Objectives	5) Address peak hour congestion on the highway network both for the present and in the future 6) Direct traffic more appropriately across/through the town

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
Experimental closure is being paid for through the JPU discretionary budget		
TOTAL COST FOR DELIVERY		

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	Y	~~N~~
Can the scheme be delivered without third party involvement?	Y	~~N~~
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~

Scheme Name	Pirton Road – Speed Investigation	
Scheme Reference:	HM33.29	
Problem References:	H13	Rat running within Hitchin is problematic
	H21	Lack of capacity on key highway links
	CO1	Congestion in Hitchin at peak times is a major problem
Scheme Status:	This scheme is addressed by HM33	

Description of Proposals

This scheme has been developed to examine the specific issue of excessive vehicle speeds on Pirton Road, building upon UTP scheme HM33.

In 2006 a scheme was proposed to reduce the instances of speeding vehicles on Pirton Road (from the Upper Tilehouse Street roundabout to its junction with Crow Furlong) as traffic surveys undertaken in 2005 identified that some vehicles were travelling along the road at a higher speed then is desirable for the road conditions. The following measures were developed to try and encourage all road users to travel at a more appropriate speed along this section of road:-

- visually narrowing the road with centre hatching;
- upgrading existing 30mph signs;
- upgrading the existing uncontrolled crossing point;
- minor kerb realignments at the entry to Tudor Court.

During the Public Consultation phase of the Hitchin UTP it was suggested by the public that the mitigation measures outlined above had worsened the speeding problems along this route. The public went on to suggest a number of possible improvements that could be made to reduce the number of vehicles speeding along this section of Pirton Road including, amongst others, vehicle activated speeding signs and removal of the mitigation measures outlined above.

The selection and funding requirements for mitigation of potential speeding issues are outlined within the Hertfordshire Highways – Speed Management Strategy – 2009. Review of this strategy highlights that Local Transport Plan (LTP) funding through the Speed Compliance Target represents the primary source of funding to address what has been identified as a speeding issue. The requirements to access this funding are:

- The environment must be suitable for a 30mph speed limit.
- Recorded 85th percentile speeds on weekdays must be at least 35mph (following ACPO threshold speeds)
- The scheme will be selected by the Speed Management Group.

Clearly, in order to be able to determine what mitigation may be appropriate at this location it is necessary to collect some relevant and up to date information on the speeds of vehicles using this route. This data was subsequently collected in November 2010 and is discussed further below.

Results of the traffic surveys

Traffic surveys were carried out on Pirton Road by Hertfordshire Constabulary for a period of seven days between 25th November 2010 and 2nd December. The survey location was opposite Tudor Close, recording eastbound and westbound vehicles.

The results of these surveys are shown below:

Speed of Vehicles

Hitchin, B65 has a posted speed limit (PSL) of **30** Mph

West bound		East bound	
Mean Speed	**30**	Mean Speed	**25**
85%ile Speed	**35**	85%ile Speed	**30**
15%ile Speed	**26**	15%ile Speed	**21**

It is acknowledged that the recorded speeds could have been affected by the weather during the survey period; however, based upon this latest data, it is not possible to justify an intervention on the grounds of speeding. This is because the criteria for implementing traffic calming measures (as set out in the Hertfordshire Speed Management Strategy) have not been met.

Recommendation

In light of the above information, it is recommended that Pirton Road remains in the medium term UTP scheme HM33 as a location where residents have reported instances of excessive speed. Through this approach it would then be possible to revisit this issue and, should it be demonstrated that the necessary criteria have been, develop a traffic calming scheme as appropriate.

Links to other UTP schemes:	HM33- Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds

Contribution to Objectives / Indicators:	UTP Objectives	1) Increase pedestrian priority across Hitchin and enhance the quality of the pedestrian environment 5) Address peak hour congestion on the highway network both for the present and in the future 6) Direct traffic more appropriately across/through the town

Scheme Name	Introduce a package of smarter measures such as travel marketing, travel plans and car clubs to reduce reliance on the car	
Scheme Reference:	HM35	
Problem References:	CO1	Congestion in Hitchin at peak times is a major problem
	CO3	Cumulative effect of new housing developments on the highway network
	CO4	School related traffic causes problems
	S4	Lack of travel marketing for homes and businesses
Scheme Status:	This scheme is included in the UTP	

Description of Proposals

Smarter choices are techniques for influencing people's travel behaviour towards more sustainable options such as encouraging school, workplace and individualised travel planning. They also seek to improve public transport and marketing services such as travel awareness campaigns, setting up websites for car share schemes, supporting car clubs and encouraging teleworking. The proposed implementation of Smarter Choices Measures can therefore be better defined as a series of discrete options all working together to try and reduce the reliance on the car and encourage people to travel in a more sustainable way.

The individual measures that are being proposed as part of the package of Smarter Measures are described in more detail in the individual Scheme Descriptions. These include:
SM1 – Introduce car sharing / car clubs
SM2 – Introduce more work place travel plans
SM6 – Introduce more school travel plans
SM8 – Produce an integrated strategy for marketing sustainable modes
SM9 – Engage major employers in sustainable travel plans
SM12 – Learn from sustainable travel best practice elsewhere (e.g. Oxford)

There are a number of guidance documents that have been developed by the DfT to support those who want to set up a Smarter Choices campaign. One of the most relevant at this stage of the scheme development would be 'Making Campaigning for Smarter Choices Work: Guidelines for Local Authorities, May 2005', which presents guidance on the most appropriate way to set these schemes up to ensure that they are successful. The document can be found on the DfT website under sustainable travel and smarter choices:
http://www.dft.gov.uk/pgr/sustainable/smarterchoices/makingwork/

Trip Reductions

A summary of the trip reductions that could be expected from various sustainable transport measures and how these have been applied in the traffic model is shown in the table below:

Sustainable Measures Trip Reductions in Hitchin

Assumptions Summary	User Group	Reduction	Reduction Type	Trips Affected	Time Periods
School Travel Plans	HBE	8% New 8% Relocated 3% Existing	Site Specific - Schools	Development	AM (to), IP (from)
Residential Plans	HBO	10% New	New Developments	Development	All
Work Place Travel Plans	HBW	18% New 10% Existing	Key Zone Specific - New Developments	Development	AM (to), PM (from)
Car Sharing	-	No Reduction	N/A	N/A	N/A
Individual Travel Marketing (ITM)	HBO	7% Existing	Town Centre based trips SNAP development	Development	All

User Groups
HBW – Home Based Work
HBO – Home Based Other
NBE – Home Based Education

Time Periods
AM – 0800 to 0900
IP – average inter peak hour between 1000 to 1600
PM – 1700 to 1800

The full trip reduction will be made to the future year matrix impacted by each new development. This is because travel plan guidance advocates that once people have a particular travel pattern they do not tend to change it. Reductions for existing businesses and schools will be made to the first design year of 2014 and do minimum scenario assuming no further reductions over time.

Location Plan/outline Scheme Plan
Individual measures delivered as part of this package of Smarter Measures are dealt with by individual schemes.

Supporting Photograph(s)

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Dealt with at individual scheme level		

Links to other UTP schemes:	SM1 – Introduce car sharing / car clubs SM2 – Introduce more work place travel plans SM6 – Introduce more school travel plans SM8 – Produce an integrated strategy for marketing sustainable modes SM9 – Engage major employers in sustainable travel plans SM12 – Learn from sustainable travel best practice elsewhere (e.g. Oxford)

Contribution to Objectives / Indicators:	UTP Objectives	1) Increase the pedestrian priority across Hitchin and enhance the quality of the pedestrian environment. 2) Provide a safe and high quality network for cyclists in Hitchin. 4) Enhance the attractiveness of public transport by better integrating services and increasing the amount information available to users. 8) Increase the number of sustainable travel measures and their use 9) Support the economic vitality of Hitchin's shops and businesses

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
TOTAL COST FOR DELIVERY		

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	N/A	
Can the scheme be delivered without third party involvement?	~~Y~~	N
Do all elements of the scheme involve standard work processes?	Y	~~N~~
Can the scheme be delivered in the short term?	Y	~~N~~
Where 'N' details for overcoming deliverability risk: There would need to be some involvement between transport operators, existing LA sustainable officers and businesses within the area. This does however not create a significant barrier to this being delivered but it will need to be managed effectively.		

Scheme Name	Introduce a mini roundabout at the junction of London Road and Blackhorse Lane	
Scheme Reference:	HM34	
Problem References:	H5	Excessive vehicle speeds in parts of Hitchin
Scheme Status:	This scheme is not included in the UTP	

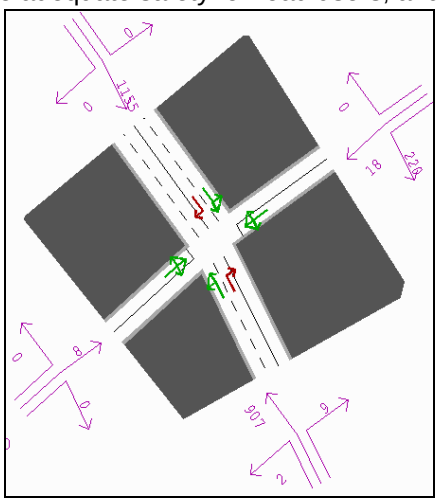
Description of Proposals

The issue of excessive vehicle speeds in parts of Hitchin has been raised on numerous occasions during the preparation of the UTP. One particular location for where this issue was mentioned was along the B656 London Road through the residential area around Blackhorse Lane. A scheme to introduce a mini-roundabout at the London Road / Blackhorse Lane junction to reduce speeds in this area was raised at the stakeholder consultation.

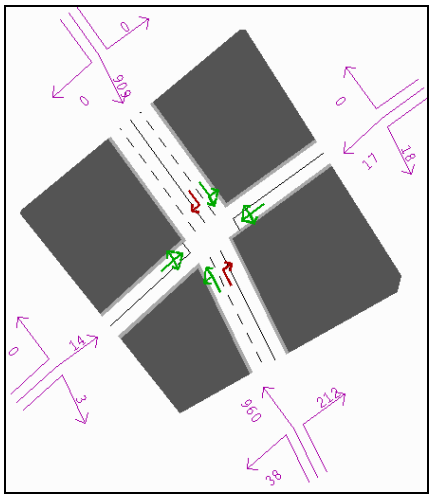
The junction of London Road / Blackhorse Lane is currently a crossroads with priority for traffic on the B656 London Road, with separate right turn lanes from the B656, which means vehicles on the B656, are not hindered. The introduction of a mini-roundabout at this junction would aim to force all vehicles to reduce their speeds on the approach to the roundabout to safely negotiate the junction.

A mini-roundabout can act as a useful traffic calming feature and can be effective in influencing speeds. The introduction of a mini-roundabout can break up the straight stretch of road with an adequate deflection forcing drivers to slow down on the approach and prevent them from accelerating away too quickly as they exit from the roundabout. Drivers should approach the junction with caution as they expect to give way and this in turn will result in a speed reduction.

However, a mini-roundabout will not be successful in controlling traffic speeds if there is not much turning traffic. In this circumstance drivers will tend to run through the mini-roundabout not expecting to yield to other drivers. Turning traffic at this junction is low and is forecast to be the same in the future (SHUM, 2014 Do Nothing Network). Guidance for the design of a mini-roundabout, TD 54/07 Design of Mini-Roundabouts, states that a mini-roundabout must not be used at a junction where the forecast traffic on any arm is less than 500 vehicles per day. The guidance also recommends that a 4-arm mini-roundabout is not used where the sum of all four entry arms is greater than 500 vehicles / hour during the maximum peak. This junction exceeds both of these recommendations on the design of mini-roundabouts. Therefore the introduction of a mini-roundabout at this junction would not provide adequate safety for road users, and will not be included in the UTP.



Junction Demand (pcus/hr)
2014 Do Nothing Morning Peak



Junction Demand (pcus/hr)
2014 Do Nothing Evening Peak

Location Plan

Supporting Photograph(s)

Design Considerations	Proposed Solutions	Are solutions sufficient to overcome issues? (Y/N)
Low turning movement flows on all four arms	A mini-roundabout is not delivered at this junction because it would not conform to guidance.	N
Speeds on the approach to the roundabout	The installation of the mini-roundabout on the route should influence driver behaviour. Raising the central island to act as a deterrent to ensure drivers cannot drive straight across the island. High friction surfacing can also be installed on the approach to the give way lines.	Y

Links to other UTP schemes:	

Contribution to Objectives / Indicators:	UTP Objectives	5) Address peak hour congestion on the highway network both for the present and in the future

Outline Cost Analysis		
Works Element	**Est. Cost**	**Notes**
TOTAL COST FOR DELIVERY		

Deliverability Assessment		
Can the scheme be delivered within the highway boundary?	~~Y~~	N
Can the scheme be delivered without third party involvement?	~~Y~~	N
Do all elements of the scheme involve standard work processes?	~~Y~~	N
Can the scheme be delivered in the short term?	~~Y~~	N

Scheme:
Address rat runs through and around the town

Scheme Reference:
HM9

Scheme Status:
This scheme is addressed through other specific UTP schemes:

- HM8 – Direct good vehicles appropriately and restrict lorries from using the High Street;
- HM37 – Introduce a shared space scheme for the town centre;
- HM28 – Review road signage within Hitchin;
- HM33 – Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds.

Purpose:
It was raised at the stakeholder consultation that several roads in and around Hitchin are used as through routes (otherwise known as 'rat runs') to avoid busy main roads and junctions within the town (Bearton Road for example). Excessive speeds on these through routes were raised as a concern. However there is no data currently available that shows excessive speeds and if rat runs are prevalent around Hitchin.

Details:
As given in HM8, HM19, HM28 and HM33.

Benefits:

- Reduction in cut through traffic
- Reduction in inappropriate traffic in residential areas
- Improved direction for motorists

Risks:

- Increase in traffic on main roads and at key junctions
- Cannot enforce signage and traffic routing patterns

Indicative Costs:
The costs of this scheme are addressed by other specific schemes; but an indicative cost of addressing rat runs through and around the town is £50,000. This cost was provided by HCC for the design fees of this as a stand alone scheme.

Scheme:
Improve signalised junctions and pedestrian phasing throughout Hitchin

Scheme Reference:
HM15

Scheme Status:
This scheme is included in the UTP and addressed through other specific UTP schemes:

- HM37 – Introduce a shared space scheme for the town centre
- HM32 – Improve operation of Cadwell Lane junction to minimise the impact of HGV's on the local area and improve crossings.

The continual improvement and operation of traffic signals in Hertfordshire is also covered as part of the County's Intelligent Transport Systems (ITS) strategy, July 2008.

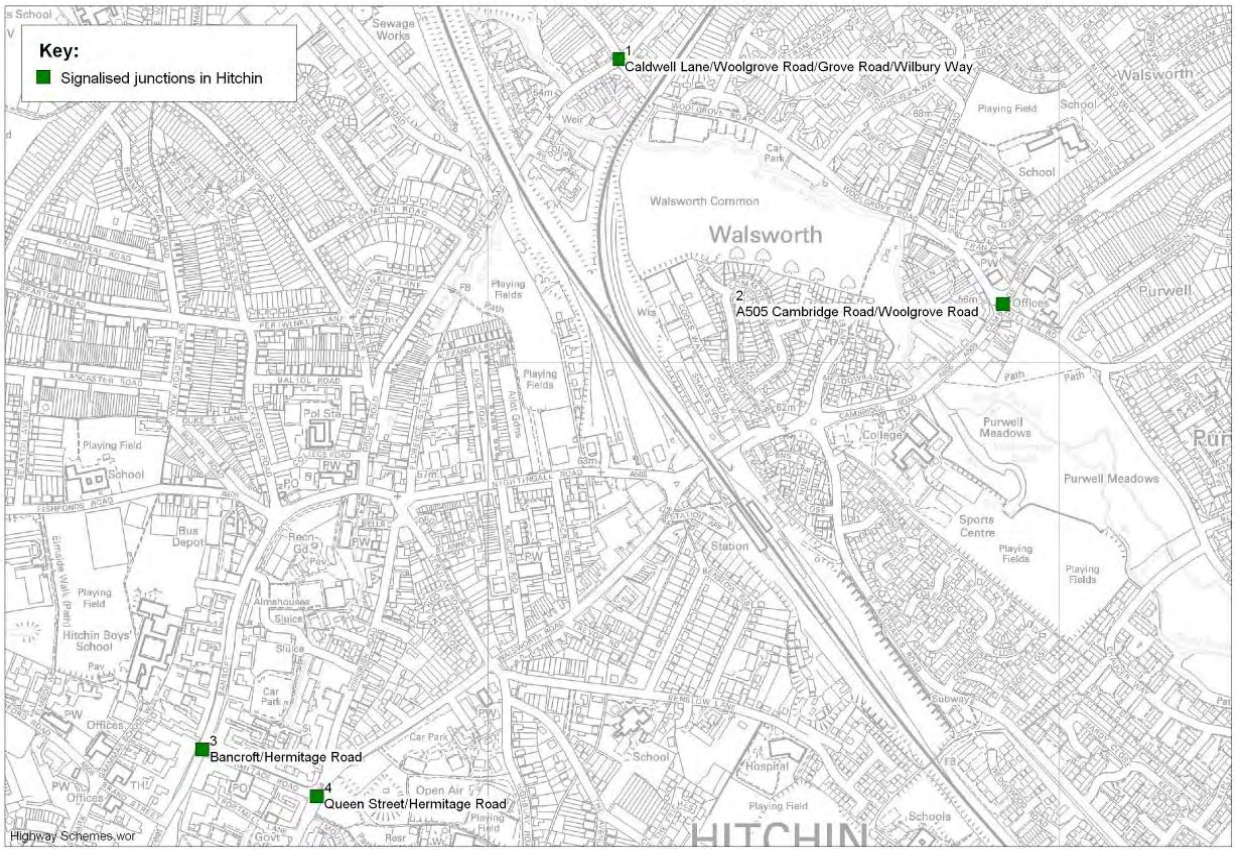
Purpose:
It was raised during the consultations that the pedestrian phasing at signalised junctions in Hitchin is poor, with it perceived to be too short and inadequate. This raises concerns of safety at the junctions for pedestrians and that pedestrian priority across the town is low.

Details:
In Hitchin there are four signalised junctions identified for improved pedestrian phasing:

1. Cadwell Lane / Woolgrove Road / Grove Road / Wilbury Way;
2. A505 Cambridge Road / Woolgrove Road;
3. Bancroft / Hermitage Road;
4. Queen Street / Hermitage Road;

The Old Park Road / Bedford Road junction has recently been upgraded since the consultation was undertaken and will not be included in the UTP.

Locations of Signalised Junction in Hitchin



A review of the signal phasing at these signalised junctions should be undertaken at regular intervals, with a continuous review programme to regularly update the pedestrian phases to react to any changes in traffic and pedestrian demand. Several of the UTP schemes identified should provide a reduction in traffic demand, which will increase the potential for increased pedestrian priority and phasing at these junctions.

Benefits:

- Improved road safety
- Improved pedestrian crossing time
- Increase in anticipated pedestrian safety
- Reduction in pedestrian accidents

Risks:

- Increased traffic delay as a result of additional vehicular red time

Indicative Costs:

Whilst the costs of this scheme are addressed by other specific schemes, an indicative cost of improving signalised junctions and phasing throughout Hitchin is £110,000. This cost was provided by HCC for the design fees and works costs of this scheme, if stand alone.

Scheme:
Introduce road narrowing and more crossings rather than speed humps

Scheme Reference:
HM24

Scheme Status:
This scheme is addressed through other specific UTP schemes:

- WM2 Introduce more pedestrian crossings in Hitchin.

Purpose:
This scheme was raised during the stakeholder consultation as a means of addressing the perceived lack of crossing locations in Hitchin and perceived high vehicle speeds along certain routes. The majority of pedestrian crossings in the town are at-grade and are primarily located along the A505 and A602 corridors. The availability of suitably located crossings is vital to ensure that the highway network does not sever key desire lines or limit the movement of other road users. After reviewing the network in Hitchin a number of new crossings facilities are proposed through the UTP at specific locations in Hitchin, namely:

WM2.1- Provide a pedestrian crossing facility at Stotfold Road / Cambridge Road junction
WM2.2- Provide a Toucan crossing at Bancroft by Regal Chambers
WM2.4- Introduce a pedestrian crossing facility at Queen Street by Bridge Street
WM2.5- Introduce Toucan crossings on the Stevenage Road and London Road approaches to the Hitchin Hill roundabout

Details:
As given in WM2

Benefits:

- Provide safe designated crossing points across busy routes
- Increased pedestrian priority and reduced severance

Risks:

- Designated crossing points will not always be adhered too
- Designated crossings will only make drivers slow down or stop if there is demand for people using the crossing

Indicative Costs:
The costs for providing crossings at the above mentioned locations are contained within the individual scheme proformas.

Scheme:
Upgrade the roads around the employment area (Cadwell Lane, Wilbury Way, Grove Road and Woolgrove Road)

Scheme Reference:
HM27

Scheme Status:
This scheme is addressed through the County Council's Transport Asset Management Plan (TAMP) and by other UTP schemes:

- HM7 – Direct goods vehicles appropriately and restrict lorries from using the High Street;
- HM32 – Improve operation of Cadwell Lane junction to minimise the impact of HGV's on the local area and improve crossings).

Purpose:
It has been raised that roads around the employment area are of substandard design, which leads to problems particularly for larger vehicles. In addition, it was felt that the nature of the highway network in these areas is constraining movement, which can lead to capacity issues. A perceived lack of maintenance of the roads in these areas was also raised as a concern.

Details:
This scheme will in part be addressed through other specific UTP schemes outlined above (HM7 and HM32). Implementation of these schemes will improve the performance on the highway network by directing larger vehicles appropriately so that they do not use inappropriate routes. This should reduce the problems associated with the issue of the highway network being a constraining factor, particularly for larger vehicles. In addition, improvements identified at the Cadwell Lane junction on the entry to the industrial estate will improve the operating capacity, particularly for larger vehicles. Details of these two schemes are given in HM7 and HM32.

In addition to the aforementioned schemes, Hertfordshire County Council (HCC) has adopted an 'asset management' approach to manage and maintain the highway network. What this means for highway maintenance is that HCC consider, over a much longer period, all the roads in the county in relation to one another when working out which ones to repair first, rather than automatically fixing the roads which look worst. This enables them to make the best use of the limited resources they have but sometimes causes confusion when people see county roads being fixed that appear to be in better condition than some others.

For example, when looking to improve a particular area, they may find one road in a really bad condition and three other roads in a slightly better condition. With the limited budget available they have to decide whether to spend all the money on the worst road, and let the other three roads continue to deteriorate into a worse condition, or spend the minimum amount necessary to keep the worst road safe and invest the remaining budget on the other three roads to stop them deteriorating into the same poor condition as the first road. In terms of budget, if the worst road was repaired first, you would find, in a year's time that you have one good road and three other 'bad' roads all needing a larger amount of money spent on them. However, if you spend the budget on bringing the three 'less bad' roads up to a good standard, in a year's time you will have three good roads and only one bad road to spend the limited budget on.

In the long term, it is obvious that this is a good way to spend the limited amount of money available for the road network. However, in the short term, it may appear that those roads which appear to be in the greatest need of our attention are ignored, but this is not the case.

To organise this approach across 5,000km of roads, HCC have developed a 'Transportation Asset Management Plan', (TAMP). To successfully implement the asset management approach, the

principles are translated into a practical system that can be used to manage the network on a day to day basis. This system is used to inform best practice for the management of the highway network, including the improvement to sub standard carriageways. As part of the TAMP, a rolling 5 year works programme is updated annually to identify the current and future maintenance programmes and funding sources. The latest 5 year works programme is the 2010/11 Integrated Works Programme (IWP) and Future Works Programme (FWP) to 2014/15. Included in this IWP are the following projects for the employment area:

- Grove Road Resurfacing, 2010/11, Committed;
- Woolgrove Road Resurfacing, 2010/11, Under Investigation;
- Cadwell Lane Thin Surfacing, 2014/15 – patching and resurfacing – Cat 2.

The Grove Road resurfacing was originally on the 2009/10 IWP but was postponed to 2010/11 due to bad weather, utility works and funding deferral. The FWP identifies the following projects for the employment area:

- Woolgrove Road Resurfacing, 2011/12, Preparation;
- Wilbury Way Resurfacing, 2013/14, Preparation;

A description of status codes includes:

- Committed – Approved by Cabinet in 2009/10 IWP, in most cases design and consultation will be completed during the 2009/10 financial year, works on site likely to be implemented in the 2010/11 financial year.
- Preparation – scheme identified within the FWP for future delivery in 2011/12 and beyond. These schemes may be under development during 2010/11.
- Under Investigation – scheme is currently under investigation to decide if works are required. If found to be necessary works may be carried out during 2010/11 or during subsequent years.

Benefits:

- Improved road safety;
- Support economic activity;
- Carriageways in the employment area have been identified for works in either the IWP or FWP.

Risks:

- Carriageways identified in FWP are not committed and may be postponed due to funding deferrals, bad weather or utility works in the future.

Scheme:
Implement junction improvements along the A505 / A602 corridor to maximise the existing capacity

Scheme Reference:
HM31

Scheme Status:
This scheme is included in the UTP

Purpose:
It has been raised that there is a lack of highway capacity on key links through Hitchin. This lack of capacity is seen as a problem because it causes traffic to use residential routes to avoid the congestion on the main roads during peak periods. The A505 / A602 through Hitchin, which provides a link between Luton and Stevenage/ A1(M) has been identified as a key route which is susceptible to a lack of capacity.

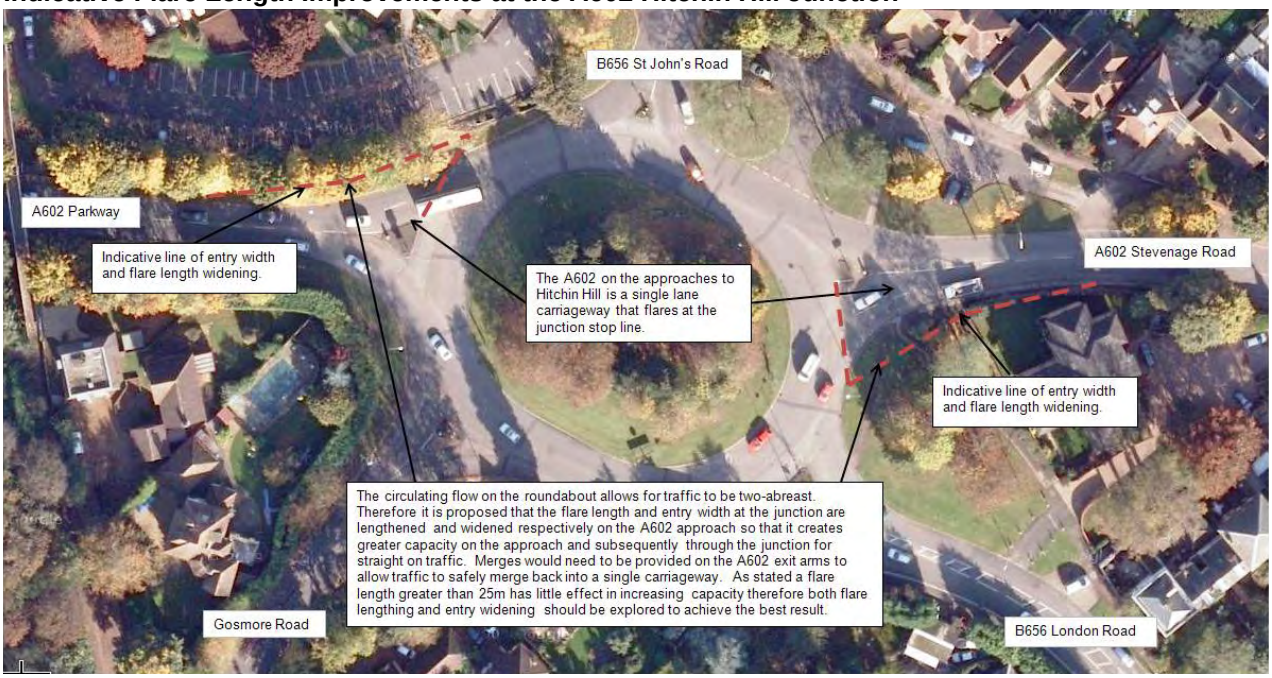
Details:
Future year scenarios for 2014 were identified as part of the UTP which include all of the assumptions for development within and outside of Hitchin up to 2014. These assumptions were included within the transport model and have highlighted that as a result of the increase in traffic growth three junctions along the A505 / A602 through Hitchin will be under pressure and operating at or close to their design capacity by 2014:

- A505 Upper Tilehouse Street / A602 Parkway roundabout;
- A602 Hitchin Hill roundabout;
- A505 / B655 Pirton Road roundabout.

It is intended to take a phased approach to these improvements, starting with minor improvements at the A505/A602 and A602 roundabouts to mitigate background traffic growth, before undertaking improvements at the A505 / B655 Pirton Road roundabout.

A602 Hitchin Hill roundabout
Improvements to the A602 Hitchin Hill roundabout involves widening of existing entries with a longer flare length on the approaches to the roundabout from the A602 and partial signals on St John's Road and Stevenage Road approaches. Lengthening of the flares on the approaches to the junction, with minor road widening should improve the capacity of the junction and mitigate the increase in traffic demand. DMRB Volume 6 Section 2, Geometric Design of Roundabouts outlines guidance relating to the design of roundabouts. It states that entry width and sharpness of the flare are the most important determinants of capacity. Even a small increase in entry width may increase capacity. The capacity of an entry can also be improved by increasing the effective flare length. The effective flare length is the average length over which the entry widens. The results will depend on the available land take as similar levels of capacity can be obtained with a variety of flare lengths and entry widths. A minimum length of 5m in urban areas is desirable, with lengths greater than 25m having little effect in increasing capacity. An indicative layout of the improvement to the flare length on the A602 approaches at this junction is shown in the figure overleaf.

Indicative Flare Length Improvements at the A602 Hitchin Hill Junction

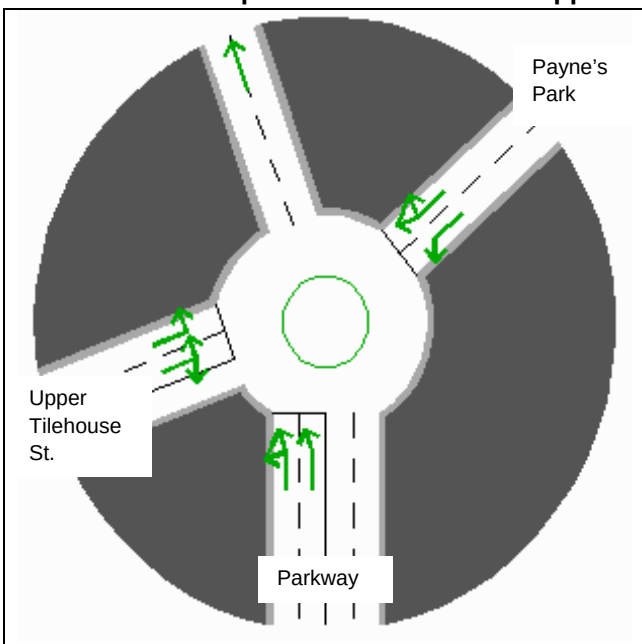


Source: www.google.co.uk

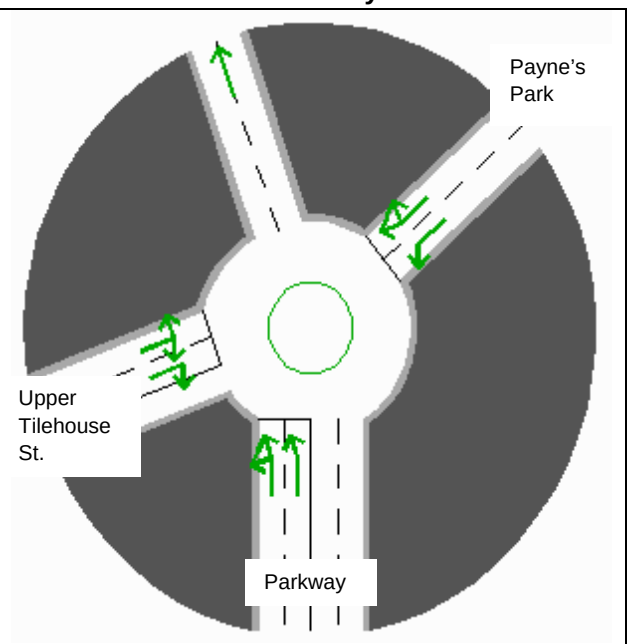
A505 Upper Tilehouse Street / A602 Parkway roundabout

The A505 Upper Tilehouse Street / A602 Parkway junction improvements will include a revision to the lane allocation at the A505 Upper Tilehouse Street approach. As a result of the improvement to the A505/B655 junction, the traffic throughput has increased along the A505. This has resulted in an increase in demand for traffic turning right at the roundabout, which can be accommodated by a change in the lane allocation. In addition to a change in the lane allocation, improved lane marking on the approaches and roundabout, along with the widening and lengthening of the flares on all approaches to the roundabout will improve the junction throughput, as demonstrated by the Hitchin Hill improvement.

Lane Allocation Improvement at the A505 Upper Tilehouse Street / A602 Parkway Junction



A505 / A602 Lane Allocation – Do Nothing

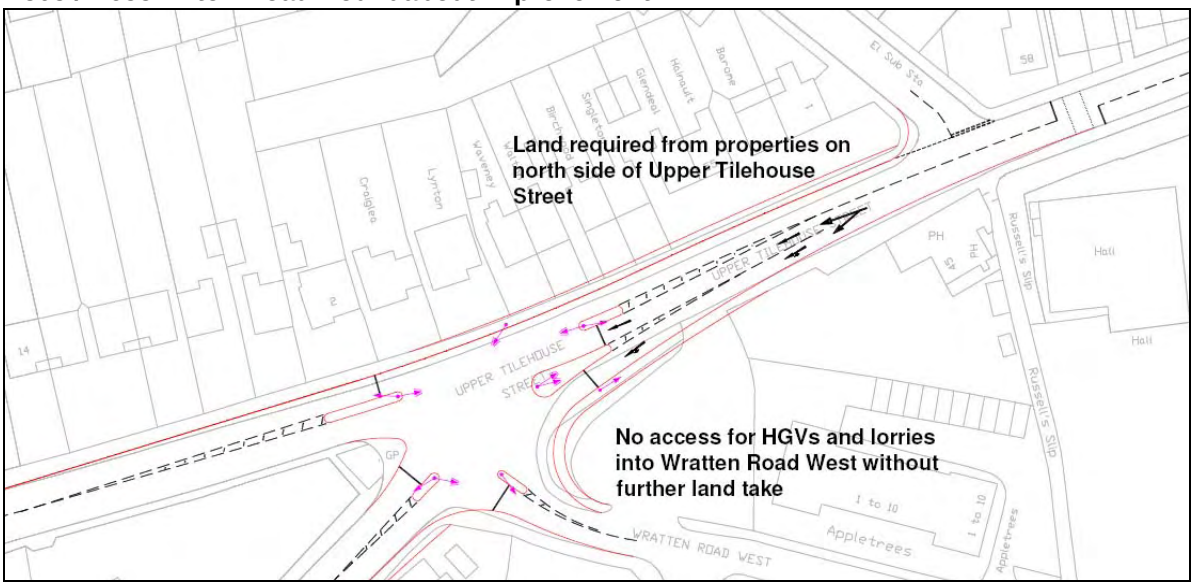


A505 / A602 Lane Allocation – Do Something

A505 / B655 Pirton Road Roundabout

The improvement to the A505 / B655 junction is to change the roundabout to a signal controlled junction. The signal timings have been optimised in the 2014 Do Nothing scenario with junction improvement based on fixed timings. However, there may be additional scope to implement demand responsive signals to respond to changes in demand during busy periods. This cannot be modelled because of software limitations but it would be expected to further enhance the operation and capacity of the junction.

A505 / B655 Pirton Road Roundabout Improvement



The impact of the improvements at the junction in the morning and evening peak periods shows a reduction in delay and average queue length with an increase in the junction throughput. The traffic analysis has used a modelling measure referred to as Passenger Carrying Units (vehicles) which equates the capacity that would be taken up by one car vehicle. In the morning peak the impact of the improvements yield the following results:

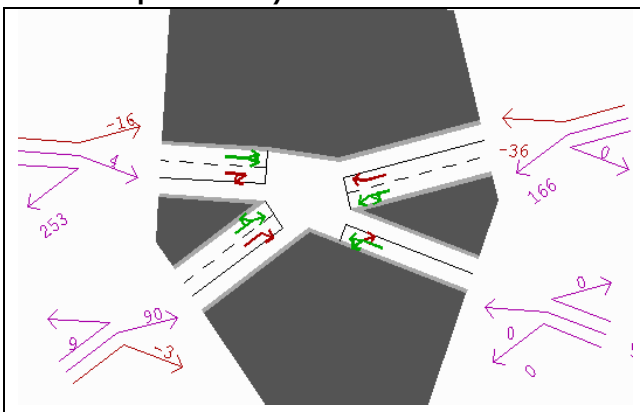
- Increased junction throughput – 470 vehicles;
- Reduction in total delay – 1330 seconds;
- Reduction in average queue length – 30 vehicles.

In the evening peak, the results are similar:

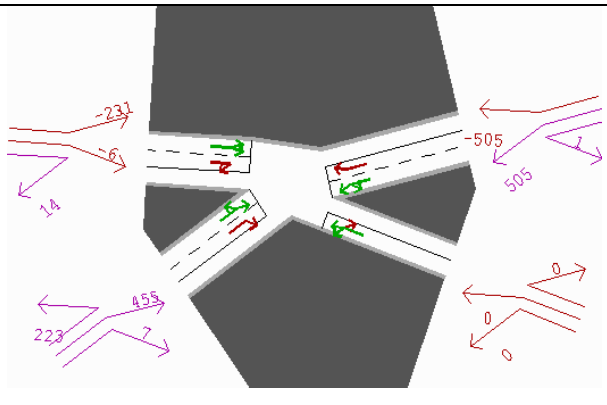
- Increased junction throughput – 450 vehicles;
- Reduction in total delay – 335 seconds;
- Reduction in average queue length – 20 vehicles.

In the morning peak, the movement from the Upper Tilehouse Street to Pirton Road does experience a 189 second increase in delay per vehicle compared to without the improvement. However the impact of this on demand is 35vehicles/hr and the queuing caused has increased by less than 10vehicles/hr, which is negligible. This is similar in the evening peak, although the impact on demand is greater at 500vehicles/hr, with an average delay of 390 seconds per vehicle. However the number of vehicles on average queuing at this junction is less than 5 vehicles during the peak. The improvement considerably improves the operation of the whole junction reducing delay, whilst increasing the capacity. Therefore the junction throughput is increased and the A505 is a more attractive route.

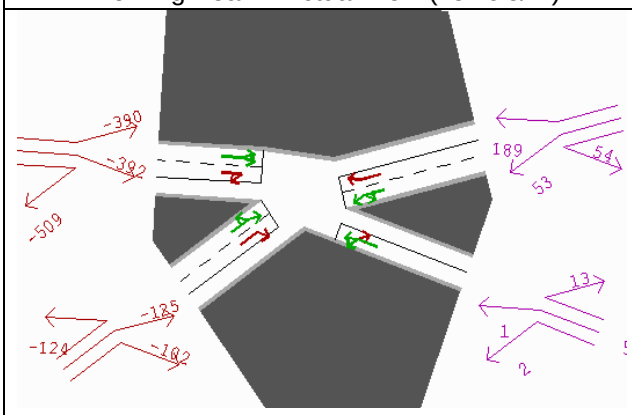
Impact of the A505 / B655 Junction Improvement (2014 with improvement compared against 2014 without improvement)



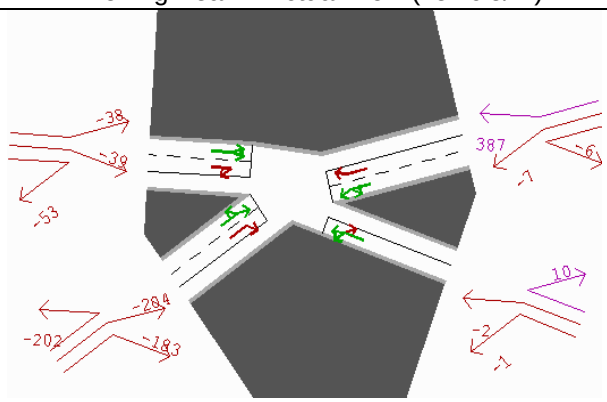
Morning Peak – Actual Flow (vehicle/hr)



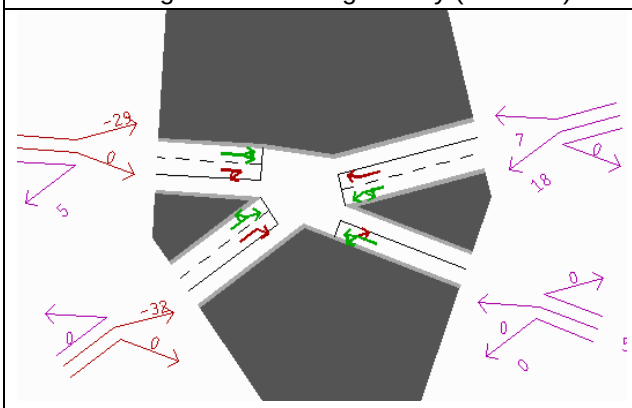
Evening Peak – Actual Flow (vehicle/hr)



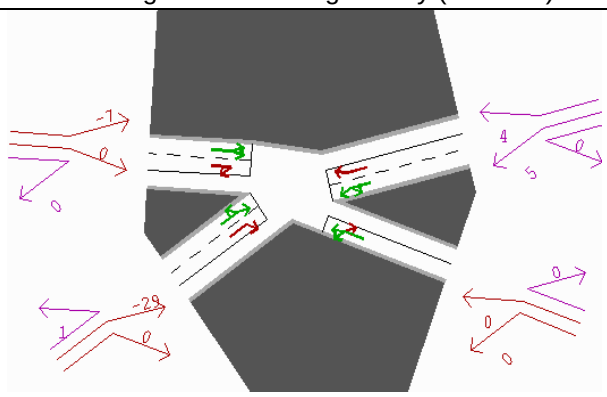
Morning Peak – Average Delay (seconds)



Evening Peak – Average Delay (seconds)



Morning Peak – Average Queue (vehicles)



Evening Peak – Average Queue (vehicles)

An increase as a result of the improvement is shown as a positive, decrease as a negative

Initial costs for implementing this junction have been estimated at £1.27 million. These costs were based on a construction year of 2021 with the breakdown of the costs outlined in more detail in the table overleaf. However based on a construction year of 2014, the indicative costs would be £1 million, due to a change in inflation. The item, allowance and contingency costs would be unchanged.

Indicative Costs for A505 / B655 Pirton Road Improvement

Works Element	Est. Cost	Notes
Construction Items	£192,000	
Allowances for Design Fees	£38,300	20% of the construction items
Allowances for Preliminaries	£191,700	100% of the construction items
Allowances for Supervision	£19,200	10% of the construction items
Allowances for Utilities / Electricals	£38,300	20% of the construction items
Allowances for Stats	£143,800	20% of the construction items
Sub-Total for construction items and allowances	*£623,000*	
Contingency	£249,200	40% of sub-total
Allowance for inflation (2021)	£401,200	Green book 3.5% inflation rate (2021)
Total Cost for Delivery (2021)	£1,273,400	2021 Construction Year
Allowance for inflation (2014)	£128,700	Green book 3.5% inflation rate (2014)
Total Cost for Delivery (2014)	£1,000,900	2014 Construction Year

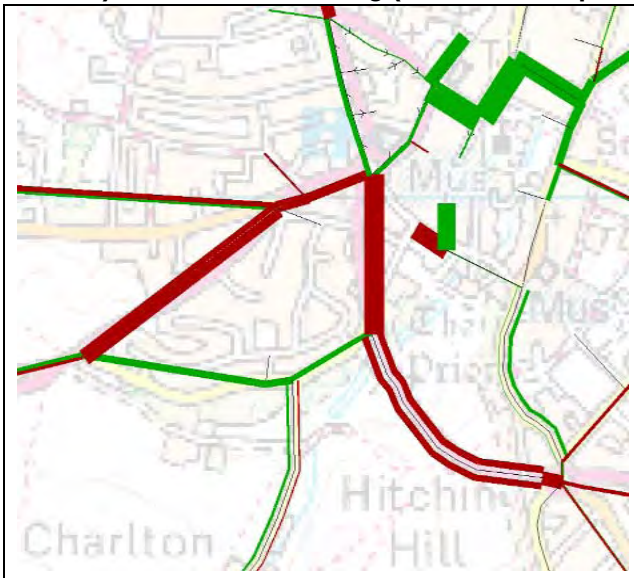
Summary

Overall by implementing the three junction improvements along the corridor, the capacity on the approaches to the junctions will be increased thus more traffic can be accommodated without hindering the performance of the network. It can be seen through the model testing that the improvements also result in less rat running, namely along Willow Lane because of the reduction in delay along the A505 / A602 corridor route.

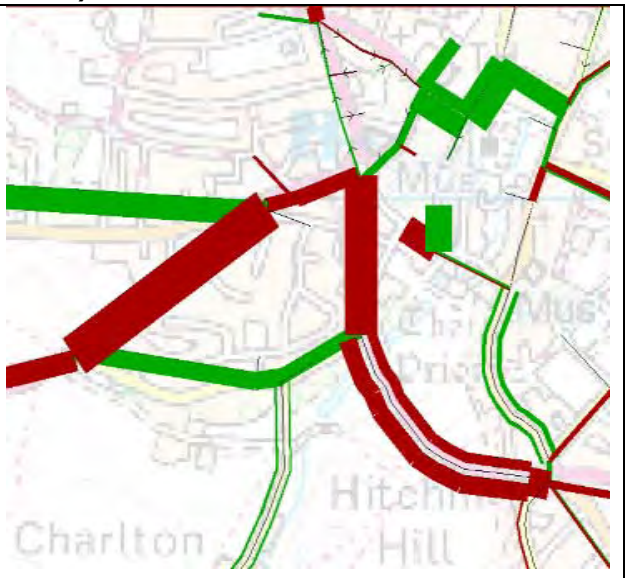
In the morning and evening peaks the model testing of HM31 has shown that the following approaches to the junctions have increased traffic flow compared to without the improvements. The morning peak increase is shown first:

- A505 Offley Road – 350vehicle/hr (AM) / 800 vehicle/hr (PM)
- B655 Pirton Road – 200 vehicle/hr
- A505 Upper Tilehouse Street westbound – 100 vehicle/hr / 100vehicle/hr
- A505 Upper Tilehouse Street eastbound – 200 vehicle/hr / 300 vehicle/hr
- A602 Parkway northbound – 500 vehicle/hr / 600 vehicle/hr
- A602 Parkway eastbound (Hitchin Hill) – 250vehicle/hr / 300 vehicle/hr
- A602 Stevenage Road (Hitchin Hill) – 200 vehicle/hr / 150 vehicle/hr
- B656 London Road – 150 vehicle/hr / 100 vehicle/hr
- Gosmore Road – 150 vehicle/hr / 100 vehicle/hr

Change in flow along the A505 / A602 corridor and adjacent roads between 2014 DS (HM31 scheme) and 2014 Do Nothing (no scheme improvements)



Morning Peak – Actual Flow (vehicle/hr) 2014 DS (HM31) compared with 2014 DN



Evening Peak – Actual Flow (vehicle/hr) 2014 DS (HM31) compared with 2014 DN

Green represents a decrease in flow in the 2014 Do Nothing with improvements scenario compared with the 2014 Do Nothing scenario and Red indicates an increase.

Indicative Costs:

An indicative cost of £50,000 has been provided by HCC for this scheme (design fees only) in addition to the costs outlined for each improvement.

Benefits:

- Increased junction throughput along the A505 / A602 corridor around Hitchin
- Reduced junction delay along main distributor route around Hitchin
- Reduced traffic congestion along a main distributor route through Hitchin
- Improved linkages to and from Hitchin
- Reduced rat running through residential routes in Hitchin

Risks:

- Costs of implementing the improvements for both construction and possible land take. The A505 / B656 Pirton Road improvement is expected to cost approximately £1.27 million.
- The cost of the signing and lining improvements at the A505/ A602 junction and A602 Hitchin Hill junction would be approximately £12,000 for each junction. The cost of increasing flare lengths would need to be outlined at detailed design stage and could be dependent on land requirements and ownership.
- Funding could be an issue to implement the highway improvements; however Section 106 monies may be available.
- Available land to implement the improvements. Compulsory Purchase Orders (CPOs) can be used to acquire land but this can be costly.

Scheme:
Improve operation of Cadwell Lane junction to minimise the impact of HGV's on the local area and improve crossings

Scheme Reference:
HM32

Scheme Status:
This scheme is included in the UTP

Purpose:
It was raised during consultations that the Cadwell Lane junction at the entry to the industrial area is problematic to local residents, with HGVs during the peak periods affecting the local area. The junction is also seen as a barrier to pedestrians, with a lack of adequate crossing facilities, making walking an unattractive option in the local area. It was raised that the junction should be improved to help minimise any impact from HGVs accessing the industrial estate and to help promote more walking in the area by providing pedestrian crossings.

Details:
A report by AECOM in June 2010 identified possible solutions to alleviate issues at the junction by imposing bans on certain HGV movements. The study also investigated the potential to include pedestrian phasing at the existing traffic signals at the junction.

The scenarios previously considered at the junction include:

- Option 1: This comprised a combination of two previous options evaluated in November 2009 including banning HGV left turns from Grove Road to Cadwell Lane, banning HGV right turns from Cadwell Lane to Grove Road, imposing an HGV weight restriction on Grove Road (HGV ban) and optimising the junction signals to include formal pedestrian crossing facilities. This option was discounted as it is reliant on the delivery of the new link road to the north of Cadwell Lane to provide access to the industrial estate which would not be delivered by 2014.
- Option 2: This sought to remove problematic turning movements at the junction and provide pedestrian crossing facilities by banning all left turning traffic from Grove Road to Cadwell Lane, banning all right turning traffic from Cadwell Lane to Grove Road, imposing an HGV weight restriction on Grove Road (HGV ban) and optimising signals to provide pedestrian crossings. Once again, this option is reliant on the delivery of the new link road to the north of Cadwell Lane which could not be delivered by 2014.
- Option 3: This option looked at reducing the number of permitted traffic movements at the junction so that the pedestrian crossings could be accommodated whilst maintaining vehicular throughput. This option comprised banning all right turning traffic movements and optimising signals to provide pedestrian facilities. However, delivery of this option is dependent on the delivery of a link road to connect Cadwell Lane and Wilbury Way to provide alternative routes to HGV traffic banned from making right turns at the junction. As the local link road is not planned for short term implementation, this option is also not feasible.
- Option 4: This option comprised reallocating lanes to maximise capacity whilst banning right turning movements from Grove Road to Woolgrove Road and also from Wilbury Way to Cadwell Lane where there is no current or forecast demand anyway. This option also included pedestrian provision and two tests were conducted to determine a worst case (with the pedestrian crossing called every cycle) and a best case scenario (which assumed it would not be called at all during peak hours) on the basis that the junction would be likely to operate in conditions somewhere between these two scenarios.

Options 1, 2 and 3 were discounted prior to modelling as they could not be delivered without the introduction of a new northern link road from the Industrial Estate to the north of Cadwell Lane. As the link road will not be delivered by 2014 these options are therefore not feasible in the short term. The Option 4 improvements showed that the junction would be expected to operate within capacity during both peak hours. However, this option has been discounted following comments received from local members that the option of banning the right turn HGV movements at the junction is not considered acceptable as part of this scheme.

The detail and model testing associated with Option 4 has therefore been revised to remove the right turn ban from Grove Road to Woolgrove Road and Wilbury Way to Cadwell Lane whilst retaining the new pedestrian crossing provision. The results of the revised modelling, named Option 5, with and without the pedestrian phases are shown in the tables below.

If the cycle time is optimised without a pedestrian phase, the junction's operational capacity would marginally improve in both peaks compared to the Do Nothing scenario. However, the results continue to show a significant traffic overload in the AM peak hour with capacity exceeded on the Woolgrove Road and Grove Road approaches.

The introduction of a pedestrian phase every cycle would considerably worsen operation of the Woolgrove Road and Grove Road approaches in the AM peak with an increase in queuing in excess of 75 pcus (pcu refers to Passenger Car Units, i.e. the equivalent number of cars you could get through the junction) and delays of 300 secs/pcu. In the PM peak the introduction of pedestrian phases would slightly worsen operation though the junction would continue to operate within capacity.

2014 Do Nothing Scenario

MAX DOS = Degree of Saturation *Delay = Average Delay (Secs/PCU)* *MMQ = Mean Maximum Queue (PCU)* Cycle Time 96 seconds	AM Peak			PM Peak		
	MAX DOS	**Delay**	**MMQ**	**MAX DOS**	**Delay**	**MMQ**
Cadwell Lane, Left/Ahead/Right	59.1	29.1	7.3	64.6	36.7	8.7
Wilbury Way, Left	13.1	21.0	1.5	66.7	26.7	11.6
Wilbury Way, Right/Ahead	8.4	19.9	1.2	34.8	19.0	5.9
Woolgrove Road, Left/Ahead/Right	117.1	326.3	79.9	31.7	22.7	3.6
Grove Road, Left/Ahead/Right	120.8	374.5	124.6	38.9	25.0	4.2
PRC	-34.2			34.9		

2014 Option 5 Do Something Scenario (without Pedestrian Demand)

MAX DOS = Degree of Saturation *Delay = Average Delay (Secs/PCU)* *MMQ = Mean Maximum Queue (PCU)* Cycle Time 66 seconds	AM Peak			PM Peak		
	MAX DOS	**Delay**	**MMQ**	**MAX DOS**	**Delay**	**MMQ**
Cadwell Lane, Left/Ahead/Right	59.5	24.9	5.6	70.6	33.6	6.8
Wilbury Way, Left	14.1	16.8	1.1	68.8	21.9	8.5
Wilbury Way, Right/Ahead	9.0	15.8	0.9	35.8	14.7	4.3
Woolgrove Road, Left/Ahead/Right	118.9	331.4	76.7	33.9	19.0	2.7
Grove Road, Left/Ahead/Right	117.4	314.5	102.1	36.7	18.8	3.1
PRC	-32.1			27.5		

2014 Option 5 Do Something Scenario (with Pedestrian Demand)

MAX DOS = Degree of Saturation *Delay = Average Delay (Secs/PCU)* *MMQ = Mean Maximum Queue (PCU)* Cycle Time 120 seconds	AM Peak			PM Peak		
	MAX DOS	**Delay**	**MMQ**	**MAX DOS**	**Delay**	**MMQ**
Cadwell Lane, Left/Ahead/Right	63.6	39.2	9.8	77.8	57.7	12.5
Wilbury Way, Left	15.6	31.3	2.1	76.6	41.7	16.4
Wilbury Way, Right/Ahead	10.0	29.8	1.7	39.9	28.6	8.2
Woolgrove Road, Left/Ahead/Right	142.1	638.0	149.8	36.2	32.4	4.8
Grove Road, Left/Ahead/Right	144.9	655.3	208.4	72.1	46.5	6.8
PRC	-61.0			15.6		

Based on the strategic model flows for the Do Something scenario in 2014 it appears that the junction would become overloaded by 2014 even without pedestrian demand. Even with the junction cycle time optimised and the pedestrian invitation to cross reduced below the crossing time, the introduction of any pedestrian demand would make the situation worse and be detrimental to vehicular traffic which would experience increased delays during both the AM and PM peaks.

The junction model assumes that no widening is undertaken, however, observations on site indicate that increasing the radius and widening the turn from Grove Road into Cadwell Lane would enable traffic to travel through the junction at a slightly increased speed and therefore improve the capacity of the junction by increasing the potential throughput of traffic. It is not expected that this would have any detrimental impact on safety at the junction but this will be assessed fully during the detailed design phase of scheme development.

Although the junction model does not represent the behaviour, it is also anticipated that improvements would be derived by:

- Introducing demand responsive pedestrian phases.
- Reducing the pedestrian invitation to cross below the crossing time.
- Operating the junction under MOVA control.
- Minimal widening to improve the amount of non-blocking right turn storage from Cadwell Lane and to improve the radius for vehicles turning into Cadwell Lane.

Benefits:

- Increased pedestrian priority.
- May encourage some localised modal shift by removing vehicular capacity to provide for pedestrians.

Risks:

- Rerouting of vehicles as a result of increased delays could be detrimental to operation of neighbouring routes.
- The benefits delivered by these improvements are dependent on pedestrian demand.
- The scheme only alleviates issues at the junction in the short term and further improvements such as widening requiring land acquisition or delivery of a link road will be required in the longer term to accommodate future traffic growth.

Indicative Costs
An indicative cost for this scheme is £95,000, which is in line with the costs provided by HCC for WM6.1 (Upgrade the crossing facilities at the Cadwell Lane crossroads).

Scheme:
Investigate speeds at specific locations across Hitchin to determine whether traffic calming measures are required to reduce excessive vehicle speeds

Scheme Reference:
HM33

Scheme Status:
This scheme, in part, is included in the UTP. This scheme combines several different locations identified for investigating speeds to determine whether traffic calming is required. The schemes to be included are:

- HM33.6- Investigate speeds on Burford Way
- HM33.8- Investigate speeds on Blackhorse Lane
- HM33.9- Investigate speeds on Oakfield Avenue
- HM33.10- Investigate speeds on Gosmore Road
- HM33.12- Investigate speeds on Purwell Lane in the vicinity of Mary Exton School
- HM33.14- Investigate speeds on Victoria Road
- HM33.15- Investigate speeds on Redhill Road
- HM33.18- Investigate speeds on Heathfield Road
- HM33.19- Investigate speeds on Moss Way
- HM33.20- Investigate speeds on Swinburne Avenue
- HM33.21- Investigate speeds on Bedford Street
- HM33.22- Investigate speeds on Verulam Road
- HM33.24- Investigate speeds on Chaucer Way
- HM33.27- Investigate speeds on Oughton Head Way
- HM33.28- Investigate speeds on Hampden Road
- HM33.29- Pirton Road speeding issues - **Subject of separate pro-forma where existing problems need to be addressed.**
- HM33.30- Investigate speeds on St. Michaels Road
- HM33.31- Investigate speeds on Willow Lane/Charlton Road

However not all of the locations identified will be included in the UTP. There are thirteen locations that will not be included in the UTP:

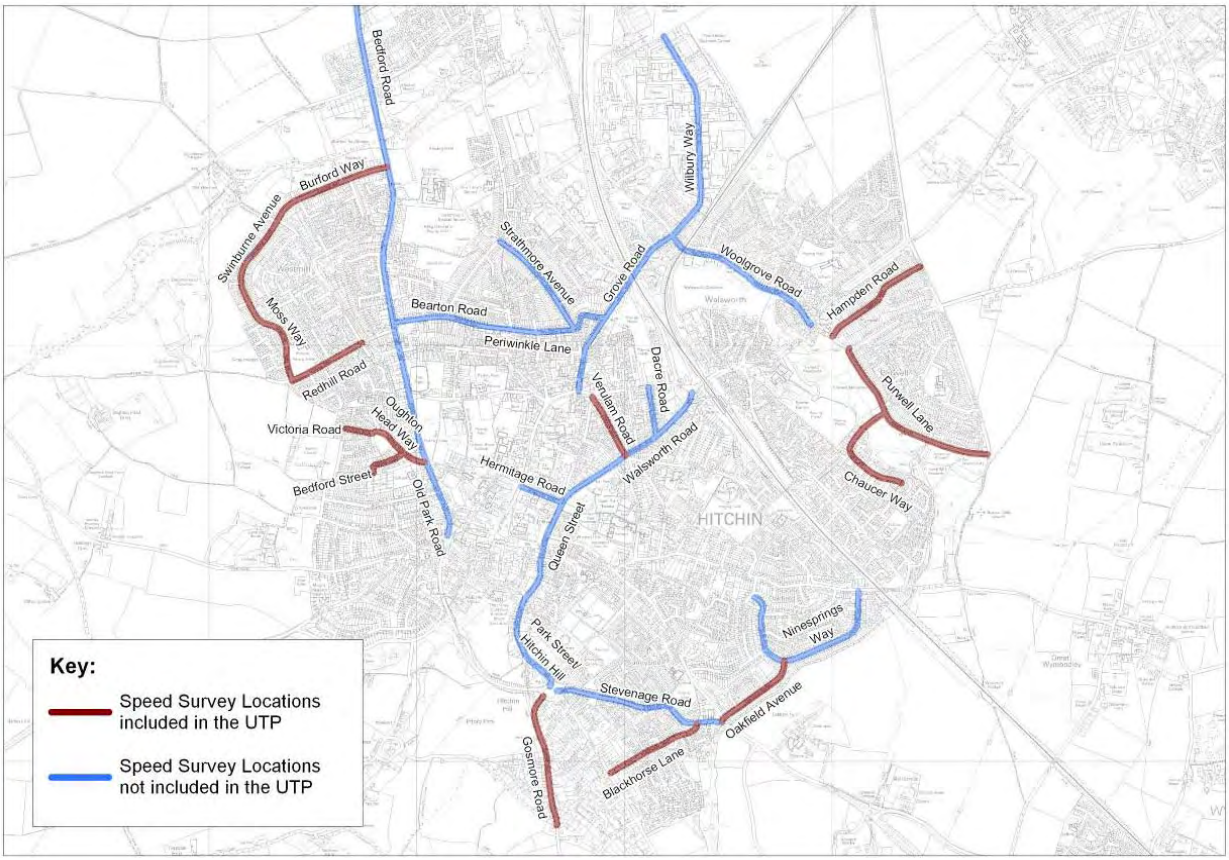
- HM33.1- Investigate speeds on Hermitage Road
- HM33.2- Investigate speeds on Queen Street/Walsworth Road
- HM33.3- Investigate speeds on Park Street/Hitchin Hill
- HM33.4- Investigate speeds on Woolgrove Road
- HM33.5- Investigate speeds along Stevenage Road
- HM33.7- Investigate speeds on Bearton Road/ Periwinkle Lane
- HM33.11- Investigate speeds on Dacre Road
- HM33.13- Investigate speeds on Old Park Road
- HM33.16- Investigate speeds on Ninesprings Way
- HM33.17- Investigate speeds on Bedford Road
- HM33.23- Investigate speeds on Strathmore Avenue
- HM33.25- Investigate speeds on Wilbury Way
- HM33.26- Investigate speeds on Grove Road

Purpose:
It was raised at the consultations that several routes in Hitchin are perceived to experience excessive vehicle speeds, which makes the pedestrian environment unattractive in these locations. Several roads across Hitchin were identified as having excessive speeding with the introduction of traffic calming

measures preferred as a main deterrent to the excessive speeds. The County's Speed Management Strategy, November 2009, sets the objectives of speed management and traffic calming in the County. The objectives of the strategy are:

- To facilitate the safe and efficient movement of people and goods whilst protecting and enhancing quality of life within communities whilst minimising the effect on the local environment;
- To achieve a consistent approach to implementing speeds limits based on the function and nature of the route;
- To enable a consistent approach to the implementation of speed management tools;
- To increase driver awareness of appropriate speed by ensuring a clear and logical approach to the application of speed limits and speed management tools.

Identified Speed Investigation Locations



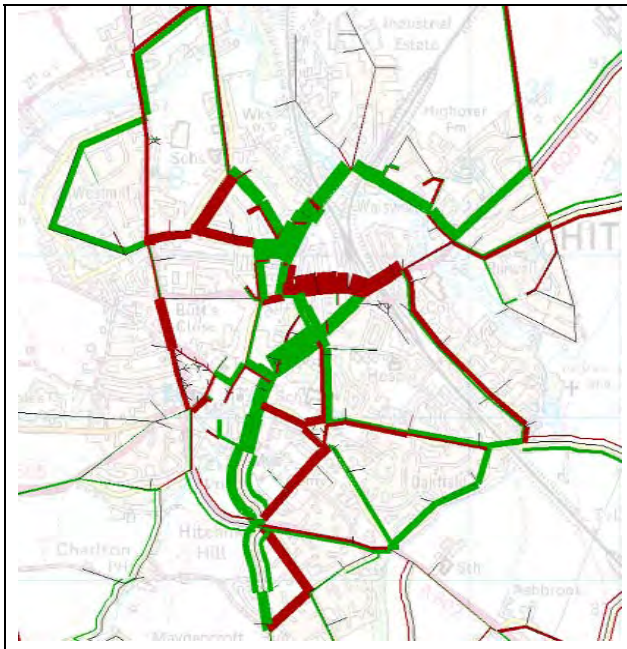
Details:

Vehicle speeds along identified locations should be in investigated through speeds surveys to determine whether excessive speeds are common and the extent of any the speeding. If the speed surveys determine that excessive speeds are prevalent along a route, then concept designs for traffic calming should be prepared with the objective to reduce vehicle speeds in keeping with the urban environment and speed limit.

If the speed surveys identify that traffic calming is required because of excessive speeds, the impact of any measure will need to be understood. Where applicable, traffic calming was tested using the transport model to understand the potential impact on the surrounding area, by applying a speed and capacity reduction to the identified links. Schemes were grouped for testing where traffic calming was identified in similar locations. The following traffic calming schemes were tested, either as a group or in isolation in the 2014 Do Nothing scenario:

- HM33.1; HM33.2; HM33.3; HM33.8; HM33.9; HM33.10; HM33.16; HM33.22.
- HM33.4; HM33.7; HM33.23; HM33.25; HM33.26.
- HM33.5.
- HM33.13; HM33.17.
- HM33.6; HM33.12; HM33.15; HM33.19; HM33.20.

The schemes that had the desired effect of controlling speeds without causing too much additional delay or re-routeing in the surrounding area were packaged together to assess the combined impact of all the identified schemes. The schemes packaged for testing were HM33.1; 2; 3; 4; 6; 7; 8; 9; 10; 12; 15; 16; 19; 20; 22; 23; 25; 26. This testing showed that traffic calming has the desired effect of making certain routes less attractive for through traffic whilst reducing vehicle speeds along the route to a level in keeping with the surrounding urban environment, without causing too much additional delay.



Change in traffic flow in Morning Peak (2014 DS (HM33) compared with 2014 DN)
Reduction in traffic as a result of the traffic calming is shown in Green, increase in Red.

Change in vehicle speeds in Morning Peak (2014 DS (HM33) compared with 2014 DN)
Reduction in speed as a result of the traffic calming is shown in Green, increase in Red.

The model testing showed that traffic calming will reduce the speed and volume of traffic along certain routes without causing significant detrimental effects in the surrounding area. However this testing is only indicative in terms of showing the potential impact of traffic calming schemes. Traffic calming was not tested in some locations due to limitations of the model network. However it is envisaged that traffic calming on these routes will yield similar impacts to routes tested because they are minor residential routes and have similar characteristics to the routes tested. If the speed surveys conducted along these identified routes determine that the speed limit is regularly exceeded, the suitability for traffic calming and potential detrimental effect on the surrounding area should be considered:

- HM33.14- Investigate speeds on Victoria Road;
- HM33.18- Investigate speeds on Heathfield Road;
- HM33.21- Investigate speeds on Bedford Street;
- HM33.24- Investigate speeds on Chaucer Way;
- HM33.27- Investigate speeds on Oughton Head Way;
- HM33.28- Investigate speeds on Hampden Road.

The type of traffic calming to be implemented will vary between locations because of the varying nature of the roads and locations identified. There are several different types of traffic calming techniques available, each with their own merits. These can vary from vertical deflection devices, like speed cushions and speed tables to horizontal deflections, including chicanes or pinch points. Access control measures, such as width restrictions could be another possible consideration or changes in the visual appearance including high friction surfacing should be considered. All new traffic calming measures should be considered on an individual basis with objectives for the scheme set in line with the County's Speed Management Strategy, November 2009. All traffic calming should be carefully designed in consultation with various stakeholders including emergency services, bus operators and local people and installed to prevent creating conflicts particularly with parking, access and grounding. The Department for Transport (DfT) have several traffic advisory leaflets relating to the different types of traffic calming with the Traffic Calming Regulations, 7/93, providing guidance on the use of measures and an explanation of the Highways (Traffic Calming) Regulations 1993.

As mentioned traffic calming should only be implemented if there is data supporting the need for the measures. Speed surveys have been undertaken along some identified routes and indicate that excessive speeds are not a problem, and thus speeding is not an issue. Therefore although these routes were perceived to be subject to excessive speeds and the testing indicates the measures have no ill effects, there is no data to support the need for traffic calming. The routes identified that do not experience excessive speeds and thus will not be included in the UTP include:

- HM33.2- Investigate speeds on Queen Street/Walsworth Road
- HM33.3- Investigate speeds on Park Street/Hitchin Hill
- HM33.4- Investigate speeds on Woolgrove Road
- HM33.5- Investigate speeds along Stevenage Road
- HM33.7- Investigate speeds on Bearton Road/ Periwinkle Lane
- HM33.16- Investigate speeds on Ninesprings Way
- HM33.23- Investigate speeds on Strathmore Avenue
- HM33.25- Investigate speeds on Wilbury Way
- HM33.26- Investigate speeds on Grove Road

In two locations, where traffic calming was tested, the effect of the measures is detrimental to the performance of the highway network, creating more problems than it solves. These locations will not be included in the UTP:

- HM33.13 – Investigate speeds on Old Park Road
- HM33.17 – Investigate speeds on Bedford Road

One of the main dis-benefits of traffic calming in these locations is it causes traffic to re-route away from these main distributor roads onto minor residential routes. As a result of this re-routing there is a significant increase in delay in residential areas, as well as along the routes were the traffic calming has been implemented. These schemes would not help achieve the desired effects of traffic calming being to reduce speeds in keeping with the urban environment, reduce severance, and to discourage through traffic on unsuitable routes.

Another scheme that will not be included in the UTP is HM33.1 – Introduce traffic calming on Hermitage Road. This is because of other UTP schemes identified on Hermitage Road, namely:

- HM37 – Introduce a shared space scheme for the town centre and;
- PTM19 – Revise the boarding and alighting points of buses within the town centre.

These two schemes will achieve a reduction in vehicle speeds on this road because they are envisaged to limit the number of vehicles on this route in the short term, and then restrict all vehicle movements in the medium term. It would not be cost effective to investigate the speeds along this route because of the proposed changes in the future. Implementing any traffic calming in addition to these UTP schemes

would contradict the impacts achieved through the schemes and could have an adverse impact on accessibility, particularly bus operations.
Following site visits, the scheme HM33.11 – Investigate speeds on Dacre Road, has been identified as already having traffic calming measures in place, with speed tables along the length of this road, therefore this scheme will not be included in the UTP.

HM33 Supporting Photographs

Example of three abreast speed cushions

Example of a speed table on Dacre Road

Example of a chicane scheme

Example of pinch points

Example of rumble devices
Source: Traffic Advisory Leaflet 1/05

Example of coloured road surfaces

Benefits:

- Reduce the number and severity of causalities resulting from road traffic collisions, especially those involving pedestrians and cyclists
- Discourage heavy vehicles and 'through traffic' from using unsuitable routes
- Reduce speeding
- Improve the urban street environment and reduce community severance
- Promote a greater feeling of safety
- Promote cycling and walking

Risks:

- Loss of on-street parking
- Cost of construction
- Can result in an increase in emergency response times
- Can be unsuitable for buses

Indicative Costs:

Indicative costs for providing speed surveys at the identified locations can range from £225/day for one survey to £650/day for five surveys, if they are in the same area. The following locations could be grouped so that the costs for a week are minimised:

- Burford Way / Swinburne Avenue / Moss Way / Redhill Road (4 sites) – £3,700
- Oughton Head Way / Victoria Road / Bedford Street (3 sites) – £2,800
- Gosmore Road / Blackhorse Lane / Oakfield Avenue (3 sites) – £2,800
- Hampden Road / Purwell Lane / Chaucer Way (3 sites) – £2,800
- Verulam Road (1 site) – £1,600
- Total speed survey costs for a week – **£13,700**

If the speed surveys identify that traffic calming measures are required at all of the above sites then the costs (provided by HCC) for the design fees and works associated with implementing the traffic calming schemes are assumed to be:

- Design Fees for traffic calming – £50,000;
- Works Costs for traffic calming – £90,000.
- Total Traffic Calming Scheme Costs – **£140,000**

HM33 Scheme Cost (speed surveys and traffic calming)

- **£153,700**

Scheme:
Highway infrastructure improvements identified using SHUM

Scheme Reference:
HM36

Scheme Status:
This scheme is included in the UTP

Purpose:
As part of the UTP process, a Stevenage and Hitchin Urban Transport Plan highway model (SHUM) was developed to test certain highway related schemes. As part of this process, the SHUM has been used to identify additional highway issues that could arise as a result of future year scenarios, which have not been identified through consultations. By 2014, the SHUM has highlighted two additional schemes could be required to mitigate any future year demand on the network to ensure that it continues to operate satisfactorily:

- Improvement to Queen Street / Biggin Lane
- Widening of the A505 Bedford Road at the junction with Brand Street / Grammar School Walk (Payne's Park)

Details:
The methodology for the packaging of options in the highway model is discussed and explained in the Main UTP document. In line with the Route User Hierarchy all of the schemes which had been identified in the emerging UTP in relation to disabled users, walking, cycling, and public transport, where applicable, were tested to develop a set of schemes defined as either 'Package B' or within Package 'C'. This provided a foundation to work from which had addressed most of the issues around the access to sustainable modes but had not necessarily dealt with the junction and congestion related issues.

The congestion and highway capacity issues could have either come forward as a result of existing problems that have been identified from consultations, through the implementation of other scheme options or identified through the future year modelling. A large number of model tests were undertaken and UTP schemes tested at a number of locations which would seek to ensure that congestion was kept to a minimum both in the base year and the future years, whilst improving the highway network for all users. The series of tables below discuss the packages and what has been included in terms of improvements around the network in the relevant traffic model scenarios.

- Package A – highway infrastructure identified for improvement through the base year modelling;
- Package B – committed highway infrastructure improvements for inclusion by 2014;
- Package C – short and medium term UTP schemes;
- Package D – highway infrastructure improvements identified through the future year modelling.

Highway infrastructure upgraded in the 2008 DM Network (A Packages):

Location	Junction type	Improvement
Cadwell Lane / Grove Road / Woolgrove Road / Wilbury Way	Signals	Optimisation of the signals. However these signals are currently on MOVA which cannot be modelled. Therefore there may not be a need to optimise.
A505 Cambridge Road / Woolgrove Road / Willian Road	Signals	Optimisation of the signals. However these signals are currently on MOVA which cannot be modelled. Therefore there may not be a need to optimise.

Highway infrastructure upgraded in the 2014 DN network (B Packages):

Location	Junction Type	Improvement
Bedford Road (Payne's Park Gyratory)	Crossing	New Pelican Crossing (for pedestrians) along Bedford Road

Highway infrastructure upgraded in the 2014 DS network (D Packages). This does not include any C Packages (Short and Medium Term UTP schemes):

Location	Junction type	Improvement
Queen Street / Biggin Lane	Priority	Flaring of Biggin Lane at the stop line with Queen Street to two lanes
Bedford Road (at Brand Street / Grammar School Walk on Payne's Park Gyratory)	Priority	Widening of the carriageway to ensure sufficient capacity in line with standards

Improvement to Queen Street / Biggin Lane

As a result of increased demand in Hitchin Town Centre, the pressure on the routes that provide access to the surrounding roads will increase. As a direct result of the increase in development by 2014, the access from Biggin Lane onto Queen Street will need to be widened to two lanes to mitigate the anticipated increase in demand. If the junction cannot be widened, then relief will need to be provided by allowing additional access to and from the developments in this area.

HM36.1 Supporting Photographs

Existing view along Biggin Lane to the junction with Queen Street

Existing view from Queen Street of Biggin Lane at the junction stop line

Widening of the A505 Bedford Road at the junction with Brand Street / Grammar School Walk (Payne's Park)

As a result of other UTP schemes being implemented, twinned with a general increase in traffic by 2014; demand around the Payne's Park gyratory has increased. This places additional pressure on the gyratory, particularly at the Grammar School Walk / Brand St junction where it is only a single lane carriageway around the gyratory, from a dual lane along the A505 before and after this junction. This section will need to be widened to a sufficient standard to improve the capacity around the gyratory so that this junction does not cause a bottleneck.

If widening is not possible, then the junction could be redesigned to allow two lanes around the gyratory at this junction. As part of other UTP schemes being delivered, the through traffic to and from Brand Street is being restricted, therefore there will be less demand on the single lane straight on to Brand Street from the A505 Bedford Road. Allowing two lanes around the gyratory at this junction will resolve the issue of any bottleneck that may occur from a reduction in capacity.

HM36.2 Supporting Photographs

	
Existing view of A505 Bedford Road (Payne's Park) from Bedford Road	Existing view of A505 Bedford Road (Payne's Park) from Brand Street

Benefits:

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

Risks:

- Detailed design assessments have not been carried out for either of the schemes so 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 these schemes can be delivered
- Potential land ownership issues concerning the Queen Street /Biggin Lane improvements may need to be resolved

Indicative Cost

Further work is required to be able to fully develop the two potential schemes identified through the SHUM modelling, namely 'Improvement to Queen Street / Biggin Lane' and 'Widening of the A505 Bedford Road at the junction with Brand Street / Grammar School Walk (Payne's Park)'. These schemes would need to be considered as part of the annual review of the UTP to determine whether they should be taken forward.

Scheme:
Introduce a shared space scheme for the Town Centre

Scheme Reference:
HM37

Scheme Status:
This scheme is included in the UTP

Purpose:
This scheme has been developed from the work already undertaken as part of PTM19 (Revise the boarding and alighting points of buses within the town centre) and HM19 (Reduce the through movement of traffic in the town centre), both of which proposed elements of a shared space scheme for Hermitage Road, Brand Street and Bancroft respectively. Following comments from local members, it was decided to consolidate the detail and aims of each scheme into a single proposal.

PTM19 aimed to simplify the boarding and alighting points by consolidating bus infrastructure in Hermitage Road, providing a shared space environment which caters for pedestrians, cyclists and public transport users as well as motorists. To achieve this, the existing bus stops on Bancroft and Queen Street will be relocated to the western end of Hermitage Road. All bus infrastructure will be consolidated in this part of Hermitage Road so as to provide a central hub which will be simple to navigate and improve the bus offer within the town centre, encouraging more people to travel by bus.

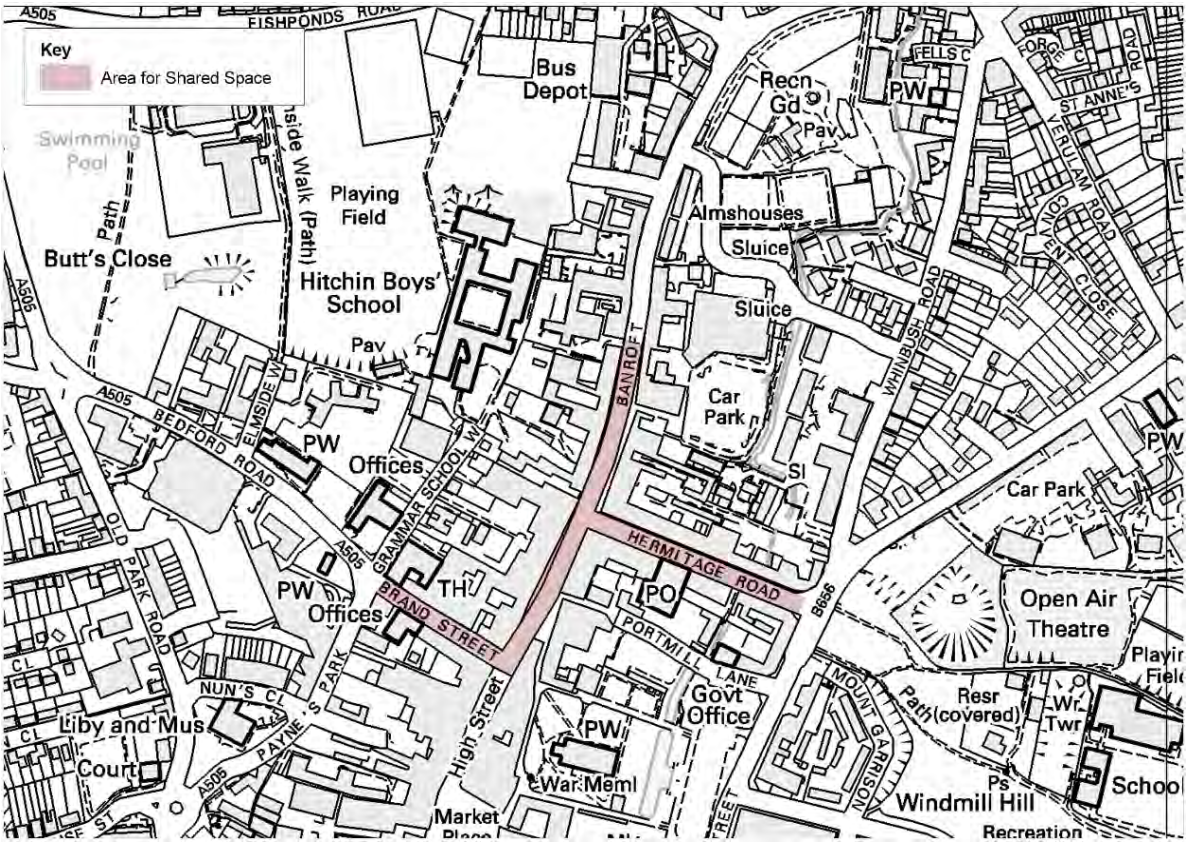
HM19 was designed to try and reduce the amount of rat running by improving and changing the nature and appearance of roads within the town centre to make them less attractive than the intended primary routes to travel across town. The preferred mechanism to try and achieve this is via the introduction of shared space routes through the town centre.

By combining the detail of PTM19 and HM19 it is considered that this single scheme can improve the current public transport infrastructure, address the issue of town centre rat running and also provide an attractive and high quality environment for pedestrians and cyclists, and encourage economic activity within the town centre itself.

The roads identified for the shared space scheme are:

- Hermitage Road;
- Brand Street and;
- Bancroft (southern end, at the approach to Hermitage Road).

Location Plan/outline Scheme Plan



Shared space schemes remove the traditional highway priority and segregation of motor vehicles, pedestrians and other road users. Traditional traffic management features, such as kerbs, road markings and signs that tend to encourage users of vehicles to assume priority are reduced to create an integrated public space, such that pedestrians, cyclists and road users become integrated. The benefits of shared space may include:

- A reduction in traffic dominance;
- Economic regeneration of the area;
- A less cluttered streetscape and hence a more attractive social environment;
- A change in pedestrian movement and activity.

Shared space is a design approach rather than a standard type of design. However, there are some design parameters that are likely to be influential in determining their performance including traffic volumes, vehicle speeds and the mix of traffic participants. The full benefits of shared space are likely to be achieved when vehicle flows are relatively low, vehicle speeds are effectively controlled and there are features in the space that encourage pedestrian activity.

The aim of this scheme is to enable pedestrians to move more freely around the town centre by reducing traffic management features that tend to encourage users of vehicles to assume priority; particularly along Hermitage Road, Brand Street and Bancroft. This scheme will have the added benefit consolidating and improving town centre bus infrastructure, the detail of which is contained within PTM19.

Examples of shared space:

Shared space in Ashford

(www.kerbi.net

Shared space in Brighton

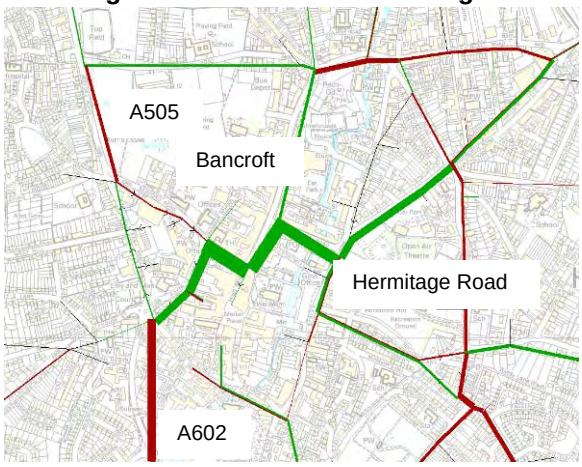
(www.lfgss.com)

Model Testing

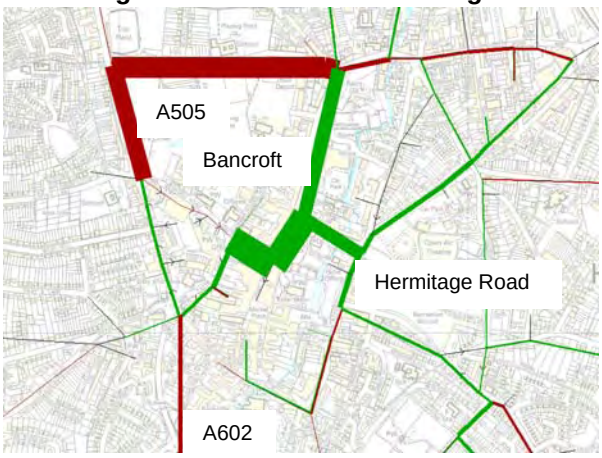
By changing the streetscape in this area, traffic volumes and speeds would be expected to reduce, with traffic re-routeing onto other roads in the network. A model test has been conducted in the 2014 Do Nothing (i.e. no other schemes proposed in the town) scenario to assess, in isolation, the impact of the shared space concept. The model assumes that the shared space scheme will have a 20mph limit with a reduced road capacity compared with the current layout.

As a result there is a decrease in traffic on Hermitage Road, Bancroft and Brand Street, with traffic re-routeing onto the A505 and one-way system around Hitchin, particularly evident in the evening peak. During the morning peak there is also a shift in traffic travelling east which previously routed through the town centre now using the A505 and other southeast routes

Change in Traffic Flows – Morning Peak



Change in Traffic Flows – Evening Peak



Green represents an decrease in traffic as a result of limiting through traffic in 2014 Do Nothing, Red is an increase compared with 2014 Do Nothing Scenario.

As a result of the increase in flow during the peak periods on the A505 and around the one-way system, the amount of spare capacity on these roads has reduced but the roads still operate at a similar level of performance, as without the shared space scheme.

The final design would need to be developed within the context and setting of the town centre (i.e. High Street and Market Square), but the key themes would relate to lowering vehicle speeds and providing features which encourage pedestrian activity and shared use of space. Implementation of shared space scheme would therefore provide a range of positive benefits for the town centre

Benefits:

- Reduced traffic dominance
- Improved environment for pedestrians and cyclists
- A central bus interchange hub
- Improved bus infrastructure
- Ease of pedestrian movement and changes in pedestrian activity
- Increase in public transport patronage
- Economic regeneration

Risks:

- There is no identified funding for the scheme
- Some reduction in highway capacity

Scheme:
Revert the one-way systems to two-way (Payne's Park / Old Park Road / Bedford Road)

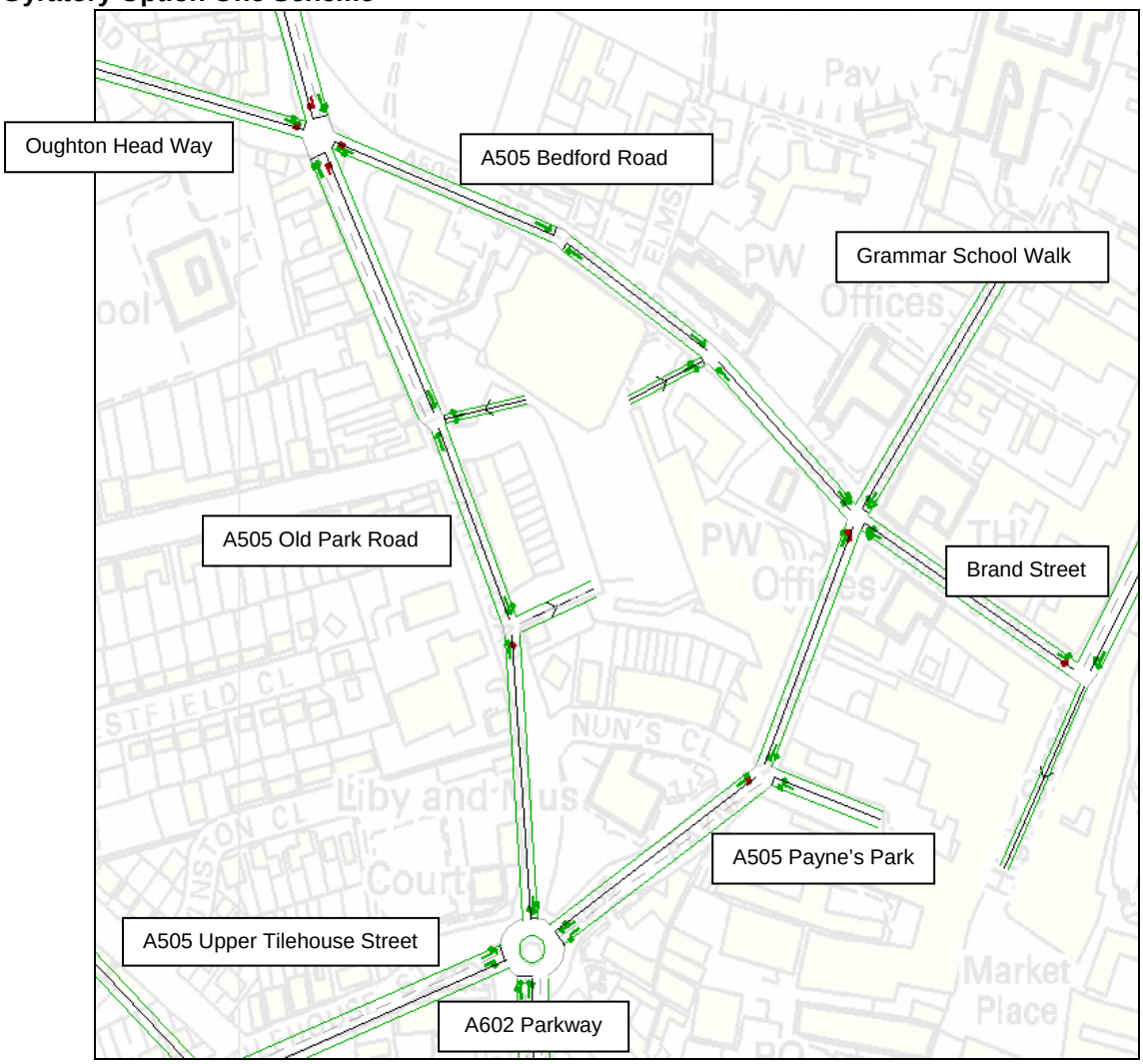
Scheme Reference:
HM20

Scheme Status:
This scheme is not included in the UTP

Purpose:
An 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 and allow a better control of flows in the area.

Details:
A two-way gyratory option has been tested in isolation in the 2014 Do Nothing (DN) scenario because this is envisaged to be the first future year affected, if a scheme is implemented. The gyratory performance and wider network impacts are compared against the 2014 DN scenario for the morning and evening peaks. An option was developed with the gyratory system operating as two-directional with the current give way markings and signal controlled junctions in force.

Gyratory Option One Scheme



Network Performance Statistics

A comparison of key Stevenage and Hitchin network wide performance statistics for the 2014 DN scenario and 2014 DN HM20 Option One are provided in the tables below for the AM and PM peak hour.

Parameters – AM Peak	2014 DN	2014 HM20 Option One
Total Number of trips (pcus)	53075	53075
Total amount of time spent on the road (pcu/hr)	8991	8977
Total distance travelled (pcu/km)	328775	328228
Average Speed (kph)	36.6	36.6
Total delay per vehicle (mins/veh)	3.61	3.61
Total delay based on distance travelled (min/veh.km)	0.58	0.58
Average trip length in model (km)	6.19	6.18
Convergence Delta Statistic (%)	0.107	0.119

Parameters – PM Peak	2014 DN	2014 HM20 Option One
Total Number of trips (pcus)	52312	52312
Total amount of time spent on the road (pcu/hr)	5574	5541
Total distance travelled (pcu/km)	228931	228895
Average Speed (kph)	41.1	41.3
Total delay per vehicle (mins/veh)	1.90	1.87
Total delay based on distance travelled (min/veh.km)	0.43	0.43
Average trip length in model (km)	4.38	4.38
Convergence Delta Statistic (%)	0.0735	0.0795

The tables show that the gyratory Option One test has improved the overall network performance with:

- Total time spent on the network decreasing by 0.6% in the PM peak and 0.2% in the AM peak;
- Total delay per vehicle decreasing by 2% in the PM peak but unchanged in the AM peak; and
- The average network speed increasing by 0.2kph in the PM peak and unchanged in the AM peak.

Changes in Flow (all flows given in passenger carrying units (PCU's) representing one car equivalent)

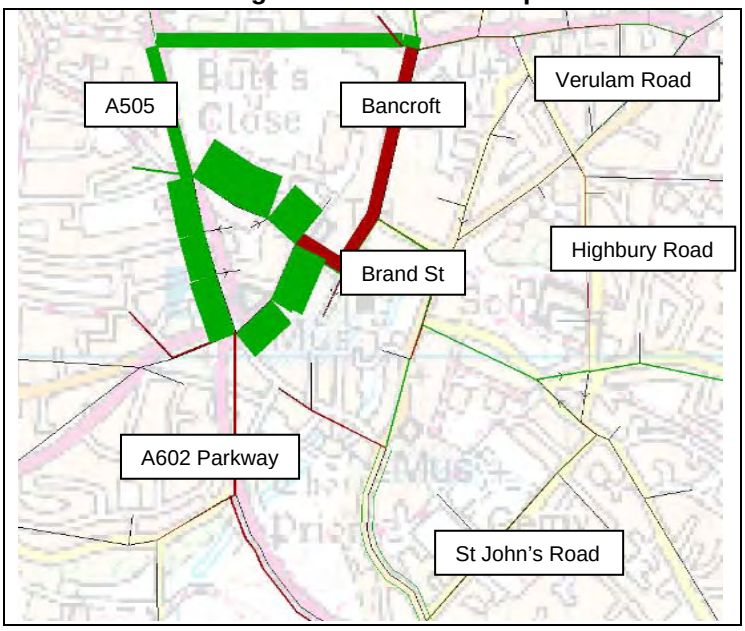
The overall pattern of traffic flow changes around the gyratory and the wider impact across the network between the 2014 DN scenario and the 2014 DN HM20 Option One are shown for the AM peak and PM peak. Flow increases due to HM20 are shown in red and flow decreases in green. The line thickness is proportional to the flow change i.e. the thicker the line, the greater the flow change. The change in flow anti-clockwise around the gyratory is not shown on the figures due to software limitations (the two networks are not identical), but is reported on later diagrams. The actual traffic flow volumes at selected locations on the network for the option test and the DN are shown later for the AM peak hour and PM peak hour.

As a result of making the gyratory two-way there is a shift in traffic travelling north. The A505 route experiences a reduction in demand (400pcus) with an increase on Bancroft (450pcus) in the AM peak. This is the stand alone impact of making the gyratory two-way in the morning peak and a more significant impact in the evening peak. This shift in traffic occurs because Payne's Park is two-way, so it is a more attractive route for traffic travelling north through Hitchin. In the one-way operation, traffic is forced northbound along Old Park Road to the junction with Bedford Road before traffic has the choice to continue on the A505 or to travel through the town centre (Brand Street / Bancroft).

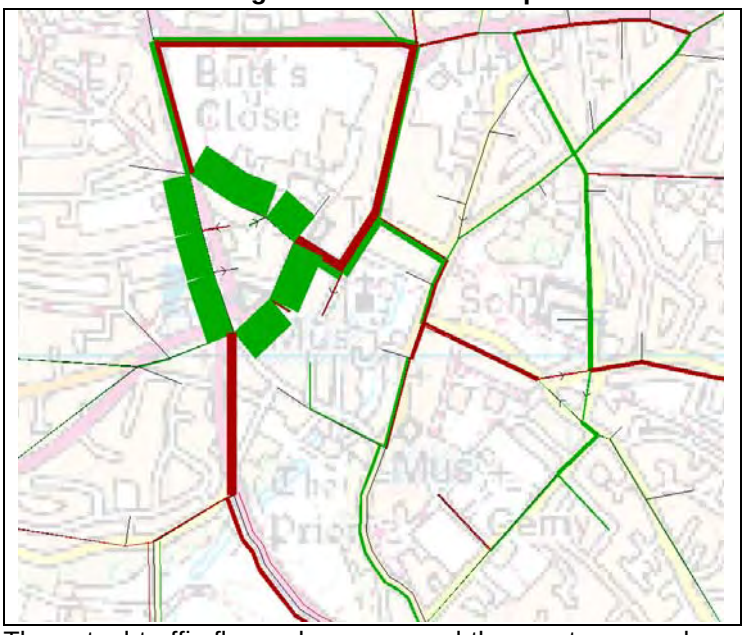
In the evening peak, in addition to the impact on Bancroft (250pcus increase); there is a small increase on the A505 southbound (150pcus). As a result of making Old Park Road two-directional, traffic routes

around Hitchin along the A505 instead of routeing through the town (decrease on Hermitage Road (200pcus) and Brand Street southbound (250pcus)). As a result of this re-routeing, there is an increase in demand on the A602 Parkway southbound (100pcus), with decreases on minor residential routes in the town.

Overall Flow Change 2014 DN v HM20 Option One – AM

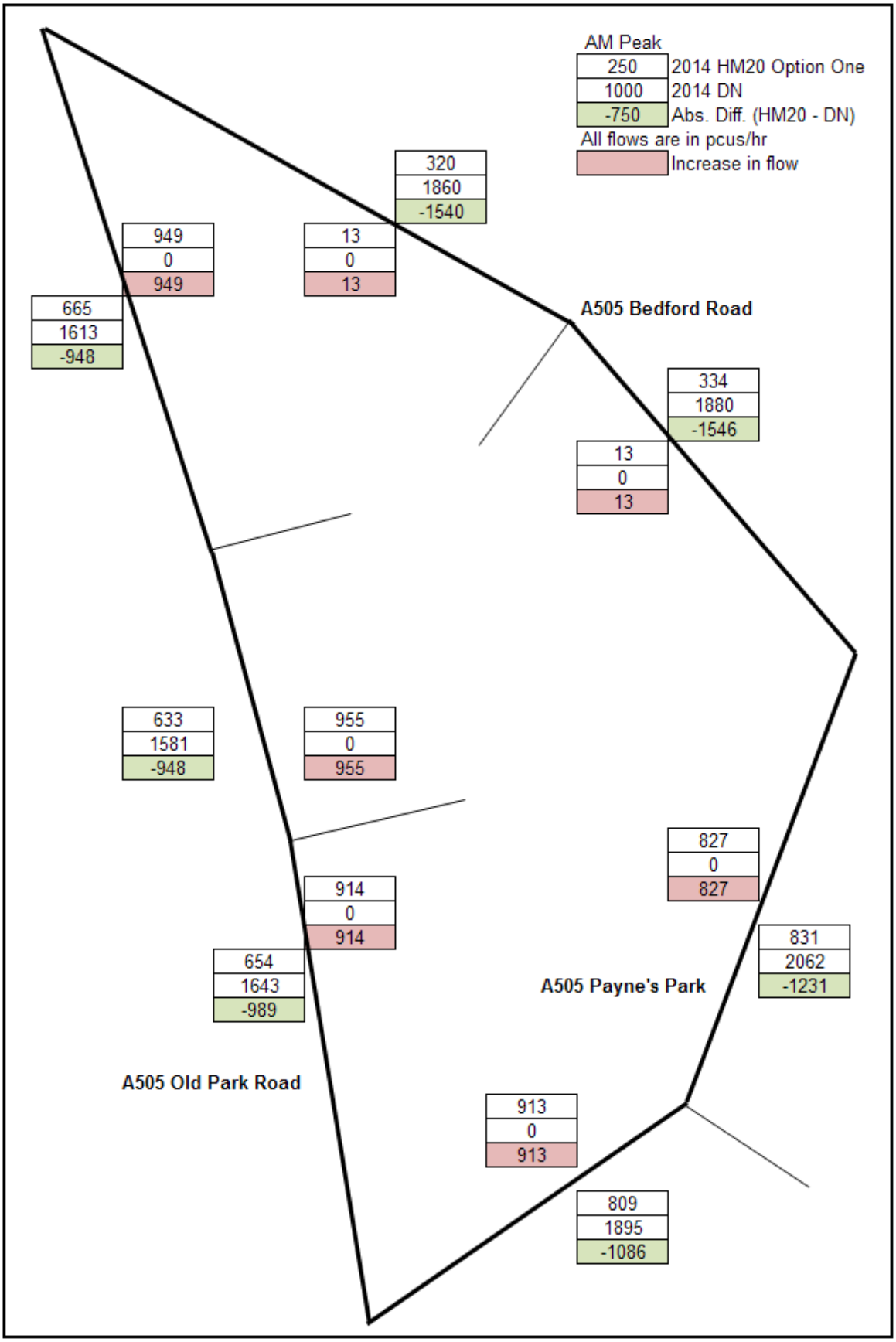


Overall Flow Change 2014 DN v HM20 Option One – PM

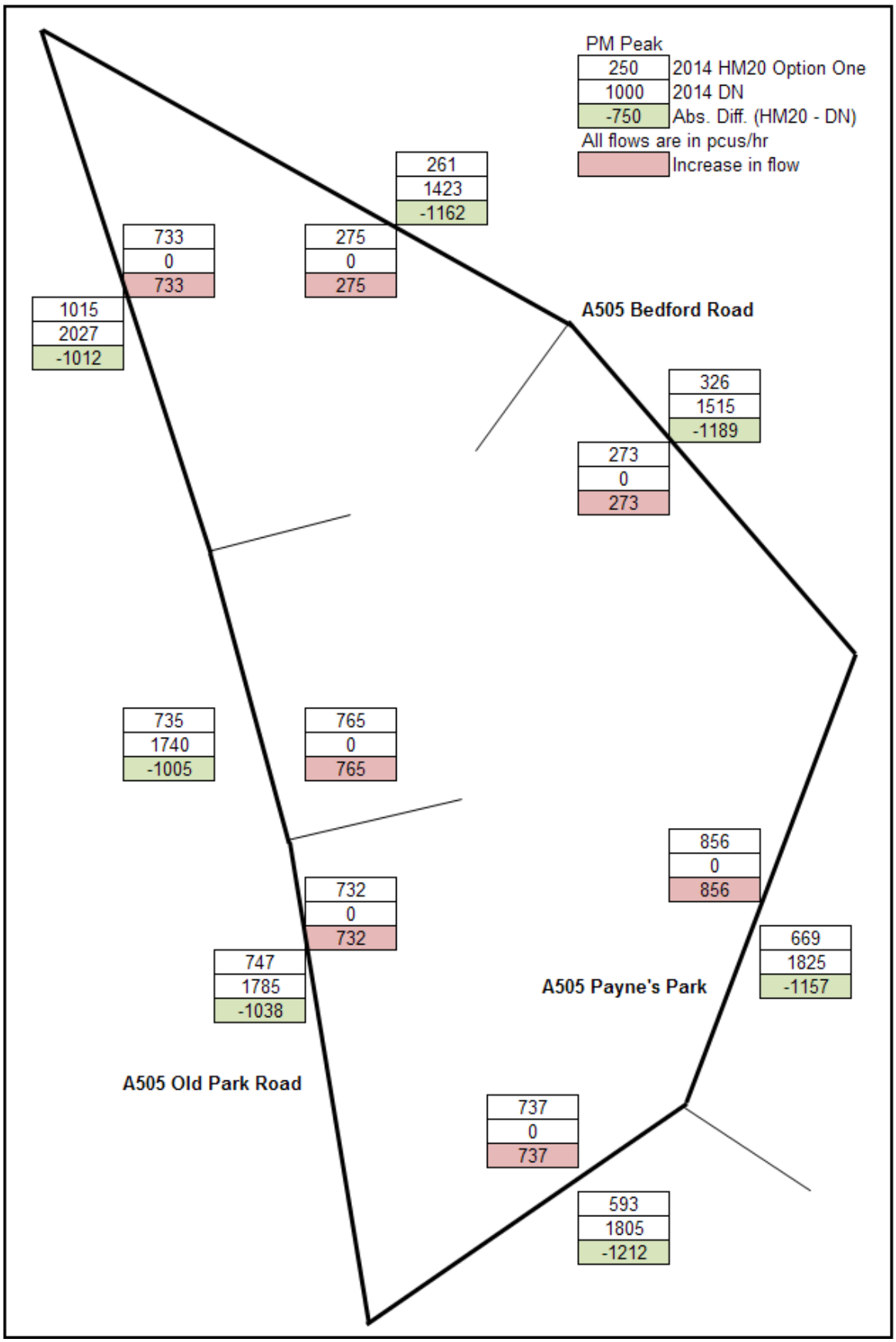


The actual traffic flow volumes around the gyratory are shown in the figures below. The impact on the total demand around the gyratory is a decrease during the peak hours, with Bedford Road southbound experiencing a decrease of over 80%. This decrease relates primarily to two factors, firstly traffic that would previously have travelled along two sides of the gyratory but can now use just one, therefore is not counted twice. Secondly, there has been some re-routeing of traffic onto other routes, namely northbound traffic on Bancroft. The two-way gyratory experiences a reduction in traffic demand on all roads around the gyratory when summed by up to 30% in the AM and 28% in the PM peak.

Detailed Flow Change around the Gyratory – 2014 DN v 2014 HM20 Option One, AM Peak



Detailed Flow Change around the Gyratory – 2014 DN v 2014 HM20 Option One, PM Peak



Operational Performance

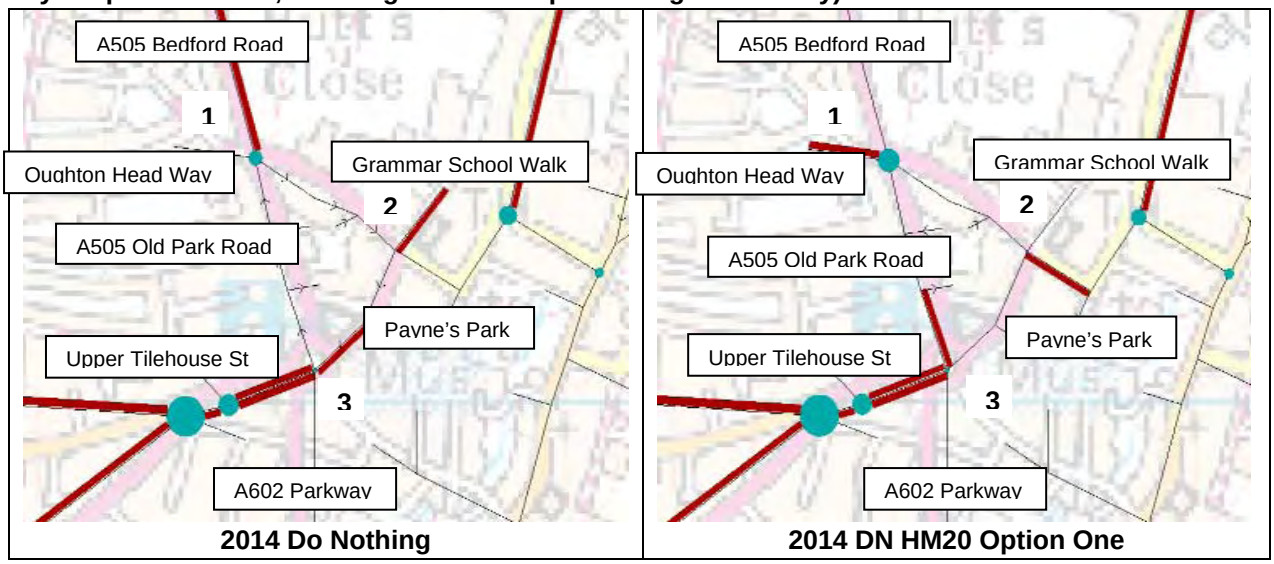
Although the flow around the gyratory has been reduced, key to the performance of the two-way gyratory is the operational performance. The operational performance of the network for this Option One test is illustrated by two means, firstly links exhibiting a flow/capacity ratio of above 85% (85% represents the design capacity of the road)and secondly, delays at junctions on the gyratory.

Key to the performance of the gyratory are three junctions:

1. A505 Old Park Road / Bedford Road / Oughton Head Way
2. A505 Bedford Road / Payne's park / Brand Street / Grammar School Walk
3. A505 Old Park Road / Payne's Park / Upper Tilehouse Street / A602 Parkway

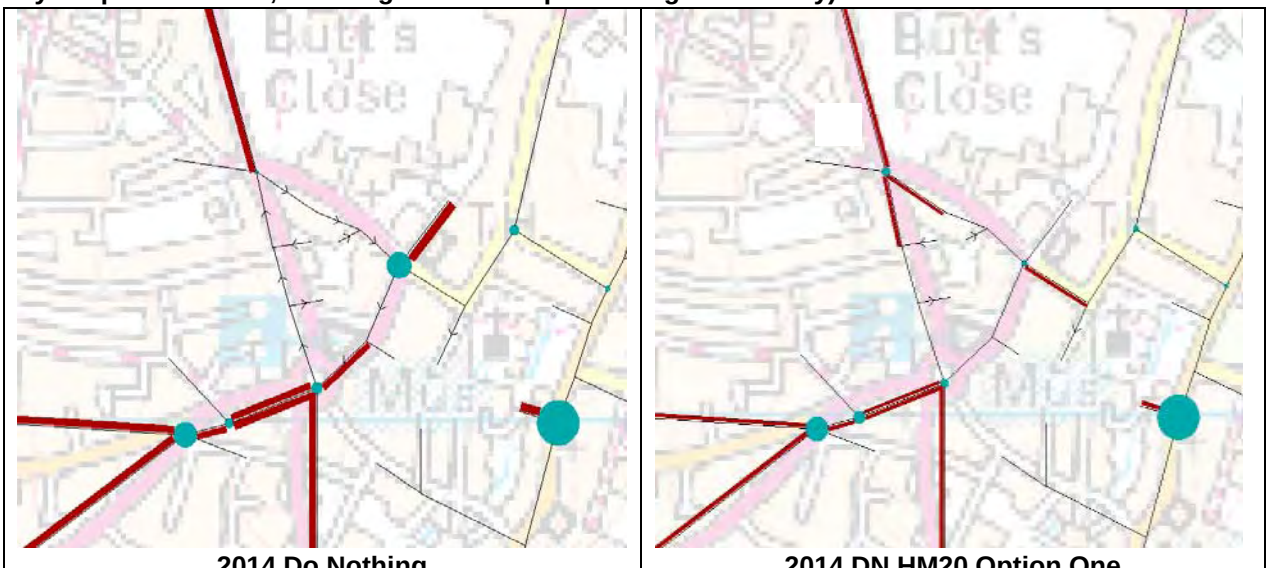
Other junctions displaying delay have been dealt with by other UTP schemes. The gyratory testing has been done using a 2014 DN scenario, assuming no schemes are implemented.

2014 DN v HM20 Option One AM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)



2014 Do Nothing | **2014 DN HM20 Option One**

2014 DN v HM20 Option One PM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)



2014 Do Nothing | **2014 DN HM20 Option One**

The gyratory option in the AM peak exacerbates the average delay at junction one compared to the 2014 DN scenario. In the evening peak the average delay at junction two has been minimised but there is a slight increase at junction one. Average delay at the three gyratory junctions in the DN and Gyratory Option One scenario are shown with the DN scenario first:

AM Peak

- Junction 1 – 59 seconds (2014 DN) / 92 seconds (Gyratory Option One)
- Junction 2 – 3 seconds / 8 seconds
- Junction 3 – 16 seconds / 16 seconds

PM Peak

- Junction 1 – 13 seconds / 36 seconds
- Junction 2 – 103 seconds / 23 seconds
- Junction 3 – 45 seconds / 34 seconds

The operational performance of links on the gyratory operating at over 85% of their capacity in the AM peak, in the DN and gyratory Option One scenario include:

- A505 Bedford Road southbound – 105% (2014 DN) / 85% (Gyratory Option One)
- A505 Upper Tilehouse Street eastbound – 98% / 96%
- A505 Payne's Park westbound – 94% / 54%
- Grammar School Walk southbound – 90% / 37%
- Brand Street westbound – 53% / 91%
- Oughton Head Way eastbound – 41% / 101%
- A505 Old Park Road southbound – n/a / 86%

In the PM peak, the operational performance of the gyratory links at over 85% capacity include:

- Grammar School Walk southbound – 135% (2014 DN) / 84% (Gyratory Option One)
- A602 Parkway northbound – 104% / 102%
- A505 Upper Tilehouse Street eastbound – 100% / 90%
- A505 Payne's Park westbound – 93% / 42%
- A505 Old Park Road northbound – 81% / 92%
- A505 Bedford Road southbound – 74% / 101%
- Brand Street westbound – 60% / 98%
- A505 Bedford road northbound – n/a / 90%

2014 Do Nothing Gyratory Option One Summary

The two-way gyratory option does yield small network wide benefits and a reduction in traffic around the gyratory (30% in the AM, 28% in the PM). However despite this significant reduction in demand using the gyratory there are still a number of roads operating at over 85% of their capacity, with an increase in the delay at junctions on the gyratory. Therefore the scheme will not be included in this UTP due to the negative effects the scheme has on the surrounding area.

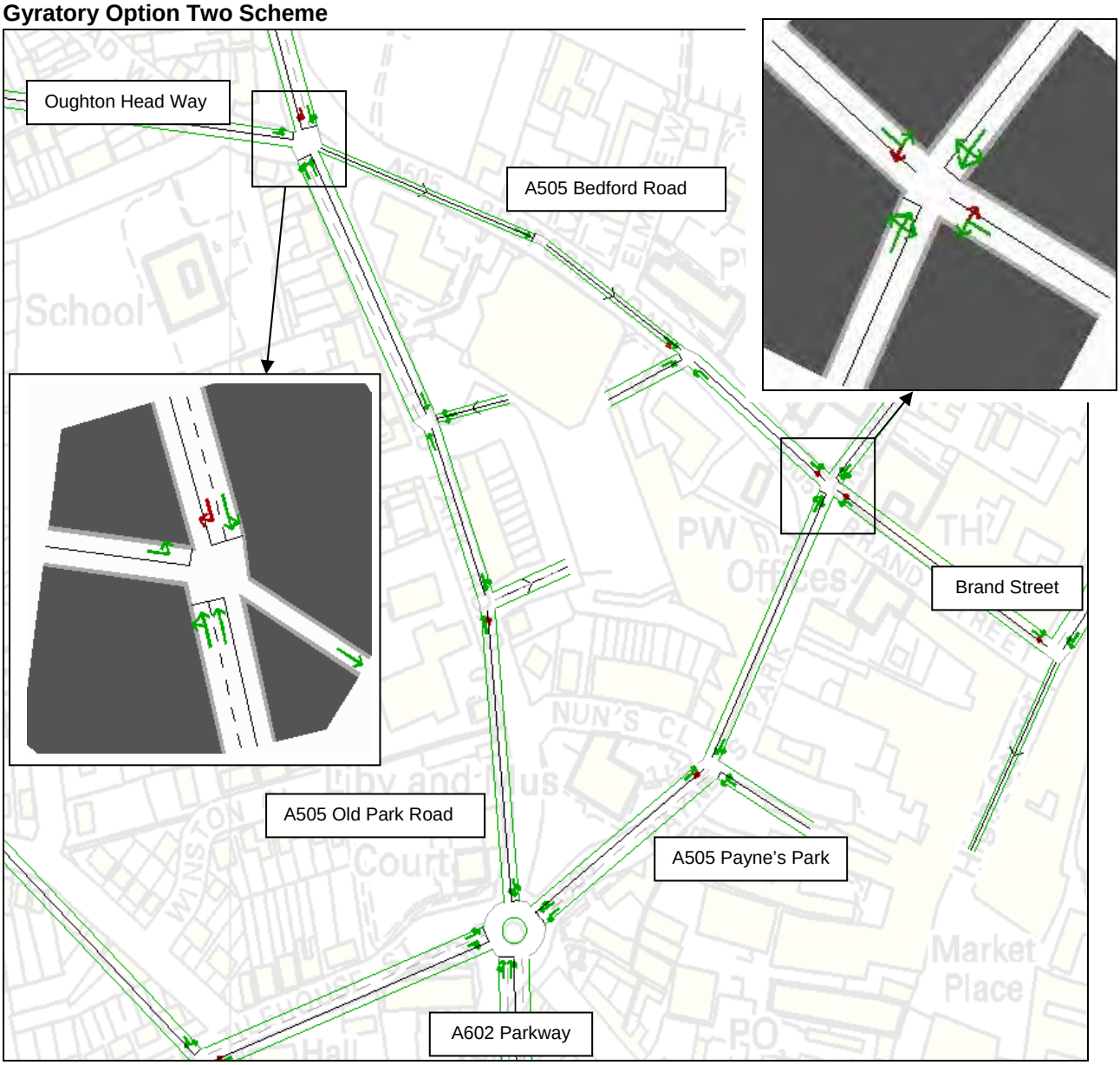
2014 Do Something Gyratory Option One Test

To understand the potential impact of the gyratory Option One in the future year with other proposed UTP schemes, the gyratory option was tested in the 2014 Do Something (DS) scenario. As a result of the gyratory Option One in the 2014 DS scenario, the general network performance deteriorates with the Bedford Road / Old Park Road junction experiencing considerable delay in both the morning and evening peaks. This delay is detrimental to the performance of the highway network in Hitchin causing traffic to re-route onto minor roads and through residential areas. This scheme does not complement the other UTP schemes proposed and therefore should not be included.

2014 Do Nothing Gyratory Option Two Test

A two-way gyratory option with junction improvements has been tested in isolation in the 2014 DN scenario. This option is similar to Option One, making the gyratory two-way except for Bedford Road which is entry only at the junction with Old Park Road. The junction of Bedford Road / Old Park Road has been modified to a three-arm signalised junction with certain movements banned. Only left turning traffic is allowed from Oughton Head Way, with any traffic wishing to access the town centre encouraged to shift modes and walk or cycle the short distance to the town centre, or use public transport from along Bedford Road. This option would result in restrictions along Bedford Road and enable improved bus reliability into the town centre. The Bedford Road / Brand Street junction has also been improved with banned movements to restrict through movements in the town centre.

Gyratory Option Two Scheme



The performance and wider Stevenage and Hitchin network impacts of Option Two are compared against the 2014 DN scenario for the morning and evening peaks.

Parameters – AM Peak	2014 DN	2014 HM20 Option Two
Total Number of trips (pcus)	53075	53075
Total amount of time spent on the road (pcu/hr)	8991	8952
Total distance travelled (pcu/km)	328775	328216
Average Speed (kph)	36.6	36.7
Total delay per vehicle (mins/veh)	3.61	3.58
Total delay based on distance travelled (min/veh.km)	0.58	0.58
Average trip length in model (km)	6.19	6.18
Convergence Delta Statistic (%)	0.107	0.103

Parameters – PM Peak	2014 DN	2014 HM20 Option two
Total Number of trips (pcus)	52312	52312
Total amount of time spent on the road (pcu/hr)	5574	5525
Total distance travelled (pcu/km)	228931	228847
Average Speed (kph)	41.1	41.4
Total delay per vehicle (mins/veh)	1.90	1.85
Total delay based on distance travelled (min/veh.km)	0.43	0.42
Average trip length in model (km)	4.38	4.37
Convergence Delta Statistic (%)	0.0735	0.0711

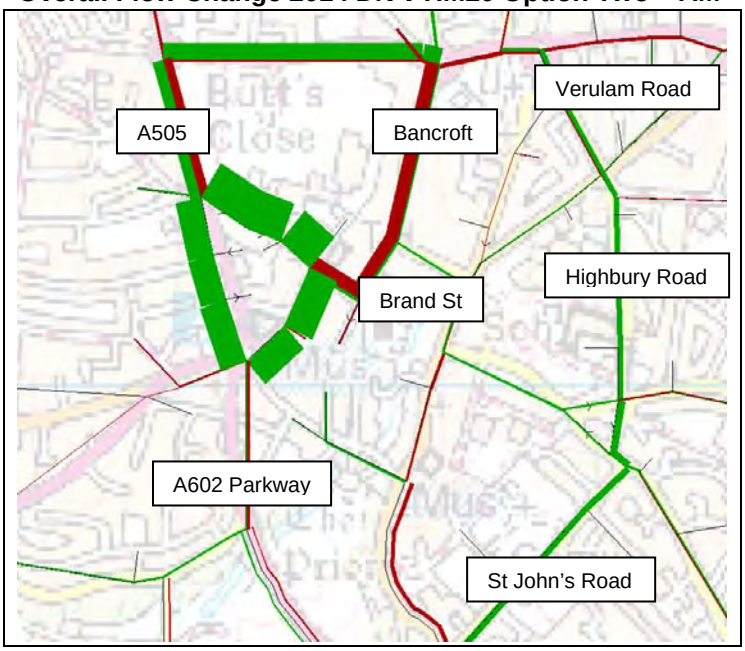
The tables show that the gyratory Option Two improves the network performance and yields better results than Option One with:

- Total time spent on the network decreasing by 0.9% in the PM peak and 0.4% in the AM peak;
- Total delay per vehicle decreasing by 1% in the AM peak and 3% in the PM peak; and
- The average network speed increasing by 0.1kph in the AM peak and by 0.3kph in the PM peak.

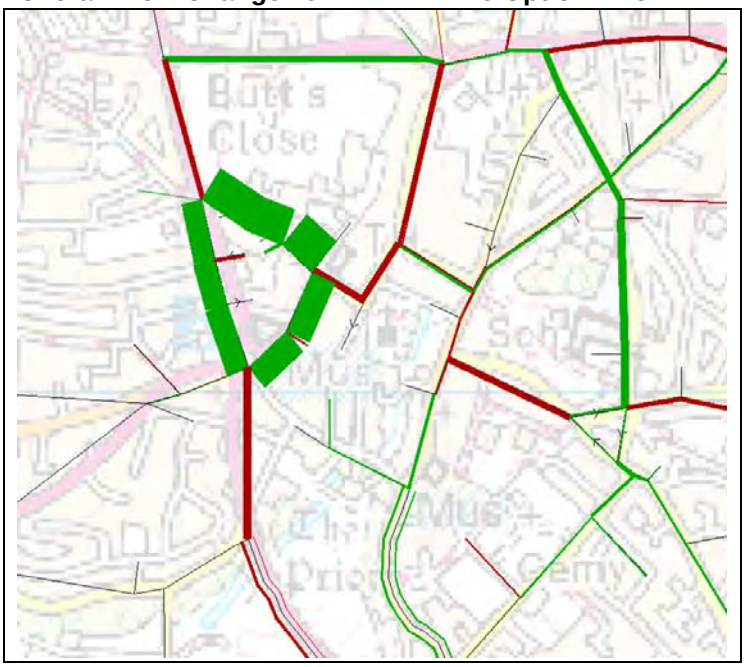
The impact on traffic flows are similar to the Option One test with a shift in traffic travelling north, from the A505 route around Hitchin town centre onto Bancroft. (The decrease in the AM on the A505 northbound is 350pcus, with an increase of 450pcus on Bancroft). In the morning peak, this was the only impact in Option One. However in Option Two there is also a decrease along Highbury Road and St John's Road (150pcus) with an increase on the A505 (300pcus) and A602 southbound (100pcus). This shift in traffic occurs because Old Park Road is two-way, so it is a more attractive route for traffic travelling south through Hitchin.

In the evening peak, in addition to the impact on Bancroft northbound (125pcus increase), there is a small increase on the A505 southbound (100pcus). Similar to the morning peak, making Old Park Road two-directional, traffic routes around Hitchin using the A505 instead of routeing through the town (decrease on Verulam Road and Highbury Road southbound, 100pcus). As a result of traffic re-routeing, there is an increase in demand on the A602 Parkway southbound (100pcus), with decreases on minor residential routes in the town. The results of Option Two in the PM are similar to Option One.

Overall Flow Change 2014 DN v HM20 Option Two – AM



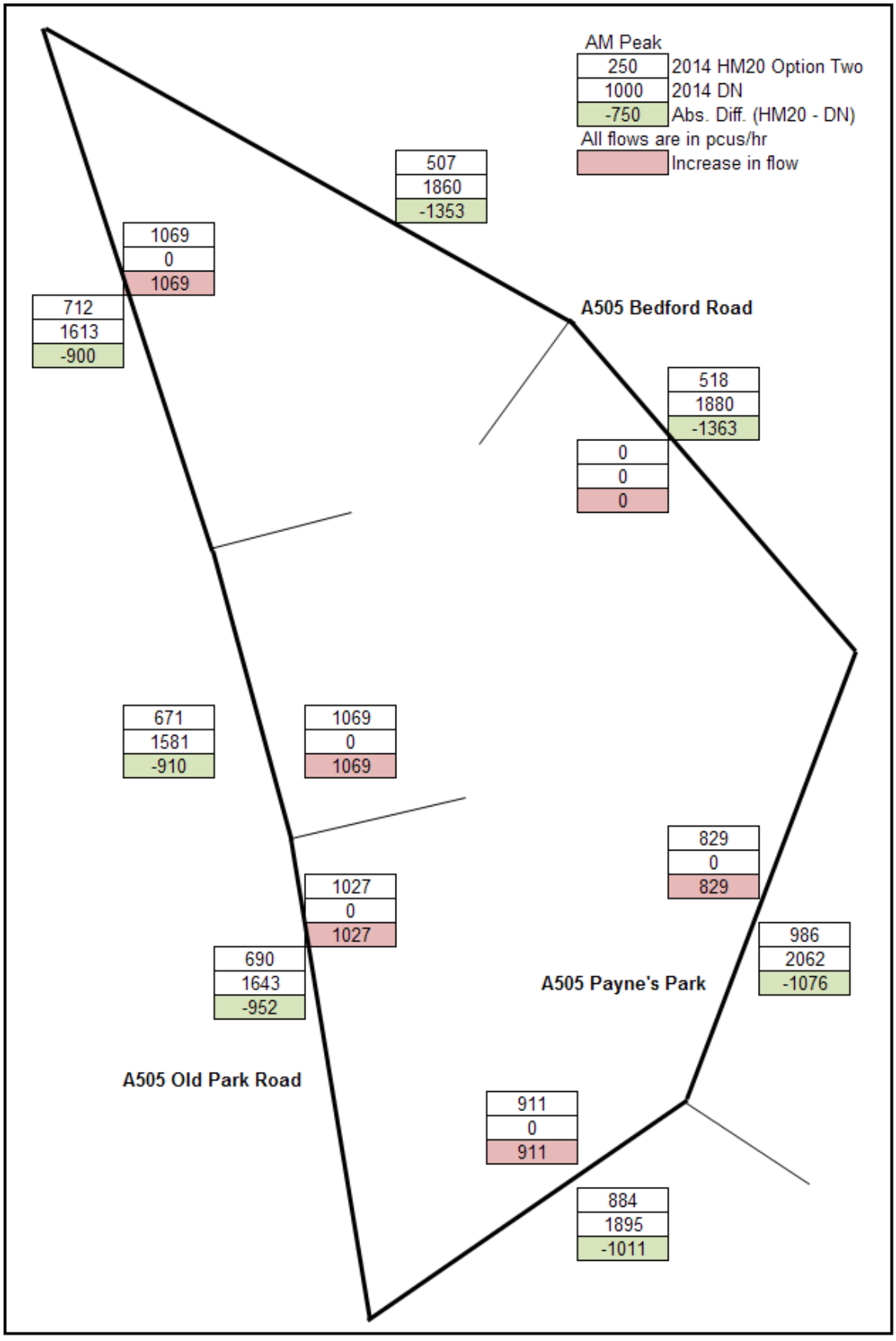
Overall Flow Change 2014 DN v HM20 Option Two – PM



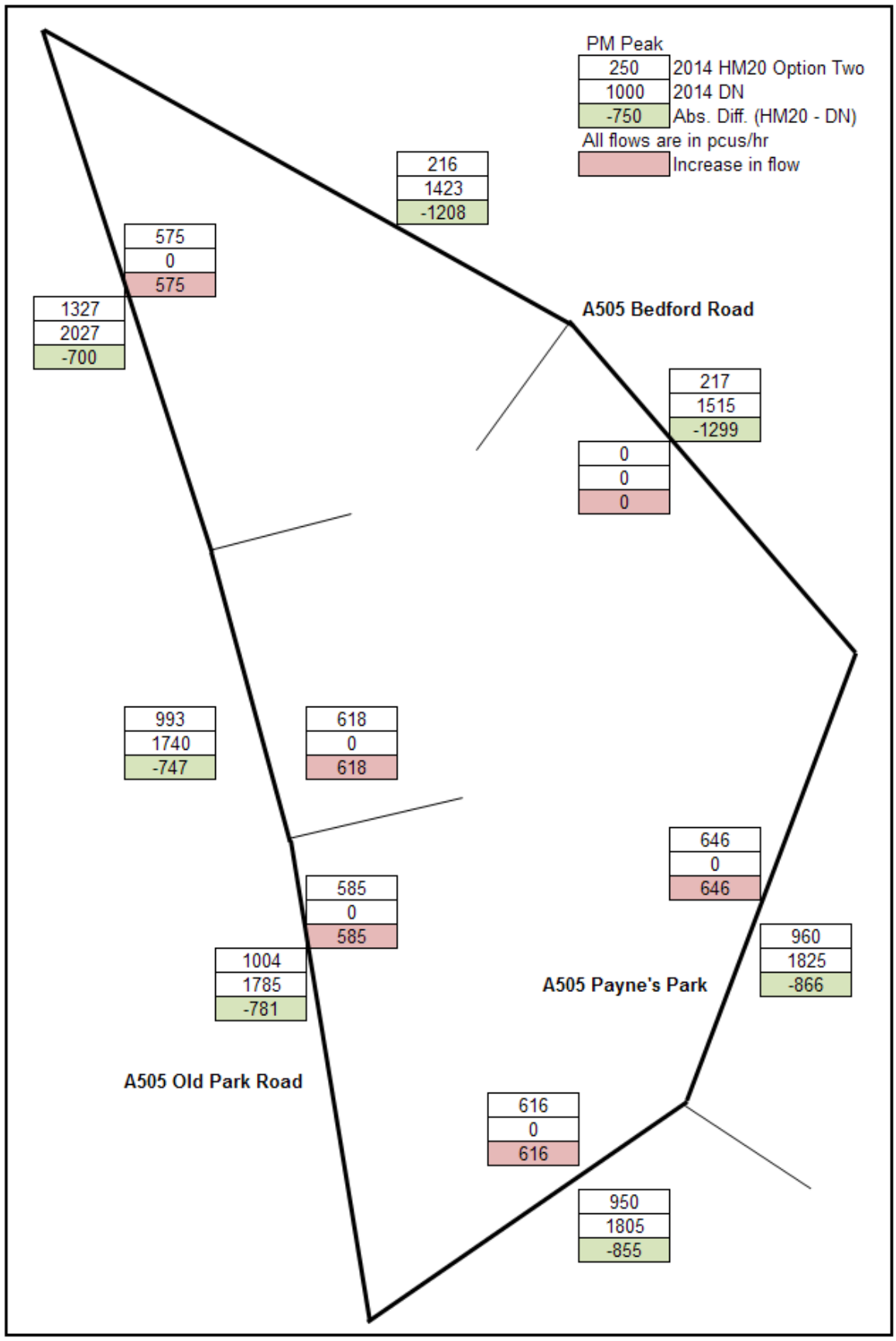
The actual traffic flow volumes around the gyratory are shown in the figures below. The impact on demand around the gyratory is a decrease in total traffic during the peak hours, with Bedford Road southbound experiencing a decrease of over 85% in the PM and 73% in the AM. The two-way gyratory experiences a reduction in traffic demand by up to 21% in the AM and 28% in the PM peak.

In the AM peak, the southbound flow on Old Park Road is over 1000pcus, close to the link capacity, whereas the highest flow for the one way option is around 2000pcus (Payne's Park). Therefore there is further spare capacity around the gyratory in the current one-way option if the traffic demand was to increase compared with Option Two. The PM flow for Option Two around the gyratory differs from Option One because in Option Two there is little change in demand along Brand Street as a result of the gyratory option. However in Option One, there is a significant shift in traffic from Brand Street onto the A505, around the gyratory and thus higher flows on Old Park Road.

Detailed Flow Change around the Gyratory – 2014 DN v 2014 HM20 Option Two, AM Peak



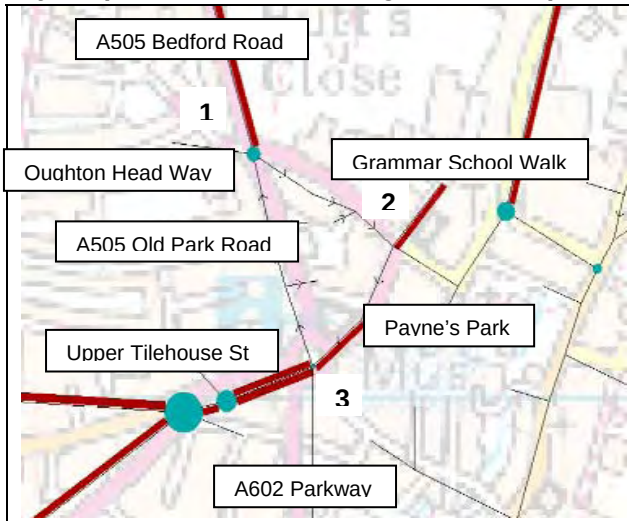
Detailed Flow Change around the Gyratory – 2014 DN v 2014 HM20 Option Two, PM Peak



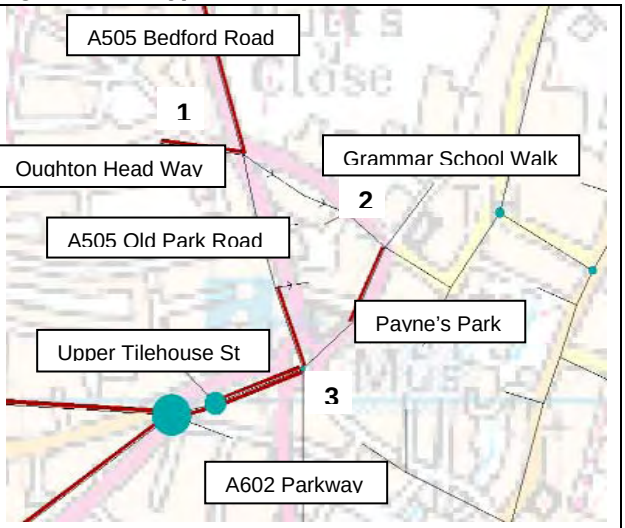
Key to the performance of the gyratory are three junctions:

1. A505 Old Park Road / Bedford Road / Oughton Head Way
2. A505 Bedford Road / Payne's park / Brand Street / Grammar School Walk
3. A505 Old Park Road / Payne's Park / Upper Tilehouse Street / A602 Parkway

2014 DN v HM20 Option Two AM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)

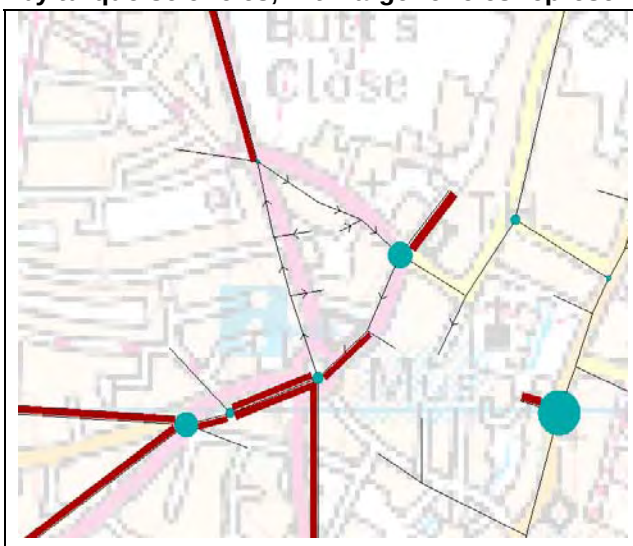


2014 Do Nothing

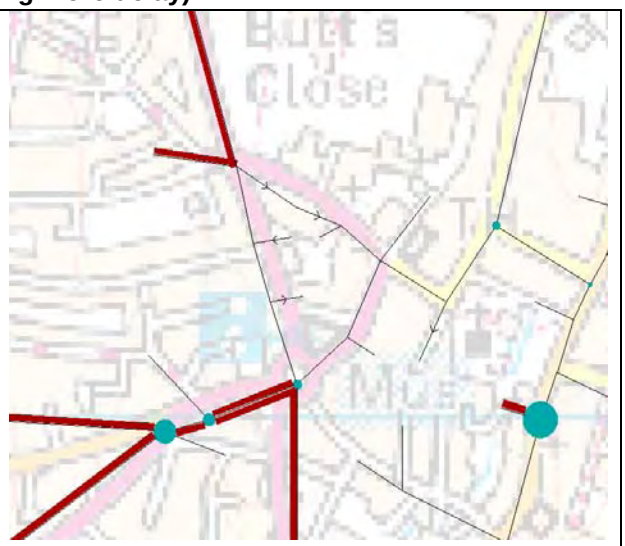


2014 DN HM20 Option Two

2014 DN v HM20 Option Two PM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)



2014 Do Nothing



2014 DN HM20 Option Two

The gyratory Option Two in the AM peak significantly reduces the delay experienced at junction one in the 2014 DN scenario. There are small increases at the other two junctions, but both these delays are negligible. In the evening peak the delay at junction two has been mitigated significantly with decreases at the other two junctions during the peak. Average delay at the three gyratory junctions in the DN and Gyratory Option Two scenario are shown with the DN scenario first:

AM Peak
- Junction 1 – 59 seconds (2014 DN) / 5 seconds (Gyratory Option Two)
- Junction 2 – 3 seconds / 9 seconds
- Junction 3 – 16 seconds / 23 seconds

PM Peak
- Junction 1 – 13 seconds / 8 seconds
- Junction 2 – 103 seconds / 8 seconds
- Junction 3 – 45 seconds / 38 seconds

The operational performance of links on the gyratory operating at over 85% of their capacity in the AM peak, in the DN and gyratory Option Two include:
- A505 Bedford Road southbound – 105% (2014 DN) / 97% (Gyratory Option Two)
- A505 Upper Tilehouse Street eastbound – 98% / 96%
- A505 Payne's Park westbound – 94% / 64%
- Grammar School Walk southbound – 90% / 31%
- Brand Street westbound – 53% / 42%
- Oughton Head Way eastbound – 41% / 102%
- A505 Old Park Road southbound – n/a / 100%

In the PM peak, the operational performance of the gyratory links at over 85% capacity include:
- Grammar School Walk southbound – 135% (2014 DN) / 77% (Gyratory Option Two)
- A602 Parkway northbound – 104% / 103%
- A505 Upper Tilehouse Street eastbound – 100% / 94%
- A505 Payne's Park westbound – 93% / 63%
- A505 Old Park Road northbound – 81% / 77%
- A505 Bedford Road southbound – 74% / 62%
- Brand Street westbound – 60% / 53%

2014 Do Nothing Gyratory Option Two Summary

The two-way gyratory Option Two does yield positive network wide benefits and a reduction in total traffic around the gyratory of 21% in the AM and 28% in the PM. This significant reduction in demand using the gyratory has attributed to a decrease in delay at junctions previously experiencing significant delay. There are still a number of roads operating at over 85% of their capacity on the gyratory approaches but the volume over capacity of these links has reduced compared with the DN scenario and Option One. Option Two produces more highway network benefits and improves the performance of the gyratory compared with the 2014 DN scenario and Option One.

2014 Do Something Gyratory Option Two Test

It has been shown that Option Two improves the performance of traffic flow around the gyratory and across the wider highway in isolation in 2014. However it needs to achieve these benefits in tandem with other proposed UTP schemes. To understand the potential impact of Option Two in the future year, it has been tested in the 2014 Do Something (DS) scenario, which includes all the other proposed UTP schemes

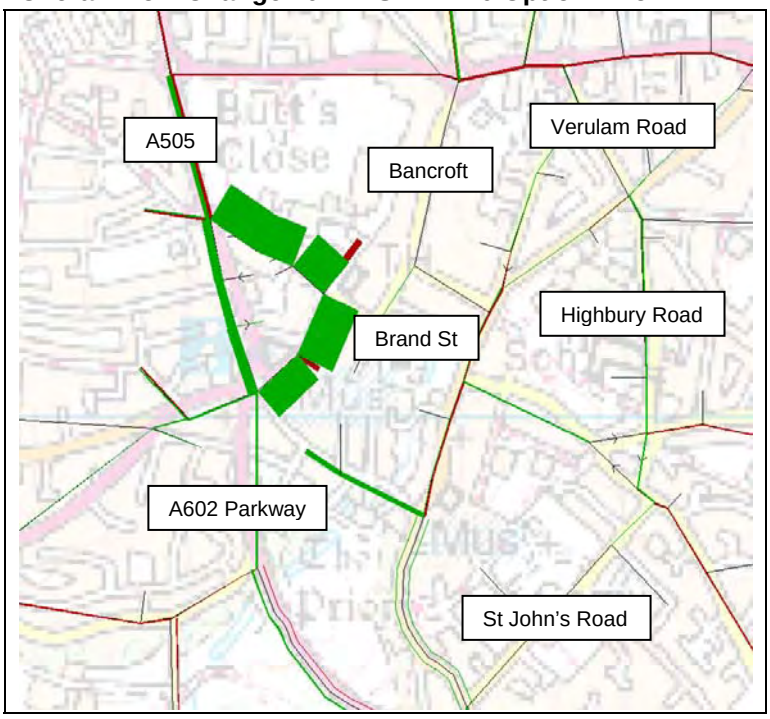
The benefits delivered to the wider network in 2014 Do Something by the gyratory option are negligible in both peaks, with no significant overall time or vehicle delay savings. Although the gyratory improvements delivered noticeable benefits to the wider highway network in Stevenage and Hitchin in the DN scenario, the impact is less so in the DS scenario. This is because other UTP schemes delivered in 2014 DS provide network wide benefits, with no additional benefits provided by the gyratory other than a shorter average trip length.

Parameters – AM Peak	2014 DS	2014 HM20 Option Two
Total Number of trips (pcus)	53075	53075
Total amount of time spent on the road (pcu/hr)	8983	8966
Total distance travelled (pcu/km)	329565	329020
Average Speed (kph)	36.7	36.7
Total delay per vehicle (mins/veh)	3.53	3.53
Total delay based on distance travelled (min/veh.km)	0.57	0.57
Average trip length in model (km)	6.21	6.20
Convergence Delta Statistic (%)	0.0952	0.109

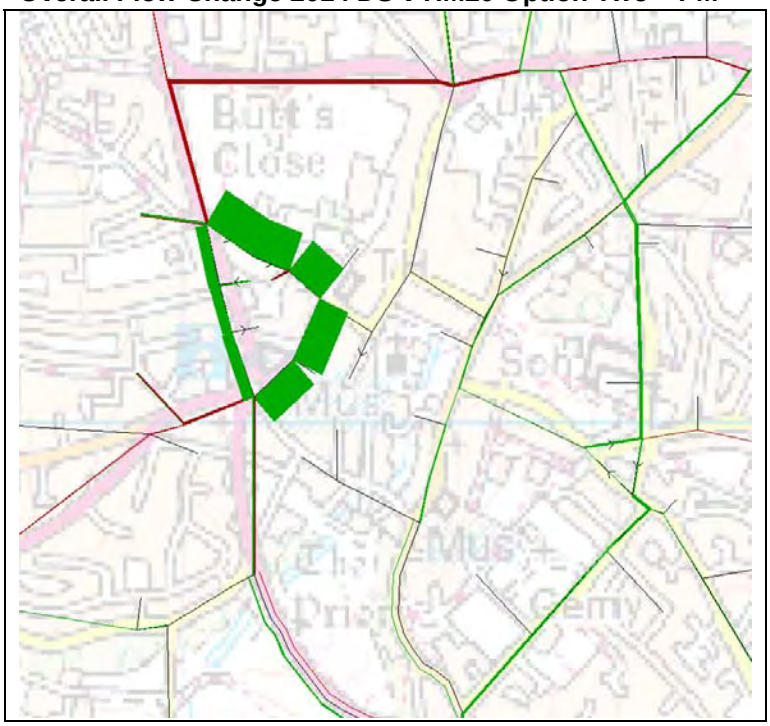
Parameters – PM Peak	2014 DS	2014 HM20 Option Two
Total Number of trips (pcus)	52312	52312
Total amount of time spent on the road (pcu/hr)	5469	5460
Total distance travelled (pcu/km)	230001	229824
Average Speed (kph)	42.1	42.1
Total delay per vehicle (mins/veh)	1.71	1.71
Total delay based on distance travelled (min/veh.km)	0.39	0.39
Average trip length in model (km)	4.40	4.39
Convergence Delta Statistic (%)	0.0778	0.0819

The impacts on flow across the network are also insignificant with little change in the demand on minor routes, and only small increases on the A505 southbound around Hitchin (100pcus in AM and PM) and decreases on Highbury Road (50pcus in both peaks) and St John's Road (50pcus in the PM). However, the most noticeable impact is around the gyratory in the AM peak.

Overall Flow Change 2014 DS v HM20 Option Two – AM



Overall Flow Change 2014 DS v HM20 Option Two – PM



Due to UTP schemes proposed, the demand on the A505 and around the gyratory has increased compared with the 2014 DN scenario. Therefore the demand in the 2014 DS Option Two is much higher than previously tested in the DN scenario. The single lane capacity and junctions in Option Two cannot cope with the future year 2014 DS demand without incurring considerable delay, particularly in the morning peak. Three junctions key to the performance of the gyratory are:

1. A505 Old Park Road / Bedford Road / Oughton Head Way
2. A505 Bedford Road / Payne's park / Brand Street / Grammar School Walk
3. A505 Old Park Road / Payne's Park / Upper Tilehouse Street / A602 Parkway

The average delay at the Bedford Road / Old Park Road junction in the morning peak increases by 26 seconds compared to 2014 DS, with several links having a flow over capacity greater than 85%.

AM Peak

- Junction 1 – 98 seconds (2014 DN) / 124 seconds (Gyratory Option Two);
- Junction 2 – 0 seconds / 4 seconds;
- Junction 3 – 61 seconds / 42 seconds.

PM Peak

- Junction 1 – 23 seconds (2014 DN) / 12 seconds (Gyratory Option Two);
- Junction 2 – 0 seconds / 4 seconds;
- Junction 3 – 63 seconds / 21 seconds.

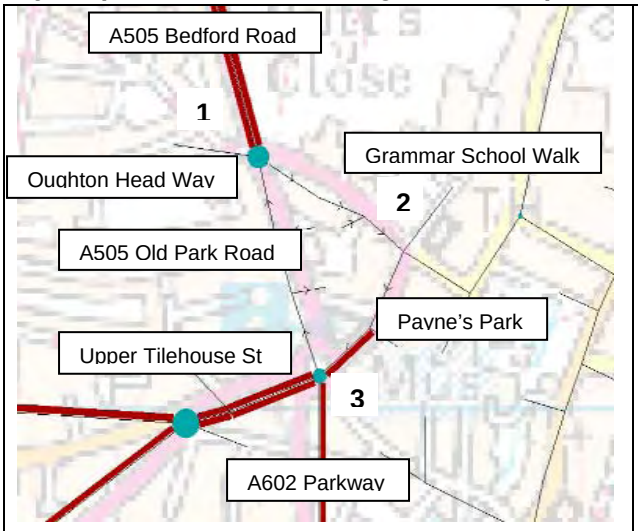
The operational performance of links on the gyratory operating at over 85% of their capacity in the AM peak, in the DS and gyratory Option Two include:

- A505 Bedford Road southbound – 109% (2014 DN) / 110% (Gyratory Option Two)
- A505 Payne's Park westbound – 104% / 70%
- A505 Upper Tilehouse Street eastbound – 102% / 103%
- Oughton Head Way eastbound – 40% / 107%
- A505 Old Park Road southbound – n/a / 100%

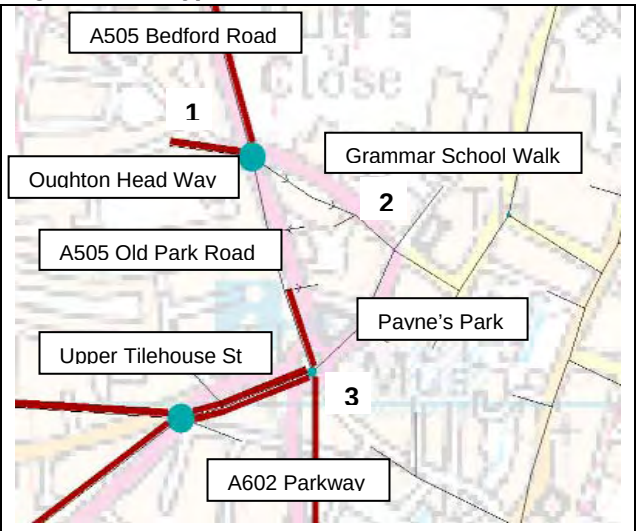
The operational performance of links on the gyratory operating at over 85% of their capacity in the PM peak, in the DS and gyratory Option Two include:

- A505 Upper Tilehouse Street eastbound – 103% (2014 DN) / 100% (Gyratory Option Two)
- A505 Payne's Park westbound – 102% / 54%
- A602 Parkway northbound – 100% / 93%
- A505 Bedford Road southbound – 85% / 83%
- A505 Old Park Road northbound – 78% / 100%
- Oughton Head Way eastbound – 57% / 101%
- A505 Old Park Road southbound – n/a / 91%

2014 DS v HM20 Option Two AM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)



2014 Do Something



2014 DS HM20 Option Two

2014 DS v HM20 Option Two PM Peak –
Volume over Capacity Ratio greater than 85% (shown in red) and Average Junction Delay (shown by turquoise circles, with larger circles representing more delay)

2014 Do Something

2014 DS HM20 Option Two

Routeing around the gyratory is also an issue, with southbound traffic split between using Old Park Road and Bedford Road/Payne's Park. The AM peak is the worst case because the demand on Old Park Road is the highest. Approximately 30% of the demand southbound on the A505 chooses to route via Bedford Road and Payne's Park around the gyratory because of the congestion on A505 Old Park Road. Although this results in a lower volume over capacity ratio on both Payne's Park and Old Park Road compared with Payne's Park (in 2014 DS), it is a theoretical assumption that traffic would choose to route in this manner. The modelling exercise assumes that all traffic has a perfect knowledge of the road network, which in reality is untrue. It is unlikely that traffic would re-route away from Old Park Road to ease congestion, especially as signage would direct them straight on along this route. Therefore the volume over capacity of this section could be worse than the modelling forecasts.

Other issues regarding the two-way gyratory option include the deliverability of any potential scheme within the current highway boundary. This poses an issue for the design of the option and although it could be delivered, any future expansion of the gyratory is unlikely. Therefore if demand was to increase beyond 2014 levels around the gyratory it is unlikely that the single lane gyratory could be widened to accommodate the growth. Whereas the one-way gyratory can cope with additional traffic growth on the links because the delay occurs at the junctions. Due to the lack of future year capacity available around the gyratory in Option Two, and possible routeing confusion for drivers this scheme will not be included in the UTP.

Non-motorised users

It is recognised that the Paynes Park gyratory can present a barrier to the movement of pedestrians and cyclists between the town centre and the west of Hitchin, reinforcing the notion of severance caused by the highway network. Pedestrian crossings are installed at either end of Bedford Road and also mid way along Paynes Park; however these may not always satisfy pedestrian desire lines. To raise the priority of pedestrians and cyclists along this route (particularly in the vicinity of the junction with Brand Street), it may be possible to introduce a shared space environment, similar to that proposed in the town centre. Other options may include realigning the carriageway or providing additional crossings, all of which would require detailed assessment and justification. For the purposes of the UTP it is therefore proposed that increasing the pedestrian priority around Paynes Park is included as a longer term consideration to be reviewed annually to determine whether a suitable scheme can be implemented.

Benefits:

- Shorter, more direct routeing of traffic
- Increased journey time savings

Risks:

- Possible increase in town centre through trips due to more direct routeing options could increase severance of the town centre for other road users
- Deliverability of a two way gyratory with junction improvements within the existing highway boundary
- Cost of delivering the scheme including junction improvements likely to be difficult to fund
- It is unlikely that the level of benefit to the area would justify the cost of the scheme
- Local access within and around the gyratory has not been investigated in detail because of model limitations. The strategic nature of traffic around the gyratory has been modelled but local access routeing has not been assessed
- Delivering a two directional carriageway could increase the likelihood of conflicts on the highway network, raising possible safety concerns
- Bus services would need to be re-directed with the Option Two gyratory