

# Technical Note G

**Project:** Wisbech Area Transport Study

**Subject:** Wisbech Transport Mitigation Strategy

**Date:** January 2013

## 1. Introduction

This Technical Note summarises the development of the Wisbech Transport Mitigation Strategy. The note will set out how the strategy was developed, discuss items for inclusion in the strategy and set out the results of testing the strategy in the Wisbech Traffic Model. Any changes that have been made to the strategy or the specific components of it will also be detailed in this report.

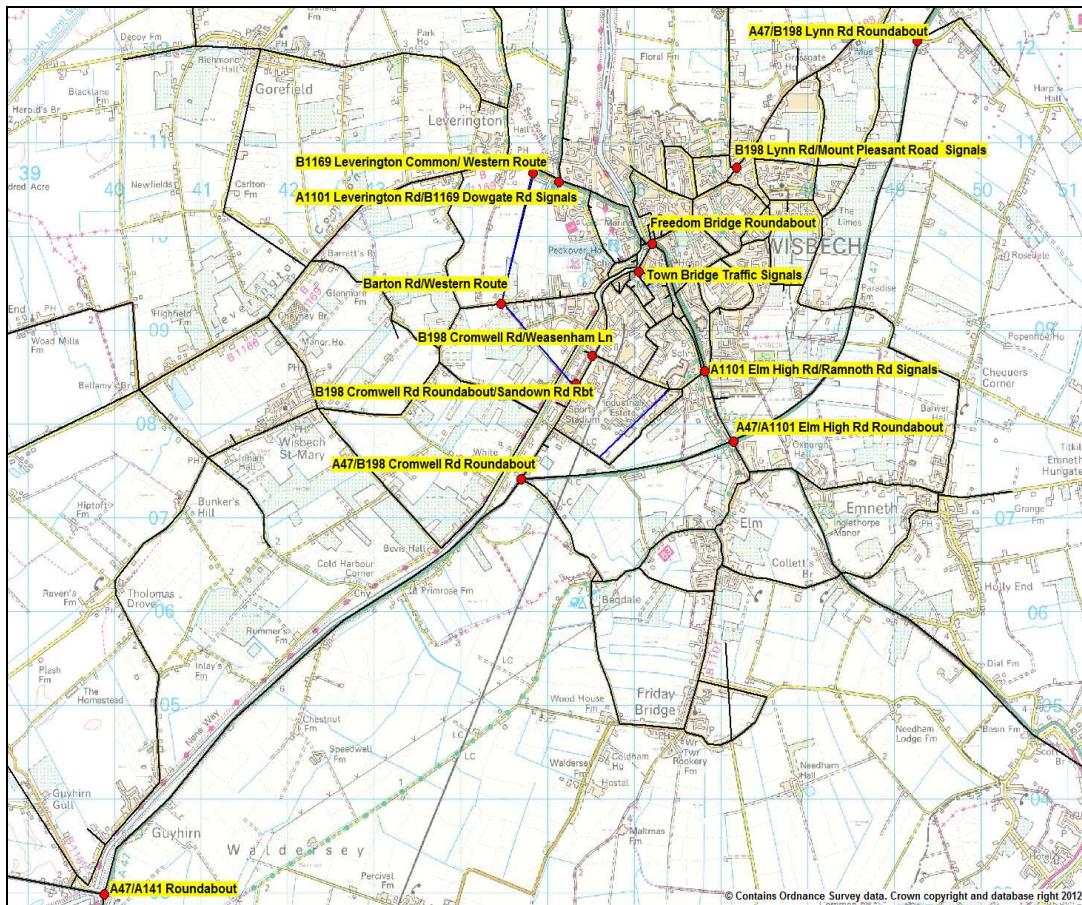
### Background

The Wisbech Area Transport Study involves the testing of transport implications for different scales and proposals for housing and job growth in Wisbech up to 2031. Since 2008 this project has tested different levels of growth in different locations using the Wisbech traffic model. The results of this modelling work are set out in other technical notes that form part of the study. It is however clear from the different modelling runs that there are problems and congestion on the transport network that will need to be addressed. It is clear that transport mitigation measures will be needed in a number of key locations. These locations include places within Wisbech town and also along A47 in Cambridgeshire and West Norfolk.

The traffic modelling results have persistently shown problems on the transport network in terms of delays and traffic flow in a number of key locations. These locations are as follows and illustrated in Figure 1:

- A47/A141 Roundabout
- A47 / B198 Cromwell Road Roundabout
- A47 / A1101 Elm High Road Roundabout
- A1101 Leverington Road / B1169 Dowgate Road traffic signals
- Town Bridge traffic signals
- Freedom Bridge Roundabout
- B198 Lynn Road / Mount Pleasant Road traffic signals
- A1101 Elm High Road / Ramnoth Road traffic signals
- B198 Cromwell Road including the junctions with Sandown Road and Weasenham Lane

**Figure 1: Location of key junctions**



Any approach developed through a mitigation strategy must ensure that consideration is given to addressing the transport issues listed above.

## 2. Development of the Mitigation Strategy

The Wisbech Transport Mitigation Strategy was developed in a number of stages which are as follows:

- A Mitigation Workshop – discussion of the issues and a review of transport evidence
- 2<sup>nd</sup> Meeting – workshop ideas and site visits
- Site Visits and Assessments
- Refining of the options/strategy

### A, Mitigation Workshop

The mitigation workshop was held to discuss the transport issues in Wisbech. Existing evidence and previous studies were reviewed along with the results of the earlier traffic modelling. The existing transport situation in Wisbech that already has some specific issues was also taken into account. Appendix one of this technical note lists a range of possible projects and ideas that were provided at the workshop for discussion.

The workshop included staff from the Local Authorities in Cambridgeshire and Norfolk and the Highways Agency. Those present were from a range of professional backgrounds including transport policy and planning, land use planning, traffic management and engineering and major projects.

Some of the key issues that were discussed during the workshop in respect of Wisbech transport issues and the evidence available are as follows:

- A47 and Wisbech town– land constraints – locations for opportunities for new infrastructure
- the current and future build up of traffic and congestion at all the key junctions and routes within the town especially Freedom Bridge and on the A47
- the limited river crossings for traffic
- future congestion along Weasenham Lane
- Traffic circulation in the town
- Access to Wisbech Hospital – demographic issues
- Bus station capacity/existing and future services/interchange
- The administrative boundary with Kings Lynn and West Norfolk as this falls within the town of Wisbech/the draw of services and facilities (e.g. supermarkets in the Kings Lynn boundary)
- Walking/cycling – lack of routes, relationship to trip purpose
- Car parks and park and ride
- Rail options

Having discussed the issues, a list of possible items for further consideration was developed that would be the subject of future meetings and site visits.

- A new river crossing
- Freedom Bridge improvements?
- Is the bus station in the right location? Can further improvements be made at the current location? Issues in respect of layover space for buses and access for buses onto Freedom Bridge
- Future congestion on Weasenham Lane – the need for an additional east – west route – possible upgrades to New Bridge Lane and in the Boleness Road Area. Links with the South West Wisbech Growth area
- Walking and cycling schemes – the ability to improve and address gaps in the network. Links with the new draft Wisbech Market Town Transport Strategy
- A47 Package – this is likely to include all the junctions from A141 to A198 Lynn Road junction. Possible measures will be identified in due course
- Traffic Management/Signals/UTMC – Lynn Road, Churchill Road and Cromwell Road and links to A47
- Car parking as a demand management measure
- Travel planning backed up by conditions and enforcement

## **B, 2<sup>nd</sup> Meeting**

The 2nd meeting to consider the Wisbech Transport Mitigation Strategy focussed on the development of the outcomes from the earlier workshop and also preparation for the Site Visit day.

Site plans and aerial photographs were used during the meeting to consider issues of land constraint and to assess opportunities to develop new transport schemes. The following issues were discussed:

- Possible locations for a new river crossing – Barton Road, North Brink. Without another river crossing there is no opportunity to remove some traffic from the Freedom Bridge area. How would traffic, as part of any western area, access any development without a crossing or bypass?
- Changes are being made to Freedom Bridge in August 2012, can further changes be made?

- Earlier work to consider the bridge has been reviewed previously. Can further work be done without the removal of some traffic that currently uses the bridge?
- The Bus Station is in a central location close to the shops, services and facilities that people want access to. Is other land available nearby or in another central location that provides such convenient access? Is there a way to facilitate easier access on and off Freedom Bridge roundabout for buses? Are there other options for accessing the bus station, perhaps Nene Quay?
  - A47 issues – congestion at the roundabouts. Are there opportunities to make the roundabouts larger? There is land in and around Guyhirn and Cromwell Road roundabouts that could be used to extend them. Land around the A47/A1101 Elm High Road Roundabout seems to be limited from the photos, congestion at this roundabout is key. A47 Broad End Road junction needs to be considered in respect of the housing development in Kings Lynn and West along with any Fenland allocation. A47 access from any development is considered to be high due to the junction that is already an accident spot. It was agreed this junction needs further consideration. The A47/B198 Lynn Road junction has not shown critical issues in modelling terms as the other A47 junctions.
  - Traffic signals – can the existing traffic signals be better utilised and linked together, such as holding traffic back to reduce congestion at another junction or roundabout?
  - The traffic model shows specific issues at Weasenham Lane in future years. The A47 is the only other east – west route, an additional route is needed on the Boleness Road area. This needs further investigation.

The above discussion clarified that some sites would require more consideration than others, especially for the site visits. From the above discussion a plan was developed for the site visit day including consideration of which sites should be included in the tour. There was general agreement that the sites where it would be more difficult to develop transport measures should be part of any visit. It was also agreed that following any visit a detailed discussion was then needed about which measures should form part of the mitigation strategy.

### **C, Site Visits and Assessment Day**

The day included going to the following sites:

- North Brink & Barton Road – river crossing & link road
- Cromwell Road & South West Wisbech Development Site
- A47 Cromwell Road
- A47 Elm High Road
- A47 Broad End Road & East Wisbech Development site & new town bus service
- A47 Lynn Road
- Freedom Bridge
- Wisbech Bus Station

The afternoon discussion focussed on assessing the information from the earlier meetings and the site visits. A summary of this discussion is as follows:

#### North Brink & Barton Road – river crossing & link road

- Need to consider access by road, foot and cycle
- The area near the river closest to town is built up and there are issues about access and space to create a crossing.
- Flood defence issues or gates. Gates will be cheaper than trying to go over the river
- Issue – river width
- Access arrangements to the bridge
- There is potential to connect Cox's Lane in line with Sandown Road (Tesco) on Cromwell Road

- Feasibility work will be needed to develop this beyond any traffic modelling stage

#### Cromwell Road & South West Wisbech Development Site

- This area is highlighted in the Core Strategy for development. Access issues are critical for the site
- The earlier traffic modelling work all shows specific problems in the Weasenham Lane area as development comes forward and traffic increases. It is considered that a new east –west route in this area is needed to address this issue
- Walking and cycling issues and facilities in this area also key including connections to existing networks and also improvements to such facilities at Weasenham Lane
- At the end of Boleness Road there is a culvert, engineering is needed here and there are bridge strength issues. Boleness Road is currently an unadopted road, it is owned by Fenland DC.
- New Drove is very narrow and also very residential this would not be suitable to carry extra traffic
- On Cromwell Road the Stadium development site will require a new set of signals. Could any such development be linked into this set of signals for an entrance and exit on Cromwell Road?
- It is considered that an option for an east-west road in this area is needed for this area and an initial configuration should be demonstrated in the traffic model as part of the mitigation strategy
- We need to understand if there is potential here to take some traffic off the A47. The traffic modelling will assist with this approach.
- Could a public transport interchange be provided in this location that links buses, taxis and rail? What would the benefit of such a scheme be?

#### A47 Cromwell Road

- It is considered that there is land available in the area of this roundabout to make it larger. A possible solution here is considered easier than some of the other locations in this strategy.
- Consideration needs to be given as to what would be required to provide adequate capacity here.

#### A47 Elm High Road & Elm High Road

- This area is all in Kings Lynn and West Norfolk
- This roundabout is congested at certain times on all approaches. Traffic levels on the site visit day towards lunch time showed high levels of use and this was not at peak time.
- The area around the roundabout is heavily built up, except for the west side where there is a pedestrian and cycle facility. The importance and heavy use of this facility is acknowledged, in view of the housing development nearby and also the services and facilities located in the area.
- There is no room to make the roundabout larger, although it is considered that this could be a solution to the traffic issues if space were available. A bigger island is ideally needed and therefore space on all 4 corners to make the roundabout larger. This is not considered a practical option given the levels of existing development in the area.
- A discussion was held about signals vs a roundabout in this location. Signals control conflict but there is not so much capacity as a roundabout. As capacity is needed in this location the use of signals is not considered appropriate.
- Balanced flows would help the existing road but there is no easy opportunity to make a step change here. Could an urban traffic control solution be provided in this area to hold traffic back before the roundabout? Could there be links to other signals along Elm High Road and Churchill Road?
- Elm High Road in Wisbech has a range of shopping and service facilities along with being a main access route into and out of the town. There is increasing congestion on this road in both directions that is affecting the traffic on the roundabout. Issues with access and safety into the retail development are also affecting traffic flow in this area; this is having wider impacts on the road network.
- It is felt that there are limited if any opportunities to make real improvements in this location. It is considered important to understand the effects of other transport measures that are more realistic on this part of the network.

A47 Broad End Road & East Wisbech Development site & new town bus service

- The existing accident record at this site is poor and needs to be addressed. Kings Lynn and West Norfolk Councillors have specific safety concerns about this site and they want to see the issue addressed.
- There is space to provide a roundabout in this location as part of any future developments in either the Fenland or Kings Lynn and West Norfolk borders
- Access to the A47 from any development will also need consideration. Currently there are a number of narrow lanes in this area
- There are visibility and vegetation issues in this location
- It is considered that this option is less complicated to deliver than other elements of this proposed strategy.

A47 Lynn Road

- This site is in Kings Lynn and West Norfolk area
- This roundabout is larger than the other A47 Wisbech area roundabouts.
- Previous traffic modelling for Wisbech has not shown any specific issue in this location
- This site is remote from the proposed development sites in the Core Strategy
- Further discussion is not currently needed on this site. It should however be noted that this may change in future and that land ownership and acquisition issues will need to be considered.

Freedom Bridge

- There are already existing pressures at the bridge. Is there capacity for extra trips?
- Making major changes to the bridge and/or the road layout in this area will require additional land and therefore considerable cost. Much of the area is already built out. Are there other solutions to mitigate against the extra trips?
- Should adding signals to the roundabout be considered?
- Wisbech Area Transport Study evidence (2009 forecasting) indicates that a full western bypass will not remove as many trips as might have been anticipated. This suggests more trips are internal to the town. A bypass would offer some short term relief to Freedom Bridge.
- How can the new Market Town Transport Strategy help? Is there further potential to encourage more walking, cycling and public transport use? If so, how? Can we engineer further modal shift at the bridge and surrounding area? There would have to be a bias towards cycling and pedestrians?

Wisbech Bus Station

- Remodel the entrance to the bus station so that it connects with Nene Quay
- To deliver such a scheme would require the removal of some existing buildings
- Would any new entrance or exit need to be signalled? Has this already been modelled as part of previous work?
- Should any new access point be for all users or just buses?
- Could bus layover spaces be provided elsewhere in the town? Possible locations would need to be identified. This may help to increase the capacity of the bus station if service levels increase in future.

Car Parking Management and Park and Ride

- Are there opportunities to look at the management of car parks, especially with respect to long stay and short stay use? Can the management of spaces be improved? Are car parks needed in different locations and if so where in addition to current car parks?
- Could some form of parking be provided in the south of Wisbech that could link to an interchange site? This could free up spaces in the centre that are currently used by people commuting elsewhere.

- Park and Ride was considered in detail but was found to be too expensive. The existing park and ride schemes which operate in Wisbech during festivals and events were noted. To make such a scheme work however, as many of 4 sites would be needed along each corridor as you enter Wisbech. With the costs for the buses and maintaining any sites, this is not considered viable.

After the discussion above, consideration was then given as to what might form an initial strategy for Wisbech transport Mitigation.

Table 1 below includes a commentary of some of the key issues discussed along with the transport options that will form the initial Wisbech Transport Mitigation Strategy.

Table 1 – Assessing Options during the Site Visits

Strategy Item no	Mitigation Strategy Option	Key Issues and Comments
1	A47 Broad End Road	<ul style="list-style-type: none"> <li>• This is a staggered junction that could benefit from being a roundabout. This would have the effect of slowing traffic down.</li> <li>• Consideration is needed</li> </ul>
2	Access arrangements from East development in Kings Lynn area	<ul style="list-style-type: none"> <li>• This will be determined by Kings Lynn and West Norfolk Council. A number of sites are currently being considered for the location of their 550 homes. Any decision on the location of the housing will influence the access arrangements</li> <li>• Any modelling for the Fenland area will include new arrangements for the A47 Broad End Road Junction</li> </ul>
3	Freedom Bridge See also items 4 and 10.	<ul style="list-style-type: none"> <li>• The new layout for the roundabout implemented during August 2012 will be used for all future modelling. A drawing of the layout will be provided. It is not considered possible to make major changes in this area at the present time.</li> <li>• A review is to be undertaken of existing studies for the roundabout as part of the Market Town Transport Strategy work</li> <li>• A decision needs to be made as to whether signals are included on the roundabout as part of modelling a comprehensive UTC system</li> </ul>
4	Bus Station entrance and Nene Parade consolidation	<ul style="list-style-type: none"> <li>• Remodel the entrance to the bus station so that it connects with Nene Quay and not Freedom Bridge roundabout as at present.</li> <li>• This will make Freedom Bridge roundabout four legs and not five.</li> </ul>

5	A new road at Boleness Road/Newbridge Lane	<ul style="list-style-type: none"> <li>• This is a new East – West Road as an alternative to Weasenham Lane</li> <li>• The road would connect Boleness Road into Newbridge Lane or an alternative road connecting to Cromwell Road</li> <li>• Newbridge Lane linking to New Drove will need to be severed to ensure HCVs do not travel down New Drove.</li> <li>• CCC has had recent meetings to look at the closure of the level crossing on Newbridge Lane. Any road will need a crossing whether we use Newbridge Lane or build a separate road in the area. Network Rail has a national policy of closing crossings.</li> </ul>
6	River Crossing & Link Road - Location & proposals for a bridge at Barton Road/Cox's Lane	<ul style="list-style-type: none"> <li>• Existing development in and around the North Brink Area close to the town centre</li> <li>• Any new road or bridge needs to serve some strategic purpose</li> <li>• North Brink is narrow</li> <li>• Cox's Lane is single track</li> <li>• The location of the bridge will be off Cox's Lane adjacent to the existing Lidl and Tesco stores on Cromwell Road. A new road will be built from B1169 Leverington Road to Barton Road and then from Barton Road to Cox's Lane linking into the bridge</li> <li>• From A1101/B1169 Junction there will be an access only route for HCVs, with the expectation that all other HCVs will use the new road rather than Freedom Bridge roundabout</li> <li>• A new access road from B1169 Leverington Road to Barton Road and linking to a bridge over the river at Cox's Lane.</li> </ul>
7	A47 Guyhirn Roundabout	<ul style="list-style-type: none"> <li>• It is considered that a larger roundabout in this location is needed</li> <li>• Atkins to be asked to develop new proposals for this roundabout to allow more traffic to flow</li> </ul>
8	A47 Cromwell Road Roundabout	<ul style="list-style-type: none"> <li>• It is considered that a larger roundabout in this location is needed</li> <li>• Atkins to be asked to develop new proposals for this roundabout to allow more traffic to flow</li> </ul>
9	UTC/Traffic Management on Cromwell Road, Lynn Road & Elm High Road	<ul style="list-style-type: none"> <li>• A comprehensive UTC system for the town to be considered. Agreement is needed about whether Freedom Bridge is included as per item 3 above. Do we model this as part of the strategy or do we consider?</li> </ul>
10	Walking and Cycling proposals	<p>We will model the draft Wisbech MTTTS proposals for walking and cycling. These include:</p> <ul style="list-style-type: none"> <li>• North East - South West Cycle route – from the South West along Cromwell Road, into Coalwharf Road, through the Somers Road car park and into Post Office Lane to connect with the Market Place area in the town centre.</li> <li>• Upgrade the existing footpath on the north side of Weasenham Lane</li> <li>• Creation of a footpath and cycleway along the existing March – Wisbech railway line</li> <li>• Agricultural college site area/Meadowgate Lane route to the town centre. Provides a connection to the existing Sustrans route.</li> </ul>
11	Confirmation of Public Transport test from the technical note	<p>The new bus service will be modelled as per the Wisbech Area Transport Study 2011 Public Transport Technical Note.</p>



## D, Refining of the Options/Strategy

Following the site visit day further discussions were on going by phone and email to refine the options further. A final technical meeting was then held between the Local Authorities to agree what should go into the strategy for the traffic modelling. A meeting was then held with Atkins to finalise and agree the initial strategy from a traffic modelling perspective.

The issues discussed and clarified in the final technical meeting are as follows:

- Some amendments are needed to revalidate and update the traffic model. There have been some network changes since 2009. These changes are:
  - 2012 layout amendments to Freedom Bridge
  - new signals at Cromwell Road and Weasenham Lane
  - changes in the Nene Waterfront area
  - Check with Atkins that the Cromwell Road and Sandown Road traffic lights in the Tesco area have also been included
- Any changes including a new bypass and river crossing need to include HCV ban on the existing A1101. There is a need to remove HCV traffic from Freedom Bridge where possible
- It should be noted that Barton Road was downgraded and is now not a B road. Options for this area and the river crossing should be as discussed on the site visit day. The issues about the length of the road and therefore the potential cost are acknowledged, however, it is considered important that this option is tested. There is a need to understand how an option of this nature performs in the traffic model
- Freedom Bridge is to be modelled as per previous discussions. As there is some evidence that the road currently self regulates, there was an agreement that it should be modelled as part of the strategy without traffic signals
- The proposals for the new access to the bus station should be modelled in the current site of Albion House
- The walking and cycling proposals to be modelled as per the draft Market Town Transport Strategy
- The public transport route is to be modelled as per the Public Transport Technical Note. All existing bus services are also to be modelled
- Newbridge Lane has now been closed to through traffic following CCC discussions with Network Rail about the level crossing. Newbridge Lane is technically a no through road. New Drove and New Bridge Lane are now severed. A new road in this location should however be tested due to the need for an additional east – west road in this area. Further discussion and follow up is needed with Network Rail and others about this matter to understand the full implications
- It is suggested that it would be helpful to use Atkins knowledge of other areas and previous studies to develop the proposals for the A47 roundabouts
- It was agreed to run the initial testing without a UTC system. Given the size of the area and the number of sets of existing lights it is unclear as to whether there would be benefit in a system of this nature.

Discussions from the meeting with Atkins are as follows:

- Freedom Bridge will reflect the August 2012 layout changes and the new access into Nene Quay through the Albion House site
- The new bus station entrance on Nene Quay will require a new element in the traffic model it will also be modelled with signals
- The timings of the sets of traffic signals on Cromwell Road need to be checked to ensure they are accurate
- A47 Broad End Road Junction/Roundabout – Broad End Road will feed into Sandy Lane for the purposes of the testing. Atkins will advise if they need to improve other junctions as part of this proposal
- The river crossing over Cox's Lane will be straight over and will not link into North or South Brink for the purposes of modelling
- A47 Guyhirn – the area has some constraint due to the river. The scale of the improvement might be similar to other A47 junctions. Consideration will be given to a 2 lane entry and 2 segregated lanes. More thought and consideration is needed
- A47 Cromwell Road – similar to A47 Guyhirn above. The double entry capacity could be widened with a longer taper
- UTC issues – it was agreed to model the proposed strategy without the UTC. Depending on the outcome of the initial testing there is an option to do a stand alone test on a specific corridor to assess the issues and possible benefits to UTC. A corridor approach could be considered on each of the main access routes into Wisbech
- The walking and cycling measures will be assessed through a reduction in demand for car travel. A percentage of car trips will be taken out of the network on corridors and routes in the area of the new walking and cycling infrastructure. Further consideration is needed on the percentage of trips to be removed
- Connectors in the model will be added from the west development area to the new road and the river crossing also on the west
- For the east development the FDC 1000 homes will be remodelled to include the Broad End Road connection. The split of traffic needs to be considered and Atkins will check previous modelling work as an initial assessment. The 550 homes location and split still needs to be agreed.
- The Highways Agency has recently made further comments on the traffic modelling and has requested that the level of LGV growth should be increased. It was agreed that the LGV growth will be increased for all future traffic modelling.

#### How to model the mitigation strategy?

Advice was given to Atkins following discussion between Fenland District Council and Cambridgeshire County Council to model the mitigation strategy as a whole rather than as a phased approach. It is recognised that the transport issues that require a mitigation strategy are in key areas across the whole town. Due to the size of this area and the number of mitigation measures required there is a need to fully understand the full impact of the strategy in total including its effect on the whole of the town. There is a need to understand at this initial stage whether the strategy as a whole can actually mitigate the impacts of the proposed developments. If this is not possible discussions around the phasing of options and transport measures will be prohibitive.

#### What about phasing of the options?

It is recognised that each option within the mitigation strategy will have a different impact on the transport network as a whole. It is also recognised that there are links between the phasing of the developments and the transport measures. Upon the completion of testing a whole transport mitigation strategy, consideration will need to be given to phasing and timing issues.

### 3. Testing the Mitigation Strategy using the traffic model

The initial results from the testing of the mitigation strategy can be found in Technical Note F for the Wisbech Area Transport Study. These initial results include the Fenland District Council Area of Wisbech only and not Kings Lynn and West Norfolk. The cross boundary issues will form a second phase of the work followed by a sensitivity test to consider the effects of adding more traffic onto the A47.

The following text describes the mitigation strategies considered for testing and how they are incorporated in the traffic model:

#### **Freedom Bridge Roundabout**

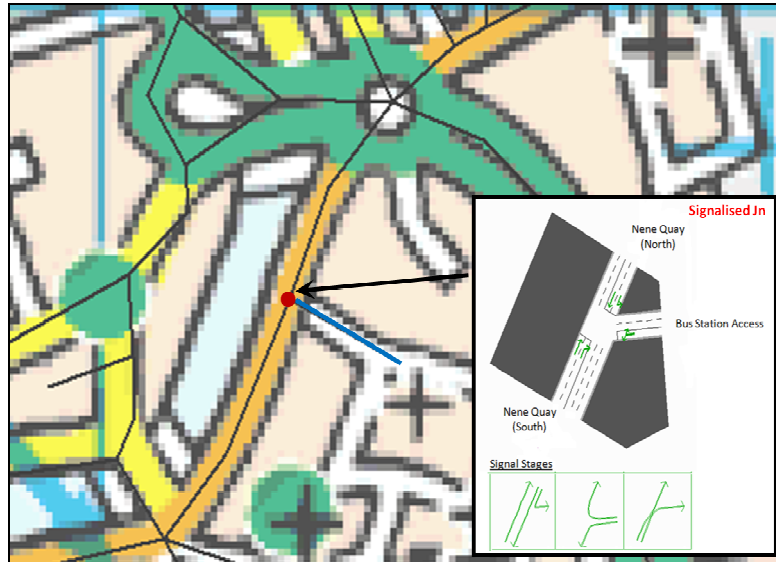
The base models reflect the new roundabout layout implemented during August 2012.

For the mitigation strategy the south arm providing access to bus station through Horse Fair has been removed to revise the bus station access.

#### **Bus Station Access Changes:**

A new three arm signalised junction has been added to Nene Quay close to Freedom Bridge and the bus station zone is connected to this new junction. The layout of new junction is shown in Figure 2.

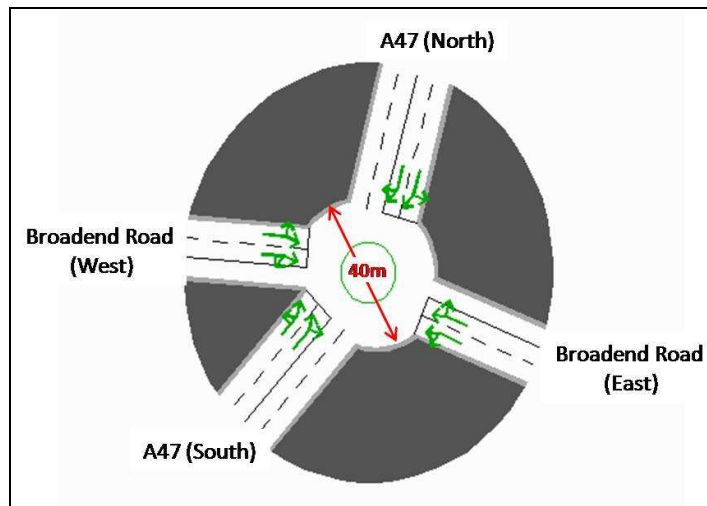
**Figure 2: Horse Fair / Bus Station Connections**



**A47 Broad End Road Junction**

The junction is redefined as a roundabout from existing priority to accommodate the traffic from to the East opportunity development. The layout of the Roundabout is shown in Figure 3.

**Figure 3: A47 Broad End Road Junction**



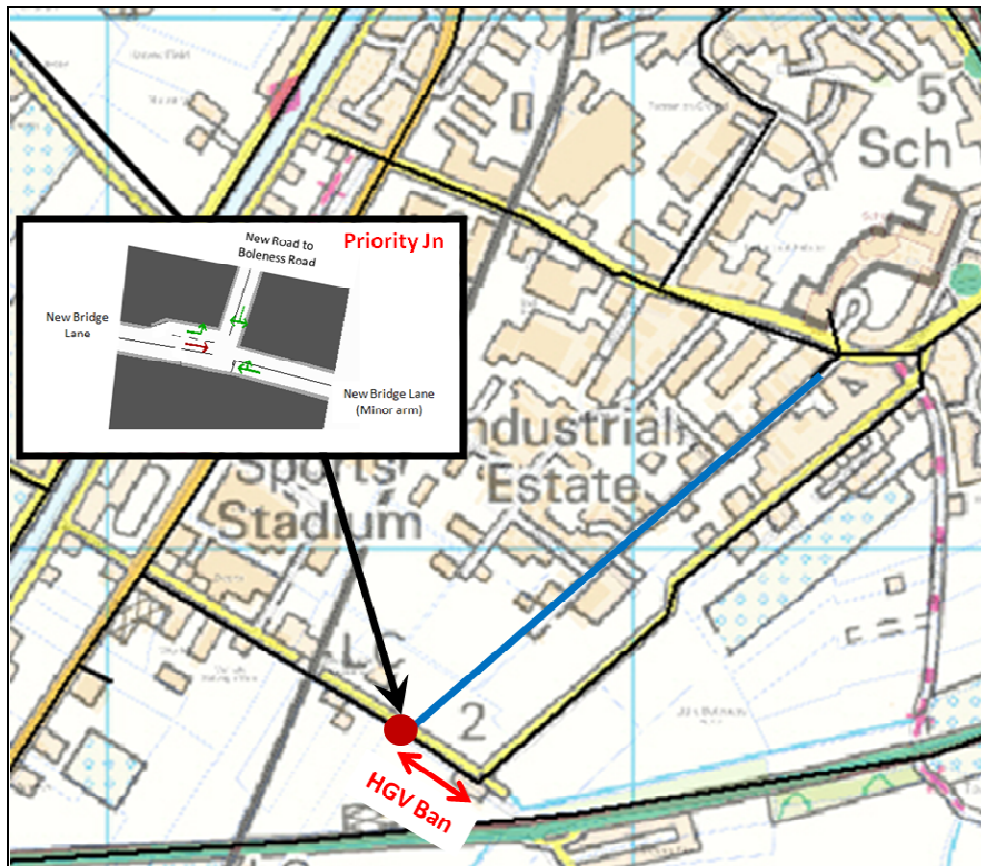
For the initial tests (omitting the KLWN site allowance) the 2031 forecast year average delay per vehicle at the junction has reduced to less than 10 seconds from around 30 seconds despite more highway demand due to the development.

**A new road at Boleness Road/Newbridge Lane**

As an alternative to Cromwell Road/Weasenham Lane a new single (S2AP) East-West road connecting Boleness Road to Cromwell Road has been tested. The alignment of the existing New Bridge Lane was adopted for part of the route.

A new link (shown in Figure 4) is added by introducing a priority junction along New Bridge Lane and connecting it to the Boleness Road. The section, to the east of the new priority junction with Boleness Road, before it becomes New Drove Lane has an HGV ban to control HGV access and avoid New Drove Lane.

**Figure 4: New East-West Road Alignment and Junction Layout**



**River Crossing & New link road**

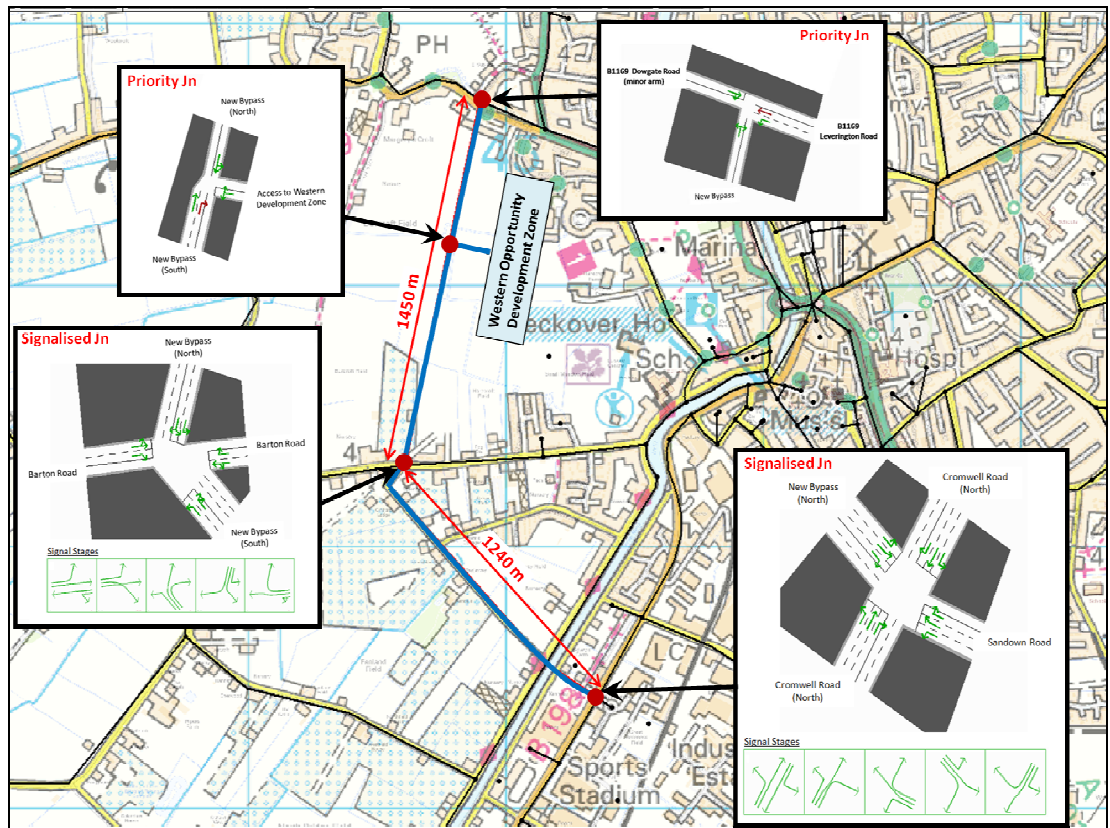
Designation of a single carriageway S2AP road linking B1169 Leverington Road to Cromwell Road. New links connecting Cromwell Road/ Sandown Road junction with Barton Road and linking Barton Road with B1169 Leverington Road have been added to provide a western link road. No access is provided to North Brink Road from the proposed link road.

A new four arm signalised junction on Barton Road and priority junction along Leverington Road are introduced for this route and the signalised Cromwell Road/ Sandown Road junction is upgraded to allow for the additional link. Heavy delays have been observed at Cromwell Road/ Sandown Road junction because of this new link road connection.

To reduce this delay, junction enhancement measures have been considered. This includes the addition of a separate lane for right turning movements from Cromwell Road Southbound arm to Link Road and three lane entry arm from the Link Road into the junction.

Figure 5 shows the alignment of Link Road assumed and layouts of junctions considered. A larger scale of the same graphic is included at Appendix 2 to this document.

**Figure 5: New Bypass Alignment and Junction Layouts**



**A47 Guyhirn & A47 Cromwell Road Roundabouts**

The capacity enhancement measures have been considered to accommodate more flow along A47. The turn saturation flows of A47 arms are increased from 1650 PCU's to 2200 PCU's to account for lane widening on selective entries and localised widening of exits.

This resulted in more flow being accommodated along A47 and also a reduction in delay time compared to the unmitigated scenarios.

**Development Zone Access**

The West Opportunity development zone is connected to the New Bypass road between Barton Road and B1169 Leverington Road.

The East Opportunity Development zone is split into two zones: one connecting into Chapnall Road and other connecting to Sandy Lane which will feed into Broad End Road.

Kings Lynn & West Norfolk new development zone is also split into two with access from Chapnall Road and Elm High Road respectively. It should be noted that there is no Kings Lynn & West Norfolk development considered for the initial test.

**Walking and cycling measures**

New Cycle ways proposed in Wisbech area along Cromwell Road, Weasenham Lane, Elm Road, Sandy Lane to A1101 through the College of West Anglia Isle campus, old rail line between Wisbech and March, has been considered while building the DS matrices. The potential shift to

cycle from car because of the new cycle ways has been calculated through the proportion of highway trip length getting benefit by the cycle way. These trips are then extracted from the car user classes of the final DS matrices.

This removed around 70 cars from the highway demand relieving Cromwell Road and Weasenham Lane in particular.

#### **Signal Time optimizations**

The timings of the set of traffic signals on Cromwell Road have been updated as per the provided data.

This caused heavy delays along these junctions as the cycle time provided suggested a cycle time of 200 seconds. These cycle times were reduced accordingly to 120 seconds or less and optimised to have less delay.

## 4. Key issues highlighted by testing the Mitigation Strategy

Below is a list of key issues in respect of the mitigation strategy that are not included in Technical Note 22, but that is relevant and link specifically to section 3 above. The issues are as follows:

#### The new east/west route as part of the south Wisbech development

The new east/west route proposed as an alternative to Weasenham Lane is attracting much traffic from Weasenham Lane. This may be as a result of the assumed speeds on the new route which have been kept consistent with the current speeds on New Bridge Lane. These assumed speeds could be raised since the proposed standard of road is higher. This would then allow the new route to compete with Cromwell Road and Weasenham Lane which has free flow speeds of 56 and 47kph respectively.

Zones in this particular part of the model are quite coarse. Zone 121 covers a large area but has limited access points. In reality the demand from zone 121 could load on to New Bridge Lane, Algores Way or Boleness Road. The limited zone connection representation may also be responsible for an over estimate of delay at the Tesco Roundabout junction (the principal connection point for zone 121).

It is recognised sensitivity tests should be conducted with the possible splitting of zone 121 into smaller zones to better represent the access points for new developments in this area.

#### Observations at about B198 Lynn Road/Mount Pleasant junction for the port

There is no significant change observed in the movement across B198 Lynn Road/Mount Pleasant junction.

#### Performance and delays at A47/A110 Elm High Road Roundabout

Reduction of about 70 seconds in AM, 30 seconds in IP and 40 seconds in PM observed at A47/A110 Elm High Road Roundabout though there is no direct mitigation done on the junction itself.

The reduction in delay can be attributed to reduction in demand from A1101 turning right towards A47 west because of rerouting of traffic from B1169 Dowgate Road going to South Brink. The new western link road diverts (on the AM peak) about 50-100 trips to and from B1169 Dowgate Road accessing South Brink via Freedom Bridge Roundabout and A47/A110 Elm High Road



Roundabout. This allowed for reduction in delay at the junction even with the increase in flow along A47 because of capacity enhancements at A47 Guyhirn & A47 Cromwell Road Roundabouts.

#### The effect of adding a new bus station entrance onto Nene Quay

The extra set of traffic signals on Nene Quay will introduce transient delay, inherent to any traffic signal installation. Since the mitigation measures were added all in one combined test it is difficult to assess the standalone impact of this element and the benefit to Freedom Bridge Roundabout which may have reduced flows as a result of the western bypass mitigation measure. A further “decremental” type test of removing these specific measures would be an efficient way of investigating effects of this isolated measure.

Technical Note F provides the detailed comments on the mitigation strategy testing. However the key points to note are as follows:

- Whole Network Performance as a comparison between the do minimum (no mitigation) and do something (whole mitigation strategy) – although there is an increase in the use of the network there is improvement in the performance. The improvement can be shown by a decrease in average trip distance and in total travel time. There is also a decrease in transient queues and a significant decrease in over capacity queues. There are improvements in accessibility and reductions in delays
- For demands and delays at key junctions there are a number of performance differences. Town Bridge traffic signals, B198 Cromwell Road and Weasenham Lane junction both benefit from a reduction in traffic flow as a result of the new Link Road and river crossing
- Traffic levels and impacts at Freedom Bridge remain similar between the do minimum and do something options. This is because a decrease in traffic as a result of the bypass is replaced by traffic using the bridge from the west development
- For the A47, where improvements have been made at roundabouts they are showing a reduced delay time and an increase in traffic flow. For the eastern development there is evidence that the new roundabout at Broad End Road accommodates the additional flow of traffic from Wisbech
- Due to the Wisbech Transport Mitigation Strategy it can be seen that delays are reduced at B198 Cromwell Road/Weasenham Lane junction. A47/A141 Guyhirn roundabout, A47/B198 Cromwell Road roundabout and A47/A1110 Elm High Road roundabout

## 5. Next Steps and Recommendations

The next steps and recommendations for the mitigation strategy are as follows:

- To undertake the cross border testing for the Kings Lynn and West Norfolk area
- To undertake the sensitivity test across the whole network and both Local Authority areas
- To refine and develop the mitigation strategy as necessary to ensure that the network functions adequately
- develop phasing issues for any final mitigation strategy
- develop proposals for financing and delivering the final transport mitigation strategy.

## **Appendix One - Wisbech Area Transport Study – Mitigation Workshop**

Here is a list of schemes, projects and transport measures that were considered as part of the mitigation workshop. This list was

### Walking and Cycling

- North East – South West Cycle route – connecting resident areas with the town centre and employment in the south
- Upgrade walking and cycling facilities in Weasenham Lane including a new footpath on the south side
- New pedestrian and cycle bridge – Coal Wharf Road/North Brink

### Public Transport

- Extension of the town bus service – already included in earlier testing for the Wisbech Area Transport Study
- Relocation of Wisbech Bus Station
- New public transport interchanges in Wisbech
- Guyhirn Interchange – A47/A141 Roundabout – links to current X1 bus service to Peterborough and Kings Lynn
- Higher frequency bus service for commuters
- Additional taxi ranks in different areas of the town. The current taxi ranks are only at Wisbech Bus Station

### Traffic Management

- Use of UTMC or other measures to improve/control the flow of traffic on A1101 and B198 as the key routes into and out of Wisbech
- Park and Ride sites at the key junctions with A47 and A1101
- Car parking – all the current car parks in Wisbech are located in and around the town centre. Development of a Car Parking Strategy for Wisbech?
- Lorry parking on the edge of Wisbech/Access to the Port

### Demand Management Measures

- Work place travel plans
- Residential travel plans

### Strategic/Highway Improvements

- A47 Upgrade
- Western Bypass
- Northern Bypass
- Western Bypass – Barton Road to A47/Cromwell Road
- Wisbech – March Rail Line
- Extend Boleness Road to link with A47
- Upgrade New Bridge Lane to Cromwell Road

### Appendix Two - Wisbech Area Transport Study: Enlarged Figure 5: New Bypass alignment and Junction Layouts

