



Job Name: A14 at Hinchingsbrooke

Job N^o: IMA-15-132

Date: September 2015

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Technical Note A14/1: Local Implications at Hinchingsbrooke

1 Introduction

- 1.1 This Technical Note has been produced by IMA Transport Planning Ltd on behalf of Hinchingsbrooke Healthcare NHS Trust (The Trust hereafter).
- 1.2 The report summarises investigation of concerns voiced by The Trust and local residents regarding the potential effects of proposals by Highways England to alter the eastern end of Hinchingsbrooke Park Road in association with the A14 scheme.
- 1.3 The Trust is concerned that the single point of access, Hinchingsbrooke Park Road, is potentially the single point of failure for the future of the Hinchingsbrooke area.
- 1.4 The ability to expand the services of The Trust to meet future demand is contingent on achieving planning permission without objections on highways grounds. It is therefore essential that the Trust and the Local Highway Authority have confidence in the modelling work presented by Highways England.

2 Observed Existing Highway Conditions

- 2.1 Observations on site show that in the weekday evening peak period, stationary traffic often lines the entire length of Hinchingsbrooke Park Road.
- 2.2 The queueing has several sources, which go through phases. Just after 15:30 pupils depart Hinchingsbrooke School en masse, causing very high demand for the pelican crossing at the school, which continues for about 10-15 minutes.
- 2.3 At 15:40 to 15:45 around 7 buses depart from the school. As they are often exiting into standing traffic, they often pull part-way across the road, blocking it temporarily in both directions.
- 2.4 After activity at the school frontage drops off, the congestion continues until about 16:00. In part this is probably a result of parents picking up school children from side roads off Hinchingsbrooke Park Road.
- 2.5 Between about 16:00 and 16:30 there are intermittent spikes of long queues on Hinchingsbrooke Park Road, caused when the exit from Hinchingsbrooke Park Road is blocked by standing traffic on Brampton Road, stretching back from the Edison Bell Way signal junction near the station.
- 2.6 By about 16:30, stationary traffic on Brampton Road extends well beyond Hinchingsbrooke Park Road and drivers can only exit with the goodwill of drivers on Brampton Road or by utilising gaps formed by the yellow box junction marking.
- 2.7 The standing traffic on Brampton Road regularly causes queues the length of Hinchingsbrooke Park Road, frequently blocking back to the Parkway roundabout between about 16:30 and 17:30, after which conditions revert to free flow again.
- 2.8 The congestion causes and consequences are summarised in Plan TN A14/1-1.

3 Highways England Huntingdon Town Centre Models

- 3.1 The Highways England Transport Assessment (December 2014) includes modelling of junctions in Huntingdon Town Centre. The junctions of Huntingdon Park Road, Brampton Road and Edison Bell Way were all included in a single LinSig model, an industry-standard traffic modelling programme which allows interaction between junctions to be taken into account.
- 3.2 The conclusions of the Transport Statement are as follows with respect to Huntingdon:
- 8.5.5 The Huntingdon Southern Bypass would offer strategic traffic an alternative route, avoiding the section of the A14 through Huntingdon, which would release capacity on that section of the local highways network for local traffic.*
- 8.5.6 As a result, while some roads are forecast to experience an increase in the number of trips, others are expected to experience a reduction in traffic. All of the roads that would experience a significant increase in traffic by 2035 as a result of the scheme would be improved under the proposals.*
- 3.3 The Transport Assessment concludes that as the scheme would alleviate congestion, reduce accidents and increase capacity on the A14 between Huntingdon and Cambridge, it would support future growth and there are no transport reasons why development consent should not be granted.
- 3.4 Highways England has provided The Trust with a copy of their Traffic Modelling Update Report (HE/A14/EX/44) dated June 2015. That report incorporates refinements to the traffic models, but concludes that the detailed local modelling shows similar impacts to the Transport Assessment, so no modification to the original conclusions is put forward.
- 3.5 Highways England has explained that their modelling has included traffic associated with the Health Campus development proposed at Hinchingsbrooke Hospital, but have not provided any details of what assumptions were made about the development content and hence what increase in traffic might have been allowed for.

4 Issues with Local Junction Modelling

- 4.1 The Traffic Modelling Update Report includes a section on Huntingdon Town Centre in Appendix A, commencing on Page 105, which is appended to this Technical Note for ease of reference (Appendix TN A14/1-1).
- 4.2 The tables summarising the model outputs (A.25/A.26, A.27/A.28 & A.29/A.30 all relate) show that queueing on Hinchingsbrooke Park Road will increase under the 'Do-Something' scenarios relative to the 'Do-Minimum' case.
- 4.3 Put simply, queues and delays on Hinchingsbrooke Park Road are predicted to increase as a direct result of the proposed junction works and changes in traffic flows arising from the A14 scheme.
- 4.4 However, the HE report suggests that the operation of the local highway network is acceptable as all of the arms of the Hinchingsbrooke Park Road junctions with the Views Common Link, with the Underpass to Brampton Road and with Brampton Road itself, are all shown to operate within 85% of capacity in the peak periods.
- 4.5 Only the Brampton Road/Edison Bell Way junction at the station is predicted to operate over capacity in the HE models, but no solution is offered there due to physical constraints (paragraphs 3.3.11 to 3.3.15 in the Update Report).

- 4.6 Both the Transport Assessment and the Update Report note that the model omits local factors that might make the outputs unrepresentative of actual conditions. The following is from page 106 of the Update Report:

It is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way may block back on to Hinchingsbrooke Park Road and extend past this junction in the peak hours. This would result in worse performance than the operational assessment suggests, potentially leading to longer queues and delays.

- 4.7 And from page 110:

In practice, there are a number of other factors which affect the performance of this junction, including its use by emergency vehicles accessing the nearby hospital, police and fire stations; buses blocking through traffic on the approaches; congestion associated with school pick-up and drop-off; and pedestrians crossing the road away from designated crossing points. In combination, these effects would be expected to worsen the performance of the junction and would result in additional delays at the junction over and above those forecast in the operational assessments. However, due to the limitations of the modelling software, these effects cannot be replicated in the results of the operational assessments.

- 4.8 The discrepancies have been acknowledged in the HE modelling work, but they were not quantified. As explained in section 2 of this Technical Note, stationary traffic along the entire length of Hinchingsbrooke Park Road is a daily occurrence in the weekday evening peak, which extends from just after 15:30 to about 17:30.
- 4.9 During that period, queues of 100 vehicles waiting to exit Hinchingsbrooke Park Road are commonplace. In contrast, the modelling in the update report shows just 4 vehicles queueing to leave Hinchingsbrooke Park Road in the 2020 'Do Minimum' scenario (see Table A.25 on page 106 in Appendix TN A14/1-1), increasing to 17 in the 2020 'Do-Something' case (Table A.26).

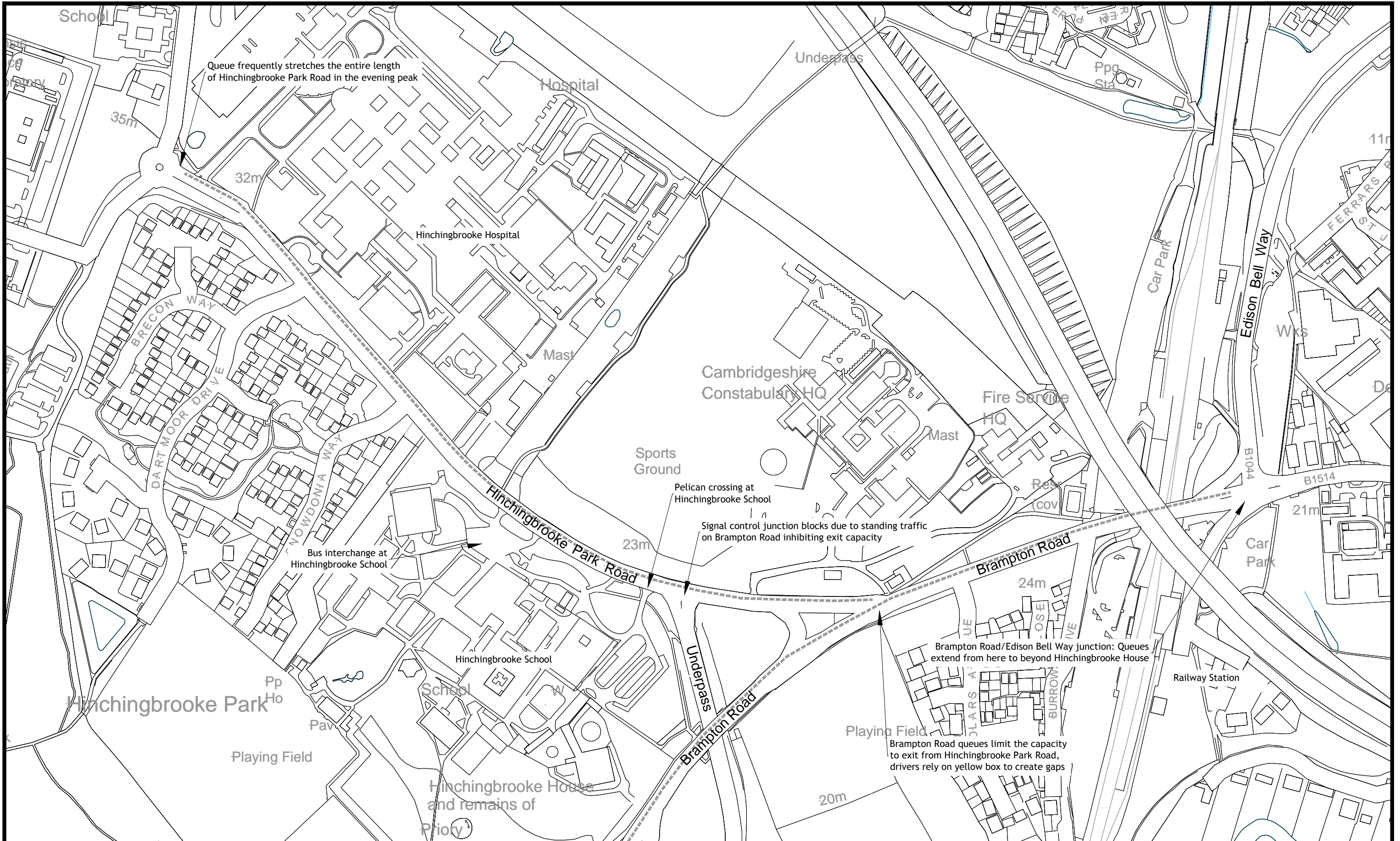
5 Issues & Recommendations

- 5.1 The error in queue modelling on Hinchingsbrooke Park Road is too extreme to be dismissed as a limitation of the modelling software. It should be possible to calibrate a LinSig model so that it reflects interaction between the junctions far more accurately than has been the case to date.
- 5.2 IMA Transport Planning has not seen the LinSig model however, so cannot comment on the details, but in the event that it cannot be calibrated to provide a baseline output that even approximately resembles the reality on the ground, an alternative approach such as micro-simulation should be pursued.
- 5.3 Until the existing highway network has been modelled realistically, it is premature to conclude that the proposed junction arrangements will operate satisfactorily. If the proposed junction works simply make existing queues worse, as the current modelling shows, then the existing severe congestion will be exacerbated.
- 5.4 We have discussed the matter with the County Council and agree with their position that there is a great deal of detailed modelling and junction design that needs to be undertaken before it can be accepted that the proposed scheme would not have a seriously detrimental impact on congestion in the Hinchingsbrooke area. Until that work is complete, the conclusions of the HE Transport Assessment cannot be accepted as valid.



Plan TN A14/1-1

(Existing Traffic Conditions)



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PROJECT:
**A14 Scheme
at Hinchingsbrooke**

TITLE:
**Existing Evening Peak Hour
Traffic Conditions on
Hinchingsbrooke Park Road/Brampton Road**

SCALE: (A3)
NTS

CAD FILE:
TN A14-1 V1-1.dwg

PROJECT No:
IMA-15-132

CHECKED:

DESIGN/DRAWN:
PMG

DRAWING No:

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APPROVED:

DATE:
Sep 15

REV:



Appendix TN A14/1-1

(Extract from HE Update Rport)

junction is forecast to better, or no worse, than in the 'Do-Minimum' scenario (without the scheme) across both time periods in both 2020 and 2035.

Views Common Junction Roundabout

The Views Common junction roundabout in Huntingdon is a new junction and therefore no 'Do-Minimum' (without scheme) operational assessment has been undertaken. The results of the 'Do-Something' (with scheme) operational assessment undertaken for the Views Common junction roundabout are summarised in *Table A.24*.

Table A.24: Views Common Junction Roundabout Capacity Assessment ('Do-Something' scenario)

Junction Arm	2020 'Do-Something' Scenario				2035 'Do-Something' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)
Old A14 (north)	31%	0	19%	0	40%	1	22%	0
Local Access	0%	0	0%	0	0%	0	0%	0
Old A14 (south)	25%	0	40%	1	24%	0	51%	1

The operational assessment indicates that all arms of the Views Common junction roundabout are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035. Short queues are forecast even though the traffic movements are unopposed at this junction. These queues are the result of vehicles slowing down to negotiate the junction and as such would be transient in nature.

Huntingdon Town Centre

The network of junctions in Huntingdon town centre that would be affected by the scheme have been assessed in a single operational model. The results of the assessment for each individual junction are presented below.

Hinchingbrooke Road / Views Common Link Junction

The results of the 'Do-Minimum' (without scheme) operational assessment undertaken for the Hinchingbrooke Road / Views Common Link junction are summarised in *Table A.25*.

Table A.25: Hinchingsbrooke Road / Views Common Link Junction Capacity Assessment ('Do-Minimum' scenario)

Junction Arm	2020 'Do-Minimum' Scenario				2035 'Do-Minimum' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Hinchingsbrooke Road (west)	22%	2	40%	4	25%	2	47%	6
Hinchingsbrooke Road (east)	16%	1	9%	1	19%	2	11%	1
Underpass	39%	1	29%	0	53%	1	31%	0
Cycle Time (secs)	90							

The operational assessment indicates that all arms of the Hinchingsbrooke Park Road / Views Common Link junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

It is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way may block back on to Hinchingsbrooke Park Road and extend past this junction in the peak hours. This would result in worse performance than the operational assessment suggests, potentially leading to longer queues and delays.

The results of the 'Do-Something' (with scheme) operational assessment undertaken for the Hinchingsbrooke Road / Views Common Link junction are summarised in *Table A.26*.

Table A.26: Hinchingsbrooke Road / Views Common Link Junction Capacity Assessment ('Do-Something' scenario)

Junction Arm	2020 'Do-Something' Scenario				2035 'Do-Something' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Hinchingsbrooke Park Road (west)	46%	10	59%	17	51%	11	60%	19
Views Common Link	37%	12	34%	9	52%	18	47%	12
Hinchingsbrooke Park Road (east)	0%	0	0%	0	0%	0	0%	0
Underpass	59%	4	61%	8	75%	8	72%	11
Cycle Time (secs)	120							

The operational assessment indicates that all arms of the Hinchingsbrooke Road / Views Common Link junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

Again, it is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way may block back on to Hinchingsbrooke Park Road and extend past this junction in the peak hours. This would result in worse performance than the operational assessment suggests. However the traffic signals at this junction and at the Brampton Road / Hinchingsbrooke Park Road junction could be used to regulate flows entering the town centre thus ensuring that the town centre junctions would not get overloaded.

Brampton Road / Underpass Junction

It is understood that changes have been made to the signal timings at the Brampton Road / Edison Bell Way junction in response to complaints about the level of queuing that occurs in the peak periods on the Station access. Updated traffic signal data has been obtained from Cambridgeshire County Council, which has been incorporated in to the 'Do-Minimum' operational assessments as part of the work undertaken to update the operational assessments based on the CHARM3a traffic forecasts.

The results of the 'Do-Minimum' (without scheme) operational assessment undertaken for the Brampton Road / underpass junction are summarised in *Table A.27*.

Table A.27: Brampton Road / Underpass Junction Capacity Assessment ('Do-Minimum' scenario)

Junction Arm	2020 'Do-Minimum' Scenario				2035 'Do-Minimum' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)
Underpass	35%	0	71%	4	39%	0	76%	5
Brampton Road (east)	41%	0	40%	0	45%	0	45%	0
Brampton Road (west)	41%	0	39%	0	47%	0	41%	0

The operational assessment indicates that all arms of the Brampton Road / underpass junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

It is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way would extend past this junction in the peak hours. This would result in worse performance than the operational assessment suggests.

In light of the recent changes made to the traffic signal timings at the Brampton Road / Edison Bell Way junction, the cycle time at this junction in the 'Do-Something' scenario has been increased to 120 seconds in both the 'traffic optimised' and 'NMU optimised' scenarios for consistency with the existing situation. Since both the 'traffic optimised' and 'NMU optimised' scenarios have the same staging and cycle time, there is no difference between them and therefore only a single 'Do-Something' scenario has been assessed.

The results of the 'Do-Something' (with scheme) operational assessment undertaken for the Brampton Road / Underpass junction are summarised in *Table A.28*.

Table A.28: Brampton Road / Underpass Junction Capacity Assessment ('Do-Something' scenario)

Junction Arm	2020 'Do-Something' Scenario				2035 'Do-Something' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)
Underpass	36%	2	34%	5	25%	2	33%	4
Brampton Road (east)	46%	0	46%	0	47%	3	45%	2
Brampton Road (west)	40%	0	46%	1	41%	1	44%	1

The operational assessment indicates that all arms of the Brampton Road / Underpass junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

Again, it is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way would extend past this junction in the peak hours, resulting in worse performance than the operational assessment suggests.

Brampton Road / Hinchingsbrooke Road Junction

The results of the 'Do-Minimum' (without scheme) operational assessment undertaken for the Brampton Road / Hinchingsbrooke Road junction are summarised in *Table A.29*.

Table A.29: Brampton Road / Hinchingsbrooke Road Junction Capacity Assessment ('Do-Minimum' scenario)

Junction Arm	2020 'Do-Minimum' Scenario				2035 'Do-Minimum' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)	RFC (%)	Queue (vehs)
Hinchingsbrooke Road	29%	0	52%	1	38%	0	74%	5
Brampton Road (east)	37%	0	37%	0	41%	0	41%	0
Hinchingsbrooke Road	28%	0	32%	0	30%	0	33%	0

The operational assessment indicates that all arms of the Brampton Road / Hinchingsbrooke Road junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

It is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way would extend past this junction in the peak hours. This would result in worse performance than the operational assessment suggests.

The results of the 'Do-Something' (with scheme) operational assessment undertaken for the Brampton Road / Hinchingsbrooke junction are summarised in *Table A.30*.

Table A.30: Brampton Road / Hinchingsbrooke Road junction capacity assessment ('Do-Something' scenario)

Junction Arm	2020 'Do-Something' Scenario				2035 'Do-Something' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Hinchingsbrooke Road	56%	11	57%	13	53%	12	56%	13
Brampton Road (east)	54%	9	55%	12	63%	15	57%	15
Hinchingsbrooke Road	20%	7	24%	9	23%	9	23%	9
Cycle Time (secs)	120							

The operational assessment indicates that all arms of the Brampton Road / Hinchingsbrooke Road junction are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in both 2020 and 2035.

Again, it is expected that slow moving queues of traffic on Brampton Road from the junction with Edison Bell Way would extend past this junction in the peak hours, resulting in worse performance than the operational assessment suggests. However the traffic signals at this junction and at the Hinchingsbrooke Park Road / Views Common Link junction could be used to regulate flows entering the town centre thus ensuring that the town centre junctions would not get overloaded.

Brampton Road / Edison Bell Way Junction

The results of the 'Do-Minimum' (without scheme) operational assessment undertaken for the Brampton Road / Edison Bell Way junction are summarised in *Table A.31*.

Table A.31: Brampton Road / Edison Bell Way Junction Capacity Assessment ('Do-Minimum' scenario)

Junction Arm	2020 'Do-Minimum' Scenario				2035 'Do-Minimum' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Brampton Road (west)	55%	11	78%	23	65%	15	90%	33
Edison Bell Way	64%	5	73%	6	69%	7	80%	11
Brampton Road (east)	68%	17	75%	18	76%	20	86%	22
Station Access	7%	0	9%	1	10%	0	10%	1
Cycle Time (secs)	120							

The operational assessment indicates that all arms apart from Brampton Road (west) and Brampton Road (east) are forecast to operate within capacity (RFC less than or equal to 85%) in both time periods (AM peak hour and PM peak hour) in 2020, but the junction would be operating close to capacity in the PM peak hour by 2035.

In practice, there are a number of other factors which affect the performance of this junction, including its use by emergency vehicles accessing the nearby hospital, police and fire stations; buses blocking through traffic on the approaches; congestion associated with school pick-up and drop-off; and pedestrians crossing the road away from designated crossing points. In combination, these effects would be expected to worsen the performance of the junction and would result in additional delays at the junction over and above those forecast in the operational assessments. However, due to the limitations of the modelling software, these effects cannot be replicated in the results of the operational assessments.

The results of the 'Do-Something' (with scheme) operational assessment undertaken for the Brampton Road / Edison Bell Way junction are summarised in *Table A.32*.

Table A.32: Brampton Road / Edison Bell Way Junction Capacity Assessment ('Do-Something' scenario)

Junction Arm	2020 'Do-Something' Scenario				2035 'Do-Something' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Brampton Road (west)	77%	30	94%	54	93%	50	99%	63
Edison Bell Way	85%	14	99%	29	98%	27	102%	36
Brampton Road (east)	54%	3	37%	2	57%	3	46%	3
Mill Common Link	64%	8	64%	8	63%	9	61%	9
Cycle Time (secs)	120							

The operational assessment indicates that, the Brampton Road / Edison Bell Way junction is forecast to operate at capacity in both 2020 and 2035. For the reasons described above, the actual performance of the junction is expected to be worse than the operational assessments suggest, leading to longer queues and more delay in all scenarios. However, these effects cannot be replicated in the operational assessments due to the limitations of the modelling software.

Ermine Street / Edison Bell Way Junction

The results of the 'Do-Minimum' (without scheme) operational assessment undertaken for the Ermine Street / Edison Bell Way junction are summarised in *Table A.33*.

Table A.33: Ermine Street / Edison Bell Way Junction Capacity Assessment ('Do-Minimum' scenario)

Junction Arm	2020 'Do-Minimum' Scenario				2035 'Do-Minimum' Scenario			
	AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)		AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)	DoS (%)	Queue (pcus)
Ermine Street (west)	42%	8	47%	10	56%	13	53%	12
Ermine Street (east)	54%	5	58%	5	62%	7	66%	9
Edison Bell Way	16%	3	17%	3	20%	4	26%	5