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Option Assessment Report

March Area Transport Study

February 2020

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Introduction

The March Options Assessment Report (OAR) sets out the development and assessment of improvement options identified within the March Area Transport Study (MATS). The report details the technical work undertaken in relation to traffic modelling and economic assessment, and identifies several packages of schemes that should be taken forward for development.

Assessment Process

The assessment process used has been broken down into three distinct phases, with each informing the next. The three phases are:

- Strategic Assessment
- Operational Assessment
- Packaging Assessment.

Strategic Assessment

The Strategic Assessment, using a bespoke SATURN model developed for MATS has considered larger infrastructure improvements and has been used for two purposes. Firstly to undertake an economic assessment of the larger options to determine at an early stage if they offer value for money. Secondly, to generate different sets of traffic flows, which account for the rerouting created by larger options, for use in the Operational Assessment. Specifically, the Strategic Assessment has considered options for a:

- New River Crossing, both within March Town, and as part of an Eastern Bypass
- Northern Industrial Link Road
- A141 Re-alignment Options.

Operational Assessment

The Operational Assessment was undertaken using a bespoke VISSIM micro-simulation model developed for MATS, and provides a detailed assessment of how each of the options assessed perform. The options that performed well within the Operational Assessment were then taken forward for use within the Packaging Assessment.

Packaging Assessment

The Packaging Assessment has taken the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented in March. This Packaging Assessment was done using the MATS SATURN model. Multiple different packages have been assessed, representing different levels of impact within March. The Packaging Assessment again used economic assessments to determine whether each package offered value for money, and would stand a reasonable chance to secure funding.

Future High Streets Fund

In parallel to the MATS project, Fenland District Council has developed a proposal for the Future High Street Fund (FHSF) to fundamentally change the way in which March functions as a Town Centre. This includes improvements in Broad Street which will improve pedestrian flow and footfall, changes to densification in use which will support a 24-hour economy and support resilience, and public realm improvements which will open up underused and derelict areas for commercial development.

The purpose of this investment is to arrest the decline in March Town Centre and enable the area to make the most of its untapped potential. This opportunity for funding has presented itself at an opportune time for March as it builds on the recently adopted Growing Fenland Strategy for the development of Fenlands towns and has linked closely with the development of the MATS.

There has been regular dialogue between the two projects to ensure that any proposals considered within this study for the Town Centre, and particularly Broad Street, are consistent with the FHSF aspirations.

Option Development

A series of Option Development workshops were held to devise improvement options to be considered as part of the MATS. The workshops were attended by approximately twenty five stakeholders from various transport, planning and engineering disciplines, with delegates representing:

- Cambridgeshire County Council
- Fenland District Council
- Highways England
- King's Lynn and West Norfolk Borough Council
- Skanska / Capita.

During each workshop, attendees were divided into smaller groups, and each group was tasked with identifying and developing a range of improvement options. These options were then presented to the remaining groups, and were challenged by the rest of the delegates on technical or delivery grounds.

Option Review

Following the workshop, the options were reviewed by the project team and presented to the Member Steering Group for further discussion and approval to assess. Several options were discounted during this stage, with the remaining options taken forward for assessment in either the MATS SATURN model or the VISSIM model.

Further Option Evolution

Many of the options also evolved during the assessment process, with amendments made based on the results of traffic modelling or highway design review. The options that emerged from the Strategic Assessment and the Operational Assessment are taken forward to the Packaging Assessment.

Strategic Assessment Summary

Strategic Assessments have been undertaken on numerous options for a New River Crossing, Northern Industrial Link Road (NILR) and A141 Re-alignment. The assessments have used the MATS SATURN model to measure the impact of each of the options on a localised scheme level and on the wider network as a whole. Network wide model results have then been extracted for the options and these have been entered into the transport user benefit appraisal (TUBA) model, along with high level scheme cost estimates, to allow a value for money assessment to be undertaken, and from this a benefit to cost ratio (BCR) to be calculated.

The secondary purpose of the Strategic Assessment is also to determine a set of traffic flows to be used in the Operational Assessment.

The Strategic Assessment of the New River Crossing options identified Option 10 (a new river crossing to the west of the existing Town Bridge) as the best performing option. Further sensitivity testing was undertaken on Option 10 to determine whether the option could support public realm improvements around the existing Town Centre Bridge, and specifically along Broad Street. The sensitivity testing indicated that there is the potential for public realm improvements to be made along Broad Street, at the expense of highway capacity, and possibly without the new river crossing. This is tested further within the Operational Assessment. All Eastern bypass options were identified in the Strategic Assessment as offering poor value for money and were not progressed further.

The Strategic Assessment of the NILR options identified Option 1 (the alignment running north-south along Hundred Road and east-west along Longhill Road) as the best performing option, which is consistent with the assessment undertaken in the 2011 March Area Transport Study.

The Strategic Assessment of the A141 Re-alignment options has shown that no options performed well within the economic assessment, largely due to the associated infrastructure costs, and therefore none of these options are being progressed further as part of this study. However, online improvements to the A141 have been considered, and these are discussed further within the Operational Assessment chapter.

The next stage of assessment was a detailed Operational assessment of the remaining options to identify a preferred set of options to be considered within the Packaging Assessment.

Operational Assessment Summary

The Operational Assessment has used the March VISSIM model to test the operational performance of options along the A141 corridor and within March Town Centre.

The Operational Assessment has identified that the following options offer operational benefits, serve to mitigate against future year growth, and are compatible with the FHSF aspirations for the Town Centre:

- Peas Hill Roundabout Option 5.2 (60m ICD), in conjunction with the A141 / Hostmoor Avenue roundabout (developer funded scheme)
- Town Centre Package 2 (TC2), consisting of:
    - Broad Street / Dartford Road / Station Road mini roundabout, with Broad Street made one lane in each direction (and the provision of public realm improvements)
    - St Peter's Road Traffic Signal Improvements
- Town Centre Package 3 (TC3), consisting of:
    - Station Road / Creek Road Mini Roundabout
    - Broad Street / Dartford Road / Station Road mini roundabout, with Broad Street made one lane in each direction (and the provision of public realm improvements)
    - A New River Crossing, joining Dartford Road to the north and City Road to the south, with a new roundabout at Burrowmoor Road / City Road and High Street
    - St Peter's Road Traffic Signal Improvements.

These options have been progressed to the Packaging Assessment along with the NILR Option 1 from the Strategic Assessment and the signalisation of the A141 / Twenty Foot Road from the Quick Wins work stream.

Packaging Assessment Summary

The Packaging Assessment has taken the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented in March. Multiple different packages have been assessed, representing different levels of extremity in terms of impact within March.

Each of the options within the packages has been costed using a high level costing tool, the costs provided for each option include:

- Design and Supervision Fees
- Stats, Landscaping and Preliminaries Allowance
- Land and Property Acquisition Allowance
- 20% Risk Allowance
- 44% Optimism Bias Allowance (66% for structures)
- Future year inflation (5% per annum) and Maintenance Costs (1.7% per annum) for use in the Economic Assessment.

The Project Team developed a series packages which included a mix of short term and long term schemes. The packages have been built into the MATS SATURN model and traffic assignments have been run for the future year scenarios 2026 and 2031.

The Transport User Benefits Appraisal (TUBA) program was used to quantify the transport user benefits resulting from all packages, and to calculate a Benefit to Cost Ratio (BCR).

The TUBA assessment uses the output files from the March Area Transport Study (MATS) SATURN model to quantify the change in journey time and distance for each package compared to a Do Minimum Scenario, and hence quantify the journey time and vehicle operating cost benefits (if any). This information is then used to calculate a 60-year whole life Present Value of Benefits (PVB) which when compared to a Present Value of Costs (PVC) is then used to calculate a Benefit Cost Ratio (BCR).

The packages assessed are described beneath:

- **Package 1** – Signalisation of the A141 / Twenty Foot Road, Peas Hill Roundabout improvements (in conjunction with the developer funded roundabout at A141 / Hostmoor Avenue) and the High Street / St Peter's Road Signal improvements.
- **Package 1a** – Package 1 plus the Northern Industrial Link Road.

- **Package 3** – Package 1 plus reducing Broad Street to one lane in each direction and replacing the signalised junction at Dartford Road / Station Road with a mini roundabout (FHSF Option).
- **Package 3a** – Package 3 plus the Northern Industrial Link Road.

- **Package 4** – Package 3 plus the creation of a New River Crossing between Dartford Road and City Road.
- **Package 4a** – Package 4 plus the Northern Industrial Link Road.

The resultant BCRs for these packages are shown below in Table 1.

Table 1: Package BCR Results

Net Benefit/BCR Impact						
	Package 1	**Package 1a**	**Package 3**	**Package 3a**	**Package 4**	**Package 4a**
Present Value of Benefits (PVB)	10225	23019	22711	35091	37163	47094
Present Value of Costs (PVC)	4501	9428	5122	9679	33699	38682
Net Present Value (NPV)	5724	13713	17589	25412	3464	8412
Benefit/Cost Ratio (BCR)	**2.3**	**2.5**	**4.4**	**3.6**	**1.1**	**1.2**
VFM Statement	High	High	High	High	Low	Low

The assessment of the packages has shown that all serve to mitigate the impact of the Local Plan growth to varying degrees, and all are expected to perform well. Packages 1 and 1a do not include any changes to Broad Street, whereas the remaining packages facilitate the creation of a significant public realm along Broad Street which is in line with Fenland District Council's FHSF aspirations for the regeneration of March Town Centre.

Packages 3 and 3a are closely aligned to the FHSF proposals and have the highest BCRs relative to their counterpart Packages (Package 3 is higher than Package 1 and 4, Package 3a is higher than 1a and 4a). Packages 3, 3a, 4 and 4a all require the repositioning of March Town Fountain, which would be incorporated into wider public realm and landscape design. This study has not considered the detail of that design, and this would need to be undertaken in consultation with environment, conservation and heritage specialists, as well public engagement in some form.

As a result of the Packaging Assessment, it is recommended that Packages 1, 1a, 3 and 3a are considered for further development.

Packages 4 and 4a provide the best network wide statistics, but involve significant disruption (and cost) within the Town Centre. It is recommended that these packages are not considered any further at this stage, but can be revisited in future should further capacity enhancements be needed in March Town Centre.

Of the packages recommended for further development, Packages 3 and 3a are closest to the FHSF aspirations for March Town Centre, and are considered the preferred Packages at this stage of the study. Package 3a builds upon Package 3 with the addition of the NILR, the cost of which suppresses the BCR in comparison to Package 3, however the addition of the NILR will generate far greater benefit than shown in the Package omitting it. The NILR will attract additional trips away from the residential areas (particularly Norwood Road) and the Town Centre to the south, and so should be investigated further.

1. Introduction

1.1. Introduction

1.1.1. The vision of Fenland District Council is set out within the Local Plan (2014), which aims 'to maximise the potential of the area and deliver jobs, skills, improved housing and new infrastructure', making Fenland 'a better place to live, work and visit'.

1.1.2. The Local Plan includes the delivery of 4,200 new homes in March as well 30 hectares of employment land to provide new jobs. The broad locations for this housing are set out in the 'Proposals for Place' section of the plan for March.

1.1.3. The 2011 March Area Transport Study provided the transport evidence base for the Local Plan, and assessed the impact of traffic growth resulting from the Local Plan and proposed measures to improve the towns transport network under current and future traffic demand. The current March Area Transport Study (MATS) builds upon this work and assesses potential improvement options to deliver this growth.

1.1.4. The March Options Assessment Report (OAR) sets out the development and assessment of improvement options identified within the March Area Transport Study (MATS). The report details the technical work undertaken in relation to traffic modelling and economic assessment, and recommends several packages of schemes to be taken forward for development.

1.1.5. The OAR forms part of the MATS suite of reports, and follows on from the following reports:

- March Existing Conditions and Data Collection Report (v4.0)
- March Sustainable Travel Report (v4.0)
- March SATURN LMVR (v4.0)
- March SATURN Forecasting Report (v3.0)
- March VISSIM LMVR (v2.0).

1.1.6. The OAR is the final report within the MATS, and concludes the technical work undertaken to prepare packages of schemes for this stage of the study.

1.1.7. Note that a separate work stream considering potential 'Quick Wins' within March has also been progressed alongside the main MATS and is reported separately to the MATS.

1.2. Assessment Process

1.2.1. The assessment process used within the MATS is shown in Figure 1.1 beneath. The assessment has been broken down into three distinct phases, with each informing the next.

Figure 1.1: March Area Transport Study (MATS) Assessment Process

1.2.2. Each of these stages are discussed further beneath.

Strategic Assessment

1.2.3. The Strategic Assessment (using a custom built SATURN model) has considered the larger infrastructure improvements, such as a potential Eastern Bypass or Northern Industrial Link Road (NILR), which would significantly impact on vehicle routing around March.

1.2.4. The Strategic Assessment has been used for two purposes, firstly to undertake an economic assessment of the larger options to determine at an early stage if they offer value for money. The second purpose was to generate different sets of traffic flows, which accounted for the rerouting created by larger options, for use in the Operational Assessment. This created the traffic demand for the Do Minimum Scenario, as well as two additional scenarios which included larger infrastructure changes.

1.2.5. This first phase of assessment has generally considered new roads and junctions, whereas the Operational Assessment focused on improving existing infrastructure. Specifically, the Strategic Assessment has considered options for a:

- New River Crossing, both within March Town, and as part of an Eastern Bypass
- Northern Industrial Link Road
- A141 Re-alignment Options.

Operational Assessment

1.2.6. The Operational Assessment was undertaken using the VISSIM model, and provides a detailed assessment of how the options perform. This assessment has been used to identify the best performing options, and in conjunction with input from highway design engineers, has enabled these options to be further refined.

1.2.7. The options that performed well within the Operational Assessment were then taken forward for use within the Packaging Assessment.

Packaging Assessment

1.2.8. The Packaging Assessment also used the March Saturn model and has taken the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented in March. Multiple different packages have been assessed, representing different levels of extremity in terms of impact within March, ranging from a package with a small number of schemes that would make a modest impact, to a large transformative package that consists of multiple schemes and would dramatically change the transport network in and around March.

1.2.9. The Packaging Assessment again used an economic assessment to determine whether each package offered value for money, and would stand a reasonable chance to secure funding. The Packaging Assessment provides with a series of viable packages, to be taken to public consultation.

1.3. Report Structure

1.3.1. This report is structured as follows:

- **Executive Summary**
- **Introduction** – An explanation of the purpose and structure of the MATS Option Assessment Report, and the assessment process used.
- **Option Development Chapter** – An explanation of how the various improvement options considered within this study were devised.
- **Strategic Assessment Chapter** – Sets out the Strategic Assessment of the larger improvement options, and specifically considers the value for money that these would offer.
- **Operation Assessment Chapter** – Assesses the options in detail, and explains how these have been further revised based on the traffic modelling results and input from highway design engineers.
- **Packaging Assessment Chapter** – Sets out a series of packages of options, and demonstrates the impact and value for money that these would produce.
- **Summary** – A summary of the options considered and the assessment process, and recommendations on packages of schemes for further development.

2. Option Development

2.1. Overview

2.1.1. A series of Option Development workshops were held to devise improvement options to be considered as part of the MATS. Three workshops were held in total to consider the different areas of March, these were held on the following dates:

- January 31st 2019 – Town Centre Options
- February 14th 2019 – A141 Corridor Options
- March 14th 2019 – Northern Industrial Link Road and Eastern Bypass Options.

2.2. Option Development Workshops

2.2.1. The workshops were attended by approximately twenty five stakeholders from various transport, planning and engineering disciplines, with delegates representing:

- Cambridgeshire County Council
- Fenland District Council
- Highways England
- King's Lynn and West Norfolk Borough Council
- Skanska / Capita.

2.2.2. During each workshop, attendees were divided into smaller groups and presented with data and information on the existing conditions, planned growth and expected future conditions. Delegates then shared knowledge based on their specific fields of expertise and local knowledge.

2.2.3. Following this, each group was tasked with identifying and developing a range of improvement options at each location. These options were then presented to the remaining groups, and were challenged by the rest of the delegates on technical or delivery grounds.

2.3. Option Review

2.3.1. The list of options generated during the workshops are presented in Appendix A. Following the workshop, the options were reviewed by the project team and presented to the Member Steering Group (MSG) for further discussion and approval to assess. Several options were discounted during this stage, based on further consideration or additional local knowledge, and these are shown in grey in Appendix A.

2.3.2. The options shown in blue were identified for the Strategic Assessment using the MATS SATURN model, and are discussed further in Chapter 3 (Strategic Assessment). The remaining options were either assessed using the March VISSIM model and are discussed in Chapter 4 (Operational Assessment), or were incorporated into wider options.

2.3.3. The options that were assessed, and are discussed within this report, are shown in Table 2.1 beneath.

Table 2.1: Options Assessed as part of the Strategic Assessment

Scheme Area	Option	Description
New River Crossing Options	1	Bypass from B1101 / Flaggrass Hill Road to B1101 / Lambs Hill Drove
	2	Bypass from Creek Road / Flaggrass Hill Road to Upwell Road/ Silt Road
	3	New town centre bridge from North Drive to Wigstone's Road
	4	Bypass from B1101 / Flaggrass Hill Road to B1101 / Lambs Hill Drove
	5	Bypass from Creek Road (Level Crossing) to Upwell Road (Level Crossing)
	6	Bypass from B1101 / Longhill Road to B1101 / Lambs Hill Drove
	7	Bypass from Coldham Bank to B1101 / Lambs Hill Drove
	8	Bypass from B1101 / Flaggrass Hill Road to Mill Hill Roundabout
	9	Bypass from B1101 / Flaggrass Hill Road to A141 Isle of Ely Way
	10	New River Crossing to the West of exsiting town centre bridge
	11	New River Crossing to the East of existing town centre bridge
Northern Industrial Link Road Options	1	Improvements to Hundred Road and link through to Longhill Road
	2a	Improvements to Hundred Road and new link to A141
	2b	Improvements to Hundred Road and links to A141 and Longhill Road
	3	Improvements on Twenty Foot Road
	4	New link connecting Hostmoor Avenue and Hundred Road
	5a/b	New link from Melbourne Avenue/Hundred Road roundabout to B1101 Elm Road
	6	Improvements to Hundred Road and link to Twenty Foot Road
	7	Extension of Thorby Avenue to the north
	8	New link road between A141 and B1101 to the north of March
	9	Upgrade Norwood Road
	11	Continue B1101 south with a new Bridge over Twenty Foot River and connect to Longhill Road
A141 Options	1	Realignment of A141 from north of Hostmoor Avenue Roundabout to south of Peas Hill Roundabout
	2	Create a new access over the railway line from Peas Hill roundabout via the Meadowlands Estate
	3	A141 Dualling
	4	New junction on A141, closure of Burrowmoor and Knights End junctions with A141
	5	Realign A141 to the west from Gaul Road junction in the south to Hostmoor Avenue Junction in the north
	6	Create a new A141 route from Mill Hill roundabout to north of Hostmoor Avenue. Existing alignment to remain as a local / development access road
	7	Creation of a new grade separated junction at Peas Hill Roundabout

Table 2.2: Options Assessed as part of the Operational Assessment

Scheme Area	Option	Description
Peas Hill Roundabout	5.2	Creation of a new larger roundabout on the existing site, involving land acquisition
	5.3	Realign Whittlesey Road approach to join the A141 to the south (in the vicinity of Marina Drive)
	5.7	Realign Meadowlands approach to join Wisbech Road east of the roundabout and enlarge the roundabout to the west of the existing site.
Town Centre	Package 1	Creek Road Improvements, Signal Upgrade at Broad Street, Roundabout Improvements at Burrowmoor Road and Signal Upgrade at St Peters Road
	Package 3	Creek Road Improvements, Roundabout at Broad Street, Partial Public Realm Scheme, New Link Road and River Crossing, Roundabout Improvements at Burrowmoor Road and Signal Upgrade at St Peters Road

2.4. Further Option Evolution

2.4.1. Many of the options also evolved during the assessment process, with amendments made based on the results of traffic modelling or highway design review. The options that emerged from the Strategic Assessment and the Operational Assessment are discussed in Chapter 5 (Packaging Assessment).

2.5. Future High Streets Fund

2.5.1. In parallel to the MATS project, Fenland District Council has developed a proposal for the Future High Street Fund (FHSF) to fundamentally change the way in which March functions as a Town Centre. This includes improvements in Broad Street which will improve pedestrian flow and footfall, changes to densification in use which will support a 24-hour economy and support resilience, and public realm improvements which will open up underused and derelict areas for commercial development.

2.5.2. The purpose of this investment is to arrest the decline in March Town Centre and enable the area to make the most of its untapped potential. This opportunity for funding has presented itself at an opportune time for March as it builds on the recently adopted Growing Fenland Strategy for the development of Fenlands towns and has linked closely with the development of the MATS.

2.5.3. There has been regular dialogue between the two projects to ensure that any proposals considered within this study for the Town Centre, and particularly Broad Street, are consistent with the FHSF aspirations.

3. Strategic Assessment

3.1. Introduction

3.1.1. The Strategic Assessment considers the larger schemes within the March Area Transport Study (MATS) that have the potential to significantly impact on vehicle routing in and around the town. The Strategic Assessment uses a high level economic assessment to assess the potential for each of these schemes.

3.1.2. The purpose of the Strategic Assessment is to:

- Determine the economic viability of larger infrastructure schemes at an early stage, to identify whether they are likely to offer value for money, which in turn will…
- Determine which traffic flows to use in the Operational Assessment.

3.1.3. The Strategic Assessment has considered the following areas:

- New River Crossing (Town Centre and the concept of an Eastern Bypass)
- Northern Industrial Link Road
- A141 (Re-alignment) Options.

3.1.4. This chapter sets out:

- The Economic Assessment Process, explaining how options have been modelled, and benefits and costs have been calculated for use in the economic assessments undertaken
- The Strategic Assessment of a New River Crossing
- The Strategic Assessment of a Northern Industrial Link Road
- The Strategic Assessment of A141 re-alignment options.

3.2. The Economic Assessment Process

3.2.1. The economic assessment process essentially measures the benefit versus cost of each potential option. These two elements are discussed in greater detail beneath.

Calculating Benefits

3.2.2. The MATS SATURN model has been used to assess options for the Strategic Assessment. For more information on the MATS model, please see the associated Local Model Validation Report (LMVR). Using the Do Minimum (DM) models as a starting point, the options have been coded into the highway network to create Do Something (DS) models. By comparing the DM (without option) and DS (with option) model outputs it is possible to calculate the impact of the option on traffic flow, vehicle routing, travel times and travel distances. Figure 3.1 below displays the extent of the road network in the MATS model.

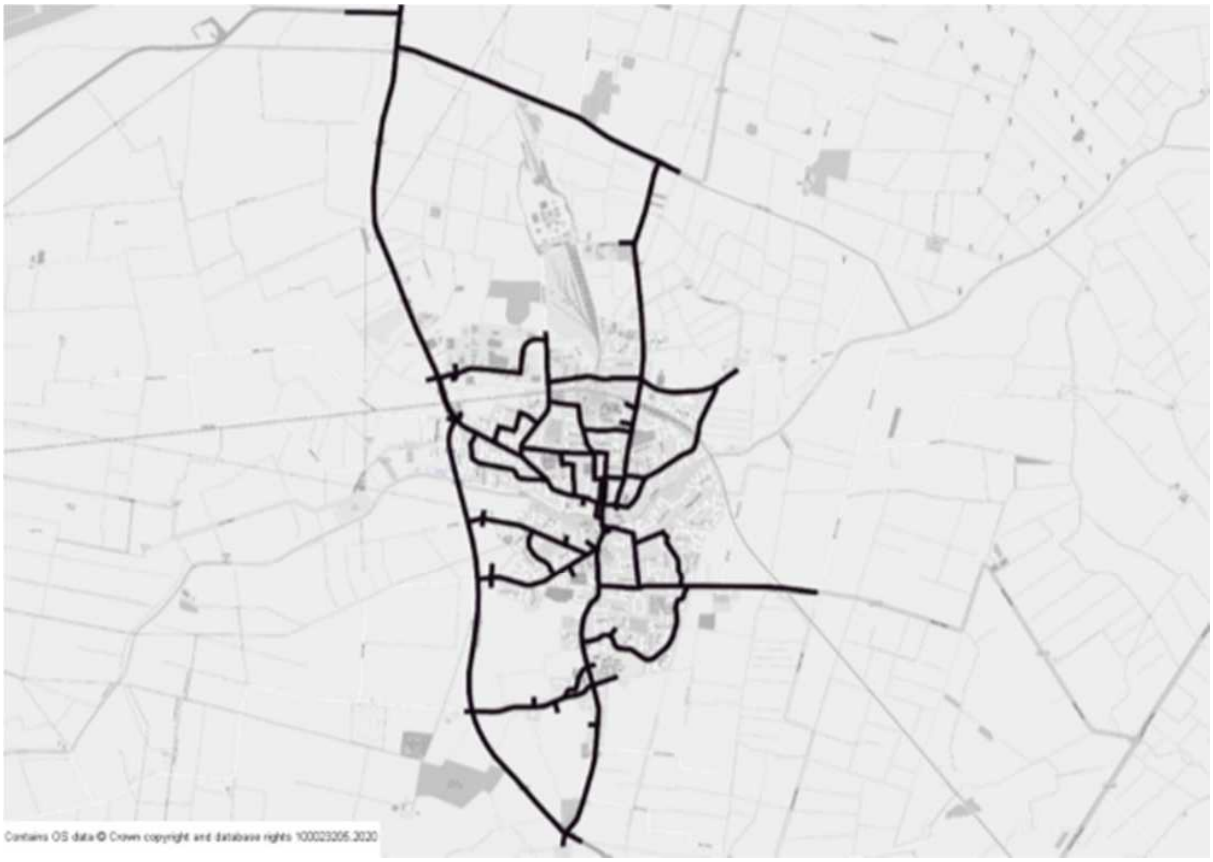

Figure 3.1: March Area Transport Study (MATS) SATURN Model Network

3.2.3. This information, along with the high level scheme cost information, is then passed through the Transport User Benefits Appraisal (TUBA) programme to monetise the benefits and calculate a Benefit to Cost Ratio (BCR). TUBA has been developed for the DfT to undertake economic appraisals for multi-modal transport schemes. TUBA carries out transport economic appraisals in according with the DfT's Transport Analysis Guidance (WebTAG). The BCR determines the expected value for money and gives an indication of the likelihood that a scheme would achieve funding based on transport user benefits such as journey time savings.

3.2.4. It should be noted that other considerations, such as wider economic benefits and environmental impacts, are also important in determining whether a scheme receives funding. Benefits and dis-benefits from these wider considerations can be added to the transport user benefits as part of the scheme business case.

Option Costing

3.2.5. Options have been costed using 2019 unit rates which are based on costs from recent major schemes that have been designed and built within the Cambridgeshire and Peterborough area, with a 20 – 30 week construction programme. Option costs have been calculated using a high level costing tool that costs schemes based on the road type and length, the number and form of junctions, the size and type of structures required and the amount of land acquisition required.

3.2.6. Aerial imagery and local mapping have been used to calculate the length, size and component parts of each option in order to generate an option cost.

3.2.7. Once costed, the following uplifts were applied:

- Stats (10% of construction cost)
- Preliminaries (15% of construction cost)
- Design (10% of construction cost)
- Supervision (11% of construction cost)
- Land and property acquisition (costed based on number of dwellings and area of land)
- Risk Allowance (20% of construction cost)
- Optimism Bias (Concept Stage: 44% for Highway / 66% for Structures).

3.2.8. Optimism Bias (OB) refers to the tendency for those involved in projects, such as funders, managers or beneficiaries, to be too optimistic in terms of forecasting project costs, scale, timing and benefits. To redress this tendency appraisers should make explicit, empirically based adjustments to the estimates of a project's costs, benefits, and duration. Accordingly, any appraisal should make an appropriate Optimism Bias adjustment based on how much is known about a potential scheme and how much preparatory and design work has been undertaken. Further information on the application of Optimism Bias can be found in the Department for Transport's (DfT) TAG guidance note A1.21. Table 3.1 below shows the OB percentages that should be added to the schemes at the various stages of their development.

Table 3.1: Recommended Optimism Bias Adjustments (WebTAG Unit A1.2 Scheme Costs)

Table 8 Recommended optimism bias uplifts for different projects at different stages of the life of a transport project				
Category	**Types of projects**	**Stage 1**	**Stage 2**	**Stage 3**
Roads	Motorway, Trunk roads, Local roads, Bicycle Facilities, Park and ride, Bus lane schemes, Guided buses on wheels	44%**	15%	3%**
Light Rail	Metro, Light rail, Guided buses on tracks	66%**	40%	6%**
Conventional Rail	Network rail enhancement projects	64%*	18%*	4%*
Fixed Links	Bridges and Tunnels	66%**	23%	6%**
Building Projects	Stations and Terminal buildings	51%**	-	4%**
IT Projects	IT system development	200%**	-	10%**
Sources: Flyvbjerg (2004), UCL (2015)* and Mott Macdonald (2002)**				

3.2.9. An example of an option cost, showing the various components and how they are costed, is shown beneath in Figure 3.2.

TAG unit A1-2 Scheme Costs, https://www.gov.uk/government/publications/webtag-tag-unit-a1-2-scheme-costs-july-2017

Option EB_1

			Unit	Quantity		Cost
Main Carriageway	Off line D2AP	(m)	£ 2,600		m	£ -
	Off line D2AP on Embankment	(m)	£ 3,200		m	£ -
	On Line D2AP	(m)	£ 1,600		m	£ -
	Off line S2AP	(m)	£ 1,735	6,368	m	£ 11,048,480
	Width - Excavation				m	
	Width - Embankment (D2)				m	
	Excavation Depth				m	
	Embankment Height				m	
Junctions	Grade Separated	(ea)	£ 15,000,000		No	£ -
	Roundabouts	(ea)	£ 430,000	4	No	£ 1,720,000
	Roundabouts on Embankment	(ea)	£ 482,988		No	£ -
	Major/Minor	(ea)	£ 247,800	2	No	£ 495,600
	Major/Minor on Embankment	(ea)	£ 266,876		No	£ -
	Left in/out	(ea)	£ 105,000		No	£ -
	Left in/out on Embankment	(ea)	£ 124,076		No	£ -
Structures	Accommodation Structures	(ea)	£ 500,000		No	£ -
	Cut/Cover Tunnel	(m)	£ 80,625		m	£ -
	Retaining walls	(m)	£ 26,875		m	£ -
	Bridge	(m)	£ 268,750	89	m	£ 23,918,750
	Large Culvert (2 - 4 m)	(ea)	£ 75,000		No	£ -
	Small Culvert (<2m)	(ea)	£ 20,000	7	No	£ 140,000
Earthworks	Excavation	(m3)	£ 7	0	m3	£ -
	Disposal	(m3)	£ 23	0	m3	£ -
	Import	(m3)	£ 28	0	m3	£ -
				Sub Total		£37,322,830
Percentages	Accommodation works		2.50%		£	933,071
	Preliminaries		15.00%		£	5,598,425
	Statutory Undertakers		10.00%		£	3,732,283
	Landscaping		3.00%		£	1,119,685
	Supervision		11.00%		£	4,105,511
	Design		10.00%		£	3,732,283
				Sub Total		£19,221,257
Land (cost £)						
	Agricultural (hectare)	(ha)	£ 37,500	13	£	479,271.60
	Residential Properties Part 1	(ea)	£ 277,500		£	-
				Sub Total		£479,272
Risk Allowance			20%		£	11,404,672
Optimism Bias	Concept Stage		45%		£	30,792,614
Option Cost				**Grand Total**		**£99,220,645**

Figure 3.2: Example of Option Costing (Eastern Bypass Option 1)

3.2.10. The Strategic Assessment of the New River Crossing, NILR and the A141 Re-alignment Options are discussed in turn beneath.

3.3. New River Crossing (Eastern Bypass and Town Centre)

Options Assessed

3.3.1. The options assessed for a New River Crossing include options developed for both an Eastern Bypass and for a New River Crossing in the Town Centre. The options devised for a new Town Centre river crossing were developed as an alternative to options for an Eastern Bypass in an attempt to reduce infrastructure costs and to maximise the potential to re-route trips from Broad Street and the existing Town Bridge.

3.3.2. Eleven options have been assessed for a potential New River Crossing. For assessment purposes, some conceptual alignments for these options were selected. The conceptual alignments of these options, as used for modelling and costing, are shown in Figure 3.3, with further information about each provided in Table 3.1.

Figure 3.3: Eastern Bypass and Town Centre River Crossing Option Locations

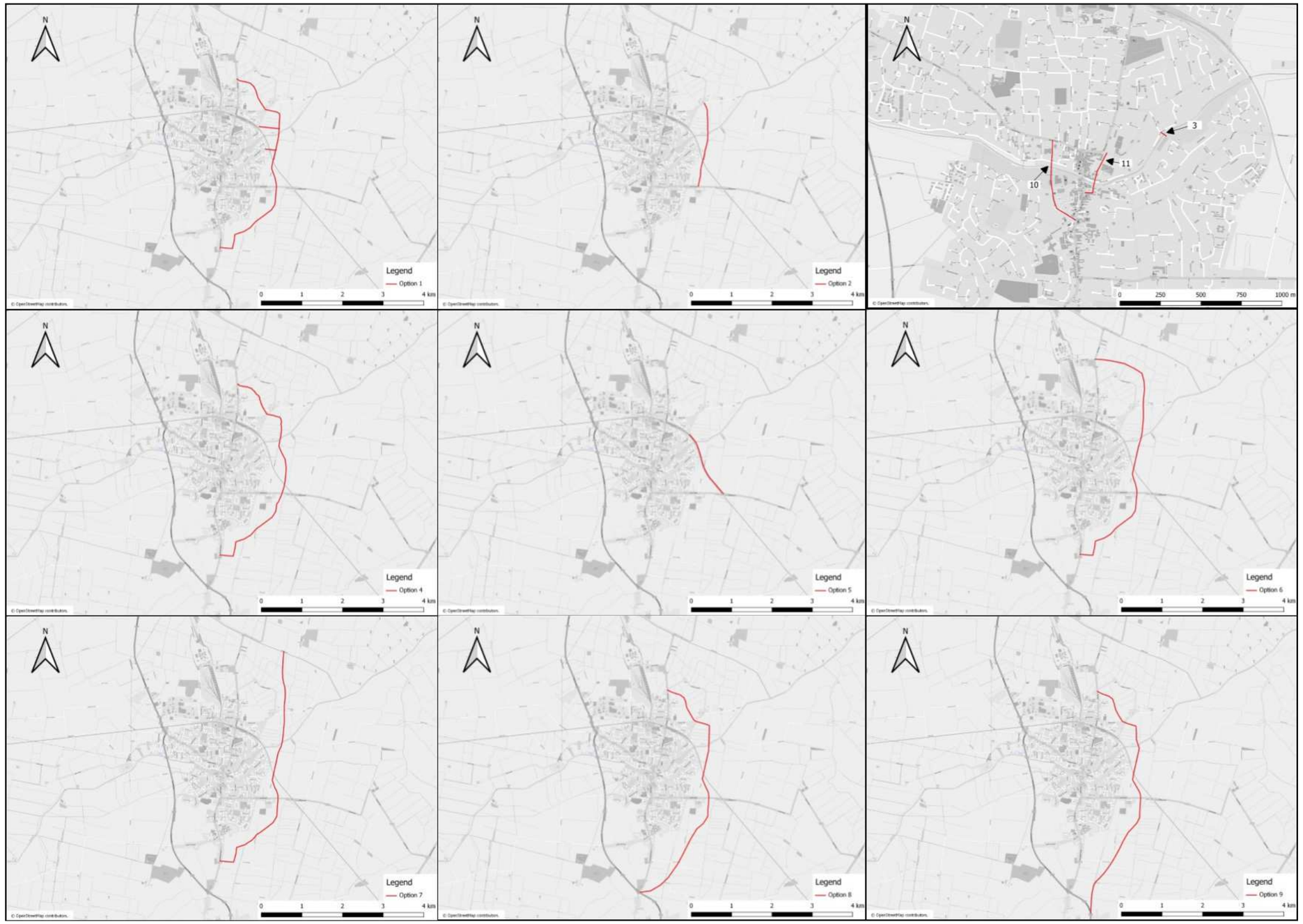

Table 3.2: Description of New River Crossing Options

Option	From	To	Length
1	B1101 / Flaggrass Hill Road	B1101 / Lambs Hill Drove	6.4km
2	Creek Road / Flaggrass Hill Road	Upwell Road / Silt Road	2.1km
3	North Drive	Wigstone's Road	0.5km
4	B1101 / Flaggrass Hill Road	B1101 / Lambs Hill Drove	5.8km
5	Creek Road (Level Crossing)	Upwell Road (Level Crossing)	1.7km
6	B1101 / Longhill Road	B1101 / Lambs Hill Drove	6.6km
7	Coldham Bank	B1101 / Lambs Hill Drove	6.1km
8	B1101 / Flaggrass Hill Road	Mill Hill Roundabout	6.4km
9	B1101 / Flaggrass Hill Road	A141 Isle of Ely Way	7.1km
10	B1099 Dartford Road	Brewin Chase / City Road	0.5km
11	B1101 / Creek Road	B1101 / Market Place	0.3km

Impact on Town Centre Trips

3.3.3. One of the expected benefits of a New River Crossing is that it would provide an alternative route for trips that are currently using the bridge in the Town Centre, particularly for trips to / from eastern areas of March where there is no alternative route. These trips contribute significantly to congestion along Broad Street and through the Broad Street / Dartford Road / Station Road junction.

3.3.4. To understand the level of benefit that each options has in reducing trips through the Town Centre, an assessment of the potential reduction in vehicle trips over the existing town bridge has been undertaken for the AM and PM peak hours for the horizon forecast year (2031). Tables 3.2 and 3.3 below show the reduction in vehicle trips for each option compared to the Do Minimum scenario.

Table 3.3: Vehicle Trips, March Town Centre 2031 AM Peak Hour (08:00 – 09:00)

2031 AM	Northbound		Southbound	
Option	Town Bridge Demand Flow	Impact of Option	Town Bridge Demand Flow	Impact of Option
DM	1,111		745	
1	837	-274	518	-227
2	945	-166	658	-87
3	954	-157	623	-122
4	846	-265	550	-195
5	998	-113	690	-55
6	886	-225	589	-156
7	866	-245	573	-172
8	823	-288	538	-207
9	769	-342	517	-228
10	608	-503	426	-319
11	800	-311	466	-279

3.3.5. The results show that all of the modelled options remove vehicle trips from March Town Centre, and specifically the Town Centre bridge. Options 9, 10 and 11 are the best performing options in terms of removing both northbound and southbound vehicle trips from the current town bridge. Both Options 10 and 11 are Town Centre -based options and are therefore relatively close to the existing river crossing, meaning that they will have the greatest potential for rerouting traffic from the existing Town Centre bridge. Option 9 is the longest bypass option, travelling from the north of March, bypassing the town completely from Flaggrass Hill Road in the north to the A141 Isle of Ely Way to the south of March.

Table 3.4: Vehicle Trips, March Town Centre 2031 PM Peak Hour (17:00 – 18:00)

2031 PM	Northbound		Southbound	
Option	Town Bridge Demand Flow	Impact of Option	Town Bridge Demand Flow	Impact of Option
DM	904		773	
1	661	-243	523	-250
2	763	-141	666	-107
3	770	-134	681	-92
4	668	-236	577	-196
5	762	-142	709	-64
6	729	-175	611	-162
7	693	-211	613	-160
8	663	-241	543	-230
9	593	-311	551	-222
10	567	-337	508	-265
11	674	-230	558	-215

3.3.6. As with the AM peak hour, all of the modelled options remove vehicle trips from March Town Centre. The results show the directionality of vehicles travelling through March in the AM and PM peak hours. All of the options remove more vehicle trips from the town bridge in the southbound direction during the AM peak hour, although more vehicle trips are removed in the northbound direction in the PM peak hour. This would indicate that many vehicles are travelling from the north of March to the south in the AM peak hour, and vice versa in the PM peak hour.

3.3.7. As with the AM peak hour, Option 10 removes the most vehicles in both the northbound and southbound direction, with Options 8, 9 and 11 also removing a significant number of vehicle trips.

Network Wide Benefits

3.3.8. The following tables highlight the impact of each of the options on the overall model network. These statistics demonstrate how each option affects the network as a whole rather than just the river crossing in March Town Centre.

3.3.9. A key indicator within the network wide statistics is Over Capacity Queues (OCQ), which represents the number of vehicles still queuing on the network at the end of the one-hour modelled time period.

3.3.10. An OCQ is caused by a junction or link operating beyond capacity and indicates whether the increased vehicle demand on the highway network can be accommodated.

Table 3.5: Network Wide Statistics 2031 AM Peak Hour (08:00 – 09:00)

2031 AM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	249	48	596.8	562.9	33.9	893.8	29270.3	32.7	2714.5
Op1	177.1	21.2	565.5	543.8	21.6	763.8	29881.6	39.1	2558.2
Op2	201.9	26.7	585.6	559.9	25.7	814.2	29490.1	36.2	2600.8
Op3	204.6	29	592	565.5	26.5	825.6	29240.2	35.4	2597.9
Op4	178.8	21.2	566.5	543.9	22.6	766.5	29897.4	39	2563.9
Op5	210.3	30	588	560.8	27.3	828.3	29324.3	35.4	2614.2
Op6	183.9	23.6	568.2	545.1	23	775.6	29869.9	38.5	2578.6
Op7	180.6	21.6	563.8	542.8	21.1	766.1	29849	39	2565.3
Op8	178	18.7	569	549.9	19.2	765.7	30169.8	39.4	2579.6
Op9	178	12.5	575.7	555.1	20.7	766.3	31083.5	40.6	2621.9
Op10	187.9	20.7	584.5	558.2	26.3	793	29043	36.6	2520.1
Op11	211.8	25.9	589.3	562	27.3	826.9	29148.9	35.2	2605.9

3.3.11. Table 3.4 above shows that all options would reduce the OCQ from 48 passenger car unit hours (PCU. Hr) in the AM peak hour 2031 DM scenario to an OCQ within the 20 – 30 PCU. Hr range. Option 9 is the best performing option for reducing OCQ on the network, with a result of 12.5 PCU. Hr.

Table 3.6: Network Wide Statistics 2031 PM Peak Hour (17:00 – 18:00)

2031 PM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	223.8	22.7	602.9	570.9	32	849.3	29585.8	34.8	2636.3
Op1	168.9	5.7	569.3	547.2	22.1	743.9	30450.2	40.9	2525.4
Op2	186.5	5.7	591.4	566	25.3	783.6	29810.9	38	2537.6
Op3	196.7	5.5	596.2	569	27.2	798.4	29479.7	36.9	2541.5
Op4	171.2	5.5	569.8	546.9	22.9	746.5	30447.8	40.8	2530.7
Op5	192.8	9.1	592.7	566.9	25.8	794.6	29592.1	37.2	2538.7
Op6	179.1	5.4	572.2	548.6	23.7	756.8	30383.3	40.1	2551.4
Op7	176.8	5.1	566.5	545.8	20.7	748.3	30469.4	40.7	2547
Op8	170.6	5	569.9	550.7	19.3	745.6	30745.5	41.2	2555.2
Op9	177.6	64	568	549	19.1	809.6	31560.9	39	2690.6
Op10	184.5	6	587.5	563.2	24.3	778	29249.8	37.6	2492.2
Op11	201.3	5.4	595.4	566.1	29.3	802.1	29380.4	36.6	2550.1

3.3.12. Table 3.5 above shows that all options except Option 9, would reduce the OCQ from 22.7 PCU. Hr in the PM peak hour 2031 DM scenario to an OCQ within the 5 – 10 PCU. Hr range. Option 9 significantly increases OCQ in the PM peak and further investigations has revealed that this is caused by the new roundabout on the A141 at Eastwood End, where the bypass joins the existing road network.

3.3.13. The results show that all of the options apart from Option 9 lead to an overall reduction in the amount of queuing across the network as a whole during the PM peak hour. Option 9 leads to an increase in overall queuing and further investigation has revealed that the majority of this extra queuing is located at the new roundabout junction that is created on the A141 at Eastwood End where the bypass joins the existing network.

Option Costing

3.3.14. High level cost estimates have been produced for each of the options. Table 3.6 below shows the assumptions made when generating these costs as well as the Total Cost. The scheme cost includes a 20% Risk Allowance and 44% Optimism Bias (or 66% for structures).

Table 3.7: Option Costs for New River Crossing Options (2019 prices)

Option	Length (m)	No. Roundabouts	No. Priority Junctions	No. Structures	No. Culverts	Approximate Cost £m (excl OB)	Approximate Cost £m (incl OB)
1	6.4km	4	2	2	7	68	99
2	2.1km	2	0	0	3	52	75
3	0.5km	1	0	1	0	16	23
4	5.8km	4	2	2	5	62	89
5	1.7km	2	1	1	1	22	32
6	6.6km	4	2	2	6	65	94
7	6.1km	3	1	2	5	57	82
8	6.4km	3	2	2	11	64	92
9	7.1km	4	2	2	12	67	96
10	0.5km	1	0	1	0	16	23
11	0.3km	1	0	1	0	16	23

Economic Assessment (Value for Money)

3.3.15. The model results and scheme costs for each of the options have been run through TUBA to calculate a BCR for each option. TUBA gives a BCR figure for each option, and the Department for Transport uses the following categories to determine the Value for Money that BCR represents:

- Low Value for Money if BCR = 1.0 to 1.5
- Medium Value for Money if BCR = 1.5 to 2.0
- High Value for Money if BCR = 2.0 to 4.0
- Very High Value for Money if BCR > 4.0.

3.3.16. A breakdown of the economic assessment results from TUBA is shown beneath in Table 3.8.

Table 3.8: New River Crossing Options Benefit Cost Ratios

Net Benefit/BCR Impact											
	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11
Net Present Value (NPV)	-27805	-28512	489	-21914	-5187	-28557	-16849	-25626	-41812	19368	17386
Benefit/Cost Ratio (BCR)	0.6	0.4	1.0	0.6	0.8	0.5	0.7	0.6	0.4	2.3	2.1
VFM Statement	Poor Value for Money	Poor Value for Money	Low Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money	High Value for Money	High Value for Money

3.3.17. Table 3.8 shows that the majority of the Eastern Bypass Options return a low BCR and VFM Statement of 'Poor Value for Money'. However the two Town Centre river crossing options (10 and 11) offer 'High Value for Money' with BCRs of 2.3 and 2.1 respectively, although it should be noted that these fall within the lower range of the 'High Value for Money' category which describes BCRs of between 2.0 and 4.0.

3.3.18. The Strategic Assessment for the New River Crossing has shown that Option 10 and Option 11 are the only two to offer an acceptable value for money (BCR of greater than 2.0). This is because both of these options are closest to the existing Town Centre Bridge and therefore have the greatest potential to attract trips away from the existing bridge with a minimal impact on journey distance (a key factor in driver route choice and the economic assessments). Options 1 to 9 are all located further out from the Town Centre, where demand is much lower, and therefore appeal to fewer users and attract less trips. These options also have longer routes and therefore much higher infrastructure costs. Options 10 and 11 have significantly lower costs over all of the other options (excluding option 3). As a result of these two factors, Options 1 to 9 all return a poor value for money.

3.3.19. Further consideration has been given to Option 10 and Option 11 based on the results of the economic assessment, with Options 1 to 9 being dismissed from this study. It should be noted that although lower than New River Crossing options, the costs of Option 10 and 11 are still significantly higher than other options being considered within the study.

3.3.20. A review of Option 10 and Option 11 has highlighted that Option 10 offers the better use of existing infrastructure and provides more opportunity for building a new bridge to provide the river crossing. The salient points from the review are shown beneath.

Option 10

- Less constrained site
- Existing adjoining network more appropriate – makes use of existing routes through March Town Centre without too much diversion.
- Ties in with Fenland District Council's strategy to consolidate car parking.
- Fenland District Council own some land to the south of the river
- Has a better BCR than Option 11, offering greater transport user benefits.

Option 11

- Adjoining network much more constrained, particularly along Elwyn Road and Market Place, with a one-way system currently in place and housing along the roads.
- There are more buildings in the area to the east than in the area to the west of the current town bridge, so there is more scope for impact on the built form.
- Less appropriate for HGV movements due to narrow and constrained road network.

3.3.21. The review of location of Option 10 and Option 11 has identified that Option 10 (to the west of the existing bridge) would be preferable to Option 11 (to the east of the existing bridge). On this basis, Option 10 has been retained as a potential viable option for further assessment. Any new River Crossing would be subject to funding decisions and further work.

Option 10 Sensitivity Testing

3.3.22. A series of modelling sensitivity tests have been undertaken on Option 10 to understand what impact the New River Crossing would have on the potential for public realm schemes within the Town Centre, and specifically along Broad Street. Fenland District Council and March Town Council have an aspiration to improve the public realm via developing the cultural, retail and leisure offer in March, to make the town an even more engaging and attractive place to visit.

3.3.23. The sensitivity tests also test the impact of the current Future High Street Fund (FHSF) proposals to significantly increase the amount of public realm space along Broad Street by removing traffic lanes. Although designs are still being finalised for the FHSF bid, the concepts are based on the provision of one lane of traffic in each direction along Broad Street, with a roundabout at the junction of Broad Street with Dartford Road and Station Road.

3.3.24. The purpose of the sensitivity tests is to understand the impact that removing varying degrees of capacity from the Town Centre would have on the economic viability of a New River Crossing, providing insight into whether or not a New River Crossing is required to realise the aspirations for regenerating the Town Centre.

3.3.25. The tests undertaken were:

- Option 10 – New bridge to the west + Broad Street / Town Bridge remains fully open (in its current form)
- Option 10a – New bridge to the west + Broad Street / Town Bridge as a single lane in each direction (allowing for approximately half of Broad Street to become public realm)
- Option 10b – New bridge to the west + Broad Street / Town Bridge completely closed to traffic (allowing for all of Broad Street to become public realm)
- Option 10c – No new bridge to the west + Broad Street / Town Bridge completely closed to traffic (allowing for a full public realm scheme)
- Option 10d - No new bridge to the west + Broad Street / Town Bridge reduced to one lane in each direction with the creation of a roundabout at the junction of Broad Street / Dartford Road / Station Road (allowing for approximately half of Broad Street to become public realm)

3.3.26. Figure 3.4 beneath provides a graphical representation of Option 10, 10a, 10b, 10c and 10d. Note that where a single lane of traffic in each direction along Broad Street is shown, there is no significance in strategic traffic modelling terms as to which side of the street is occupied by the road and which side is occupied by the public realm, this would be determined at later design stages.

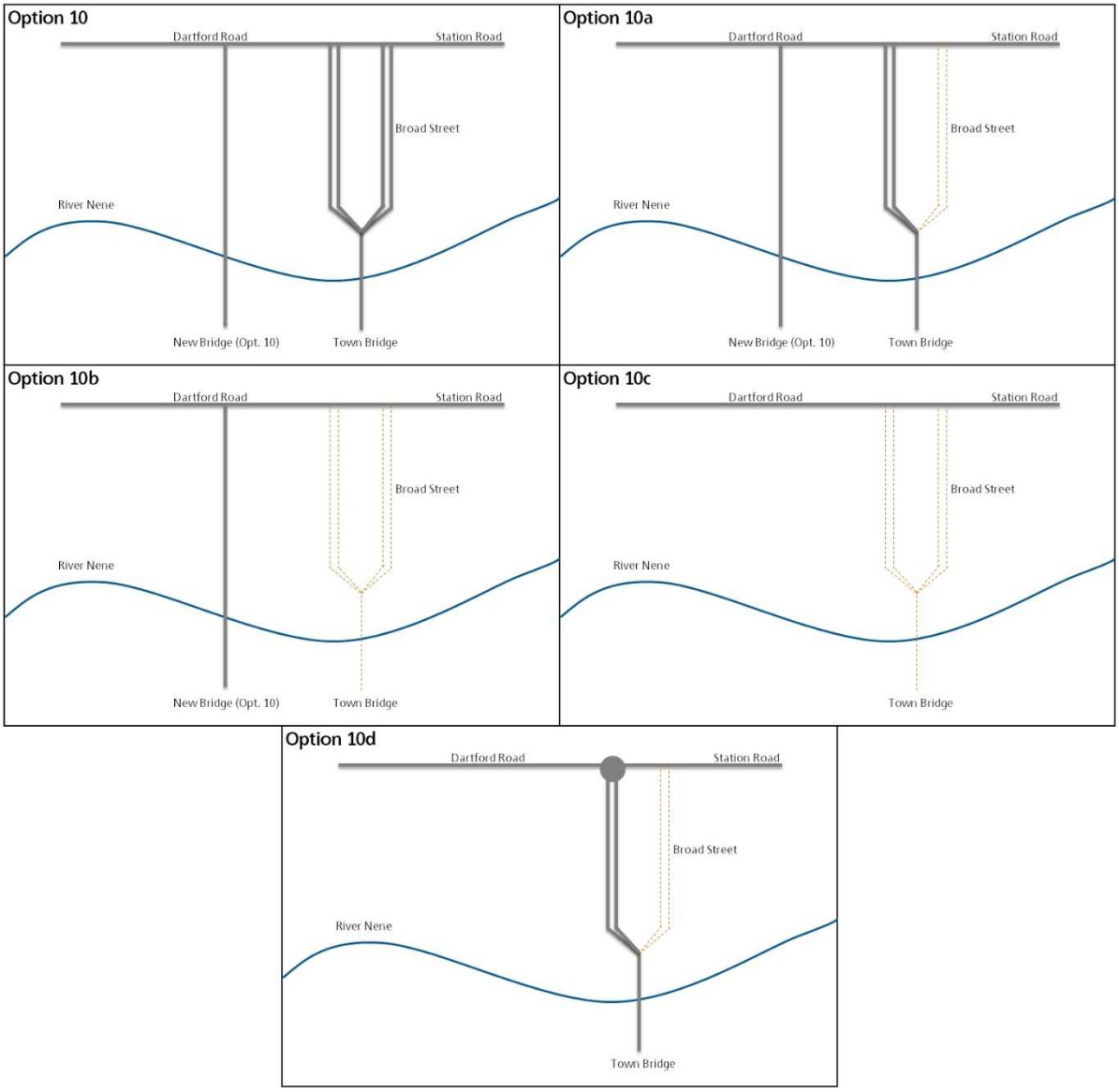

Figure 3.4: Options 10, 10a, 10b, 10c and 10d Sensitivity Tests

3.3.27. Each of these options have been modelled, and an economic assessment undertaken using TUBA to calculate BCRs for Options 10, 10a, 10b, 10c and 10d to give an indication of the level of benefit to transport users. Analysis of the model outputs and resultant BCRs are discussed beneath.

Table 3.9: AM Peak Hour (08:00 – 09:00) Network wide statistics for Options 10, 10a, 10b, 10c and 10d

2031 AM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	249	48	596.8	562.9	33.9	893.8	29270.3	32.7	2714.5
Op10	187.9	20.7	584.5	558.2	26.3	793	29043	36.6	2520.1
Op10a	185.4	22	585.5	559.2	26.3	792.9	29096.4	36.7	2520
Op10b	204.4	68.4	607.1	572.7	34.5	879.9	29579.4	33.6	2693.2
Op10c	332	1080	763.8	670	93.9	2175.8	36613	16.8	4732.6
Op10d	234.8	50.7	593.4	561.4	32	879	29071.7	33.1	2651.8

3.3.28. Table 3.9 above shows that the DM OCQ is 48 PCU hours in the 2031 AM peak hour scenario, and Delays are 33.9 PCU hours. Options 10 and 10a reduce the OCQ and delays experienced compared to the DM scenario.

3.3.29. However, Options 10b and 10c increase the OCQ and delays. Option 10c significantly increases both OCQ and delays compared to the other options. This is easily explained, as Option 10c is the complete closure of the existing river crossing with no new provision made. Instead, vehicles must re-route around the town using the A141.

3.3.30. Option 10d shows a slight increase in OCQ compared to the DM scenario. Further investigation within the model indicates that Option 10d removes delay at the top of Broad Street, however it adds a small amount of delay south of the Town Centre at St Peters Road.

3.3.31. Figure 3.5 beneath shows the difference in delay from the DM and Option 10d scenario, with green indicating an increase in delay and blue indicating a decrease. The network wide statistics also show Option 10d leads to a decrease in delay as well as Total Travel Time and Travel Distance when compared to the DM scenario.

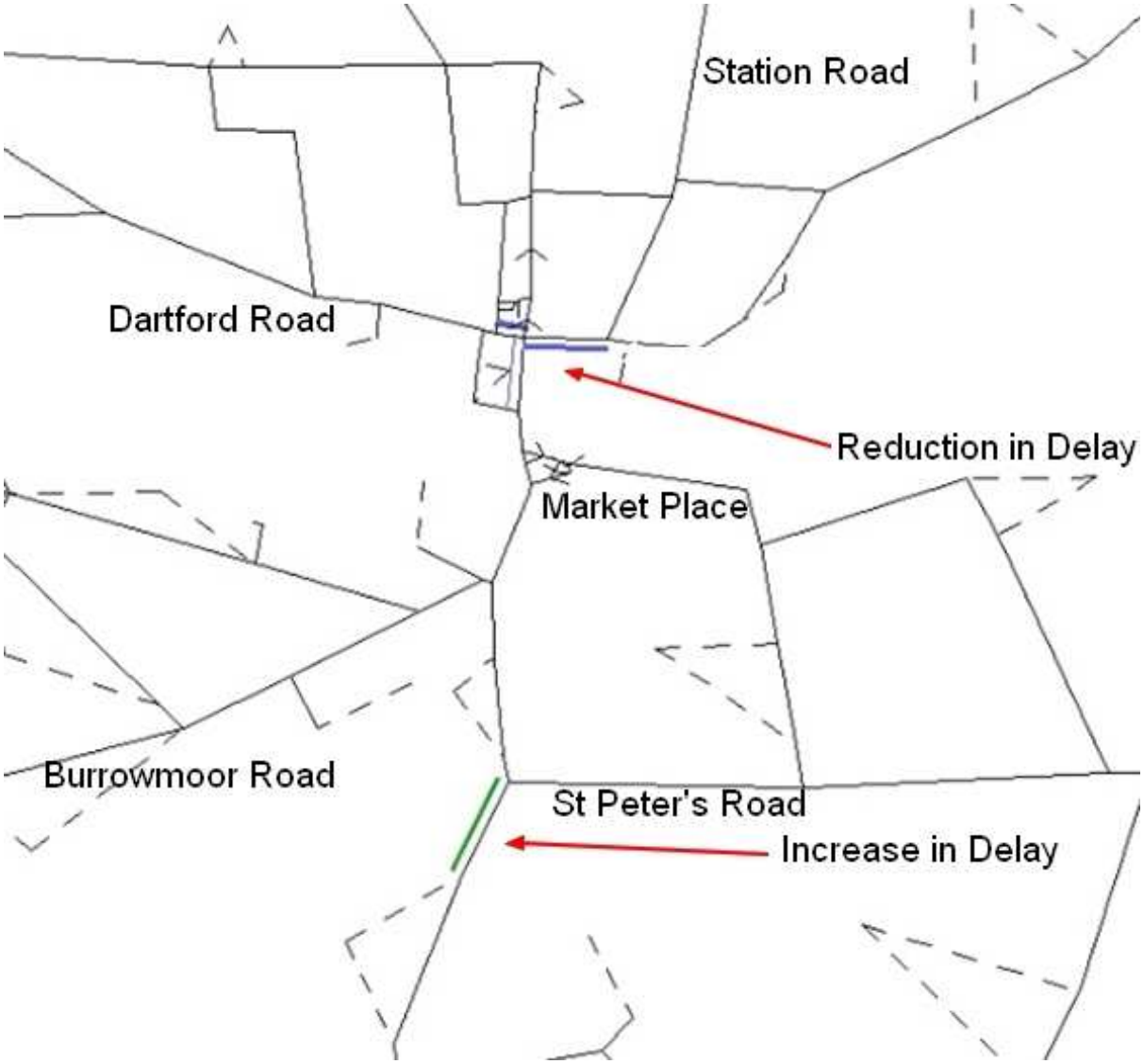

Figure 3.5: Delay Comparison between the DM and Option 10d Scenarios in the AM Peak Hour

3.3.32. Option 10a performs the best of all the options in the 2031 AM peak hour with a lower overall Total Travel Time and a higher Overall Average Speed. Total Travel Time and Overall Average Speed are calculated from all vehicle trips undertaken on the model network during the modelled time period. A lower Total Travel Time indicates that the network is operating in a less constrained manner, whilst a higher Overall Average Speed indicates vehicles are able to move more freely around the network.

3.3.33. However, it should be noted that all options apart from 10b and 10c, offer a general improvement over the DM scenario during the AM peak hour.

3.3.34. Figure 3.6 below shows where the delays would occur in the Option 10c scenario, with green showing an increase in delay and blue indicating a decrease in delay. The thicker the line the greater the increase / decrease in delay.

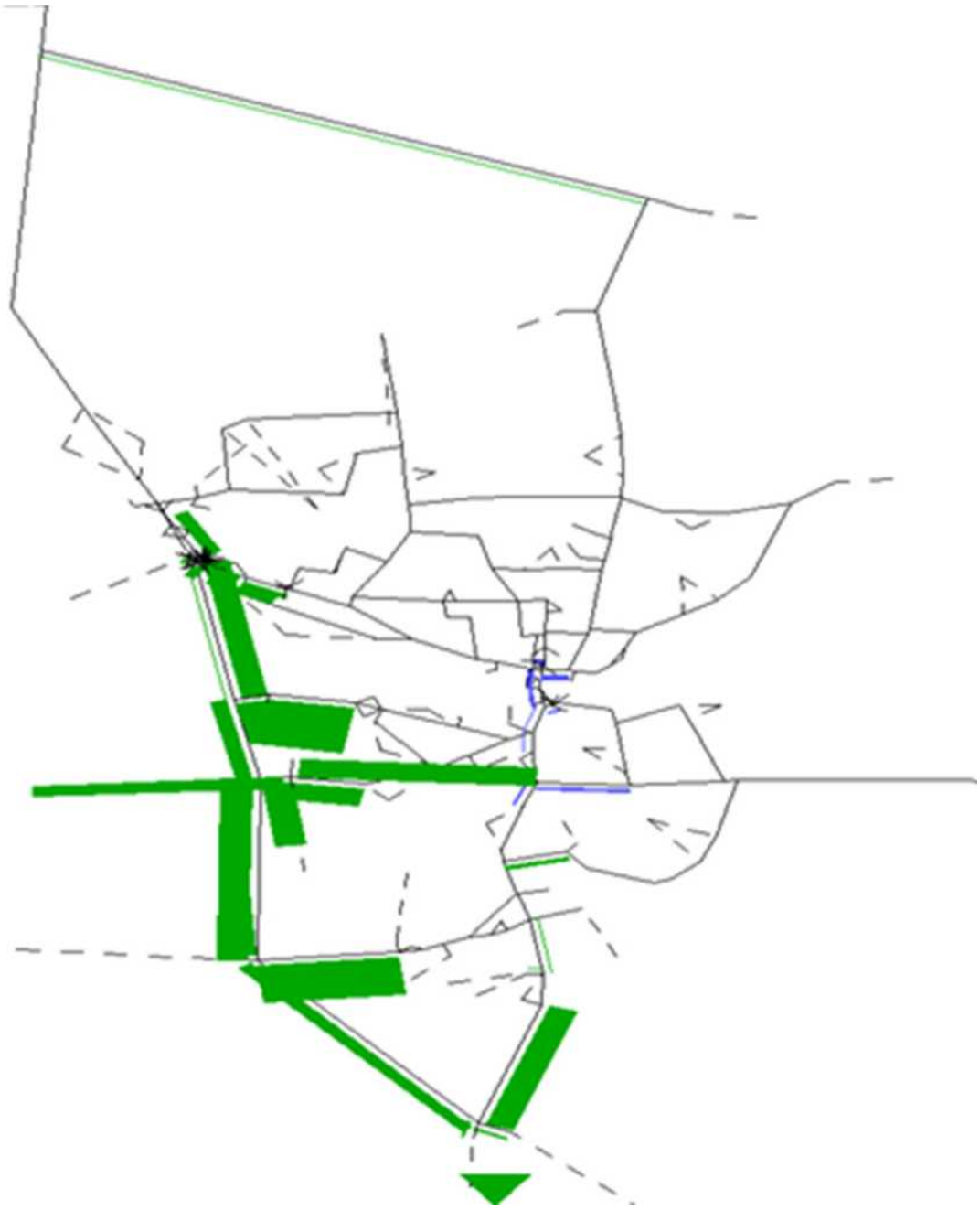

Figure 3.6: AM Peak Hour (08:00 – 09:00) Delay (seconds) for Option 10c

3.3.35. The results of the 2031 sensitivity test for the PM peak hour are shown in Table 3.10 beneath.

Table 3.10: PM Peak Hour (17:00 – 18:00) Network wide statistics for Options 10, 10a, 10b, 10c and 10d

2031 PM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	223.8	22.7	602.9	570.9	32	849.3	29585.8	34.8	2636.3
Op10	184.5	6	587.5	563.2	24.3	778	29249.8	37.6	2492.2
Op10a	178.5	5.2	588.3	563.9	24.4	772	29301.8	38	2483.8
Op10b	204.9	9.8	615.1	582.6	32.5	829.8	39993.2	36.1	2615.4
Op10c	286.8	876.8	741.2	672.3	68.8	1904.8	36158.7	19	4345.7
Op10d	194.9	5.1	595.5	566.5	29	795.5	29309.2	36.8	2512.2

3.3.36. As with the 2031 AM peak hour scenario, Table 3.10 shows Options 10 and 10a decrease the OCQ and delays from that shown in the DM scenario.

3.3.37. Unlike the AM peak hour (which saw a slight increase), Option 10d shows a significant decrease in OCQ compared to the DM scenario. Option 10b also decreases the OCQ experienced during the PM peak hour compared to the DM scenario.

3.3.38. Again, Option 10c has a significant impact on increasing OCQ and delays experienced against the DM scenario, due to the complete closure of Broad Street as a through route.

3.3.39. Similar to the 2031 AM peak hour, Option 10a has a lower overall Total Travel Time and higher Overall Average Speed in the 2031 PM peak hour than the other options.

3.3.40. Figure 3.8 below shows where the delays would occur under option 10c, with green showing an increase in delay and blue indicating a decrease in delay. The thicker the line the greater the increase/decrease in delay.

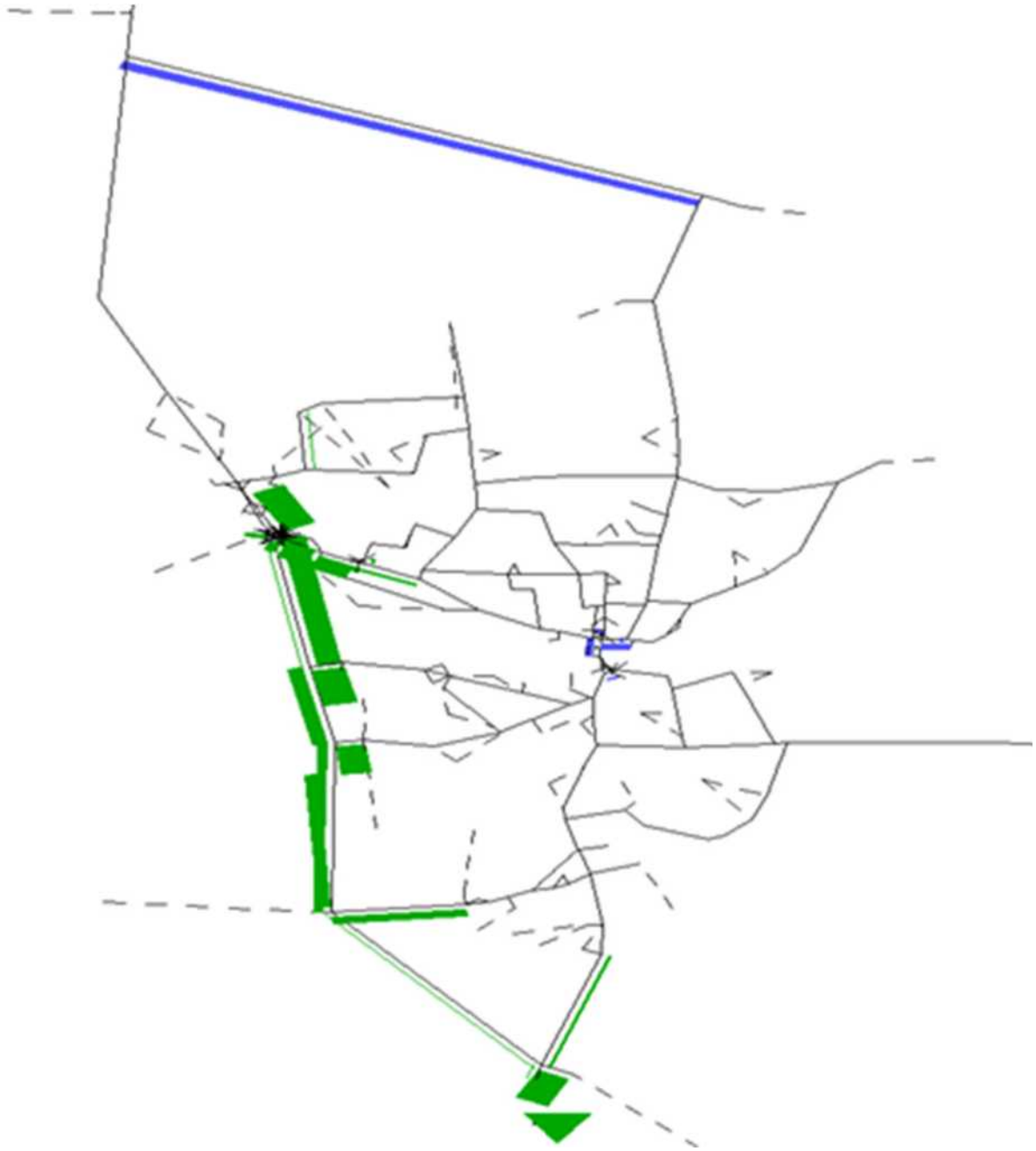

Figure 3.7: PM Peak Hour (17:00 – 18:00) Delay (seconds) for Option 10c

3.3.41. The BCRs for the sensitivity test options are shown beneath in Table 3.11. Please note that the benefits only represent transport user benefits, and not wider economic benefits from any subsequent regeneration of the Town Centre.

Table 3.11: Sensitivity Test BCRs

Net Benefit/BCR Impact					
	Option 10	Option 10a	Option 10b	Option 10c	Option 10d
Net Present Value (NPV)	19368	19786	-12129	-720243	14058
Benefit/Cost Ratio (BCR)	2.3	2.3	0.2	-1078.8	9.7
VFM Statement	High Value for Money	High Value for Money	Poor Value for Money	Very Poor Value for Money	High Value for Money

3.3.42. The sensitivity testing has highlighted Options 10a and 10d to be the best performing. Option 10d returns a significantly better BCR due to the much lower costs involved than Option 10a. Option 10d removes the construction costs and difficulties associated with building a New River Crossing in the centre of town, whilst still providing network wide benefits. Although 10a includes some significant construction costs associated with the New River Crossing, its overall network wide benefits are the greatest of all the sensitivity test options. Both Options 10a and 10d have been progressed for further Operational Assessment.

New River Crossing Summary

3.3.43. The modelling of the New River Crossing options has identified that a new crossing in the Town Centre is considered to be more viable than an Eastern Bypass alignments for a number of reasons. The model results indicate that a new Town Centre crossing has the greatest potential to divert existing vehicle trips away from the current Town Centre road infrastructure. Aligned with these results, the potential costs of a new crossing in the Town Centre are considerably less than the costs of any new bypass option.

3.3.44. Of the two potential Options for a River Crossing in the Town Centre, Option 10 (river crossing to the west of the existing crossing) is considered more viable than Option 11 (river crossing to the east of the existing crossing). Option 10 offers the better use of existing infrastructure and provides more opportunity for building a new bridge to provide the river crossing.

3.3.45. Further sensitivity testing on Option 10 suggests that there is the potential for public realm improvements to be made along Broad Street, at the expense of highway capacity, without the need for a New River Crossing. The Operational Assessment will test this further.

3.3.46. The reduction of Broad Street to a single lane in each direction enables the removal of the existing traffic signals at the junction with Dartford Road and Station Road (as pedestrians can safely cross one lane of traffic). The removal of the signals takes away transient delay which in turn provides further capacity to offset the loss of one lane in each direction.

3.3.47. It should be noted that the Operational Assessment using more detailed microsimulation modelling software may identify capacity issues that are not identified by strategic transport modelling, particularly at junctions. To guard against this, both options 10a and 10d will be considered during the Operational Assessment phase of the study.

3.4. Northern Industrial Link Road

3.4.1. Twelve initial options have been assessed for the NILR. These alignments were developed during the Option Development Workshop and in subsequent discussions with highway designers. Proposals for a NILR were also investigated as part of the 2013 March Area Transport Strategy, and have been incorporated into this assessment.

3.4.2. These alignments that have been assessed are shown in Figure 3.8 with a more detailed description provided beneath in Table 3.12.

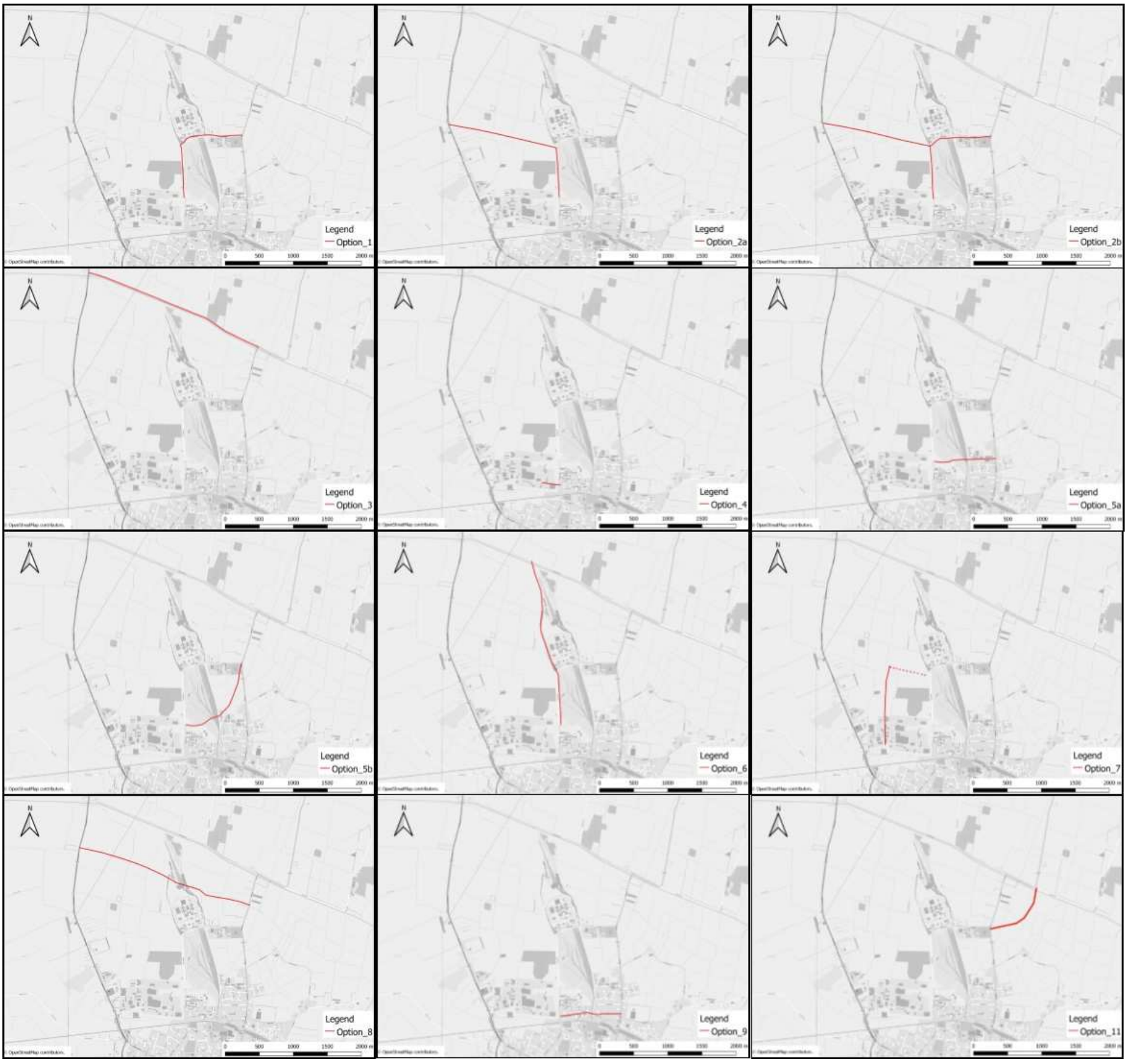

Figure 3.8: Northern Industrial Link Road (NILR) Option Locations

Table 3.12: Description of Northern Industrial Link Road Options

Option	From	To	Length	Notes
1	Hundred Road	Longhill Road	1.9km	New roundabout at Longhill Road/B1101
2a	Hundred Road	A141 Wisbech Road	2.6km	New roundabout at junction with A141
2b	Hundred Road	A141 Wisbech Road and Longhill Road	3.3km	New roundabout at A141 and B1101
3	Twenty Foot Road/A141	Twenty Foot Road/B1101	2.7km	Upgrade of exisitng Twenty Foot Road
4	Hundred Road	Hostmoor Avenue	0.3km	Would require CPO and demolition of houses
5a	Melbourne Avenue	Marwick Rd/B1101	0.9km	Requires new bridge over the railway
5b	Melbourne Avenue	Longhill Road/B1101	1.3km	Requires new bridge over the railway
6	Hundred Road	Twenty Foot Road	2.5km	Requires new bridge over Twenty Foot River
7	Thorby Avenue	A1101 and Longhill Road	3.4km	New roundabout at A1101
8	B1101	A141	2.6km	New roundabouts at B1101 and A141
9	Hundred Road	B1101	0.9km	Upgrade of Norwood Road
11	B1101/Twenty Foot Road	B1101/Longhill Road and B1101/Flaggrass Hill Road	1.7km	New roundabouts at Twenty Foot Road, Longhill Road and Flaggrass Hill Road

Option Modelling and Results

3.4.3. An initial sifting of the NILR options was undertaken at a steering group meeting. Potential issues with some of the options were highlighted, which included the need for land acquisition, as well as some options requiring considerable infrastructure over the Network Rail Marshalling Yard. Table 3.13 below summarises the discussions from the Member Steering Group meeting. As a result of this exercise, only Options 1, 2a, 2b, 6, 7, 8 and 11 were progressed to the Strategic Assessment.

Table 3.13: Initial Sifting of Northern Industrial Link Road (NILR) Options

Option	Option Description	Comments	Progress to Strategic Assessment
1	Improvements to Hundred Road and link through to Longhill Road	There is a need to liaise with HMP Whitemoor	Yes
2b	Improvements to Hundred Road and links to A141 and Longhill Road	Assess this option but without the closure to Twenty Foot Road	Yes
3	Improvements on Twenty Foot Road	Little benefit seen in pursuing this option, due to it being located north of March and not in the immediate study area	No
4	New link connecting Hostmoor Avenue and Hundred Road	Does not address issues to the east of March	No
5a/b	New link from Melbourne Avenue/Hundred Road roundabout to B1101 Elm Road	Concerns about the number of businesses that would be affected by works. Also large amounts of infrastructure needed.	No
6	Improvements to Hundred Road and link to Twenty Foot Road	Opens significant parcals of land for growth	Yes
7	Extension of Thorby Avenue to the north	Private road with increasing number of businesses. Will need close consultation with stakeholders	Yes
8	New link road between A141 and B1101 to the north of March	May remove trips through the centre of March	Yes
9	Upgrade Norwood Road	Concerns with proximity of scheme to a nature reserve. Concerns over land acquisition.	No
11	Continue B1101 south with a new Bridge over Twenty Foot River and connect to Longhill Road	No comments	Yes

3.4.4. To understand the potential impact on vehicle routing of each option assessed, the demand flows have been extracted from the central point of each NILR alignment, by direction. These are shown in Table 3.14 beneath.

Table 3.14: Expected Demand Flow (No. of vehicles) 2031 AM Peak Hour

2031 AM Option	Northbound (No. of vehicles)	Southbound (No. of vehicles)	Two-Way Flow (No. of vehicles)
1	87	154	241
1a	59	74	133
2a	42	40	82
2b	38	41	79
6	46	82	128
7	47	77	124
7a	47	77	124
8	132	35	167
11	199	205	404

3.4.5. Whilst all of the options experience demand in the AM peak hour in both directions, it is evident that some of the options experience greater demand, these are options 1, 8 and 11. The demand flow for Option 11 is fairly balanced in both directions, whereas Options 1 and 8 attract more trips in one direction that the other. Option 1 has greater flow in the southbound direction, indicative of vehicles commuting from the north of March (and beyond) to the industrial area and the A141. Option 8 has a greater flow in a northbound direction from the B1101 to the A141.

3.4.6. Further Select Link Analysis work on Options 1, 8 and 11 indicates that the demand flows represent strategic trips rather than local. That is, the vehicles travelling through the option links are mainly originating from outside of the March Town Urban Area.

Table 3.15: Expected Demand Flow (No. of vehicles) 2031 PM Peak Hour

2031 PM Option	Northbound (No. of vehicles)	Southbound (No. of vehicles)	Two-Way Flow (No. of vehicles)
1	261	275	536
1a	206	118	324
2a	57	46	103
2b	78	32	110
6	149	93	242
7	42	7	49
7a	42	7	49
8	207	139	346
11	241	254	495

3.4.7. Table 3.15 shows that all of the options attract traffic in the PM peak hour. As with the AM peak hour Options 1, 2b, 8 and 11 attract the highest volumes. Unlike the AM peak hour however, the flows for these options are fairly well balanced in both directions in the PM peak hour. Option 1 is expected to experience the highest overall level of demand.

3.4.8. Similar to the AM peak hour, the majority of the demand through the modelled options represents strategic trips through the network.

3.4.9. As with the New River Crossing options, the following tables highlight the overall network wide statistics for each option. These results highlight how each option affects the network as a whole and not just the trips travelling in and around the immediate area.

Table 3.16: Network Wide Statistics 2031 AM Peak Hour

2031 AM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	249	48	596.8	562.9	33.9	893.8	29270.3	32.7	2714.5
Op1	242.1	48.8	590	557	33	880.9	29178.7	33.1	2696.8
Op1a	246.6	48.1	594.8	561	33.8	889.5	29272.7	32.9	2709.5
Op2a	256.4	46.4	593.6	561.2	32.4	896.4	29200.1	32.6	2713.9
Op2b	249.7	48.9	589	556.1	32.8	887.6	29101.1	32.8	2700
Op6	252	51.3	596.4	564.3	32.1	899.7	29201.2	32.5	2737.3
Op7	249.1	47.9	586.8	555.6	31.2	883.7	29037.5	32.9	2692.8
Op8	256.2	45.4	591.7	552	39.6	893.2	28625.9	32	2671.8
Op11	252.7	48.2	595.3	561.5	33.8	896.2	29288.8	32.7	2719.8

3.4.10. The network statistics in Table 3.16 above show that in the AM peak hour, none of the options significantly affect the network wide OCQ or Delays. Options 2a and 8 slightly reduce the OCQ whilst the rest of the options slightly increase this statistic. In terms of network delay, all of the options apart from Option 8 show a slight decrease in overall delay. Option 8 produces an increase in network delay during the AM peak hour. This demonstrates the benefit of the NILR options are fairly localised to the area during the AM peak hour.

Table 3.17: Network Wide Statistics 2031 PM Peak Hour

2031 PM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	223.8	22.7	602.9	570.9	32	849.3	29585.8	34.8	2636.3
Op1	212.2	10.3	584.9	554.5	30.4	807.4	29209	36.2	2570.5
Op1a	212.5	16.5	593.5	564.5	29	822.6	29396.6	35.7	2585.6
Op2a	225.2	18.6	598.4	568.3	30.1	842.1	29500.4	35	2616.8
Op2b	216.6	5.2	583.1	553.3	29.8	804.9	29118.1	36.2	2552.5
Op6	212.6	18.4	598.6	570.1	28.4	829.5	29471.7	35.5	2591.9
Op7	216.4	5.2	582.4	553.1	29.3	804	29088.3	36.2	2548.4
Op8	222.8	6.5	591.9	554.9	37	821.2	28934.7	35.2	2550.2
Op11	227.4	22.6	600.6	569.7	30.9	850.6	29588.1	34.8	2633.4

3.4.11. Unlike the AM peak hour, the network wide statistics shown above in Table 3.17 demonstrate that all of the options show a decrease in OCQ. None of the options has a significant impact on network delay, with all options except Option 8 showing a slight decrease in delay. This suggests that the introduction of a NILR has much wider network benefits during the PM peak hour.

Option Costing

3.4.12. High level cost estimates have been calculated for each of the options. Table 3.18 below shows the assumptions made when generating these costs as well as the current Total Cost. The scheme cost includes a 20% Risk Allowance and 44% Optimism Bias (or 66% for structures).

Table 3.18: Option Costs for Northern Industrial Link Road Options (2019 prices)

Option	Length (m)	No. Roundabouts	No. Priority Junctions	No. Structures	No. Culverts	Approximate Cost £m (excl. OB)	Approximate Cost £m (inc. OB)
1	1.9km	1	1	0	0	4	6
2a	2.6km	1	0	0	2	9	13
2b	3.3km	1	0	0	3	10	13
6	2.5km	0	1	1	3	30	43
7	3.4km	1	2	0	1	12	17
8	2.6km	2	0	0	3	10	15
11	1.7km	3	0	1	2	23	33

Economic Assessment

3.4.13. The results from the Economic Assessment of the NILR options are shown in Table 3.19.

Table 3.19: Northern Industrial Link Road Benefit Cost Ratios

Net Benefit/BCR Impact							
	Option 1	**Option 2a**	**Option 2b**	**Option 6**	**Option 7**	**Option 8**	**Option 11**
Net Present Value (NPV)	10791	-9916	3595	-26236	1216	-3914	-23987
Benefit/Cost Ratio (BCR)	**3.8**	**-0.2**	**1.4**	**0.1**	**1.1**	**0.6**	**-0.1**
VFM Statement	High Value for Money	Negative Value for Money	Low Value for Money	Poor Value for Money	Low Value for Money	Poor Value for Money	Negative Value for Money

3.4.14. The BCRs in Table 3.19 above indicate that whilst the majority of options (2a, 2b, 6, 7, 8 and 11) offer 'Low, Poor, or Negative Value for Money', Option 1 offers 'High Value for Money'.

3.4.15. Further investigation of Option 1 has shown that the benefit comes from creating a direct link between Hundred Road and B1101 Elm Road, which provides an alternative east – west route to Norwood Road. This is highlighted in Figure 3.9 below, where the blue indicates a decrease in vehicles and green indicates an increase in vehicles. Option 1 also attracted the highest demand flow (both directions) of any option during the PM peak hour, which is when the NILR had the most network wide benefit. Another significant factor in the higher BCR for Option 1 is that the cost of this option is less than half of any other option, as it has a shorter route and makes good use of the existing infrastructure along Longhill Road.

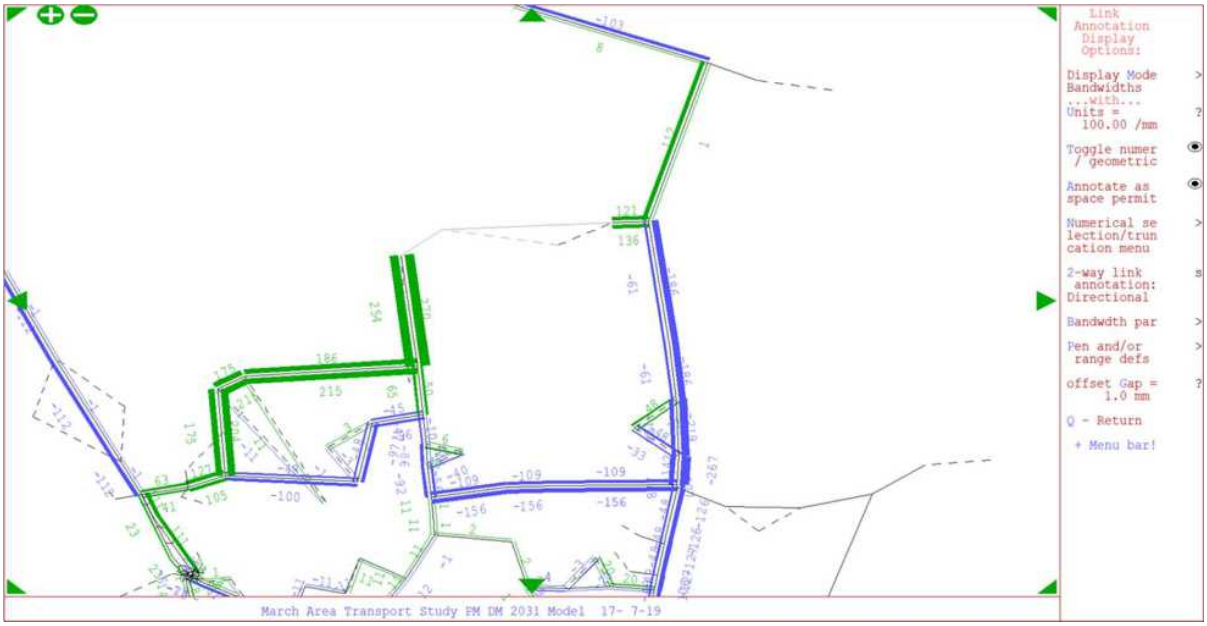

Figure 3.9: Demand flow difference between DM and Option 1 scenarios

3.4.16. As stated, Figure 3.9 above shows the change in vehicle flows between the DM scenario and Option 1. The blue lines represent a decrease in vehicle flows. With the addition of the new link road, more vehicles are using the link and no longer having to travel down the B1101 and across Norwood Road. Norwood Road contains a signal controlled single lane crossing over the railway bridge which adds considerable delay in the DM scenario. The link road in Option 1 contains no such constraint.

3.4.17. It should be noted that within the SATURN model it is not possible to (visually) compare data between two modelled scenarios if the infrastructure has not been coded into both networks. This can be seen in Figure 3.9 above at the western end of Longhill Road, where the light grey link representing the new connection has no comparison of traffic flows.

Northern Industrial Link Road Summary

3.4.18. An initial sifting exercise was undertaken with the relevant members steering group to gain an understanding of the potential issues and level of acceptance of each individual option. This exercise resulted in several options being dismissed with the remaining options to be included within the Strategic Assessment modelling.

3.4.19. The Strategic Assessment of the remaining options has indicated that all of the assessed options have varying levels of anticipated demand, with some options attracting a greater demand than others. Network wide statistics have also been interpreted to assess how each option affects the wider road network around March and not just the localised impact of each option.

3.4.20. Using the results from the Strategic Assessment modelling, and the option costs derived from the high level cost estimates, an economic assessment has been undertaken on each option to generate a BCR. The economic assessment has shown that only Option 1 has a BCR of greater then 2.0, primarily as the cost is significantly lower than for the other options.

3.4.21. Based on the economic assessment, it is recommended that Option 1 is explored in further detail to fully understand the complexities associated with delivering this scheme.

3.5. A141 Re-alignment Options

3.5.1. This assessment considers options that alter the alignment of the existing A141, and therefore may have a significant impact on vehicle routing, or have higher infrastructure costs than options along the existing alignment.

3.5.2. There are further options for junction improvements along the A141 corridor, particularly at the A141 / B1099 Wisbech Rd junction, known locally as Peas Hill Roundabout, and these are assessed in the following chapter, which reports the Operational Assessment.

3.5.3. Seven initial options have been assessed for the wider A141 corridor. The alignments of these options are shown in Figure 3.10, whilst Table 3.20 contains some further information about each alignment.

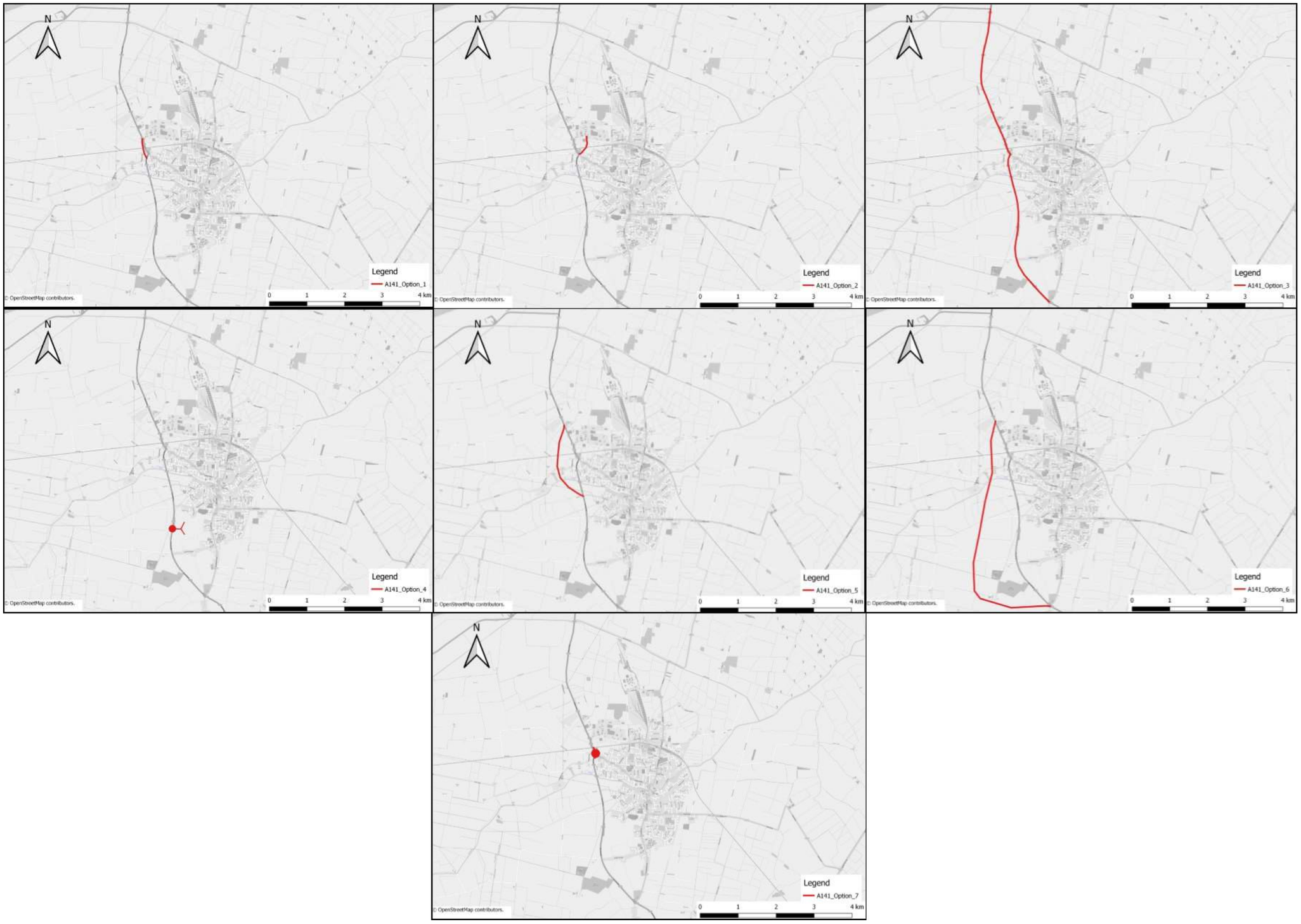

Figure 3.10: A141 Re-alignment Options

Table 3.20: Description of A141 Re-alignment Options

Option	Description	From	To	Length
1	Realignment of A141 from north of Hostmoor Avenue Roundabout to south of Peas Hill Roundabout	A141 / Hostmoor Avenue	A141 south of Peas Hill Roundabout	0.5km
2	Create a new access over the railway line from Peas Hill roundabout via the Meadowlands Estate	A141 Peas Hill Roundabout	Hostmoor Avenue	0.5km
3	A141 Dualling	A141 / A605	A141 Mill Hill Roundabout	8.3km
4	New junction on A141, closure of Burrowmoor and Knights End junctions with A141	Burrowmoor Road	Knights End Road	0.5km
5	Realign A141 to the west from Gaul Road junction in the south to Hostmoor Avenue Junction in the north	A141 south of Westry	A141 / Gaul Road	2.2km
6	Create a new A141 route from Mill Hill roundabout to north of Hostmoor Avenue. Existing alignment to remain as a local / development access road	A141 south of Westry	A141 Mill Hill Roundabout	6.7km
7	Creation of a new grade separated junction at Peas Hill Roundabout	A141	A141	0.5km

Option Modelling and Results

3.5.4. Tables 3.21 and 3.22 highlight the network wide statistics for the entire model network for each option. These results highlight how each option affects the network as a whole and not just the trips travelling in and around the A141 corridor.

Table 3.21: Network Wide Statistics 2031 AM Peak Hour (08:00 – 09:00)

2031 AM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	249	48	596.8	562.9	33.9	893.8	29270.3	32.7	2714.5
Option 1	216.7	1.5	595	562.5	32.5	813.2	29417.9	36.2	2560.8
Option 2	244.3	50.7	594	561.6	32.4	889.1	29211.1	32.9	1707
Option 5	190.7	0	580.5	560.6	19.9	771.2	29790.6	38.6	2515.5
Option 6	209.7	0	588.7	565.7	23	798.5	30026.1	37.6	2598
Option 7	209.4	0.4	596.4	560.8	35.6	806.2	29540.3	36.6	2549.8

3.5.5. Table 3.21 above shows that Options 1, 5, 6 and 7 perform exceptionally well in reducing the OCQ on the network in the AM peak hour. This is due to the fact that all four of these options bypass Peas Hill Roundabout in one form or another. Options 5 and 6 are bypasses of considerable length whereas Option 1 is a localised bypass of Peas Hill Roundabout. Option 7 is a flyover of the A141 over Peas Hill Roundabout.

3.5.6. All of the options reduce network wide delay in the AM peak hour, with Option 5 being the best performing option in this regard. All of the options also reduce the Total Travel Time of trips throughout the model network.

Table 3.22: Network Wide Statistics 2031 PM Peak Hour (17:00 – 18:00)

2031 PM Peak Hour	Transient Queues (pcu.hrs)	Over Capacity Queues (pcu.hrs)	Link Cruise Time (pcu.hrs)	Free Flow (pcu.hrs)	Delays (pcu.hrs)	Total Travel Time (pcu.hrs)	Travel Distance (pcu.kms)	Overall Average Speed (kph)	Fuel Consumption (litres)
DM	223.8	22.7	602.9	570.9	32	849.3	29585.8	34.8	2636.3
Option 1	219.7	14.2	601.8	570.3	31.5	835.7	29715.8	35.6	2601
Option 2	223	25.5	600.8	569.9	30.9	849.3	29521.6	34.8	2636.1
Option 5	190.8	11.2	586.8	567.9	18.9	788.8	30031.1	38.1	2545.4
Option 6	195.8	11.6	596.3	573.9	22.4	803.7	30442.9	37.9	2598.5
Option 7	208.3	15.7	603	568.8	34.2	827	29786.4	36	2576.8

3.5.7. Table 3.22 above shows that as with the AM peak hour, Options 1, 5, 6 and 7 all reduce the Over Capacity Queues experienced across the network in the PM peak hour. All of the options reduced the Delay and Total Travel Time of trips throughout the network.

Option Costing

3.5.8. High level cost estimates have been calculated for each of the options. The table below shows the assumptions that have been made when generating these costs as well as the estimated Total Cost. The final scheme cost includes a 20% Risk Allowance and 44% Optimism Bias (or 66% for structures).

Table 3.23: A141 Re-alignment Option Costs (2019 prices)

Option	Length	No. of Roundabouts	No. Priority Junctions	No. of Structures	No. of Culverts	Approximate Cost £m (excl. OB)	Approximate Cost £m (inc. OB)
1	0.5km	1	1	1	1	18	26
2	0.5km	1	0	1	1	15	21
5	2.2km	3	1	2	2	37	53
6	6.7km	3	1	2	9	52	75
7	0.5km	0	0	1	0	27	39

3.5.9. Table 3.23 shows that the options have costs (excluding OB) ranging from £15m to £52m. The presence of bridges (structures) on all options contributes significantly to the scheme costs.

3.5.10. Table 3.23 beneath presents the results from the economic assessment undertaken using TUBA, including an indicative BCR for each option.

3.5.11. Table 3.24 beneath shows the results of the Economic Assessment of the A141 Re-alignment options.

Table 3.24: A141 Re-alignment Options Benefit Cost Ratios

Net Benefit/BCR Impact					
	Option 1	Option 2	Option 5	Option 6	Option 7
Net Present Value (NPV)	-14338	-13339	-7733	-31803	-17223
Benefit/Cost Ratio (BCR)	**0.2**	**0.1**	**0.7**	**0.2**	**0.3**
VFM Statement	Poor Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money	Poor Value for Money

3.5.12. Table 3.24 shows that all of the BCRs for the A141 Re-alignment options return 'Poor Value for Money'. Although all of the options showed some benefits across the network wide statistics, the significant amount of infrastructure needed and associated costs mean that the benefits are far outweighed by cost. Every option requires at least one bridge, with Options 5 and 6 requiring two bridges, which significantly increases the costs of these options.

3.5.13. The model shows that although there is delay along the A141 corridor, it is mostly localised delay at a couple of junctions, rather than delay experienced along the entirety of the A141. It is therefore likely that localised schemes to address these congestion hotspots would offer better value for money over much larger realignment of the A141. As a result of the Poor Value for Money, these options will not be considered for further assessment. The Operational Assessment will however, considered local junction improvements along the A141 corridor.

A141 Re-alignment Option Summary

3.5.14. The Strategic Assessment has only considered A141 options that re-align the existing route. This is due to the scale of impact and cost associated with these options. As stated all of the options require at least one bridge structure, with Options 5 and 6 requiring two bridges. As well as the structures the majority of these options require some large scale off-line highways infrastructure.

3.5.15. All of the A141 re-alignment options return a poor value for money, this is predominately due to the high infrastructure costs, and will therefore not be progressed further. However, online improvements to the A141 have been considered, and these are discussed further within the Operational Assessment chapter below.

3.6. Core Scenarios

3.6.1. As well as assessing the impact and viability of larger options, the Strategic Assessment has produced demand flows for use in the Operational Assessment. This allows options to be tested in detail with different sets of traffic flows representing vehicle rerouting as a result of larger infrastructure changes. The different demand sets are discussed in greater detail in the Operational Assessment Chapter, and include:

- Do Minimum
- Core Scenario 1 (Do Minimum + Northern Industrial Link Road Option 1)
- Core Scenario 2 (Do Minimum + Northern Industrial Link Road Option 1 + New River Crossing in the Town Centre).
- Core Scenario 3 (Do Minimum + Northern Industrial Link Road Option 1 + Broad Street one lane in each direction with a roundabout at the junction with Dartford Road / Station Road).

3.7. Strategic Assessment Summary

3.7.1. Strategic Assessments have been undertaken on numerous options for a New River Crossing, NILR and A141 Re-alignment. The assessments have used the MATS SATURN model to measure the impact of each of the options on a localised scheme level and on the wider network as a whole. Network wide model results have then been extracted for the options and these have been entered into the transport user benefit appraisal (TUBA) model, along with high level scheme cost estimates, to allow a value for money assessments to be undertaken, and from this BCRs to be calculated. Note that these BCRs are calculated purely on transport user benefits, and do not include wider economic benefits and environmental considerations, which have not been considered at this stage.

3.7.2. The secondary purpose of the Strategic Assessment is to determine sets of traffic flows to be used in the Operational Assessment. These will be discussed further in the next chapter.

3.7.3. The Strategic Assessment of the New River Crossing options has identified a New River Crossing nearby to the west of the existing town bridge (Option 10) as the best performing option. This is primarily because Option 10 is closest to the existing Town Centre Bridge and therefore has the greatest potential to attract trips away from that bridge with a minimal impact on journey distance (a key factor in driver route choice and economic assessments). All other options are located further out from the Town Centre, and therefore attract fewer trips. These options also have longer routes and therefore much higher infrastructure costs. Option 10 has significantly lower construction costs compared with all of the other options.

3.7.4. Further sensitivity testing was undertaken on Option 10 to examine whether the option could support public realm improvements around the existing Town Centre Bridge, and specifically along Broad Street to the north of the river. These improvements are in line with current aspirations for March Town Centre, which are currently being developed by the FHSF project.

3.7.5. The sensitivity testing indicated that there is the potential for public realm improvements to be made along Broad Street, at the expense of highway capacity, potentially without the need for a New River Crossing. This will be explored further in the Operational Assessment.

3.7.6. The Strategic Assessment of the NILR identified Option 1 as the best performing option, which is consistent with the assessment undertaken in the 2013 March Area Transport Study. This is because transport user benefits come from creating a direct link between Hundred Road and the B1101 Elm Road, which provides an alternative to the current low capacity east – west route on Norwood Road. Another significant factor for Option 1 being the preferred option, is that the cost of this option is less than half of any of the other options, making it more affordable.

3.7.7. The Strategic Assessment of the A141 Re-alignment options has shown that no options performed well within the economic assessment, and therefore none of these options are being progressed further as part of this study. However, online improvements to the A141 have been considered, and these are discussed further within the Operational Assessment chapter below.

3.7.8. The next stage is to undertake a detailed Operational Assessment of the remaining options to identify a preferred package of schemes which will be considered within the Packaging Assessment.

3.7.9. It should also be noted that this study is mindful of the potential for the rail link between March and Wisbech to be re-established, and the options assessed as part of the Strategic Assessment, or at any other stage of the assessment, do not predicate this from happening.

4. Operational Assessment

4.1. Introduction

4.1.1. The Operational Assessment has been undertaken using the PTV micro-simulation modelling software VISSIM. A 2018 base VISSIM model has already been constructed for use in this project, and this report should be read in conjunction with the 'VISSIM Local Model Validation Report March Area Transport Study', dated July 2019.

4.2. Do Minimum Model (DM)

4.2.1. A Do Minimum model (DM) builds upon a validated base model to add in additional infrastructure that has either been built since the traffic surveys were undertaken, or is known to be coming forwards in the future independently of the other schemes being assessed. DM models also use forecast traffic flows to represent a future year scenario, and are used as the reference case against which to test the schemes being assessed (Do Something scenarios).

4.2.2. The Operational Assessment within the MATS has been undertaken using DM models for 2026 and 2031 to ensure compatibility with the SATURN model forecast years which is based on Fenland District Council Local Plan growth forecasts. The DM VISSIM model includes the following changes to the 2018 base model:

- Application of future traffic growth for the forecast years 2026 and 2031
- Addition of the A141 / Gaul Road traffic signals, which were completed in February 2019
- Creation of a four arm roundabout on the A141 / Hostmoor Avenue junction, to replicate developer proposals
- Implementation of a 40mph speed restriction on Upwell Road to the east of the existing 60-30mph speed limit transition point
- Addition of Norwood Road Traffic Signals, which were completed after the model was built
- Traffic Signal Optimisation of B1099 Dartford Road / B1101 Broad Street / B1101 Station Road.

4.2.3. Each of these amendments are discussed in more detail beneath.

Application of Future Traffic Growth

4.2.4. The percentage or absolute difference between the 2018 base and 2026 and 2031 base year SATURN flows were applied to the VISSIM 2018 balanced peak hour flows. The percentage difference was utilised unless the difference was greater than 25% either way. In those instances, a sensitivity check was used to see any differences and the absolute difference applied. The AM and PM peak hour traffic flows were balanced for all vehicles and then profiled as per the base model for the 15 minute intervals. New entries to / exits from the network were added to represent future development accesses. These additions to the VISSIM model simulate where the development traffic enters the network and were kept consistent with the locations used within the SATURN model.

A141 / Gaul Road Traffic Signals

4.2.5. Installation of the A141 / Gaul Road traffic signals was completed on the 12th February 2019, after the traffic surveys undertaken in March 2018, which were used to build the base model. The junction operates on the signal type MOVA (Microprocessor Optimised Vehicle Actuation) and was coded into VISSIM as per the signal specifications and MOVA dataset using TRL PC MOVA. In the absence of pedestrian counts at this location, the junction has been simulated with 20 pedestrians per hour in each direction. This is likely to be higher than the actual number of pedestrians crossing at this location, but provides a robust assessment of the junction and prevents the impacts of the pedestrian phase being called from being underestimated. Figure 4.1 shows the layout of the Gaul Road signals in VISSIM.

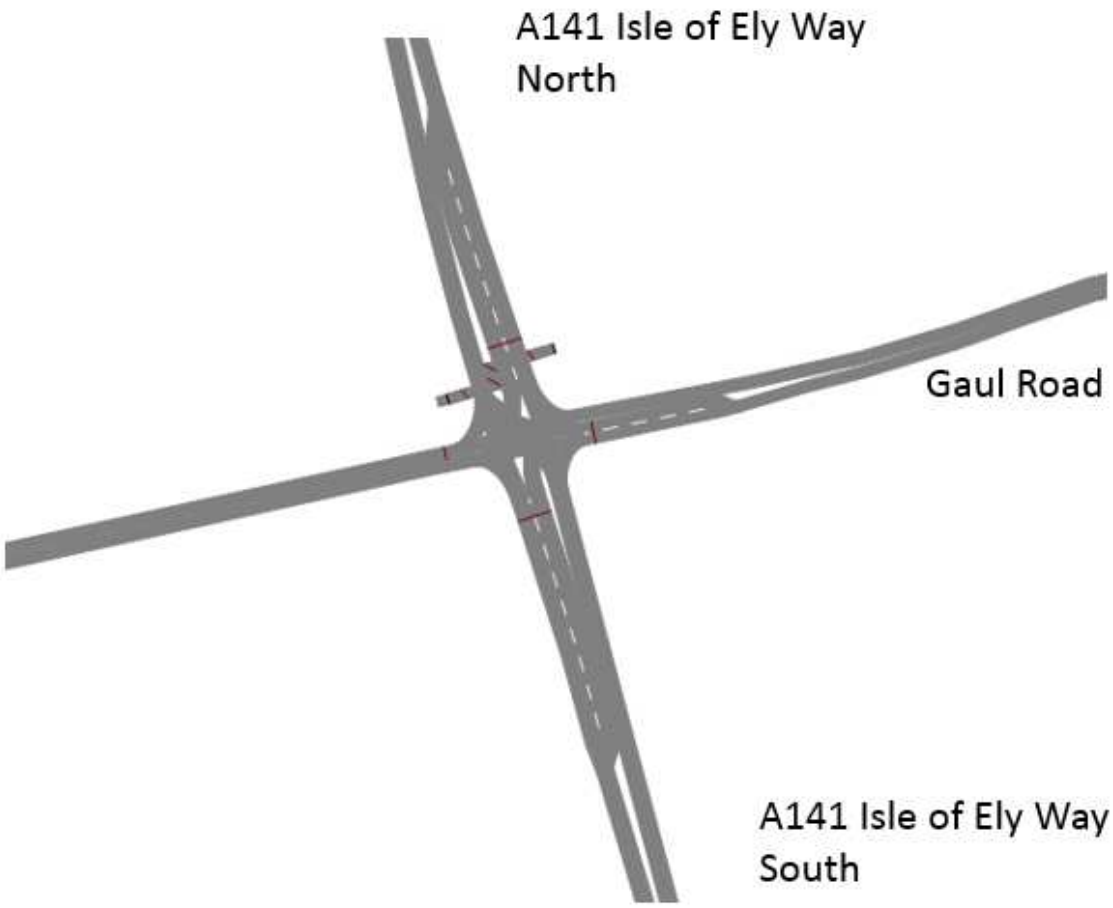

Figure 4.1: Gaul Road Traffic Signals

A141 / Hostmoor Avenue Roundabout

4.2.6. The Hostmoor Avenue junction with the A141 Wisbech Road was coded in the DM as a roundabout with a 45-metre inscribed circular diameter (ICD), as per the drawing provided by CCC (DWG no 1368A – PL1105), which is a medium sized roundabout for an A-road with a speed limit of 40 – 50mph. The roundabout scheme is part of a development plan to allow access to the west of the site. Based on results from initial runs of the VISSIM DM, the east arm (Hostmoor Avenue) is expected to be heavily congested during the PM peak hour in future years. Therefore, the design was updated to include a three-lane flare allowing two lanes to turn left to the A141 Wisbech Road south. The layout of the roundabout in VISSIM is shown below in Figure 4.2 and is coded to operate on give way with default parameters for the priority rules.

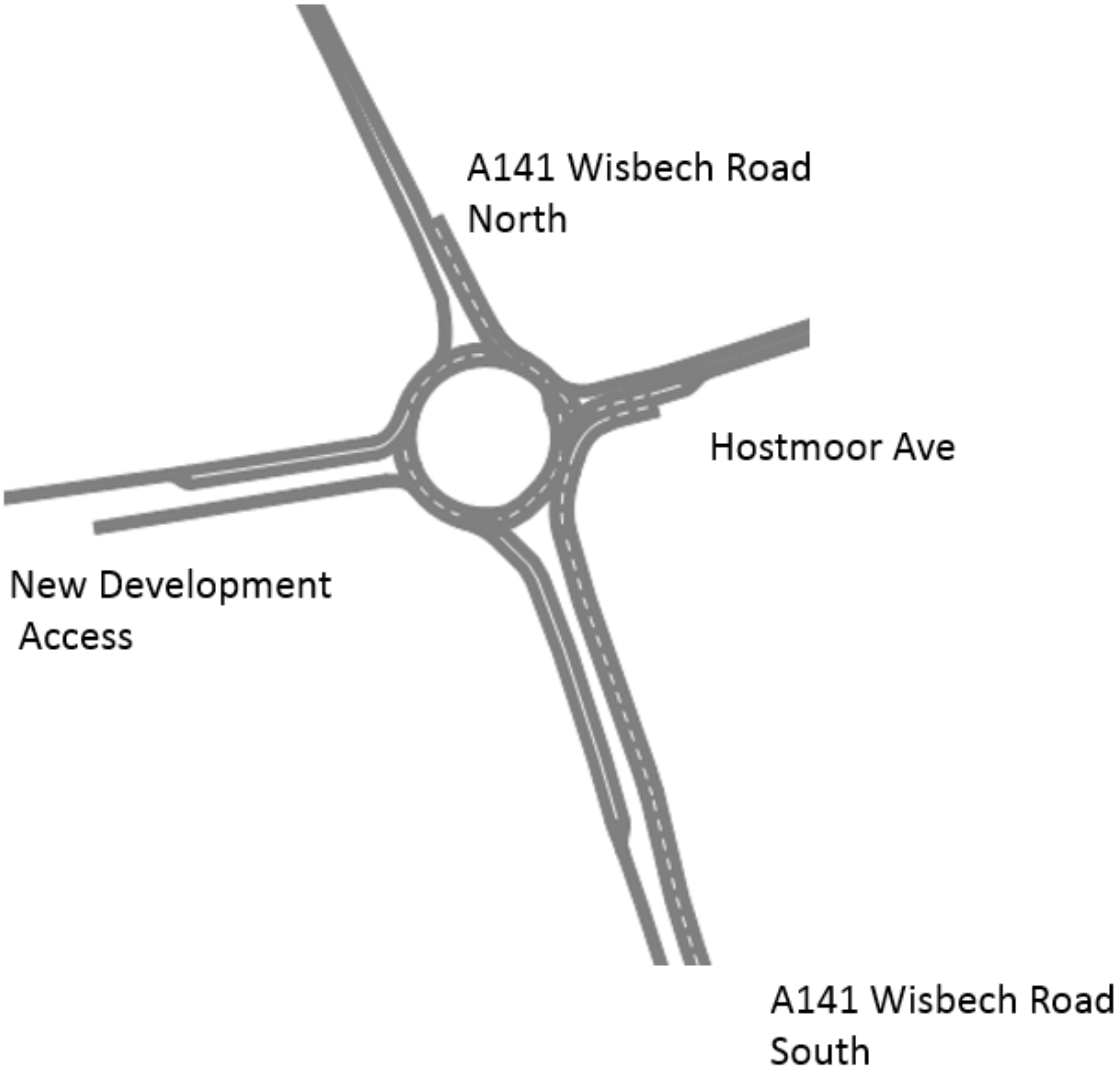

Figure 4.2: A141 / Hostmoor Avenue Developer Junction

Upwell Road

4.2.7. A 40 mph speed restriction was added on Upwell Road to the east of the current 60-30mph speed limit transition point to reflect changes proposed by one of the MATS Quick Win schemes.

Norwood Road Traffic Signals

4.2.8. The new signals at Norwood Road located at the railway bridge were introduced in October 2018, after the traffic surveys were conducted in March 2018. The new signals were coded into the model as per the signal specification layout and timings provided by CCC. Due to the narrowing of the road over the railway line, the new signals operate to control traffic so it operates in one direction at a time.

Broad Street Traffic Signal Optimisation

4.2.9. The Broad Street traffic signal green times were updated in the 2026 and 2031 models to optimise the operation of the junction and help balance queueing due to the changes in traffic in the forecast years. Any changes made to the green time were minimal (maximum 10 seconds in the AM peak hour).

4.3. DM Model: Core Scenario 1 (CS1)

4.3.1. A second traffic demand scenario has been exported from the SATURN model following the Strategic Assessment. This is known as Core Scenario 1 (CS1) and captures the impacts of vehicles re-routing as a result of some of the larger options tested such as the NILR.

4.3.2. The CS1 builds on the DM model and incorporates schemes from the Strategic Assessment and Quick Wins (QW) streams of work for the MATS project. The CS1 model used traffic demand based on the SATURN model including the following options. The purpose of the CS1 scenario is to understand how the operational performance of options are impacted by other schemes, including:

- Northern Industrial Link Road: CS1 includes NILR Option 1 which is shown Figure 4.3 beneath.

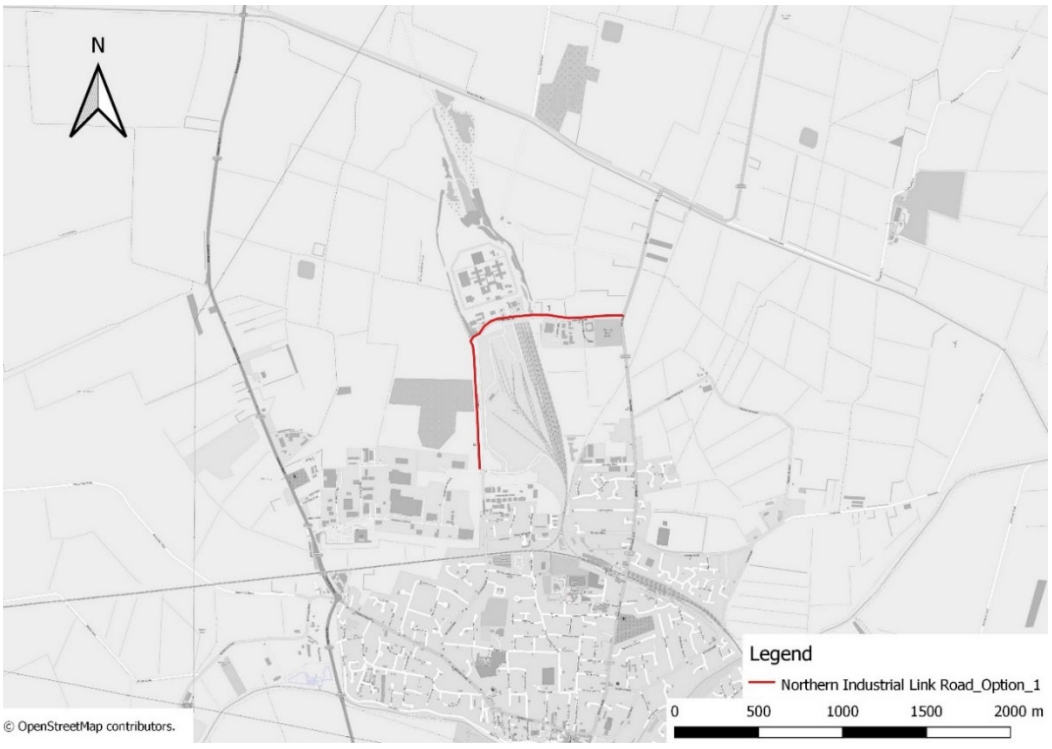

Figure 4.3: Northern Link Road (NILR)

- **A141 March Road / Twenty Foot Road:** The signalisation of the A141 March Road / Twenty Foot Road junction was identified within the Quick Wins work stream due to safety issues at the junction. This signalisation scheme was included in CS1 and the proposed signal information was provided by traffic signal engineers for the modelling. The junction was coded in using Vehicle Actuation (VA) operation using VisVap in VISSIM. The layout of the junction is shown below in Figure 4.4.

Figure 4.4: A141 / Twenty Foot Road

4.3.3. The strategic SATURN model was then re-run with these changes incorporated and the CS1 traffic flows extracted. The same process used for the DM model was then used to convert these traffic flows from SATURN into VISSIM.

DM and DM (CS1) Results

4.3.4. The DM and DM CS1 model results for overall junction operation for the AM peak hour are shown below in Table 4.1. The table compares the 2018 base model to the 2026 and 2031 model in terms of traffic volume, queue, delays and LOS. LOS is an American concept derived from their Highway Capacity Manual (2000). It rates performance based upon delay thresholds on an A to F grading as follows:

- LOS A - 0 to 10 seconds delay
- LOS B - 10 to 20 seconds delay (10 to 15 seconds delay for un-signalised junctions)
- LOS C - 20 to 35 seconds delay (15 to 25 seconds delay for un-signalised junctions)
- LOS D - 35 to 55 seconds delay (25 to 35 seconds delay for un-signalised junctions)
- LOS E - 55 to 80 seconds delay (35 to 50 seconds delay for un-signalised junctions)
- LOS F - Over 80 seconds delay (over 50 seconds delay for un-signalised junctions).

4.3.5. A LOS E is considered to be at capacity whilst a LOS F is considered to be over capacity.

4.3.6. LOS E or F have been highlighted in the table to show junctions/movements that operate over capacity. Please note that VISSIM only calculates queue and delay node to node. Also note that, although a junction overall might not be over capacity, individual movements at the junction could be.

Table 4.1: 2018 Base vs 2026 and 2031 DM and CS1 Results – AM Peak Hour

Junction	Model Volume					Max QL (m)					Avg Delay (s)					LOS				
Name	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1
A141 March Road / A605	1775	1877	2005	2026	2103	119	167	180	205	202	11.0	12.5	13.4	14.3	14.4	B	B	B	B	B
A141 Wisbech Road / Twenty Foot Road	1626	1862	1855	2002	1953	48	180	143	245	160	4.6	10.6	10.3	14.3	10.8	A	B	B	B	B
B1101 / Twenty Foot Road	490	631	574	644	584	21	26	27	23	24	2.3	2.5	2.4	2.4	2.4	A	A	A	A	A
A141 Wisbech Road / Hostmoor Avenue	1884	2459	2490	2672	2643	56	113	136	166	178	7.7	10.2	10.4	12.3	13.5	A	B	B	B	B
Hostmoor Avenue / Martin Avenue / Superstore	742	1050	1126	1189	1253	16	45	53	57	82	1.6	2.8	3.3	3.4	5.1	A	A	A	A	A
Hundred Road / Melbourne Avenue Roundabout	423	497	523	558	554	10	19	20	19	23	1.3	1.8	1.7	2.2	1.9	A	A	A	A	A
Norwood Road / Hundred Road	554	551	509	611	537	28	25	20	27	22	4.2	6.3	4.2	6.6	4.4	A	A	A	A	A
Longhill Road / B1101 Elm Road	488	522	570	536	582	29	24	31	19	31	5.2	5.4	5.2	5.3	4.9	A	A	A	A	A
B1101 Elm Road / B1101 Station Road / Estover Road / Norwood Road Mini	788	864	660	883	662	156	173	152	181	140	26.4	30.1	26.7	31.7	27.3	D	D	D	D	D
Estover Road / Creek Road	280	299	297	296	296	14	15	17	15	14	7.9	8.2	7.8	7.7	7.2	A	A	A	A	A
Flaggrass Hill Road / Creek Fen / Creek Road	201	175	175	175	176	6	6	6	5	6	0.5	0.3	0.3	0.3	0.3	A	A	A	A	A
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	2274	2709	2743	2839	2809	162	650	660	965	962	10.2	51.2	59.5	91.3	111.8	B	F	F	F	F
B1099 Wisbech Road / Peas Hill Road	1145	1354	1347	1394	1335	34	170	157	197	206	5.2	16.4	18.4	25.9	34.3	A	C	C	D	D
B1099 Wisbech Road / Russell Avenue	1062	1275	1279	1337	1298	44	112	137	183	243	4.6	6.4	7.4	11.2	18.9	A	A	A	B	C
B1099 Wisbech Road / Norwood Road	1175	1384	1397	1469	1443	78	122	115	167	167	8.9	10.6	10.8	15.0	15.7	A	B	B	B	C
Norwood Road / Robingoodfellow's Lane	580	573	589	619	620	27	28	25	26	27	5.6	5.1	5.2	5.4	5.4	A	A	A	A	A
B1099 Wisbech Road / Elliott Road / B1099 Dartford Road	774	987	1022	1077	1074	87	131	143	226	199	4.6	9.3	11.0	21.8	21.7	A	A	B	C	C
B1099 Dartford Road / Rookswood Road / Westwood Avenue	887	1085	1115	1184	1172	46	263	268	318	284	3.3	27.8	30.3	44.5	40.2	A	D	D	E	E
B1099 Dartford Road / Superstore	864	1048	1088	1092	1110	49	85	85	86	89	2.8	15.8	16.0	21.2	20.1	A	C	C	C	C
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	967	1148	1161	1193	1180	136	157	159	159	160	25.2	45.7	42.5	53.0	48.4	D	E	E	F	E
Darthill Road / Robingoodfellow's Lane	247	303	265	315	272	11	14	11	14	12	1.6	1.7	1.6	1.7	1.5	A	A	A	A	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	1539	1732	1708	1785	1768	147	158	158	159	158	26.3	31.7	29.4	33.1	32.9	C	C	C	C	C
B1101 Station Road / Creek Road	818	855	806	865	861	82	126	86	141	107	7.1	19.3	10.5	24.0	17.7	A	C	B	C	C
B1101 Station Road / St John's Road / Norwood Avenue	694	742	693	761	709	25	34	27	35	26	4.6	5.0	4.5	5.1	4.4	A	A	A	A	A
B1101 Station Road / County Road	681	746	641	763	648	78	139	78	145	72	14.0	23.8	18.0	24.0	18.4	B	C	C	C	C
Creek Road / St John's Road / Wigstone's Road	303	354	352	351	399	13	15	14	12	16	17.7	5.1	5.0	5.2	5.1	C	A	A	A	A
B1101 Broad Street / Grays Lane / Nene Parade	1415	1565	1550	1628	1605	87	105	94	102	96	8.3	9.6	9.6	9.9	9.8	A	A	A	A	A
B1101 High Street / Elwyn Road	1415	1550	1546	1609	1601	62	64	65	65	67	3.2	4.7	4.6	5.3	5.6	A	A	A	A	A
Elwyn Road / Badgeney Road	549	561	589	618	607	21	19	20	24	20	2.6	2.7	2.8	2.9	3.1	A	A	A	A	A
B1101 High Street / Market Square	1257	1386	1372	1506	1450	136	180	177	213	212	13.1	17.9	17.0	24.2	26.6	B	C	C	C	D
Creek Road / Mill View	295	305	307	303	356	33	72	42	89	65	4.9	29.0	10.4	52.1	28.4	A	D	B	F	D
A141 Isle of Ely Way / Gaul Road	1543	1834	1864	1905	1954	53	251	302	497	452	3.5	20.5	21.5	40.4	38.8	A	C	C	E	E
A141 Isle of Ely Way / Burrowmoor Road	1530	1894	1912	2003	2109	35	32	36	190	87	3.0	5.0	5.3	9.1	7.2	A	A	A	A	A
Gaul Road / Burrowmoor Road	538	590	538	755	743	26	29	25	45	38	5.8	6.5	5.7	10.1	10.7	A	A	A	B	B
B1101 High Street / City Road / Burrowmoor Road	1328	1530	1487	1653	1607	229	312	277	364	367	18.8	28.9	25.0	57.1	54.7	C	D	C	F	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	1164	1348	1349	1348	1321	188	466	529	598	599	42.7	83.0	90.2	156.3	167.7	D	F	F	F	F
B1099 St Peter's Road / Elwyn Road / Eastwood Avenue	672	728	735	721	753	26	33	28	30	42	4.2	4.5	4.4	4.5	10.4	A	A	A	A	B
B1099 St Peter's Road / Morton Avenue / Cavalry Drive	579	602	597	596	613	25	36	34	33	31	5.5	5.8	5.6	5.7	5.7	A	A	A	A	A
B1101 The Avenue / Cavalry Park	1064	1251	1266	1259	1209	31	70	73	338	352	8.3	11.7	10.0	42.5	40.3	A	B	B	E	E
Cavalry Drive / Hunters Chase	341	347	345	345	347	8	7	9	11	8	3.3	3.2	3.2	3.0	3.2	A	A	A	A	A
A141 Isle of Ely Way / Knights End Rd	1493	1801	1800	1909	1975	29	74	69	98	100	5.0	15.1	14.4	16.8	17.9	A	C	B	C	C
Knight's End Road / Church Street	270	314	277	390	393	10	10	8	254	125	4.0	3.5	3.2	26.0	11.8	A	A	A	D	B
B1101 Wimblington Road / Jobs Lane / Barker's Lane	901	1069	1005	1128	1050	72	76	73	320	274	7.7	8.7	8.4	37.0	31.4	A	A	A	E	D
B1101 Wimblington Road / Neale-Wade Academy / Service Station / Church Street	1238	1411	1389	1416	1369	57	92	75	171	178	4.3	5.2	4.8	17.5	16.8	A	A	A	C	C
A141 Isle of Ely Way / B1101 Wimblington Road / March Road	1760	2034	2055	2120	2122	80	317	317	297	337	9.5	27.1	27.0	27.8	29.4	A	D	D	D	D

4.3.7. Table 4.1 shows that there is an increase in traffic and therefore the model expects an increase in queues and delays in the 2026 and 2031 AM peak hour for both demand scenarios. In 2026 in both scenarios, three junctions are now predicted to be over capacity compared to the base 2018 model including:

- A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill)
- B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
- B1101 The Causeway / B1101 High Street / B1099 St Peter's Road.

4.3.8. Due to the further increase in traffic, the following additional junctions are also over capacity in the 2031 DM and DM CS1 in the AM peak hour:

- B1101 High Street / City Road / Burrowmoor Road
- B1101 The Avenue / Cavalry Park
- B1099 Dartford Road / Rookswood Road / Westwood Avenue.

4.3.9. From observing the simulation, the issue at a number of these junctions is the high congestion levels at both the A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill) and the Town Centre, causing queuing issues back through the network.

4.3.10. Table 4.1 shows that the proposed new roundabout at A141 Wisbech Road / Hostmoor Avenue is expected to operate within capacity in all years.

4.3.11. It should be noted that due to the congestion in some locations, the 2031 model is processing less vehicles than the 2026 models, as vehicles queue at the edges of the modelled network and are unable to enter during the simulation period. These trips will either be reported as unmet demand, or be released into the network by proposed schemes which improve capacity, and be reported as vehicles processed. The total amount of traffic demand applied to the modelled networks remains consistent between the DM and various DS scenarios.

4.3.12. The 2026 and 2031 DM and DM CS1 model results compared to the 2018 base for overall junction operation for the PM peak hour, is shown below in Table 4.2 .

Table 4.2: 2018 Base vs 2026 and 2031 DM and CS1 Results – PM Peak Hour

Junction	Model Volume					Max QL (m)					Avg Delay (s)					LOS				
Name	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1	Base	2026	2026 CS1	2031	2031 CS1
A141 March Road / A605	2096	2208	2270	2257	2332	200.3	220	235	251	252	15.0	17.4	18.1	18.4	19.0	B	B	B	B	B
A141 Wisbech Road / Twenty Foot Road	1949	2192	2096	2233	2152	97.8	435	143	398	166	7.0	45.6	11.2	43.9	11.5	A	E	B	E	B
B1101 / Twenty Foot Road	611	681	640	690	624	67.03	40	46	37	41	3.1	2.5	2.2	2.5	2.1	A	A	A	A	A
A141 Wisbech Road / Hostmoor Avenue	2478	3043	3157	3196	3261	131.7	248	225	239	273	11.6	12.5	12.0	13.8	14.9	B	B	B	B	B
Hostmoor Avenue / Martin Avenue / Superstore	1155	1455	1668	1614	1769	29.51	78	56	96	143	2.4	3.8	4.4	4.9	7.9	A	A	A	A	A
Hundred Road / Melbourne Avenue Roundabout	377	340	354	405	374	8.87	9	8	10	9	1.6	1.5	1.3	1.8	1.5	A	A	A	A	A
Norwood Road / Hundred Road	545	482	434	570	457	23.56	27	15	31	17	4.3	7.9	4.1	8.4	4.3	A	A	A	A	A
Longhill Road / B1101 Elm Road	611	550	643	570	610	36.2	33	30	38	30	4.2	3.6	2.8	3.6	3.0	A	A	A	A	A
B1101 Elm Road / B1101 Station Road / Estover Road / Norwood Road Mini	965	902	585	1020	620	94.62	115	51	111	53	19.1	18.2	13.1	21.3	12.5	C	C	B	C	B
Estover Road / Creek Road	271	253	266	252	258	22.05	20	22	20	23	15.7	13.3	13.7	13.7	13.5	C	B	B	B	B
Flaggrass Hill Road / Creek Fen / Creek Road	135	124	129	123	125	2.99	2	3	2	2	0.8	0.7	0.8	0.7	0.7	A	A	A	A	A
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	2744	2963	3148	3126	3183	173.47	583	614	791	899	11.5	38.0	46.7	61.0	87.8	B	E	E	F	F
B1099 Wisbech Road / Peas Hill Road	1200	1358	1393	1407	1334	55.65	115	84	99	108	4.7	5.4	5.3	5.5	6.2	A	A	A	A	A
B1099 Wisbech Road / Russell Avenue	1113	1264	1299	1305	1227	43.49	81	62	74	65	4.9	5.7	5.5	5.8	5.5	A	A	A	A	A
B1099 Wisbech Road / Norwood Road	1186	1293	1380	1360	1337	74.62	141	123	134	136	7.7	8.9	9.4	9.4	9.4	A	A	A	A	A
Norwood Road / Robingoodfellow's Lane	452	389	462	459	472	16.62	16	17	16	17	3.9	3.5	3.9	3.7	4.1	A	A	A	A	A
B1099 Wisbech Road / Elliott Road / B1099 Dartford Road	914	1054	1172	1096	1128	30.02	122	76	90	136	4.4	8.2	7.3	8.9	12.9	A	A	A	A	B
B1099 Dartford Road / Rookswood Road / Westwood Avenue	940	1062	1152	1094	1092	45.27	260	230	256	273	3.2	38.3	32.8	41.0	46.2	A	E	D	E	E
B1099 Dartford Road / Superstore	986	1095	1189	1130	1151	40.45	91	86	93	92	2.8	21.9	18.6	21.2	23.7	A	C	C	C	C
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	1012	1061	1179	1112	1147	137.42	158	158	158	159	29.3	50.4	46.2	51.3	48.4	D	F	E	F	E
Darthill Road / Robingoodfellow's Lane	215	214	202	264	209	10.23	9	9	9	9	1.6	1.8	1.6	1.7	1.6	A	A	A	A	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	1742	1724	1880	1833	1831	156.18	159	160	159	158	33.6	37.9	38.0	39.2	40.2	C	D	D	D	D
B1101 Station Road / Creek Road	980	922	989	952	997	118.28	195	139	243	224	11.4	28.1	24.5	55.1	45.7	B	D	C	F	E
B1101 Station Road / St John's Road / Norwood Avenue	796	797	736	898	791	36.17	85	19	72	72	5.7	5.4	4.3	7.2	5.5	A	A	A	A	A
B1101 Station Road / County Road	756	733	605	842	641	72.63	130	64	120	78	13.4	12.8	10.3	13.4	10.7	B	B	B	B	B
Creek Road / St John's Road / Wigstone's Road	308	303	384	326	428	10.88	11	13	14	17	11.0	3.9	4.4	4.0	4.4	B	A	A	A	A
B1101 Broad Street / Grays Lane / Nene Parade	1641	1624	1741	1727	1682	107.61	138	115	137	138	9.5	10.8	10.7	10.9	12.0	A	B	B	B	B
B1101 High Street / Elwyn Road	1691	1629	1731	1734	1675	65.72	69	69	67	69	4.2	5.1	5.3	5.6	6.4	A	A	A	A	A
Elwyn Road / Badgeney Road	704	734	818	738	750	24.86	58	48	44	79	3.4	4.6	11.3	4.8	10.1	A	A	B	A	B
B1101 High Street / Market Square	1432	1335	1392	1467	1368	187.53	248	227	265	321	23.0	29.7	34.4	35.0	46.5	C	D	D	E	E
Creek Road / Mill View	409	392	488	378	499	45.21	86	77	100	178	12.2	29.9	36.4	85.7	111.7	B	D	E	F	F
A141 Isle of Ely Way / Gaul Road	1710	1874	1983	2030	2073	92.29	193	217	265	307	3.7	15.8	16.6	20.3	23.7	A	C	C	C	C
A141 Isle of Ely Way / Burrowmoor Road	1636	1852	1943	2080	2114	18.59	29	27	50	106	2.4	3.6	3.5	4.7	5.6	A	A	A	A	A
Gaul Road / Burrowmoor Road	529	508	503	626	620	22.37	71	25	52	74	4.7	5.1	5.2	5.3	5.9	A	A	A	A	A
B1101 High Street / City Road / Burrowmoor Road	1559	1431	1472	1656	1583	215.4	234	152	365	318	19.5	20.0	15.0	48.6	38.2	C	C	C	E	E
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	1269	1161	1198	1312	1265	265.46	313	219	566	416	40.1	46.5	34.2	123.5	68.7	D	D	C	F	E
B1099 St Peter's Road / Elwyn Road / Eastwood Avenue	741	775	823	820	848	31.22	55	40	49	57	4.6	4.9	5.1	4.8	5.3	A	A	A	A	A
B1099 St Peter's Road / Morton Avenue / Cavalry Drive	663	653	680	723	752	29.16	31	30	30	33	4.8	4.7	4.7	5.1	5.4	A	A	A	A	A
B1101 The Avenue / Cavalry Park	1186	1106	1167	1256	1213	30.05	82	39	237	85	6.3	6.6	6.2	39.0	10.2	A	A	A	E	B
Cavalry Drive / Hunters Chase	360	370	393	418	428	7.45	6	7	11	13	4.2	4.5	4.6	4.7	4.6	A	A	A	A	A
A141 Isle of Ely Way / Knights End Rd	1584	1772	1901	2006	2050	26.22	82	99	147	138	4.4	8.3	8.8	16.2	16.5	A	A	A	C	C
Knight's End Road / Church Street	175	252	262	411	399	4.5	29	9	43	9	2.3	2.6	2.5	7.7	3.6	A	A	A	A	A
B1101 Wimblington Road / Jobs Lane / Barker's Lane	1032	1059	1106	1285	1235	49.96	173	60	196	120	6.6	7.6	7.4	18.7	9.3	A	A	A	C	A
B1101 Wimblington Road / Neale-Wade Academy / Service Station / Church Street	1132	1084	1135	1258	1199	39.5	76	55	118	74	4.1	4.3	4.2	9.5	4.5	A	A	A	A	A
A141 Isle of Ely Way / B1101 Wimblington Road / March Road	2158	2285	2421	2473	2488	117.73	334	324	385	373	11.4	18.4	20.3	29.0	30.0	B	C	C	D	D

4.3.13. Table 4.2 shows that, like the AM peak hour in 2026 and 2031 DM and DM CS1, there is an increase in traffic causing expected increases in delays and queues. The main junctions over capacity in both the 2026 and / or 2031 DM and DM CS1 include:

- A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill)
- B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
- B1099 Dartford Road / Rookswood Road / Westwood Avenue
- B1101 Station Road / Creek Road
- Creek Road / Mill View
- B1101 High Street / City Road / Burrowmoor Road
- B1101 The Causeway / B1101 High Street / B1099 St Peter's Road

4.3.14. The A141 March Road / Twenty Foot Road is over capacity in the DM and but not in the DM CS1 scenario. This is due to the proposed signalisation scheme that is operating in CS1, showing the signals should offer a congestion benefit at this junction, particularly in the PM peak hour.

4.3.15. The new proposed roundabout at A141 Wisbech Road / Hostmoor Avenue is also predicted to operate within capacity in all years.

4.3.16. From observing the simulation and like in the AM peak hour, the issues at a number of junctions in 2031 are due to the high queues and delays at both the A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill) and the Town Centre, causing queue issues back through the network.

4.4. Do Something Models

4.4.1. Once the future year reference case (DM model) had been established, the Do Something models were then created to test the impacts of various options identified within the MATS study. The details of the options assessed, and the results of these assessments, are presented beneath.

4.4.2. Please note that at this stage of the study, designs are only at concept level and subject to further design work. It is recommended that these options should be re-tested in the model if any changes are made during the preliminary or detailed design stages.

4.5. Peas Hill Roundabout Options

4.5.1. The A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill) Roundabout has been identified for capacity improvements within the DM modelling. Three options have been modelled which incorporate lane closures, re-routing and expansion of the roundabout. These options were progressed from the Option Development Workshop and subsequent discussions, and are:

- Option 5.2 - Creation of a new larger roundabout on the existing site, involving land acquisition
- Option 5.3 – Realignment of Whittlesey Road approach to join the A141 to the south (in the vicinity of Marina Drive)
- Option 5.7 – Realignment of Meadowlands approach to join Wisbech Road east of the roundabout and enlarge the roundabout to the west of the existing site.

4.6. Peas Hill Option 5.2

4.6.1. Option 5.2 proposes to increase the size of the roundabout (which would require some land acquisition). Three layouts with differing Inscribed Circle Diameters (ICD) were tested. The ICD is the diameter of the largest circle that can be fitted into the junction outline[2].

- 40m ICD
- 50m ICD
- 60m ICD.

4.6.2. Although the ICD of the roundabout was increased, the current lane allocation and approach flare length was left the same as the existing conditions. From initial modelling it became clear that, with the forecast flows, the roundabout would not operate within capacity even with a 60m ICD.

4.6.3. The junction layout was therefore updated to allow two lanes ahead on the A141 Isle of Ely Way (NB) and Wisbech Road (NB and SB). To accommodate these two lane sections, the northbound carriageway between Peas Hill Roundabout and the A141 Wisbech Road \ Hostmoor Roundabout, was also upgraded to two lanes. Also to prevent any weaving issues in this two lane section, an additional two lane section of carriageway was added on the A141 Wisbech Road north of Hostmoor roundabout to allow northbound traffic to use 2 lanes through this junction. This traffic merges into a single lane north of the Hostmoor Avenue Roundabout.

4.6.4. Figure 4.5, Figure 4.6 and Figure 4.7 show the layout of the Peas Hill Roundabout option for 40m, 50m and 60m ICD. Figure 4.8 shows the Peas Hill Roundabout 60m ICD and the A141 Wisbech Road \ Hostmoor Avenue Roundabout layout, together with the two lanes northbound and the two lane northbound exit from Hostmoor Roundabout.

[2] http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol6/section2/td1607.pdf

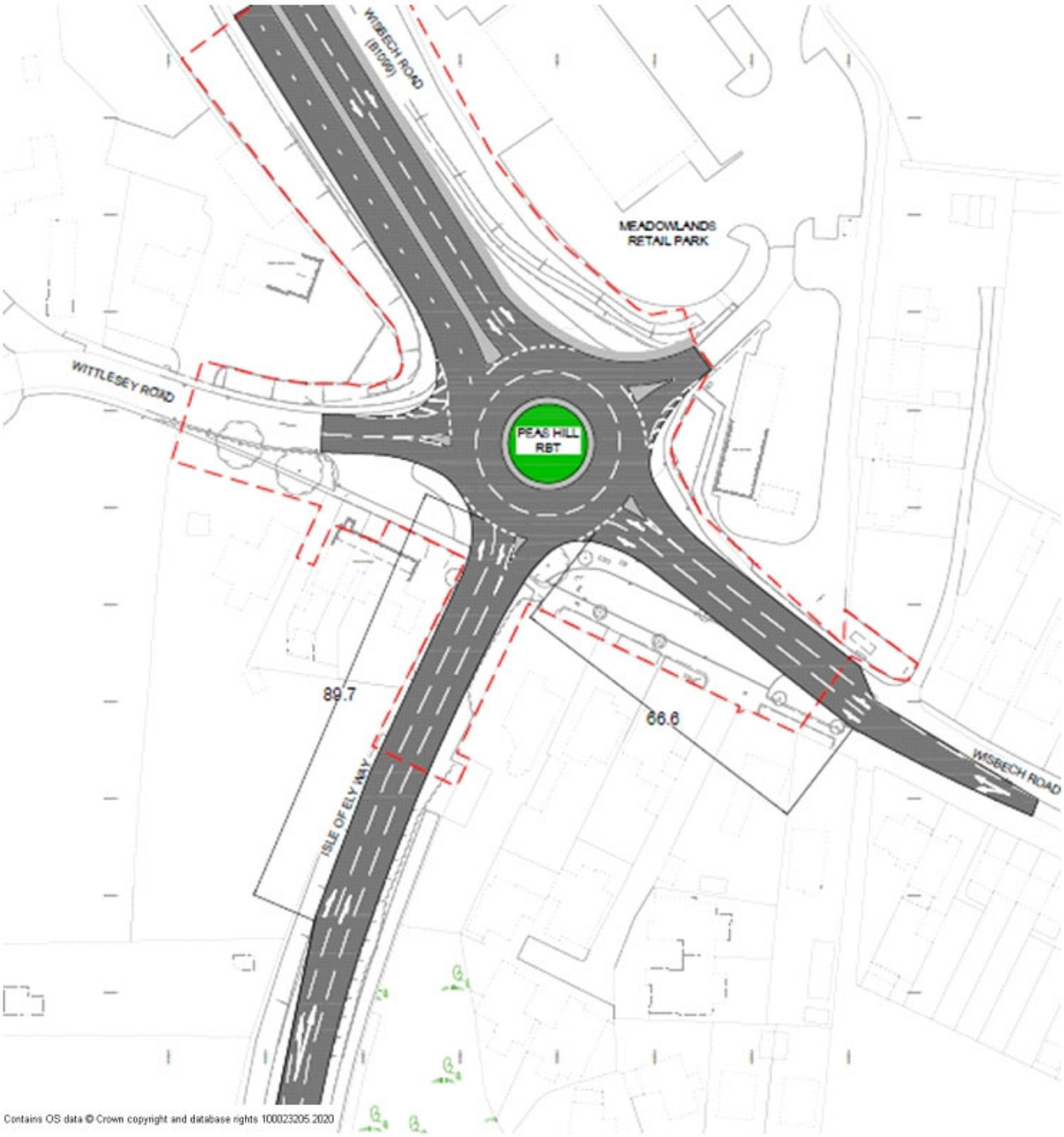

Figure 4.5: Peas Hill Roundabout Option 5.2 (40m ICD)

Figure 4.6: Peas Hill Roundabout Option 5.2 (50m ICD)

Figure 4.7: Peas Hill Roundabout Option 5.2 (60m ICD)

4.6.5. Note that the dashed red line shows the existing highway boundary, and that options for either a 50m or 60m ICD roundabout require small amounts of land take to the east and south west of the circulatory.

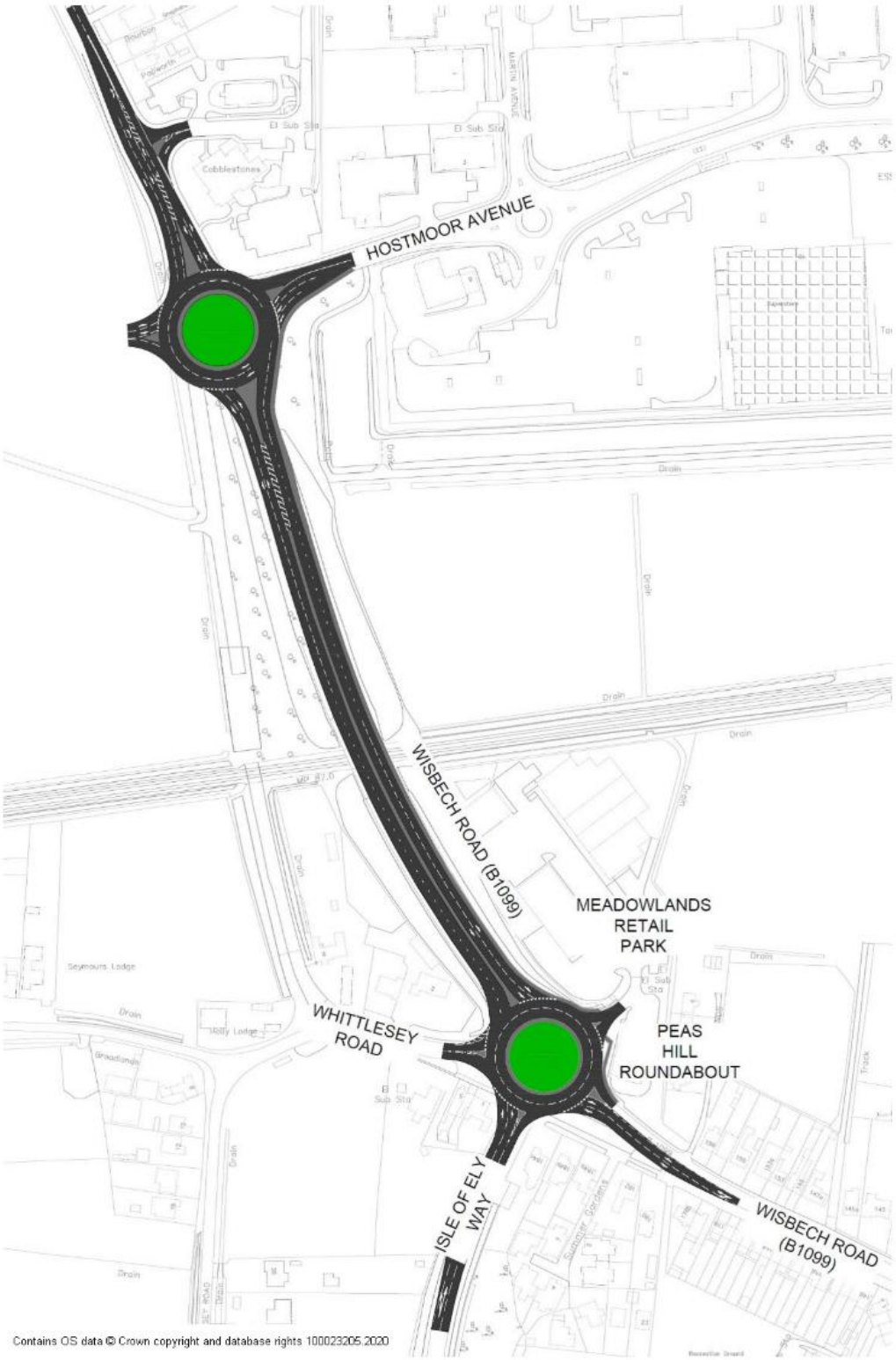

Figure 4.8: Peas Hill Roundabout Option 5.4 (60m ICD) Peas Hill and Hostmoor Avenue Roundabout

Option 5.2 Results

4.6.6. The overall junction operation for the AM peak hour is shown beneath in Table 4.3 and Table 4.4 for 2026 and 2031 AM peak hour respectively. The table compares the DM to Option 5.2 40m, 50m and 60m ICD, using the DM traffic flows and results include traffic volume, queue, delays and LOS for the Peas Hill Roundabout only.

Table 4.3: 2026 DM vs. Option 5.2 Results – AM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	31	31	31	31	144	135	164	132	19	18	19	13	6.8	7.5	7.1	6.1	A	A	A	A
Wisbech Road North	Wisbech Road South	271	270	267	271	144	135	164	132	19	18	19	13	7.6	7.2	7.4	7.2	A	A	A	A
Wisbech Road North	A141	643	643	638	645	144	135	164	132	19	18	19	13	17.7	17.4	16.0	14.0	C	C	C	B
Wisbech Road North	Whittlesey Rd	30	30	30	30	144	135	164	132	19	18	19	13	17.1	17.4	16.3	13.3	C	C	C	B
Wisbech Road North	Wisbech Road North	0	0	0	0	144	135	164	132	19	18	19	13	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	8	8	8	8	17	18	18	18	0	0	0	0	5.9	12.4	10.2	11.3	A	B	B	B
Industrial Park	A141	4	4	4	4	17	18	18	18	0	0	0	0	9.1	19.5	11.7	12.6	A	C	B	B
Industrial Park	Whittlesey Rd	0	0	0	0	17	18	18	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	4	4	4	4	17	18	18	18	0	0	0	0	11.7	15.1	15.0	13.7	B	C	C	B
Industrial Park	Industrial Park	0	0	0	0	17	18	18	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	270	274	265	274	242	159	92	79	83	28	13	8	40.2	33.3	18.7	14.1	E	D	C	B
Wisbech Road South	Whittlesey Rd	60	60	59	60	242	159	92	79	83	28	13	8	40.8	32.8	18.3	14.1	E	D	C	B
Wisbech Road South	Wisbech Road North	482	486	473	487	242	159	92	79	83	28	13	8	41.0	30.6	16.1	12.0	E	D	C	B
Wisbech Road South	Industrial Park	4	4	4	4	242	159	92	79	83	28	13	8	41.0	28.8	18.5	12.2	E	D	C	B
Wisbech Road South	Wisbech Road South	0	0	0	0	242	159	92	79	83	28	13	8	0.0	0.0	0.0	0.0	A	A	A	A
A141	Whittlesey Rd	7	8	7	7	650	111	104	89	242	17	12	9	116.5	31.8	22.6	22.7	F	D	C	C
A141	Wisbech Road North	621	641	617	640	650	111	104	89	242	17	12	9	115.2	31.4	25.7	23.4	F	D	D	C
A141	Industrial Park	4	4	4	4	650	111	104	89	242	17	12	9	126.5	37.7	33.4	25.8	F	E	D	D
A141	Wisbech Road South	149	153	147	153	650	111	104	89	242	17	12	9	116.5	38.5	32.1	28.1	F	E	D	D
A141	A141	0	0	0	0	650	111	104	89	242	17	12	9	0.0	0.0	0.0	0.0	A	A	A	A
Whittlesey Rd	Wisbech Road North	24	24	24	24	26	36	34	32	1	3	2	1	7.5	15.8	10.3	11.2	A	C	B	B
Whittlesey Rd	Industrial Park	3	3	3	3	26	36	34	32	1	3	2	1	8.0	15.3	13.0	10.8	A	C	B	B
Whittlesey Rd	Wisbech Road South	39	39	38	39	26	36	34	32	1	3	2	1	7.9	17.0	12.0	12.8	A	C	B	B
Whittlesey Rd	A141	55	55	54	55	26	36	34	32	1	3	2	1	8.3	17.3	10.0	11.6	A	C	A	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	26	36	34	32	1	3	2	1	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**2709**	**2740**	**2675**	**2742**	**650**	**174**	**173**	**136**	**45**	**13**	**8**	**6**	**51.2**	**25.0**	**18.2**	**15.8**	**F**	**D**	**C**	**C**

Table 4.4: 2031 DM vs. Option 5.2 Results – AM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	21	21	21	21	178	206	191	162	37	43	41	28	14.8	15.2	16.7	10.7	B	C	C	B
Wisbech Road North	Wisbech Road South	334	335	334	335	178	206	191	162	37	43	41	28	12.8	15.0	15.1	11.6	B	B	C	B
Wisbech Road North	A141	717	718	717	718	178	206	191	162	37	43	41	28	27.7	31.7	30.1	21.7	D	D	D	C
Wisbech Road North	Whittlesey Rd	19	19	19	19	178	206	191	162	37	43	41	28	27.4	30.2	28.4	20.1	D	D	D	C
Wisbech Road North	Wisbech Road North	0	0	0	0	178	206	191	162	37	43	41	28	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	8	8	8	8	16	18	19	18	0	0	0	0	6.5	14.2	10.5	15.4	A	B	B	C
Industrial Park	A141	4	4	4	4	16	18	19	18	0	0	0	0	11.8	22.6	15.9	15.0	B	C	C	C
Industrial Park	Whittlesey Rd	0	0	0	0	16	18	19	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	4	4	4	4	16	18	19	18	0	0	0	0	13.4	16.5	14.5	17.5	B	C	B	C
Industrial Park	Industrial Park	0	0	0	0	16	18	19	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	231	239	241	240	244	229	165	82	128	62	25	11	56.6	59.8	30.0	17.4	F	F	D	C
Wisbech Road South	Whittlesey Rd	65	67	68	68	244	229	165	82	128	62	25	11	54.4	57.0	29.3	18.1	F	F	D	C
Wisbech Road South	Wisbech Road North	499	512	515	515	244	229	165	82	128	62	25	11	57.4	57.9	27.2	15.1	F	F	D	C
Wisbech Road South	Industrial Park	7	8	8	8	244	229	165	82	128	62	25	11	52.7	55.0	30.6	16.7	F	F	D	C
Wisbech Road South	Wisbech Road South	0	0	0	0	244	229	165	82	128	62	25	11	0.0	0.0	0.0	0.0	A	A	A	A
A141	Whittlesey Rd	7	8	8	8	965	128	153	114	614	17	19	12	234.2	35.1	34.9	30.0	F	E	D	D
A141	Wisbech Road North	645	704	705	697	965	128	153	114	614	17	19	12	233.6	33.6	35.0	29.2	F	D	D	D
A141	Industrial Park	11	13	13	12	965	128	153	114	614	17	19	12	227.6	42.1	42.9	33.4	F	E	E	D
A141	Wisbech Road South	141	154	155	153	965	128	153	114	614	17	19	12	234.8	40.2	41.9	35.2	F	E	E	E
A141	A141	0	0	0	0	965	128	153	114	614	17	19	12	0.0	0.0	0.0	0.0	A	A	A	A
Whittlesey Rd	Wisbech Road North	26	26	26	26	30	43	34	38	1	4	2	2	7.5	21.6	12.5	13.3	A	C	B	B
Whittlesey Rd	Industrial Park	3	3	3	3	30	43	34	38	1	4	2	2	8.1	21.1	14.3	18.1	A	C	B	C
Whittlesey Rd	Wisbech Road South	39	39	39	39	30	43	34	38	1	4	2	2	8.9	22.2	12.9	16.0	A	C	B	C
Whittlesey Rd	A141	58	58	58	58	30	43	34	38	1	4	2	2	9.7	21.3	11.6	14.6	A	C	B	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	30	43	34	38	1	4	2	2	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**2839**	**2939**	**2944**	**2936**	**965**	**243**	**222**	**172**	**95**	**25**	**16**	**10**	**91.3**	**37.6**	**28.8**	**21.1**	**F**	**E**	**D**	**C**

4.6.7. Table 4.3 shows in the 2026 AM peak hour DM, the model predicts that Peas Hill Roundabout will operate over capacity. The table also shows that in 2026 the model predicts that under Option 5.2 with any of the proposed ICDs, the junction will operate within capacity.

4.6.8. Table 4.4 shows that in the 2031 AM peak hour, Peas Hill Roundabout is expected to operate over capacity in both the DM and proposed 40m ICD options. Both the 50m and 60m ICD options are predicted to operate within capacity in the 2031 AM peak hour.

4.6.9. The 60m ICD roundabout is predicted to be the optimum performer for the 2026 and 2031 AM peak hour.

4.6.10. The overall junction operation is shown beneath for the AM peak hour for Option 5.2 with the CS1 traffic flows for the 2026 and 2031 AM peak hour respectively.

Table 4.5: 2026 CS1 DM vs. Option 5.2 Results – AM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	22	22	23	22	172	154	174	141	33	29	30	19	11.4	11.2	11.2	7.7	B	B	B	A
Wisbech Road North	Wisbech Road South	280	281	281	281	172	154	174	141	33	29	30	19	11.2	9.7	11.2	8.6	B	A	B	A
Wisbech Road North	A141	705	705	707	706	172	154	174	141	33	29	30	19	26.0	23.7	24.3	17.1	D	C	C	C
Wisbech Road North	Whittlesey Rd	20	20	20	20	172	154	174	141	33	29	30	19	23.2	22.6	22.1	14.9	C	C	C	B
Wisbech Road North	Wisbech Road North	0	0	0	0	172	154	174	141	33	29	30	19	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	8	8	8	8	18	20	19	18	0	0	0	0	7.6	15.2	15.2	16.0	A	C	C	C
Industrial Park	A141	4	4	4	4	18	20	19	18	0	0	0	0	7.6	15.1	10.9	16.8	A	C	B	C
Industrial Park	Whittlesey Rd	0	0	0	0	18	20	19	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	8	8	8	8	18	20	19	18	0	0	0	0	13.4	13.1	14.5	13.6	B	B	B	B
Industrial Park	Industrial Park	0	0	0	0	18	20	19	18	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	244	250	246	247	244	213	124	87	107	45	17	10	49.7	46.8	23.4	16.8	E	E	C	C
Wisbech Road South	Whittlesey Rd	59	60	59	60	243	213	124	87	107	45	17	10	50.7	45.5	22.9	16.8	F	E	C	C
Wisbech Road South	Wisbech Road North	490	500	494	497	243	213	124	87	107	45	17	10	50.7	44.9	20.8	14.7	F	E	C	B
Wisbech Road South	Industrial Park	4	4	4	4	243	213	124	87	107	45	17	10	48.7	41.0	18.8	16.0	E	E	C	C
Wisbech Road South	Wisbech Road South	0	0	0	0	243	213	124	87	107	45	17	10	0.0	0.0	0.0	0.0	A	A	A	A
A141	Whittlesey Rd	7	8	7	8	660	110	107	107	272	14	14	10	126.3	27.5	26.7	22.9	F	D	D	C
A141	Wisbech Road North	621	639	627	638	660	110	107	107	272	14	14	10	127.9	28.9	29.4	26.1	F	D	D	D
A141	Industrial Park	4	4	4	4	660	110	107	107	272	14	14	10	129.3	39.5	41.6	34.4	F	E	E	D
A141	Wisbech Road South	147	151	148	151	660	110	107	107	272	14	14	10	130.4	36.1	36.1	31.5	F	E	E	D
A141	A141	0	0	0	0	660	110	107	107	272	14	14	10	0.0	0.0	0.0	0.0	A	A	A	A
Whittlesey Rd	Wisbech Road North	24	24	24	24	27	35	30	35	1	3	1	2	7.5	17.8	9.0	12.0	A	C	A	B
Whittlesey Rd	Industrial Park	3	3	3	3	27	35	30	35	1	3	1	2	8.8	18.5	10.6	10.4	A	C	B	B
Whittlesey Rd	Wisbech Road South	41	41	41	41	27	35	30	35	1	3	1	2	8.6	16.9	12.4	13.4	A	C	B	B
Whittlesey Rd	A141	53	52	53	53	27	35	30	35	1	3	1	2	8.3	17.4	10.8	12.6	A	C	B	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	27	35	30	35	1	3	1	2	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**2743**	**2783**	**2759**	**2778**	**660**	**218**	**186**	**156**	**55**	**18**	**12**	**8**	**59.5**	**30.1**	**23.3**	**18.4**	**F**	**D**	**C**	**C**

Table 4.6: 2031 CS1 DM vs. Option 5.2 Results – AM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	22	20	26	25	339	420	232	208	120	193	55	49	53.8	74.2	20.8	10.6	F	F	C	B
Wisbech Road North	Wisbech Road South	279	250	335	325	339	420	232	208	120	193	55	49	49.3	68.6	17.7	11.6	E	F	C	B
Wisbech Road North	A141	780	704	702	686	339	420	232	208	120	193	55	49	72.2	100.2	33.5	22.6	F	F	D	C
Wisbech Road North	Whittlesey Rd	19	17	19	19	339	420	232	208	120	193	55	49	67.2	97.4	29.8	19.8	F	F	D	C
Wisbech Road North	Wisbech Road North	0	0	0	0	339	420	232	208	120	193	55	49	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	8	8	8	8	18	20	22	26	0	1	1	2	7.1	14.4	17.5	17.5	A	B	C	C
Industrial Park	A141	4	4	4	4	18	20	22	26	0	1	1	2	10.4	19.5	17.2	16.7	B	C	C	C
Industrial Park	Whittlesey Rd	0	0	0	0	18	20	22	26	0	1	1	2	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	8	7	8	7	18	20	22	26	0	1	1	2	14.3	13.0	17.4	15.9	B	B	C	C
Industrial Park	Industrial Park	0	0	0	0	18	20	22	26	0	1	1	2	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	210	212	201	193	247	225	111	84	154	77	17	9	70.8	66.0	23.7	15.7	F	F	C	C
Wisbech Road South	Whittlesey Rd	55	56	62	58	246	225	111	84	154	77	17	9	71.7	65.9	23.7	15.7	F	F	C	C
Wisbech Road South	Wisbech Road North	496	496	489	467	246	225	111	84	154	77	17	9	71.6	65.7	23.0	14.0	F	F	C	B
Wisbech Road South	Industrial Park	3	3	7	7	246	225	111	84	154	77	17	9	62.6	65.6	26.8	16.9	F	F	D	C
Wisbech Road South	Wisbech Road South	0	0	0	0	246	225	111	84	154	77	17	9	0.0	0.0	0.0	0.0	A	A	A	A
A141	Whittlesey Rd	7	8	19	19	962	224	162	179	614	54	21	33	236.7	34.2	33.9	30.7	F	D	D	D
A141	Wisbech Road North	615	629	696	683	962	224	162	179	614	54	21	33	232.7	34.8	34.4	31.0	F	D	D	D
A141	Industrial Park	4	4	12	12	962	224	162	179	614	54	21	33	241.5	43.6	44.1	39.5	F	E	E	E
A141	Wisbech Road South	178	184	149	143	962	224	162	179	614	54	21	33	232.0	42.1	42.3	36.6	F	E	E	E
A141	A141	0	0	0	0	962	224	162	179	614	54	21	33	0.0	0.0	0.0	0.0	A	A	A	A
Whittlesey Rd	Wisbech Road North	26	24	26	25	29	63	40	49	1	11	3	8	7.4	23.7	12.0	12.8	A	C	B	B
Whittlesey Rd	Industrial Park	3	3	3	3	29	63	40	49	1	11	3	8	10.3	28.1	16.1	13.1	B	D	C	B
Whittlesey Rd	Wisbech Road South	43	41	42	40	29	63	40	49	1	11	3	8	8.3	25.9	13.1	15.6	A	D	B	C
Whittlesey Rd	A141	49	46	51	50	29	63	40	49	1	11	3	8	8.9	24.3	13.3	14.2	A	C	B	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	29	63	40	49	1	11	3	8	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**2809**	**2715**	**2857**	**2773**	**962**	**466**	**245**	**239**	**116**	**67**	**19**	**20**	**111.8**	**63.8**	**28.6**	**21.7**	**F**	**F**	**D**	**C**

4.6.11. Table 4.5 shows that in the 2026 AM peak hour CS1 scenario, the model predicts that Peas Hill Roundabout will operate over capacity overall in the DM but within capacity with Option 5.2 for all size ICD roundabouts tested.

4.6.12. Table 4.6 shows that in the 2031 CS1 scenario, Peas Hill Roundabout is expected to operate over capacity in both the DM and with the proposed 40m ICD roundabout.

4.6.13. The 60m ICD roundabout is predicted to be the optimum performing option in the 2031 AM peak hour.

4.6.14. The overall junction operation for the PM peak hour is shown below in Table 4.7 and Table 4.8 for 2026 and 2031 PM peak hours respectively. The table compares the DM to Option 5.2 with 40m, 50m and 60m ICD roundabouts, using the DM traffic flows.

Table 4.7: 2026 DM vs. Option 5.2 Results – PM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	41	42	42	41	186	151	158	151	30	21	19	19	8.5	9.2	8.5	7.5	A	A	A	A
Wisbech Road North	Wisbech Road South	460	473	469	464	186	151	158	151	30	21	19	19	8.4	8.4	8.4	7.6	A	A	A	A
Wisbech Road North	A141	734	754	751	743	186	151	158	151	30	21	19	19	18.2	18.0	15.6	12.1	C	C	C	B
Wisbech Road North	Whittlesey Rd	50	51	51	51	186	151	158	151	30	21	19	19	17.8	16.6	14.7	11.3	C	C	B	B
Wisbech Road North	Wisbech Road North	0	0	0	0	186	151	158	151	30	21	19	19	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	39	39	39	39	28	24	29	29	1	2	2	2	8.4	17.9	14.9	16.8	A	C	B	C
Industrial Park	A141	20	20	20	19	28	24	29	29	1	2	2	2	10.5	20.0	16.6	18.2	B	C	C	C
Industrial Park	Whittlesey Rd	0	0	0	0	28	24	29	29	1	2	2	2	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	27	27	27	27	28	24	29	29	1	2	2	2	13.1	17.6	14.6	15.7	B	C	B	C
Industrial Park	Industrial Park	0	0	0	0	28	24	29	29	1	2	2	2	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	161	165	165	164	169	114	65	55	22	24	9	5	21.5	36.7	17.8	12.7	C	E	C	B
Wisbech Road South	Whittlesey Rd	39	42	41	41	169	114	65	55	22	24	9	5	20.9	37.4	17.5	12.7	C	E	C	B
Wisbech Road South	Wisbech Road North	420	432	430	431	169	114	65	55	22	24	9	5	21.7	38.1	17.7	12.1	C	E	C	B
Wisbech Road South	Industrial Park	17	17	17	17	169	114	65	55	22	24	9	5	21.6	39.7	21.5	14.9	C	E	C	B
Wisbech Road South	Wisbech Road South	3	4	4	4	169	114	65	55	22	24	9	5	17.2	45.5	20.0	16.1	C	E	C	C
A141	Whittlesey Rd	21	20	20	21	578	91	91	111	203	10	10	9	89.6	19.0	19.1	17.2	F	C	C	C
A141	Wisbech Road North	690	687	683	704	578	91	91	111	203	10	10	9	90.7	21.4	20.9	18.2	F	C	C	C
A141	Industrial Park	11	12	12	12	578	91	91	111	203	10	10	9	91.0	25.4	29.0	22.5	F	D	D	C
A141	Wisbech Road South	146	147	146	149	578	91	91	111	203	10	10	9	90.8	25.2	25.5	21.9	F	D	D	C
A141	A141	4	4	4	4	578	91	91	111	203	10	10	9	105.9	26.5	27.0	23.6	F	D	D	C
Whittlesey Rd	Wisbech Road North	34	35	34	34	30	27	22	30	1	1	1	2	6.7	13.6	8.9	9.2	A	B	A	A
Whittlesey Rd	Industrial Park	2	2	2	2	30	27	22	30	1	1	1	2	8.3	10.3	9.0	9.5	A	B	A	A
Whittlesey Rd	Wisbech Road South	28	29	28	28	30	27	22	30	1	1	1	2	7.9	14.1	9.4	10.7	A	B	A	B
Whittlesey Rd	A141	16	17	17	17	30	27	22	30	1	1	1	2	8.3	15.3	8.9	11.3	A	C	A	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	30	27	22	30	1	1	1	2	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**2963**	**3019**	**3001**	**3011**	**583**	**157**	**159**	**157**	**31**	**12**	**8**	**8**	**38.0**	**21.8**	**16.3**	**13.5**	**E**	**C**	**C**	**B**

Table 4.8: 2031 DM vs. Option 5.2 Results – PM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	43	43	44	44	249	259	225	170	58	56	42	27	16.0	16.7	13.1	10.1	C	C	B	B
Wisbech Road North	Wisbech Road South	468	463	471	475	249	259	225	170	58	56	42	27	16.5	16.1	13.9	11.0	C	C	B	B
Wisbech Road North	A141	818	810	825	831	249	259	225	170	58	56	42	27	32.8	30.8	26.1	19.2	D	D	D	C
Wisbech Road North	Whittlesey Rd	55	54	55	56	249	259	225	170	58	56	42	27	32.7	30.2	25.5	19.7	D	D	D	C
Wisbech Road North	Wisbech Road North	0	0	0	0	249	259	225	170	58	56	42	27	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	40	40	40	41	27	40	30	30	1	5	2	2	9.5	25.9	19.3	23.8	A	D	C	C
Industrial Park	A141	24	23	24	24	27	40	30	30	1	5	2	2	11.2	26.2	21.0	23.9	B	D	C	C
Industrial Park	Whittlesey Rd	0	0	0	0	27	40	30	30	1	5	2	2	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	27	26	27	27	27	40	30	30	1	5	2	2	15.3	24.7	19.2	20.1	C	C	C	C
Industrial Park	Industrial Park	0	0	0	0	27	40	30	30	1	5	2	2	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	181	175	182	186	211	198	82	67	36	54	14	9	29.3	75.0	24.0	17.0	D	F	C	C
Wisbech Road South	Whittlesey Rd	41	39	41	42	211	198	82	67	36	54	14	9	30.1	76.3	24.2	17.1	D	F	C	C
Wisbech Road South	Wisbech Road North	426	413	427	437	211	198	82	67	36	54	14	9	29.7	78.9	24.7	16.1	D	F	C	C
Wisbech Road South	Industrial Park	14	13	14	15	211	198	82	67	36	54	14	9	27.0	82.9	29.3	19.7	D	F	D	C
Wisbech Road South	Wisbech Road South	4	4	4	4	211	198	82	67	36	54	14	9	29.4	99.9	31.3	19.5	D	F	D	C
A141	Whittlesey Rd	21	21	21	22	791	144	105	82	373	17	16	9	147.4	33.3	35.3	28.9	F	D	E	D
A141	Wisbech Road North	709	721	730	732	791	144	105	82	373	17	16	9	146.5	33.0	34.4	29.4	F	D	D	D
A141	Industrial Park	12	13	13	13	791	144	105	82	373	17	16	9	146.1	42.3	45.6	32.5	F	E	E	D
A141	Wisbech Road South	160	159	164	165	791	144	105	82	373	17	16	9	147.0	38.1	41.2	35.1	F	E	E	E
A141	A141	4	4	4	4	791	144	105	82	373	17	16	9	156.3	36.7	42.6	40.7	F	E	E	E
Whittlesey Rd	Wisbech Road North	34	34	34	34	28	39	22	25	1	3	1	1	6.9	15.3	8.1	9.6	A	C	A	A
Whittlesey Rd	Industrial Park	2	2	2	2	28	39	22	25	1	3	1	1	7.5	14.2	9.4	10.6	A	B	A	B
Whittlesey Rd	Wisbech Road South	28	28	28	28	28	39	22	25	1	3	1	1	8.5	15.3	9.3	11.6	A	C	A	B
Whittlesey Rd	A141	17	17	17	17	28	39	22	25	1	3	1	1	9.3	16.4	9.2	12.9	A	C	A	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	28	39	22	25	1	3	1	1	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**3126**	**3101**	**3168**	**3197**	**791**	**273**	**225**	**170**	**57**	**27**	**15**	**10**	**61.0**	**38.4**	**26.0**	**20.5**	**F**	**E**	**D**	**C**

4.6.15. Table 4.7 shows that in the 2026 PM peak hour DM, the model is predicted to operate over capacity at Peas Hill Roundabout. The table also shows that in 2026 the model predicts that Option 5.2 with any of the ICDs will operate within capacity.

4.6.16. Table 4.8 shows that in 2031 Peas Hill Roundabout is expected to operate over capacity in both the DM and the proposed 40m ICD roundabout option.

4.6.17. Overall, in the 2031 PM peak hour, the 60m ICD roundabout is predicted to be the optimum performer.

4.6.18. The overall junction operation for the PM peak hour for Option 5.2 is shown beneath in Table 4.9 and Table 4.10 for the 2026 and 2031 PM peak hours respectively.

Table 4.9: 2026 CS1 DM vs. Option 5.2 Results – PM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	43	43	40	43	233	205	210	161	44	39	61	21	15.7	13.2	12.6	9.6	C	B	B	A
Wisbech Road North	Wisbech Road South	499	500	476	500	233	205	210	161	44	39	61	21	14.8	12.8	12.6	9.8	B	B	B	A
Wisbech Road North	A141	826	829	789	828	233	205	210	161	44	39	61	21	28.2	26.5	24.3	16.1	D	D	C	C
Wisbech Road North	Whittlesey Rd	53	53	51	53	233	205	210	161	44	39	61	21	27.0	24.6	23.1	15.7	D	C	C	C
Wisbech Road North	Wisbech Road North	0	0	0	0	233	205	210	161	44	39	61	21	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	39	39	37	39	25	30	30	28	1	3	8	2	10.1	22.6	18.7	22.3	B	C	C	C
Industrial Park	A141	20	20	19	20	25	30	30	28	1	3	8	2	12.6	24.1	19.4	21.3	B	C	C	C
Industrial Park	Whittlesey Rd	0	0	0	0	25	30	30	28	1	3	8	2	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	28	27	26	27	25	30	30	28	1	3	8	2	16.3	23.3	18.3	17.5	C	C	C	C
Industrial Park	Industrial Park	0	0	0	0	25	30	30	28	1	3	8	2	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	153	151	146	153	187	175	82	61	27	40	23	7	25.1	58.8	22.7	15.7	D	F	C	C
Wisbech Road South	Whittlesey Rd	38	38	36	38	187	175	82	61	27	40	23	7	24.7	59.3	23.7	15.9	C	F	C	C
Wisbech Road South	Wisbech Road North	429	427	406	429	187	175	82	61	27	40	23	7	25.0	60.5	23.6	15.2	C	F	C	C
Wisbech Road South	Industrial Park	17	17	15	16	187	175	82	61	27	40	23	7	23.1	64.2	27.2	17.1	C	F	D	C
Wisbech Road South	Wisbech Road South	4	4	4	4	187	175	82	61	27	40	23	7	22.3	77.0	31.7	18.5	C	F	D	C
A141	Whittlesey Rd	21	21	20	21	614	96	84	80	253	10	11	8	103.2	22.1	19.7	17.3	F	C	C	C
A141	Wisbech Road North	725	733	693	732	614	96	84	80	253	10	11	8	107.4	21.6	21.1	19.1	F	C	C	C
A141	Industrial Park	13	13	12	13	614	96	84	80	253	10	11	8	110.1	25.6	27.8	23.2	F	D	D	C
A141	Wisbech Road South	135	136	129	136	614	96	84	80	253	10	11	8	108.1	24.9	25.8	23.1	F	C	D	C
A141	A141	4	4	4	4	614	96	84	80	253	10	11	8	106.0	24.5	31.1	24.2	F	C	D	C
Whittlesey Rd	Wisbech Road North	57	57	55	57	25	33	34	28	1	2	9	1	7.6	15.0	8.4	10.3	A	B	A	B
Whittlesey Rd	Industrial Park	2	2	2	2	25	33	34	28	1	2	9	1	8.4	20.9	14.1	21.7	A	C	B	C
Whittlesey Rd	Wisbech Road South	26	26	25	26	25	33	34	28	1	2	9	1	8.6	15.4	10.3	11.7	A	C	B	B
Whittlesey Rd	A141	17	17	16	17	25	33	34	28	1	2	9	1	8.8	17.7	8.9	11.1	A	C	A	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	25	33	34	28	1	2	9	1	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**3148**	**3158**	**3001**	**3159**	**614**	**224**	**210**	**161**	**40**	**19**	**24**	**8**	**46.7**	**29.3**	**19.7**	**15.9**	**E**	**D**	**C**	**C**

Table 4.10: 2031 CS1 DM vs. Option 5.2 Results – PM Peak Hour

Movement		Volume				Queue Length								Delay (secs)							
						Max QL (m)				Avg QL (m)				Avg				LOS			
From	To	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m	DM	40m	50m	60m
Wisbech Road North	Industrial Park	45	45	43	46	375	355	329	248	152	136	104	48	49.5	44.4	27.4	16.2	E	E	D	C
Wisbech Road North	Wisbech Road South	495	495	482	505	375	355	329	248	152	136	104	48	51.0	44.5	28.6	17.4	F	E	D	C
Wisbech Road North	A141	906	904	877	921	375	355	329	248	152	136	104	48	70.9	65.4	44.5	27.6	F	F	E	D
Wisbech Road North	Whittlesey Rd	57	57	55	58	375	355	329	248	152	136	104	48	71.1	64.8	43.8	26.9	F	F	E	D
Wisbech Road North	Wisbech Road North	0	0	0	0	375	355	329	248	152	136	104	48	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road South	42	42	42	42	30	40	37	32	2	5	6	3	12.3	29.3	24.8	29.6	B	D	C	D
Industrial Park	A141	24	24	23	24	30	40	37	32	2	5	6	3	14.4	29.9	22.9	29.0	B	D	C	D
Industrial Park	Whittlesey Rd	0	0	0	0	30	40	37	32	2	5	6	3	0.0	0.0	0.0	0.0	A	A	A	A
Industrial Park	Wisbech Road North	27	27	26	27	30	40	37	32	2	5	6	3	19.7	31.4	24.0	26.5	C	D	C	D
Industrial Park	Industrial Park	0	0	0	0	30	40	37	32	2	5	6	3	0.0	0.0	0.0	0.0	A	A	A	A
Wisbech Road South	A141	138	139	136	138	195	221	101	66	39	86	20	9	34.0	112.0	31.3	19.5	D	F	D	C
Wisbech Road South	Whittlesey Rd	35	35	35	36	194	221	101	66	39	86	20	9	32.7	108.7	31.7	21.2	D	F	D	C
Wisbech Road South	Wisbech Road North	404	406	396	404	194	221	101	66	39	86	20	9	34.2	120.9	32.6	18.9	D	F	D	C
Wisbech Road South	Industrial Park	14	14	14	14	194	221	101	66	39	86	20	9	32.3	134.9	41.3	22.0	D	F	E	C
Wisbech Road South	Wisbech Road South	4	4	4	4	194	221	101	66	39	86	20	9	36.1	138.5	35.1	26.9	E	F	E	D
A141	Whittlesey Rd	21	20	20	21	899	117	200	89	489	15	36	10	177.8	36.1	33.3	30.0	F	E	D	D
A141	Wisbech Road North	741	748	733	735	899	117	200	89	489	15	36	10	179.1	34.7	34.8	30.4	F	D	D	D
A141	Industrial Park	12	13	13	13	899	117	200	89	489	15	36	10	176.8	42.3	42.1	33.0	F	E	E	D
A141	Wisbech Road South	126	128	128	130	899	117	200	89	489	15	36	10	179.3	40.4	41.4	35.2	F	E	E	E
A141	A141	4	4	4	4	899	117	200	89	489	15	36	10	178.3	35.6	44.1	37.3	F	E	E	E
Whittlesey Rd	Wisbech Road North	45	46	44	46	28	30	38	23	1	2	5	1	6.7	14.7	8.3	9.3	A	B	A	A
Whittlesey Rd	Industrial Park	2	2	2	2	28	30	38	23	1	2	5	1	6.7	19.4	10.2	6.5	A	C	B	A
Whittlesey Rd	Wisbech Road South	25	26	25	26	28	30	38	23	1	2	5	1	8.4	16.6	10.7	11.8	A	C	B	B
Whittlesey Rd	A141	17	17	17	17	28	30	38	23	1	2	5	1	8.5	16.5	9.8	10.5	A	C	A	B
Whittlesey Rd	Whittlesey Rd	0	0	0	0	28	30	38	23	1	2	5	1	0.0	0.0	0.0	0.0	A	A	A	A
	TOTAL	**3183**	**3195**	**3118**	**3211**	**899**	**355**	**373**	**248**	**88**	**49**	**36**	**15**	**87.8**	**60.5**	**35.4**	**24.8**	**F**	**F**	**E**	**C**

4.6.19. Table 4.9 shows that during the 2026 PM peak hour, with CS1 traffic flows, the model predicts that Peas Hill Roundabout will operate over capacity in the DM but within capacity overall for Option 5.2 with any of the proposed ICDs.

4.6.20. Table 4.10 shows that 2031 PM peak hour, with CS1 traffic flows, Peas Hill Roundabout is expected to operate over capacity in both the DM scenario and with the proposed ICD 40m and 50m roundabouts. Table 4.10 shows that in the 2031 CS1 PM peak hour, the only option that is predicted to operate within capacity is the 60m ICD roundabout.

Option 5.2 Summary

4.6.21. Table 4.11 below shows a summary of the Overall Level of Service (LOS) for Peas Hill Roundabout for the DM and Option 5.2 (DM and CS1 forecast flows). LOS A-C have been coloured as green, LOS D has been coloured as orange and LOS E and F have been coloured as red.

Table 4.11: Option 5.2 Results Summary

		DM	40m	50m	60m
AM Peak	2026	F	D	C	C
	2026 CS1	F	F	D	C
	2031	F	E	D	C
	2031 CS1	F	F	D	C
PM Peak	2026	E	C	C	B
	2026 CS1	E	D	C	C
	2031	F	E	D	C
	2031 CS1	F	F	E	C

4.6.22. Overall Table 4.11 shows that all options are expected to offer benefits at Peas Hill Roundabout over the DM but that the predicted optimal performer which operates within capacity for all years and scenarios, is the 60m ICD roundabout.

4.7. Peas Hill Option 5.3

4.7.1. Proposed Option 5.3 reduces Peas Hill Roundabout from a 5-arm to 4-arm approach roundabout, by closing the Whittlesey Road approach. Vehicles that once used Whittlesey Road would use Marina Drive with a new link road that offers direct access to the A141 Isle of Ely Way, as shown in Figure 4.9 below.

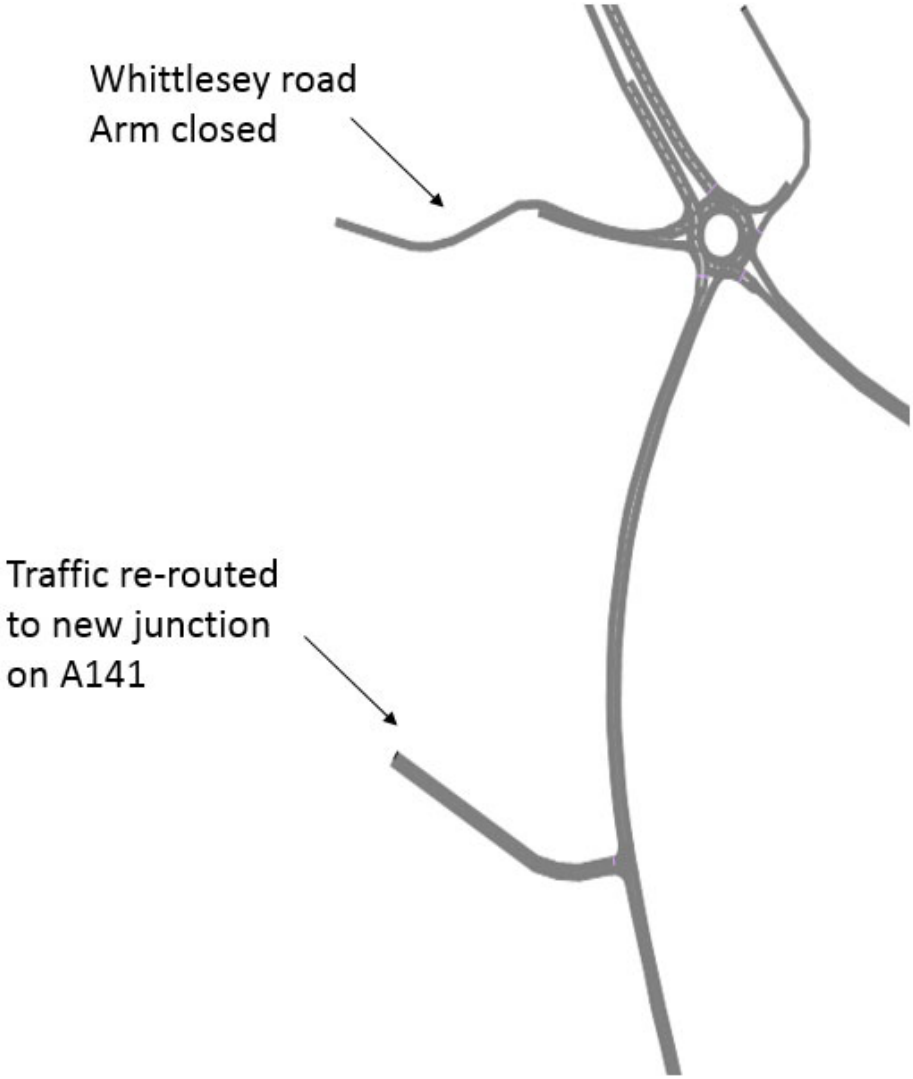

Figure 4.9: Peas Hill Roundabout Option 5.3 Design Layout

4.7.2. To model this option the vehicle input and routes from Whittlesey Road were moved to a new link on Marina Drive that connects to the A141 Isle of Ely Way. The new junction operates on give way coded into the model with priority rules. No other changes were made to Peas Hill Roundabout.

Option 5.3 Results

4.7.3. The overall junction operation for the AM peak hour is shown below in Table 4.12. The table compares the DM to Option 5.3 for the AM peak hour in 2026 and 2031, for both the Peas Hill Roundabout and the new junction on the A141 Isle of Ely Way at Marina Drive.

Table 4.12: 2026 and 2031 DM vs. Option 5.3 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	31	31	21	21	144	168	178	284	19	23	37	72	6.8	8.7	14.8	30.5	A	A	B	D
	Wisbech Road North	Wisbech Road South	271	270	334	332	144	168	178	284	19	23	37	72	7.6	9.7	12.8	30.0	A	A	B	D
	Wisbech Road North	A141	643	671	717	725	144	168	178	284	19	23	37	72	17.7	22.4	27.7	52.5	C	C	D	F
	Wisbech Road North	Whittlesey Rd	30	0	19	0	144	168	178	284	19	23	37	72	17.1	0.0	27.4	0.0	C	A	D	A
	Wisbech Road North	Wisbech Road North	0	0	0	0	144	168	178	284	19	23	37	72	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	8	8	8	8	17	16	16	17	0	0	0	0	5.9	7.1	6.5	10.2	A	A	A	B
	Industrial Park	A141	4	4	4	4	17	16	16	17	0	0	0	0	9.1	8.2	11.8	22.1	A	A	B	C
	Industrial Park	Whittlesey Rd	0	0	0	0	17	16	16	17	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road North	4	4	4	4	17	16	16	17	0	0	0	0	11.7	11.8	13.4	17.2	B	B	B	C
	Industrial Park	Industrial Park	0	0	0	0	17	16	16	17	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Wisbech Road South	A141	270	326	231	268	242	239	244	246	83	90	128	154	40.2	44.3	56.6	79.6	E	E	F	F
	Wisbech Road South	Whittlesey Rd	60	0	65	0	242	239	244	245	83	89	128	153	40.8	0.0	54.4	0.0	E	A	F	A
	Wisbech Road South	Wisbech Road North	482	473	499	446	242	239	244	245	83	89	128	153	41.0	43.8	57.4	79.1	E	E	F	F
	Wisbech Road South	Industrial Park	4	4	7	7	242	239	244	245	83	89	128	153	41.0	36.7	52.7	68.9	E	E	F	F
	Wisbech Road South	Wisbech Road South	0	0	0	0	242	239	244	245	83	89	128	153	0.0	0.0	0.0	0.0	A	A	A	A
	A141	Whittlesey Rd	7	0	7	0	650	282	965	282	242	97	614	121	116.5	0.0	234.2	0.0	F	A	F	A
	A141	Wisbech Road North	621	658	645	727	650	282	965	282	242	97	614	121	115.2	47.3	233.6	51.4	F	E	F	F
	A141	Industrial Park	4	6	11	15	650	282	965	282	242	97	614	121	126.5	48.0	227.6	52.8	F	E	F	F
	A141	Wisbech Road South	149	187	141	186	650	282	965	282	242	97	614	121	116.5	47.8	234.8	52.4	F	E	F	F
	A141	A141	0	0	0	0	650	282	965	282	242	97	614	121	0.0	0.0	0.0	0.0	A	A	A	A
	Whittlesey Rd	Wisbech Road North	24	-	26	-	26	-	30	0	1	-	1	0	7.5	-	7.5	0.0	A	-	A	-
	Whittlesey Rd	Industrial Park	3	-	3	-	26	-	30	0	1	-	1	0	8.0	-	8.1	0.0	A	-	A	-
	Whittlesey Rd	Wisbech Road South	39	-	39	-	26	-	30	0	1	-	1	0	7.9	-	8.9	0.0	A	-	A	-
	Whittlesey Rd	A141	55	-	58	-	26	-	30	0	1	-	1	0	8.3	-	9.7	0.0	A	-	A	-
	Whittlesey Rd	Whittlesey Rd	0	-	0	-	26	-	30	0	1	-	1	0	0.0	-	0.0	0.0	A	-	A	-
		TOTAL	**2709**	**2643**	**2839**	**2741**	**650**	**282**	**965**	**317**	**45**	**32**	**95**	**57**	**51.2**	**35.4**	**91.3**	**56.0**	**F**	**E**	**F**	**F**
A141 Isle of Ely Way / Marina Drive	Isle of Ely Way North	Isle of Ely Way South	-	908	-	920	-	293	-	336	-	33	-	72	-	16.4	-	28.7	-	C	-	D
	Isle of Ely Way North	Marina Drive	-	87	-	77	-	305	-	348	-	36	-	77	-	21.4	-	38.1	-	C	-	E
	Isle of Ely Way South	Marina Drive	-	8	-	8	-	200	-	420	-	17	-	72	-	17.7	-	39.9	-	C	-	E
	Isle of Ely Way South	Isle of Ely Way North	-	797	-	871	-	200	-	420	-	17	-	72	-	21.8	-	43.1	-	C	-	E
	Marina Drive	Isle of Ely Way North	-	61	-	53	-	112	-	140	-	29	-	76	-	121.1	-	357.1	-	F	-	F
	Marina Drive	Isle of Ely Way South	-	51	-	47	-	112	-	140	-	29	-	75	-	151.0	-	390.3	-	F	-	F
		TOTAL	**-**	**1912**	**-**	**1976**	**-**	**308**	**-**	**459**	**-**	**29**	**-**	**74**	**-**	**25.6**	**-**	**52.0**	**-**	**D**	**-**	**F**

4.7.4. Table 4.12 shows that in both 2026 and 2031, Option 5.3 is expected to have little impact on junction operation, with both Peas Hill Roundabout and the new junction A141 Isle of Ely Way \ Marina Drive, predicted to operate over capacity with LOS E and F. Also, please note that VISSIM only records queues and delays back to the next node. Due to the introduction of a new node within the model network to represent the new junction, the queues and delay on the A141 Isle of Ely Way approach to Peas Hill Roundabout appear to have reduced, they are however now being recorded by the new node, which demonstrates that the A141 northbound approach to Peas Hill Roundabout remains over capacity.

4.7.5. The overall junction operation for the DM and Option 5.3 (DM flow scenario) for the 2026 and 2031 PM peak hour is shown below in Table 4.13.

Table 4.13: 2026 and 2031 DM vs. Option 5.3 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	41	41	43	43	186	222	249	362	30	38	58	143	8.5	13.8	16.0	51.6	A	B	C	F
	Wisbech Road North	Wisbech Road South	460	467	468	469	186	222	249	362	30	38	58	143	8.4	13.7	16.5	52.7	A	B	C	F
	Wisbech Road North	A141	734	794	818	876	186	222	249	362	30	38	58	143	18.2	27.1	32.8	78.5	C	D	D	F
	Wisbech Road North	Whittlesey Rd	50	0	55	0	186	222	249	362	30	38	58	143	17.8	0.0	32.7	0.0	C	A	D	A
	Wisbech Road North	Wisbech Road North	0	0	0	0	186	222	249	362	30	38	58	143	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	39	39	40	40	28	25	27	29	1	1	1	2	8.4	9.4	9.5	14.0	A	A	A	B
	Industrial Park	A141	20	20	24	24	28	25	27	29	1	1	1	2	10.5	12.8	11.2	19.5	B	B	B	C
	Industrial Park	Whittlesey Rd	0	0	0	0	28	25	27	29	1	1	1	2	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road North	27	27	27	27	28	25	27	29	1	1	1	2	13.1	15.4	15.3	20.5	B	C	C	C
	Industrial Park	Industrial Park	0	0	0	0	28	25	27	29	1	1	1	2	0.0	0.0	0.0	0.0	A	A	A	A
	Wisbech Road South	A141	161	207	181	217	169	204	211	233	22	44	36	129	21.5	33.5	29.3	82.1	C	D	D	F
	Wisbech Road South	Whittlesey Rd	39	0	41	0	169	203	211	233	22	44	36	128	20.9	0.0	30.1	0.0	C	A	D	A
	Wisbech Road South	Wisbech Road North	420	434	426	416	169	203	211	233	22	44	36	128	21.7	32.8	29.7	79.7	C	D	D	F
	Wisbech Road South	Industrial Park	17	17	14	14	169	203	211	233	22	44	36	128	21.6	27.9	27.0	73.9	C	D	D	F
	Wisbech Road South	Wisbech Road South	3	4	4	4	169	203	211	233	22	44	36	128	17.2	28.9	29.4	77.8	C	D	D	F
	A141	Whittlesey Rd	21	0	21	0	578	280	791	281	203	83	373	86	89.6	0.0	147.4	0.0	F	A	F	A
	A141	Wisbech Road North	690	742	709	739	578	280	791	281	203	83	373	86	90.7	38.9	146.5	41.1	F	E	F	E
	A141	Industrial Park	11	14	12	14	578	280	791	281	203	83	373	86	91.0	40.7	146.1	43.1	F	E	F	E
	A141	Wisbech Road South	146	179	160	186	578	280	791	281	203	83	373	86	90.8	39.2	147.0	42.4	F	E	F	E
	A141	A141	4	4	4	4	578	280	791	281	203	83	373	86	105.9	41.9	156.3	52.5	F	E	F	F
	Whittlesey Rd	Wisbech Road North	34	-	34	-	30	0	28	0	1	0	1	0	6.7	0.0	6.9	0.0	A	-	A	-
	Whittlesey Rd	Industrial Park	2	-	2	-	30	0	28	0	1	0	1	0	8.3	0.0	7.5	0.0	A	-	A	-
	Whittlesey Rd	Wisbech Road South	28	-	28	-	30	0	28	0	1	0	1	0	7.9	0.0	8.5	0.0	A	-	A	-
	Whittlesey Rd	A141	16	-	17	-	30	0	28	0	1	0	1	0	8.3	0.0	9.3	0.0	A	-	A	-
	Whittlesey Rd	Whittlesey Rd	0	-	0	-	30	0	28	0	1	0	1	0	0.0	0.0	0.0	0.0	A	-	A	-
		TOTAL	**2963**	**2990**	**3126**	**3072**	**583**	**299**	**791**	**381**	**31**	**25**	**57**	**63**	**38.0**	**29.5**	**61.0**	**61.2**	**E**	**D**	**F**	**F**
A141 Isle of Ely Way / Marina Drive	Isle of Ely Way North	Isle of Ely Way South	-	934	-	1022	-	300	-	319	-	31	-	66	-	15.5	-	24.7	-	C	-	C
	Isle of Ely Way North	Marina Drive	-	92	-	94	-	311	-	331	-	35	-	72	-	20.7	-	30.4	-	C	-	D
	Isle of Ely Way South	Marina Drive	-	21	-	21	-	196	-	232	-	14	-	17	-	12.7	-	22.4	-	B	-	C
	Isle of Ely Way South	Isle of Ely Way North	-	873	-	881	-	196	-	232	-	14	-	17	-	16.1	-	24.5	-	C	-	C
	Marina Drive	Isle of Ely Way North	-	65	-	64	-	66	-	90	-	9	-	18	-	55.8	-	118.2	-	F	-	F
	Marina Drive	Isle of Ely Way South	-	17	-	17	-	66	-	90	-	9	-	18	-	108.2	-	185.7	-	F	-	F
		TOTAL	**-**	**2002**	**-**	**2099**	**-**	**323**	**-**	**344**	**-**	**20**	**-**	**38**	**-**	**18.0**	**-**	**28.7**	**-**	**C**	**-**	**D**

4.7.6. Table 4.13 shows in both the 2026 and 2031 DM PM peak hour traffic flows, Option 5.3 is expected to have little impact on junction operation, with Peas Hill Roundabout operating over capacity with LOS E and F.

4.7.7. The overall junction operation for the AM peak hour DM and Option 5.3 for the CS1 forecast flows are shown below in Table 4.14.

Table 4.14: 2026 and 2031 CS1 DM vs. Option 5.3 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	22	22	22	26	172	223	339	347	33	45	120	94	11.4	16.5	53.8	44.5	B	C	F	E
	Wisbech Road North	Wisbech Road South	280	281	279	336	172	223	339	347	33	45	120	94	11.2	17.8	49.3	41.5	B	C	E	E
	Wisbech Road North	A141	705	724	780	720	172	223	339	347	33	45	120	94	26.0	34.7	72.2	65.9	D	D	F	F
	Wisbech Road North	Whittlesey Rd	20	0	19	0	172	223	339	347	33	45	120	94	23.2	0.0	67.2	0.0	C	A	F	A
	Wisbech Road North	Wisbech Road North	0	0	0	0	172	223	339	347	33	45	120	94	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	8	8	8	8	18	18	18	19	0	0	0	0	7.6	7.3	7.1	11.2	A	A	A	B
	Industrial Park	A141	4	4	4	4	18	18	18	19	0	0	0	0	7.6	9.7	10.4	13.9	A	A	B	B
	Industrial Park	Whittlesey Rd	0	0	0	0	18	18	18	19	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road North	8	8	8	8	18	18	18	19	0	0	0	0	13.4	13.5	14.3	19.2	B	B	B	C
	Industrial Park	Industrial Park	0	0	0	0	18	18	18	19	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Wisbech Road South	A141	244	294	210	248	244	245	247	246	107	116	154	149	49.7	57.9	70.8	78.3	E	F	F	F
	Wisbech Road South	Whittlesey Rd	59	0	55	0	243	244	246	245	107	115	154	149	50.7	0.0	71.7	0.0	F	A	F	A
	Wisbech Road South	Wisbech Road North	490	474	496	457	243	244	246	245	107	115	154	149	50.7	56.6	71.6	78.2	F	F	F	F
	Wisbech Road South	Industrial Park	4	4	3	6	243	244	246	245	107	115	154	149	48.7	53.8	62.6	77.7	E	F	F	F
	Wisbech Road South	Wisbech Road South	0	0	0	0	243	244	246	245	107	115	154	149	0.0	0.0	0.0	0.0	A	A	A	A
	A141	Whittlesey Rd	7	0	7	0	660	282	962	281	272	113	614	130	126.3	0.0	236.7	0.0	F	A	F	A
	A141	Wisbech Road North	621	658	615	730	660	282	962	281	272	113	614	130	127.9	52.8	232.7	53.7	F	F	F	F
	A141	Industrial Park	4	6	4	14	660	282	962	281	272	113	614	130	129.3	52.8	241.5	52.5	F	F	F	F
	A141	Wisbech Road South	147	188	178	188	660	282	962	281	272	113	614	130	130.4	53.2	232.0	55.0	F	F	F	F
	A141	A141	0	0	0	0	660	282	962	281	272	113	614	130	0.0	0.0	0.0	0.0	A	A	A	A
	Whittlesey Rd	Wisbech Road North	24	-	26	-	27	0	29	0	1	0	1	0	7.5	0.0	7.4	0.0	A	-	A	-
	Whittlesey Rd	Industrial Park	3	-	3	-	27	0	29	0	1	0	1	0	8.8	0.0	10.3	0.0	A	-	B	-
	Whittlesey Rd	Wisbech Road South	41	-	43	-	27	0	29	0	1	0	1	0	8.6	0.0	8.3	0.0	A	-	A	-
	Whittlesey Rd	A141	53	-	49	-	27	0	29	0	1	0	1	0	8.3	0.0	8.9	0.0	A	-	A	-
	Whittlesey Rd	Whittlesey Rd	0	-	0	-	27	0	29	0	1	0	1	0	0.0	0.0	0.0	0.0	A	-	A	-
		TOTAL	**2743**	**2672**	**2809**	**2744**	**660**	**303**	**962**	**370**	**55**	**43**	**116**	**62**	**59.5**	**44.8**	**111.8**	**61.3**	**F**	**E**	**F**	**F**
A141 Isle of Ely Way / Marina Drive	Isle of Ely Way North	Isle of Ely Way South	-	945	-	893	-	307	-	335	-	35	-	73	-	16.2	-	29.5	-	C	-	D
	Isle of Ely Way North	Marina Drive	-	77	-	77	-	319	-	346	-	38	-	78	-	22.3	-	38.6	-	C	-	E
	Isle of Ely Way South	Marina Drive	-	8	-	20	-	298	-	471	-	33	-	81	-	24.2	-	42.7	-	C	-	E
	Isle of Ely Way South	Isle of Ely Way North	-	793	-	871	-	298	-	471	-	33	-	81	-	29.4	-	47.8	-	D	-	E
	Marina Drive	Isle of Ely Way North	-	65	-	60	-	117	-	140	-	31	-	76	-	136.0	-	362.9	-	F	-	F
	Marina Drive	Isle of Ely Way South	-	51	-	44	-	117	-	140	-	31	-	76	-	154.2	-	389.9	-	F	-	F
		TOTAL	**-**	**1938**	**-**	**1966**	**-**	**368**	**-**	**498**	**-**	**33**	**-**	**77**	**-**	**29.3**	**-**	**55.4**	**-**	**D**	**-**	**F**

4.7.8. Table 4.14 shows that in both the 2026 and 2031 CS1 AM peak hour traffic flows, Option 5.3 is expected to have little impact on junction operation, with both Peas Hill Roundabout and the new junction A141 Isle of Ely Way \ Marina Drive, predicted to operate over capacity with LOS E and F.

4.7.9. The overall junction operation for the PM peak hour DM and Option 5.3 for the CS1 forecast flows are shown below in Table 4.15.

Table 4.15: 2026 and 2031 CS1 DM vs. Option 5.3 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3	DM	Opt 5.3
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	43	43	45	43	233	374	375	501	44	120	152	307	15.7	44.4	49.5	109.3	C	E	E	F
	Wisbech Road North	Wisbech Road South	499	497	495	471	233	374	375	501	44	120	152	307	14.8	43.9	51.0	108.3	B	E	F	F
	Wisbech Road North	A141	826	876	906	913	233	374	375	501	44	120	152	307	28.2	66.9	70.9	139.8	D	F	F	F
	Wisbech Road North	Whittlesey Rd	53	0	57	0	233	374	375	501	44	120	152	307	27.0	0.0	71.1	0.0	D	A	F	A
	Wisbech Road North	Wisbech Road North	0	0	0	0	233	374	375	501	44	120	152	307	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	39	39	42	43	25	26	30	26	1	1	2	2	10.1	14.3	12.3	15.7	B	B	B	C
	Industrial Park	A141	20	20	24	24	25	26	30	26	1	1	2	2	12.6	17.5	14.4	21.0	B	C	B	C
	Industrial Park	Whittlesey Rd	0	0	0	0	25	26	30	26	1	1	2	2	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road North	28	28	27	28	25	26	30	26	1	1	2	2	16.3	19.1	19.7	22.5	C	C	C	C
	Industrial Park	Industrial Park	0	0	0	0	25	26	30	26	1	1	2	2	0.0	0.0	0.0	0.0	A	A	A	A
	Wisbech Road South	A141	153	190	138	178	187	215	195	234	27	69	39	105	25.1	50.7	34.0	75.8	D	F	D	F
	Wisbech Road South	Whittlesey Rd	38	0	35	0	187	214	194	233	27	69	39	105	24.7	0.0	32.7	0.0	C	A	D	A
	Wisbech Road South	Wisbech Road North	429	427	404	414	187	214	194	233	27	69	39	105	25.0	49.6	34.2	75.7	C	E	D	F
	Wisbech Road South	Industrial Park	17	16	14	14	187	214	194	233	27	69	39	105	23.1	42.6	32.3	69.4	C	E	D	F
	Wisbech Road South	Wisbech Road South	4	4	4	4	187	214	194	233	27	69	39	105	22.3	56.9	36.1	79.0	C	F	E	F
	A141	Whittlesey Rd	21	0	21	0	614	282	899	282	253	99	489	97	103.2	0.0	177.8	0.0	F	A	F	A
	A141	Wisbech Road North	725	785	741	801	614	282	899	282	253	99	489	97	107.4	44.0	179.1	43.7	F	E	F	E
	A141	Industrial Park	13	15	12	15	614	282	899	282	253	99	489	97	110.1	49.8	176.8	46.0	F	E	F	E
	A141	Wisbech Road South	135	162	126	159	614	282	899	282	253	99	489	97	108.1	45.1	179.3	46.0	F	E	F	E
	A141	A141	4	4	4	4	614	282	899	282	253	99	489	97	106.0	55.2	178.3	51.0	F	F	F	F
	Whittlesey Rd	Wisbech Road North	57	-	45	-	25	0	28	0	1	0	1	0	7.6	0.0	6.7	0.0	A	-	A	-
	Whittlesey Rd	Industrial Park	2	-	2	-	25	0	28	0	1	0	1	0	8.4	0.0	6.7	0.0	A	-	A	-
	Whittlesey Rd	Wisbech Road South	26	-	25	-	25	0	28	0	1	0	1	0	8.6	0.0	8.4	0.0	A	-	A	-
	Whittlesey Rd	A141	17	-	17	-	25	0	28	0	1	0	1	0	8.8	0.0	8.5	0.0	A	-	A	-
	Whittlesey Rd	Whittlesey Rd	0	-	0	-	25	0	28	0	1	0	1	0	0.0	0.0	0.0	0.0	A	-	A	-
		TOTAL	**3148**	**3106**	**3183**	**3111**	**614**	**379**	**899**	**501**	**40**	**48**	**88**	**93**	**46.7**	**50.9**	**87.8**	**88.2**	**E**	**F**	**F**	**F**
A141 Isle of Ely Way / Marina Drive	Isle of Ely Way North	Isle of Ely Way South	-	1000	-	1031	-	312	-	327	-	49	-	69	-	20.5	-	25.3	-	C	-	D
	Isle of Ely Way North	Marina Drive	-	91	-	90	-	324	-	339	-	54	-	74	-	26.9	-	34.5	-	D	-	D
	Isle of Ely Way South	Marina Drive	-	21	-	21	-	257	-	277	-	22	-	23	-	16.4	-	24.7	-	C	-	C
	Isle of Ely Way South	Isle of Ely Way North	-	883	-	903	-	257	-	277	-	22	-	23	-	20.6	-	27.7	-	C	-	D
	Marina Drive	Isle of Ely Way North	-	84	-	73	-	79	-	86	-	14	-	18	-	69.0	-	99.1	-	F	-	F
	Marina Drive	Isle of Ely Way South	-	17	-	17	-	79	-	85	-	14	-	18	-	128.9	-	166.2	-	F	-	F
		TOTAL	**-**	**2096**	**-**	**2135**	**-**	**353**	**-**	**358**	**-**	**30**	**-**	**40**	**-**	**23.6**	**-**	**30.3**	**-**	**C**	**-**	**D**

4.7.10. Table 4.15 shows that Option 5.3 is expected to have little impact on junction operation at Peas Hill Roundabout which is operating over capacity with LOS E and F during the 2026 and 2031 PM peak hour.

Option 5.3 Summary

4.7.11. Table 4.16 below shows a summary of the overall LOS for Peas Hill Roundabout and the A141 / Marina Drive new junction.

Table 4.16: Option 5.3 Results Summary

			DM	Opt 5.3
AM Peak	2026	Peas Hill Roundabout	F	E
		A141 / Marina Way	-	D
	2026 CS1	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	F
	2031	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	F
	2031 CS1	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	F
PM Peak	2026	Peas Hill Roundabout	E	D
		A141 / Marina Way	-	C
	2026 CS1	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	D
	2031	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	D
	2031 CS1	Peas Hill Roundabout	F	F
		A141 / Marina Way	-	D

4.7.12. Table 4.16 shows that the model predicts both the DM and Option 5.3 will operate over capacity at both Peas Hill Roundabout and the A141 / Marina Way in the AM peak hour with the DM and CS1 forecast flows. In the PM peak hour, Peas Hill Roundabout is also predicted to operate over capacity.

4.7.13. Option 5.3 is likely to operate over capacity in both the AM and PM peak hour due to moving the Whittlesey approach to the A141 Isle of Ely Way. The A141 Isle of Ely Way northbound is already over capacity in the DM at Peas Hill Roundabout. Option 5.3 brings no capacity benefits and therefore the junction is still over capacity, just with more traffic added to this approach.

4.8. Option 5.7

4.8.1. Option 5.7 reduces Peas Hill Roundabout from a 5-arm to a 4-arm approach roundabout, by realigning the Meadowlands Industrial site approach to the east of the roundabout with access provided from Wisbech Road. The new access is a T junction operating on give way priority control. The roundabout was also enlarged to the west of the existing site as well as the A141 Isle of Ely Way approach being realigned. Figure 4.10 shows the new layout in VISSIM.

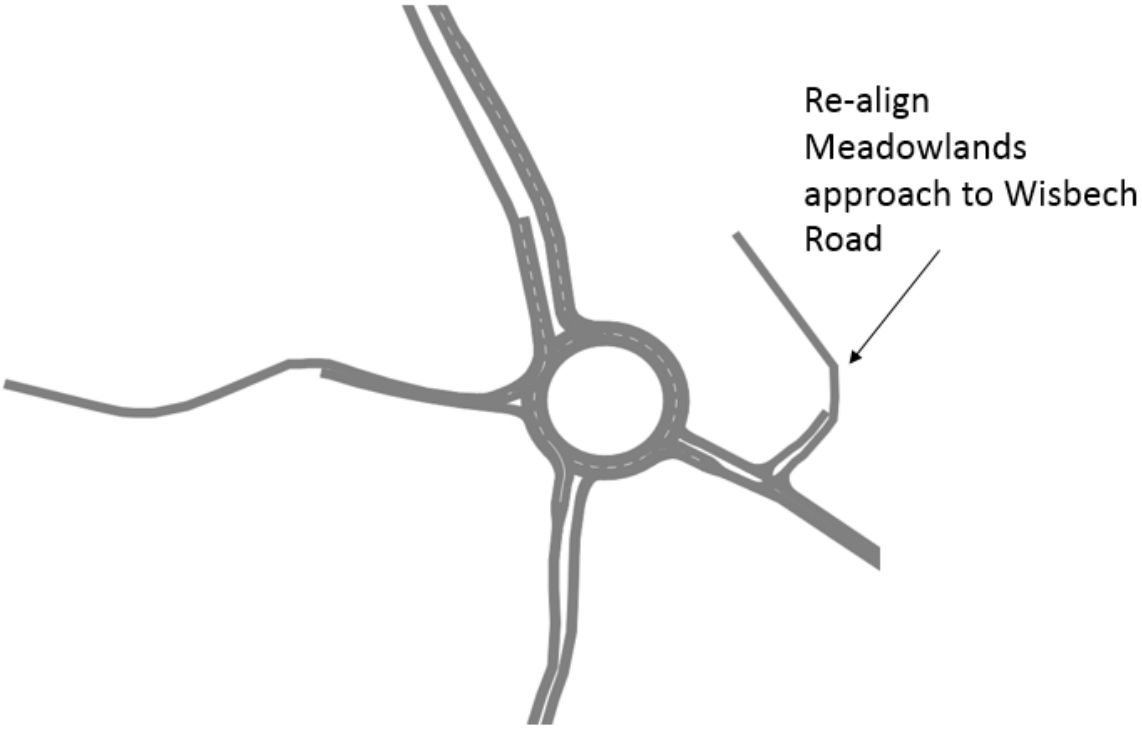

Figure 4.10: Peas Hill Roundabout Option 5.7

Option 5.7 Results

4.8.2. The overall junction operation for the AM peak hour (DM forecast flows) is shown below in Table 4.17. The table compares the DM to Option 5.7 for the AM peak hour 2026 and 2031, for both the Peas Hill Roundabout and the new junction on Wisbech Road.

Table 4.17: 2026 and 2031 DM vs. Option 5.7 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	31	-	21	-	144	-	178	-	19	-	37	-	6.8	-	14.8	-	A	-	B	-
	Wisbech Road North	Wisbech Road South	271	302	334	355	144	135	178	150	19	12	37	20	7.6	6.5	12.8	8.2	A	A	B	A
	Wisbech Road North	A141	643	644	717	717	144	135	178	150	19	12	37	20	17.7	14.4	27.7	18.6	C	B	D	C
	Wisbech Road North	Whittlesey Rd	30	30	19	19	144	135	178	150	19	12	37	20	17.1	13.8	27.4	18.4	C	B	D	C
	Wisbech Road North	Wisbech Road North	0	0	0	0	144	135	178	150	19	12	37	20	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	8	-	8	-	17	-	16	-	0	-	0	-	5.9	-	6.5	-	A	-	A	-
	Industrial Park	A141	4	-	4	-	17	-	16	-	0	-	0	-	9.1	-	11.8	-	A	-	B	-
	Industrial Park	Whittlesey Rd	0	-	0	-	17	-	16	-	0	-	0	-	0.0	-	0.0	-	A	-	A	-
	Industrial Park	Wisbech Road North	4	-	4	-	17	-	16	-	0	-	0	-	11.7	-	13.4	-	B	-	B	-
	Industrial Park	Industrial Park	0	-	0	-	17	-	16	-	0	-	0	-	0.0	-	0.0	-	A	-	A	-
	Wisbech Road South	A141	270	263	231	216	242	56	244	57	83	13	128	16	40.2	11.2	56.6	13.5	E	B	F	B
	Wisbech Road South	Whittlesey Rd	60	57	65	60	242	56	244	57	83	13	128	16	40.8	12.1	54.4	14.3	E	B	F	B
	Wisbech Road South	Wisbech Road North	482	465	499	459	242	56	244	57	83	13	128	16	41.0	13.0	57.4	15.1	E	B	F	C
	Wisbech Road South	Industrial Park	4	-	7	-	242	-	244	-	83	-	128	-	41.0	-	52.7	-	E	-	F	-
	Wisbech Road South	Wisbech Road South	0	0	0	0	242	56	244	57	83	13	128	16	0.0	0.0	0.0	0.0	A	A	A	A
	A141	Whittlesey Rd	7	8	7	7	650	754	965	984	242	362	614	710	116.5	160.2	234.2	286.8	F	F	F	F
	A141	Wisbech Road North	621	607	645	618	650	754	965	984	242	362	614	710	115.2	162.2	233.6	281.9	F	F	F	F
	A141	Industrial Park	4	-	11	-	650	-	965	-	242	-	614	-	126.5	-	227.6	-	F	-	F	-
	A141	Wisbech Road South	149	148	141	146	650	754	965	984	242	362	614	710	116.5	164.9	234.8	284.5	F	F	F	F
	A141	A141	0	0	0	0	650	754	965	984	242	362	614	710	0.0	0.0	0.0	0.0	A	A	A	A
	Whittlesey Rd	Wisbech Road North	24	24	26	26	26	28	30	31	1	1	1	1	7.5	9.9	7.5	9.4	A	A	A	A
	Whittlesey Rd	Industrial Park	3	-	3	-	26	-	30	-	1	-	1	-	8.0	-	8.1	-	A	-	A	-
	Whittlesey Rd	Wisbech Road South	39	41	39	41	26	28	30	31	1	1	1	1	7.9	11.5	8.9	11.8	A	B	A	B
	Whittlesey Rd	A141	55	55	58	58	26	28	30	31	1	1	1	1	8.3	12.0	9.7	13.4	A	B	A	B
	Whittlesey Rd	Whittlesey Rd	0	0	0	0	26	28	30	31	1	1	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	**2709**	**2642**	**2839**	**2722**	**650**	**754**	**965**	**984**	**45**	**59**	**95**	**112**	**51.2**	**55.4**	**91.3**	**90.2**	**F**	**F**	**F**	**F**
Wisbech Road / Industrial Park	Wisbech Road North	Industrial Park	-	38	-	34	-	0	-	0	-	0	-	0	-	-0.2	-	-0.2	-	A	-	A
	Wisbech Road North	Wisbech Road South	-	454	-	509	-	0	-	0	-	0	-	0	-	0.2	-	0.2	-	A	-	A
	Industrial Park	Wisbech Road South	-	8	-	8	-	9	-	11	-	0	-	0	-	2.7	-	4.1	-	A	-	A
	Industrial Park	Wisbech Road North	-	8	-	8	-	13	-	14	-	0	-	0	-	21.8	-	26.3	-	C	-	D
	Wisbech Road South	Wisbech Road North	-	778	-	728	-	212	-	212	-	108	-	139	-	50.6	-	68.6	-	F	-	F
	Wisbech Road South	Industrial Park	-	4	-	7	-	212	-	212	-	108	-	139	-	46.8	-	63.6	-	E	-	F
		TOTAL	**-**	**1289**	**-**	**1293**	**-**	**212**	**-**	**212**	**-**	**27**	**-**	**35**	**-**	**30.8**	**-**	**39.1**	**-**	**D**	**-**	**E**

4.8.3. Table 4.17 shows that in both the 2026 and 2031 AM peak hour, the DM and Option 5.7 is predicted to be over capacity at both Peas Hill Roundabout and at Wisbech Road / Meadowlands Industrial Park new junction, with a LOS E and F.

4.8.4. Also, please note that VISSIM only records queues and delays back to the next node (junction). Therefore, although Wisbech Road south at Peas Hill Roundabout is showing a predicted decrease in queues and delays, this is because the queue and delay in Option 5.7 is now shown at the new junction at Wisbech Road / Meadowlands Industrial Park (i.e. the Peas Hill Roundabout Wisbech Road approach queue, blocks back through the Wisbech Road / Meadowlands Industrial Park junction).

4.8.5. The overall junction operation for Option 5.7 for the PM peak hour (DM forecast flows) compared to the DM, is shown below in Table 4.18.

Table 4.18: 2026 and 2031 DM vs. Option 5.7 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	41	-	43	-	186	-	249	-	30	-	58	-	8.5	-	16.0	-	A	-	C	-
	Wisbech Road North	Wisbech Road South	460	514	468	517	186	139	249	170	30	12	58	20	8.4	6.6	16.5	7.8	A	A	C	A
	Wisbech Road North	A141	734	754	818	829	186	139	249	170	30	12	58	20	18.2	13.0	32.8	16.0	C	B	D	C
	Wisbech Road North	Whittlesey Rd	50	51	55	55	186	139	249	170	30	12	58	20	17.8	12.7	32.7	16.8	C	B	D	C
	Wisbech Road North	Wisbech Road North	0	0	0	0	186	139	249	170	30	12	58	20	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	39	-	40	-	28	-	27	-	1	-	1	-	8.4	-	9.5	-	A	-	A	-
	Industrial Park	A141	20	-	24	-	28	-	27	-	1	-	1	-	10.5	-	11.2	-	B	-	B	-
	Industrial Park	Whittlesey Rd	0	-	0	-	28	-	27	-	1	-	1	-	0.0	-	0.0	-	A	-	A	-
	Industrial Park	Wisbech Road North	27	-	27	-	28	-	27	-	1	-	1	-	13.1	-	15.3	-	B	-	C	-
	Industrial Park	Industrial Park	0	-	0	-	28	-	27	-	1	-	1	-	0.0	-	0.0	-	A	-	A	-
	Wisbech Road South	A141	161	190	181	204	169	51	211	51	22	12	36	16	21.5	11.7	29.3	-	C	B	D	B
	Wisbech Road South	Whittlesey Rd	39	42	41	40	169	51	211	51	22	12	36	16	20.9	13.1	30.1	15.6	C	B	D	C
	Wisbech Road South	Wisbech Road North	420	470	426	449	169	51	211	51	22	12	36	16	21.7	14.1	29.7	16.7	C	B	D	C
	Wisbech Road South	Industrial Park	17	-	14	-	169	-	211	-	22	-	36	-	21.6	-	27.0	-	C	-	D	-
	Wisbech Road South	Wisbech Road South	3	4	4	4	169	51	211	51	22	12	36	16	17.2	12.6	29.4	14.1	C	B	D	B
	A141	Whittlesey Rd	21	20	21	19	578	788	791	948	203	434	373	632	89.6	176.9	147.4	249.5	F	F	F	F
	A141	Wisbech Road North	690	676	709	643	578	788	791	948	203	434	373	632	90.7	175.0	146.5	249.6	F	F	F	F
	A141	Industrial Park	11	-	12	-	578	-	791	-	203	-	373	-	91.0	-	146.1	-	F	-	F	-
	A141	Wisbech Road South	146	155	160	156	578	788	791	948	203	434	373	632	90.8	173.7	147.0	248.5	F	F	F	F
	A141	A141	4	4	4	3	578	788	791	948	203	434	373	632	105.9	190.5	156.3	256.7	F	F	F	F
	Whittlesey Rd	Wisbech Road North	34	34	34	34	30	22	28	25	1	1	1	1	6.7	9.9	6.9	9.5	A	A	A	A
	Whittlesey Rd	Industrial Park	2	-	2	-	30	-	28	-	1	-	1	-	8.3	-	7.5	-	A	-	A	-
	Whittlesey Rd	Wisbech Road South	28	31	28	31	30	22	28	25	1	1	1	1	7.9	11.1	8.5	10.2	A	B	A	B
	Whittlesey Rd	A141	16	17	17	17	30	22	28	25	1	1	1	1	8.3	11.9	9.3	14.1	A	B	A	B
	Whittlesey Rd	Whittlesey Rd	0	0	0	0	30	22	28	25	1	1	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	**2963**	**2963**	**3126**	**3000**	**583**	**788**	**791**	**948**	**31**	**69**	**57**	**101**	**38.0**	**58.7**	**61.0**	**77.9**	**E**	**F**	**F**	**F**
Wisbech Road / Industrial Park	Wisbech Road North	Industrial Park	-	55	-	57	-	0	-	5	-	0	-	1	-	-0.2	-	-0.2	-	A	-	A
	Wisbech Road North	Wisbech Road South	-	648	-	651	-	0	-	5	-	0	-	1	-	0.2	-	0.2	-	A	-	A
	Industrial Park	Wisbech Road South	-	39	-	40	-	28	-	34	-	2	-	3	-	10.8	-	13.3	-	B	-	B
	Industrial Park	Wisbech Road North	-	48	-	50	-	28	-	34	-	2	-	4	-	25.6	-	34.8	-	D	-	D
	Wisbech Road South	Wisbech Road North	-	657	-	647	-	194	-	207	-	45	-	112	-	32.4	-	69.1	-	D	-	F
	Wisbech Road South	Industrial Park	-	17	-	14	-	194	-	207	-	45	-	112	-	33.3	-	67.1	-	D	-	F
		TOTAL	**-**	**1465**	**-**	**1458**	**-**	**194**	**-**	**207**	**-**	**12**	**-**	**30**	**-**	**16.2**	**-**	**32.9**	**-**	**C**	**-**	**D**

4.8.6. Table 4.18 shows that in the 2026 and 2031 PM peak hour for both the DM and Option 5.7, Peas Hill Roundabout is expected to be over capacity with a LOS E and F. The new junction at Wisbech Road / Meadowlands Industrial Park operates within capacity with an LOS of C in 2026 and D in 2031, but certain approaches to the junction are over capacity in 2031 and achieve a LOS of F.

4.8.7. The overall junction operation for the 2026 and 2031 AM peak hour CS1 DM and Option 5.7, is shown below in Table 4.19.

Table 4.19: 2026 and 2031 CS1 DM vs. Option 5.7 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	31	-	21	-	144	-	178	-	19	-	37	-	6.8	-	14.8	-	A	-	B	-
	Wisbech Road North	Wisbech Road South	271	302	334	355	144	135	178	150	19	12	37	20	7.6	6.5	12.8	8.2	A	A	B	A
	Wisbech Road North	A141	643	644	717	717	144	135	178	150	19	12	37	20	17.7	14.4	27.7	18.6	C	B	D	C
	Wisbech Road North	Whittlesey Rd	30	30	19	19	144	135	178	150	19	12	37	20	17.1	13.8	27.4	18.4	C	B	D	C
	Wisbech Road North	Wisbech Road North	0	0	0	0	144	135	178	150	19	12	37	20	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	8	-	8	-	17	-	16	-	0	-	0	-	5.9	-	6.5	-	A	-	A	-
	Industrial Park	A141	4	-	4	-	17	-	16	-	0	-	0	-	9.1	-	11.8	-	A	-	B	-
	Industrial Park	Whittlesey Rd	0	-	0	-	17	-	16	-	0	-	0	-	0.0	-	0.0	-	A	-	A	-
	Industrial Park	Wisbech Road North	4	-	4	-	17	-	16	-	0	-	0	-	11.7	-	13.4	-	B	-	B	-
	Industrial Park	Industrial Park	0	-	0	-	17	-	16	-	0	-	0	-	0.0	-	0.0	-	A	-	A	-
	Wisbech Road South	A141	270	263	231	216	242	56	244	57	83	13	128	16	40.2	11.2	56.6	-	E	B	F	B
	Wisbech Road South	Whittlesey Rd	60	57	65	60	242	56	244	57	83	13	128	16	40.8	12.1	54.4	14.3	E	B	F	B
	Wisbech Road South	Wisbech Road North	482	465	499	459	242	56	244	57	83	13	128	16	41.0	13.0	57.4	15.1	E	B	F	C
	Wisbech Road South	Industrial Park	4	-	7	-	242	-	244	-	83	-	128	-	41.0	-	52.7	-	E	-	F	-
	Wisbech Road South	Wisbech Road South	0	0	0	0	242	56	244	57	83	13	128	16	0.0	0.0	0.0	0.0	A	A	A	A
	A141	Whittlesey Rd	7	8	7	7	650	754	965	984	242	362	614	710	116.5	160.2	234.2	286.8	F	F	F	F
	A141	Wisbech Road North	621	607	645	618	650	754	965	984	242	362	614	710	115.2	162.2	233.6	281.9	F	F	F	F
	A141	Industrial Park	4	-	11	-	650	-	965	-	242	-	614	-	126.5	-	227.6	-	F	-	F	-
	A141	Wisbech Road South	149	148	141	146	650	754	965	984	242	362	614	710	116.5	164.9	234.8	284.5	F	F	F	F
	A141	A141	0	0	0	0	650	754	965	984	242	362	614	710	0.0	0.0	0.0	0.0	A	A	A	A
	Whittlesey Rd	Wisbech Road North	24	24	26	26	26	28	30	31	1	1	1	1	7.5	9.9	7.5	9.4	A	A	A	A
	Whittlesey Rd	Industrial Park	3	-	3	-	26	-	30	-	1	-	1	-	8.0	-	8.1	-	A	-	A	-
	Whittlesey Rd	Wisbech Road South	39	41	39	41	26	28	30	31	1	1	1	1	7.9	11.5	8.9	11.8	A	B	A	B
	Whittlesey Rd	A141	55	55	58	58	26	28	30	31	1	1	1	1	8.3	12.0	9.7	13.4	A	B	A	B
	Whittlesey Rd	Whittlesey Rd	0	0	0	0	26	28	30	31	1	1	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	**2709**	**2642**	**2839**	**2722**	**650**	**754**	**965**	**984**	**45**	**59**	**95**	**112**	**51.2**	**55.4**	**91.3**	**90.2**	**F**	**F**	**F**	**F**
Wisbech Road / Industrial Park	Wisbech Road North	Industrial Park	-	38	-	34	-	0	-	0	-	0	-	0	-	0.0	-	0.0	-	A	-	A
	Wisbech Road North	Wisbech Road South	-	454	-	509	-	0	-	0	-	0	-	0	-	0.2	-	0.0	-	A	-	A
	Industrial Park	Wisbech Road South	-	8	-	8	-	9	-	11	-	0	-	0	-	2.7	-	4.1	-	A	-	A
	Industrial Park	Wisbech Road North	-	8	-	8	-	13	-	14	-	0	-	0	-	21.8	-	26.3	-	C	-	D
	Wisbech Road South	Wisbech Road North	-	778	-	728	-	212	-	212	-	108	-	139	-	50.6	-	68.6	-	F	-	F
	Wisbech Road South	Industrial Park	-	4	-	7	-	212	-	212	-	108	-	139	-	46.8	-	63.6	-	E	-	F
		TOTAL	**-**	**1289**	**-**	**1293**	**-**	**212**	**-**	**212**	**-**	**27**	**-**	**35**	**-**	**30.8**	**-**	**39.1**	**-**	**D**	**-**	**E**

4.8.8. Table 4.19 shows that in both the 2026 and 2031 CS1 DM and Option 5.7 AM peak hour, Peas Hill Roundabout is expected to operate over capacity with a LOS E and F. The new junction at Wisbech Road / Meadowlands Industrial Park remains within capacity in 2026, but reaches a LOS E by 2031, indicating that it is at capacity.

4.8.9. The overall junction operation for Option 5.7 for the PM peak hour is shown below in Table 4.20 for 2026 and 2031.

Table 4.20: 2026 and 2031 CS1 DM vs. Option 5.7 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7	DM	Opt 5.7
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park	Wisbech Road North	Industrial Park	41	-	43	-	186	-	249	-	30	-	58	-	8.5	-	16.0	-	A	-	C	-
	Wisbech Road North	Wisbech Road South	460	514	468	517	186	139	249	170	30	12	58	20	8.4	6.6	16.5	7.8	A	A	C	A
	Wisbech Road North	A141	734	754	818	829	186	139	249	170	30	12	58	20	18.2	13.0	32.8	16.0	C	B	D	C
	Wisbech Road North	Whittlesey Rd	50	51	55	55	186	139	249	170	30	12	58	20	17.8	12.7	32.7	16.8	C	B	D	C
	Wisbech Road North	Wisbech Road North	0	0	0	0	186	139	249	170	30	12	58	20	0.0	0.0	0.0	0.0	A	A	A	A
	Industrial Park	Wisbech Road South	39	-	40	-	28	-	27	-	1	-	1	-	8.4	-	9.5	-	A	-	A	-
	Industrial Park	A141	20	-	24	-	28	-	27	-	1	-	1	-	10.5	-	11.2	-	B	-	B	-
	Industrial Park	Whittlesey Rd	0	-	0	-	28	-	27	-	1	-	1	-	0.0	-	0.0	-	A	-	A	-
	Industrial Park	Wisbech Road North	27	-	27	-	28	-	27	-	1	-	1	-	13.1	-	15.3	-	B	-	C	-
	Industrial Park	Industrial Park	0	-	0	-	28	-	27	-	1	-	1	-	0.0	-	0.0	-	A	-	A	-
	Wisbech Road South	A141	161	190	181	204	169	51	211	51	22	12	36	16	21.5	11.7	29.3	-	C	B	D	B
	Wisbech Road South	Whittlesey Rd	39	42	41	40	169	51	211	51	22	12	36	16	20.9	13.1	30.1	15.6	C	B	D	C
	Wisbech Road South	Wisbech Road North	420	470	426	449	169	51	211	51	22	12	36	16	21.7	14.1	29.7	16.7	C	B	D	C
	Wisbech Road South	Industrial Park	17	-	14	-	169	-	211	-	22	-	36	-	21.6	-	27.0	-	C	-	D	-
	Wisbech Road South	Wisbech Road South	3	4	4	4	169	51	211	51	22	12	36	16	17.2	12.6	29.4	14.1	C	B	D	B
	A141	Whittlesey Rd	21	20	21	19	578	788	791	948	203	434	373	632	89.6	176.9	147.4	249.5	F	F	F	F
	A141	Wisbech Road North	690	676	709	643	578	788	791	948	203	434	373	632	90.7	175.0	146.5	249.6	F	F	F	F
	A141	Industrial Park	11	-	12	-	578	-	791	-	203	-	373	-	91.0	-	146.1	-	F	-	F	-
	A141	Wisbech Road South	146	155	160	156	578	788	791	948	203	434	373	632	90.8	173.7	147.0	248.5	F	F	F	F
	A141	A141	4	4	4	3	578	788	791	948	203	434	373	632	105.9	190.5	156.3	256.7	F	F	F	F
	Whittlesey Rd	Wisbech Road North	34	34	34	34	30	22	28	25	1	1	1	1	6.7	9.9	6.9	9.5	A	A	A	A
	Whittlesey Rd	Industrial Park	2	-	2	-	30	-	28	-	1	-	1	-	8.3	-	7.5	-	A	-	A	-
	Whittlesey Rd	Wisbech Road South	28	31	28	31	30	22	28	25	1	1	1	1	7.9	11.1	8.5	10.2	A	B	A	B
	Whittlesey Rd	A141	16	17	17	17	30	22	28	25	1	1	1	1	8.3	11.9	9.3	14.1	A	B	A	B
	Whittlesey Rd	Whittlesey Rd	0	0	0	0	30	22	28	25	1	1	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	**2963**	**2963**	**3126**	**3000**	**583**	**788**	**791**	**948**	**31**	**69**	**57**	**101**	**38.0**	**58.7**	**61.0**	**77.9**	**E**	**F**	**F**	**F**
Wisbech Road / Industrial Park	Wisbech Road North	Industrial Park	-	55	-	57	-	0	-	5	-	0	-	1	-	-0.2	-	-0.2	-	A	-	A
	Wisbech Road North	Wisbech Road South	-	648	-	651	-	0	-	5	-	0	-	1	-	0.2	-	0.2	-	A	-	A
	Industrial Park	Wisbech Road South	-	39	-	40	-	28	-	34	-	2	-	3	-	10.8	-	13.3	-	B	-	B
	Industrial Park	Wisbech Road North	-	48	-	50	-	28	-	34	-	2	-	4	-	25.6	-	34.8	-	D	-	D
	Wisbech Road South	Wisbech Road North	-	657	-	647	-	194	-	207	-	45	-	112	-	32.4	-	69.1	-	D	-	F
	Wisbech Road South	Industrial Park	-	17	-	14	-	194	-	207	-	45	-	112	-	33.3	-	67.1	-	D	-	F
		TOTAL	**-**	**1465**	**-**	**1458**	**-**	**194**	**-**	**207**	**-**	**12**	**-**	**30**	**-**	**16.2**	**-**	**32.9**	**-**	**C**	**-**	**D**

4.8.10. Table 4.20 shows that during the 2026 and 2031 CS1 PM peak hour, both the DM and Option 5.7 operate over capacity at Peas Hill Roundabout, with the junction operating with at a predicted a LOS E and F.

Option 5.7 Summary

4.8.11. Table 4.21 below shows a summary of the Overall Level of Service (LOS) for Peas Hill Roundabout and the new Wisbech Road / Meadowlands Industrial Estate junction.

Table 4.21: Option 5.7 Results Summary

			DM	Opt 5.7
AM Peak	2026	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	D
	2026 CS1	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	E
	2031	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	E
	2031 CS1	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	E
PM Peak	2026	Peas Hill Roundabout	E	F
		Wisbech Rd / Industrial Pk	-	C
	2026 CS1	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	D
	2031	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	D
	2031 CS1	Peas Hill Roundabout	F	F
		Wisbech Rd / Industrial Pk	-	D

4.8.12. Table 4.21 shows that the model predicts both the DM and Option 5.7 will operate over capacity at both junctions in both the AM and PM peak hours in both traffic flow scenarios.

4.8.13. Option 5.7 is likely to be over capacity in both the AM and PM peak hour due to moving the Meadowlands Industrial Park approach to the A141 Wisbech Road. The A141 Wisbech Road is already over capacity therefore adding more traffic flow with no big extra capacity improvements to this approach, would result in higher traffic demand on an already congested approach.

4.9. Town Centre Packages

4.9.1. Three packages of Town Centre options have been developed for testing in VISSIM. These range from very small scale and localised improvements, to a combination of options that facilitate the redesign of March Town Centre in line with the FHSF aspirations.

4.10. Town Centre Package 1

4.10.1. Town Centre Package 1 (TC1), which represents smaller, more limited changes to the area, is shown schematically in Figure 4.11.

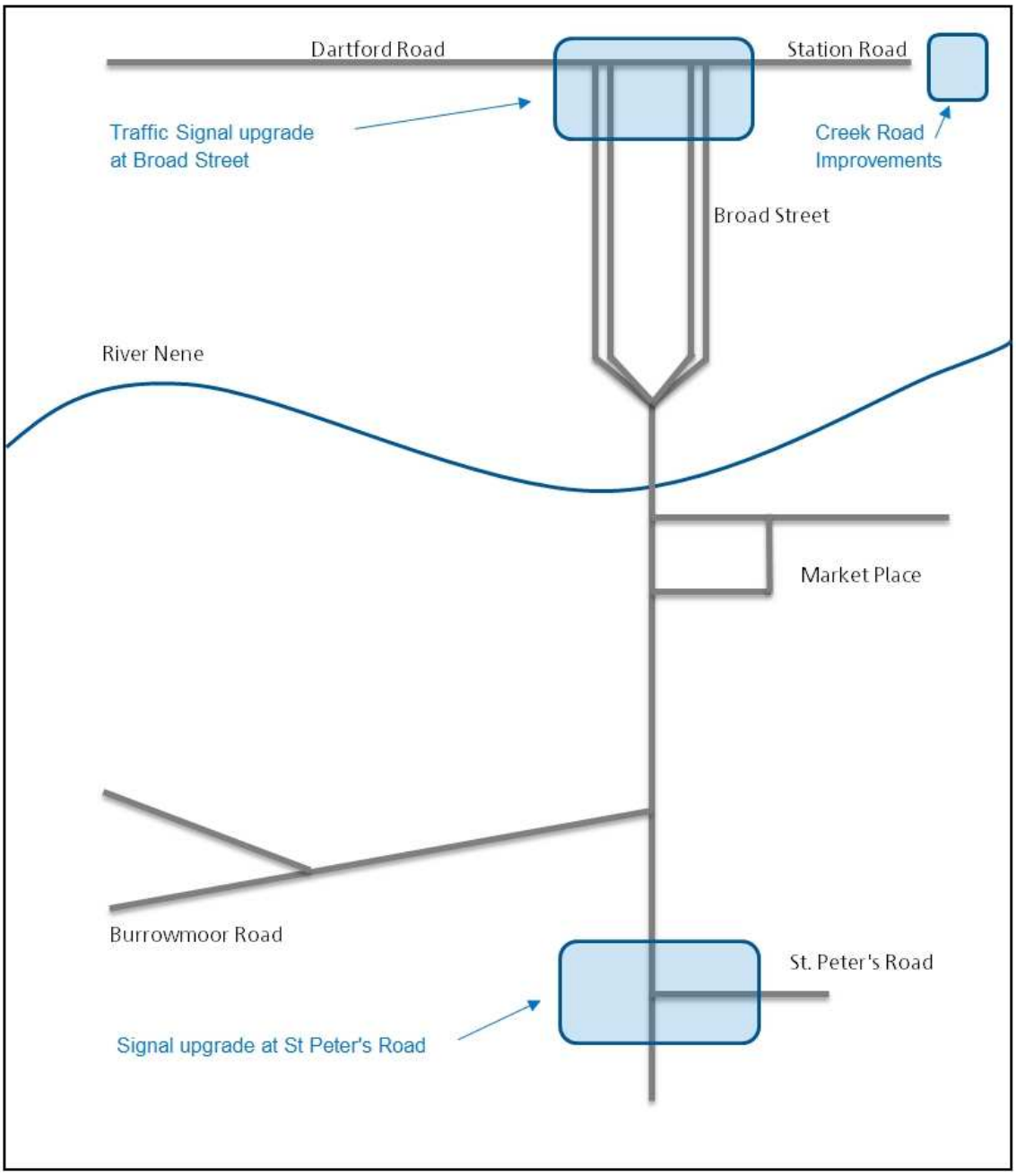

Figure 4.11: Town Centre Package 1

4.10.2. The TC1 package specifically includes the following options.

B1101 Station Road / Creek Road

4.10.3. This option updates Station Road \ Creek Road from a priority junction to a mini roundabout, as shown below in Figure 4.12. The mini roundabout has been modelled with the same yellow box parameters as the base model.

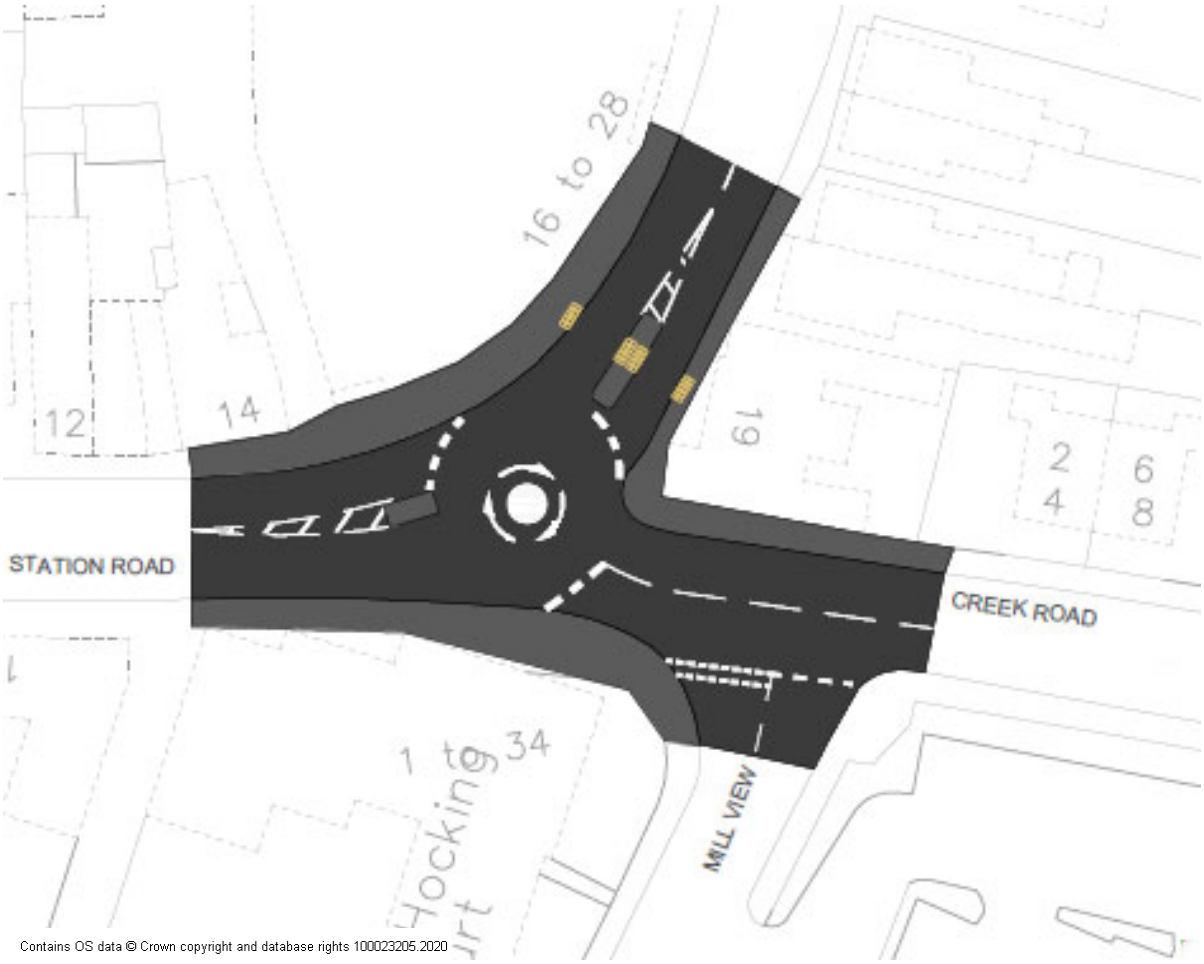

Figure 4.12: B1101 Station Road / Creek Road

Signal Upgrade at Broad Street

4.10.4. This option upgrades the Broad Street / Dartford Road / Station Road traffic signals. There are two options for this: firstly, try to optimise the existing signal timings and secondly, a new layout that aims to optimise signal operation. The first option was not modelled as this would have limited impact in future years due to the 2026 and 2031 DM models predicted to be over capacity in this area on all approaches. The second option was initially modelled by traffic signal engineers and the layout is shown below in Figure 4.13.

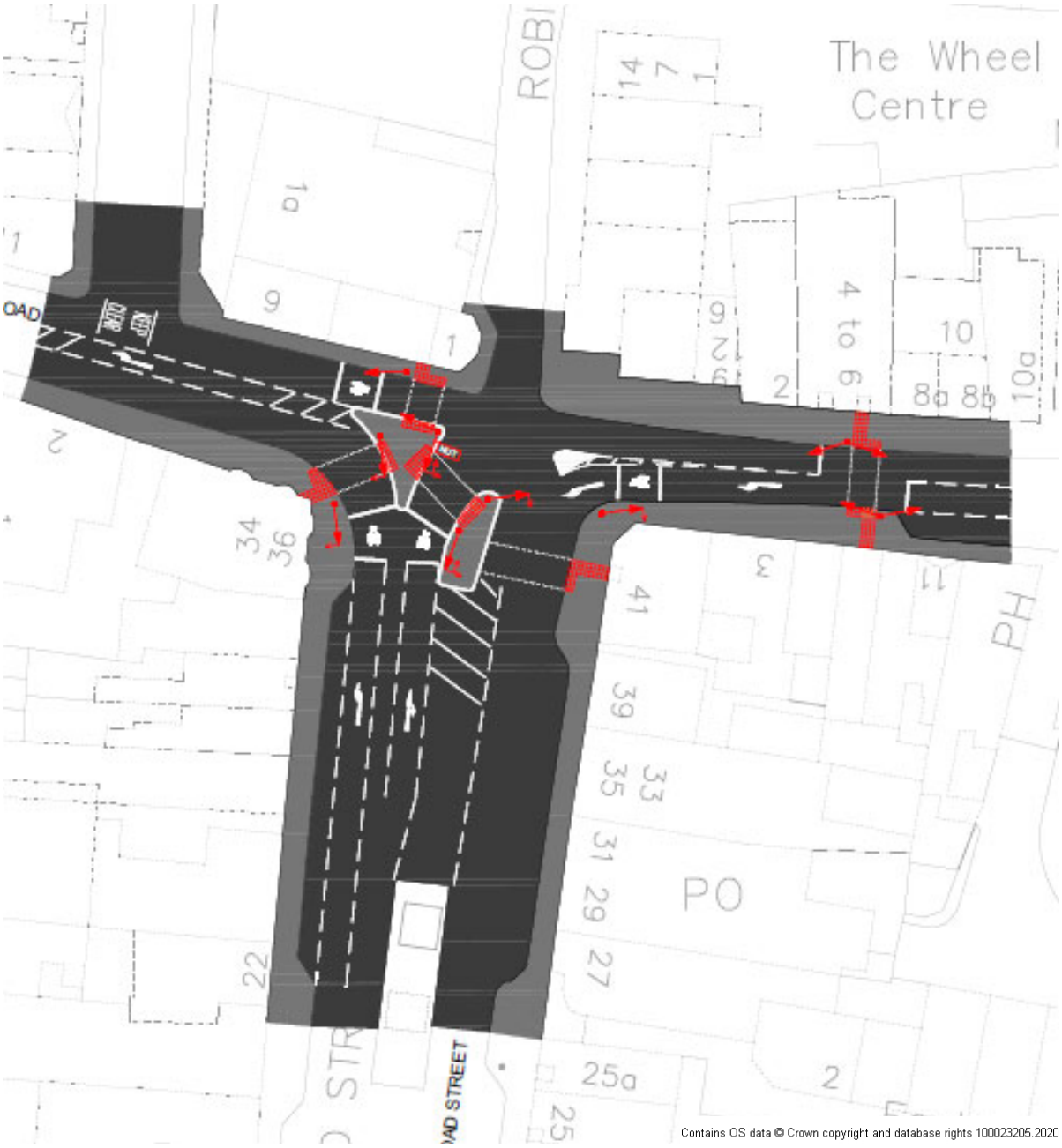

Figure 4.13: Broad Street Traffic Signals Upgrade

4.10.5. This option removes the ahead movement from Station Road to Dartford Road and creates a gyratory (one way) system around Broad Street to enable this movement. The pedestrian crossing locations have also been updated. This therefore allows the staging and phasing to be updated and helps optimise the signal timings and operation. Traffic signal engineers provided LinSigs (traffic signal modelling software) model outputs and these were used to update the VISSIM model signals, including signal timings. For modelling the south of the gyratory at Broad Street the same layout has been maintained. No other changes were made to the model in this area.

4.10.6. It should be noted that the design is likely to require the March Fountain to be relocated by approximately 10 metres. Such an exercise would be undertaken very sensitively, and after input from historic, conservation and environmental experts, and taking into account responses from public consultation.

B1101 High Street / City Road / Burrowmoor Road

4.10.7. The DM future year modelling shows this junction as an issue with congestion and queueing back to the High Street / St Peter's Road junction, particularly northbound. After considering possible improvements to the roundabout it is clear that there is limited scope for minor changes to be made at this junction. Therefore no changes have been made at this location in TC1.

B1101 The Causeway / B1101 High Street / B1099 St Peter's Road

4.10.8. This option looks to update the High Street / St Peter's Road junction with a dedicated northbound right turn lane. In the existing conditions and future year modelling the northbound right turn traffic causes an issue as it blocks the northbound straight-ahead movement. Traffic signal engineers have assessed this junction and identified that a northbound right turn lane can be accommodated as shown beneath in Figure 4.14. The LinSig and signal timings developed by the traffic signal engineers have been used to update the VISSIM model.

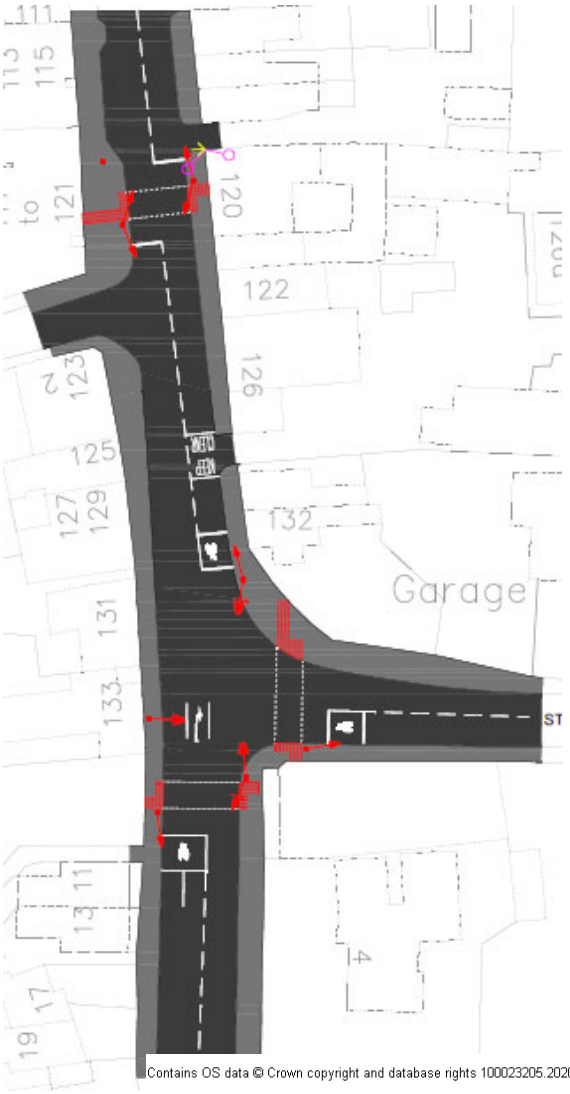

Figure 4.14: B1101 The Causeway / B1101 High Street / B1099 St Peter's Road Traffic Signals Upgrade

4.10.9. The TC1 model was run with both the DM and CS1 scenario traffic flows.

4.10.10. The overall junction operation for the AM peak hour is shown below in Table 4.22. The table compares the DM to TC1 for the AM peak hour in 2026 and 2031 for the following junctions:

- B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
- B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane
- B1101 Station Road / Creek Road
- B1101 Broad Street / Grays Lane / Nene Parade
- B1101 High Street / Market Square
- B1101 High Street / City Road / Burrowmoor Road
- B1101 The Causeway / B1101 High Street / B1099 St Peter's Road.

4.10.11. The junctions are shown graphically below in Figure 4.15.

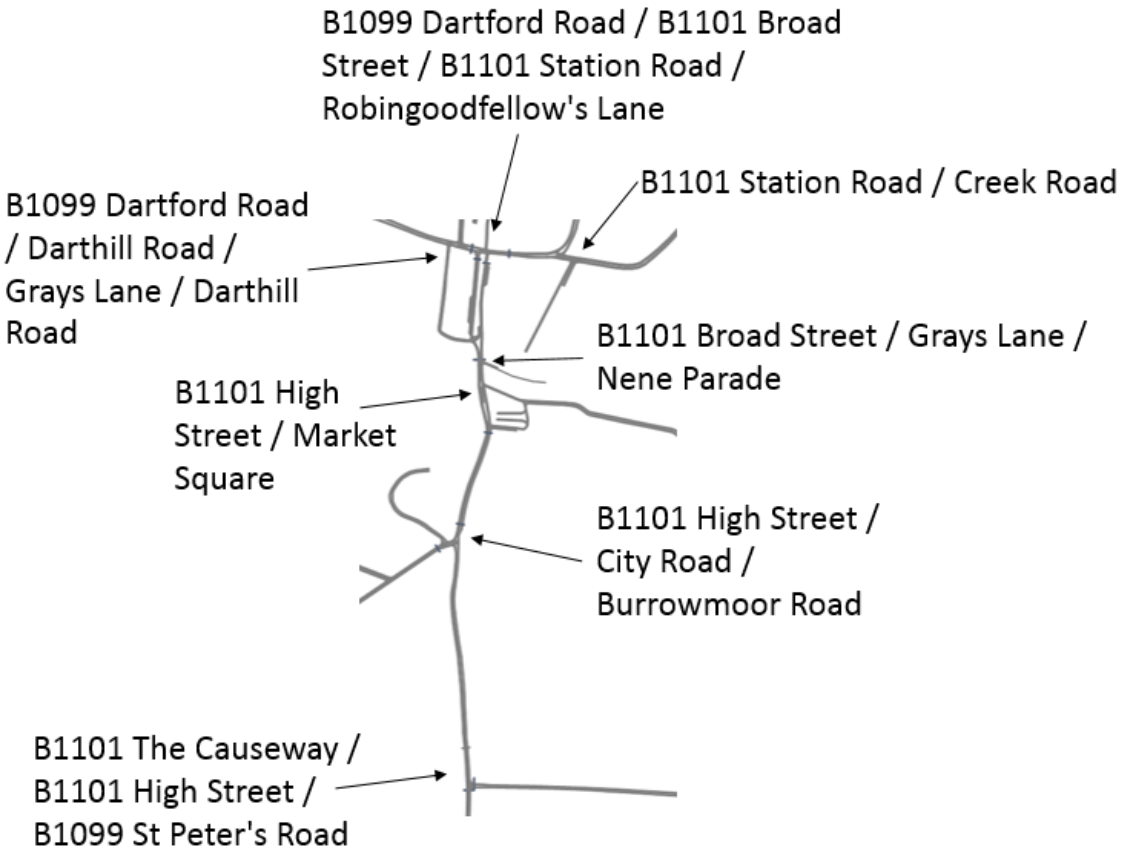

Figure 4.15: Junction Outputs for Town Centre Package 1

Table 4.22: 2026 and 2031 DM vs. Town Centre Package 1 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	131	127	130	130	62	42	66	32	11	7	13	2	52.7	12.4	57.2	14.7	F	B	F	B
	Darthill Road	Dartford Road West	17	17	18	18	63	42	66	32	12	7	13	2	53.3	10.9	61.1	12.6	F	B	F	B
	Darthill Road	Grays Ln	0	0	0	0	63	42	66	32	12	7	13	2	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road East	Grays Ln	6	6	4	3	78	57	81	47	19	10	21	5	0.6	0.7	0.5	0.5	A	A	A	A
	Dartford Road East	Dartford Road West	552	554	596	567	78	57	81	47	19	10	21	5	0.6	0.4	0.6	0.4	A	A	A	A
	Dartford Road East	Darthill Road	75	75	71	68	38	29	37	23	1	0	2	0	7.5	2.4	8.5	2.5	A	A	A	A
	Grays Ln	Dartford Road West	28	29	34	33	10	10	13	11	0	0	0	0	4.6	3.5	5.4	3.6	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	9	12	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	9	12	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	21	23	20	23	157	123	159	133	88	21	108	23	119.5	29.1	154.8	35.0	F	D	F	D
	Dartford Road West	Dartford Road East	292	319	294	341	157	123	159	133	88	21	108	23	129.7	27.9	157.7	35.4	F	D	F	E
	Dartford Road West	Grays Ln	27	29	26	29	157	123	159	133	88	21	108	23	125.7	26.2	156.7	34.8	F	D	F	D
		TOTAL	1148	1177	1193	1210	157	127	159	133	19	7	22	5	45.7	10.7	53.0	13.7	E	B	F	B
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	305	398	315	418	106	109	105	108	54	41	58	41	59.0	41.9	61.8	43.9	E	D	F	D
	B1101	B1099	98	-	97	-	117	-	117	-	5	-	5	-	60.9	-	65.1	-	E	-	E	-
	B1101	Robingoodfellow's Ln	4	3	3	3	106	109	105	108	54	41	58	41	60.3	42.1	67.3	51.8	E	D	E	D
	Broad Street	B1099	535	635	574	637	158	103	159	85	43	16	47	10	25.8	5.1	27.3	4.8	C	A	C	A
	Broad Street	Robingoodfellow's Ln	38	36	39	35	158	103	159	85	43	16	47	10	34.3	16.5	34.0	13.6	C	B	C	B
	Broad Street	B1101	330	334	333	309	158	103	159	85	43	16	47	10	35.0	16.0	35.5	15.1	D	B	D	B
	B1099	Robingoodfellow's Ln	4	4	4	4	52	53	51	51	19	11	20	11	7.8	6.4	6.9	9.2	A	A	A	A
	B1099	B1101	82	87	79	90	52	53	51	51	19	11	20	11	10.8	9.6	10.9	10.3	B	A	B	B
	B1099	Broad Street	337	354	341	376	52	53	51	51	19	11	20	11	9.5	9.0	9.8	9.2	A	A	A	A
		TOTAL	1732	1850	1785	1872	158	121	159	110	30	23	32	21	31.7	16.2	33.1	16.7	C	B	C	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	33	32	34	34	126	150	141	127	19	25	26	16	38.4	30.0	43.3	26.4	E	D	E	D
	B1101 North	B1101 South	263	255	264	262	126	150	141	127	19	25	26	16	36.5	34.1	46.6	32.0	E	D	E	D
	Creek Road	B1101 South	148	148	153	162	42	32	42	34	9	2	11	2	33.7	9.4	40.0	11.3	D	A	E	B
	Creek Road	B1101 North	0	0	0	0	39	32	39	34	7	2	9	2	0.0	0.0	0.0	0.0	A	A	A	A
	B1101 South	B1101 North	303	310	315	304	25	1	27	2	0	0	0	0	1.6	2.4	1.7	2.4	A	A	A	A
	B1101 South	Creek Road	108	110	98	94	25	1	27	2	0	0	0	0	2.5	2.7	2.6	2.7	A	A	A	A
		TOTAL	855	855	885	857	126	150	141	127	9	11	12	7	19.3	14.1	24.0	14.1	C	B	C	B
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	0	0	4	4	105	121	102	153	7	8	7	11	0.0	0.0	7.8	9.2	A	A	A	A
	Broad Street North	Broad Street South	630	639	638	674	105	121	102	153	7	8	7	11	9.1	11.2	9.1	12.4	A	B	A	B
	Broad Street North	Grays Ln	0	0	0	0	83	144	80	147	2	14	2	11	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	12	112	12	115	81	142	78	146	2	15	3	12	16.2	21.6	21.5	21.6	C	C	C	C
	Nene Parade	Broad Street South	0	0	0	0	0	1	0	0	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Grays Ln	4	4	3	3	6	6	6	6	0	0	0	0	19.5	15.7	25.9	17.4	C	C	D	C
	Nene Parade	Broad Street North	0	0	0	0	6	6	6	6	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street South	Grays Ln	24	25	31	29	56	57	57	56	13	13	14	11	8.7	8.1	9.1	7.7	A	A	A	A
	Broad Street South	Broad Street North	858	860	907	833	56	57	57	56	13	13	14	11	9.4	8.4	10.0	8.2	A	A	A	A
	Broad Street South	Nene Parade	4	4	3	3	56	57	56	55	12	13	14	10	6.0	6.9	6.0	7.8	A	A	A	A
	Grays Ln	Broad Street North	33	34	30	33	20	18	16	21	1	1	1	1	18.1	18.7	20.5	17.7	C	C	C	C
		TOTAL	1565	1678	1628	1694	105	146	102	158	5	8	5	7	9.6	10.6	9.9	11.0	A	B	A	B
B1101 High Street / Market Square	High St North	High St South	388	394	396	417	43	44	45	48	1	1	1	2	3.9	4.0	4.1	5.8	A	A	A	A
	Market Place	High St South	78	76	138	135	118	137	165	141	22	31	35	24	27.7	25.1	39.2	30.7	D	D	E	D
	Market Place	High St North	164	158	158	156	118	137	165	141	22	31	36	24	59.8	63.6	81.8	61.8	F	F	F	F
	High St South	High St North	757	766	813	735	172	179	190	185	20	28	34	20	15.1	15.2	20.0	15.3	C	C	C	C
		TOTAL	1386	1394	1508	1442	180	198	213	194	16	23	27	18	17.9	18.0	24.2	19.1	C	C	C	C
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	342	345	408	414	70	67	101	156	3	3	6	24	6.6	6.5	8.8	23.9	A	A	A	C
	High Street North	Burrowmoor Rd	86	86	98	101	70	67	101	156	3	3	6	24	12.5	12.6	15.9	27.4	B	B	C	D
	High Street North	City Rd	38	38	29	29	70	67	101	156	3	3	6	24	13.1	13.8	18.5	33.2	B	B	C	D
	High Street South	Burrowmoor Rd	91	89	91	75	312	363	364	376	75	130	193	278	58.2	83.6	134.7	222.1	F	F	F	F
	High Street South	City Rd	43	42	42	35	312	363	364	376	75	130	193	278	58.4	86.6	138.9	222.1	F	F	F	F
	High Street South	High Street North	517	509	470	389	312	363	364	376	75	130	193	278	52.2	79.4	131.9	211.3	F	F	F	F
	Burrowmoor Rd	City Rd	46	38	52	51	65	70	94	90	5	7	10	8	8.3	8.4	12.5	10.9	A	A	B	B
	Burrowmoor Rd	High Street North	210	231	312	314	65	70	94	90	5	7	10	8	14.7	14.4	19.0	15.9	B	B	C	C
	Burrowmoor Rd	High Street South	113	92	108	109	65	70	94	90	5	7	10	8	15.0	14.2	19.0	18.9	B	B	C	C
	City Rd	High Street North	32	31	32	32	14	21	16	15	0	2	1	1	9.3	9.8	14.9	10.9	A	A	B	B
	City Rd	High Street South	11	11	11	11	14	21	16	15	0	2	1	1	10.7	10.5	12.3	13.7	B	B	B	B
	City Rd	Burrowmoor Rd	0	0	0	0	14	21	17	15	0	2	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	1530	1511	1653	1561	312	363	364	376	12	21	30	45	28.9	40.0	57.1	79.6	D	E	F	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	83	80	78	76	136	226	171	364	25	60	35	170	27.1	55.0	31.6	121.2	C	D	C	F
	B1101 North	B1101 South	382	364	450	439	136	226	171	364	25	60	35	170	28.4	56.5	32.9	123.4	C	E	C	F
	St. Peters Road	B1101 South	142	140	140	125	184	135	254	335	65	34	110	110	89.8	43.8	150.5	133.7	F	D	F	F
	St. Peters Road	B1101 North	224	221	211	186	184	135	254	335	65	34	110	110	91.7	44.5	148.5	145.3	F	D	F	F
	B1101 South	B1101 North	437	437	399	328	455	321	586	586	162	79	389	347	125.0	67.3	300.4	288.2	F	E	F	F
	B1101 South	St. Peters Road	79	80	70	58	466	259	598	596	172	35	401	316	133.1	70.1	310.1	302.1	F	E	F	F
		TOTAL	1348	1321	1348	1211	466	353	598	596	106	52	234	236	83.0	57.3	156.3	179.1	F	E	F	F

4.10.12. Table 4.22 shows the model predicts the following results between the DM and the TC1 changes:

- The model predicts a decrease in queue and delay at Broad Street / Dartford Road / Station Road junction with the introduction of the gyratory layout with the westbound ahead movement banned, as well as at the Dartford Road / Darthill Road / Gray's Lane junction, to the extent that both junctions are predicted to operate within capacity. The layout also reduces queues and delays at Station Road / Creek Road, although the B1101 North approach is still over capacity.
- In both the DM and the TC1 scenario, the model predicts that the Market Place approach is over capacity at the B1101 High Street / Market Place junction.
- The Burrowmoor Road / City Road / High Street Junction continues to operate over capacity in the TC1 package as no improvements are proposed. Please note the give way (priority rules) have not been changed from the base model validation. If improvements on other parts of the network increase the gap times at this roundabout, then it may process more vehicles. This would improve the situation at this location, but generate issues elsewhere as more traffic is released towards the Town Centre.
- The B1101 High Street / St Peter's Road Junction, is predicted to operate over capacity as a result of the queue back from Burrowmoor Road / City Road / High Street Roundabout.

4.10.13. The overall junction operation for the PM peak hour TC1 scenario compared to the DM, is shown below in Table 4.23.

Table 4.23: 2026 and 2031 DM vs. Town Centre Package 1 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	11	12	28	28	26	15	33	22	3	0	5	1	34.1	15.0	50.9	15.9	D	B	F	C
	Darthill Road	Dartford Road West	20	21	20	21	26	16	34	22	4	0	6	1	36.5	10.3	47.2	15.0	E	B	E	B
	Darthill Road	Grays Ln	4	4	4	4	26	16	34	22	4	0	6	1	54.9	8.3	50.3	12.6	F	A	F	B
	Dartford Road East	Grays Ln	2	2	0	0	45	31	51	37	8	2	11	3	0.8	0.5	0.0	0.0	A	A	A	A
	Dartford Road East	Dartford Road West	495	542	518	531	45	31	51	37	8	2	11	3	0.7	0.4	0.8	0.4	A	A	A	A
	Dartford Road East	Darthill Road	64	71	69	71	37	29	37	31	2	0	3	0	11.8	3.4	14.1	3.5	B	A	B	A
	Grays Ln	Dartford Road West	40	45	41	43	10	11	12	10	0	0	0	0	4.5	3.5	4.5	3.6	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	11	11	9	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	11	11	9	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	11	12	9	10	158	127	158	128	109	22	105	23	118.0	30.3	118.4	28.6	F	D	F	D
	Dartford Road West	Dartford Road East	413	471	421	454	158	127	158	128	109	22	105	23	119.9	30.2	122.7	30.0	F	D	F	D
	Dartford Road West	Grays Ln	2	2	2	2	158	127	158	128	109	22	105	23	113.8	26.2	116.3	25.4	F	D	F	D
		TOTAL	1061	1183	1112	1184	158	127	158	128	18	4	19	4	50.4	13.3	51.3	13.3	F	B	F	B
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	405	498	433	512	105	109	102	110	61	47	65	52	58.2	43.6	61.6	46.2	E	D	E	D
	B1101	B1099	48	-	48	-	101	-	116	-	12	-	9	-	62.3	-	65.7	-	E	-	E	-
	B1101	Robingoodfellow's Ln	4	4	4	4	105	109	102	110	61	47	65	52	58.6	45.8	65.2	48.1	E	D	E	D
	Broad Street	B1099	513	616	539	602	159	79	159	76	63	8	62	8	32.4	4.6	33.8	4.6	C	A	C	A
	Broad Street	Robingoodfellow's Ln	34	38	61	62	159	79	159	76	63	8	62	8	54.2	11.9	54.7	12.3	D	B	D	B
	Broad Street	B1101	296	324	300	308	159	79	159	76	63	8	62	8	53.7	13.0	53.2	12.6	D	B	D	B
	B1099	Robingoodfellow's Ln	0	0	0	0	50	52	51	52	22	12	22	13	0.0	0.0	0.0	0.0	A	A	A	A
	B1099	B1101	79	90	90	97	50	52	51	52	22	12	22	13	9.7	10.4	10.2	10.1	A	B	B	B
	B1099	Broad Street	345	394	359	385	50	52	51	52	22	12	22	13	9.4	9.3	9.6	9.4	A	A	A	A
		TOTAL	1724	1963	1833	1971	159	109	159	110	39	23	40	24	37.9	17.3	39.2	18.2	D	B	D	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	72	78	69	71	195	204	243	229	52	39	95	59	46.6	43.9	93.0	60.5	E	E	F	F
	B1101 North	B1101 South	320	346	374	386	195	204	243	229	52	39	95	59	47.7	48.5	96.9	62.8	E	E	F	F
	Creek Road	B1101 South	139	155	113	129	31	25	31	25	11	2	16	2	42.3	12.3	75.7	13.7	E	B	F	B
	Creek Road	B1101 North	16	17	8	8	28	25	27	25	9	2	13	2	15.2	6.1	29.2	7.1	C	A	D	A
	B1101 South	B1101 North	215	237	219	227	36	14	17	10	1	0	0	0	2.5	2.9	1.6	2.7	A	A	A	A
	B1101 South	Creek Road	160	177	170	178	36	14	17	10	1	0	0	0	3.3	3.4	2.5	3.2	A	A	A	A
		TOTAL	922	1011	952	999	195	204	243	229	18	16	31	24	28.1	23.2	55.1	31.5	D	C	F	D
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	4	4	4	4	136	132	137	135	18	9	15	12	7.7	9.1	7.5	8.5	A	A	A	A
	Broad Street North	Broad Street South	728	816	772	825	136	132	137	135	18	9	15	12	10.1	9.2	9.5	9.2	B	A	A	A
	Broad Street North	Grays Ln	0	0	0	0	114	125	116	124	12	5	9	8	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	15	71	16	68	115	123	113	122	16	6	10	9	25.9	18.8	28.5	20.7	D	C	D	C
	Nene Parade	Broad Street South	8	8	8	8	11	7	9	8	1	0	0	0	6.1	5.3	7.5	5.9	A	A	A	A
	Nene Parade	Grays Ln	0	0	0	0	11	7	10	8	1	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Broad Street North	3	4	4	4	11	7	10	8	1	0	0	0	46.0	19.5	37.2	23.0	E	C	E	C
	Broad Street South	Grays Ln	40	44	41	43	55	54	55	55	15	9	14	9	9.7	6.6	10.4	6.6	A	A	B	A
	Broad Street South	Broad Street North	814	893	874	894	55	54	55	55	15	9	14	9	11.0	7.0	11.7	7.2	B	A	B	A
	Broad Street South	Nene Parade	3	4	3	3	54	54	54	55	14	8	14	9	12.0	6.5	10.0	8.9	B	A	B	A
	Grays Ln	Broad Street North	8	9	6	6	10	9	9	9	0	0	0	0	24.3	21.0	23.8	16.9	C	C	C	C
		TOTAL	1624	1853	1727	1855	138	137	137	139	10	5	8	6	10.8	8.5	10.9	8.7	B	A	B	A
B1101 High Street / Market Square	High St North	High St South	370	413	413	441	41	44	44	42	2	1	1	2	3.4	3.5	3.7	3.6	A	A	A	A
	Market Place	High St South	72	80	100	107	238	110	259	142	82	24	86	29	68.9	21.7	90.7	31.8	F	C	F	D
	Market Place	High St North	198	223	179	192	238	110	259	143	82	24	87	29	109.7	55.2	143.8	65.9	F	F	F	F
	High St South	High St North	695	759	775	784	164	146	187	153	30	9	34	10	17.5	10.0	20.8	10.8	C	B	C	B
		TOTAL	1335	1475	1467	1524	248	151	265	171	49	14	52	17	29.7	15.6	35.0	17.1	D	C	E	C
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	282	315	321	343	73	66	84	93	5	2	4	7	6.1	5.9	7.7	7.3	A	A	A	A
	High Street North	Burrowmoor Rd	122	136	151	161	73	66	84	93	5	2	4	7	10.2	10.1	12.3	11.8	B	B	B	B
	High Street North	City Rd	37	43	40	43	73	66	84	93	5	2	4	7	11.6	10.6	14.0	13.5	B	B	B	B
	High Street South	Burrowmoor Rd	33	36	73	73	230	230	365	373	57	47	171	259	40.2	46.7	115.2	178.8	E	E	F	F
	High Street South	City Rd	25	27	25	25	230	230	365	373	57	47	171	259	45.8	50.7	129.1	177.8	E	F	F	F
	High Street South	High Street North	473	519	496	496	230	230	365	373	57	47	171	259	37.0	42.4	115.2	173.4	E	E	F	F
	Burrowmoor Rd	City Rd	62	67	69	70	58	45	55	57	9	2	5	4	5.6	4.8	6.1	5.5	A	A	A	A
	Burrowmoor Rd	High Street North	146	159	166	169	58	45	55	57	9	2	5	4	12.0	9.9	12.5	11.2	B	A	B	B
	Burrowmoor Rd	High Street South	89	96	104	105	58	45	55	57	9	2	5	4	11.9	10.3	12.2	11.0	B	B	B	B
	City Rd	High Street North	76	82	117	119	57	32	58	49	13	2	9	5	12.1	9.4	16.3	12.1	B	A	C	B
	City Rd	High Street South	43	47	49	50	57	32	58	49	13	2	9	5	12.3	9.9	17.4	13.2	B	A	C	B
	City Rd	Burrowmoor Rd	44	48	45	46	57	32	59	49	13	2	9	5	13.2	10.3	17.7	13.9	B	B	C	B
		TOTAL	1431	1574	1656	1699	234	230	365	373	14	8	28	40	20.0	21.2	48.6	67.1	C	C	E	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	99	110	112	118	134	129	134	179	23	23	21	41	20.9	25.8	23.5	32.2	C	C	C	C
	B1101 North	B1101 South	313	349	361	377	134	129	134	179	23	23	21	41	21.1	25.5	23.9	33.3	C	C	C	C
	St. Peters Road	B1101 South	73	79	92	92	131	71	137	142	33	12	36	32	37.1	28.4	54.5	48.2	D	C	D	D
	St. Peters Road	B1101 North	191	205	220	222	131	71	137	142	33	12	36	32	36.5	28.3	56.9	54.5	D	C	E	D
	B1101 South	B1101 North	343	373	382	383	290	136	554	486	93	15	357	239	71.7	25.8	255.2	187.1	E	C	F	F
	B1101 South	St. Peters Road	142	155	144	144	302	133	566	486	101	12	369	234	74.5	32.4	256.6	184.4	E	C	F	F
		TOTAL	1161	1272	1312	1335	313	151	566	497	62	15	196	136	46.5	27.1	123.5	97.4	D	C	F	F

4.10.14. Table 4.23 shows that the model predicts the following results during the PM peak hour for the TC1 package:

- As with the AM peak hour, the model predicts a decrease in queue and delay at Broad Street / Dartford Road / Station Road junction with the introduction of the gyratory layout with the westbound ahead movement banned, as well as at the Dartford Road / Darthill Road / Gray's Lane junction, to the extent that both junctions are predicted to operate within capacity. The layout also reduces queues and delays at Station Road / Creek Road, although the B1101 North approach is still over capacity.
- In both the DM and the TC1 scenarios the model predicts that the Market Place approach is over capacity at the High Street / Market Place junction.
- The Burrowmoor Road / City Road / High Street junction continues to operate over capacity, especially on the northbound High Street approach, in the TC1 package as no improvements are proposed. This is because more vehicles arrive at the southbound High Street approach due to the reduction in predicated queues and delays around the Broad Street area further north, therefore meaning that the southern approach is giving way to more vehicles.
- Please note the give way (priority rules) have not been changed from the base model for validation at Burrowmoor Road / City Road / High Street. If improvements on other parts of the network increase the gap times at this roundabout, then it may process more vehicles. This would improve the situation at this location, but generate issues elsewhere as more traffic is released towards the Town Centre.
- The B1101 High Street / St Peter's Road junction, is predicted to operate over capacity as a result of the queue back from the Burrowmoor Road / City Road / High Street Roundabout.
- The High Street / St Peter's Road Junction is predicted to operate within capacity in 2026 but over capacity in 2031. The model predicts that the scheme does lower queues and delays on the B1101 south approach. It should be noted that from watching model visualisations, the queue back from the Burrowmoor Road / City Road / High Street junction does affect this junction, particularly in 2031.

4.10.15. The overall junction operation for the AM peak hour TC1 CS1 scenario is shown below in Table 4.24.

Table 4.24: 2026 and 2031 CS1 DM vs. Town Centre Package 1 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	92	86	88	87	45	35	38	24	6	8	6	1	38.8	11.2	40.8	12.1	E	B	E	B
	Darthill Road	Dartford Road West	18	17	18	18	46	35	38	25	6	8	6	1	45.2	11.9	45.3	9.6	E	B	E	A
	Darthill Road	Grays Ln	0	0	0	0	46	35	38	25	6	8	6	1	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road East	Grays Ln	6	6	3	3	61	50	54	41	12	10	12	3	0.6	0.5	0.5	0.5	A	A	A	A
	Dartford Road East	Dartford Road West	582	557	595	599	61	50	54	41	12	10	12	3	0.6	0.4	0.6	0.4	A	A	A	A
	Dartford Road East	Darthill Road	69	65	72	73	36	27	38	28	2	1	2	0	8.3	2.5	9.1	2.8	A	A	A	A
	Grays Ln	Dartford Road West	28	28	35	37	10	11	12	11	0	1	0	0	4.5	3.4	4.3	3.9	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	11	12	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	11	12	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	20	21	20	22	159	118	160	127	90	16	106	20	121.5	25.0	138.0	27.9	F	C	F	D
	Dartford Road West	Dartford Road East	321	334	325	360	159	118	160	127	90	16	106	20	120.6	26.0	140.5	29.8	F	D	F	D
	Dartford Road West	Grays Ln	26	27	25	27	159	118	160	127	90	16	106	20	118.7	26.5	136.9	28.7	F	D	F	D
		TOTAL	1161	1140	1180	1226	159	129	160	127	17	6	19	4	42.5	10.1	48.4	11.4	E	B	E	B
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	297	367	308	418	105	108	105	110	45	36	56	38	52.7	38.0	60.8	40.8	D	D	E	D
	B1101	B1099	91	-	101	-	116	-	107	-	5	-	6	-	55.2	-	63.0	-	E	-	E	-
	B1101	Robingoodfellow's Ln	3	3	3	3	105	108	105	110	45	36	56	38	52.4	40.3	63.2	44.7	D	D	E	D
	Broad Street	B1099	567	629	570	676	158	92	158	91	42	16	46	11	25.8	5.0	27.0	5.1	C	A	C	A
	Broad Street	Robingoodfellow's Ln	38	34	39	39	158	92	158	91	42	16	46	11	31.3	13.7	37.2	14.8	C	B	D	B
	Broad Street	B1101	299	287	334	336	158	92	158	91	42	16	46	11	32.3	14.3	35.6	15.6	C	B	D	B
	B1099	Robingoodfellow's Ln	4	4	4	4	53	52	52	54	19	9	20	11	8.8	10.9	3.6	9.9	A	B	A	A
	B1099	B1101	80	83	81	89	53	52	52	54	19	9	20	11	9.8	9.5	10.0	10.2	A	A	A	B
	B1099	Broad Street	328	333	328	355	53	52	52	54	19	9	20	11	9.3	8.8	9.8	9.1	A	A	A	A
		TOTAL	1708	1739	1768	1919	158	116	158	111	28	20	32	20	29.4	14.7	32.9	15.9	C	B	C	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	32	31	32	33	86	107	107	109	8	18	16	13	18.4	18.7	32.3	25.3	C	C	D	D
	B1101 North	B1101 South	248	232	257	260	86	107	107	109	8	18	16	13	18.9	20.3	32.8	27.2	C	C	D	D
	Creek Road	B1101 South	147	139	158	163	37	33	40	32	4	2	6	1	17.0	7.2	31.7	8.2	C	A	D	A
	Creek Road	B1101 North	0	0	0	0	34	33	36	32	3	2	6	1	0.0	0.0	0.0	0.0	A	A	A	A
	B1101 South	B1101 North	271	264	277	286	23	1	31	3	0	0	0	0	1.7	2.5	1.9	2.4	A	A	A	A
	B1101 South	Creek Road	108	105	137	139	23	1	31	3	0	0	0	0	2.4	2.7	2.8	3.1	A	A	A	A
		TOTAL	806	770	861	881	86	107	107	109	4	8	8	6	10.5	9.3	17.7	11.7	B	A	C	B
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	0	0	0	0	91	120	96	133	7	13	7	8	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street South	613	599	623	653	91	120	96	133	7	13	7	8	9.0	10.3	8.9	11.9	A	B	A	B
	Broad Street North	Grays Ln	0	0	0	0	73	124	75	146	2	12	2	10	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	12	101	12	118	71	122	73	144	2	13	2	11	18.0	20.4	17.2	22.5	C	C	C	C
	Nene Parade	Broad Street South	0	0	0	0	0	1	0	0	0	1	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Grays Ln	4	4	4	4	6	7	6	6	0	1	0	0	16.5	15.5	18.2	16.5	C	C	C	C
	Nene Parade	Broad Street North	0	0	0	0	6	7	6	6	0	1	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street South	Grays Ln	23	24	31	33	56	55	56	57	13	13	15	13	9.4	7.7	9.2	7.8	A	A	A	A
	Broad Street South	Broad Street North	860	818	904	902	56	55	56	57	13	13	15	13	9.5	8.3	10.1	8.5	A	A	B	A
	Broad Street South	Nene Parade	4	4	4	4	55	55	56	57	12	12	14	12	7.6	6.8	7.5	7.5	A	A	A	A
	Grays Ln	Broad Street North	33	33	28	31	18	21	17	20	1	1	1	1	18.2	18.8	18.4	21.2	C	C	C	C
		TOTAL	1550	1582	1605	1744	94	131	96	152	5	8	5	7	9.6	10.0	9.8	10.9	A	A	A	B
B1101 High Street / Market Square	High St North	High St South	359	350	357	377	44	43	42	49	1	1	1	1	3.8	3.8	3.8	4.1	A	A	A	A
	Market Place	High St South	80	76	114	114	113	127	159	180	18	33	38	38	20.1	21.3	41.1	42.4	C	C	E	E
	Market Place	High St North	173	165	156	158	113	127	160	180	18	33	38	38	50.5	54.3	89.5	89.8	F	F	F	F
	High St South	High St North	760	725	823	819	175	183	197	195	20	26	40	29	15.2	14.0	22.5	17.6	C	B	C	C
		TOTAL	1372	1316	1450	1469	177	195	212	225	14	23	29	27	17.0	16.7	26.6	23.9	C	C	D	C
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	320	311	337	361	63	61	93	89	2	3	4	6	5.7	5.7	8.0	9.2	A	A	A	A
	High Street North	Burrowmoor Rd	81	77	97	96	63	61	93	89	2	3	4	6	11.3	11.2	15.3	16.4	B	B	C	C
	High Street North	City Rd	37	37	35	35	63	61	93	89	2	3	4	6	11.7	11.0	18.9	19.0	B	B	C	C
	High Street South	Burrowmoor Rd	91	86	97	97	277	348	367	372	61	107	177	240	48.2	65.7	118.6	156.1	E	F	F	F
	High Street South	City Rd	42	41	43	42	277	348	367	372	61	107	177	240	50.7	65.6	124.0	160.8	F	F	F	F
	High Street South	High Street North	549	528	503	501	277	348	367	372	61	107	177	240	42.1	59.9	112.5	150.4	E	F	F	F
	Burrowmoor Rd	City Rd	43	40	52	51	51	57	94	86	3	7	11	9	6.8	7.2	13.5	11.1	A	A	B	B
	Burrowmoor Rd	High Street North	182	171	292	288	51	57	94	86	3	7	11	9	13.1	13.7	20.9	18.9	B	B	C	C
	Burrowmoor Rd	High Street South	96	92	106	106	51	57	94	86	3	7	11	9	13.3	14.4	21.4	19.7	B	B	C	C
	City Rd	High Street North	32	30	32	32	15	22	16	16	0	5	1	1	10.3	9.9	15.5	12.8	B	A	C	B
	City Rd	High Street South	11	10	11	11	15	22	16	16	0	5	1	1	10.1	10.6	16.4	15.2	B	B	C	C
	City Rd	Burrowmoor Rd	0	0	0	0	15	22	16	16	0	5	1	1	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	1487	1424	1607	1621	277	348	367	372	10	18	28	37	25.0	33.2	54.7	67.6	C	D	F	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	71	69	80	79	133	207	141	261	23	52	26	87	26.7	51.2	29.2	74.7	C	D	C	E
	B1101 North	B1101 South	359	346	375	392	133	207	141	261	23	52	26	87	27.8	52.6	29.5	75.5	C	D	C	E
	St. Peters Road	B1101 South	146	140	140	144	169	134	310	215	60	38	149	65	85.0	42.0	183.6	84.8	F	D	F	F
	St. Peters Road	B1101 North	221	212	223	232	169	134	310	215	60	38	149	65	84.5	42.4	185.3	92.5	F	D	F	F
	B1101 South	B1101 North	469	460	428	422	517	330	588	573	203	85	387	313	141.7	65.9	280.9	241.9	F	E	F	F
	B1101 South	St. Peters Road	84	81	75	74	529	272	599	583	214	31	399	290	144.8	67.6	288.9	234.4	F	E	F	F
		TOTAL	1349	1307	1321	1343	529	338	599	583	125	52	240	189	90.2	55.5	167.7	139.0	F	E	F	F

4.10.16. Table 4.24 shows that the scheme at Broad Street / Dartford Road / Station Road results in a decrease in queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and Broad Street / Dartford Road / Station Road junction in the AM peak hour CS1 scenario, and both junctions are expected to operate within capacity.

4.10.17. Table 4.24 also shows that the TC1 CS1 scenario is predicted to operate over capacity at both Burrowmoor Road / City Road / High Street junction and the High Street / St Peter's Road junction.

4.10.18. The overall junction operation for TC1 for the PM peak hour CS1 scenario is shown below in Table 4.25.

Table 4.25: 2026 and 2031 CS1 DM vs. Town Centre Package 1 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	13	13	26	28	17	11	26	14	1	0	3	0	31.6	15.1	42.1	15.5	D	C	E	C
	Darthill Road	Dartford Road West	10	10	7	8	18	11	26	15	1	0	3	0	43.0	10.7	56.2	12.1	E	B	F	B
	Darthill Road	Grays Ln	2	2	2	2	18	11	26	15	1	0	3	0	57.5	13.1	40.9	12.6	F	B	E	B
	Dartford Road East	Grays Ln	13	13	14	15	36	27	45	30	4	1	7	2	0.6	0.5	0.6	0.5	A	A	A	A
	Dartford Road East	Dartford Road West	533	526	521	568	36	27	45	30	4	1	7	2	0.9	0.4	0.9	0.4	A	A	A	A
	Dartford Road East	Darthill Road	78	77	72	79	37	31	38	34	3	1	3	0	13.9	3.5	14.4	3.6	B	A	B	A
	Grays Ln	Dartford Road West	47	48	43	46	12	10	12	11	0	0	0	0	4.7	3.4	4.7	3.6	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	11	9	11	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	11	9	11	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	3	4	10	11	158	137	159	148	99	24	109	32	111.3	28.5	101.1	31.2	F	D	F	D
	Dartford Road West	Dartford Road East	477	495	450	499	158	137	159	148	99	24	109	32	107.1	31.2	112.9	38.1	F	D	F	E
	Dartford Road West	Grays Ln	2	2	2	2	158	137	159	148	99	24	109	32	110.0	31.1	101.3	29.2	F	D	F	D
		TOTAL	1179	1189	1147	1258	158	137	159	148	15	4	18	5	46.2	14.1	48.4	16.5	E	B	E	C
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	400	478	391	504	104	108	104	110	61	41	69	48	61.5	40.6	69.1	44.3	E	D	E	D
	B1101	B1099	67	-	53	-	115	-	117	-	7	-	14	-	66.1	-	75.1	-	E	-	E	-
	B1101	Robingoodfellow's Ln	4	4	4	4	104	108	104	110	61	41	69	48	64.1	36.0	67.8	45.3	E	D	F	D
	Broad Street	B1099	557	616	553	662	160	77	158	80	61	8	62	9	32.9	4.7	32.9	4.8	C	A	C	A
	Broad Street	Robingoodfellow's Ln	37	38	35	40	160	77	158	80	61	8	62	9	55.3	12.6	55.8	11.9	E	B	E	B
	Broad Street	B1101	325	320	320	345	160	77	158	80	61	8	62	9	53.9	12.8	55.8	13.6	D	B	E	B
	B1099	Robingoodfellow's Ln	0	0	0	0	49	51	51	51	20	13	21	14	0.0	0.0	0.0	0.0	A	A	A	A
	B1099	B1101	103	106	126	141	49	51	51	51	20	13	21	14	9.2	9.9	8.9	10.2	A	A	A	B
	B1099	Broad Street	387	402	349	386	49	51	51	51	20	13	21	14	8.7	9.1	8.9	9.1	A	A	A	A
		TOTAL	1880	1964	1831	2082	160	109	158	112	37	21	41	24	38.0	16.2	40.2	17.2	D	B	D	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	80	81	92	97	139	134	224	173	28	19	82	42	40.9	27.4	86.7	49.2	E	D	F	E
	B1101 North	B1101 South	306	308	308	329	139	134	224	174	28	20	82	42	42.3	30.6	87.4	52.0	E	D	F	F
	Creek Road	B1101 South	166	174	140	181	29	25	35	26	11	2	18	2	40.7	8.7	66.9	11.0	E	A	F	B
	Creek Road	B1101 North	10	10	10	12	27	25	31	26	9	2	15	2	17.3	4.0	21.1	5.2	C	A	C	A
	B1101 South	B1101 North	199	200	208	225	26	12	21	15	0	0	0	0	1.8	2.7	1.7	2.9	A	A	A	A
	B1101 South	Creek Road	227	226	239	261	26	12	21	15	0	0	0	0	2.9	3.5	2.8	3.7	A	A	A	A
		TOTAL	989	999	997	1105	139	134	224	174	12	8	29	17	24.5	14.6	45.7	23.2	C	B	E	C
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	4	4	4	4	115	130	138	127	9	8	18	8	8.6	6.9	10.6	8.2	A	A	B	A
	Broad Street North	Broad Street South	761	785	716	808	115	130	138	127	9	8	18	8	9.3	9.2	10.4	9.2	A	A	B	A
	Broad Street North	Grays Ln	5	4	2	2	94	127	116	124	4	6	13	6	17.8	20.5	17.4	16.3	C	C	C	C
	Broad Street North	Broad Street North	17	87	15	78	92	125	114	122	4	7	13	7	24.6	19.4	32.9	23.9	C	C	D	C
	Nene Parade	Broad Street South	8	8	8	8	8	8	10	7	0	0	1	0	5.5	5.5	6.7	5.2	A	A	A	A
	Nene Parade	Grays Ln	0	0	0	0	8	8	10	7	0	0	1	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Broad Street North	4	4	4	4	8	8	10	7	0	0	1	0	33.0	22.2	40.6	22.3	D	C	E	C
	Broad Street South	Grays Ln	42	44	40	45	55	52	54	55	14	8	15	10	9.8	6.6	11.0	6.7	A	A	B	A
	Broad Street South	Broad Street North	878	886	870	947	55	52	54	55	14	8	15	10	11.3	6.8	12.4	7.3	B	A	B	A
	Broad Street South	Nene Parade	4	4	3	4	54	51	54	54	13	8	15	9	9.8	6.1	20.4	6.9	A	A	C	A
	Grays Ln	Broad Street North	18	17	18	19	15	12	14	15	1	0	1	1	25.3	19.2	27.4	24.2	D	C	D	C
		TOTAL	1741	1823	1682	1918	115	140	138	137	6	5	9	5	10.7	8.6	12.0	8.9	B	A	B	A
B1101 High Street / Market Square	High St North	High St South	348	359	341	385	36	38	39	40	1	1	1	1	3.3	3.2	3.4	3.4	A	A	A	A
	Market Place	High St South	82	82	75	88	221	112	313	142	77	19	132	30	83.3	18.0	121.1	31.7	F	C	F	D
	Market Place	High St North	234	239	180	215	221	112	314	142	77	19	132	31	121.8	42.1	201.5	67.8	F	E	F	F
	High St South	High St North	729	712	772	822	164	122	192	154	22	7	45	13	18.3	9.3	24.8	11.8	C	A	C	B
		TOTAL	1392	1392	1368	1510	227	132	321	166	44	11	77	19	34.4	13.9	46.5	18.8	D	B	E	C
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	283	290	261	296	62	57	71	61	2	3	3	3	5.7	4.9	7.4	6.2	A	A	A	A
	High Street North	Burrowmoor Rd	107	109	118	134	62	57	71	61	2	3	3	3	10.1	8.4	12.6	11.1	B	A	B	B
	High Street North	City Rd	40	42	38	44	62	57	71	61	2	3	3	3	11.1	9.1	15.6	13.2	B	A	C	B
	High Street South	Burrowmoor Rd	37	36	80	85	152	152	318	336	23	19	118	133	27.2	27.2	83.7	98.7	D	D	F	F
	High Street South	City Rd	28	27	26	28	152	152	318	336	23	19	118	133	32.8	30.2	90.2	99.0	D	D	F	F
	High Street South	High Street North	488	473	494	526	152	152	318	336	23	19	118	133	25.1	23.4	76.8	89.4	D	C	F	F
	Burrowmoor Rd	City Rd	82	81	85	91	46	44	70	54	2	2	8	3	5.0	4.2	8.4	5.5	A	A	A	A
	Burrowmoor Rd	High Street North	145	145	171	181	46	44	70	54	2	2	8	3	10.7	8.5	15.5	11.5	B	A	C	B
	Burrowmoor Rd	High Street South	82	82	103	109	46	44	70	54	2	2	8	3	10.0	9.1	16.5	11.6	A	A	C	B
	City Rd	High Street North	95	94	111	115	33	33	75	44	2	1	12	3	11.2	7.6	22.6	13.3	B	A	C	B
	City Rd	High Street South	47	46	50	52	33	33	75	44	2	1	12	3	10.3	8.1	22.8	14.3	B	A	C	B
	City Rd	Burrowmoor Rd	39	39	47	50	33	33	75	44	2	1	12	3	10.0	8.3	20.1	15.4	A	A	C	C
		TOTAL	1472	1463	1583	1710	152	152	318	336	4	4	22	21	15.0	13.1	38.2	40.1	C	B	E	E
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	91	93	101	112	106	132	124	146	14	23	16	24	18.6	23.4	21.3	27.1	B	C	C	C
	B1101 North	B1101 South	320	322	312	345	106	132	124	146	14	23	16	24	19.7	23.5	22.1	27.3	B	C	C	C
	St. Peters Road	B1101 South	79	77	92	97	82	82	138	96	15	12	31	16	35.3	27.0	44.1	33.8	D	C	D	C
	St. Peters Road	B1101 North	190	187	212	224	82	82	138	96	15	12	31	16	35.8	27.5	44.9	34.5	D	C	D	C
	B1101 South	B1101 North	362	346	398	414	207	140	404	222	39	14	166	41	44.1	24.5	115.5	43.1	D	C	F	D
	B1101 South	St. Peters Road	156	150	150	157	219	143	416	220	46	11	177	34	46.4	31.5	117.6	47.9	D	C	F	D
		TOTAL	1198	1175	1265	1349	219	167	416	235	28	15	98	29	34.2	25.7	68.7	36.2	C	C	E	D

4.10.19. Table 4.25 shows that the model predicts the following results between the DM and TC1 CS1 scenarios in the PM peak hour (which is very similar to TC1 DM AM peak hour scenario results):

- The TC1 scheme decreases queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and the Broad Street / Dartford Road / Station Road junction, such that both junctions are expected to operate within capacity. However, the Dartford Road West to East movement is over capacity. The layout also reduces queues and delays at the Station Road / Creek Road junction, although the B1101 North approach is still over capacity.
- In both the DM and the TC1 scenarios, the model predicts that the Market Place approach is over capacity at the High Street / Market Place junction.
- The B1101 Burrowmoor Road / City Road / High Street junction is predicted to operate over capacity in both the DM and TC1 scenarios. Queues and delays are expected to increase with the TC1 scheme, particularly on High Street South.
- The High Street / St Peter's Road junction is predicted to operate within capacity with the TC1 scheme.

Town Centre Package 1 Summary

4.10.20. Table 4.26 below shows a summary of the Overall Level of Service (LOS) for the DM and TC1 scenarios. Cells shown in green have a LOS of A-C, which is within capacity, orange is LOS D, which is approaching capacity, and red is LOS E-F, which is over capacity.

Table 4.26: Town Centre Package 1 Results Summary

Approach		Summary AM Peak								Summary PM Peak							
		2026		2031		2026 CS1		2031 CS1		2026		2031		2026 CS1		2031 CS1	
Name	From	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1	DM	TC1
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	F	B	F	B	E	B	E	B	D	B	F	C	D	C	E	C
	Dartford Road East	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Greys Ln	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Dartford Road West	F	D	F	E	F	D	F	D	F	D	F	D	F	D	F	E
	TOTAL	E	B	F	B	E	B	E	B	F	B	F	B	E	B	E	C
B1099 Dartford Road / B1101 BRoad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	E	D	E	D	D	D	E	D	E	D	E	D	E	D	E	D
	Broad Street	D	B	D	B	C	B	D	B	D	B	D	B	D	B	E	B
	B1099	B	A	B	B	A	A	A	B	A	B	B	B	A	A	A	B
	TOTAL	C	B	C	B	C	B	C	B	D	B	D	B	D	B	D	B
B1101 Station Road / Creek Road	B1101 North	E	D	E	D	C	C	D	D	E	E	F	F	E	D	F	F
	Creek Road	D	A	E	B	C	A	D	A	E	B	F	B	E	A	F	B
	B1101 South	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	TOTAL	C	B	C	B	B	A	C	B	D	C	F	D	C	B	E	C
B1101 BRoad Street / Grays Lane / Nene Parade	Broad Street North	C	C	C	C	C	C	C	C	D	C	D	C	C	C	D	C
	Nene Parade	C	C	D	C	C	C	C	C	A	A	A	A	A	A	A	A
	Broad Street South	A	A	A	A	A	A	B	A	B	A	B	A	B	A	B	A
	Greys Ln	C	C	C	C	C	C	C	C	C	C	C	C	D	C	D	C
	TOTAL	A	B	A	B	A	A	A	B	B	A	B	A	B	A	B	A
B1101 High Street / Market Square	High St North	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Market Place	F	F	F	F	F	F	F	F	F	F	F	F	F	E	F	F
	High St South	C	C	C	C	C	B	C	C	C	B	C	B	C	A	C	B
	TOTAL	C	C	C	C	C	C	D	C	D	C	E	C	D	B	E	C
B1101 High Street / City Road / Burrowmoor Road	High Street North	B	B	C	D	B	B	C	C	B	B	B	B	B	A	C	B
	High Street South	F	F	F	F	E	F	F	F	E	E	F	F	D	D	F	F
	Burrowmoor Rd	B	B	C	C	B	B	C	C	B	A	B	B	B	A	C	B
	City Rd	A	A	A	A	A	A	A	A	B	B	C	B	A	A	C	C
	TOTAL	D	E	F	F	C	D	F	F	C	C	E	F	C	B	E	E
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	C	E	C	F	C	D	C	E	C	C	C	C	B	C	C	C
	St. Peters Road	F	D	F	F	F	D	F	F	D	C	E	D	D	C	D	C
	B1101 South	F	E	F	F	F	E	F	F	E	C	F	F	D	C	F	D
	TOTAL	F	E	F	F	F	E	F	F	D	C	F	F	C	C	E	D

*taken highest delay/LOS as summary

4.10.21. Table 4.26 shows that the model predicts that the TC1 Package improves congestion and delay around the Town Centre, particularly at Dartford Road / Darthill Road / Grays Lane junction and the Broad Street / Dartford Road / Station Road junctions.

4.10.22. Table 4.26 also shows that the model predicts issues with congestion at the High Street / Market Square junction and Burrowmoor Road / City Road / High Street Roundabout. As a result of vehicles queueing back from this last junction, the High Street / St Peter's Road junction traffic signals are over capacity in the TC1 Package during the AM peak hour.

Subsequent Safety Review and Impact on FHSF Aspirations

4.10.23. A safety review of this scheme has been undertaken on the TC1 following the Operational Assessment to further investigate the impact of routing westbound HGVs around the Broad Street gyratory. This is considered to be a specific concern given the FHSF aspirations to improve the public realm and pedestrian environment along Broad Street.

4.10.24. The review identified that the u-turning movement at the southern end of Broad Street would be difficult for HGV's to perform, and would introduce a safety concern for pedestrians within the vicinity at the time.

4.10.25. In addition to the safety concerns identified, TC1 also compromises the FHSH aspirations to increase the public realm along Broad Street, and implementation of this option would maintain two lanes of traffic in each direction.

4.10.26. Although offering operational benefits to the signalised junction at the northern end of Broad Street, this option has been discounted from further consideration within this study due to the safety concerns identified with HGV movements at the southern end of Broad Street and the option would compromise the FHSF aspirations.

4.11. Town Centre Package 2

4.11.1. Town Centre Package 2 (TC2) is similar to TC1, except replaces the Broad Street / Dartford Road / Station Road signalised junction with a roundabout, and reduces Broad Street to one lane of traffic in each direction. This option represents the aspirations of the FHSF project, and the desire to create significant public realm space along Broad Street to facilitate the regeneration of March Town Centre.

4.11.2. As Broad Street is reduced to one lane in each direction, it becomes possible for pedestrians to safely cross without the need for traffic signals (using zebra crossings), facilitating the replacement of the Traffic Signals with a roundabout.

4.11.3. The components of TC2 are shown beneath in Figure 4.16.

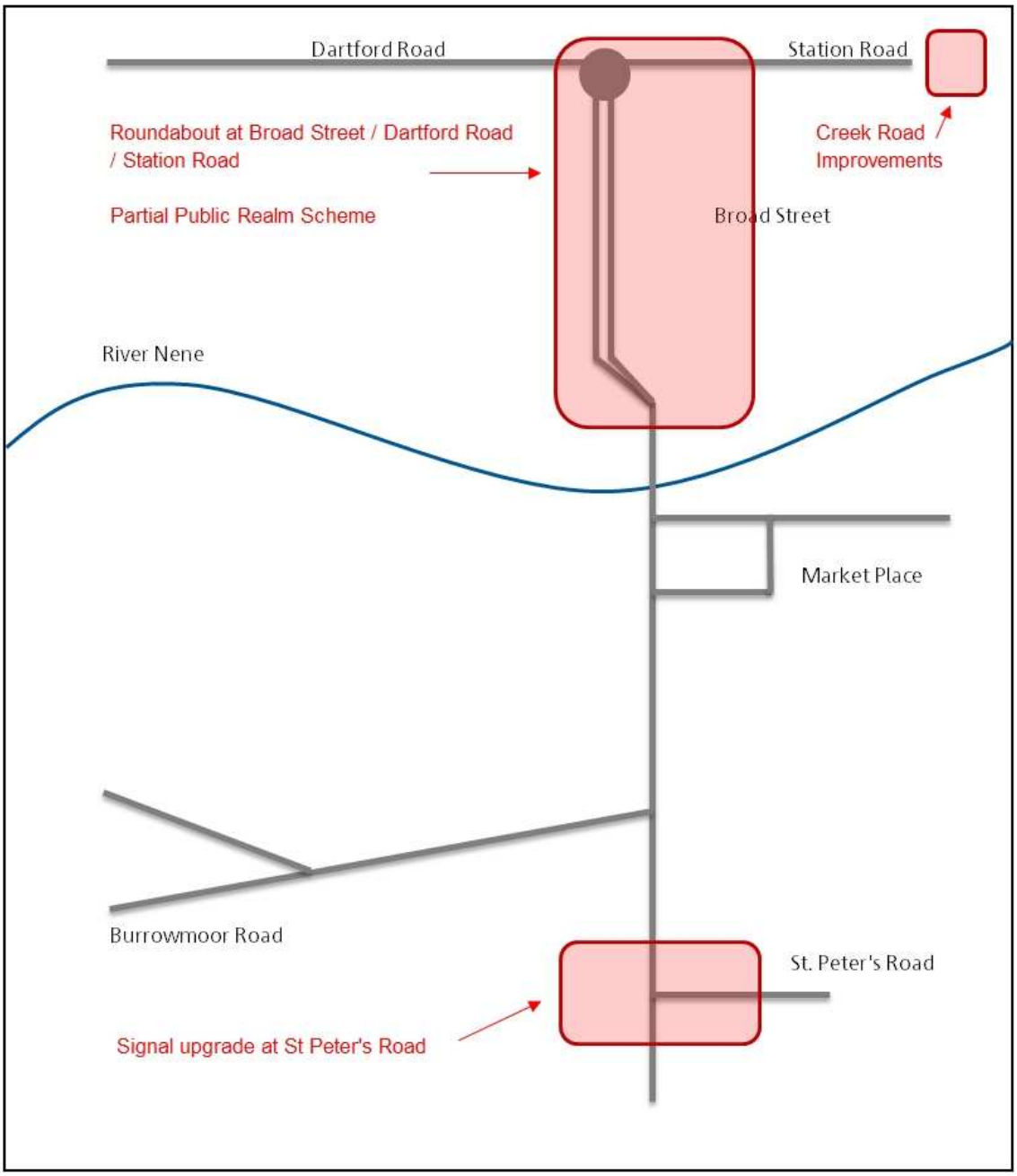

Figure 4.16: Town Centre Package 2

B1101 Station Road / Creek Road

4.11.4. As per TC1, this package looks to update Station Road \ Creek Road junction from a priority junction to a mini roundabout. The mini roundabout has been modelled with a yellow box as in the base model.

Broad Street Roundabout and Public Realm

4.11.5. In line with FHSF aspirations, this option updates the Broad Street / Dartford Road / Station Road junction to a large mini-roundabout (20m ICD) with single lane approaches. Zebra crossings are provided across each of the approaches. The changes also include making Broad Street one lane in each direction which releases a significant amount of space for public realm improvements.

4.11.6. The creation of a roundabout at this location would require the repositioning of March Fountain. This would be undertaken with careful consideration and advice from historic, conservation and built environment specialists, as well as in response to consultation. The option creates a significant amount of public realm space along Broad Street to where the Fountain could be repositioned.

4.11.7. Figure 4.17 shows the layout of the junction modelled within TC2. It should be noted that this is a concept design and the public realm space could be designed as desired. The layout shown within the model is for testing the reduced lane capacity without signalisation. No changes to bus routes or the southern end of Broad Street have been made within the model, and pedestrian crossings are retained across all arms in the form of zebra crossings.

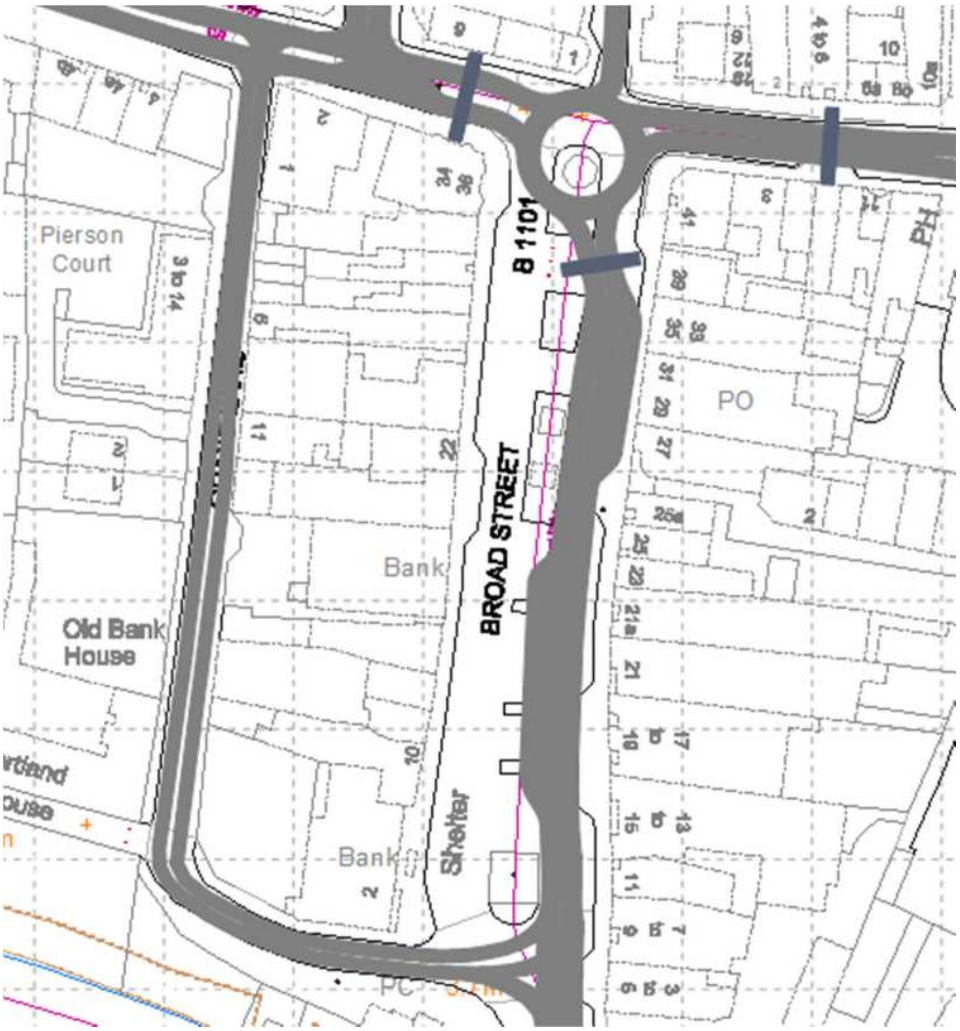

Figure 4.17: TC2 Broad Street Option

4.11.8. The assessment has only considered the impact of the option in transport terms at this stage of the study, and further design and landscaping work will be needed to determine the layout and appearance of any public realm along Broad Street, including potential options for the future location of March Fountain.

B1101 The Causeway / B1101 High Street / B1099 St Peter's Road

4.11.9. As per TC1, TC2 also includes the proposed improvements to the High Street / St Peter's Road signalised junction, incorporating a northbound right turn lane.

4.11.10. The TC2 model was run with both the DM and CS1 scenario traffic flows.

4.11.11. The overall junction operation for the AM peak hour is shown below in Table 4.27. The table compares the DM to TC2 for the AM peak hour in 2026 and 2031 for the following junctions:

- B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
- B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane
- B1101 Station Road / Creek Road
- B1101 Broad Street / Grays Lane / Nene Parade
- B1101 High Street / Market Square
- B1101 High Street / City Road / Burrowmoor Road
- B1101 The Causeway / B1101 High Street / B1099 St Peter's Road.

4.11.12. The junctions are shown graphically below in Figure 4.18.

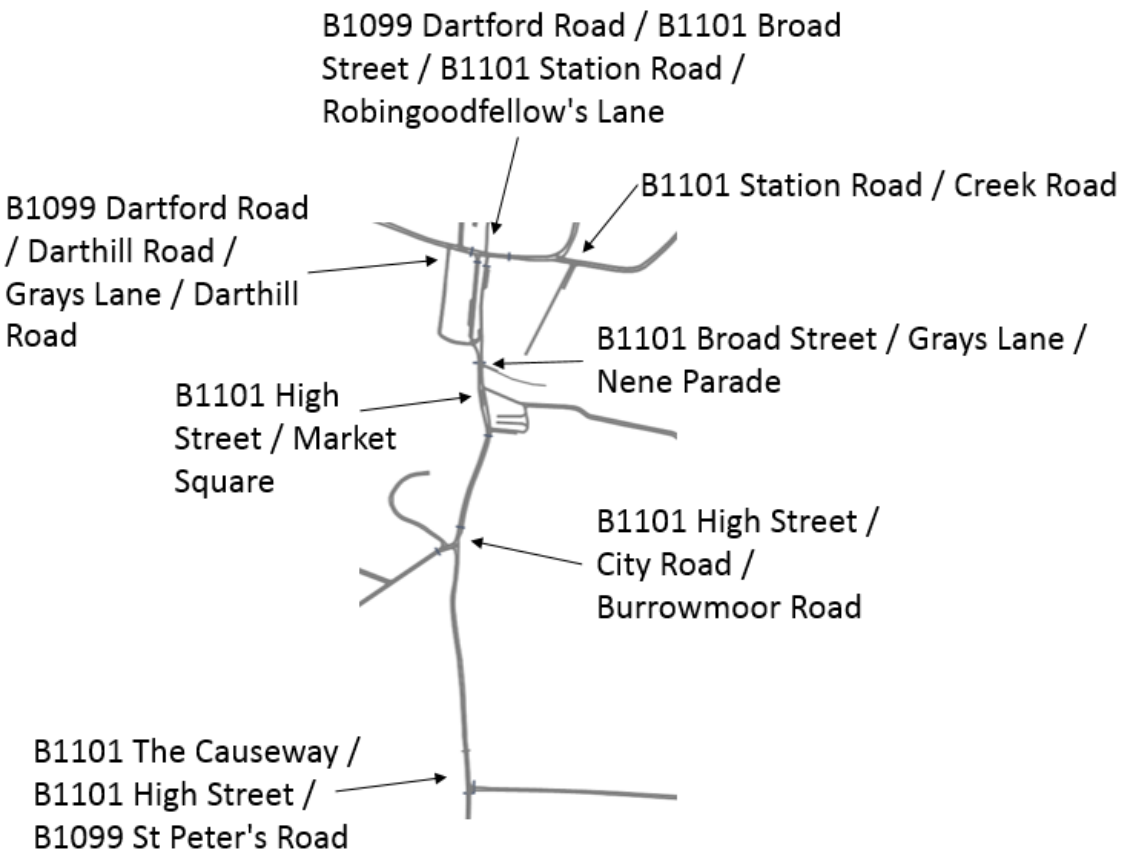

Figure 4.18: Junction Outputs for Town Centre Package 2

Table 4.27: 2026 and 2031 CS1 DM vs. Town Centre Package 2 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	131	131	130	125	62	19	66	39	11	0	13	4	52.7	4.2	57.2	4.9	F	A	F	A
	Darthill Road	Dartford Road West	17	17	18	17	63	19	66	39	12	0	13	4	53.3	5.7	61.1	6.1	F	A	F	A
	Darthill Road	Grays Ln	0	0	0	0	63	19	66	39	12	0	13	4	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road East	Grays Ln	6	5	4	3	78	37	81	70	19	1	21	6	0.6	0.6	0.5	0.7	A	A	A	A
	Dartford Road East	Dartford Road West	552	542	596	513	78	37	81	70	19	1	21	6	0.6	0.5	0.6	0.5	A	A	A	A
	Dartford Road East	Darthill Road	75	74	71	61	38	75	37	79	1	2	2	2	7.5	1.6	8.5	1.5	A	A	A	A
	Grays Ln	Dartford Road West	28	28	34	29	10	12	13	10	0	0	0	0	4.6	3.5	5.4	3.5	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	11	12	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	11	12	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	21	24	20	22	157	116	159	124	88	11	108	18	119.5	16.5	154.8	20.7	F	C	F	C
	Dartford Road West	Dartford Road East	292	328	294	330	157	116	159	124	88	11	108	18	129.7	19.6	157.7	22.2	F	C	F	C
	Dartford Road West	Grays Ln	27	30	26	28	157	116	159	124	88	11	108	18	125.7	17.7	156.7	22.6	F	C	F	C
		TOTAL	1148	1179	1193	1129	157	121	159	131	19	2	22	5	45.7	7.2	53.0	8.6	E	A	F	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	305	297	315	292	106	105	105	111	54	13	58	24	59.0	17.4	61.8	24.9	E	B	F	C
	B1101	B1099	98	101	97	96	117	-	117	-	5	-	5	-	60.9	-	65.1	-	E	B	E	C
	B1101	Robingoodfellow's Ln	4	3	3	3	106	105	105	111	54	13	58	24	60.3	18.6	67.3	36.3	E	B	E	D
	Broad Street	B1099	535	521	574	481	158	150	159	148	43	48	47	36	25.8	23.6	27.3	20.8	C	C	C	C
	Broad Street	Robingoodfellow's Ln	38	35	39	31	158	150	159	148	43	48	47	36	34.3	23.7	34.0	21.1	C	C	C	C
	Broad Street	B1101	330	308	333	263	158	150	159	148	43	48	47	36	35.0	24.1	35.5	21.8	D	C	D	C
	B1099	Robingoodfellow's Ln	4	4	4	4	52	59	51	61	19	7	20	8	7.8	5.7	6.9	4.0	A	A	A	A
	B1099	B1101	82	91	79	87	52	59	51	61	19	7	20	8	10.8	5.8	10.9	5.9	B	A	B	A
	B1099	Broad Street	337	364	341	363	52	59	51	61	19	7	20	8	9.5	6.9	9.8	8.2	A	A	A	A
		TOTAL	1732	1739	1785	1632	158	150	159	148	30	23	32	23	31.7	17.7	33.1	18.4	C	B	C	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	33	33	34	33	126	60	141	121	19	2	26	17	38.4	8.2	43.3	20.3	E	A	E	C
	B1101 North	B1101 South	263	265	264	251	126	59	141	121	19	2	26	17	36.5	8.5	46.6	20.6	E	A	E	C
	Creek Road	B1101 South	148	153	153	158	42	30	42	30	9	0	11	1	33.7	2.4	40.0	4.2	D	A	E	A
	Creek Road	B1101 North	0	0	0	0	39	30	39	30	7	0	9	1	0.0	0.0	0.0	0.0	A	A	A	A
	B1101 South	B1101 North	303	305	315	279	25	2	27	2	0	0	0	0	1.6	1.7	1.7	1.7	A	A	A	A
	B1101 South	Creek Road	108	108	98	86	25	2	27	2	0	0	0	0	2.5	2.2	2.6	2.1	A	A	A	A
		TOTAL	855	864	885	807	126	62	141	121	9	1	12	7	19.3	4.2	24.0	8.7	C	A	C	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	0	0	4	4	105	88	102	158	7	7	7	25	0.0	0.0	7.8	11.8	A	A	A	B
	Broad Street North	Broad Street South	630	661	638	645	105	88	102	158	7	7	7	25	9.1	8.2	9.1	14.2	A	A	A	B
	Broad Street North	Grays Ln	0	0	0	0	83	62	80	132	2	1	2	18	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	12	_	12	_	81	_	78	_	2	_	3	_	16.2	_	21.5	_	C	_	C	_
	Nene Parade	Broad Street South	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Grays Ln	4	4	3	3	6	6	6	5	0	0	0	0	19.5	23.7	25.9	23.1	C	C	D	C
	Nene Parade	Broad Street North	0	0	0	0	6	6	6	5	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street South	Grays Ln	24	24	31	26	56	59	57	56	13	20	14	16	8.7	12.8	9.1	11.8	A	B	A	B
	Broad Street South	Broad Street North	858	828	907	739	56	59	57	56	13	20	14	16	9.4	15.5	10.0	13.8	A	C	A	B
	Broad Street South	Nene Parade	4	3	3	3	56	58	56	55	12	20	14	15	6.0	10.4	6.0	8.4	A	B	A	A
	Grays Ln	Broad Street North	33	36	30	31	20	18	16	15	1	1	1	1	18.1	18.7	20.5	15.0	C	C	C	C
		TOTAL	1565	1556	1628	1451	105	88	102	158	5	7	5	10	9.6	12.5	9.9	14.0	A	B	A	B
B1101 High Street / Market Square	High St North	High St South	388	408	396	397	43	43	45	53	1	1	1	7	3.9	3.9	4.1	10.6	A	A	A	B
	Market Place	High St South	78	73	138	123	118	255	165	233	22	74	35	67	27.7	86.6	39.2	71.4	D	F	E	F
	Market Place	High St North	164	150	158	146	118	255	165	233	22	74	36	67	59.8	152.8	81.8	111.0	F	F	F	F
	High St South	High St North	757	740	813	638	172	202	190	190	20	72	34	52	15.1	39.3	20.0	32.4	C	E	C	D
		TOTAL	1386	1372	1508	1304	180	266	213	259	16	55	27	48	17.9	43.5	24.2	38.4	C	E	C	E
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	342	353	406	387	70	86	101	175	3	4	6	48	6.6	7.8	8.8	39.3	A	A	A	E
	High Street North	Burrowmoor Rd	86	88	98	94	70	86	101	175	3	4	6	48	12.5	15.3	15.9	41.9	B	C	C	E
	High Street North	City Rd	38	39	29	27	70	86	101	175	3	4	6	48	13.1	19.0	18.5	46.6	B	C	C	E
	High Street South	Burrowmoor Rd	91	84	91	56	312	370	364	368	75	176	193	298	58.2	125.1	134.7	284.9	F	F	F	F
	High Street South	City Rd	43	40	42	28	312	370	364	368	75	176	193	298	58.4	127.6	138.9	307.1	F	F	F	F
	High Street South	High Street North	517	478	470	299	312	370	364	368	75	176	193	298	52.2	118.8	131.9	288.1	F	F	F	F
	Burrowmoor Rd	City Rd	46	38	52	50	65	85	94	97	5	9	10	17	8.3	15.0	12.5	16.1	A	C	B	C
	Burrowmoor Rd	High Street North	210	237	312	301	65	85	94	97	5	9	10	17	14.7	23.5	19.0	22.2	B	C	C	C
	Burrowmoor Rd	High Street South	113	93	108	104	65	85	94	97	5	9	10	17	15.0	23.2	19.0	27.6	B	C	C	D
	City Rd	High Street North	32	32	32	31	14	16	16	26	0	1	1	3	9.3	16.9	14.9	18.1	A	C	B	C
	City Rd	High Street South	11	11	11	11	14	16	16	26	0	1	1	3	10.7	19.2	12.3	22.9	B	C	B	C
	City Rd	Burrowmoor Rd	0	0	0	0	14	16	17	26	0	1	1	3	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	1530	1493	1653	1389	312	370	364	368	12	27	30	53	28.9	57.6	57.1	98.7	D	F	F	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	83	81	78	71	136	224	171	375	25	67	35	203	27.1	60.8	31.6	139.2	C	E	C	F
	B1101 North	B1101 South	382	372	450	408	136	224	171	375	25	67	35	203	28.4	62.3	32.9	143.0	C	E	C	F
	St. Peters Road	B1101 South	142	141	140	105	184	182	254	365	65	43	110	167	89.8	63.7	150.5	220.2	F	E	F	F
	St. Peters Road	B1101 North	224	221	211	156	184	182	254	365	65	43	110	167	91.7	67.4	148.5	237.9	F	E	F	F
	B1101 South	B1101 North	437	406	399	241	455	516	586	561	162	155	389	403	125.0	126.3	300.4	398.3	F	F	F	F
	B1101 South	St. Peters Road	79	74	70	41	466	523	598	566	172	118	401	337	133.1	128.8	310.1	418.0	F	F	F	F
		TOTAL	1348	1295	1348	1022	466	526	598	585	106	96	234	277	83.0	87.0	156.3	232.5	F	F	F	F

4.11.13. Table 4.27 shows that the scheme at Broad Street / Dartford Road / Station Road results in a notable decrease in queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and Broad Street / Dartford Road / Station Road junction in the AM peak hour CS1 scenario, and both junctions are expected to operate within capacity. There is a notable reduction in queue length and average delay per vehicle along the B1099 Dartford Road and B1101 Station Road approaches to the Broad Street mini roundabout junction relative to DM conditions.

4.11.14. Table 4.27 also shows that the TC2 CS1 scenario is predicted to operate over capacity at both Burrowmoor Road / City Road / High Street junction and the High Street / St Peter's Road junction during the AM peak hour.

4.11.15. The overall junction operation for TC2 for the PM peak hour DM and CS1 scenarios is shown below in Table 4.28.

Table 4.28: 2026 and 2031 CS1 DM vs. Town Centre Package 2 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	11	12	28	28	26	10	33	21	3	0	5	3	34.1	4.6	50.9	4.5	D	A	F	A
	Darthill Road	Dartford Road West	20	21	20	20	26	10	34	21	4	0	6	3	36.5	5.4	47.2	6.3	E	A	E	A
	Darthill Road	Grays Ln	4	4	4	4	26	10	34	21	4	0	6	3	54.9	6.5	50.3	5.9	F	A	F	A
	Dartford Road East	Grays Ln	2	2	0	0	45	26	51	37	8	1	11	4	0.8	0.4	0.0	0.0	A	A	A	A
	Dartford Road East	Dartford Road West	495	540	518	512	45	26	51	37	8	1	11	4	0.7	0.6	0.8	0.6	A	A	A	A
	Dartford Road East	Darthill Road	64	71	69	68	37	69	37	73	2	3	3	3	11.8	2.1	14.1	1.8	B	A	B	A
	Grays Ln	Dartford Road West	40	44	41	41	10	11	12	11	0	0	0	0	4.5	3.6	4.5	3.7	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	11	11	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	11	11	10	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	11	12	9	10	158	87	158	107	109	8	105	15	118.0	13.2	118.4	15.7	F	B	F	C
	Dartford Road West	Dartford Road East	413	469	421	447	158	87	158	107	109	8	105	15	119.9	14.6	122.7	17.9	F	B	F	C
	Dartford Road West	Grays Ln	2	2	2	2	158	87	158	107	109	8	105	15	113.8	13.1	116.3	13.9	F	B	F	B
		TOTAL	1061	1177	1112	1131	158	90	158	111	18	2	19	4	50.4	6.7	51.3	8.0	F	A	F	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	405	430	433	438	105	109	102	109	61	25	65	30	58.2	24.9	61.6	26.3	E	C	E	C
	B1101	B1099	48	54	48	50	101	-	116	-	12	-	9	-	62.3	-	65.7	-	E	C	E	C
	B1101	Robingoodfellow's Ln	4	4	4	4	105	109	102	109	61	25	65	30	58.6	22.2	65.2	29.7	E	C	E	C
	Broad Street	B1099	513	558	539	529	159	148	159	147	63	35	62	33	32.4	19.6	33.8	19.2	C	B	C	B
	Broad Street	Robingoodfellow's Ln	34	38	61	60	159	148	159	147	63	35	62	33	54.2	19.8	54.7	19.8	D	B	D	B
	Broad Street	B1101	296	304	300	279	159	148	159	147	63	35	62	33	53.7	20.2	53.2	19.9	D	C	D	B
	B1099	Robingoodfellow's Ln	0	0	0	0	50	60	51	61	22	8	22	9	0.0	0.0	0.0	0.0	A	A	A	A
	B1099	B1101	79	90	90	95	50	60	51	61	22	8	22	9	9.7	6.0	10.2	6.2	A	A	B	A
	B1099	Broad Street	345	392	359	381	50	60	51	61	22	8	22	9	9.4	7.4	9.6	7.7	A	A	A	A
		TOTAL	1724	1888	1833	1852	159	148	159	147	39	23	40	24	37.9	17.9	39.2	18.3	D	B	D	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	72	79	69	70	195	111	243	127	52	8	95	16	46.6	14.2	93.0	14.9	E	B	F	B
	B1101 North	B1101 South	320	350	374	382	195	111	243	127	52	8	95	16	47.7	14.9	96.9	15.6	E	B	F	C
	Creek Road	B1101 South	139	156	113	126	31	25	31	25	11	1	16	1	42.3	3.8	75.7	3.4	E	A	F	A
	Creek Road	B1101 North	16	17	8	9	28	25	27	25	9	1	13	1	15.2	2.7	29.2	2.8	C	A	D	A
	B1101 South	B1101 North	215	236	219	219	36	9	17	6	1	0	0	0	2.5	1.9	1.6	1.8	A	A	A	A
	B1101 South	Creek Road	160	176	170	172	36	9	17	6	1	0	0	0	3.3	2.4	2.5	2.4	A	A	A	A
		TOTAL	922	1013	952	978	195	111	243	127	18	3	31	7	28.1	7.7	55.1	8.5	D	A	F	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	4	4	4	4	136	101	137	132	18	8	15	15	7.7	6.6	7.5	5.0	A	A	A	A
	Broad Street North	Broad Street South	728	819	772	814	136	101	137	132	18	8	15	15	10.1	7.7	9.5	8.5	B	A	A	A
	Broad Street North	Grays Ln	0	0	0	0	114	75	116	106	12	2	9	8	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	15	_	16	_	115	_	113	_	16	_	10	_	25.9	_	28.5	_	D	_	D	_
	Nene Parade	Broad Street South	8	8	8	8	11	8	9	8	1	0	0	0	6.1	6.5	7.5	5.5	A	A	A	A
	Nene Parade	Grays Ln	0	0	0	0	11	8	10	7	1	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Broad Street North	3	4	4	4	11	8	10	7	1	0	0	0	46.0	32.8	37.2	28.2	E	D	E	D
	Broad Street South	Grays Ln	40	44	41	40	55	55	55	55	15	14	14	14	9.7	10.1	10.4	10.2	A	B	B	B
	Broad Street South	Broad Street North	814	888	874	856	55	55	55	55	15	14	14	14	11.0	12.0	11.7	12.0	B	B	B	B
	Broad Street South	Nene Parade	3	4	3	3	54	55	54	54	14	14	14	14	12.0	9.3	10.0	13.2	B	A	B	B
	Grays Ln	Broad Street North	8	9	6	6	10	10	9	8	0	0	0	0	24.3	18.1	23.8	18.6	C	C	C	C
		TOTAL	1624	1779	1727	1735	138	101	137	132	10	5	8	7	10.8	10.0	10.9	10.3	B	A	B	B
B1101 High Street / Market Square	High St North	High St South	370	415	413	434	41	44	44	44	2	1	1	3	3.4	3.6	3.7	3.8	A	A	A	A
	Market Place	High St South	72	80	100	97	238	220	259	299	82	72	86	118	68.9	75.1	90.7	112.3	F	F	F	F
	Market Place	High St North	198	219	179	178	238	220	259	300	82	72	87	118	109.7	124.2	143.8	171.6	F	F	F	F
	High St South	High St North	695	755	775	756	164	162	187	178	30	18	34	28	17.5	15.8	20.8	19.9	C	C	C	C
		TOTAL	1335	1469	1467	1465	248	237	265	306	49	41	52	67	29.7	31.4	35.0	38.7	D	D	E	E
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	282	315	321	331	73	64	84	98	5	2	4	11	6.1	5.9	7.7	7.3	A	A	A	A
	High Street North	Burrowmoor Rd	122	136	151	156	73	64	84	98	5	2	4	11	10.2	10.2	12.3	11.9	B	B	B	B
	High Street North	City Rd	37	43	40	41	73	64	84	98	5	2	4	11	11.6	11.4	14.0	14.6	B	B	B	B
	High Street South	Burrowmoor Rd	33	36	73	68	230	238	365	360	57	51	171	238	40.2	50.3	115.2	171.4	E	F	F	F
	High Street South	City Rd	25	27	25	24	230	238	365	360	57	51	171	238	45.8	54.2	129.1	177.8	E	F	F	F
	High Street South	High Street North	473	515	496	473	230	238	365	360	57	51	171	238	37.0	44.9	115.2	165.4	E	E	F	F
	Burrowmoor Rd	City Rd	62	67	69	68	58	55	55	65	9	2	5	6	5.6	5.2	6.1	6.3	A	A	A	A
	Burrowmoor Rd	High Street North	146	159	166	164	58	55	55	65	9	2	5	6	12.0	10.8	12.5	12.5	B	B	B	B
	Burrowmoor Rd	High Street South	89	96	104	103	58	55	55	65	9	2	5	6	11.9	11.0	12.2	12.4	B	B	B	B
	City Rd	High Street North	76	82	117	116	57	37	58	67	13	2	9	10	12.1	11.8	16.3	16.8	B	B	C	C
	City Rd	High Street South	43	47	49	48	57	37	58	67	13	2	9	10	12.3	12.1	17.4	17.4	B	B	C	C
	City Rd	Burrowmoor Rd	44	48	45	45	57	37	59	67	13	2	9	10	13.2	12.2	17.7	18.5	B	B	C	C
		TOTAL	1431	1570	1656	1638	234	238	365	360	14	9	28	39	20.0	22.5	48.6	64.1	C	C	E	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	99	110	112	111	134	151	134	202	23	23	21	51	20.9	25.6	23.5	32.2	C	C	C	C
	B1101 North	B1101 South	313	349	361	364	134	151	134	202	23	23	21	51	21.1	26.7	23.9	33.6	C	C	C	C
	St. Peters Road	B1101 South	73	79	92	88	131	76	137	164	33	12	36	42	37.1	29.7	54.5	54.7	D	C	D	D
	St. Peters Road	B1101 North	191	205	220	213	131	76	137	164	33	12	36	42	36.5	28.8	56.9	60.5	D	C	E	E
	B1101 South	B1101 North	343	370	382	359	290	141	554	449	93	15	357	206	71.7	25.6	255.2	170.6	E	C	F	F
	B1101 South	St. Peters Road	142	153	144	134	302	139	566	456	101	11	369	197	74.5	32.3	256.6	171.6	E	C	F	F
		TOTAL	1161	1266	1312	1270	313	170	566	474	62	15	196	124	46.5	27.5	123.5	92.0	D	C	F	F

4.11.16. Table 4.28 shows that the model predicts the following results between the DM and TC2 CS1 scenarios in the PM peak hour (which are very similar to TC2 DM AM peak hour CS1 scenario results):

- The TC2 scheme shows notable decreases in queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and the Broad Street / Dartford Road / Station Road junction, such that both junctions are expected to operate within capacity. There is a significant reduction in queue length and average delay per vehicle along the B1099 Dartford Road and B1101 Station Road approaches to the Broad Street mini roundabout junction relative to the DM.
- In both the DM and the TC2 scenarios, the model predicts that the Market Place approach is over capacity at the High Street / Market Place junction.
- The B1101 Burrowmoor Road / City Road / High Street junction is predicted to operate over capacity in both the DM and TC1 scenarios. Queues and delays are expected to increase with the TC2 scheme, particularly on High Street South.
- The High Street / St Peter's Road junction is predicted to be approaching capacity with the TC2 scheme.

4.11.17. The overall junction operation for the AM peak hour TC2 CS1 scenario is shown below in Table 4.29.

Table 4.29: 2026 and 2031 CS1 vs. Town Centre Package 2 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	92	91	88	82	45	16	38	26	6	0	6	11	38.8	3.7	40.8	3.8	E	A	E	A
	Darthill Road	Dartford Road West	18	18	18	17	46	17	38	27	6	0	6	11	45.2	6.2	45.3	6.1	E	A	E	A
	Darthill Road	Grays Ln	0	0	0	0	46	17	38	27	6	0	6	11	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road East	Grays Ln	6	6	3	3	61	36	54	43	12	1	12	12	0.6	0.7	0.5	0.6	A	A	A	A
	Dartford Road East	Dartford Road West	582	570	595	537	61	36	54	43	12	1	12	12	0.6	0.5	0.6	0.5	A	A	A	A
	Dartford Road East	Darthill Road	69	68	72	64	38	77	38	68	2	3	2	2	8.3	1.6	9.1	1.6	A	A	A	A
	Grays Ln	Dartford Road West	28	28	35	32	10	11	12	11	0	0	0	0	4.5	3.5	4.3	3.7	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	11	12	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	11	12	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	20	22	20	21	159	115	160	105	90	8	106	16	121.5	12.9	138.0	12.2	F	B	F	B
	Dartford Road West	Dartford Road East	321	358	325	345	159	115	160	105	90	8	106	16	120.6	14.6	140.5	15.7	F	B	F	C
	Dartford Road West	Grays Ln	26	29	25	25	159	115	160	105	90	8	106	16	118.7	14.6	136.9	16.1	F	B	F	C
		TOTAL	1161	1190	1180	1126	159	116	160	112	17	2	19	8	42.5	5.8	48.4	6.2	E	A	E	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	297	285	308	284	105	95	105	98	45	10	56	15	52.7	14.8	60.8	15.3	D	B	E	B
	B1101	B1099	91	93	101	98	116	-	107	98	5	10	6	15	56.2	14.4	63.0	15.6	E	B	E	B
	B1101	Robingoodfellow's Ln	3	3	3	3	105	95	105	98	45	10	56	15	52.4	16.7	63.2	15.5	D	B	E	B
	Broad Street	B1099	567	551	570	506	158	149	158	149	42	44	46	52	25.8	22.2	27.0	23.5	C	C	C	C
	Broad Street	Robingoodfellow's Ln	38	35	39	34	158	149	158	149	42	44	46	52	31.3	22.5	37.2	23.1	C	C	D	C
	Broad Street	B1101	299	277	334	282	158	149	158	149	42	44	46	52	32.3	22.9	35.6	24.3	C	C	D	C
	B1099	Robingoodfellow's Ln	4	4	4	4	53	62	52	60	19	6	20	8	8.8	4.6	3.6	3.9	A	A	A	A
	B1099	B1101	80	89	81	86	53	62	52	60	19	6	20	8	9.8	5.0	10.0	5.5	A	A	A	A
	B1099	Broad Street	328	356	328	337	53	62	52	60	19	6	20	8	9.3	6.3	9.8	6.7	A	A	A	A
		TOTAL	1708	1706	1768	1648	158	149	158	149	28	20	32	25	29.4	16.3	32.9	17.2	C	B	C	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	32	32	32	31	86	44	107	58	8	1	16	15	18.4	5.8	32.3	6.0	C	A	D	A
	B1101 North	B1101 South	248	249	257	248	86	44	107	58	8	1	16	15	18.9	6.1	32.8	6.6	C	A	D	A
	Creek Road	B1101 South	147	148	158	154	37	29	40	28	4	0	8	1	17.0	1.8	31.7	1.9	C	A	D	A
	Creek Road	B1101 North	0	0	0	0	34	29	36	29	3	0	6	1	0.0	0.0	0.0	0.0	A	A	A	A
	B1101 South	B1101 North	271	273	277	256	23	1	31	1	0	0	0	0	1.7	1.7	1.9	1.7	A	A	A	A
	B1101 South	Creek Road	108	107	137	125	23	1	31	1	0	0	0	0	2.4	2.1	2.8	2.2	A	A	A	A
		TOTAL	806	810	861	812	86	46	107	59	4	0	8	7	10.5	3.3	17.7	3.5	B	A	C	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	0	0	0	0	91	85	96	83	7	6	7	6	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street South	613	641	623	621	91	85	96	83	7	6	7	6	9.0	8.0	8.9	8.2	A	A	A	A
	Broad Street North	Grays Ln	0	0	0	0	73	59	75	59	2	1	2	1	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	12		12		71		73		2		2		18.0		17.2		C		C	
	Nene Parade	Broad Street South	0	0	0	0	0	0	0	2	0	0	0	1	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Grays Ln	4	4	4	4	6	6	6	7	0	0	0	1	16.5	21.6	18.2	28.1	C	C	C	D
	Nene Parade	Broad Street North	0	0	0	0	6	6	6	7	0	0	0	1	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street South	Grays Ln	23	24	31	28	56	59	56	58	13	19	15	22	9.4	12.8	9.2	13.2	A	B	A	B
	Broad Street South	Broad Street North	860	831	904	793	56	59	56	58	13	19	15	22	9.5	14.4	10.1	15.7	A	B	B	C
	Broad Street South	Nene Parade	4	4	4	3	55	58	56	58	12	18	14	22	7.6	7.3	7.5	7.6	A	A	A	A
	Grays Ln	Broad Street North	33	35	28	29	18	18	17	15	1	1	1	1	18.2	17.8	18.4	17.6	C	C	C	C
		TOTAL	1550	1539	1605	1478	94	86	96	86	5	6	5	8	9.6	11.8	9.8	12.6	A	B	A	B
B1101 High Street / Market Square	High St North	High St South	359	375	357	359	44	42	42	40	1	1	1	1	3.8	3.8	3.8	3.9	A	A	A	A
	Market Place	High St South	80	76	114	102	113	194	159	275	18	57	38	113	20.1	66.8	41.1	95.0	C	F	E	F
	Market Place	High St North	173	165	156	142	113	194	160	275	18	57	38	113	50.5	121.5	89.5	169.0	F	F	F	F
	High St South	High St North	760	739	823	715	175	198	197	200	20	58	40	91	15.2	32.4	22.5	44.5	C	D	C	E
		TOTAL	1372	1355	1450	1319	177	236	212	290	14	43	29	80	17.0	37.1	26.6	50.7	C	E	D	F
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	320	328	337	337	63	68	93	109	2	2	4	7	5.7	6.2	8.0	11.5	A	A	A	B
	High Street North	Burrowmoor Rd	81	84	97	90	63	68	93	109	2	2	4	7	11.3	13.3	15.3	20.0	B	B	C	C
	High Street North	City Rd	37	39	35	33	63	68	93	109	2	2	4	7	11.7	15.2	18.9	27.4	B	C	C	D
	High Street South	Burrowmoor Rd	91	88	97	79	277	383	367	376	61	137	177	292	48.2	89.2	118.6	209.2	E	F	F	F
	High Street South	City Rd	42	41	43	38	277	383	367	376	61	137	177	292	50.7	93.6	124.0	220.1	F	F	F	F
	High Street South	High Street North	549	532	503	413	277	383	367	376	61	137	177	292	42.1	84.8	112.5	208.0	E	F	F	F
	Burrowmoor Rd	City Rd	43	43	52	49	51	79	94	100	3	6	11	20	6.8	13.1	13.5	19.6	A	B	B	C
	Burrowmoor Rd	High Street North	182	182	292	274	51	79	94	100	3	6	11	20	13.1	21.5	20.9	29.2	B	C	C	D
	Burrowmoor Rd	High Street South	98	98	108	101	51	79	94	100	3	6	11	20	13.3	22.4	21.4	27.8	B	C	C	D
	City Rd	High Street North	32	32	32	30	15	16	16	27	0	1	1	8	10.3	16.9	15.5	25.2	B	C	C	D
	City Rd	High Street South	11	11	11	11	15	16	16	27	0	1	1	8	10.1	16.3	16.4	24.7	B	C	C	C
	City Rd	Burrowmoor Rd	0	0	0	0	15	16	16	27	0	1	1	9	0.0	0.0	0.0	0.0	A	A	A	A
		TOTAL	1487	1477	1607	1452	277	363	367	376	10	21	28	48	25.0	45.9	54.7	88.4	C	E	F	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	71	72	80	74	133	204	141	258	23	54	26	82	26.7	53.0	29.2	73.8	C	D	C	E
	B1101 North	B1101 South	359	362	375	369	133	204	141	258	23	54	26	82	27.8	54.1	29.5	76.1	C	D	C	E
	St. Peters Road	B1101 South	146	147	140	132	169	132	310	284	60	31	149	111	85.0	47.6	183.6	125.9	F	D	F	F
	St. Peters Road	B1101 North	221	222	223	211	169	132	310	284	60	31	149	111	84.5	49.0	185.3	136.9	F	D	F	F
	B1101 South	B1101 North	469	464	428	326	517	437	588	586	203	107	387	417	141.7	87.8	280.9	387.5	F	F	F	F
	B1101 South	St. Peters Road	84	83	75	58	529	407	599	566	214	62	399	357	144.8	88.0	288.9	384.6	F	F	F	F
		TOTAL	1349	1350	1321	1169	529	445	599	595	125	63	240	242	90.2	66.0	167.7	193.1	F	E	F	F

4.11.18. Table 4.29 shows that the scheme at Broad Street / Dartford Road / Station Road results in a decrease in queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and Broad Street / Dartford Road / Station Road junction in the AM peak hour CS1 scenario, and both junctions are expected to operate within capacity. There is a notable reduction in queue length and average delay per vehicle along the B1099 Dartford Road and B1101 Station Road approaches to the Broad Street mini roundabout junction relative to DM conditions.

4.11.19. Table 4.29 also shows that the TC2 CS1 scenario is predicted to operate over capacity at both Burrowmoor Road / City Road / High Street junction and the High Street / St Peter's Road junction during the AM peak hour.

4.11.20. The overall junction operation for TC2 for the PM peak hour CS1 scenario is shown below in Table 4.30.

Table 4.30: 2026 and 2031 CS1 vs. Town Centre Package 2 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1		2026 CS1		2031 CS1	
Name	From	To	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	13	13	26	27	17	9	26	10	1	0	3	0	31.6	4.4	42.1	5.3	D	A	E	A
	Darthill Road	Dartford Road West	10	10	7	8	18	9	26	11	1	0	3	0	43.0	6.7	56.2	6.8	E	A	F	A
	Darthill Road	Grays Ln	2	2	2	2	18	9	26	11	1	0	3	0	57.5	5.7	40.9	6.6	F	A	E	A
	Dartford Road East	Grays Ln	13	13	14	14	36	24	45	26	4	0	7	1	0.6	0.8	0.6	0.8	A	A	A	A
	Dartford Road East	Dartford Road West	533	532	521	544	36	24	45	26	4	0	7	1	0.9	0.6	0.9	0.6	A	A	A	A
	Dartford Road East	Darthill Road	78	78	72	75	37	85	38	84	3	3	3	3	13.9	2.0	14.4	2.1	B	A	B	A
	Grays Ln	Dartford Road West	47	48	43	45	12	12	12	11	0	0	0	0	4.7	3.3	4.7	3.7	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	11	12	11	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	11	12	11	11	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	3	4	10	12	158	109	159	127	99	12	109	19	111.3	15.4	101.1	23.2	F	C	F	C
	Dartford Road West	Dartford Road East	477	495	450	500	158	109	159	127	99	12	109	19	107.1	17.7	112.9	24.3	F	C	F	C
	Dartford Road West	Grays Ln	2	2	2	2	158	109	159	127	99	12	109	19	110.0	18.1	101.3	23.0	F	C	F	C
		TOTAL	1179	1197	1147	1227	158	117	159	128	15	2	18	3	46.2	8.1	48.4	10.9	E	A	E	B
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	400	393	391	429	104	106	104	106	61	18	69	23	61.5	20.4	69.1	22.9	E	C	E	C
	B1101	B1099	67	69	53	60	115	106	117	106	7	18	14	23	66.1	21.4	75.1	22.7	E	C	E	C
	B1101	Robingoodfellow's Ln	4	4	4	4	104	106	104	106	61	18	69	23	64.1	17.0	67.8	28.7	E	B	F	C
	Broad Street	B1099	557	554	553	573	160	148	158	148	61	43	62	49	32.9	21.8	32.9	23.0	C	C	C	C
	Broad Street	Robingoodfellow's Ln	37	38	35	37	160	148	158	148	61	43	62	49	55.3	21.7	55.8	23.3	E	C	E	C
	Broad Street	B1101	325	308	320	313	160	148	158	148	61	43	62	49	53.9	22.5	55.8	23.9	D	C	E	C
	B1099	Robingoodfellow's Ln	0	0	0	0	49	59	51	59	20	9	21	11	0.0	0.0	0.0	0.0	A	A	A	A
	B1099	B1101	103	106	126	141	49	59	51	59	20	9	21	11	9.2	6.1	8.9	6.7	A	A	A	A
	B1099	Broad Street	387	402	349	386	49	59	51	59	20	9	21	11	8.7	7.6	8.9	8.1	A	A	A	A
		TOTAL	1880	1892	1831	1961	160	148	158	148	37	23	41	27	38.0	17.7	40.2	19.1	D	B	D	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	80	80	92	98	139	66	224	82	28	3	82	11	40.9	8.6	86.7	16.4	E	A	F	C
	B1101 North	B1101 South	306	308	308	330	139	66	224	82	28	3	82	11	42.3	9.3	87.4	17.6	E	A	F	C
	Creek Road	B1101 South	166	174	140	180	29	25	35	25	11	1	18	1	40.7	2.5	66.9	3.1	E	A	F	A
	Creek Road	B1101 North	10	10	10	12	27	25	31	25	9	1	15	1	17.3	2.6	21.1	2.2	C	A	C	A
	B1101 South	B1101 North	199	203	208	219	26	6	21	8	0	0	0	0	1.8	1.9	1.7	2.0	A	A	A	A
	B1101 South	Creek Road	227	229	239	252	26	6	21	8	0	0	0	0	2.9	2.6	2.8	2.7	A	A	A	A
		TOTAL	989	1005	997	1091	139	66	224	82	12	1	29	5	24.5	5.0	45.7	8.3	C	A	E	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	4	4	4	4	115	122	138	140	9	8	18	11	8.6	6.8	10.6	7.3	A	A	B	A
	Broad Street North	Broad Street South	761	788	716	810	115	122	138	140	9	8	18	11	9.3	8.1	10.4	9.3	A	A	B	A
	Broad Street North	Grays Ln	5	4	2	2	94	100	116	117	4	3	13	5	17.8	10.0	17.4	10.7	C	A	C	B
	Broad Street North	Broad Street North	17	_	15	_	92	_	114	_	4	_	13	_	24.6	_	32.9	_	C	_	D	_
	Nene Parade	Broad Street South	8	8	8	8	8	8	10	9	0	0	1	0	5.5	7.0	6.7	7.5	A	A	A	A
	Nene Parade	Grays Ln	0	0	0	0	8	8	10	9	0	0	1	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Broad Street North	4	4	4	4	8	8	10	9	0	0	1	0	33.0	46.2	40.6	41.2	D	E	E	E
	Broad Street South	Grays Ln	42	44	40	43	55	55	54	56	14	16	15	20	9.8	11.0	11.0	12.6	A	B	B	B
	Broad Street South	Broad Street North	878	878	870	901	55	55	54	56	14	16	15	20	11.3	13.4	12.4	15.2	B	B	B	C
	Broad Street South	Nene Parade	4	4	3	4	54	55	54	56	13	16	15	19	9.8	11.7	20.4	13.7	A	B	C	B
	Grays Ln	Broad Street North	18	18	18	18	15	11	14	13	1	0	1	0	25.3	16.5	27.4	19.0	D	C	D	C
		TOTAL	1741	1752	1682	1793	115	123	138	142	6	6	9	8	10.7	11.0	12.0	12.5	B	B	B	B
B1101 High Street / Market Square	High St North	High St South	348	361	341	386	36	35	39	36	1	1	1	1	3.3	3.4	3.4	3.4	A	A	A	A
	Market Place	High St South	82	82	75	72	221	240	313	377	77	103	132	231	83.3	87.8	121.1	252.1	F	F	F	F
	Market Place	High St North	234	234	180	176	221	240	314	377	77	103	132	231	121.8	140.2	201.5	325.5	F	F	F	F
	High St South	High St North	729	730	772	811	164	154	192	198	22	18	45	52	18.3	16.6	24.8	30.2	C	C	C	D
		TOTAL	1392	1407	1368	1445	227	243	321	378	44	56	77	129	34.4	37.3	46.5	68.4	D	E	E	F
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	283	291	261	286	62	54	71	79	2	1	3	3	5.7	4.9	7.4	7.0	A	A	A	A
	High Street North	Burrowmoor Rd	107	109	118	130	62	54	71	79	2	1	3	3	10.1	8.8	12.6	13.3	B	A	B	B
	High Street North	City Rd	40	42	38	42	62	54	71	79	2	1	3	3	11.1	10.4	15.6	16.9	B	B	C	C
	High Street South	Burrowmoor Rd	37	37	80	83	152	154	318	346	23	20	118	173	27.2	26.5	83.7	123.7	D	D	F	F
	High Street South	City Rd	28	28	26	27	152	154	318	346	23	20	118	173	32.8	29.1	90.2	128.3	D	D	F	F
	High Street South	High Street North	488	489	494	513	152	154	318	346	23	20	118	173	25.1	23.3	76.8	116.6	D	C	F	F
	Burrowmoor Rd	City Rd	82	82	85	91	46	40	70	69	2	1	8	4	5.0	4.1	8.4	7.7	A	A	A	A
	Burrowmoor Rd	High Street North	145	146	171	181	46	40	70	69	2	1	8	4	10.7	9.1	15.5	16.1	B	A	C	C
	Burrowmoor Rd	High Street South	82	82	103	109	46	40	70	69	2	1	8	4	10.0	9.2	16.5	15.9	A	A	C	C
	City Rd	High Street North	95	95	111	115	33	31	75	58	2	1	12	6	11.2	9.3	22.6	23.0	B	A	C	C
	City Rd	High Street South	47	47	50	52	33	31	75	58	2	1	12	6	10.3	9.5	22.8	22.9	B	A	C	C
	City Rd	Burrowmoor Rd	39	39	47	50	33	32	75	58	2	1	12	6	10.0	9.3	20.1	23.3	A	A	C	C
		TOTAL	1472	1487	1583	1678	152	154	318	346	4	4	22	28	15.0	13.5	38.2	52.4	C	B	E	F
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	91	94	101	109	106	117	124	146	14	18	16	25	18.6	23.3	21.3	28.1	B	C	C	C
	B1101 North	B1101 South	320	328	312	339	106	117	124	146	14	18	16	25	19.7	23.8	22.1	29.3	B	C	C	C
	St. Peters Road	B1101 South	79	78	92	97	82	72	138	101	15	11	31	17	35.3	28.6	44.1	35.4	D	C	D	D
	St. Peters Road	B1101 North	190	190	212	222	82	72	138	101	15	11	31	17	35.8	28.4	44.9	37.9	D	C	D	D
	B1101 South	B1101 North	362	363	398	404	207	134	404	283	39	13	166	95	44.1	23.8	115.5	84.2	D	C	F	F
	B1101 South	St. Peters Road	156	157	150	153	219	136	416	278	46	11	177	83	46.4	30.5	117.6	86.7	D	C	F	F
		TOTAL	1198	1210	1265	1325	219	151	416	291	28	13	98	55	34.2	25.7	68.7	53.9	C	C	E	D

4.11.21. Table 4.30 shows that the model predicts the following results between the DM and TC2 CS1 scenarios in the PM peak hour (which are very similar to TC2 DM AM peak hour CS1 scenario results):

- The TC2 scheme decreases queues and delays at both the Dartford Road / Darthill Road / Grays Lane junction and the Broad Street / Dartford Road / Station Road junction, such that both junctions are expected to operate within capacity. There is a significant reduction in queue length and average delay per vehicle along the B1099 Dartford Road and B1101 Station Road approaches to the Broad Street mini roundabout junction relative to the DM.
- In both the DM and the TC2 scenarios, the model predicts that the Market Place approach is over capacity at the High Street / Market Place junction.
- The B1101 Burrowmoor Road / City Road / High Street junction is predicted to operate over capacity in both the DM and TC2 scenarios. Queues and delays are expected to increase with the TC2 scheme, particularly on High Street South.
- The High Street / St Peter's Road junction is predicted to be approaching capacity with the TC2 scheme.

Town Centre Package 2 Summary

4.11.22. Table 4.31 below shows a summary of the Overall Level of Service (LOS) for the DM and TC2 scenarios. Cells shown in green have a LOS of A-C, which is within capacity, orange is LOS D, which is approaching capacity, and red is LOS E-F, which is over capacity.

Table 4.31: Town Centre Package 2 Results Summary

	Approach		Summary AM Peak								Summary PM Peak							
			2026		2031		2026 CS1		2031 CS1		2026		2031		2026 CS1		2031 CS1	
No	Name	From	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2	DM	TC2
209	B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	F	A	F	A	E	A	E	A	D	A	F	A	D	A	E	A
209		Dartford Road East	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
209		Greys Ln	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
209		Dartford Road West	F	C	F	C	F	B	F	C	F	B	F	C	F	C	F	C
209		TOTAL	E	A	F	A	E	A	E	A	F	A	F	A	E	A	E	B
213	B1099 Dartford Road / B1101 BRoad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	E	B	E	C	D	B	E	B	E	C	E	C	E	C	E	C
213		Broad Street	D	C	D	C	C	C	D	C	D	C	D	B	D	C	E	C
213		B1099	B	A	B	A	A	A	A	A	A	A	B	A	A	A	A	A
213		TOTAL	C	B	C	B	C	B	C	B	D	B	D	B	D	B	D	B
214	B1101 Station Road / Creek Road	B1101 North	E	A	E	C	C	A	D	A	E	B	F	C	E	A	F	C
214		Creek Road	D	A	E	A	C	A	D	A	E	A	F	A	E	A	F	A
214		B1101 South	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
214		TOTAL	C	A	C	A	B	A	C	A	D	A	F	A	C	A	E	A
218	B1101 BRoad Street / Grays Lane / Nene Parade	Broad Street North	A	A	A	B	A	A	A	A	B	A	A	A	A	A	B	A
218		Nene Parade	C	C	D	C	C	C	C	D	A	A	A	A	A	A	A	A
218		Broad Street South	A	C	A	B	A	B	B	C	B	B	B	B	B	B	B	C
218		Greys Ln	C	C	C	C	C	C	C	C	C	C	C	C	D	C	D	C
218		TOTAL	A	B	A	B	A	B	A	B	B	A	B	B	B	B	B	B
221	B1101 High Street / Market Square	High St North	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A
221		Market Place	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
221		High St South	C	E	C	D	C	D	C	E	C	C	C	C	C	C	C	D
221		TOTAL	C	E	C	E	C	E	D	F	D	D	E	E	D	E	E	F
104	B1101 High Street / City Road / Burrowmoor Road	High Street North	B	C	C	E	B	C	C	D	B	B	B	B	B	B	C	C
104		High Street South	F	F	F	F	E	F	F	F	E	F	F	F	D	D	F	F
104		Burrowmoor Rd	B	C	C	C	B	C	C	D	B	B	B	B	B	A	C	C
104		City Rd	A	A	A	A	A	A	A	A	B	B	C	C	A	A	C	C
104		TOTAL	D	F	F	F	C	E	F	F	C	C	E	F	C	B	E	F
105	B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	C	E	C	F	C	D	C	E	C	C	C	C	B	C	C	C
105		St. Peters Road	F	E	F	F	F	D	F	F	D	C	E	E	D	C	D	D
105		B1101 South	F	F	F	F	F	F	F	F	E	C	F	F	D	C	F	F
105		TOTAL	F	F	F	F	F	E	F	F	D	C	F	F	C	C	E	D

*taken highest delay/LOS as summary

4.11.23. Table 4.31 shows that the model predicts that the TC2 Package reduces congestion and improves delay around the Town Centre, particularly at Dartford Road / Darthill Road / Grays Lane junction and the Broad Street / Dartford Road / Station Road junctions.

4.11.24. Similar to the TC1 model, Table 4.30 also shows that the TC2 model predicts issues with congestion at the High Street / Market Square junction and Burrowmoor Road / City Road / High Street Roundabout. As a result of vehicles queueing back from this last junction, the High Street / St Peter's Road junction traffic signals are over capacity in the TC2 Package during the AM peak hour and approaching capacity during the PM peak hour.

4.11.25. In addition to reducing congestion and delay along Broad Street, TC2 facilities the realisation of the FHSF aspirations by reducing road space and replacing it with large areas of public realm. As a result of this, TC2 has been progressed to the Packaging Assessment.

4.12. Town Centre Package 3

4.12.1. Town Centre Package 3 (TC3) consists of large scale changes that have a very significant impact on the appearance and performance of March Town Centre. Like TC2, this package allows for the introduction of significant public realm along Broad Street, but includes a New River Crossing to the west of the existing town bridge and an enlarged roundabout at the junction of High Street / Burrowmoor Road and City Road to address the issues identified at this location within the DM models.

4.12.2. The creation of the New River Crossing also provides the opportunity for Town Centre car parking to be consolidated at the existing car park adjacent to City Road. This would enable trips from both north and south of the river to reach the car park without the need to travel along Broad Street.

4.12.3. The options included within TC3 are shown schematically in Figure 4.19 beneath.

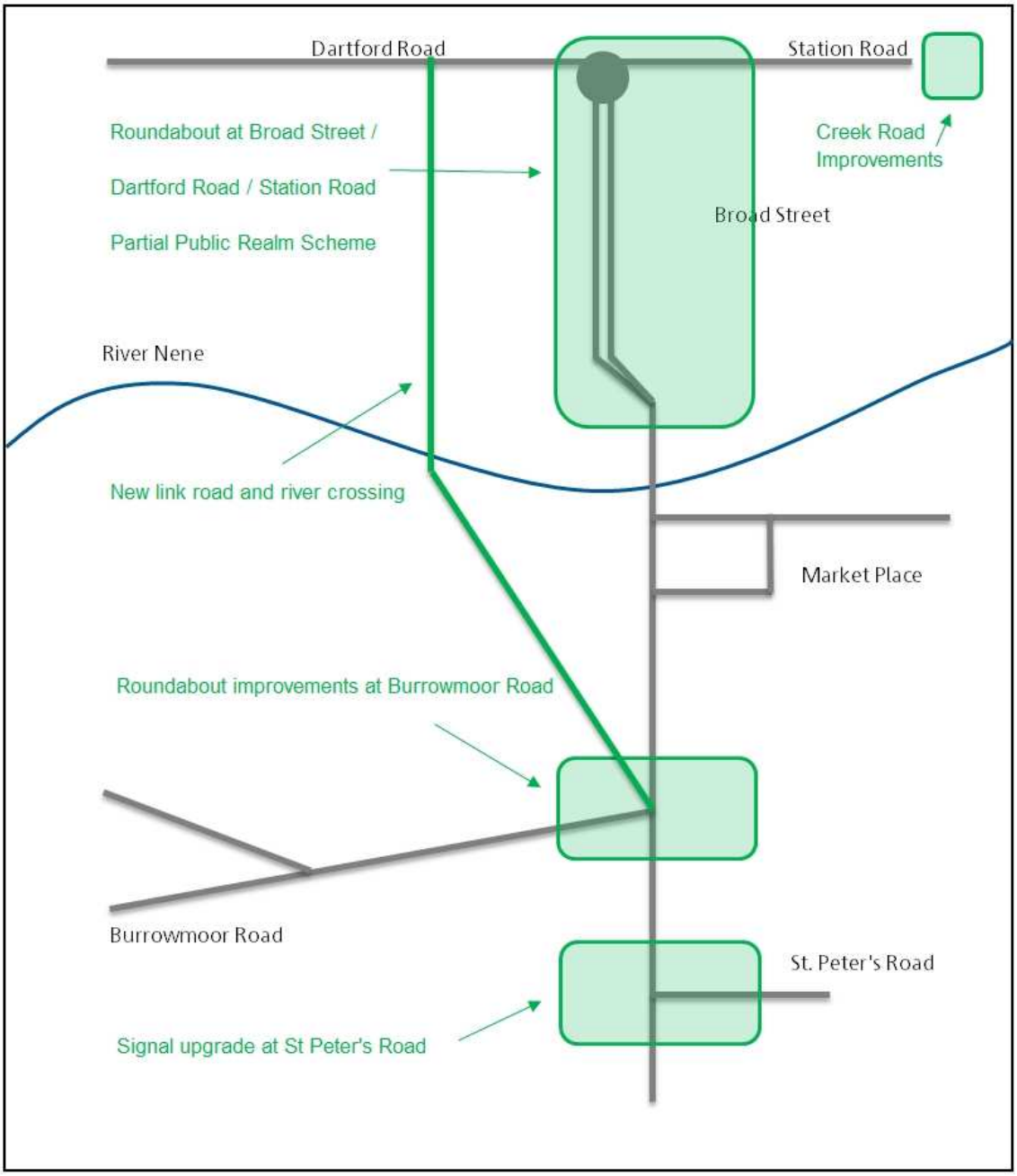

Figure 4.19: Town Centre Package 3

4.12.4. The TC3 package includes the following improvements. It should be noted that the scale of change to March Town Centre associated with TC3 is significantly greater than in TC1 and TC2. Substantial further work needs to be undertaken to determine the viability of the New River Crossing in relation to complex issues such as potential routes, land acquisition and the impact on heritage and conservation. It should be noted that the transport modelling assessment beneath only considers the impact of TC3 in transport user terms, and not any wider benefits (or disbenefits) that may be associated with it.

4.12.5. The purpose of assessing the TC3 package, and specifically the New River Crossing, is to consider a high capacity package of schemes within the Town Centre to provide an alternative should TC1 and TC2 prove unable to cope with the traffic demand anticipated in future years.

B1101 Station Road / Creek Road

4.12.6. As per TC1 and TC2, this package looks to update Station Road \ Creek Road junction from a priority junction to a mini roundabout. The mini roundabout has been modelled with a yellow box as in the base model.

Broad Street Roundabout and Public Realm

4.12.7. In line with FHSF aspirations, and consistent with TC2, this option updates the Broad Street / Dartford Road / Station Road junction to a mini-roundabout with single lane approaches. Pedestrian crossings are provided across each of the approaches by zebra crossings. The changes also include making Broad Street one lane in each direction which releases a significant amount of space for public realm improvements.

4.12.8. Note that the creation of a roundabout at this location may require the repositioning of March Fountain. This would be undertaken with careful consideration to advice from historic, conservation and built environment specialists, as we as public consultation.

4.12.9. The assessment has only considered the impact of TC3 in transport terms at this stage of the study, and further design and landscaping work will be needed to determine the layout and appearance of any public realm along Broad Street, including potential options for the repositioning of March Fountain.

New River Crossing

4.12.10. The package includes the creation of a New River Crossing to the west of Broad Street as discussed in the Strategic Assessment Chapter. This crossing would provisionally connect Dartford Road in the north, to City Road in the south, enabling trips to avoid Broad Street and March Town Centre. Note that no alignment has yet been determined for the crossing, and this would be subject to further investigation.

For the purpose of the traffic modelling, it has been assumed that the New River Crossing would join Dartford Road in the north via a signalised junction, and would connect to City Road in the south, culminating in an enlarged roundabout at Burrowmoor Road / City Road / High Street.

B1101 The Causeway / B1101 High Street / B1099 St Peter's Road

4.12.11. As in TC1 and TC2, TC3 also includes the proposed scheme to the High Street / St Peter's Road, with a northbound right turn lane.

Town Centre Package 3 Traffic Flows

4.12.12. Due to the significant impact of the New River Crossing on traffic flows, a bespoke set of traffic flows have been used to assess TC3. These flows have been extracted from the SATURN model and incorporated into the VISSIM model using the same technique that was used for the DM and CS1 demand scenarios.

4.12.13. These traffic flows are called Core Scenario 2 (CS2), and reflect re-routing following the implementation of the New River Crossing, NILR Option 1 and the signalisation of A141 / Twenty Foot Road.

Town Centre Package 3 Results

4.12.14. The overall junction operation for the AM peak hour is shown below in Table 4.32. The table compares the DM to TC3 for the AM peak hour in 2026 and 2031 for the same junctions as TC1, as well as for the Dartford Road / Rookswood Road / Westwood Avenue junction.

Table 4.32: 2026 and 2031 DM vs. Town Centre Package 3 Results – AM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3
B1099 Dartford Road / Rookswood Road / Westwood Avenue	Westwood Avenue	Dartford Road East	59	0	60	0	21	0	23	0	1	0	1	0	17.0	0.0	22.4	0.0	C	A	C	A
	Westwood Avenue	Rookswood Rd	0	0	0	0	21	0	23	0	1	0	1	0	0.0	0.0	0.0	0.0	A	A	A	A
	Westwood Avenue	Dartford Road West	31	0	31	0	21	0	23	0	1	0	1	0	12.0	0.0	13.8	0.0	B	A	B	A
	Dartford Road East	Rookswood Rd	11	81	12	77	49	68	53	67	1	13	1	16	1.5	29.8	1.2	36.7	A	C	A	D
	Dartford Road East	Dartford Road West	556	172	611	182	49	68	53	67	1	13	1	16	2.0	30.6	2.2	36.5	A	C	A	D
	Dartford Road East	Westwood Avenue	59	0	61	0	61	68	64	67	2	13	2	16	3.6	0.0	3.9	0.0	A	A	A	A
	Rookswood Rd	Dartford Road West	4	581	4	662	8	145	9	180	0	21	0	30	7.6	24.7	7.1	28.8	A	C	A	C
	Rookswood Rd	Westwood Avenue	0	0	0	0	8	145	9	180	0	21	0	30	0.0	0.0	0.0	0.0	A	A	A	A
	Rookswood Rd	Dartford Road East	6	12	7	32	8	145	9	180	0	21	0	30	33.4	42.8	39.8	47.3	D	D	E	D
	Dartford Road West	Westwood Avenue	37	0	91	0	263	147	318	196	67	15	125	23	81.4	0.0	123.5	0.0	F	A	F	A
	Dartford Road West	Dartford Road East	319	174	303	179	263	147	318	196	67	15	125	23	75.9	22.6	127.3	27.5	F	C	F	C
	Dartford Road West	Rookswood Rd	4	403	4	431	263	147	318	196	67	15	125	23	42.2	22.1	91.9	26.8	E	C	F	C
		TOTAL	1085	1421	1184	1563	263	164	318	216	10	10	19	14	27.8	24.9	44.5	29.8	D	C	E	C
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	131	54	130	54	62	17	66	22	11	0	13	1	52.7	1.7	57.2	1.8	F	A	F	A
	Darthill Road	Dartford Road West	17	116	18	116	63	17	66	22	12	0	13	1	53.3	2.4	61.1	2.3	F	A	F	A
	Darthill Road	Grays Ln	0	0	0	0	63	17	66	22	12	0	13	1	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road East	Grays Ln	6	6	4	3	78	32	81	37	19	0	21	1	0.6	0.8	0.5	0.8	A	A	A	A
	Dartford Road East	Dartford Road West	552	126	596	126	78	32	81	37	19	0	21	1	0.6	0.6	0.6	0.6	A	A	A	A
	Dartford Road East	Darthill Road	75	26	71	26	38	5	37	5	1	0	2	0	7.5	0.6	8.5	0.6	A	A	A	A
	Grays Ln	Dartford Road West	28	34	34	38	10	9	13	10	0	0	0	0	4.6	2.3	5.4	2.2	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	8	12	8	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	8	12	8	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	21	59	20	59	157	27	159	31	88	0	108	1	119.5	3.0	154.8	2.9	F	A	F	A
	Dartford Road West	Dartford Road East	292	83	294	92	157	27	159	31	88	0	108	1	129.7	3.2	157.7	3.0	F	A	F	A
	Dartford Road West	Grays Ln	27	31	26	29	157	27	159	31	88	0	108	1	125.7	3.0	156.7	2.6	F	A	F	A
		TOTAL	1148	533	1193	543	157	34	159	40	19	0	22	1	45.7	2.0	53.0	2.0	E	A	F	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	305	273	315	277	106	92	105	100	54	5	58	7	59.0	8.4	61.8	9.2	E	A	E	A
	B1101	B1099	98	136	97	132	117	-	117	-	5	-	5	-	60.9	-	65.1	-	E	A	E	A
	B1101	Robingoodfellow's Ln	4	3	3	3	106	92	105	100	54	5	58	7	60.3	8.4	67.3	7.9	E	A	E	A
	Broad Street	B1099	535	22	574	23	158	58	159	75	43	3	47	4	25.8	6.7	27.3	7.2	C	A	C	A
	Broad Street	Robingoodfellow's Ln	38	47	39	46	158	58	159	75	43	3	47	4	34.3	6.9	34.0	7.5	C	A	C	A
	Broad Street	B1101	330	326	333	329	158	58	159	75	43	3	47	4	35.0	7.0	35.5	7.5	D	A	D	A
	B1099	Robingoodfellow's Ln	4	4	4	4	52	44	51	41	19	1	20	1	7.8	5.5	6.9	6.3	A	A	A	A
	B1099	B1101	82	106	79	113	52	44	51	41	19	1	20	1	10.8	5.8	10.9	6.1	B	A	B	A
	B1099	Broad Street	337	26	341	28	52	44	51	41	19	1	20	1	9.5	6.9	9.8	6.1	A	A	A	A
		TOTAL	1732	957	1785	970	158	92	159	106	30	3	32	4	31.7	7.4	33.1	7.9	C	A	C	A
B1101 Station Road / Creek Road	B1101 North	Creek Road	33	26	34	34	126	47	141	59	19	1	26	3	38.4	6.4	43.3	7.0	E	A	E	A
	B1101 North	B1101 South	263	186	264	183	126	47	141	59	19	1	26	3	36.5	6.5	46.6	7.2	E	A	E	A
	Creek Road	B1101 South	148	241	153	243	42	31	42	32	9	0	11	1	33.7	1.3	40.0	1.3	D	A	E	A
	Creek Road	B1101 North	0	0	0	0	39	31	39	32	7	0	9	1	0.0	0.0	0.0	0.0	A	A	A	A
	B1101 South	B1101 North	303	218	315	243	25	5	27	2	0	0	0	0	1.6	1.0	1.7	1.0	A	A	A	A
	B1101 South	Creek Road	108	229	98	214	25	5	27	2	0	0	0	0	2.5	1.7	2.6	1.7	A	A	A	A
		TOTAL	855	899	865	918	126	48	141	60	9	0	12	1	19.3	2.6	24.0	2.7	C	A	C	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	0	0	4	0	105	51	102	52	7	2	7	2	0.0	0.0	7.8	0.0	A	A	A	A
	Broad Street North	Broad Street South	630	298	638	304	105	51	102	52	7	2	7	2	9.1	6.8	9.1	6.9	A	A	A	A
	Broad Street North	Grays Ln	0	0	0	0	83	21	80	23	2	0	2	0	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	12	0	12	0	81	21	78	23	2	0	3	0	16.2	0.0	21.5	0.0	C	A	C	A
	Nene Parade	Broad Street South	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Grays Ln	4	4	3	4	6	6	6	6	0	0	0	0	19.5	5.0	25.9	5.1	C	A	D	A
	Nene Parade	Broad Street North	0	0	0	0	6	6	6	6	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street South	Grays Ln	24	29	31	34	56	46	57	46	13	3	14	3	8.7	5.0	9.1	5.3	A	A	A	A
	Broad Street South	Broad Street North	858	358	907	367	56	46	57	46	13	3	14	3	9.4	5.7	10.0	5.8	A	A	A	A
	Broad Street South	Nene Parade	4	4	3	3	56	46	56	46	12	2	14	2	6.0	3.0	6.0	2.8	A	A	A	A
	Grays Ln	Broad Street North	33	37	30	32	20	13	16	13	1	0	1	0	18.1	4.8	20.5	4.7	C	A	C	A
		TOTAL	1565	730	1628	744	105	53	102	54	5	1	5	1	9.6	6.1	9.9	6.2	A	A	A	A
B1101 High Street / Market Square	High St North	High St South	388	216	396	223	43	35	45	39	1	1	1	1	3.9	3.8	4.1	5.0	A	A	A	A
	Market Place	High St South	78	218	138	240	118	30	165	47	22	2	35	3	27.7	8.6	39.2	11.1	D	A	E	B
	Market Place	High St North	164	106	158	102	118	30	165	47	22	2	36	3	59.8	8.8	81.8	10.0	F	A	F	A
	High St South	High St North	757	443	813	455	172	53	190	61	20	2	34	3	15.1	5.3	20.0	5.3	C	A	C	A
		TOTAL	1386	983	1506	1020	180	54	213	70	16	2	27	3	17.9	6.1	24.2	7.1	C	A	C	A
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	342	208	408	198	70	133	101	160	3	20	6	30	6.6	23.2	8.8	30.7	A	C	A	D
	High Street North	Burrowmoor Rd	86	81	98	108	70	133	101	160	3	20	6	30	12.5	27.5	15.9	35.2	B	D	C	E
	High Street North	City Rd	38	144	29	156	70	133	101	160	3	20	6	30	13.1	24.2	18.5	30.8	B	C	C	D
	High Street South	Burrowmoor Rd	91	95	91	101	312	138	364	199	75	10	193	22	58.2	19.2	134.7	25.2	F	C	F	D
	High Street South	City Rd	43	367	42	434	312	138	364	199	75	10	193	22	58.4	15.5	138.9	21.0	F	C	F	C
	High Street South	High Street North	517	124	470	143	312	138	364	199	75	10	193	22	52.2	15.5	131.9	21.7	F	C	F	C
	Burrowmoor Rd	City Rd	46	163	52	180	65	87	94	88	5	29	10	49	8.3	38.6	12.5	59.1	A	E	B	F
	Burrowmoor Rd	High Street North	210	206	312	190	65	87	94	88	5	29	10	49	14.7	37.2	19.0	59.4	B	E	C	F
	Burrowmoor Rd	High Street South	113	74	108	73	65	87	94	88	5	29	10	49	15.0	38.8	19.0	59.9	B	E	C	F
	City Rd	High Street North	32	113	32	123	14	102	16	106	0	15	1	19	9.3	16.0	14.9	18.9	A	C	B	C
	City Rd	High Street South	11	371	11	386	14	102	16	106	0	15	1	19	10.7	16.2	12.3	18.6	B	C	B	C
	City Rd	Burrowmoor Rd	0	30	0	31	14	102	17	106	0	15	1	19	0.0	19.3	0.0	23.0	A	C	A	C
		TOTAL	1530	1976	1853	2122	312	158	364	208	12	18	30	30	28.9	22.9	57.1	31.0	D	C	F	D
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	83	210	78	223	136	220	171	198	25	48	35	44	27.1	31.8	31.6	29.8	C	C	C	C
	B1101 North	B1101 South	382	444	450	433	136	220	171	198	25	48	35	44	28.4	33.1	32.9	31.1	C	C	C	C
	St. Peters Road	B1101 South	142	141	140	143	184	146	254	188	65	44	110	71	89.8	71.7	150.5	100.7	F	E	F	F
	St. Peters Road	B1101 North	224	197	211	205	184	146	254	188	65	44	110	71	91.7	70.6	148.5	101.1	F	E	F	F
	B1101 South	B1101 North	437	392	399	473	455	137	586	174	162	13	389	19	125.0	29.7	300.4	33.5	F	C	F	C
	B1101 South	St. Peters Road	79	58	70	49	466	94	598	115	172	4	401	5	133.1	42.9	310.1	49.0	F	D	F	D
		TOTAL	1348	1440	1348	1526	466	223	598	225	106	27	234	35	83.0	41.3	156.3	48.3	F	D	F	D

4.12.15. Table 4.30 shows that the model predicts the following results for TC3 during the AM peak hour:

- The package of schemes will alleviate all congestion in the Town Centre, and specifically at the following junctions (as the New River Crossing takes trips away from Broad Street and the centre of March):
  - B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
  - B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane
  - B1101 Station Road / Creek Road and B1101 High Street / Market Square.
- The High Street / St Peter's Road junction is predicted to operate within capacity. The St Peter's Road approach is overcapacity, however it is believed that this could be improved with further optimisation of the signals, especially as both of the B1011 approaches are within capacity.

4.12.16. The overall junction operation for the PM peak hour is shown below in Table 4.33.

Table 4.33: 2026 and 2031 DM vs. Town Centre Package 3 Results – PM Peak Hour

Movement			Volume				Queue Length								Delay (secs)							
							Max QL (m)				Avg QL (m)				Avg				LOS			
			2026		2031		2026		2031		2026		2031		2026		2031		2026		2031	
Name	From	To	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3	DM	TC3
B1099 Dartford Road / Rookswood Road / Westwood Avenue	Westwood Avenue	Dartford Road East	16	0	16	0	15	0	14	0	2	0	1	0	30.7	0.0	24.7	0.0	D	A	C	A
	Westwood Avenue	Rookswood Rd	0	0	0	0	15	0	14	0	2	0	1	0	0.0	0.0	0.0	0.0	A	A	A	A
	Westwood Avenue	Dartford Road West	7	0	7	0	15	0	13	0	2	0	1	0	13.7	0.0	15.3	0.0	B	A	C	A
	Dartford Road East	Rookswood Rd	0	58	0	62	52	77	58	82	1	20	1	26	0.0	41.9	0.0	46.4	A	D	A	D
	Dartford Road East	Dartford Road West	554	229	580	219	52	77	58	82	1	20	1	26	2.2	41.4	2.3	47.7	A	D	A	D
	Dartford Road East	Westwood Avenue	38	0	38	0	64	77	69	82	3	20	3	26	5.3	0.0	6.1	0.0	A	A	A	A
	Rookswood Rd	Dartford Road West	2	439	2	433	7	104	7	107	1	14	0	14	3.4	19.3	7.9	19.1	A	B	A	B
	Rookswood Rd	Westwood Avenue	0	0	0	0	7	104	7	107	1	14	0	14	0.0	0.0	0.0	0.0	A	A	A	A
	Rookswood Rd	Dartford Road East	4	46	4	54	7	104	7	107	1	14	0	14	62.9	43.5	84.3	43.8	F	D	F	D
	Dartford Road West	Westwood Avenue	11	0	12	0	259	204	252	216	107	31	104	49	78.5	0.0	99.9	0.0	F	A	F	A
	Dartford Road West	Dartford Road East	429	141	433	139	259	204	252	216	107	31	104	49	87.9	31.3	95.5	34.4	F	C	F	C
	Dartford Road West	Rookswood Rd	2	576	2	575	259	204	252	216	107	31	104	49	54.3	30.5	54.0	32.9	F	C	F	C
		TOTAL	1062	1489	1094	1482	260	204	256	216	16	13	16	18	38.3	29.8	41.0	32.3	E	C	E	C
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	Dartford Road East	11	8	28	6	26	8	33	8	3	0	5	0	34.1	1.0	50.9	1.6	D	A	F	A
	Darthill Road	Dartford Road West	20	40	20	44	26	8	34	8	4	0	6	0	36.5	2.0	47.2	1.9	E	A	E	A
	Darthill Road	Grays Ln	4	2	4	2	26	8	34	8	4	0	6	0	54.9	2.7	50.3	2.1	F	A	F	A
	Dartford Road East	Grays Ln	2	2	0	2	45	23	51	23	8	0	11	0	0.8	0.7	0.0	0.7	A	A	A	A
	Dartford Road East	Dartford Road West	495	179	518	176	45	23	51	23	8	0	11	0	0.7	0.5	0.8	0.5	A	A	A	A
	Dartford Road East	Darthill Road	64	8	69	6	37	3	37	3	2	0	3	0	11.8	0.6	14.1	0.7	B	A	B	A
	Grays Ln	Dartford Road West	40	46	41	46	10	7	12	10	0	0	0	0	4.5	2.3	4.5	2.3	A	A	A	A
	Grays Ln	Darthill Road	0	0	0	0	10	7	11	8	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Grays Ln	Dartford Road East	0	0	0	0	10	7	11	8	0	0	0	0	0.0	0.0	0.0	0.0	A	A	A	A
	Dartford Road West	Darthill Road	11	58	9	66	158	19	158	19	109	0	105	0	118.0	1.9	118.4	1.8	F	A	F	A
	Dartford Road West	Dartford Road East	413	118	421	119	158	19	158	19	109	0	105	0	119.9	1.8	122.7	2.0	F	A	F	A
	Dartford Road West	Grays Ln	2	2	2	2	158	19	158	19	109	0	105	0	113.8	2.3	116.3	1.8	F	A	F	A
		TOTAL	1061	464	1112	468	158	26	158	25	18	0	19	0	50.4	1.4	51.3	1.4	F	A	F	A
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	Broad Street	405	323	433	328	105	109	102	109	61	9	65	15	58.2	11.1	61.6	11.1	E	B	E	B
	B1101	B1099	48	183	48	180	101	-	116	-	12	-	9	-	62.3	-	65.7	-	E	B	E	B
	B1101	Robingoodfellow's Ln	4	4	4	4	105	109	102	109	61	9	65	15	58.6	9.4	65.2	9.0	E	A	E	A
	Broad Street	B1099	513	5	539	4	159	74	159	76	63	4	62	5	32.4	9.0	33.8	12.7	C	A	C	B
	Broad Street	Robingoodfellow's Ln	34	49	61	49	159	74	159	76	63	4	62	5	54.2	9.4	54.7	10.1	D	A	D	B
	Broad Street	B1101	296	373	300	365	159	74	159	76	63	4	62	5	53.7	9.2	53.2	10.2	D	A	D	B
	B1099	Robingoodfellow's Ln	0	0	0	0	50	37	51	36	22	1	22	1	0.0	0.0	0.0	0.0	A	A	A	A
	B1099	B1101	79	126	90	125	50	37	51	36	22	1	22	1	9.7	7.1	10.2	7.2	A	A	B	A
	B1099	Broad Street	345	0	359	0	50	37	51	36	22	1	22	1	9.4	0.0	9.6	0.0	A	A	A	A
		TOTAL	1724	1080	1833	1071	159	109	159	109	39	5	40	7	37.9	9.8	39.2	10.2	D	A	D	B
B1101 Station Road / Creek Road	B1101 North	Creek Road	72	67	69	70	195	65	243	77	52	2	95	13	46.6	8.1	93.0	8.3	E	A	F	A
	B1101 North	B1101 South	320	319	374	318	195	65	243	78	52	2	95	13	47.7	8.3	96.9	8.5	E	A	F	A
	Creek Road	B1101 South	139	208	113	209	31	25	31	26	11	1	16	2	42.3	2.1	75.7	2.3	E	A	F	A
	Creek Road	B1101 North	16	8	8	8	28	25	27	26	9	1	13	2	15.2	1.8	29.2	1.8	C	A	D	A
	B1101 South	B1101 North	215	273	219	265	36	11	17	11	1	0	0	0	2.5	1.2	1.6	1.1	A	A	A	A
	B1101 South	Creek Road	160	242	170	242	36	11	17	11	1	0	0	0	3.3	1.8	2.5	1.7	A	A	A	A
		TOTAL	922	1118	952	1112	195	65	243	78	18	1	31	6	28.1	4.0	55.1	4.1	D	A	F	A
B1101 Broad Street / Grays Lane / Nene Parade	Broad Street North	Nene Parade	4	4	4	4	136	46	137	54	18	1	15	8	7.7	4.5	7.5	6.1	A	A	A	A
	Broad Street North	Broad Street South	728	319	772	323	136	46	137	54	18	1	15	8	10.1	5.5	9.5	5.7	B	A	A	A
	Broad Street North	Grays Ln	0	0	0	0	114	15	116	25	12	0	9	5	0.0	0.0	0.0	0.0	A	A	A	A
	Broad Street North	Broad Street North	15	0	16	0	115	14	113	24	16	0	10	5	25.9	0.0	28.5	0.0	D	A	D	A
	Nene Parade	Broad Street South	8	8	8	8	11	5	9	9	1	0	0	2	6.1	1.6	7.5	1.8	A	A	A	A
	Nene Parade	Grays Ln	0	0	0	0	11	5	10	8	1	0	0	2	0.0	0.0	0.0	0.0	A	A	A	A
	Nene Parade	Broad Street North	3	4	4	3	11	5	10	8	1	0	0	2	46.0	5.6	37.2	5.9	E	A	E	A
	Broad Street South	Grays Ln	40	46	41	46	55	48	55	46	15	3	14	3	9.7	4.6	10.4	4.6	A	A	B	A
	Broad Street South	Broad Street North	814	416	874	407	55	48	55	46	15	3	14	3	11.0	5.2	11.7	5.1	B	A	B	A
	Broad Street South	Nene Parade	3	4	3	4	54	47	54	45	14	2	14	2	12.0	3.0	10.0	3.3	B	A	B	A
	Grays Ln	Broad Street North	8	6	6	7	10	7	9	7	0	0	0	0	24.3	6.0	23.8	5.1	C	A	C	A
		TOTAL	1624	807	1727	801	138	51	137	58	10	1	8	3	10.8	5.2	10.9	5.3	B	A	B	A
B1101 High Street / Market Square	High St North	High St South	370	194	413	201	41	23	44	28	2	0	1	2	3.4	2.9	3.7	3.0	A	A	A	A
	Market Place	High St South	72	182	100	187	238	29	259	46	82	2	86	17	68.9	7.0	90.7	7.3	F	A	F	A
	Market Place	High St North	198	116	179	112	238	29	259	46	82	2	87	17	109.7	9.9	143.8	10.2	F	A	F	B
	High St South	High St North	695	587	775	582	164	67	187	61	30	3	34	3	17.5	6.6	20.8	6.2	C	A	C	A
		TOTAL	1335	1079	1467	1082	248	68	265	82	49	2	52	10	29.7	6.4	35.0	6.2	D	A	E	A
B1101 High Street / City Road / Burrowmoor Road	High Street North	High Street South	282	198	321	196	73	81	84	117	5	9	4	28	6.1	14.4	7.7	26.2	A	B	A	D
	High Street North	Burrowmoor Rd	122	87	151	100	73	81	84	117	5	9	4	28	10.2	17.7	12.3	29.5	B	C	B	D
	High Street North	City Rd	37	91	40	92	73	81	84	117	5	9	4	28	11.6	15.3	14.0	27.1	B	C	B	D
	High Street South	Burrowmoor Rd	33	37	73	73	230	106	365	121	57	5	171	9	40.2	13.2	115.2	15.8	E	B	F	C
	High Street South	City Rd	25	331	25	312	230	106	365	121	57	5	171	9	45.8	11.1	129.1	13.3	E	B	F	B
	High Street South	High Street North	473	269	496	251	230	106	365	121	57	5	171	9	37.0	11.2	115.2	13.6	E	B	F	B
	Burrowmoor Rd	City Rd	62	111	69	129	58	56	55	71	9	4	5	13	5.6	17.4	6.1	24.9	A	C	A	C
	Burrowmoor Rd	High Street North	146	136	166	153	58	56	55	71	9	4	5	13	12.0	16.6	12.5	24.3	B	C	B	C
	Burrowmoor Rd	High Street South	89	19	104	29	58	56	55	71	9	4	5	13	11.9	16.3	12.2	25.3	B	C	B	D
	City Rd	High Street North	76	182	117	177	57	102	58	107	13	18	9	30	12.1	16.3	16.3	19.6	B	C	C	C
	City Rd	High Street South	43	427	49	431	57	102	58	107	13	18	9	30	12.3	16.1	17.4	19.5	B	C	C	C
	City Rd	Burrowmoor Rd	44	34	45	44	57	102	59	107	13	18	9	30	13.2	18.8	17.7	22.8	B	C	C	C
		TOTAL	1431	1923	1856	1989	234	121	365	144	14	9	28	20	20.0	14.5	48.6	20.1	C	B	E	C
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	St. Peters Road	99	213	112	218	134	203	134	271	23	44	21	84	20.9	31.8	23.5	42.0	C	C	C	D
	B1101 North	B1101 South	313	436	361	438	134	203	134	271	23	44	21	84	21.1	32.8	23.9	42.6	C	C	C	D
	St. Peters Road	B1101 South	73	80	92	79	131	81	137	104	33	13	36	30	37.1	29.8	54.5	32.5	D	C	D	C
	St. Peters Road	B1101 North	191	205	220	213	131	81	137	104	33	13	36	30	36.5	30.4	56.9	31.8	D	C	E	C
	B1101 South	B1101 North	343	432	382	424	290	147	554	145	93	15	357	19	71.7	25.0	255.2	27.6	E	C	F	C
	B1101 South	St. Peters Road	142	95	144	104	302	127	566	138	101	8	369	13	74.5	36.4	256.6	41.5	E	D	F	D
		TOTAL	1161	1461	1312	1475	313	207	566	273	62	20	196	37	46.5	30.1	123.5	35.5	D	C	F	D

4.12.17. Table 4.33 shows that the model predicts the following results for TC3 during the PM peak hour:

- As per the AM peak hear, the model predicts that the package of schemes will alleviate all congestion in the Town Centre, and specifically at the following junctions:
  - B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road
  - B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane
  - B1101 Station Road / Creek Road and
  - B1101 High Street / Market Square.
- The model also predicts that the B1101 High Street / City Road / Burrowmoor Road and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junctions will operate within capacity compared.

Town Centre Package 3 Summary

4.12.18. Table 4.34 below shows a summary of the Overall Level of Service (LOS) for the TC3 package of schemes compared to the DM scenario. Cells shown in green have a LOS of A-C, which is within capacity, orange is LOS D, which is approaching capacity, and red is LOS E-F, which is over capacity.

Table 4.34: Town Centre Package 3 Results Summary

Approach		Summary AM Peak				Summary PM Peak			
		2026		2031		2026		2031	
Name	From	DM	TC3	DM	TC3	DM	TC3	DM	TC3
B1099 Dartford Road / Rookswood Road / Westwood Avenue	Westwood Avenue	C	A	C	A	D	A	C	A
	Dartford Road East	A	C	A	D	A	D	A	D
	Rookswood Rd	D	D	E	D	F	D	F	D
	Dartford Road West	F	C	F	C	F	C	F	C
	TOTAL	D	C	E	C	E	C	E	C
B1099 Dartford Road / Darthill Road / Grays Lane / Darthill Road	Darthill Road	F	A	F	A	D	A	F	A
	Dartford Road East	A	A	A	A	A	A	A	A
	Greys Ln	A	A	A	A	A	A	A	A
	Dartford Road West	F	A	F	A	F	A	F	A
	TOTAL	E	A	F	A	F	A	F	A
B1099 Dartford Road / B1101 BRoad Street / B1101 Station Road / Robingoodfellow's Lane	B1101	E	A	E	A	E	B	E	B
	Broad Street	D	A	D	A	D	A	D	B
	B1099	B	A	B	A	A	A	B	A
	TOTAL	C	A	C	A	D	A	D	B
B1101 Station Road / Creek Road	B1101 North	E	A	E	A	E	A	F	A
	Creek Road	D	A	E	A	E	A	F	A
	B1101 South	A	A	A	A	A	A	A	A
	TOTAL	C	A	C	A	D	A	F	A
B1101 BRoad Street / Grays Lane / Nene Parade	Broad Street North	C	A	C	A	D	A	D	A
	Nene Parade	C	A	D	A	A	A	A	A
	Broad Street South	A	A	A	A	B	A	B	A
	Greys Ln	C	A	C	A	C	A	C	A
	TOTAL	A	A	A	A	B	A	B	A
B1101 High Street / Market Square	High St North	A	A	A	A	A	A	A	A
	Market Place	F	A	F	A	F	A	F	B
	High St South	C	A	C	A	C	A	C	A
	TOTAL	C	A	C	A	D	A	E	A
B1101 High Street / City Road / Burrowmoor Road	High Street North	B	C	C	D	B	C	B	D
	High Street South	F	C	F	D	E	B	F	C
	Burrowmoor Rd	B	E	C	F	B	C	B	C
	City Rd	A	C	A	C	B	C	C	C
	TOTAL	D	C	F	D	C	B	E	C
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	B1101 North	C	C	C	C	C	C	C	D
	St. Peters Road	F	E	F	F	D	C	E	C
	B1101 South	F	C	F	C	E	C	F	C
	TOTAL	F	D	F	D	D	C	F	D

*taken highest delay/LOS as summary

4.12.19. Overall, Table 4.34 shows that the model predicts that the scheme improves congestion and delay in both 2026 and 2031 throughout the Town Centre network, as it removes trips from the Town Centre and re-routes them onto the New River Crossing.

4.12.20. Table 4.34 also shows that the model predicts that the New River Crossing, and the new larger roundabout at the Burrowmoor Road / City Road / High Street are expected to operate within capacity.

4.13. Operational Assessment Summary

4.13.1. The Operational Assessment has used the March VISSIM model to test the operational performance of options along the A141 corridor and within March Town Centre.

4.13.2. The Operational Assessment has identified that the following options offer operational benefits and serve to mitigate against future year growth to varying degrees, and are compatible with the FHSF aspirations:

- Peas Hill Roundabout Option 5.2 (60m ICD), in conjunction with the A141 / Hostmoor Avenue Roundabout improvements (which are assumed to be developer funded)
- Town Centre Package 2 (TC2), consisting of:
    - Station Road / Creek Road Mini Roundabout
    - Broad Street Mini Roundabout and Public Realm Improvements
    - St Peter's Road Traffic Signal Improvements.
- Town Centre Package 3 (TC3), consisting of:
    - Station Road / Creek Road Mini Roundabout
    - Broad Street Mini Roundabout and Public Realm Improvements
    - A New River Crossing, with a signalised junction onto Dartford Road to the north and the creation of a new larger roundabout between Burrowmoor Road / City Road and High Street to the south
    - St Peter's Road Traffic Signal Improvements.

4.13.3. Each of these options have been progressed to the Packaging Assessment along with the NILR Option 1 from the Strategic Assessment and the signalisation of the A141 / Twenty Foot Road from the Quick Wins work stream.

5. Packaging Assessment

5.1. Introduction

5.1.1. The Packaging Assessment has taken the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented in March. Different packages have been assessed, representing different levels of impact within March Town Centre, ranging from a small number of schemes that would make a modest impact, to a large transformative package that consists of multiple schemes and would dramatically change the transport network in and around March.

5.1.2. All of the Packages assessed within the Packaging Assessment are compatible with the FHSF aspirations.

5.2. Option Phasing and Costs

5.2.1. The options progressed from the strategic and operational assessments are shown in Table 5.1 below. These options have been selected based on their operational performance, and are identified to either offer benefit in their own right, or would work in conjunction with another option. The table also identifies the likely timescale for the options, whether they are shorter term (0-5 years) or longer term (5 years or more).

Table 5.1: Options Progressed to Packaging Assessment

Shorter Term (0 – 5 years) / Modelled in 2026	Longer Term (5 years +) / Modelled in 2031
A141 / Twenty Foot Road Signals	Northern Industrial Link Road
A141 / Peas Hill Roundabout (& Hostmoor Roundabout)	Town Centre Package 3 (including New River Crossing)
High Street / St Peter's Road Signal Improvements	
Town Centre Package 2 (Broad Street Roundabout and one lane in each direction)	

5.2.2. Table 5.2 below shows the individual option costs, each of the options has been costed using a high level costing tool, the costs provided for each option include:

- Design and Supervision Fees
- Stats, Landscaping and Preliminaries Allowance
- Land and Property Acquisition Allowance
- 20% Risk Allowance
- 44% Optimism Bias Allowance.

Table 5.2: High Level Option Costs

Scheme	Scheme Cost (£m)
A141 / Twenty Foot Road Signals	£1.7m
A141 / Peas Hill Roundabout (in association with Hostmoor Roundabout)	£4.1m (Peas Hill only)
High Street / St Peter's Road Signal Improvements	£0.2m
Northern Industrial Link Road	£5.4m
Broad Street Roundabout + Broad Street one lane in each direction (TC2)	£1.0m
Broad Street Roundabout + Broad Street one lane in each direction + New River Crossing + Burrowmoor Road / City Road / High Street Roundabout Improvements (TC3)	£33.8m

5.2.3. Note that these costs are in 2019 prices, and include 20% Risk Allowance and Optimism Bias.

5.3. Package Assessments

5.3.1. The Project Team have developed eight packages which include a mix of short term and long term schemes. The packages have been built into the MATS SATURN model and traffic assignments have been run for the future year scenarios 2026 and 2031. Detail on which options are included within each package, and the results from the traffic modelling, are discussed beneath.

5.3.2. The Packages have been designed around varying levels of intervention in the Town Centre, and consider with and without NILR Scenarios.

Package 1

5.3.3. Package 1 consists of the following three options:

- A141 / Twenty Foot Road signals
- A141 / Peas Hill Roundabout (60m ICD), including Hostmoor Avenue Roundabout
- High Street / St Peter's Road Signal Improvements.

5.3.4. The location of the individual options is shown beneath in Figure 5.1. Package 1 has an overall scheme cost of £5.86m in 2019 prices (including Risk Allowance and Optimism Bias), and all options are considered to be deliverable by 2026.

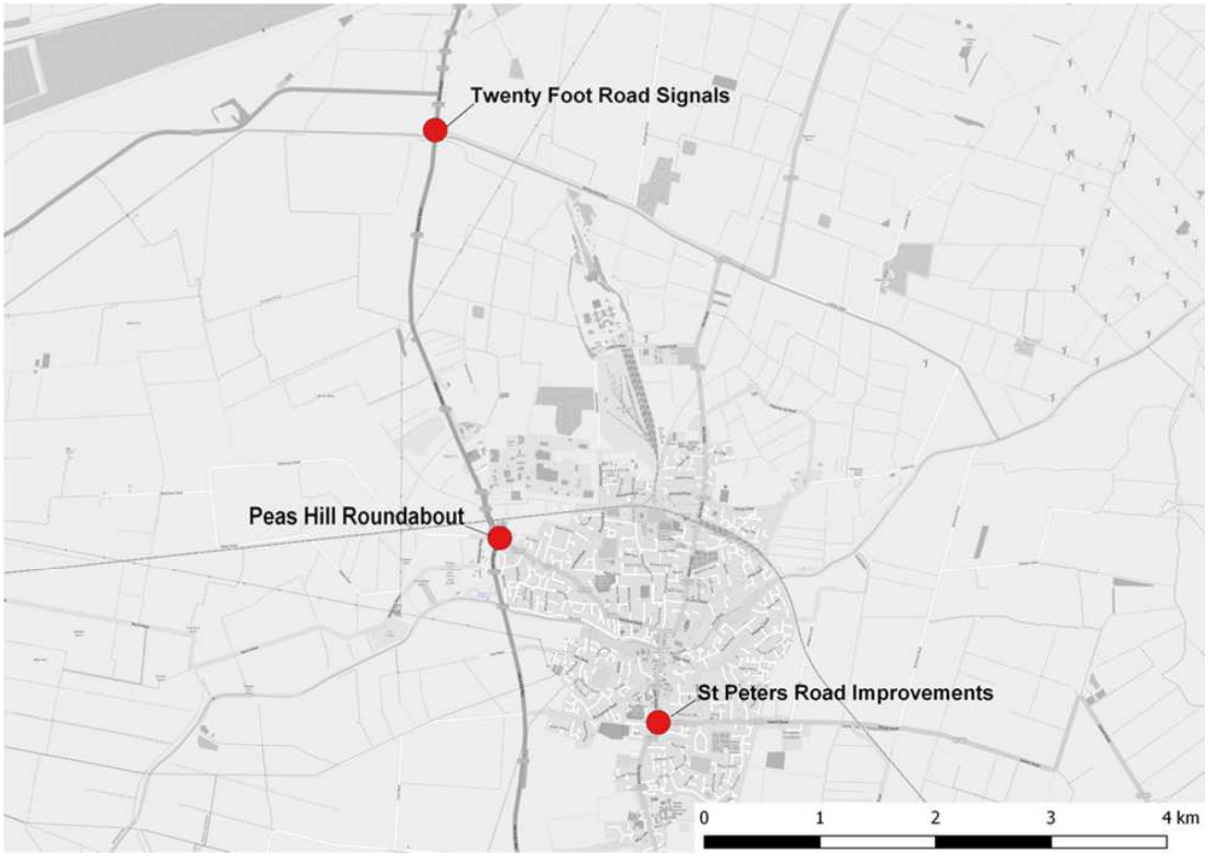

Figure 5.1: Package 1

5.3.5. Figures 5.2 to 5.5 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 1 for both the DM and Package 1 scenarios.

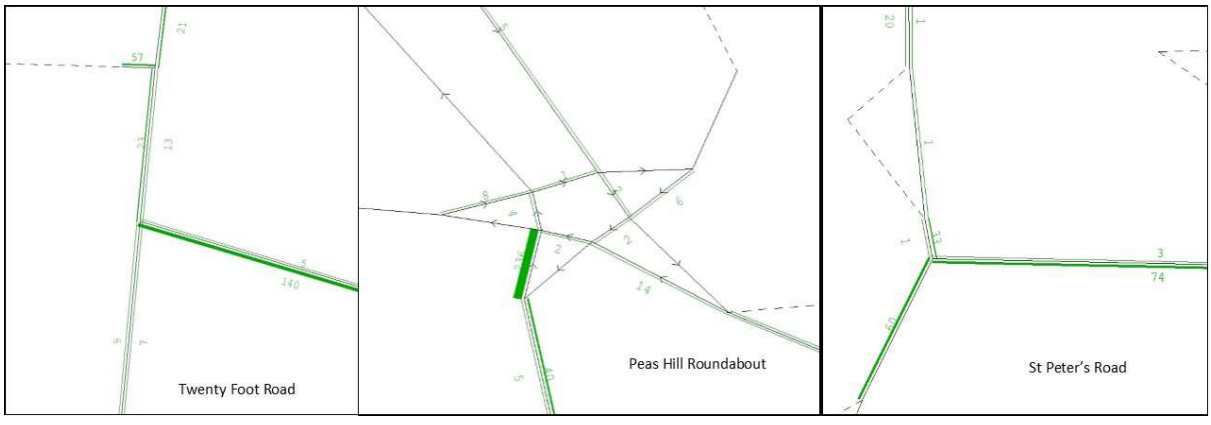

Figure 5.2: Delay in the 2031 AM Peak Hour Do-Minimum model

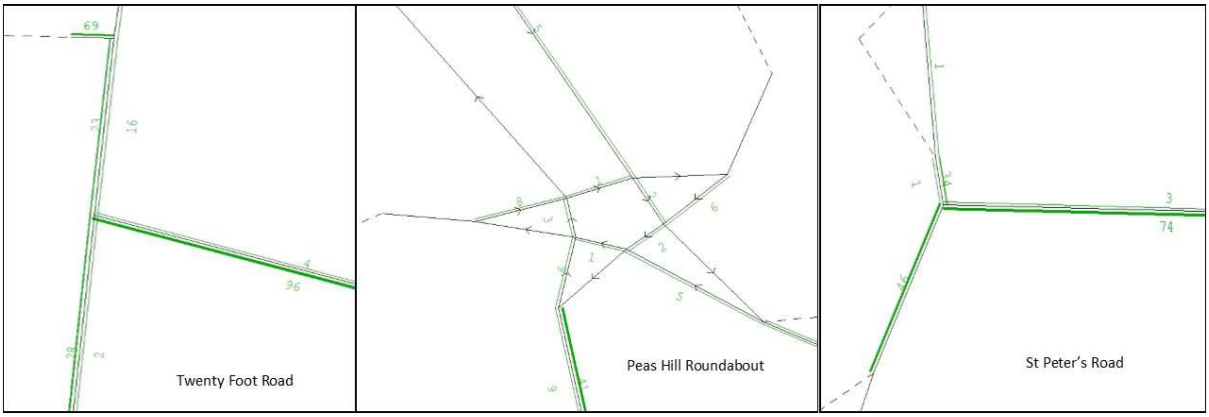

Figure 5.3: Delay in the 2031 AM Peak Hour Package 1 Options

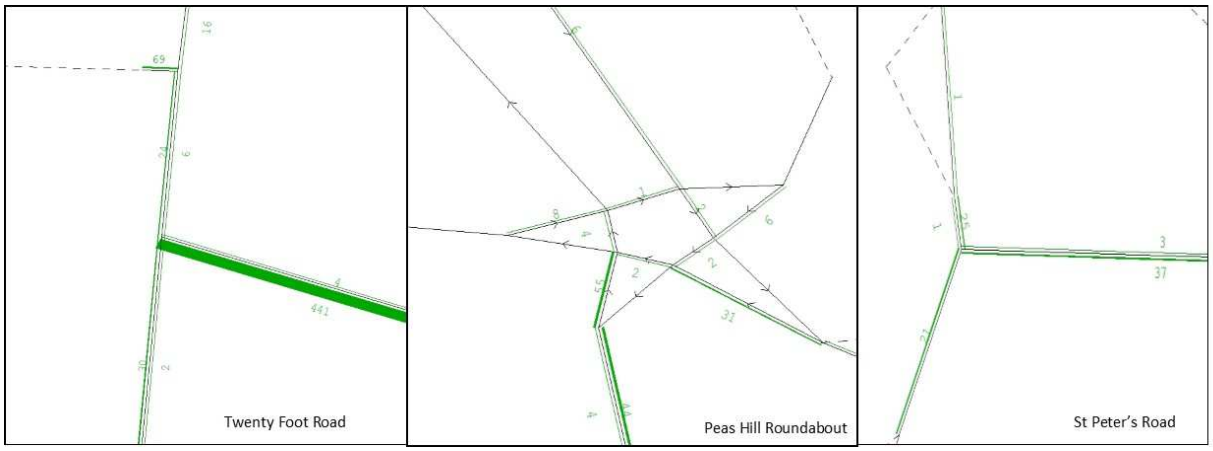

Figure 5.4: Delay in the 2031 PM Peak Hour Do-Minimum model

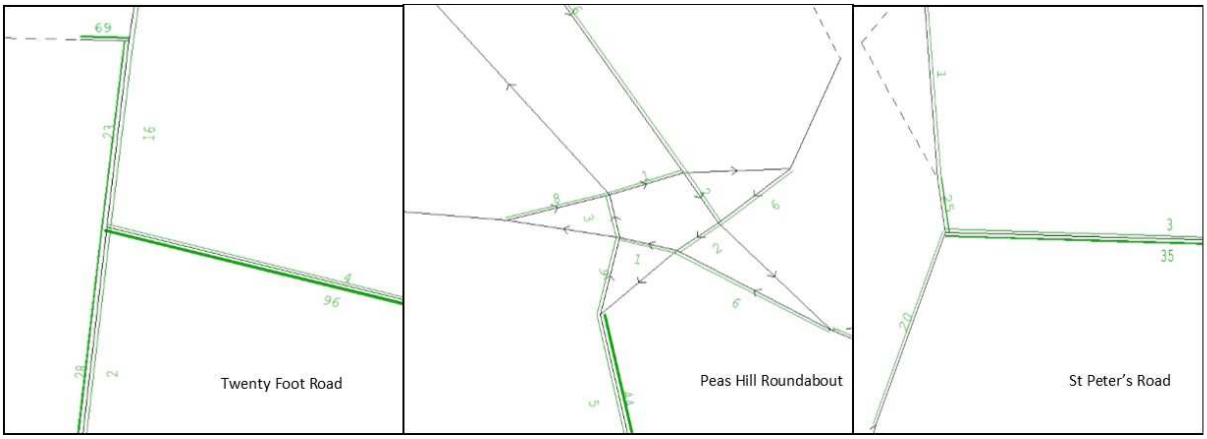

Figure 5.5: Delay in the 2031 PM Peak Hour Package 1 Options

5.3.6. The results for the 2031 AM and PM peak hours show that all three options, which form Package 1, reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 6 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140s seconds to 96 seconds in the AM peak hour and 441 seconds to 96 seconds in the PM peak hour.

5.3.7. Table 5.3 below highlights the impact of Package 1 on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

5.3.8. A key indicator within the network wide statistics is Over Capacity Queues (OCQ), which represents the number of vehicles still queuing on the network at the end of the one-hour modelled time period.

5.3.9. An OCQ is caused by a junction or link operating beyond capacity and indicates whether the increased vehicle demand on the highway network can be accommodated.

Table 5.3: Comparison of Network Wide Statistics for the Do-Minimum and Package 1 Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 1**	**DM**	**Package 1**
Transient Queues (pcu hrs)	249	207.7	223.8	199.4
Over Capacity Queues (pcu hrs)	48	0.3	22.7	6
Total Travel Time (pcu hrs)	893.8	805.5	849.3	804.7
Total Travel Distance (pcu kms)	29270.3	29457.4	29585.8	29758.7
Average speed (kph)	32.7	36.6	34.8	37

5.3.10. The network wide statistics indicate that Package 1 leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 1 also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in the Package 1 scenario than the DM scenario.

Package 1a

5.3.11. Package 1a consists of the following options:

- A141 / Twenty Foot Road Traffic Signals
- A141 / Peas Hill Roundabout (60m ICD) and Hostmoor Avenue Roundabout
- High Street / St Peter's Road Traffic Signal Improvements
- Northern Industrial Link Road Option 1.

5.3.12. The location of the individual options is shown within Figure 5.6. Package 1a has an overall scheme cost of £11.17m in 2019 prices (including Risk Allowance and Optimism Bias), and is considered to be deliverable by 2026 with the exception of the NILR, which is delayed until the 2031 model year due to the potential complexities associated with land acquisition at this location.

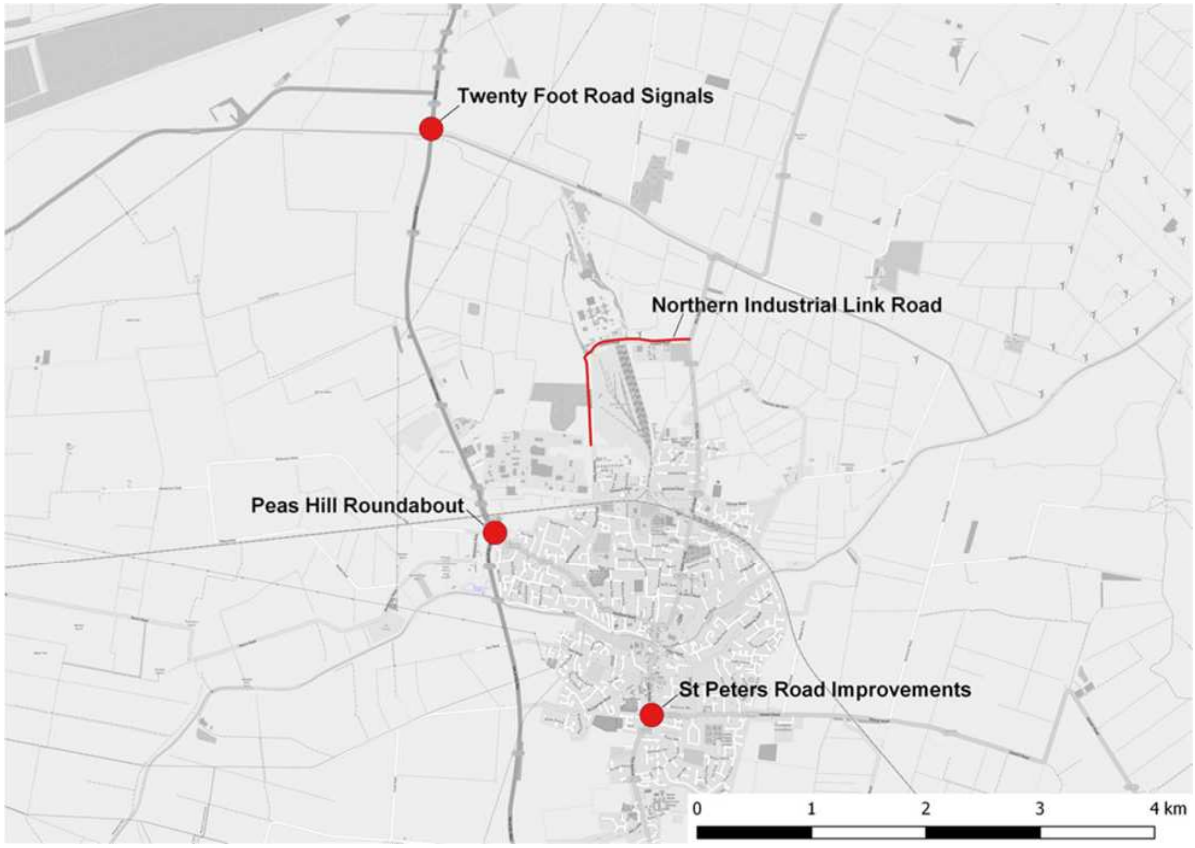

Figure 5.6: Package 1a

5.3.13. Figures 5.7 to 5.10 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 1a for both the DM and Package 1a scenarios.

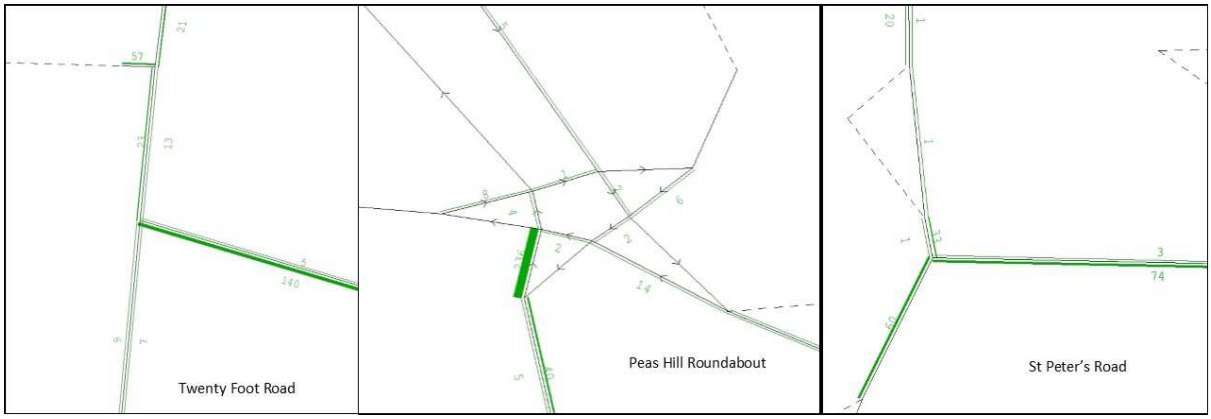

Figure 5.7: Delay in the 2031 AM Peak Hour Do-Minimum Model

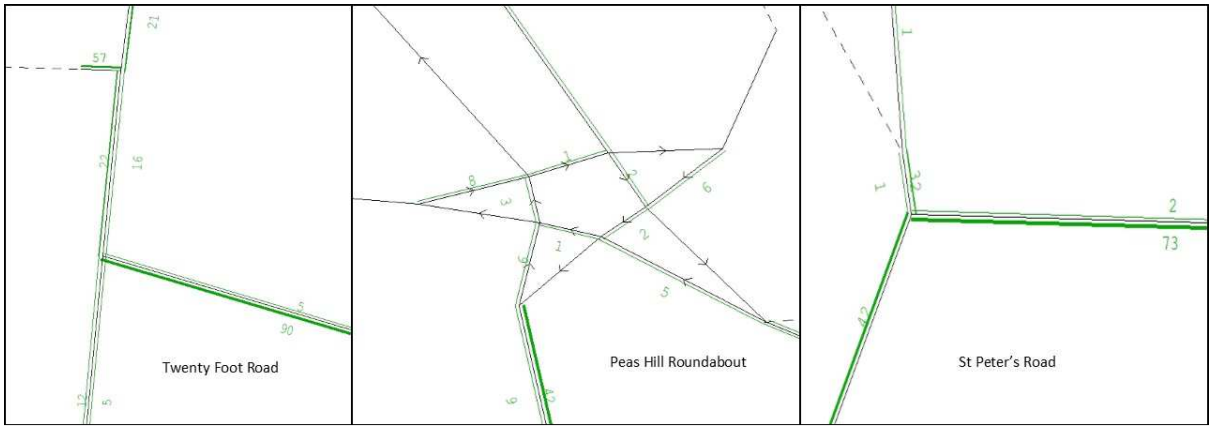

Figure 5.8: Delay in the 2031 AM Peak Hour Package 1a Options

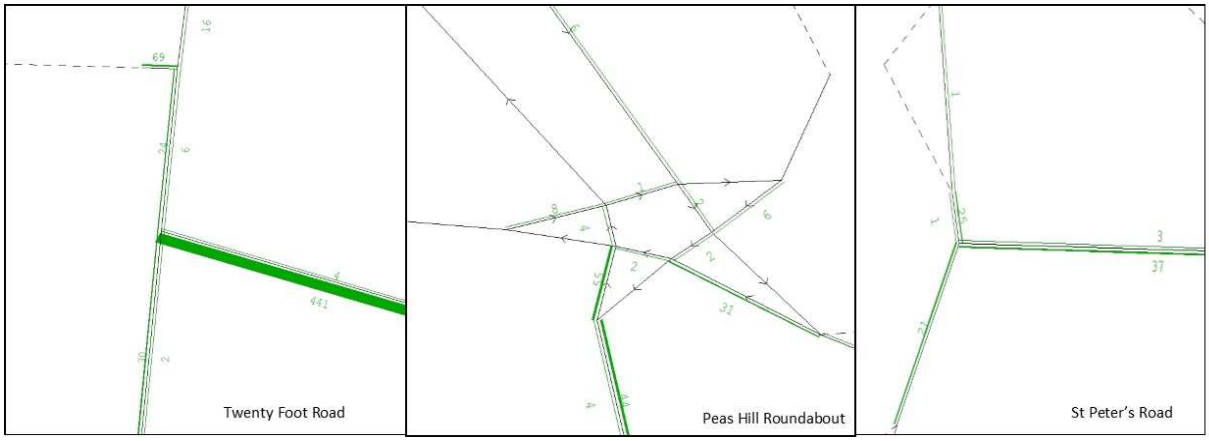

Figure 5.9: Delay in the 2031 PM Peak Hour Do-Minimum Model

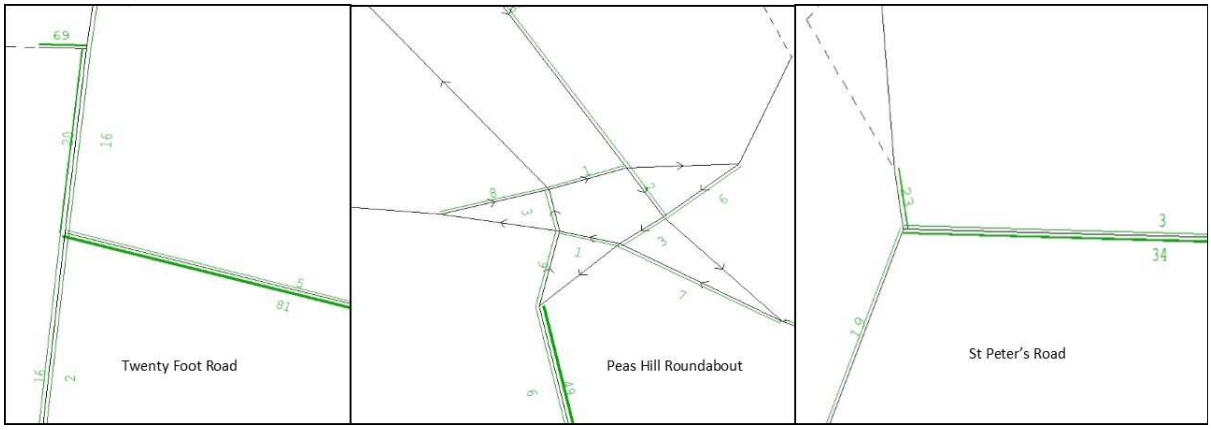

Figure 5.10: Delay in the 2031 PM Peak Hour Package 1a Options

5.3.14. The results for the 2031 AM and PM peak hour show that the options, which form Package 1a, reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 6 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140 seconds to 90 seconds in the AM peak hour and 441 seconds to 81 seconds in the PM peak hour.

5.3.15. Table 5.4 below highlights the impact of Package 1a on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

Table 5.4: Comparison of Network Wide Statistics for the Do-Minimum and Package 1a Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 1a**	**DM**	**Package 1a**
Transient Queues (pcu hrs)	249	203.3	223.8	192.2
Over Capacity Queues (pcu hrs)	48	0.2	22.7	0.9
Total Travel Time (pcu hrs)	893.8	794.3	849.3	776.9
Total Travel Distance (pcu kms)	29270.3	29322.4	29585.8	29272
Average speed (kph)	32.7	36.9	34.8	37.7

5.3.16. The network wide statistics indicate that Package 1a leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 1a also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in Package 1a scenario than the DM scenario.

Packages 2 and 2a

5.3.17. Package 2 and 2a were developed, but not tested as part of the Packaging Assessment. These packages were based on Package 1 and 1a respectively, and included the Broad Street Signal Improvements (TC1) within the Town Centre. However, the TC1 option was dismissed during the Operational Assessment due to safety issues identified with u-turning HGVs at the southern end of Broad Street, and because the proposal was contrary to the FHSF aspirations to create public realm along Broad Street.

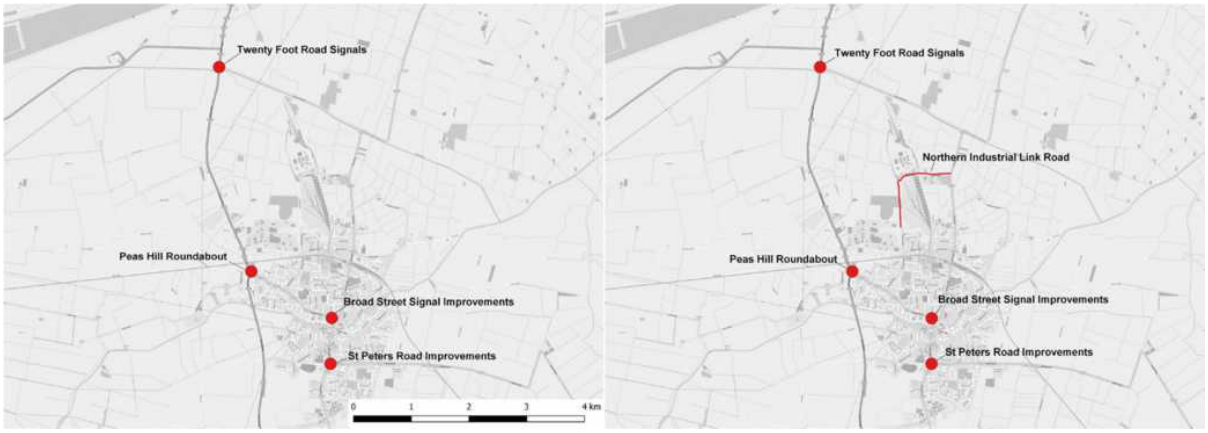

Figure 5.11: Package 2 (Left) and Package 2a (Right)

Package 3

5.3.18. Package 3 consists of the following four options:

- A141 / Twenty Foot Road Traffic Signals
- A141 / Peas Hill Roundabout (60m ICD) and Hostmoor Avenue Roundabout
- High Street / St Peter's Road Traffic Signal Improvements
- Broad Street / Dartford Road / Station Road Mini Roundabout, and Broad Street one lane in each direction (TC2)

5.3.19. The location of the individual options is shown in Figure 5.12. Package 3 has an overall scheme cost of £7.0m and all options are considered to be deliverable by 2026.

Figure 5.12: Package 3

5.3.20. Figures 5.13 to 5.16 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 3 for both the DM and Package 3 scenarios.

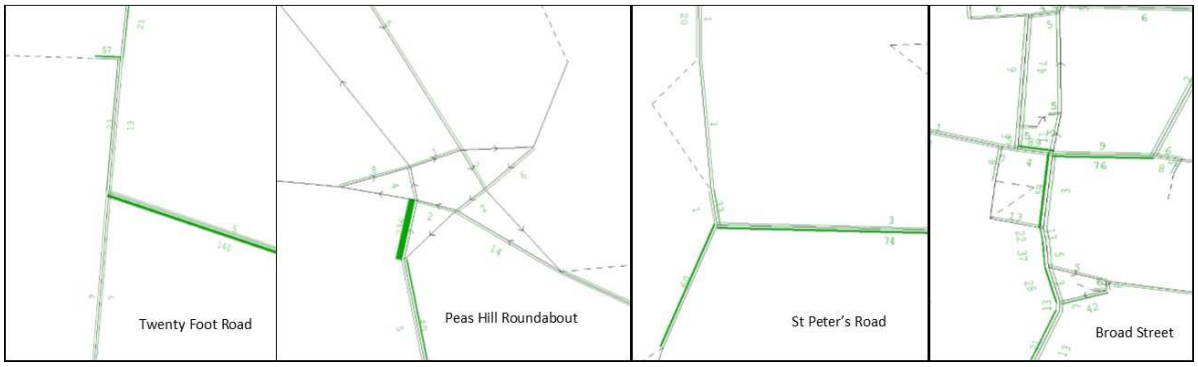

Figure 5.13: Delay in the 2031 AM Peak Hour Do-Minimum Model

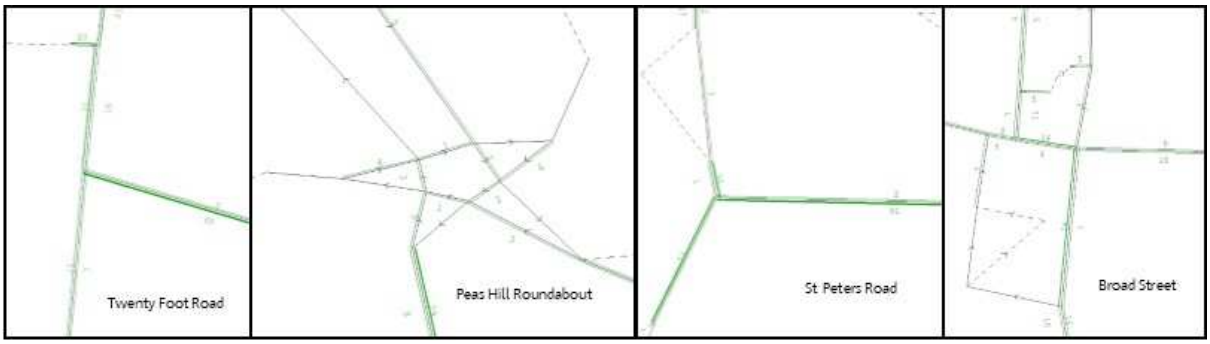

Figure 5.14: Delay in the 2031 AM Peak Hour Package 3 Options

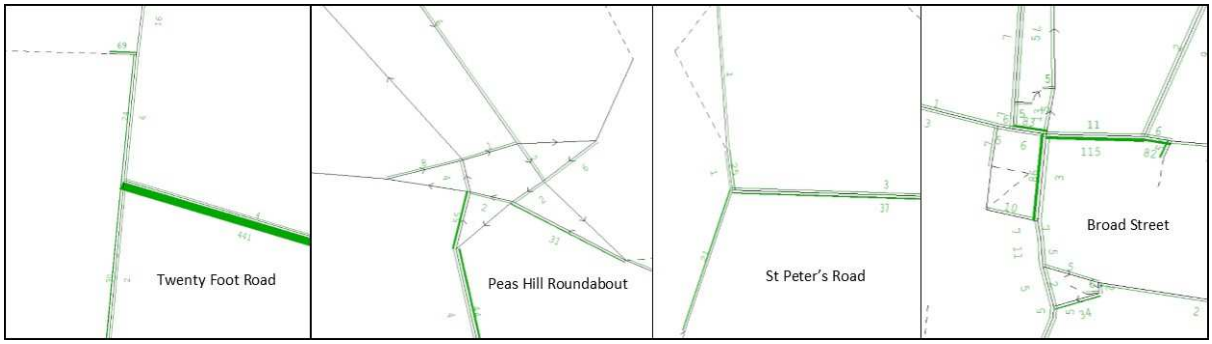

Figure 5.15: Delay in the 2031 PM Peak Hour Do-Minimum Model

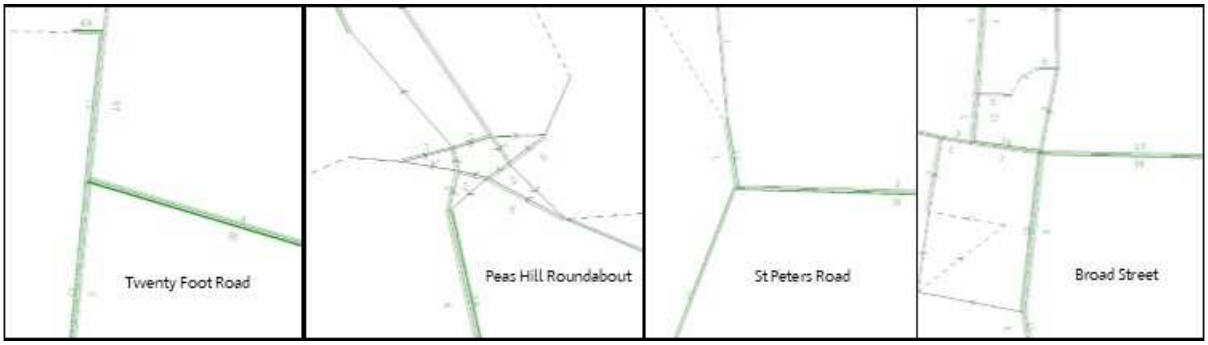

Figure 5.16: Delay in the 2031 PM Peak Hour Package 3 Options

5.3.21. The results for the 2031 AM and PM peak hour show that all four options within Package 3 reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 5 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140 seconds to 89 seconds in the AM peak hour and 441 seconds to 90 seconds in the PM peak hour.

5.3.22. The Town Centre improvements have also led to a considerable decrease in the delays experienced at the Broad Street. In the AM peak hour DM model there is a total of 224 seconds of cumulative delay on the approach arms to the junction, in the Package 3 scenario this delay is down to 66 seconds. In the PM peak hour DM model the total approach, delay is 284 seconds as opposed to 94 seconds in the Package 3 scenario.

5.3.23. Table 5.5 below highlights the impact of Package 3 on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

Table 5.5: Comparison of Network Wide Statistics for the Do-Minimum and Package 3 Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 3**	**DM**	**Package 3**
Transient Queues (pcu hrs)	249	196.7	223.8	185
Over Capacity Queues (pcu hrs)	48	0.7	22.7	0
Total Travel Time (pcu hrs)	893.8	789.8	849.3	777.2
Total Travel Distance (pcu kms)	29270.3	29201.7	29585.8	29367.8
Average speed (kph)	32.7	37	34.8	37.8

5.3.24. The network wide statistics indicate that Package 3 leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 3 also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in Package 3 scenario than the DM scenario.

Package 3a

5.3.25. Package 3a consists of the following options:

- A141 / Twenty Foot Road Traffic Signals
- A141 / Peas Hill Roundabout (60m ICD) and Hostmoor Avenue Roundabout
- High Street / St Peter's Road Traffic Signal Improvements
- Broad Street / Dartford Road / Station Road Mini Roundabout, and Broad Street one lane in each direction (TC2)
- Northern Industrial Link Road Option 1.

5.3.26. The location of the individual options is shown in Figure 5.17. Package 3a has an overall scheme cost of £12.4m in 2019 prices (including Risk Allowance and Optimism Bias). Package 3a is phased with the A141 / Twenty Foot Road Signals, A141 / Peas Hill Roundabout, High Street / St Peter's Road Signal Improvements and Town Centre elements all considered deliverable by 2026, with the NILR deferred until the 2031 model year to reflect the potential complexities associated with land acquisition at this location.

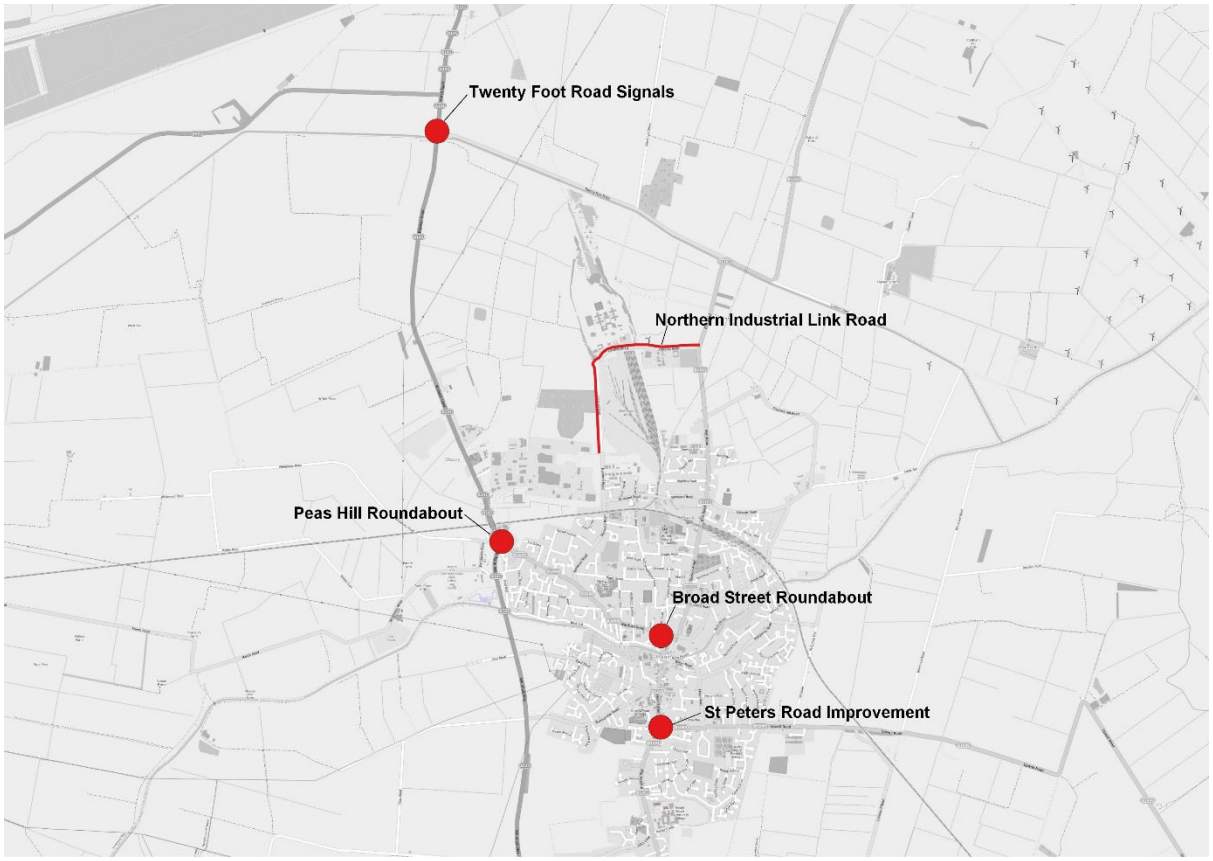

Figure 5.17: Package 3a

5.3.27. Figures 5.18 to 5.21 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 3a for both the DM and Package 3a scenarios.

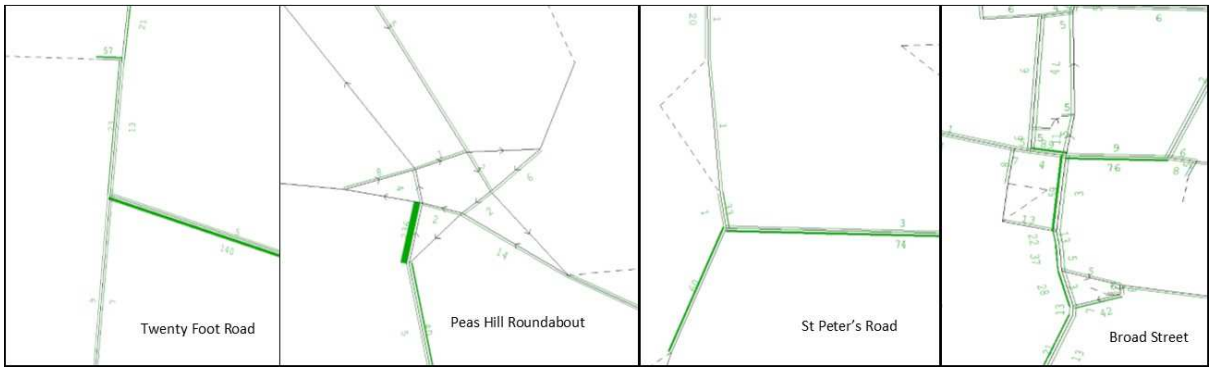

Figure 5.18: Delay in the 2031 AM Peak Hour Do-Minimum Model

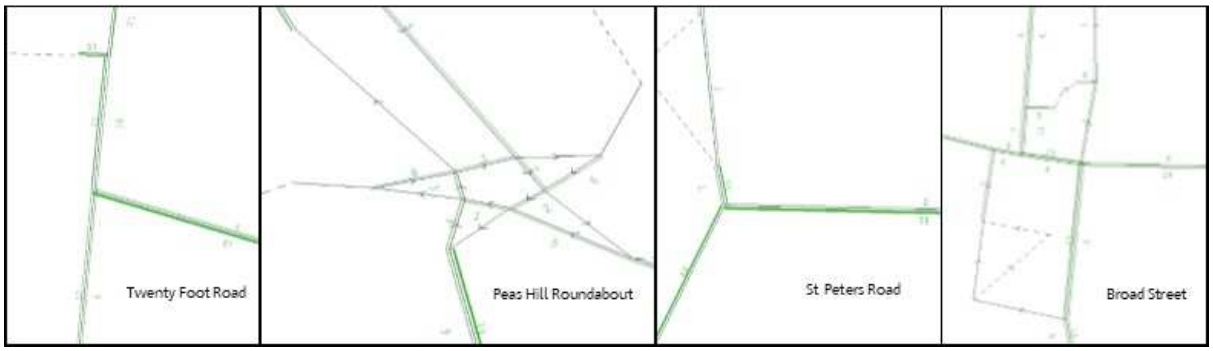

Figure 5.19: Delay in the 2031 AM Peak Hour Package 3a Options

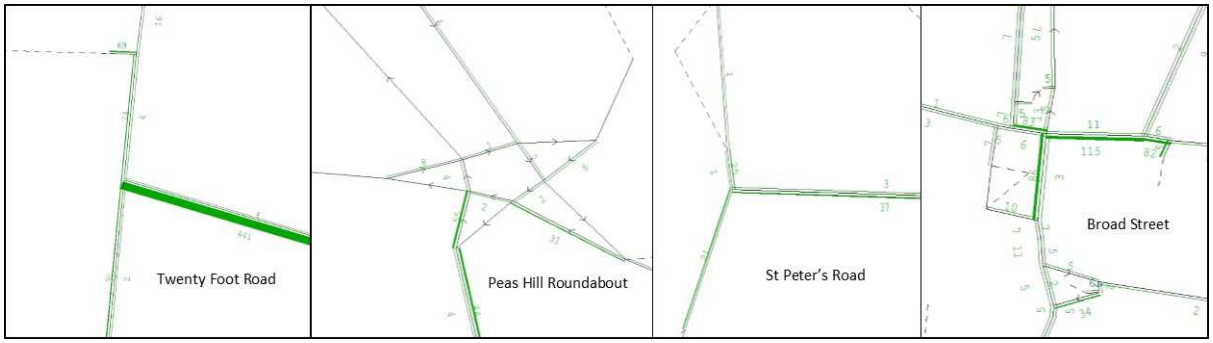

Figure 5.20: Delay in the 2031 PM Peak Hour Do-Minimum Model

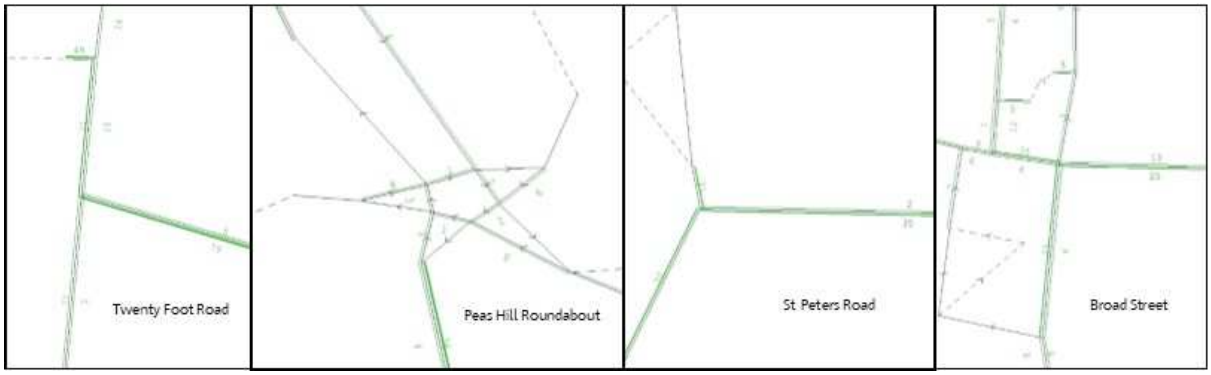

Figure 5.21: Delay in the 2031 PM Peak Hour Package 3a Options

5.3.28. The results for the 2031 AM and PM peak hour show that all the options within Package 3a reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 5 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140 seconds to 87 seconds in the AM peak hour and 441 seconds to 79 seconds in the PM peak hour.

5.3.29. The Town Centre package improvements have led to a considerable decrease in the delays experienced at the Broad Street junction in the Town Centre. In the AM peak hour DM model there is a total of 224 seconds of cumulative delay on the approach arms to the junction, in the Package 3a scenario this delay is down to 60s. In the PM peak hour DM model the total approach, delay is 284 seconds as opposed to 83 seconds in the Package 3a scenario.

5.3.30. Table 5.6 below highlights the impact of Package 3a on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

Table 5.6: Comparison of Network Wide Statistics for the Do-Minimum and Package 3a Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 3a**	**DM**	**Package 3a**
Transient Queues (pcu hrs)	249	191.7	223.8	175.1
Over Capacity Queues (pcu hrs)	48	0.1	22.7	0
Total Travel Time (pcu hrs)	893.8	778.1	849.3	754.2
Total Travel Distance (pcu kms)	29270.3	29150	29585.8	29064.3
Average speed (kph)	32.7	37.5	34.8	38.5

5.3.31. The network wide statistics indicate that Package 3a leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 3a also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in Package 3a scenario than the DM scenario.

Package 4

5.3.32. Package 4 consists of the following options:

- A141 / Twenty Foot Road Traffic Signals
- A141 / Peas Hill Roundabout (60m ICD) and Hostmoor Avenue Roundabout
- High Street / St Peter's Road Traffic Signal Improvements
- Broad Street / Dartford Road / Station Road Mini Roundabout, and Broad Street one lane in each direction, New River Crossing, and Burrowmoor Road / City Road / High Street Roundabout improvements (TC3).

5.3.33. The location of the individual options is shown in Figure 5.22. Package 4 has an overall scheme cost of £40.53m in 2019 prices (including Risk Allowance and Optimism Bias), and is phased to include the A141 / Twenty Foot Road Traffic Signals, Peas Hill Roundabout and High Street / St Peter's Road Traffic Signal improvements by 2026, and the Town Centre Package 3 elements by 2031.

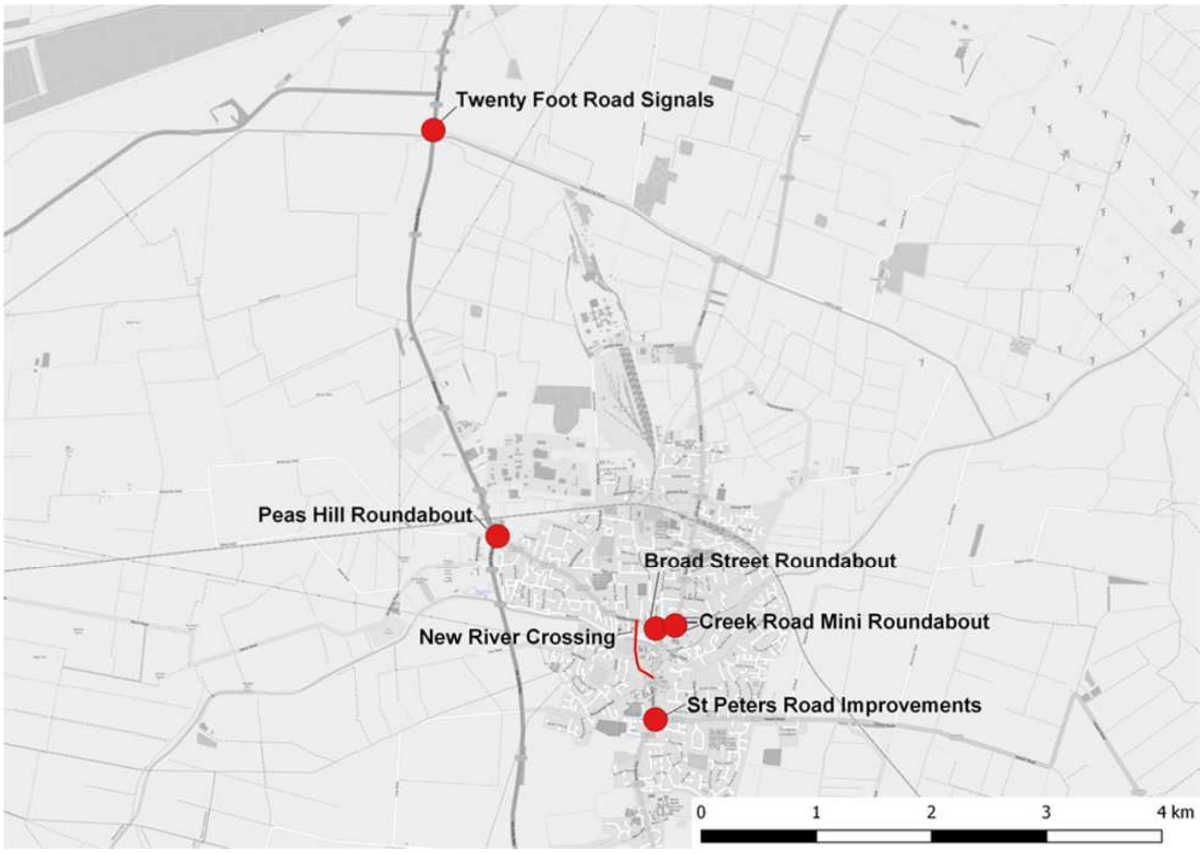

Figure 5.22: Package 4

5.3.34. Figures 5.23 to 5.26 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 4 for both the DM and Package 4 scenarios.

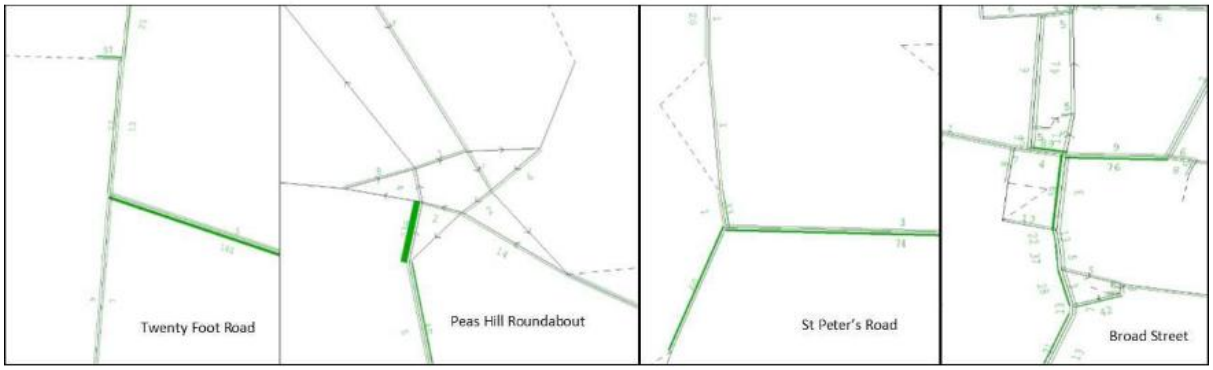

Figure 5.23: Delay in the 2031 AM Peak Hour Do-Minimum Model

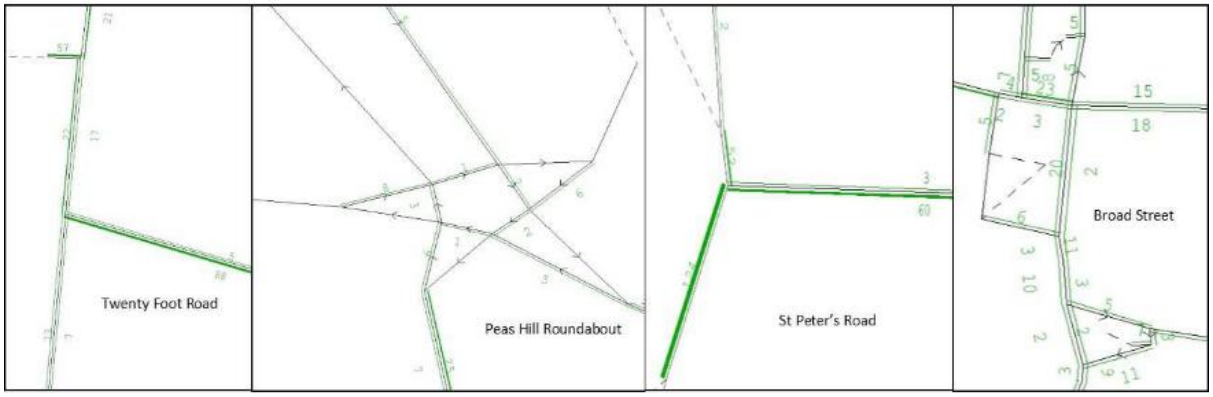

Figure 5.24: Delay in the 2031 AM Peak Hour Package 4 Options

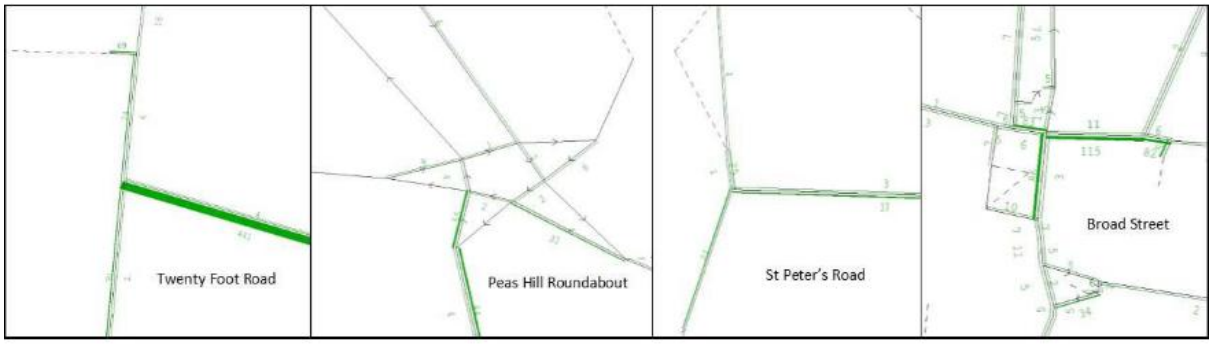

Figure 5.25: Delay in the 2031 PM Peak Hour Do-Minimum Model

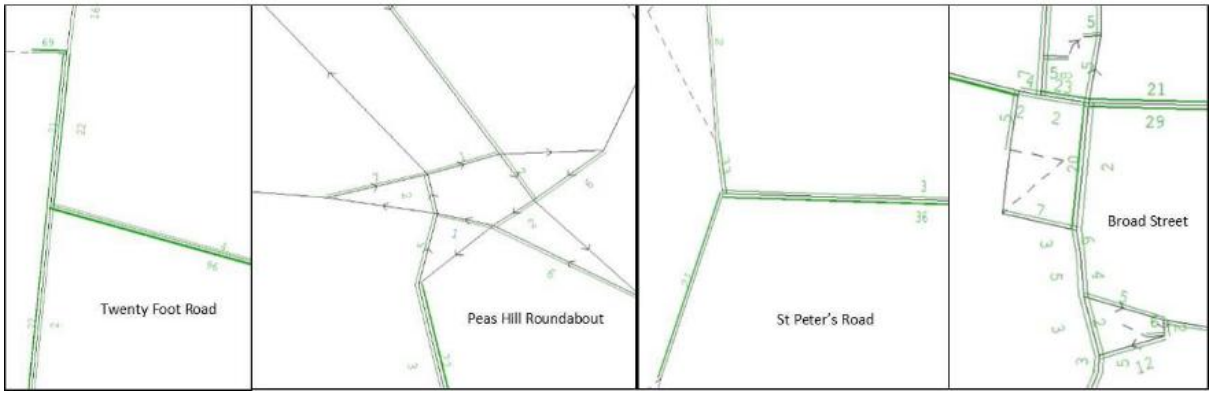

Figure 5.26: Delay in the 2031 PM Peak Package 4 Options

5.3.35. The results for the 2031 AM and PM peak hour show that the options mostly reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 5 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140 seconds to 93 seconds in the AM peak hour and 441 seconds to 81 seconds in the PM peak hour.

5.3.36. The Town Centre package option has also led to a considerable decrease in the delays experienced at the Broad Street junction in the Town Centre. In the AM peak hour DM model there is a total of 224 seconds of cumulative delay on the approach arms to the junction, in the Package 4 scenario this delay is down to 61 seconds. In the PM peak hour DM model the total approach delay is 284 seconds as opposed to 72 seconds in the Package 4 scenario.

5.3.37. Table 5.7 below highlights the impact of Package 4 on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

Table 5.7: Comparison of Network Wide Statistics for the Do-Minimum and Package 4 Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 4**	**DM**	**Package 4**
Transient Queues (pcu hrs)	249	181.3	223.8	177.2
Over Capacity Queues (pcu hrs)	48	7.5	22.7	0
Total Travel Time (pcu hrs)	893.8	773.9	849.3	759.5
Total Travel Distance (pcu kms)	29270.3	29089.3	29585.8	29250
Average speed (kph)	32.7	37.6	34.8	38.5

5.3.38. The network wide statistics indicate that Package 4 leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 4 also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in Package 4 scenario than the DM scenario.

Package 4a

5.3.39. Package 4a consists of the following options:

- A141 / Twenty Foot Road Traffic Signals
- A141 / Peas Hill Roundabout (60m ICD) and Hostmoor Avenue Roundabout
- High Street / St Peter's Road Traffic Signal Improvements
- Broad Street / Dartford Road / Station Road Mini Roundabout, and Broad Street one lane in each direction, New River Crossing, and Burrowmoor Road / City Road / High Street Roundabout improvements (TC3)
- Northern Industrial Link Road Option 1.

5.3.40. The location of the individual options are shown in Figure 5.27. Package 4a has an overall scheme cost of £45.84m in 2019 prices (including Risk Allowance and Optimism Bias), and is phased to deliver the NILR and Town Centre Package 3 improvements by 2031, and all other options by 2026.

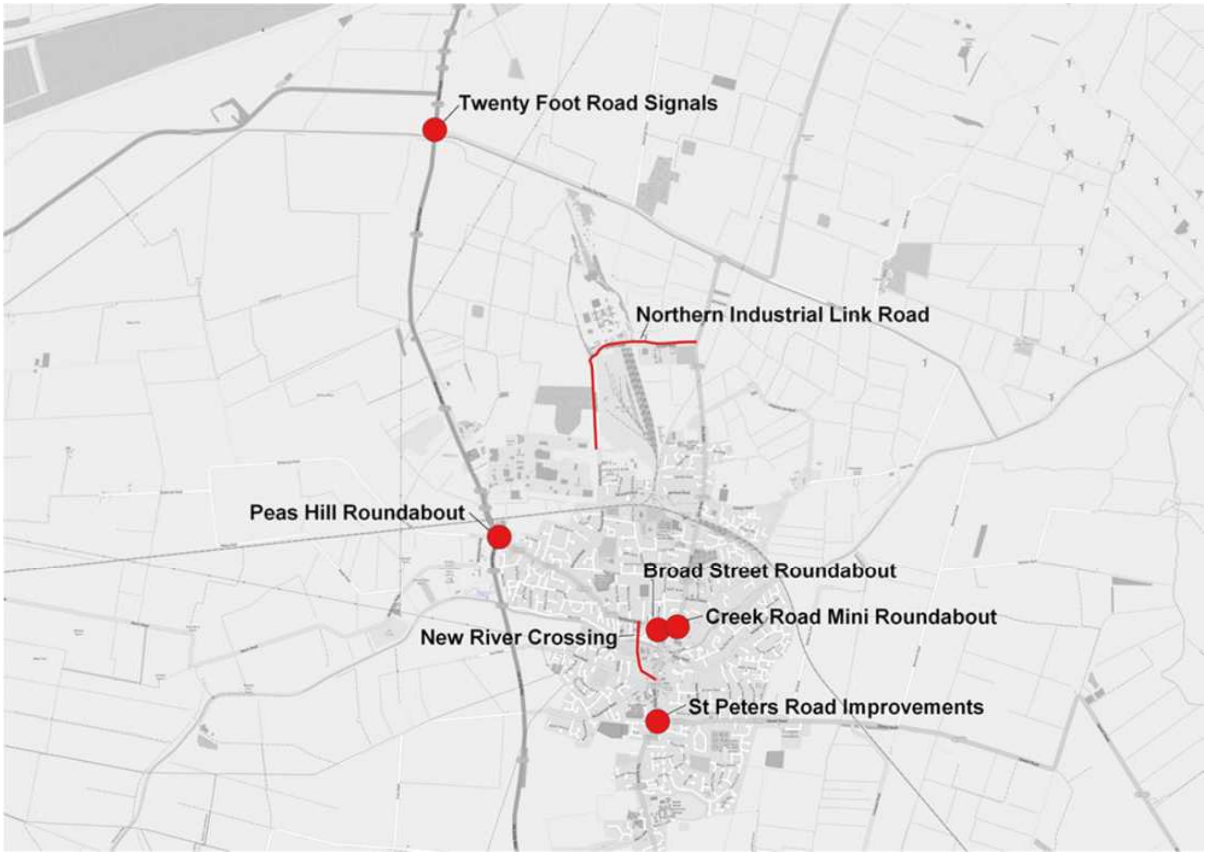

Figure 5.27: Package 4a

5.3.41. Figures 5.28 to 5.31 below show the delay experienced in the 2031 AM and PM peak hours at the option locations contained within Package 4a for both the DM and Package 4a scenarios.

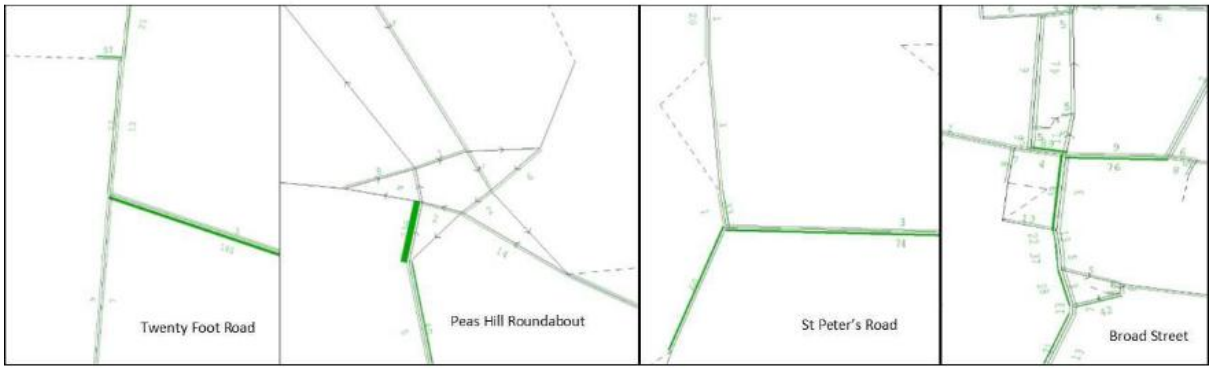

Figure 5.28: Delay in the 2031 AM Peak Hour Do-Minimum Model

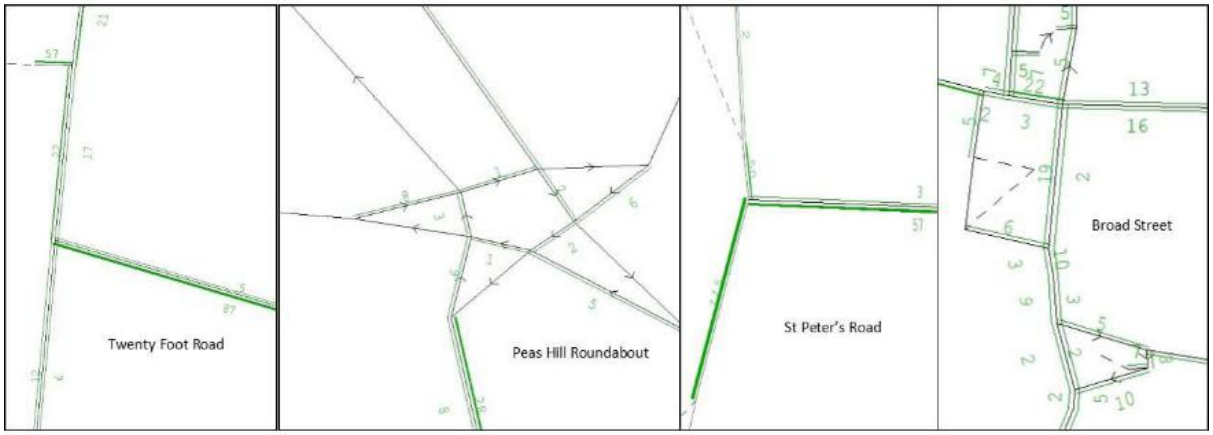

Figure 5.29: Delay in the 2031 AM Peak Hour Package 4a Options

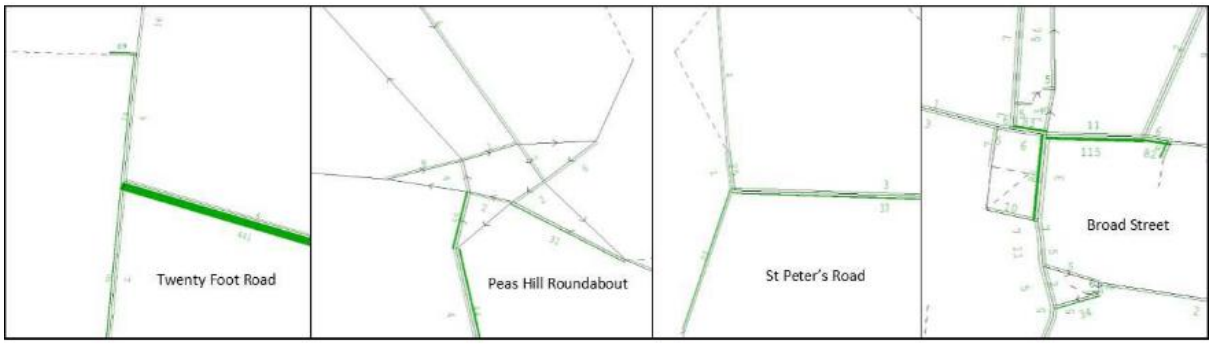

Figure 5.30: Delay in the 2031 PM Peak Hour Do-Minimum Model

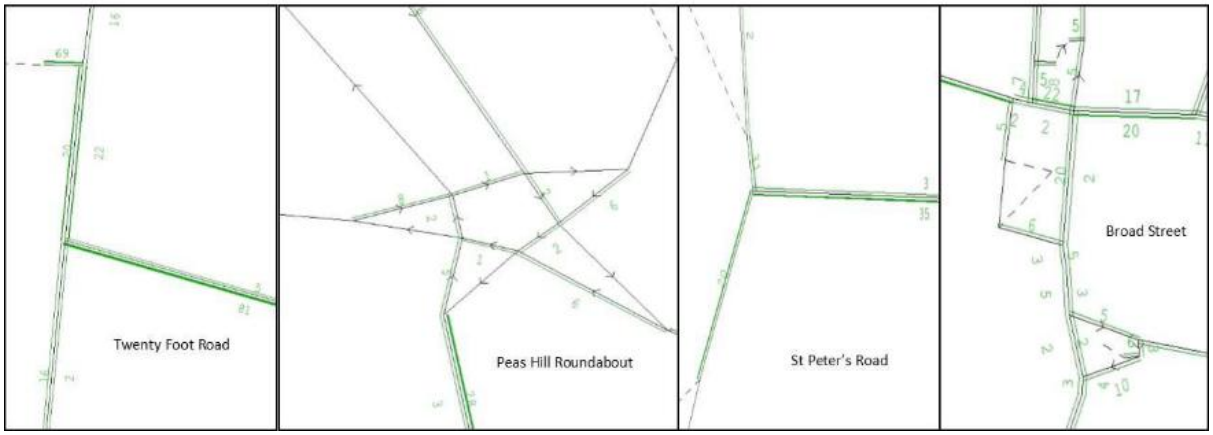

Figure 5.31: Delay in the 2031 PM Peak Hour Package 4a Options

5.3.42. The results for the 2031 AM and PM peak hour show that the options mostly reduce delay at their specific locations. The Peas Hill Roundabout option has the greatest impact reducing delay on the A141 northbound arm from 236 seconds to 6 seconds in the AM peak hour and 55 seconds to 5 seconds in the PM peak hour. There is also a substantial decrease in delay on the Twenty Foot Road approach to the A141 from 140 seconds to 87 seconds in the AM peak hour and 441 seconds to 81 seconds in the PM peak hour.

5.3.43. The Town Centre options have also led to a considerable decrease in the delays experienced at the Broad Street signalised in the Town Centre. In the AM peak hour DM model there is a total of 224 seconds of cumulative delay on the approach arms to the junction, in the Package 4a scenario this delay is down to 57 seconds. In the PM peak hour DM model the total approach, delay is 284 seconds as opposed to 62 seconds in the Package 4a scenario.

5.3.44. Table 5.8 below highlights the impact of Package 4a on the overall model network. These statistics demonstrate how the package affects the network as a whole rather than just the individual option areas.

Table 5.8: Comparison of Network Wide Statistics for the Do-Minimum and Package 4a Models

Network Wide Performance Measures	2031			
	AM		PM	
	DM	**Package 4a**	**DM**	**Package 4a**
Transient Queues (pcu hrs)	249	177.6	223.8	169
Over Capacity Queues (pcu hrs)	48	6.3	22.7	0
Total Travel Time (pcu hrs)	893.8	763.4	849.3	738.5
Total Travel Distance (pcu kms)	29270.3	29085.7	29585.8	28994.6
Average speed (kph)	32.7	38.1	34.8	39.3

5.3.45. The network wide statistics indicate that Package 4a leads to a significant decrease in the OCQs in both the AM and PM peak hour. Package 4a also leads to a decrease in total travel time across the network and the average speed increased, indicating that the network is freer flowing in Package 4a scenario than the DM scenario.

5.4. Economic Assessment

5.4.1. The Transport User Benefits Appraisal (TUBA) program was used to quantify the transport user benefits resulting from all eight packages, and to calculate a Benefit to Cost Ratio (BCR).

5.4.2. The TUBA assessment uses the output files from the March Area Transport Study (MATS) SATURN model to quantify the change in journey time and distance as a result of the Packages compared to a DM Scenario, and hence quantify the journey time and vehicle operating cost benefits (if any). This information is then used to calculate a 60-year whole life Present Value of Benefits (PVB) which when compared to a Present Value of Costs (PVC) is then used to calculate a Benefit Cost Ratio (BCR). A Value for Money (VfM) category is then determined based on this BCR. The VfM categories defined by DfT in the Value for Money Framework are shown beneath in Table 5.9.

5.4.3. The Economic Assessment includes allowance for inflation at 5% per annum and ongoing maintenance costs of 1.7% for new infrastructure. These costs are based on local industry inflation rates and post scheme maintenance spending on a range of local highway schemes.

Table 5.9: DfT Value for Money Statements

VfM Category	BCR Value
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 15
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

5.4.4. The BCR and VfM category for the packages are shown in Table 5.10 below.

Table 5.10: BCR and VfM for Packages 1, 1a, 3, 3a, 4, 4a

Net Benefit/BCR Impact						
	Package 1	Package 1a	Package 3	Package 3a	Package 4	Package 4a
Present Value of Benefits (PVB)	10225	23019	22711	35091	37163	47094
Present Value of Costs (PVC)	4501	9428	5122	9679	33699	38682
Net Present Value (NPV)	5724	13713	17589	25412	3464	8412
Benefit/Cost Ratio (BCR)	**2.3**	**2.5**	**4.4**	**3.6**	**1.1**	**1.2**
VFM Statement	High	High	High	High	Low	Low

5.4.5. The results show that Packages 1, 1a, 3, 3a all perform well and offer High value for money. Packages 4 & 4a also perform very well, but return a Low Value for Money due to the significant infrastructure costs associated with them.

5.5. Packaging Assessment Summary

5.5.1. The assessment of the packages has shown that all serve to mitigate the impact of the Local Plan growth to varying degrees, and all are expected to perform well. Packages 1 and 1a do not include any changes to Broad Street, whereas the remaining packages facilitate the creation of a significant public realm along Broad Street which is in line with Fenland District Council's FHSF aspirations for the regeneration of March Town Centre.

5.5.2. Packages 3 and 3a are closely aligned to the FHSF proposals and have the highest BCRs relative to their counterpart Packages (Package 3 is higher than Package 1 and 4, Package 3a is higher than 1a and 4a). Packages 3, 3a, 4 and 4a all require the repositioning of the March Fountain, which would be incorporated into wider public realm and landscape design. This study has not considered the detail of that design, and this would need to be undertaken in consultation with environment, conservation and heritage specialists, as well public engagement in some form.

5.5.3. As a result of the Packaging Assessment, it is recommended that Packages 1, 1a, 3 and 3a are considered for further development.

5.5.4. Packages 4 and 4a provide the best network wide statistics, but involve significant disruption (and cost) within the Town Centre. It is recommended that these packages are not considered any further at this stage, but can be revisited in future should further capacity enhancements be needed in March Town Centre.

5.5.5. Of the packages recommended for further development, Packages 3 and 3a are closest to the FHSF aspirations for March Town Centre, and are considered the preferred Packages at this stage of the study. Package 3a builds upon Package 3 with the addition of the NILR, the cost of which suppresses the BCR in comparison to Package 3, however the addition of the NILR will generate far greater benefit than shown in the Package omitting it. The NILR however will attract further trips away from the residential areas (particularly Norwood Road) and the Town Centre to the south, and so should be investigated further.

6. Summary

6.1.1. The March Options Assessment Report (OAR) sets out the development and assessment of improvement options identified within the March Area Transport Study (MATS). The report details the technical work undertaken in relation to traffic modelling and economic assessment, and identifies several packages of schemes that should be progressed to Public Consultation.

6.1.2. The assessment process used has been broken down into three distinct phases, with each informing the next. The three phases are:

- Strategic Assessment
- Operational Assessment
- Packaging Assessment.

6.1.3. Strategic Assessments have been undertaken on numerous options for a New River Crossing, the March Northern Industrial Link Road and A141 re-alignment. The assessments have used the MATS SATURN model to measure the impact of each of the options on a localised scheme level and on the wider network as a whole.

6.1.4. The Strategic Assessment of the New River Crossing options has identified Option 10, which is in the Town Centre, as the best performing option. This assessment also concluded that a bypass to the east of March would not offer value for money.

6.1.5. The Strategic Assessment of the Northern Industrial Link Road options identified Option 1 as the best performing option.

6.1.6. The Strategic Assessment of the A141 re-alignment options has shown that no options performed well within the economic assessment, and therefore none of these options are being progressed further as part of this study.

6.1.7. The Operational Assessment has used the March VISSIM micro-simulation model to test the operational performance of options along the A141 corridor and within March Town Centre.

6.1.8. The Operational Assessment has identified that the following options offer operational benefits, serve to mitigate against future year growth, and are compatible with the FHSH aspirations:

- Peas Hill Roundabout Option 5.2 (60m ICD), in conjunction with the A141 / Hostmoor Avenue roundabout (developer funded)
- Town Centre Package 2 (TC2), consisting of:
  - Broad Street / Dartford Road / Station Road mini roundabout, with Broad Street made one lane in each direction (and the provision of public realm improvements)
  - St Peter's Road Traffic Signal Improvements
- Town Centre Package 3 (TC3), consisting of:
  - Station Road / Creek Road Mini Roundabout
  - Broad Street Roundabout and Public Realm Improvements
  - A New River Crossing, joining Dartford Road to the north and City Road to the south, with a new roundabout at Burrowmoor Road / City Road and High Street
  - St Peter's Road Traffic Signal Improvements.

6.1.9. The Packaging Assessment has taken the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented in March. Multiple different packages have been assessed, representing different levels of extremity in terms of impact within March.

6.1.10. The assessment of the packages has shown that all serve to mitigate the impact of the Local Plan growth to varying degrees, and all are expected to perform well. Packages 1 and 1a do not include any changes to Broad Street, whereas the remaining packages facilitate the creation of a significant public realm along Broad Street which is in line with Fenland District Council's FHSF aspirations for the regeneration of March Town Centre.

6.1.11. Packages 3 and 3a are closely aligned to the FHSF proposals and have the highest BCRs relative to their counterpart Packages (Package 3 is higher than Package 1 and 4, Package 3a is higher than 1a and 4a).

6.1.12. As a result of the Packaging Assessment, it is recommended that Packages 1, 1a, 3 and 3a are considered for further development.

6.1.13. Of the packages recommended to take to public consultation, Packages 3 and 3a are closest to the FHSF aspirations for March Town Centre, and are considered the preferred Packages at this stage of the study.

Appendices

Appendix A – Option Development Workshop Summary

Options	Opt 1	Opt 2	Opt 3	Opt 4	Opt 5	Opt 6	Opt 7	Opt 8	Opt 9	Opt 10
Section 1 Broad Street Area	1:1 – Broad Street one lane in each direction on the eastern side of the street (navigating around the fountain) with the western side of the street committed to Public Realm.	1:2 – Broad Street one lane in each direction along the western side of the street. Eastern side of the street committed to Public Realm and incorporating the fountain. Grays Lane made one way southbound with left out only onto Broad Street.		0:4 – Creation of a new route past supermarket with a junction on Dartford Road. New river crossing to the west of the Town Centre landing in FDC land on southern bank. New road from river crossing to Brewin Chase providing direct access to large, consolidated car park, and connecting to improved junction with Burrowmoor Road (see Opts 3:1 & 3:2) Broad Street becomes Public Realm bus and taxi only access between Dartford Road and Market Place.	0:5 – Creation of a new route from Station Road to Mill View with a new river crossing onto Elywn Road. Route is southbound only once south of supermarket access. Market Place is southbound only to the junction with the High Street. High Street northbound only from Market Place Junction over the river with vehicles then routed via Grays Lane (still northbound one way only) emerging at a signal controlled junction with Dartford Road. Broad Street becomes Public Realm between the War Memorial and the Fountain, with access retained for buses.	1:6 – No access between Station Road and Creek Road. Access to Creek Road via St John's Road instead.	1:7 – Remove signals from Broad Street / Dartford Road / Station Road and replace with a roundabout (retaining fountain in centre). Creation of a roundabout between Station Road / Creek Road. Robingoodfellows Lane northbound only, Darthill Road southbound only.	1:8 – Creek Road one way only from Station Road / Creek Road junction to Station Road / St John's Road Junction. Grays Lane northbound only with a left tur out onto Dartford Road. Broad Street Right turn only onto Station Road. Creation of a bus and taxi interchange on land immediately north of Broad Street / Dartford Road / Station Road junction. Parking removed from Broad Street and replaced with Public Realm.	1:9 – Grays Lane northbound only from junction with Broad Street with roundabout created at junction of Grays Lane and Dartford Road. Creation of roundabout between Dartford Road / Station Road / Broad Street and Broad Street southbound only along western side of street, with eastern side committed to Public Realm (including taxi ranks and bus stops). Robingoodfellows Lane closed to vehicular access between Broad Street and Car Park egress. Car par can only be entered from Darthill Road.	1:10 Demolition of Collingwoods building to create space for a roundabout and additional car parking.
Section 2 Market Place Area	2:1 – Remove Market Place parking and create public space.	2:2 – Signalisation of High Street / Market Place incorporating pedestrian crossing facilities.	2:3 - Signalised pedestrian crossing on High Street opposite George Street to serve pedestrian desire line.			2:6 – widen river bridge for pedestrian and cycle use only. Close access from High Street to Elywn Road. Market Place two way between High Street and car park access.	2:7 – New river crossing between Nene Parade and Elywn Road or Wherry Road east of Town Centre. Two way traffic along Elwyn Road as far as High Street. Left turn out only from Market Place junction with High Street.	2:8 – Remove parking from Market Place and create Public Realm. Close Market Place to vehicular traffic and make Elwyn Road two way as far as High Street Junction. Creation of a clear pedestrian route from City Car Park into town centre area.	0.9 – Creation of a mini roundabout between High Street and Elywn Road. Creation of a larger four arm roundabout at High Street / Burrowmoor Road / City Road with access to Chapel Street moved to the south onto the High Street. New carriageway created from Brewin Chase to a new river bridge to the west of the town centre at the site of the existing pedestrian footbridge and connecting to Marylebone Road.	
Section 3 Burrowmoor Road Area	3:1 – City Road connection to Burrowmoor Road moved west. Chapel Street access changed to the High Street. Signalisation of Burrowmoor / High Street Junction.	3:2 – City Road connection to Burrowmoor Road moved west. Chapel Street access changed to the High Street. Burrowmoor / High Street junction becomes a three arm roundabout.								

Note that options shaded in blue were identified for Strategic Assessment, and those shaded grey were discounted from the study following consultation with the Member Steering Group and / or review from the Project Team following the Option Development Workshop.

Options	Opt 1	Opt 2	Opt 3	Opt 4	Opt 5	Opt 6	Opt 7
Section 4 A141 / Hostmoor Avenue	4:1 – Roundabout (Developer Proposal) 45m ICD	4:2 – Roundabout (Developer Proposal) 60m ICD					
Section 5 A141 / B1099 Wisbech Road / Whittlesey Road (Peas Hill Roundabout)	5:1 – Bypass Peas Hill Roundabout from A141 south approach to A141 north approach (G Edwards idea)	5:2 – Creation of a new larger roundabout on the existing site, involving land acquisition (60m ICD?)	5:3 – Realign Whittlesey Road approach to join the A141 to the south (in the vicinity of Marina Drive, allowing a LDL to be created from A141 south to A141 north	5:4 – Creation of a Hamburger roundabout, with priority given to the A141 (both directions)	5:5 – Remove Meadowlands approach, and provide new access from Hostmoor Avenue to the north (via a railway bridge)	5:6 – Grade separate using a structure to carry the A141 over Peas Hill Roundabout	5:7 – Realign Meadowlands approach to join Wisbech Road east of the roundabout, and enlarge roundabout to the west of the existing site (O Brown sketch)
Section 6 A141 / Burrowmoor Road	6:1 - Roundabout	6:2 – Two stage crossing					
Section 7 A141 / Gaul Road	7:1 – Signal enhancements to maximise capacity	7:2 - Roundabout					
Section 8 A141 / Knight's End Road	8:1 – Create roundabout by realigning the eastern approach to face the western approach						
Section 9 Wider A141 Realignments / Options	9:1 – Realignment of A141 from north of Hostmoor Avenue Roundabout to south of Peas Hill Roundabout	9:2 – Remove A141 / Hostmoor Avenue junction and create a new access over the railway line via the Meadowlands Estate	9:3 – Dual A141 on existing alignment	9:4 – Creation of a new junction between Burrowmoor Road and Knight's End Road to provide access to the development. Remove the existing junctions at these two locations	9:5 – Realign A141 to the west from Gaul Road junction in the south to Hostmoor Avenue Junction in the north	9:6 – Create a new A141 route from Mill Hill roundabout to north of Hostmoor Avenue. Existing alignment to remain as a local / development access road	9:7 – Consolidate Gaul Road and Burrowmoor Road into a single roundabout providing development access

Note that options shaded in blue were identified for Strategic Assessment, and those shaded grey were discounted from the study following consultation with the Member Steering Group and / or review from the Project Team following the Option Development Workshop.

Options	Opt 1	Opt 2	Opt 3	Opt 4	Opt 5	Opt 6	Opt 7	Opt 8	Opt 9	Opt 10	Opt 11
Northern Industrial Link Road	10:1 – Existing Proposal, connect Hundreds Road at the Prison	10:2a – Connect from Longhill Road through to A141 10:2b – Above plus close Twenty Foot Road at A141 junction	10:3 – Upgrade Twenty Foot Road junction instead to improve route in from the north	10:4 – Connect Hundreds Road through to Hostmoor Avenue area (would require some demolition)	10:5 – Connect from junction of Hundreds Road / Melbourne Road over the railway line to B1101	10:6 – Continue Hundreds Road to Twenty Foot Road	10:7 – Extend Thorby Road north and connect to Option 2? Or have as standalone option through to Hundreds Road / Longhill Road.	10:8 – New east / west route north of the Prison	10:9 – Upgrade Norwood Road (could connect to Option 4)	10:10 – Opt 1 + Continue Longhill Road to connect through to Flaggrass Hill Road and then onto an Eastern Bypass…..	10:11 – Continue B1101 south, new river crossing and connect through to Longhill Road and Marwick Road (through to A141).
Eastern Bypass	11:1 – Original MATS proposal	11:2 – Connect Estover Road / Creek Road to Silt Road (upgrade) taking the route to Upwell Road	11:3 – Connection over river just west of railway line in the vicinity of Riverdown / Heron Walk (three locations possible) with no HGV access	11:4 – As per option 1, but with alterative alignment to the east of Silt Road between river and Upwell Road (to avoid properties) with new railway crossing	11:5 – New route following the line of the railway from Creek Road down to Upwell Road, including river crossing (but no rail crossing)	11:6 – New route from B1101 in north (Longhill Road) to join Option 1 just south of the river	11:7 – New route from Twenty Foot road, over Twenty Foot river to join Option 1 just south of the river	11:8 – As per Option 1, but with route continued to existing A141 / Wimblington Road roundabout to the south	11:9 – As per Option 8, but taking alignment in the south along the dismantled railway line to a new junction with the A141 in the vicinity of Eastwood		

Note that options shaded in blue were identified for Strategic Assessment, and those shaded grey were discounted from the study following consultation with the Member Steering Group and / or review from the Project Team following the Option Development Workshop.

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