



## March Area Transport Study (MATS)

### Full Business Case (FBC)

## Document Control

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## Glossary

<b>BCR</b>	– Benefit to Cost Ratio
<b>CCC</b>	– Cambridgeshire County Council
<b>CPCA</b>	– Cambridgeshire and Peterborough Combined Authority
<b>CPIER</b>	– Cambridgeshire and Peterborough Independent Economic Review
<b>CPO</b>	– Compulsory Purchase Order
<b>DfT</b>	– Department for Transport
<b>DM</b>	– Do Minimum
<b>DS</b>	– Do Something
<b>EAST</b>	– Early Assessment Sifting Tool
<b>FBC</b>	– Full Business Case
<b>FDC</b>	– Fenland District Council
<b>FHSF</b>	– Future High Streets Fund
<b>HMT</b>	– HM Treasury
<b>ICD</b>	– Inscribed Circle Diameter
<b>IMD</b>	– Indices of Multiple Deprivation
<b>ITE</b>	– Independent Technical Evaluation
<b>LMVR</b>	– Local Model Validation Report
<b>LSOA</b>	– Lower Super Output Area
<b>MATS</b>	– March Area Transport Study
<b>MHCLG</b>	– Ministry of Housing, Communities and Local Government
<b>MSG</b>	– Members' Steering Group
<b>MTC</b>	– March Town Council
<b>NILR</b>	– Northern Industrial Link Road
<b>NPPF</b>	– National Planning Policy Framework
<b>NPV</b>	– Net Present Value
<b>OAR</b>	– Options Appraisal Report
<b>OBC</b>	– Outline Business Case
<b>PVB</b>	– Present Value of Benefits
<b>PVC</b>	– Present Value of Costs
<b>QRA</b>	– Quantified Risk Assessment (QRA)
<b>SOBC</b>	– Strategic Outline Business Case
<b>TAG</b>	– Transport Analysis Guidance
<b>TCF</b>	– Transforming Cities Fund
<b>VfM</b>	– Value for Money

# Executive Summary

## Introduction

This document sets out the Full Business Case (FBC) for the March Area Transport Study (MATS) Broad Street Scheme and updates the Outline Business Case (OBC) for the remaining MATS improvement schemes, namely the A141 / Peas Hill Roundabout, A141 / Hostmoor Avenue, A141 / Twenty Foot Road, B1101 High Street / St Peter's Road and the Northern Industrial Link Road.

The MATS FBC will be presented in three phases, with each focusing on the delivery of different schemes from the overall MATS package. Each phase will present the case for investment for the whole MATS package, confirming the strategic benefits associated with delivering all five schemes, as well as demonstrating (through sensitivity testing) that the funding for each phase will still deliver value and benefits should future phases falter.

The recommended package of MATS Improvement Schemes will address existing capacity and safety problems, while mitigating for future growth in travel demand resulting from housing and employment growth identified in the Fenland Local Plan (2014). In addition, the recommended package of schemes includes improvements to Broad Street, which seek to facilitate regeneration funded by the Future High Streets Fund (FHSF), and the wider regeneration of March Town Centre.

This Business Case is set out in compliance with the Department for Transport's (DfT's) The Transport Business Cases (2013) guidance and HM Treasury's (HMT's) Five Case Model.

## Strategic Dimension

The **Strategic Dimension** demonstrates how the recommended package of MATS Improvement Schemes fits with wider public policy objectives and provides the case (or need) for change.

The recommended package of MATS Improvement Schemes strongly aligns with the vision and objectives of national, regional, and local bodies, including the DfT, the Cambridgeshire and Peterborough Combined Authority (CPCA), Fenland District Council (FDC), and March Town Council (MTC).

The Strategic Dimension identifies a clear need for change and the impacts of not progressing. The need for change can be summarised as follows:

- The need for regeneration in March Town Centre
- The need to address existing traffic congestion and safety issues
- The need to facilitate housing and employment growth across March
- The need to improve local environmental conditions.

The need for change is being driven internally, by local growth aspirations and support from local authority bodies, and externally, by the requirement to redesign Broad Street to facilitate regeneration funded by the FHSF.

Twelve scheme objectives, which remain unchanged since the SOBC, will be used to measure the success of the recommended package of MATS Improvement Schemes. These objectives reflect the themes identified in the need for change, and are as follows:

#### **1. Regeneration of March Town Centre**

- a. Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme.
- b. Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth.
- c. Maximise public realm within Broad Street.
- d. Enhance pedestrian safety and accessibility around the town centre.

#### **2. Address Existing Traffic Congestion and Safety Issues**

- a. Address existing congestion issues within the town centre (Broad Street area).
- b. Address existing congestion issues along the A141 around Peas Hill roundabout.
- c. Improve pedestrian level of service around Broad Street.
- d. Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction.

#### **3. Facilitate Housing and Employment Growth**

- a. Support Local Plan development proposals.
- b. Ensure sustainable access to proposed Local Plan development.

#### **4. Improve Local Environmental Conditions**

- a. Improve air quality conditions around Broad Street.
- b. Facilitate the enhancement of heritage assets around Broad Street.

Finally, the options identification and appraisal work that has been undertaken to date is explained within the Strategic Dimension. Ultimately, the Strategic Dimension identifies Package 3a as the MATS Improvement Schemes to be progressed and explains how this has evolved through the Detailed Design phase.

Package 3a comprises the following MATS Improvement Schemes:

- A141 / Peas Hill Roundabout Upgrade (52m ICD), including the creation of an all-movement signalised junction at the A141 / Hostmoor Avenue Junction.
- A141 / Twenty Foot Road Signals.
- Broad Street / Dartford Road / Station Road Mini Roundabout, with one lane in each direction on Broad Street
- High Street / St Peter's Road Traffic Signal Improvements.
- Development of a Northern Industrial Link Road (NILR)

## Economic Dimension

The **Economic Dimension** demonstrates that the recommended package of MATS Improvement Schemes offers value for money.

Package 3a has a core BCR of 2.23 based on transport user, noise, greenhouse gas, air quality, and accident benefits alone. This indicates that the core monetised benefits outweigh the scheme cost estimates and provide High Value for Money (VfM). The addition of journey time reliability benefits increases the BCR to 2.42, which still represents High VfM.

The MATS Broad Street Scheme has a core BCR of 8.37, which equates to Very High VfM. The addition of journey time reliability benefits increases the BCR to 8.90, which still represents Very High VfM.

The calculated BCRs are considered conservative as they are only based on the scheme benefits that can be monetised. Other benefits relating to improved townscape, severance, personal affordability for income deprived groups, and journey quality are anticipated for both Package 3a and the MATS Broad Street Scheme.

Both Package 3a and the MATS Broad Street Scheme are expected to have some Slight Adverse (Negative) Effects, which include impacts to the historic environment, biodiversity, and water environment.

Sensitivity testing has been undertaken to determine whether Package 3a and the MATS Broad Street Scheme could still achieve VfM if the expected value of time (VOT), travel behaviour, road traffic growth, air quality differs from current predictions.

The results from the sensitivity testing indicate that:

- Package 3a has a BCR of 0.44 in the Behavioural Change Growth Scenario, which represents Poor VfM
- Package 3a has a BCR of 1.10 in the Low Growth Scenario, which represents Low VfM
- Package 3a has a BCR of 2.24 in the Core Growth Scenario and 3.72 in the High Growth Scenario, which both represent High VfM
- Package 3a has a BCR of 1.41 in the Low VOT scenario, which represents Low VfM
- Package 3a has BCR of 2.24 and 2.76 for the Core and High VOT scenarios respectively, both of which represent High VfM.
- The MATS Broad Street Scheme has a BCR of 3.04 in the Behavioural Change Growth Scenario, which represents High VfM
- The MATS Broad Street Scheme has a BCR of 6.47 in the Low Growth Scenario, 9.24 in the Core Growth Scenario, and 14.35 in the High Growth Scenario, all of which represent Very High VfM
- The MATS Broad Street Scheme has BCRs ranging between 6.55 and 11.92 for all VOT scenarios, which represents Very High VfM in all instances.

## Financial Dimension

The **Financial Dimension** demonstrates that the recommended package of MATS Improvement Schemes is financially affordable.

The scheme costs considered in the Financial Dimension include base investment cost, risk adjusted base cost, inflated risk adjusted cost (Outturn cost), and inflated risk adjusted cost including whole life costs. For Package 3a, the inflated risk adjusted cost including whole life costs over the 60-year assessment period, is £49,423,931 and the Outturn cost required to deliver it is £47,693,154. A full 60-year schedule (2023-83) showing how the costs have been calculated is included in Appendix G.

The Outturn cost for the MATS Broad Street Scheme is £4,149,825. The CPCA have confirmed that there is a sufficient TCF funding allocation in the 2023 / 2024 financial for construction of this scheme. This funding is time limited and must be spent by March 31<sup>st</sup> 2024.

Potential funding sources for the construction of the remaining MATS Improvement Schemes have been explored and include the CPCA Single Investment Fund and Developer Contributions. The funding strategy for delivering these schemes will be confirmed in FBC2 (and FBC3 for the NILR).



## Commercial Dimension

The **Commercial Dimension** demonstrates that the recommended package of MATS Improvement Schemes can be effectively procured commercially viable and confirms the procurement strategy for the MATS Broad Street Scheme which will be let via the Eastern Highways Alliance (EHA).

The output-based specification identifies the five recommended MATS Improvement Schemes (included in Package 3a) as the key outputs to be delivered through the chosen procurement route. The success of these outputs will be measured using the scheme objectives, as detailed in the Benefits Realisation Plan and Monitoring and Evaluation sections of the Management Dimension.

Possible routes to procurement for the remaining MATS schemes include: Eastern Highways Alliance Framework 3; Standalone – ‘Find a Tender’ service; the existing Cambridgeshire Highways Services Contract; and the Cambridgeshire and Peterborough Joint Professional Services Framework (Professional Services support only). The procurement strategy for each of the remaining MATS schemes will be confirmed in the respective FBCs.

Possible sourcing options include: a traditional arrangement; a single-stage design and build contract; a two-stage design and build contract; early contractor involvement (ECI); and a private finance initiative (PFI). The scheme promotor will need to confirm its choice of contractor as each MATS scheme enters the FBC stage.

The remaining sections of the Commercial Dimension consider possible payment mechanisms, pricing framework and charging mechanisms, risk allocation and transfer, contract length, and contract management issues.

## Management Dimension

The **Management Dimension** demonstrates that the recommended package of MATS Improvement Schemes is deliverable.

Evidence of the delivery of similar projects, which supports the recommended project approach, includes the Wisbech Access Study (WAS), Ely Southern Bypass, and King’s Dyke.

The Management Dimension provides information relating to the governance, organisation structure, and roles, and describes the key roles, lines of accountability and how they are resourced. The CPCA is the organisation that is ultimately responsible for the delivery of the MATS Improvement Schemes, with Cambridgeshire County Council (CCC) nominated as the delivery partner, with delegated authority.

The Management Dimension includes a project plan with delivery milestones, ranging from submission of this Business Case (FBC1) to the construction of the NILR (October 2026 – November 2027). It is important to note that the delivery of the MATS Broad Street scheme has been prioritised to align with the construction programme for the FHSF scheme, to meet the requirements of the FHSF.

The assurance and approvals plan states that the CPCA will manage the MATS in accordance with its existing assurance and approvals processes, as detailed in the CPCA Assurance Framework and Ten Point Guide. As part of the CPCA Assurance Framework process, an Independent Technical Evaluation (ITE) of each business case, including this document, will be undertaken at each stage of the project.

The identified approach to communication and stakeholder engagement requires the provision of regular updates to stakeholders, engagement with stakeholders, and ensuring that information is shared using appropriate methods of communication. To date, regular Members' Steering Group (MSG) meetings have been held throughout the development of the MATS. A Future March online consultation event was held between May 2020 and June 2020, and a public consultation exercise regarding the March Future High Street Fund proposals ran in May 2020. Further public engagement was also undertaken during September 2022, and responses have been considered where possible.

A Benefits Realisation Plan, which outlines the approach for managing the realisation of benefits of the recommended package of schemes, and a Monitoring Evaluation Plan, which outlines the arrangements for monitoring and evaluating the recommended package of schemes, have been prepared for the MATS and are included in Appendices I and J.

As part of the risk management strategy, a Project Risk Register and Construction Risk Registers have been prepared for the MATS and have informed scheme costings.

# 1. Introduction

## 1.1 Scope

- 1.1.1 This document sets out the Full Business Case (FBC) for the March Area Transport Study (MATS) Broad Street Scheme and updates the Outline Business Case (OBC) for the remaining MATS improvement schemes, namely the A141 / Peas Hill Roundabout, A141 / Hostmoor Avenue, A141 / Twenty Foot Road, B1101 High Street / St Peter's Road and the Northern Industrial Link Road (NILR). The rational for this phased approach, which is required due to funding constraints, is set out in Section 1.3 beneath.
- 1.1.2 This hybrid Business Case updates and re-affirms the case for change, provides detailed economic and financial assessment of the preferred options and identifies procurement and management strategies for the successful delivery of the schemes. The level of detail provided for Broad Street is well advanced and reflects the intentions to begin construction in early 2023, in line with funding requirements. This includes completed Detailed Design and contractor target costs.
- 1.1.3 Milestone Infrastructure (formerly Skanska Infrastructure Services) have been commissioned by Cambridgeshire County Council (CCC) on behalf of the Cambridgeshire and Peterborough Combined Authority (CPCA), to produce this document.

## 1.2 Business Cases and The Five Cases Model

- 1.2.1 As set out in 'The Transport Business Cases' guidance published by the Department for Transport (DfT) in February 2022<sup>1</sup>, this document follows DfT's three-phase approach (as adopted by the Cambridgeshire and Peterborough Combined Authority's Assurance Framework) for making major investment decisions:
  - Phase 1 – Strategic Outline Business Case (SOBC)
  - Phase 2 – Outline Business Case (OBC)
  - Phase 3 – Full Business Case (FBC)
- 1.2.2 The MATS project has now entered Phase 3 following approval of the Outline Business Case in October 2021<sup>2</sup> and the subsequent Detailed Design and procurement work undertaken throughout 2022. This document represents the first of three editions of the Full Business Case. The phasing and rational for this is described beneath.

<sup>1</sup> <https://www.gov.uk/government/publications/transport-business-case/transport-business-case-guidance>

<sup>2</sup> CPCA Board Meeting, 24<sup>th</sup> November 2021.

### 1.3 MATS FBC Structure

- 1.3.1 The MATS FBC will be presented in three phases, with each focusing on the delivery of different schemes from the overall MATS package. Each phase will present the case for investment for the whole MATS package, confirming the strategic benefits associated with delivering all five schemes, as well as demonstrating (through sensitivity testing) that the funding for each phase will still deliver value and benefits should future phases falter.
- 1.3.2 The FBC phasing is presented in Figure 1.1 beneath, with dark teal indicating when each scheme will reach full FBC status, and the light teal showing an update to the information presented in the OBC (but not fully developed to FBC).

FBC 1 Broad Street Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				
FBC 2 Peas Hill Roundabout, Hostmoor Avenue, Twenty Foot Road & St Peters Road Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				
FBC 3 Northern Industrial Link Road Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				

Figure 1.1: MATS FBC Phasing Structure

- 1.3.3 This approach has been developed to enable the delivery of the Broad Street Scheme to be accelerated ahead of the remaining schemes to support the adjacent Future High Street Fund (FHSF) scheme along Broad Street. For clarity, the MATS Broad Street Improvement Scheme will amend the transport infrastructure along Broad Street, whereas the FHSF project will improve the surrounding public realm. The FHSF is separately funded, and therefore not included within the MATS project, but delivery of both the MATS and FHSF schemes needs to be closely coordinated due to the physical interaction of both schemes. The FHSF funding requires the Broad Street improvements to be completed by March 31<sup>st</sup>, 2024, and accordingly the MATS Broad Street Scheme has been accelerated for delivery, therefore reducing the risk of delay associated with the remaining MATS schemes from compromising the FHSF programme (and funding).
- 1.3.4 This approach creates an FBC 1 (this document) which is focused on the delivery of the MATS Broad Street Scheme. This is effectively a hybrid FBC / OBC + as shown in Figure 1.1 which is referred to as FBC1 for the remainder of this document. The FBC components relate to the Broad Street Scheme, and the OBC+ components relate to the remaining four schemes which were included in the OBC presented to CPCA Board in November 2021 but have been updated within this submission following completion of the Detailed Designs (and Preliminary Design for the Northern Industrial Link Road).
- 1.3.5 For clarity, the information that relates specifically to the FBC for the Broad Street Scheme (FBC1) is presented within teal-coloured boxes as shown below, enabling the reader to distinguish clearly between information pertinent to the MATS Broad Street Scheme FBC1 and the OBC+ for the remaining MATS schemes.

Information that is pertinent to the MATS Broad Street Scheme (FBC1) is presented within these teal-coloured boxes).

- 1.3.6 It is anticipated that this document (FBC1) will be updated to FBC2 and presented to the CPCA in December 2023 to request the release of construction funding for the A141 / Peas Hill Roundabout and A141 / Hostmoor Avenue Junction, A141 / Twenty Foot Road and B1101 High Street / St Peter's Road schemes. Detailed Design on these schemes has been completed, and the remaining tasks required to produce FBC2, including procurement, Outline Planning and land engagement will be completed throughout 2023 (with Full Planning Permission and land acquisition to be completed in 2024 following approval of FBC2).



- 1.3.7 A third phase (FBC 3) will then present the case for investment for the Northern Industrial Link Road (NILR). The technical assessment undertaken in earlier phases of this study identified that the NILR is required in the medium-term future (by 2028) and has been separated from FBC 2 to ensure the necessary information for this scheme, including a confirmed procurement route and a scheme target cost, is current at the time of construction.
- 1.3.8 This document therefore begins the third phase of the three-phase decision making process. Each Business Case builds on the last, but the phased approach enables appropriate investment decisions to be made and reflects the greater level of detail that becomes available as the list of potential schemes is refined, and a preferred scheme is identified. Business Cases are developed in line with the HM Treasury's (HMT's) Green Book five case model:
- The case for change – The 'Strategic Dimension'
  - Value for Money – The 'Economic Dimension'
  - Commercially viable – The 'Commercial Dimension'
  - Financially affordable – The 'Financial Dimension'
  - Achievable – The 'Management Dimension'.
- 1.3.9 In summary, this document:
- Updates and reconfirms the strategic fit and the case for change, as established in the SOBC and OBC.
  - Provides detailed economic and financial assessment of the options, including a target cost for the Broad Street Scheme.
  - Identifies the most suitable procurement and management strategies for delivery, and specifically confirms the procurement route and contractual arrangements for the delivery of the Broad Street Improvements Scheme.
  - Provides details of the project's overall balance of benefits and costs against objectives.

## 1.4 Context and Background

### Fenland

- 1.4.1 Fenland covers approximately 200 square miles within the county of Cambridgeshire. It is a rural and sparsely populated district with many diverse communities, each with very different needs. Geographically, Cambridge and the rest of Cambridgeshire are to the south, Peterborough to the west, Wisbech and King's Lynn to the north-east, and West Norfolk to the east. The sub-regional centres of Cambridge, Peterborough and King's Lynn have a considerable influence on various parts of the district in terms of employment, retail and health provision.
- 1.4.2 Although the district remains relatively sparsely populated, Fenland has experienced considerable housing and population growth in recent years, in line with growth across Cambridgeshire. According to the 2011 Census, Fenland had a population of approximately 95,300, compared to 83,700 in 2001 and 75,500 in 1991, and has continued to grow rapidly since 2011. In 2020, Fenland had an estimated total population of approximately 102,080<sup>3</sup>, which represents a 7% increase since 2011. This growth is expected to continue and needs to be positively planned for.
- 1.4.3 Growth in employment in Fenland has not matched workforce expansion and out-commuting is increasing. Currently, almost 40% of Fenland's working population commute out of the district for work. To meet the needs of a growing workforce, Fenland requires growth in employment land and business opportunities. To achieve this, infrastructure needs to be improved to retain and attract employers.
- 1.4.4 The population distribution of Fenland is characteristically rural, with the four market towns of Wisbech, March, Whittlesey and Chatteris forming the main population centres, each with their own distinct and individual character.

<sup>3</sup> <https://cambridgeshireinsight.org.uk/population/report/view/f7de925f5608420c825c4c0691de5af2/E07000010/>

## March

- 1.4.5 The location of March relative to surrounding areas is shown in Figure 1.2, below. March is a historic market town at the heart of The Fens with a population of approximately 22,980 as of 2011.<sup>4</sup> It forms the administrative centre of Fenland and lies at the heart of the district's ongoing economic function as a centre for agriculture, reflected in the number of food production businesses which are key employers in the town.

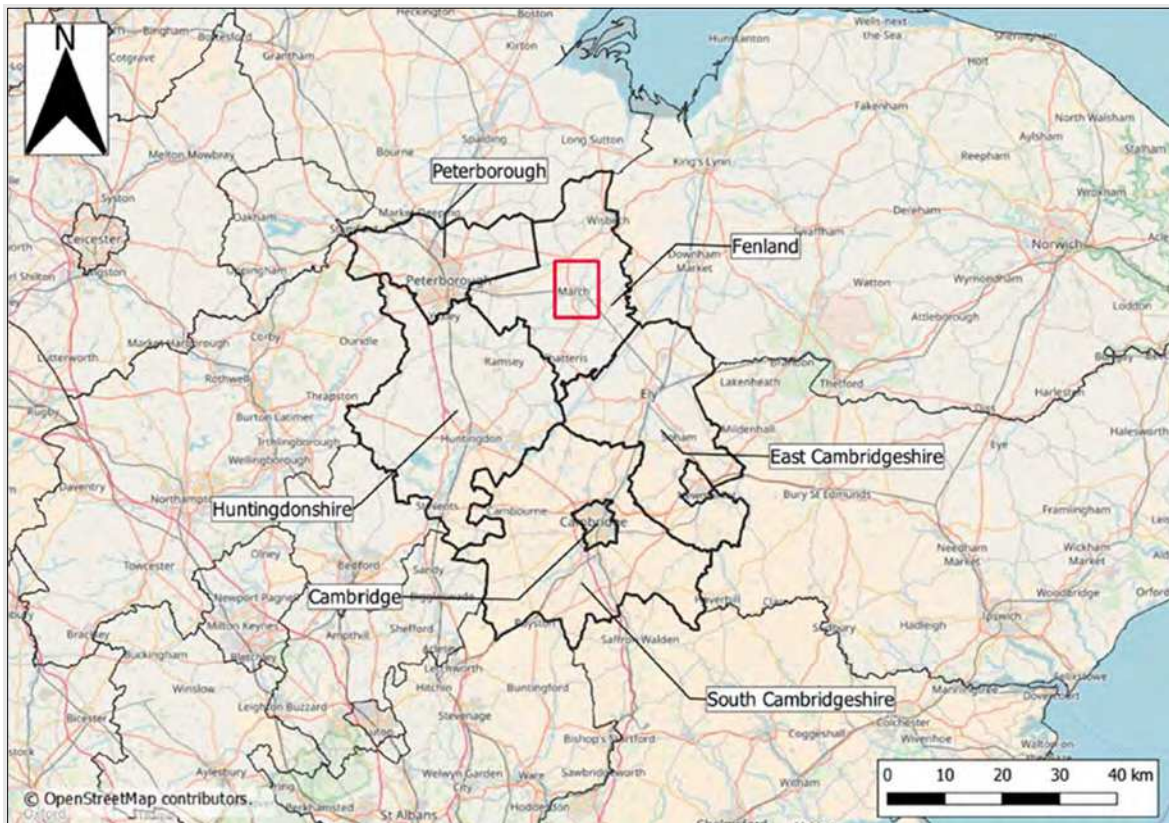


Figure 1.2: March Location Map

- 1.4.6 March is relatively well connected by road to other areas despite its rural setting and benefits from a railway station situated on the Stansted to Birmingham line. It has an established legacy as a trading centre. While the town also benefits from a historic urban form and attractive riverside setting, as well as a number of stable employers, March has an aging population and is home to some pockets of relatively severe deprivation, characterised by high unemployment and poor health.

<sup>4</sup> [https://www.fenland.gov.uk/media/16583/Fenland-Monitoring-Report-2018-2019/pdf/Fenland\\_Monitoring\\_Report\\_2018-2019.pdf?m=637261848570770000](https://www.fenland.gov.uk/media/16583/Fenland-Monitoring-Report-2018-2019/pdf/Fenland_Monitoring_Report_2018-2019.pdf?m=637261848570770000)



- 1.4.7 The 2019 English Indices of Multiple Deprivation (IMD) data measures the proportion of the population in a given area experiencing deprivation across a number of different metrics, including income, employment and housing. This is measured at a Lower Super Output Area (LSOA) level of spatial aggregation, in line with census data. Different metrics are given a ranked score on a national scale with larger scores representing increasingly deprived areas. Total scores across the various metrics are divided into deciles to allow a simple comparison of relative levels of deprivation between areas. IMD data have been mapped across March and surrounding areas, including across Cambridgeshire and beyond, in Figure 1.3 below.

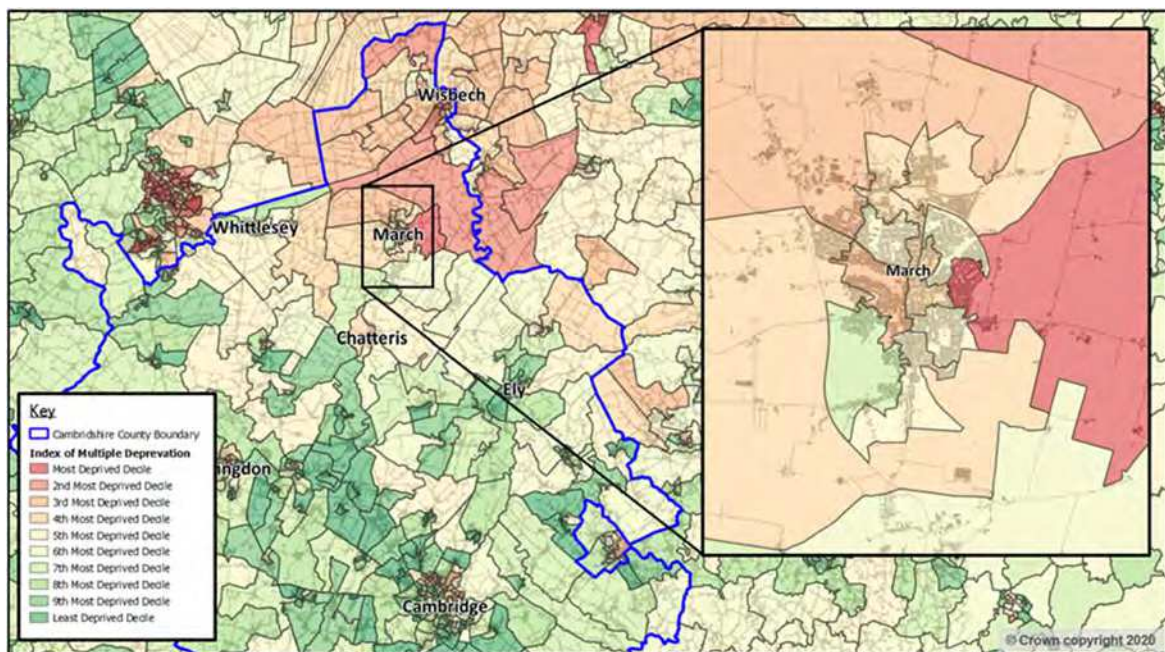


Figure 1.3: March 2019 IMD Data Map

- 1.4.8 Within Cambridgeshire, higher levels of deprivation are clustered to the north of the county around the Fenland towns of March and Wisbech. Figure 1.3 indicates a number of deprived areas in and around March, relative to other areas. Across March, many of the town's residential areas are in the third and fourth most deprived deciles of areas nationally, with areas to the east of March in the most deprived decile.
- 1.4.9 The population of March is predicted to grow by approximately one third by 2036, however the proportion of the working age population is set to decline from 62% to 56%<sup>5</sup>, with an increasing proportion of older residents. This represents a challenge for March in terms of ensuring an aging population has good access to local services and amenities.

<sup>5</sup> [https://www.fenland.gov.uk/media/16892/Growing-Fenland-March-Final-Report/pdf/Growing\\_Fenland\\_-\\_March\\_Final\\_Report.pdf?m=637272072374070000](https://www.fenland.gov.uk/media/16892/Growing-Fenland-March-Final-Report/pdf/Growing_Fenland_-_March_Final_Report.pdf?m=637272072374070000) (page 4).

- 1.4.10 A review of 2011 Census data revealed that approximately 61% of employed individuals both lived and worked in March, with approximately 39% commuting out of the town for work. The relative destinations of outbound commuters are detailed in Table 1.1 below, which highlights a varied distribution of destinations to surrounding areas.

Table 1.1: Relative Outbound Commuter Destinations

Outbound Commuter Destinations	Proportion
Wisbech	21%
Peterborough	18%
Chatteris	11%
Huntingdon and St Ives	10%
Wimblington and Doddington	9%
Ely	6%
Cambridge	6%
Whittlesey	4%
Other	15%
<b>Total</b>	<b>100%</b>

- 1.4.11 Investment in local transport infrastructure is central to ensuring the long-term economic prosperity of March as a thriving market town, by helping to revitalise the town centre, encourage inward investment and realise aspirational housing and employment growth ambitions.
- 1.4.12 The vision of Fenland District Council (FDC), the local authority for March, is set out within the adopted Local Plan (2014), which aims ‘to maximise the potential of the area and deliver jobs, skills, improved housing and new infrastructure’. The adopted Local Plan includes targets for the delivery of 4,200 new homes in March and 30 hectares of employment land, with the potential to provide over 2,000 new jobs. March is a focus for housing, employment and retail growth within the district.
- 1.4.13 The MATS Improvement Scheme options development and assessment work included in this business case process is based on realising adopted Local Plan growth to 2031, rather than emerging Local Plan growth.
- 1.4.14 FDC is currently preparing an emerging Local Plan to replace the adopted Local Plan (2014). The emerging Local Plan is expected to be adopted in 2025 and will cover the next 20-year period (to 2045).
- 1.4.15 A 2011 March Area Transport Study provided the transport evidence base for the adopted Local Plan, assessed the impact of traffic growth resulting from the growth indicated by the adopted Local Plan and proposed measures to improve the town’s transport network under current and future traffic demand. This Business Case stems from the most recent March Area Transport Study 2018 (MATS), which builds upon the historical work and assesses potential improvement packages to deliver the adopted Local Plan growth.



1.4.16 The CPCA, through CCC and FDC, agreed a brief for the most recent MATS in January 2018. The aim of this MATS is as follows:

‘To identify potential transport interventions in March to address existing capacity and safety problems whilst mitigating for future growth in the demand for travel resulting from increases in housing and employment opportunities identified in the Fenland Local Plan.’

1.4.17 In addition, the MATS Improvement Schemes have been developed to facilitate efforts to regenerate parts of March Town Centre. Specifically, options for Broad Street have been aligned with the design proposals included in the successful FHSF application, which was awarded £6.4 million funding by the Ministry of Housing, Communities and Local Government (MHCLG) and an additional £2 million match funding pledge from the CPCA in early 2021. Further details can be found in Section 2.8.

1.4.18 To specifically identify transport interventions that address the issues raised in section 2.4 of this Business Case, the MATS study has been split into three parts. These include:

- Stage 0 Audit / Scoping
- Stage 1 Option Testing
- Stage 2 Preferred Scheme Design.

1.4.19 There were a number of components and concluding reports throughout the project, defining different stages of the scheme development process. Figure 1.4 below shows how the different parts of the MATS fit together. The development of OBC and now FBC1 form part of Stage 2 and have closely followed the respective design stages.

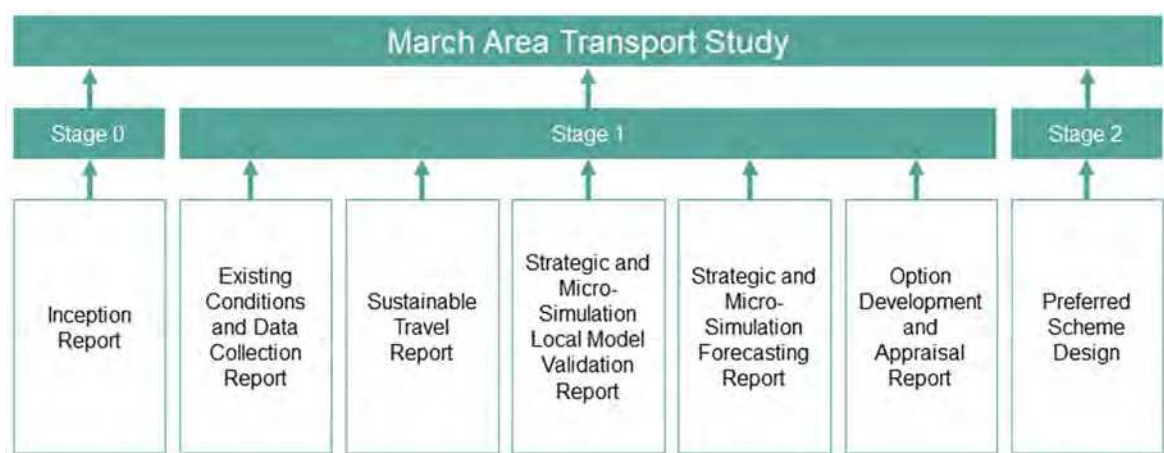


Figure 1.4: March Area Transport Study Components

1.4.20 MATS Stage 0 and Stage 1 are complete, and the production of FBCs to secure scheme funding will conclude Stage 2. The associated reports produced to date for Stage 0, Stage 1 and Stage 2 have been made available online via CCC's website<sup>6</sup> and include the following:

- Existing Conditions and Data Collection Report
- March Sustainable Travel Report
- Pedestrian, Signage and Cycling Strategy
- SATURN Local Model Validation Report (LMVR)
- VISSIM LMVR
- March Forecasting Report
- March Options Appraisal Report (OAR)
- Options Consultation Report
- Strategic Outline Business Case (SOBC)
- Outline Business Case (OBC).

1.4.21 This FBC1 document is produced during Stage 2 of the MATS process and sets out the case for investment in the MATS Broad Street Scheme and lays the groundwork for the production of FBC2 and FBC3 for the remaining schemes.

## 1.5 Document Structure

1.5.1 The remainder of this document is structured as follows:

- Chapter 2: The Strategic Dimension provides an update and verification of the need for highway interventions across March, reconfirms policy fit and objectives.
- Chapter 3: The Economic Dimension provides detailed assessment of how the preferred package of options demonstrates relative value for money.
- Chapter 4: The Financial Dimension shows how the schemes have been robustly costed, and how funding needs to be profiled.
- Chapter 5: The Commercial Dimension sets out how CCC will procure in a way that delivers value for money.
- Chapter 6: The Management Dimension explains how delivery of the schemes will be managed.

<sup>6</sup> <https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/transport-funding-bids-and-studies/march-transport-study>

## 2. Strategic Dimension

### 2.1 Introduction

- 2.1.1 This chapter sets out the Strategic Dimension for transport interventions across March, demonstrates why improvements are needed at various locations across the town, and how a scheme will fit with local, regional, and national policy, enabling March to meet its planned growth ambitions. The content of the Strategic Dimension was predominately established in the SOBC, and is verified, and updated where necessary, to strengthen the case in this FBC1.

### 2.2 Business Strategy and Strategic Policy Context

- 2.2.1 The Government's strategy for supporting regeneration and facilitating further economic growth requires the continued investment in transport infrastructure to enable businesses to invest in job creation and the provision of new residential developments. Achieving economic growth, improving living standards and the provision of new housing, are key Government objectives at national, regional, and local level. This section details how the MATS Improvement Schemes will contribute to achieving these strategic aims and policies.

#### Levelling Up

- 2.2.2 The Government's Levelling Up Agenda is focused on reducing regional disparities across the UK, by boosting economic productivity, skills and incomes to level up deprived areas, particularly as the nation begins to recover from the impact of the COVID-19 pandemic. The relevance of the Government's levelling up agenda for supporting MATS Improvement Schemes includes:
- Investing in the regeneration of town centres and high streets
  - Improving local transport links and investing in local culture
  - Giving local communities more control of local assets and how investment is made
  - Levelling up skills using apprenticeships and a £3 billion National Skills Fund
  - A review of HMT's Green Book on which DfT's Transport Analysis Guidance is based, including how the value of schemes are determined to assist Government in making informed funding decisions in support of levelling up.
- 2.2.3 In February 2022 the Government published The Levelling Up White Paper, articulating how new policy interventions will support regeneration, improve opportunity and incomes across the country, to facilitate the national economic recovery from the Covid-19 pandemic.<sup>7</sup>

<sup>7</sup> <https://www.gov.uk/government/publications/levelling-up-the-united-kingdom>

## Green Book Review 2020

- 2.2.4 HMT launched the Green Book Review in 2020 with the aim of ensuring the appraisal framework process for projects supports the delivery of the Government's strategic priorities, including the levelling up agenda and the net zero carbon emissions target. In November 2020, HMT published the findings and recommendations of the Green Book Review alongside an updated version of the Green Book guidance on appraisal and evaluation in central government.
- 2.2.5 The key changes to the Green Book resulting from the review, in relation to the content and assessment of business cases, includes:
- Clear objectives and success measures must be established for all interventions, with an objectively based logical process of change as part of the strategic appraisal. Strengthened guidance is provided on setting strategically relevant, appropriate, SMART objectives and a stronger requirement to establish clear objectives from the outset that must be the drivers of the policy development and appraisal process.
  - All options must be assessed against these objectives and only those that deliver them should be shortlisted. Options that do not deliver the objectives should not be considered value for money, regardless of the Benefit Cost Ratio (BCR).
  - The assessment of value for money should have broader emphasis than just focusing on the BCR alone, with analysis of all the relevant costs and benefits to society. Further guidance is provided on what factors must be taken into consideration for considering value for money, and how it is appraised. Only options with a strong Strategic Dimension should be short listed for detailed cost benefit analysis. The BCR will then only be calculated for options which pass this test.
  - Reviewers should be open to business cases for projects with a low BCR if, compared to options that have been appraised, that option is the best value for money way of delivering an intervention.
  - New guidance on the appraisal of transformational change and potential.
  - Updated guidance to improve the analysis of regional and local impacts, through place-based impacts, including where these are not the objective of the intervention. A new expectation is that appraisal must assess the likelihood and extent of differential place-based impacts where it appears likely to be significant, or else explain why it is unnecessary.

- New guidance clarifies how local employment effects can be considered in the appraisal and how the potential impact on surrounding areas should be assessed. When undertaking place-based analysis, appraisers will be able to use new employment multipliers to help estimate the local impact.
- Measures to improve analysis on differential impacts, including in assessments stemming from the Equality Act public sector equality duty, and under the Government's 'family test'.<sup>8</sup>

2.2.6 HMT is undertaking a review into the application of environmental valuation and discounting, with consideration given to using the same discount rate as currently applied to the valuation of life and health effects. This review will conclude in 2022 and any changes to discounting will be incorporated into future updates of the Green Book.

2.2.7 The Green Book changes summarised above make it a vital tool for progressing the Government's priority outcomes and wider public value agenda. A number of the priority outcomes are strongly focused on levelling up and will inform the allocation of spending in the 2022 Spending Review. They include:

- An outcome to raise productivity and empower places so that everyone can benefit from levelling up
- An outcome to level up education standards: so that children and young people in every part of the country are prepared with the knowledge, skills and qualifications they need
- Maximise employment across the country to aid economic recovery following Covid-19.

2.2.8 The Green Book Review has also revisited guidance on appraising environmental impacts, to strengthen the case for projects which will facilitate the delivery of the 25 Year Environmental Plan (2018) and the UK's legal requirement to achieve net zero carbon emissions by 2050.

2.2.9 Revisions to the Green Book have been taken into consideration through the development of the MATS Improvement Schemes. The content of this Business Case aligns with the latest Green Book guidance to ensure that the refinement of preferred schemes is undertaken as part of a balanced appraisal process, and not solely based on the BCR value.

<sup>8</sup> <https://www.gov.uk/government/publications/family-test-assessing-the-impact-of-policies-on-families>

### DfT Transport Appraisal Guidance Update

2.2.10 In May 2021, the DfT published the Transport Analysis Guidance (TAG) Update Report<sup>9</sup> detailing proposed changes to its TAG, to reflect recent challenges and opportunities affecting the transport appraisal framework arising from:

- The Government's revised economic outlook forecast for significantly lower long-term growth in productivity and income
- Uncertainty around future travel behaviour and needs brought about by Covid-19
- A review of HMT's Green Book, on which the DfT's Transport Analysis Guidance is based, to ensure it helps the Government take informed decisions in support of levelling up (as referred to above)
- The UK's Net Zero greenhouse gas emission target by 2050, to ensure that impacts on carbon are appropriately assessed and valued through the Business Case process
- Reviewing the appropriate timescale to assess the benefits of transport projects and whether the full extent of the value of investments is being captured appropriately.

2.2.11 The Green Book Review, detailed above, highlighted several changes to the methodology and evidence base requirements for assessing proposals through the business case process. In response to this, the DfT confirmed the transport business case guidance would be updated to provide advice on developing both strategic and economic dimensions of the business case in line with the Green Book changes. The business case process for the MATS Improvement Schemes incorporates these guidance updates.

### DfT Single Departmental Plan

2.2.12 The Single Departmental Plan published in June 2019<sup>10</sup> sets out the DfT's objectives and the plan for achieving them. The objectives are:

- Support the creation of a stronger, cleaner, more productive economy
- Help to connect people and places, balancing investment across the country
- Make journeys easier, modern and reliable
- Make sure transport is safe, secure and sustainable
- Prepare the transport system for technological progress and a prosperous future outside the EU
- Promote a culture of efficiency and productivity in everything DfT does.

<sup>9</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/987768/appraisal-and-modelling-strategy-update-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/987768/appraisal-and-modelling-strategy-update-report.pdf)

<sup>10</sup> <https://www.gov.uk/government/publications/department-for-transport-single-departmental-plan>

- 2.2.13 The MATS Improvement Schemes are broadly aligned to these objectives and will ensure national level goals for enhanced connectivity, transport infrastructure and sustainable economic growth are achieved at a local level across March.

#### National Planning Policy Framework

- 2.2.14 The National Planning Policy Framework (NPPF)<sup>11</sup> sets out the Government's planning policies for England and how they are expected to be considered in the preparation of development plans.
- 2.2.15 As stated in the NPPF, all plans are expected to be based upon and to reflect the presumption in favour of sustainable development, with clear policies that will guide how the presumption should be applied locally. Sustainable development performs an economic, social and environmental role and involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life, including (but not limited to):
- Making it easier for jobs to be created in cities, towns and villages
  - Moving from a net loss of biodiversity to achieving net gains for nature
  - Replacing poor design with better design
  - Improving the conditions in which people live, work, travel and take leisure and
  - Widening the choice of high-quality homes.
- 2.2.16 At a strategic level, the MATS Improvement Schemes align with the principles outlined in the NPPF and aspire to remove local transport barriers that prevent the progression of development which positively contributes to the local environment and people's quality of life. As individual elements of the package of schemes are developed, care will be needed to ensure that any biodiversity issues are considered.

#### Cambridgeshire and Peterborough Combined Authority

- 2.2.17 The Cambridgeshire and Peterborough Combined Authority (CPCA) was formed in 2017, as a Mayoral Combined Authority. It comprises seven local authorities (CCC, Peterborough City Council, Huntingdonshire District Council, East Cambridgeshire District Council, Fenland District Council, Cambridge City Council and South Cambridgeshire District Council) and the Business Board (Local Enterprise Partnership).
- 2.2.18 The focus of the CPCA is on strategic issues (such as housing, transport and infrastructure demand) which cross council borders and span the entire Cambridgeshire and Peterborough area. Figure 2.1, below, sets out the CPCA Policy Framework.

<sup>11</sup> <https://www.gov.uk/government/publications/national-planning-policy-framework--2>





Figure 2.1: CPCA Policy Framework

- 2.2.19 The CPCA Mayor's Growth Ambition Strategy sets out the area's priorities for achieving ambitious levels of inclusive growth and meeting the commitments of the Devolution Deal. The Strategy is based upon significant work undertaken by the Cambridgeshire and Peterborough Independent Economic Review (CPIER).
- 2.2.20 The CPIER<sup>12</sup> was commissioned by the Combined Authority and other local partners to provide a robust and independent assessment of the Cambridgeshire and Peterborough Economy and its potential for growth. The assessment makes a number of recommendations for the CPCA to take forward over the short, medium and long-term.
- 2.2.21 The success of Cambridgeshire and Peterborough as a project of national importance is highlighted in the CPIER. This is because the area contains some of the most important companies and institutions in the country, much of the country's high value agricultural land, and the cities and towns that continue to support both.
- 2.2.22 The Local Industrial Strategy<sup>13</sup> sets out the economic strategy for Cambridgeshire and Peterborough, taking a lead role in implementing the business growth, productivity, and skills elements of the Growth Ambition Strategy. The Local Industrial Strategy is focussed around five key foundations of productivity established in the UK Industrial Strategy:
- People
  - Ideas
  - Business Environment
  - Infrastructure
  - Place.

<sup>12</sup> <https://www.cpier.org.uk/>

<sup>13</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/818886/Cambridge\\_SINGLE\\_PAGE.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818886/Cambridge_SINGLE_PAGE.pdf)

- 2.2.23 It is a core principle of the Local Industrial Strategy that the fifth foundation of 'Place' reflects the findings of the CPIER, responding to the three sub-economies identified:
- Greater Cambridge
  - Greater Peterborough
  - The Fens.
- 2.2.24 The CPCA Assurance Framework states that investments will only be made if they can demonstrate that they will support the delivery of the Growth Ambition Statement and the Local Industrial Strategy, as well as the more detailed place and sector strategies.
- 2.2.25 This has direct implications for the MATS Improvement Schemes, with a need to ensure these support CPCA growth ambitions and align with the Local Industrial Strategy. March lies at the heart of 'The Fens' sub-economy, supporting industries and employers utilising the high value agricultural land surrounding the town. Providing an efficient and reliable local transport network in and around March is crucial to ensuring the continued success of the local economy in line with the CPCA Growth Ambition Statement.
- 2.2.26 In January 2020, the CPCA adopted a Local Transport Plan for Cambridgeshire and Peterborough<sup>14</sup> and it replaced the interim Local Transport Plan published in 2017. The plan describes how transport interventions can be used to address current and future challenges and opportunities for Cambridgeshire and Peterborough, setting out the policies and strategies needed to secure growth and ensuring that planned, large-scale development can take place in the county in a sustainable way.
- 2.2.27 The Local Transport Plan is split into two main parts: The 'Local Transport Plan' which sets out the vision, goals and objectives and the policies designed to deliver the objectives, and the 'Transport Delivery Plan' (2019 to 2035) which explains how the Local Transport Plan strategy will be delivered. It details programmes for delivery of improvements to the transport network, as well as for its day-to-day management and maintenance.
- 2.2.28 The development of the Local Transport Plan was undertaken concurrently with the CPIER and the Growth Ambition Strategy which enabled the challenges and opportunities detailed in these documents to be aligned. The Local Transport Plan completes the suite of documents which articulates the Combined Authority's response to the CPIER. The vision for the Local Transport Plan is:
- 'To deliver a world-class transport network for Cambridgeshire and Peterborough that supports sustainable growth and opportunity for all'.

<sup>14</sup> <https://cambridgeshirepeterborough-ca.gov.uk/assets/Transport/Draft-LTP.pdf>

2.2.29 The goals of the Local Transport Plan outline the wider outcomes the transport network in Cambridgeshire and Peterborough will aim to achieve. They are:

- **Economy** – Deliver economic growth and opportunity for all communities
- **Society** – Provide an accessible transport system to ensure everyone can thrive and be healthy, and
- **Environment** – Protect and enhance our environment and tackle climate change together.

2.2.30 The objectives of the Local Transport Plan underpin the delivery of these goals and form the basis against which schemes, initiatives and policies will be assessed. They are:

- **Housing** – Support new housing and development to accommodate a growing population and workforce
- **Employment** – Connect all new and existing communities so all residents can easily access jobs within 30 minutes by public transport
- **Business and Tourism** – Ensure all of the region's businesses and tourist attractions are connected sustainably to the main transport hubs, ports and airports
- **Resilience** – Build a transport network that is resilient and adaptive to human and environmental disruption, improving journey time reliability
- **Safety** – Embed a safe systems approach to all planning and transport operations to achieve Vision Zero (zero fatalities or serious injuries)
- **Accessibility** – Promote social inclusion through the provision of a sustainable transport network that is affordable and accessible for all
- **Health and Well-being** – provide 'healthy streets' and high-quality public realm that puts people first and promotes active lifestyles
- **Air Quality** – Ensure transport initiatives improve air quality across the region to exceed good practice standards
- **Environment** – Deliver a transport network that protects and enhances the natural, historic and built environments, and
- **Climate Change** – Reduce emissions to as close to zero as possible to minimise the impact of transport and travel on climate change.

2.2.31 The MATS Improvement Schemes aim to align directly with CPCA Local Transport Plan objectives, particularly in relation to Housing, Employment, Safety and Accessibility. The success of the MATS Improvement Schemes will be measured against similar outcomes to those defined in the CPCA Local Transport Plan.

- 2.2.32 The CPCA Mayoral Election on the 6<sup>th</sup> May 2021 resulted in a new Labour Mayor being elected, replacing the incumbent Conservative Mayor who had held office since 2017. At the time of drafting this FBC1, the content of the CPCA policy framework and Growth, Industrial and Transport Strategies, illustrated in Figure 2.1, and detailed in the subsequent text, above, remain the same.
- 2.2.33 It should be noted that the Combined Authority Board agreed to produce an updated Local Transport Plan during its meeting on 28<sup>th</sup> July 2021. This plan (The Local Transport and Connectivity Plan) was consulted on in summer 2022 and is currently being drafted. It is expected that this will be published in early 2023.

## 2.3 Local Policy Context

- 2.3.1 In relation to local planning, development, and transport policy, detailed below are a number of documents that define policies specific to March, setting out future growth ambitions and targets for the town, as well as a vision for March in future years. These represent local policy drivers influencing the MATS Improvement Schemes and define the specific aspirations of local authority bodies representing March town residents.

### Fenland Local Plan

- 2.3.2 While FDC is currently preparing a new Local Plan, which ‘will determine what the district will look like over the twenty-year period, between 2021 and 2041, and how it will become an even better place to live, work and visit’<sup>15</sup>, this business case considers the current iteration of the Fenland Local Plan, which was adopted by FDC in May 2014<sup>16</sup>. FDC is currently updating the Fenland Local Plan, however a revised document is not expected to be adopted until early 2025.
- 2.3.3 The adopted Local Plan vision for Fenland seeks to maximise the potential of the area and deliver jobs, skills, dynamic town centres, vibrant villages, improved housing, and new infrastructure.
- 2.3.4 In its Vision Statement, the Fenland Local Plan states that across the district there will be 11,000 new homes between 2011 and 2031, increased employment opportunities and a bolstered tourism economy. It also states that homes and jobs will be closely linked to each other, with new infrastructure, such as roads, planned and provided at the same time as new buildings.
- 2.3.5 In order to achieve the ambitions within the Vision Statement, the Fenland Local Plan defines a number of specific policies in relation to specific issues and locations across the district, setting out detailed targets and ambitions for addressing these.

<sup>15</sup> <https://www.fenland.gov.uk/article/15170/Emerging-Local-Plan>

<sup>16</sup> [https://www.fenland.gov.uk/media/12064/Fenland-Local-Plan---Adopted-2014/pdf/Fenland\\_Local\\_Plan-Adopted\\_2014.pdf](https://www.fenland.gov.uk/media/12064/Fenland-Local-Plan---Adopted-2014/pdf/Fenland_Local_Plan-Adopted_2014.pdf)

2.3.6 These policies are guided by a number of specific objectives, one of which, relating to economic activity, states that FDC will:

*‘Support investment in people, places, communications and other infrastructure to improve the efficiency, competitiveness, vitality and adaptability of the local economy.’*

2.3.7 In relation to housing, Policy LP4 sets a target of 4,200 new homes between 2011 and 2031 for March and surrounding areas.

2.3.8 In relation to *Employment, Tourism, Community Facilities and Retail*, Policy LP6 states that opportunities for jobs growth in the district will be maximised with the aim of achieving 7,200 net additional jobs over the period 2011 to 2031, with delivery of 85ha of new employment land to provide for business, industrial and distribution uses. In relation to March, Policy LP6 sets a target of 30ha for delivery of new employment land in and around the town.

2.3.9 Policy LP9 states that March is a focus for housing, employment and retail growth, and should enhance and make appropriate use of its heritage assets to benefit its regeneration and sense of place. Policy LP9 also defines support for development at a number of strategic allocations and broad locations for growth across the town, including:

- **South-east March** (Strategic Allocation): Approximately 600 dwellings
- **South-west March** (Broad Location for Growth): Approximately 500 dwellings
- **West March** (Strategic Allocation): Approximately 2,000 dwellings and some business uses
- **March Trading Estate** (Broad Location for Growth): Predominantly or entirely related to business uses.

2.3.10 These locations are shown in Figure 2.2 overleaf for context.<sup>17</sup>

<sup>17</sup> Figure 2.2 is from page 44 of the adopted Fenland Local Plan.

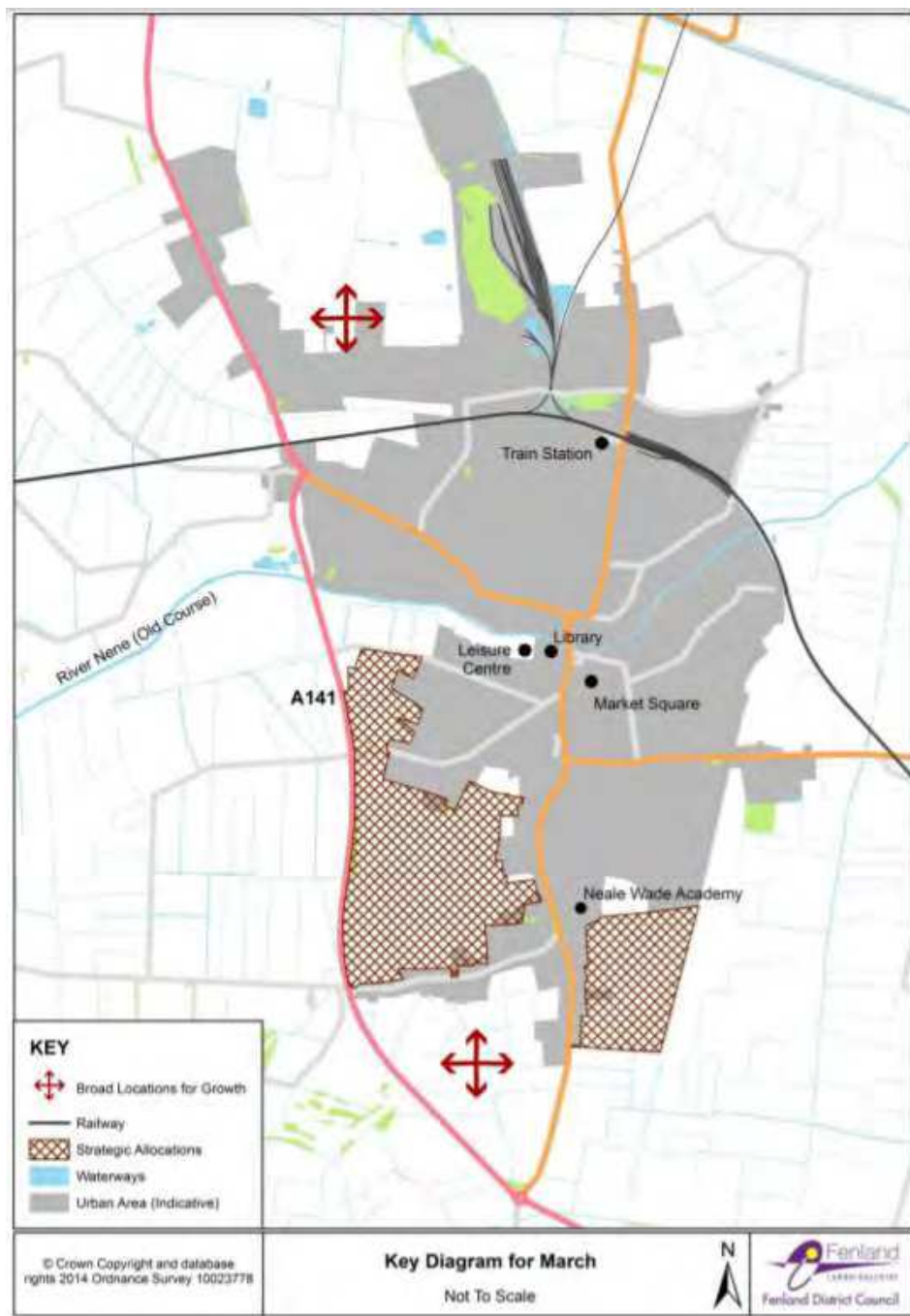


Figure 2.2: LDP Strategic Allocations and Broad Locations for Growth

- 2.3.11 In relation to *Supporting and Managing the Impact of a Growing District*, Policy LP13 states that all new development should be supported by and have good access to infrastructure. The MATS Improvement Schemes are aimed directly at improving transport infrastructure to support growth at specific, strategic locations on the network, enhancing the viability of development across the town.
- 2.3.12 In relation to *Facilitating the Creation of a More Sustainable Transport Network in Fenland*, Policy LP15 outlines its vision:



*‘The Council is seeking to deliver an integrated approach to transport in Fenland that is sustainable, facilitates growth, links town and country, encompasses cross boundary transport issues and improves accessibility for everyone by all modes of travel. An overarching aim of the Council is to reduce the need to travel, but, where travel is necessary, to minimise the distance needed to travel and increase the options available to undertake such journeys.’*

- 2.3.13 The MATS Improvement Schemes are aligned with a vision for a sustainable transport network across Fenland, helping to facilitate growth and improve links between town and country. Facilitating the regeneration of and improving access to March Town Centre, will reduce the need for longer distance travel away from the town, encouraging people to live, work and visit March as a destination of choice.
- 2.3.14 The MATS Improvement Schemes are also supported by a range of sustainable travel measures as detailed in the Pedestrian, Signage and Cycling Strategy (2020) document, produced during Stage 1 of the MATS. Further feasibility work has since been commissioned to assess, group, and prioritise the identified schemes into deliverable projects for preliminary and detailed design.
- 2.3.15 Policy LP15 also states that delivering the right transport related infrastructure, in the right place, at the right time, is essential if the transport vision is to be achieved. Specifically, in relation to strategic transport infrastructure, LP15 aims to:
- Improve and better manage the strategic road transport infrastructure, including A47, A141, A142, A605 and A1101, to allow for a range of users and increased capacity where appropriate and viable.
  - Improve and better manage the wider road infrastructure to benefit local communities including rural roads, and key transport links in market towns and villages.
- 2.3.16 The MATS Improvement Schemes propose targeted interventions along several of these defined routes, aiming to provide improved road infrastructure and capacity for the benefit of local residents and businesses.

#### Growing Fenland

- 2.3.17 Growing Fenland is a project to create four separate 'Masterplans for Growth' for each of Fenland's market towns - March, Wisbech, Chatteris and Whittlesey. These aim to bring jobs, infrastructure, and growth to market towns, enabling each to become and remain 'vibrant and thriving places' whilst helping to boost the local and regional economy and maximising their regeneration.
- 2.3.18 Through the Growing Fenland project, the CPCA is committed to the future prosperity and success of every market town in Cambridgeshire and is providing capital investment to mobilise each town masterplan and to act as a funding catalyst to secure additional investment. This approach aims to give each town its own starting point and evidence base to tailor and customise interventions to meet the distinctive needs of each local economy.



2.3.19 In relation to March, the *Growing Fenland - March: Market Town Masterplan*<sup>18</sup> was approved by the CPCA Board on 29<sup>th</sup> January 2020 and sets out a vision for March as follows:

*‘Our vision is that March will be a destination market town where people want to live and work. We will be a destination for shoppers and visitors looking to enjoy the revitalised high street. We will be a destination for employers looking for ambitious and highly skilled employees. We will be a destination for households looking for affordable homes in friendly, safe, attractive neighbourhoods.’*

2.3.20 To achieve this vision, the March Market Town Masterplan sets out a number of key proposals for improving March and the town centre. These include:

- Improving the appearance of the town centre with targeted interventions to enhance the overall appeal of the High Street and town centre areas, including measures to improve signage around the High Street and shop frontage improvement schemes.
- Reducing traffic flow through the town centre, highlighting existing issues with slow traffic flow speeds, poor air quality and the dominance of traffic within the town centre.
- A small to medium enterprise development programme, to encourage and support the development of new business and employment opportunities across the town.
- Improving the availability of properties within the town, recognising a need to bring together landowners, developers, and the local councils to ensure that March can continue to deliver the range of properties that the town needs for future years.

2.3.21 The MATS Improvement Schemes are directly aimed at addressing a number of the key proposals defined within the Growing Fenland March Masterplan, particularly around improving the appearance of the town centre and improving traffic flow conditions.

#### March Neighbourhood Plan

2.3.22 The March Neighbourhood Plan was adopted by FDC on 2<sup>nd</sup> November 2017.<sup>19</sup> It was produced by March Town Council in consultation with the community to help guide development in March in key areas in the period to 2030.

2.3.23 The plan does not replicate wider government policies such as the NPPF and the Fenland Local Plan but supports them by providing more clarity in a number of areas that the community considers to be important and necessary.

<sup>18</sup> [https://www.fenland.gov.uk/media/16601/Growing-Fenland---March-Final-Report/pdf/Growing\\_Fenland\\_-\\_March\\_Final\\_Report.pdf](https://www.fenland.gov.uk/media/16601/Growing-Fenland---March-Final-Report/pdf/Growing_Fenland_-_March_Final_Report.pdf)

<sup>19</sup> [https://www.marchtowncouncil.gov.uk/wp-content/uploads/March\\_Town\\_Neighbourhood\\_Plan\\_-\\_Referendum\\_Version\\_FINAL.pdf](https://www.marchtowncouncil.gov.uk/wp-content/uploads/March_Town_Neighbourhood_Plan_-_Referendum_Version_FINAL.pdf)

2.3.24 The plan provides a vision for the future of the community and sets out clear policies to help realise this vision in line with other national and local planning policy. This vision is:

*‘To improve the quality of life for people who live and/or work in March, including those who visit and depend on its services and facilities.’*

2.3.25 The key aims of the March Neighbourhood Plan are:

- That growth within the town is accommodated sustainably, with an objective to provide more certainty about the sequence of development across the town and the delivery of infrastructure.
- That new housing creates and maintains healthy mixed communities, with an objective to secure an appropriate mix of new housing informed by housing need.
- That March Town Centre becomes a shopping destination of choice for residents, businesses and visitors, with an objective to secure the appropriate regeneration of the town centre, tackling long-standing issues around traffic, parking, retail offer and environment.
- That the quality of the built and natural environment is improved, with an objective to secure high-quality development in all new schemes.
- That the level of provision and quality of recreational land facilities is increased and improved, with an objective to safeguard and improve all land and facilities of community importance and secure the provision of new land and facilities.

2.3.26 The MATS Improvement Schemes directly address the aims of the March Neighbourhood Plan and have been devised with direct consideration of these throughout the scheme development process.

## 2.4 Need for Change and Identified Issues

### Overall Need for Change

2.4.1 There is a need to identify specific challenges where transport issues present a barrier to progress across March when developing a clear set of targeted interventions and scheme objectives, to help the town maximise its future potential. This is set against a context of local planning and development policy to establish the overall need for change. Identified below are four broad themes that group the relative requirements for change and the associated issues into distinct categories. These are:

- The need for regeneration in March Town Centre
- The need to address existing traffic congestion and safety issues
- The need to facilitate housing and employment growth across March
- The need to improve local environmental conditions.

The MATS Broad Street Scheme will directly facilitate the regeneration of March Town Centre by re-configuring the existing transport infrastructure to provide more space for public realm and reduce existing congestion by replacing the traffic signal-controlled junction with a roundabout.

#### Regeneration in March Town Centre

- 2.4.2 There is both a pressing need and a strong local desire to encourage regeneration in and around March Town Centre. There are a number of areas within and close to the town centre in which it is felt that the quality of the built environment is having a detrimental effect on its attractiveness as a place to shop and visit, and that this is a disincentive for major retail chains to invest in the area.
- 2.4.3 Analysis has indicated that the retail vacancy rate for the area defined as March Town Centre was 3.3% in 2019, which has climbed steeply from 0.3% in 2015.<sup>20</sup> This compares unfavourably to a UK rate of 2.3% and is reflective of a significant decline. The impact of the COVID-19 lock downs during 2020 and 2021 will have had a further impact on retail vacancy rates with recent analysis, undertaken by the British Retail Consortium in May 2021, indicating that one in seven retail premises across Britain are now vacant, with vacancy rates of 14.1% in the East of England.<sup>21</sup>
- 2.4.4 In parallel to the MATS project, FDC's successful FHSF will fundamentally change the way in which March functions as a town centre. The MHCLG funding will deliver public realm improvements along Broad Street, the Riverside, and within the Market Square. This includes enhanced provision for pedestrians, changes to densification in use which will support a 24-hour economy, attracting businesses, and facilitating regeneration and resilience by opening up underused and derelict areas for commercial development. The purpose of this secured investment is to arrest the decline in March Town Centre and enable the area to make the most of its untapped potential. The changes proposed will facilitate economic growth and encourage further investment, as the town centre attracts more visitors.
- 2.4.5 The FHSF proposals have been designed to respond to local challenges and the wider strategic objectives of the FHSF programme. These include:
- **'Renew and Reshape Town Centres'** – the programme includes proposals which will 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 and densification in use which will support a 24-hour economy and support resilience,

<sup>20</sup> [https://www.fenland.gov.uk/media/16892/Growing-Fenland-March-Final-Report/pdf/Growing\\_Fenland\\_-\\_March\\_Final\\_Report.pdf?m=637272072374070000](https://www.fenland.gov.uk/media/16892/Growing-Fenland-March-Final-Report/pdf/Growing_Fenland_-_March_Final_Report.pdf?m=637272072374070000) (page 6)

<sup>21</sup> <https://www.bbc.co.uk/news/business-56925878>

and public realm improvements which will open up underused and derelict areas for commercial development.

- **‘Improve Experience’** – the improvements to Broad Street, and the Market Square public realm will ensure that existing custom is retained, while providing a new offer to businesses and the wider community. These improvements will be visual, environmental and experiential.
- **‘Drives Growth’** – the changes will tackle the existing financial viability gap and release new opportunities for the private sector to re-invigorate the town centre. The provision of mixed use and residential space will drive increases in footfall and dwell time, and help March capitalise on its unique historical and riverside assets.

2.4.6 Care has been taken to ensure that the proposed MATS intervention along Broad Street is aligned with the FHSF proposal, to ensure the boundaries of each scheme are integrated to reduce the dominance of traffic and parked vehicles, improve traffic flow conditions and maximise public realm. The FHSF proposals for Broad Street are dependent on the reallocation and realignment of carriageway in Broad Street, as proposed in the Broad Street MATS Improvement Scheme.

Again, the MATS Broad Street Scheme will directly facilitate the regeneration of March Town Centre by providing the transport infrastructure around which the FHSF proposals will be delivered.

#### Traffic Congestion and Safety Issues

- 2.4.7 There is an established need to address existing traffic congestion and road safety issues at a number of locations in and around March, as evidenced by historical studies of traffic and transport conditions within the town and work undertaken for the current MATS project. As part of the public engagement process to devise the March: Market Town Masterplan, residents consistently identified traffic congestion as one of the main issues in the town.
- 2.4.8 Existing traffic and travel conditions across March have been established in the Existing Conditions and Data Collection Report (2018) produced during Stage 1 of the MATS. This identified several specific locations and areas across March where traffic congestion was generating potential issues on the local highway network as described below.

- 2.4.9 A review of Satellite Navigation Data, supported by analysis of Automatic Number Plate Recognition (ANPR) data, provides an understanding of average vehicle speeds across March's road network during various daily time periods. During morning time periods between 08:00 and 09:00, areas within the town centre are shown to be congested, with a number of routes, including Broad Street, High Street, Station Road and Dartford Road, shown to have moderate and high levels of congestion. Slow traffic flow speeds and congestion is also observed at the Peas Hill Roundabout junction. A similar picture of congestion is shown during the evening (17:00 to 18:00) and inter-peak (14:00 to 15:00) time periods, with moderate and high levels of congestion observed across March Town Centre and along the A141 at the Peas Hill Roundabout junction.
- 2.4.10 A review of traffic survey queue length data at key junctions across March revealed that queue lengths were significantly higher within the town centre, particularly at the Broad Street / Station Road / Dartford Road junction, as well as along key routes into March (B1101 and A141).
- 2.4.11 Maximum queue length data indicate that B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction (188 metres), Peas Hill Roundabout (162 metres), and the Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane junction (147 metres) experience some of the highest maximum queues in the study area during the AM peak in the base year. Queuing at these junctions is of a similarly severe nature during the PM peak in the base year.
- 2.4.12 Junction capacity (LOS) data indicate that the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction is approaching capacity (LOS D in the AM and PM peaks) in the base year. It should also be noted that the Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane junction performs at LOS C (in the AM and PM peaks) in the base year.

Without intervention, forecast growth is expected to exacerbate existing issues of congestion and queueing along Broad Street, having an adverse impact on residents and compromising the sustainability of further long-term growth in the town.

The strategic and micro simulation modelling reported in the OAR demonstrate that the replacement of the traffic signal-controlled junction with a roundabout is expected to significantly reduce delay and queueing in March Town Centre.

2.4.13 A review of traffic collision data for 2015 to 2019 (pre-COVID-19 impacts) and 2017 to 2021 (including COVID-19 impacts) within March and in surrounding areas revealed several cluster areas across the local highway network where collisions have occurred in high frequency, including:

- March Town Centre, particularly along B1101 Broad Street, B1099 and Market Place
- The A141 / Gaul Road junction
- Peas Hill Roundabout (A141)
- The A141 / Twenty Foot Road junction.

2.4.14 These collisions are shown on a heatmap in Figure 2.3 below.



Figure 2.3: Collision Heatmap for March Pre-COVID-19 (2015 to 2019) and Including COVID-19 Impacts (2017 to 2021)

2.4.15 The heatmaps show that the densest collision hotspot is in March Town Centre, where improvements are being made by the MATS schemes. The A141 / Twenty Foot Road junction, and Peas Hill Roundabout (A141) are also more prominent collision hotspots on the heatmap, demonstrating a need for intervention at these locations.

2.4.16 One fatal traffic collisions occurred on the A141 just north of the A141 / A605 signalised junction during the 2015 to 2019 and 2017 to 2021 periods.



- 2.4.17 A comparison of accidents before and during Covid-19 pandemic has shown that the frequency of collisions has not significantly changed in the study area; 44 collisions occurred between 1<sup>st</sup> March 2020 and 31<sup>st</sup> December 2020 (i.e., during the Covid-19 pandemic) and 45 collisions occurred between 1<sup>st</sup> March 2019 and 31<sup>st</sup> December 2019 (i.e., before the Covid-19 pandemic).

Without an intervention, the likelihood of incidents occurring on Broad Street will increase.

A COBALT assessment of the accident benefits associated with the MATS Broad Street Scheme has demonstrated that the scheme will result in 129 fewer personal injury accidents across March over a 60-year appraisal period. There will be a reduction of one fatal, 11 serious, and 174 slight casualties over the whole appraisal period. Further information on the COBALT assessment can be found in the Economic Dimension.

#### Housing and Employment Growth Aspirations

- 2.4.18 As defined in previous sections, significant housing and employment growth is proposed in and around March within the adopted Local Plan period to 2031. These developments will bring growth in traffic demand and additional vehicle trips onto the road network. Without a targeted intervention to address this, it would exacerbate the existing congestion issues across March (as defined above).
- 2.4.19 Future year traffic modelling and forecasting has been undertaken and is documented in the March Forecasting Report (2019) produced during Stage 1 of the MATS. It details the relative impact of housing and employment growth aspirations on the local highway network in future years. This revealed an increase in journey times and traffic flows above existing conditions, along key routes into and around March, notably along the B1101 and A141.
- 2.4.20 A review of the performance of individual junctions in future years (2026 and 2031) revealed an increase in average vehicle delay and traffic flow demand across March. The MATS has demonstrated that some form of highway intervention at these locations would be required to mitigate the impact of adopted Fenland Local Plan housing and employment growth aspirations for March.
- 2.4.21 Severe queueing is forecast at several junctions in the study area in 2031. For example, during the AM peak, Peas Hill Roundabout is forecast to experience the highest maximum queue lengths in the study area (965 metres) and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction is forecast to experience the second highest maximum queue lengths in the study area (598 metres). Without mitigation, the highways network in March will be unable to support the impact of adopted Fenland Local Plan housing and employment growth.



Without intervention, forecast growth is expected to exacerbate existing issues of congestion and queueing along Broad Street, having an adverse impact on residents and compromising the sustainability of further long-term growth in the town.

The MATS Broad Street Scheme will support the delivery of housing and employment growth across March by removing a key capacity constraint on a critical part of the town's transport network, whilst also contributing to the regeneration of Broad Street and the economic benefit that will bring.

### Improving Local Environmental Conditions

- 2.4.22 There is a need to improve local environmental conditions across March, particularly in the town centre and Broad Street Area.
- 2.4.23 Analysis undertaken of local air quality monitoring stations revealed that the twelve-month average concentration of NO<sub>2</sub> on Broad Street for 2018 was 39.59 µg/m<sup>3</sup>, close to the current legal limit of 40.00 µg/m<sup>3</sup>.<sup>22</sup> This is driven by congestion and slow-moving traffic in the Broad Street area, particularly around the Broad Street / Station Road / Dartford Road junction traffic signals. There is a pressing need to address air quality issues at this location to prevent a further deterioration of conditions in future years.
- 2.4.24 In addition, there is a strong local desire to revitalise the townscape and built environment across March and encourage town centre regeneration. The March: Market Town Masterplan notes that the town has a number of under-utilised natural and heritage assets overshadowed by highly visible derelict eyesores, such as the long-vacant Indoor Market, vacated shop frontages and dilapidated buildings at the top of Broad Street.
- 2.4.25 These factors are driving a pressing need to make better use of the towns-built environment and to ensure measures to improve the overall aesthetic of the town are brought forward and not limited by traffic and transport issues.

The MATS Broad Street Scheme will improve air quality by significantly reduce queues and idling traffic along Broad Street through the removal of the traffic signal-controlled junction. Section 3.5 of the Economic Dimension has demonstrated the MATS package will provide an air quality benefit.

<sup>22</sup> Growing Fenland - March: A Destination Market Town, Market Town Masterplan (2019), page 15

## 2.5 Internal Drivers for Change

- 2.5.1 Internal drivers for change are factors that are driving the need for change, and come from the scheme promoter, such as aspirations for growth, or to increase network resilience.

### Local Growth Aspirations

- 2.5.2 The overall need for change is being driven by local growth and development aspirations for March from various local and regional authority bodies as has been defined in Sections 2.2 and 2.3.

### CCC / CPCA Support

- 2.5.3 The MATS Improvement Schemes are endorsed by various local authority bodies, including the CPCA, CCC and FDC.
- 2.5.4 The CPCA Mayoral and the CCC Local Government election results of 6<sup>th</sup> May 2021 have resulted in a change of political representation for both authorities, however, the CPCA, CCC and FDC remain unanimous in their support for the MATS Improvement Schemes.

The MATS Broad Street Scheme is being driven by local growth aspirations and the need to address existing issues associated with traffic congestion, personal injury incidents and air quality (specifically along Broad Street).

## 2.6 External Drivers for Change

- 2.6.1 External drivers for change come from outside the scheme promoter's organisation, and include factors such as public opinion, legislative changes or as a response to specific events.
- 2.6.2 Part of the requirement for change is being driven by a need to regenerate March Town Centre, with the successful FHSF funding allocation from MHCLG now approved. The FHSF funding will drive the requirement to redesign the transport and highway carriageway infrastructure alignment along Broad Street, to accommodate the FHSF proposals.

The award of FHSF for March Town Centre is an external driver for the MATS Broad Street Scheme and has played a significant part in shaping the final design. As its funding is time limited, the FHSF project is also driving the delivery programme for the MATS Broad Street Scheme and has necessitated the phased approach being taken towards the MATS FBCs.

- 2.6.3 While there are no specific external drivers for change associated with the MATS Improvement Schemes themselves, significant historic consultation with residents has identified clear support for addressing issues identified in Section 2.4.

## 2.7 Scheme Constraints, Powers and Consents

2.7.1 A number of potential constraints on the MATS Improvement Schemes have been identified that will need to be considered as part of the scheme's continued development and design. These include:

- **Funding:** Funding for the construction of the MATS Improvement Schemes requires identification and confirmation from the CPCA and CCC. Details of possible funding sources and mechanisms to secure these funds are provided in the Financial Dimension (section 4) of this FBC1. The schemes will need to compete with other transport infrastructure funding priorities which may exceed the CPCA's and CCC's core transport investment budget allocations.
- **Land Availability and Access:** The acquisition of land is likely to be required for interventions at three of the MATS locations which involve the development of new sections of highway or require an extension to the existing highway boundary. Additional land access may also be required during development and construction of a number of the proposed schemes. Specifically, option design refinement has identified the potential requirement for a small strip of land from a private landowner for the scheme proposals at Peas Hill Roundabout and the NILR. The requirement for land acquisition has also been identified on the A141 / Twenty Foot Road scheme. Permission to access Network Rail land is also being sought for Preliminary Design surveys relating to the NILR proposal. There is also a likely land requirement at the A141 / Hostmoor Avenue Junction. Further details are provided in the options development section in 2.13, below.
- **Planning:** Planning permission is likely to be required for any individual scheme elements that involve a change of land use and represent an extension or change to the existing highway boundary. CCC has commissioned a report to review the delivery of the MATS Improvement Schemes from a planning perspective.<sup>23</sup> The report provides recommendations in relation to planning risks and key technical document requirements for each of the MATS Improvement Schemes, which has been taken into full consideration throughout the development of the Detailed Designs and respective FBCs.
- **Spatial Constraints and the Built Environment:** Proposed interventions will need to be developed within the land available. A number of locations within the study area, notably around Broad Street and in the town centre, are constrained by the built environment as well as locally important historic structures which will need to be accounted for in scheme design. Consultation with Historic England and FDC's Conservation Officer has been undertaken during the Detailed Design phase (as part of the FHSF project) to ensure that such constraints are appropriately considered. The FHSF (and MATS by virtue of that) have the required support for the scheme.

<sup>23</sup> March Strategic Study Planning Report (Carter Jonas, July 2021)

- **Construction Programming:** Efforts will be made to minimise the overall impact on road users during scheme construction. Construction of various elements of the proposed schemes should be undertaken with consideration to other highway works across March to avoid a cumulative negative impact on road users. The delivery of the Broad Street MATS proposal will be aligned to the delivery of the FHSF Broad Street and Riverside proposals.
- **Stakeholder / Public Acceptability:** The schemes should be acceptable to and be supported by key stakeholders impacted by scheme proposals, as well as members of the public. Further details regarding stakeholder engagement are detailed below in Section 2.9.
- **Environmental Constraints:** Scheme design and delivery proposals will need to take account of local ecological receptors, protected land and Habitats of Principle Importance within the defined study area.

- **Funding:** Funding has been allocated for the MATS Broad Street Scheme subject to approval at CPCA Board. This funding is constrained by time limitations as described in the Financial Dimension and the construction programme and business case structure has been developed to reflect that.
- **Land availability of Access:** There is no land acquisition required for the MATS Broad Street Scheme.
- **Planning:** There are no planning requirements associated with the MATS Broad Street Scheme. As part of the FHSF Broad Street Scheme, a listed building consent and planning application have been submitted to allow for the relocation of the Grade II Listed, 110-year-old cast iron ornamental water fountain (NGR: TL4168196865) from its current location in the central carriageway island to the adjacent new public realm area. An application for consent will also be made as part of the FHSF Broad Street Scheme to remove two London Plane trees from Broad Street to Fenland District Council by mid December 2022. Eight new trees will be replaced as part of the March Future High Street Public Realm Scheme. Although these consents and approvals are beyond the scope of the MATS Broad Street Scheme, they clearly have the ability to impact on it. This has been identified as a project risk and will continue to be monitored and managed appropriately.
- **Spatial Constraints and Built Environment:** The MATS Broad Street Scheme will be built in a busy, complex and heavily constrained space. Careful consideration has been given to this during the Detailed Design phase and there has been the appropriate level of engagement with statutory and non-statutory stakeholders, including with those representing the businesses along Broad Street.
- **Construction Programming:** Efforts have been made to minimise the construction impacts through careful coordination of the MATS and FHSF delivery plans. Contractor commitments have been secured as part of procurement to maintain access to the shops and businesses throughout the construction period. Given the sensitivity of the location in March, and to avoid significant cumulative impacts, no other large-scale roadworks will occur in March whilst the MATS Broad Street Scheme is under construction.

1. **Stakeholder / Public Acceptability:** The MATS Broad Street Scheme has undergone multiple rounds of stakeholder and public engagement and is considered acceptable. Further information on the consultation undertaken to date is provided in Section 2.9 of the Strategic Dimension and Section 6.7 of the Management Dimension.
2. **Environmental Constraints:** The MATS Broad Street Scheme is not environmentally sensitive, and there are no environmental constraints limiting the construction of the scheme so long as appropriate management and mitigation measures are taken. The wider FHSF Broad Street Scheme does have environmental constraints, mostly relating to heritage assets flood risk and ecology (bats) and these will be carefully monitored as part of the FHSF project.

- 2.7.2 In addition to the constraints listed above, the following powers and consents are required to deliver the MATS schemes.



Table 2.1: Powers and Consents Table – MATS Broad Street Scheme

Type	Consent / Approval	Issuer	Description	Current Status
Highways	TTRO	Cambridgeshire County Council	Suspension of existing parking bays	PAA has gone in for the road space booking. TTRO 's submitted and advertised.
	PTRO	Cambridgeshire County Council	New Changes to the highway including parking ban, waiting restrictions and extension of the footway	Will be progressed in March 2023. Agreement in principal agreed with CCC/HA.
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles		Geotech assessments undertaken for pavements and paved area. Full carriageway construction	Completed
Environment	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	Undertaken and delivering a BNG.	Completed
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	LLFA engaged throughout design process. Agreement in principle to proceed.	Consultation has been carried out with the LLFA who have reviewed the attenuation plans for the scheme and are satisfied with the mitigation measures proposed.
	Great Crested Newt (GCN) and/or Reptile Mitigation License	Natural England	Ecology Survey undertaken	No significant risk of impact. No evidence of GCN within site extent.
Design	RSA2	Cambridgeshire County Council	RSA 2 has been undertaken and designers response provided. No significant issues raised.	CCC to sign off.
	Drainage Consents	Statutory Undertakers	N/A. Drainage attenuation plans are geared to discharge into the Local river - Nene River. This has been reviewed by the Local flood authority and MLC.	Agreement in principle with both authorities in place. Final sign off progressing.
Governance	Cabinet Report	CCC	OBC and Preliminary design agreed at November 2021 H&T Committee to accept the development of detailed design and FBC phase.  Update provided to April 2022 H&T Committee. Approval agreed to accept funding from CPCA to undertake construction work, enter into a GFA, engage in procurement process and award.	Complete
Other	Planning	FDC	Planning Consent to relocate historic water fountain on Broad Street	Planning application submitted. Decision due January 2023.
Other	Planning	FDC	Consent to remove trees from conservation area	Arborcultural Impact Assessment undertaken. Approval in principal agreed with FDC aborcultural officer.

Table 2.2: Powers and Consents Table – MATS St Peter's Road Scheme

Type	Consent / Approval	Issuer	Description	Current Status
Highways	PTRO	Cambridgeshire County Council	Permanent Traffic Regulation Order allowing permanent restrictions to the road allowing the introductions of improvements	N/A
	TTRO	National Highways	Temporary Traffic Regulation Order allowing temporary restrictions to the road, enabling traffic management required for construction.	Will be sought prior to construction. Temporary road space booking to be confirmed once construction programme finalised.
Environment	Site of Specific Scientific Interest (SSSI)	Natural England	No protected site (SSSI) within the vicinity of the site	N/A
	Special Area of Conservation (SAC)	Natural England	No SAC site within vicinity of the site	N/A
	Screening for Likely Significant Effect (LSE) Assessment	Local Planning Authority	N/A	N/A
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles		N/A	N/A
	Consultation	The Wild Life Trust	N/A	N/A
	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	No loss of vegetation as the site is wholly within an urban setting	N/A
	Great Crested Newt (GCN) or Reptile Mitigation license	Natural England	No impact on any GCN population	No further action required
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	Drainage design complete and reviewed by CCC flood authority	
Design	RSA2	Cambridgeshire County Council	Stage 1 completed. RSA 2 to be completed in detailed design in January 2023	RSA 2 to be completed in January 2023
	National Highways Technical Approval	National Highways	N/A	
	Drainage Consents	Statutory Undertakes	None required	
	Side Road Orders (SRO)	Cambridgeshire County Council	N/A	
Governance	Change in Equestrian Route	British Horse Society	N/A	
Governance	Cabinet Report		Initial Governance will be approval of FBC1 by Cambridge and Peterborough Joint Authority in March 2023	FBC 1 being prepared to feed into CPCA governance process in January 2023

Table 2.3: Powers and Consents Table – MATS Peas Hill Roundabout Schemes

Type	Consent / Approval	Issuer	Description	Current Status
Highways	TTRO	Cambridgeshire County Council	Temporary Traffic Regulation Order allowing temporary restrictions to the road, enabling traffic management required for construction.	Initial consultation already held with the CCC Traffic Orders team in October 2022 to clarify timescales and processes for temporary and permanent traffic orders. Temporary traffic orders to be sought before the start of construction.
	PTRO	National Highways	PTRO will be required to implement new speed limit. But the application will be made to the County council rather than National Highways	Consultation held with Cambridgeshire County Council Traffic Orders team in October 2022. Permanent traffic order requirements agreed - for any change of speed limit only
Environment	Site of Specific Scientific Interest (SSSI)	Natural England	There are no statutory sites located within 1km of the scheme and no non-statutory sites located within 500m of the scheme	Sites for conservation not considered to be a constraint to the scheme but a Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Special Area of Conservation (SAC)	Natural England	There are no statutory sites located within 1km of the scheme and no non-statutory sites located within 500m of the scheme	Sites for conservation not considered to be a constraint to the scheme but a Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Screening for Likely Significant Effect (LSE) Assessment	Local Planning Authority	Initial assessments indicate no significant effects	Further assessments to be done in the lead up to planning including a Habitat Regulation Assessment Screening report which will be produced in FBC 2 as part of an Outline Planning Application
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles	Cambridgeshire County Council	Archaeological assessments and any required surveys will be carried out in advance of submitting an outline planning application during FBC 2 in 2023. Geotechnical surveys already completed	CCC Archaeological team consulted and to be engaged in the pre-outline planning application process and subsequent construction period. Shapefile data for geotechnical surveys to be shared once available.
	Consultation	The Wild Life Trust	N/A	N/A
	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	Consultation required with Cambridgeshire City Council upon completion of initial BNG Assessment to ensure that a 20% positive BNG is achieved in accordance with organisational targets.	Preliminary Ecological Assessment undertaken in September 2022 with some initial recommendations made for taking forward Biodiversity Net Gain. These will feed into the preparation of a BNG plan for the planning application in 2023 during FBC 2
	Great Crested Newt (GCN) or Reptile Mitigation license	Natural England	Initial surveys have identified 50 field drains and 2 ponds within 500m of the proposed scheme	Both ponds were dry during the survey carried out in August 2022. Further surveys will be required to identify the presence of GCN next year. Risk of GCN presence is regarded as low
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	An initial flood risk assessment has been undertaken in August 2022. The River Nene (Old Course) flows approximately 500m to the south and the Twenty Foot river about 3km to the north. The proposed scheme is located mainly within Flood Zone 3a with small sections in flood zone 1 and 2. in an area benefitting from established EA defences. Fluvial and tidal flood risk is considered low. Certain locations are considered high risk due to topographical depressions around the north east of Peas Hill and Hotsmoor Ave. The drainage strategy utilises existing networks and new ones to offset these challenges and mitigate the consequent risks	Further assessments will be undertaken in the lead up to Planning in FBC 2 next year. Flood assessment has already been reviewed by the local Flood lead and will be continued in FBC 2
Design	RSA2	Cambridgeshire County Council	RSA 2 is scheduled to be completed as part of the detailed design	RSA 2 is scheduled to be completed in January 2023
	CCC Highways Authority	National Highways	Design reviewed and approved by CCC technical leads	Design reviewed and approved by CCC technical leads
	Drainage Consents	Statutory Undertakes	Drainage design completed. Anglian water present	Further engagement with IDB to be undertaken in FBC 2 next year (2023)
	Side Road Orders (SRO)	Cambridgeshire County Council	Side Road orders might be required if accessways to private property are modified to improve buildability	Further details on possible accessways changes to emerge by the end of detailed design in early 2023
Governance	Change in Equestrian Route	British Horse Society	N/A	N/A
Governance	Cabinet Report	CPCA	Initial Governance will be approval of FBC1 by Cambridge and Peterborough Joint Authority in March 2023	FBC 1 being prepared to feed into CPCA governance process in January 2023

Table 2.4: Powers and Consents Table – MATS Hostmoor Avenue Scheme

Type	Consent / Approval	Issuer	Description	Current Status
Highways	TTRO	Cambridgeshire County Council	Temporary Traffic Regulation Order allowing temporary restrictions to the road, enabling traffic management required for construction.	Initial consultation already held with the CCC Traffic Orders team to clarify timescales and processes for temporary and permanent traffic orders. Temporary traffic orders to be sought before the start of construction. Permanent traffic orders will be required for speed limit changes, maintenance hardstanding and right turns.
	PTRO	National Highways	PTRO will be required to implement new speed limit. But the application will be made to the County council rather than National Highways	Consultation held with Cambridgeshire County Council Traffic Orders team in October 2022. Permanent traffic order requirements agreed - for any change of speed limit only and for the new maintenance bay for the traffic signals at Hotmoor
Environment	Site of Specific Scientific Interest (SSSI)	Natural England	There are no statutory sites located within 1km of the scheme and no non-statutory sites located within 500m of the scheme	Sites for conservation not considered to be a constraint to the scheme but a Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Special Area of Conservation (SAC)	Natural England	There are no statutory sites located within 1km of the scheme and no non-statutory sites located within 500m of the scheme	Sites for conservation not considered to be a constraint to the scheme
	Screening for Likely Significant Effect (LSE) Assessment	Local Planning Authority	Initial assessments indicate no significant effects	Further assessments to be done in the lead up to planning including a Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles	Cambridgeshire County Council	Archaeological assessments and any required surveys will be carried out in advance of submitting an outline planning application during FBC 2 in 2023. Geotechnical surveys already completed	CCC Archaeological team consulted and to be engaged in the pre-outline planning application process and subsequent construction period. Shapefile data for geotechnical surveys to be shared once available.
	Consultation	The Wild Life Trust	N/A	N/A
	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	Consultation required with Cambridgeshire City Council upon completion of initial BNG Assessment to ensure that a 20% positive BNG is achieved in accordance with organisational targets.	Preliminary Ecological Assessment undertaken in September 2022 with some initial recommendations made for taking forward Biodiversity Net Gain. These will feed into the preparation of a BNG plan for the planning application in 2023
	Great Crested Newt (GCN) or Reptile Mitigation license	Natural England	Initial surveys have identified 50 field drains and 2 ponds within 500m of the proposed scheme	Further surveys expected in the lead up to planning, however risks remain low
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	An initial flood risk assessment has been undertaken in August 2022. The River Nene (Old Course) flows approximately 500m to the south and the Twenty Foot river about 3km to the north. The proposed scheme is located mainly within Flood Zone 3a with small sections in flood zone 1 and 2. in an area benefitting from established EA defences. Fluvial and tidal flood risk is considered low. Certain locations are considered high risk due to topographical depressions around the north east of Peas Hill and Hotmoor Ave. The drainage strategy utilises existing networks and new ones to offset these challenges and mitigate the consequent risks	Further assessments will be undertaken in the lead up to Planning in FBC 2 next year. Flood assessment has already been reviewed by the local Flood lead and will be continued in FBC 2
Design	RSA2	Cambridgeshire County Council	RSA 2 is scheduled to be completed as part of the detailed design	RSA 2 is scheduled to be completed in January 2023
	Design approval	CCC	Design reviewed and approved by CCC technical leads	Design reviewed and approved by CCC technical leads
	Drainage Consents	Statutory Undertakes	Drainage consents complete. Initial engagement with the CCC flood team and IDB raise no major issue	Further engagement with IDB to be undertaken in FBC 2 next year (2023)
	Side Road Orders (SRO)	Cambridgeshire County Council	Land take required. Side Roads Order	
Governance	Change in Equestrian Route	British Horse Society	N/A	
Governance	Cabinet Report	CPCA	Initial Governance will be approval of FBC1 by Cambridge and Peterborough Joint Authority in March 2023	FBC 1 being prepared to feed into CPCA governance process in January 2023

Table 2.5: Powers and Consents Table – MATS Twenty Foot Road Scheme

Type	Consent / Approval	Issuer	Description	Current Status
Highways	TTRO	Cambridgeshire County Council	Temporary Traffic Regulation Order allowing temporary restrictions to the road, enabling traffic management required for construction.	Initial consultation already held with the CCC Traffic Orders team to clarify timescales and processes for temporary and permanent traffic orders. Temporary traffic orders to be sought before the start of construction. Permanent traffic orders will be required for speed limit changes, maintenance hardstanding and right turns.
	PTRO	Cambridgeshire County Council	PTRO will be required to implement any new speed limit. But the application will be made to the County council rather than National Highways	Consultation held with Cambridgeshire County Council Traffic Orders team in October 2022. Permanent traffic order requirements agreed - for any change of speed limit and provision of signals maintenance bay on Twenty Foot Road
Environment	Site of Specific Scientific Interest (SSSI)	Natural England	Nene Washes which is an SSSI site lies within 1.2km of the site	The site appears to lay outside the 1km bandwidth for protected sites. However consultation with Natural England will still be undertaken in the lead up to planning
	Special Area of Conservation (SAC)	Natural England	Nene Washes which is an SSSI site lies within 1.2km of the site	The site appears to lay outside the 1km bandwidth for protected sites. However consultation with Natural England will still be undertaken in the lead up to planning
	Screening for Likely Significant Effect (LSE) Assessment	Local Planning Authority	Initial assessments indicate no significant effects. Rings End Local Nature Reserve is 690m to the NE of the site	Further assessments to be done in the lead up to planning Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles	Cambridgeshire County Council	Archaeological assessments and any required surveys will be carried out in advance of submitting an outline planning application during FBC 2 in 2023. Geotechnical surveys already completed	CCC Archaeological team consulted and will be engaged in the pre-outline planning application process and subsequent construction period. Shapefile data for geotechnical surveys to be shared once available.
	Consultation	The Wild Life Trust	N/A	N/A
	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	Consultation required with Cambridgeshire City Council upon completion of initial BNG Assessment to ensure that a 20% positive BNG is achieved in accordance with organisational targets.	Preliminary Ecological Assessment undertaken in September 2022 with some initial recommendations made for taking forward Biodiversity Net Gain. These will feed into the preparation of a BNG plan for the planning application in 2023
	Great Crested Newt (GCN) or Reptile Mitigation license	Natural England	Further surveys for great crested newts are not considered necessary. This is due to no GCN's having been detected. Further surveys not required due to an absence of suitable breeding ponds within 500m of the proposed scheme	No further Surveys required
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	The proposed scheme traverses Flood Zone 1, Zone 2 and Zone 3. The section of the scheme within Flood Zone 3 is part of an area benefitting from defences and will not require mitigation. Overall the proposed development site is considered to be at medium risk from fluvial flooding. Risk from surface water flooding is considered to be low	Further assessments will be undertaken in the lead up to Planning in FBC 2 next year. Flood assessment has already been reviewed by the local Flood lead and will be continued in FBC 2
Design	RSA2	Cambridgeshire County Council	RSA 2 is scheduled to be completed as part of the detailed design	RSA 2 is scheduled to be completed in January 2023
	Highway Design	CCC	Design reviewed and approved by CCC technical leads	Design reviewed and approved by CCC technical leads
	Drainage Consents	Statutory Undertakes	Drainage consents complete. Initial engagement with the CCC flood team and IDB raise no major issue	Further engagement with IDB to be undertaken in FBC 2 next year (2023)
	Side Road Orders (SRO)	Cambridgeshire County Council	Side Road order will be required to stop up section of Twenty Foot Road	Land agent to be engaged in FBC 2 to take acquisition and engagement forward with impacted parties
Governance	Change in Equestrian Route	British Horse Society	N/A	N/A
Governance	Cabinet Report	CPCA	Initial Governance will be approval of FBC1 by Cambridge and Peterborough Joint Authority in March 2023	FBC 1 being prepared to feed into CPCA governance process in January 2023

Table 2.6: Powers and Consents Table – MATS NILR Scheme

Type	Consent / Approval	Issuer	Description	Current Status
Highways	PTRO	Cambridgeshire County Council	A PTRO will be required to provide a cycle lane as proposed by the scheme	Initial discussions have been held with the CCC traffic orders team on the scope and schedule of the traffic orders process, pre-
	TTRO	Cambridgeshire County Council	TTRO will be required during the pre-construction stage.	Initial discussions have been held with the CCC traffic orders team on the scope and schedule of the traffic orders process, pre-construction
Environment	Site of Specific Scientific Interest (SSSI)	Natural England	Rings End Local Nature Reserve is located 1.6km from the proposed scheme	Sites for conservation not considered to be a constraint to the scheme
	Special Area of Conservation (SAC)	Natural England	Nene Washes which is an SSSI site lies within 3.6 km of the site	A Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Screening for Likely Significant Effect (LSE) Assessment	Local Planning Authority	Initial assessments indicate no significant effects	Further assessments to be done in the lead up to planning including a Habitat Regulation Assessment Screening report will be produced in FBC 2 as part of an Outline Planning Application
	Archaeological Watching Brief & Supply of Geotechnical Survey Shapefiles	Cambridgeshire County Council	Archaeological assessments and any required surveys will be carried it in advance of submitting an outline planning application during FBC 2 in 2023. Geotechnical surveys already completed	CCC Archaeological team consulted and to be engaged in the pre-outline planning application process and subsequent construction period. Shapefile data for geotechnical surveys to be shared once available.
	Consultation	The Wild Life Trust	N/A	N/A
	Bio Diversity Net Gain Assessment	Cambridgeshire County Council	Consultation required with Cambridgeshire City Council upon completion of initial BNG Assessment to ensure that a 20% positive BNG is achieved in accordance with organisational targets.	A BNG assessment should be undertaken using the Biodiversity Metric 3.1 published by Natural. This
	Great Crested Newt (GCN) or Reptile Mitigation license	Natural England	Desktop assessments have confirmed that great crested newts are present in four waterbodies within 500 m of the proposed scheme. Great crested newts have also been recorded northeast of the proposed scheme footprint at Norwood Farm. There are at least eight ponds within 250 m of the proposed works where no data is available with some ponds immediately adjacent to the proposed scheme	Surveys will be required to ascertain the presence of Newts around the site of the proposed schemes
	Land Drainage Consent	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	a WFD Screening and Scoping assessment will be required to demonstrate that the design is compliant with WFD	Flood risk assessment completed and reviewed by Cambridgeshire Flood leads.
Design	RSA2	Cambridgeshire County Council	RSA 2 is scheduled to be completed as part of the detailed design	RSA 2 is scheduled to be completed in January 2023
	National Highways/Network Rail Technical Approval	Network Rail/CCC	Design reviewed and approved by CCC technical leads. BAPA agreed with Network Rail	Design reviewed and approved by CCC technical leads
	Drainage Consents	Internal Drainage Board (IDB) and/or Lead Local Flood Authority (LLFA)	The proposed scheme is located about 0.6 km from the Twenty Foot River and is within flood zone 1. The fluvial flood risk is adjudged as low. The surface flood risk is regarded as high on large sections of Longhill Road and Hundred Road, but low on the Elm Road section. The drainage design is calibrated to mitigate these risks with the use of enlarged drains and gullies to mitigate these risks	Initial flood risk assessment undertaken and reviewed by Cambridgeshire Flood authority. No major impact on flooding. Engagement with flood authority to continue during detailed design
	Side Road Orders (SRO)	Cambridgeshire County Council	Land will be required for the scheme which might need a full CPO process	CPO process and any associated Side Road Order will be progressed during detailed design
Governance	Change in Equestrian Route	British Horse Society	N/A	N/A
Governance	Cabinet Report	CPCA	Initial Governance will be approval of FBC1 by Cambridge and Peterborough Joint Authority in March 2023	FBC 1 being prepared to feed into CPCA governance process in January 2023

2.7.3 All of these powers and approvals can be obtained by Cambridgeshire County Council and do not represent a risk to delivery.



## 2.8 Scheme Interdependencies

- 2.8.1 In business case terms, an interdependency is defined as an internal or external factor upon which the successful delivery of a project is dependent. In addition to the constraints and factors influencing the proposed schemes mentioned in Section 3.7, a number of other planning, transport and town regeneration schemes are concurrently being developed for March, addressing specific transport related issues in different areas of the town. Further details of specific schemes are set out below, as is their relationship to the MATS project and the current schemes.

### Hostmoor Avenue Planning Applications

- 2.8.2 There are several live and anticipated planning applications in the vicinity of the A141 / Hostmoor Avenue Junction which are expected to have a future impact on the junction's operation. These include two sites directly to the east of the junction (one for a food store and one for a fast-food restaurant) which have submitted live planning applications, and a site to the west of the junction which has permitted planning permission for a retail park<sup>24</sup>.
- 2.8.3 Growth from each of these developments has been considered within the assessment undertaken by the MATS project, ensuring that the scheme design can accommodate future trips generated by these sites.
- 2.8.4 The MATS project itself is not dependent on these developments, and alternate junction forms have been tested and proven to operate at this location should the development sites not come forward. Further information on the relationship between the MATS schemes and any live or permitted planning applications within the vicinity of Hostmoor Avenue will be provided in FBC2 when details of the A141 / Peas Hill Roundabout and A141 / Hostmoor Avenue schemes are finalised.

### Local Plan Growth Sites

- 2.8.5 The MATS Improvement Schemes have been developed to help support local housing and employment growth ambitions, with interventions tailored around specific Strategic Allocations and Broad Locations for Growth, as defined in the Adopted Fenland Local Plan (2014). A failure to partially or fully realise these growth ambitions has the potential to impact upon the overall viability and business case for specific highway interventions and the level of benefit realised post construction. This relationship has been explored through sensitivity testing undertaken as part of the Economic Dimension and is reported in Section 3.6.

<sup>24</sup> 1) F/YR19/1093/F - Erection of a A3 / A5 two-storey drive-thru restaurant / takeaway with associated parking and new access onto Hostmoor Avenue, 2) F/YR21/0885/F – Erection of a Class E(a) retail food store with associated parking and new access onto Hostmoor Avenue, 3) F/YR15/0640/F – Westry Retail Park.

Sensitivity testing has been undertaken to ascertain the impact of reduced levels of Local Plan growth on the MATS Broad Street Scheme and has demonstrated that the scheme would still return Very High Value for Money (BCR 5.87) if lower than expected levels of growth occurred.

#### Future High Street Fund Scheme

- 2.8.6 The FHSF proposals for March Town Centre include public realm proposals for Broad Street, the adjacent river frontage on the River Nene, the Market Square, and a town centre wide vacant unit's activation programme. These proposals will deliver significant public realm improvements to the Broad Street, Riverside and Market Square areas of the town centre, including enhanced provision for pedestrians.
- 2.8.7 The FHSF proposals and MATS Improvement Schemes have been developed in parallel, with regular dialogue between the two projects and the design of each intervention complementing the other. Strong synergies between both schemes will deliver the greatest impact along Broad Street, the Market Square and within March Town Centre.
- 2.8.8 The scope of the MATS and FHSF schemes is shown in Figure 2.4 beneath, with the extent of the MATS scheme shown in purple and the extents of the FHSF scheme shown in blue and green.



Figure 2.4: Extents of MATS and FHSF Broad Street Schemes

- 2.8.9 Following the successful FHSF funding award, the Detailed Design phase of both projects has been closely aligned and managed by CCC through a single reporting and governance process, resulting in a joint procurement exercise and combined construction plan. Further information on the procurement is provided in the Commercial Dimension.

The MATS Broad Street Scheme and the FHSF Broad Street proposals are mutually dependent on each other and have been developed in parallel. A single procurement exercise has been undertaken for both projects and these will be delivered as a single scheme by the same contractor to ensure consistency. Although the FHSF proposals are beyond the scope of this business case, which is only focused on the MATS schemes, the interdependency between the two has been carefully considered throughout.

#### March Railway Station Masterplan and CPCA Fenland Station Regeneration Project

- 2.8.10 The MATS Improvement Schemes will aim to complement proposals for the area around March Railway Station, identified through the March Railway Station Masterplan Strategy, 2006. The Masterplan, produced by FDC and the Hereward Community Rail Partnership, identified a range of improvements for the station and car park area to enhance access for passengers arriving or leaving March Railway Station by foot, cycle, bus and car. The status of these improvements is as follows:

- Refurbishing existing buildings and creating community use buildings. This was completed in 2022.
- Providing a new station car park. The existing car park was refurbished and remodelled in 2022. A large extension was also provided. The new station car park will now provide the short and medium term needs of March Station.
- Refurbishing the existing canopy on the disused platform, alongside an art project. This proposal is still to be progressed. Additional feasibility and survey work indicated that the canopy and the wall have deteriorated more than thought, and alternative funding is now being sought for this project which is larger and more substantial than previously considered.
- The provision of secure station cycle parking is now in place on the station platform, comprising of double height racks. This was completed in 2022.
- Improving pedestrian crossing facilities across Station Approach. This project is still to be progressed.
- Wayfinding signage improvements providing additional signage to March Railway Station from the town centre and from the industrial area, were installed in 2019 / 2020.
- Investigating options to improve interchange access to local bus services on Station Road (B1101), including the relocation of existing bus stop facilities. This was completed in 2022.

2.8.11 The Fenland Station Regeneration Project is a CPCA registered project with funding secured from the CPCA to progress the improvements listed above, including the new station car park and bus interchange access. Further details can be found at the link below.<sup>25</sup>

2.8.12 While the proposals relating to the March Railway Station Masterplan are not critical to the MATS Improvement Schemes, successful delivery of both schemes will enhance the benefits realised by each and will aid both schemes in achieving their stated objectives.

#### March Pedestrian, Signage and Cycling Strategy

2.8.13 The MATS Improvement Schemes will be complimented by the proposals and recommendations of the March Pedestrian, Signage and Cycling Strategy, which has identified a range of costed improvements for pedestrian, signage and cycling provision across March, totalling over £1 million.

<sup>25</sup> <https://www.fenland.gov.uk/article/15122/Railway-Station-Masterplans>

2.8.14 The Strategy consists of three packages of work, as follows:

- Walking and cycling audits, providing improvement proposals for pedestrian and cycling provision on six key route corridors in March:
  - Broad Street, Grays Lane, Nene Parade
  - High Street, The Causeway, The Avenue (B1101)
  - Station Road (B1101)
  - Elwyn Road, St Peter's Road/Upwell Road (B1099), Eastwood Av, March Sconce
  - Burrowmoor Road and Gaul Road
  - Wisbech Road / Dartford Road (B1099).
- Safe routes to school audits, identifying recommendations for all five March schools:
  - Neale-Wade Academy
  - Burrowmoor Road Primary
  - All Saints Inter Church Primary
  - Westwood Primary and Maple Grove Community Pre-School
  - Cavalry Primary.
- Pedestrian and cycling signage audit and improvement proposals, connecting key routes and destinations in March, with a schedule of signage location recommendations and signage design options, including distance and journey time illustrations.

2.8.15 Feasibility work has since been undertaken to assess, group, and prioritise the range of schemes identified within the Strategy, to create a programme of deliverable projects for preliminary and detailed design, consultation, and construction.

2.8.16 Construction on the first package of schemes, consisting of signage and lining improvements, is due to commence imminently with the rest of the pedestrian and cycling improvements to be completed by March 2023.

2.8.17 While the proposals relating to the March Pedestrian, Signage and Cycling Strategy are not critical to the MATS Improvement Schemes, successful delivery of both schemes will enhance the benefits realised by each and will aid both schemes in achieving their stated objectives.

## Remaining MATS Schemes

2.8.18 The five MATS schemes have been designed to work in conjunction with each other, and strategic modelling has demonstrated that there is a level of interdependency between the schemes. In summary, the key strategic dependencies between the MATS schemes are:

- A141 / Hostmoor Avenue & Peas Hill – the creation of an all-movement junction at Hostmoor Avenue will remove the current need for right turning vehicles (from Hostmoor Avenue) to U-turn at Peas Hill Roundabout. This will free up additional capacity at Peas Hill Roundabout by removing trips. U-turning trips are particularly detrimental to roundabout capacity as they impede the progress of vehicles on all other approaches.
- A141 / Hostmoor Avenue & Northern Industrial Link Road – improvements to the A141 / Hostmoor Avenue Junction (and particularly the creation of an all-movement junction) will further encourage trips to use the Northern Industrial Link Road as it will provide a better onward connection to the A141 corridor. This is expected to further reduce the number of vehicles passing through the Broad Street Junction (on an east-west route).

- Broad Street & A141 / Peas Hill – the reduction of capacity along Broad Street is paralleled by an increase along the A141 corridor, and particularly at Peas Hill Roundabout, encouraging trips onto the A141 and away from the Town Centre.
- Broad Street & Northern Industrial Link Road – the creation of a Northern Industrial Link Road opens up a new east – west route in the north of March which will reduce the number of trips passing through the Broad Street Junction (specially on the Station Road / Dartford Road route).

2.8.19 The interdependencies described above are not considered to be a risk on the operational performance of the schemes and sensitivity testing has been undertaken during the option development stage of the project to confirm that schemes can work independently of each other.

2.8.20 The strategic relationship between the five MATS schemes also carries through to the Economic Assessment as the models used to calculate scheme benefits have included all five MATS schemes (with phased implementation). Further details on this is provided in the Economic Dimension, however the relationship between schemes is not considered to be a risk to economic viability as demonstrated by the phased presentation of Scheme BCRs (FBC1 vs Full Package).

Economic Assessment of the MATS Broad Street Scheme has demonstrated that it is not dependent on the remaining MATS schemes for value for money. The MATS Broad Street Scheme returns an adjusted BCR of 9.82 independently of the remaining schemes.



## 2.9 Stakeholder Identification

2.9.1 Key stakeholders for the MATS Improvement Schemes include, but are not limited to, the following:

- The CPCA
- CCC
- FDC
- March Town Council
- People living, visiting and working in and around March
- Local businesses based in and around March
- Emergency services
- Bus service operators
- Network Rail (land requirement)
- HMP Whitemoor (land agreement)
- Anglian Water
- Historic England
- Middle Level Commissioners – waterways and flooding
- Landowners – CCC is undertaking all third-party landownership liaison and negotiations.

2.9.2 A summary of stakeholder consultation events undertaken and planned is provided in the Management Dimension (Chapter 6), and the Stakeholder Engagement Strategy is included in Appendix A.

## 2.10 Scheme Objectives

- 2.10.1 To provide focus for the MATS Improvement Schemes, a set of clear, specific objectives have been established which align with the strategic and local policy drivers and address the identified issues. Scheme objectives need to consider the key stakeholder views and opinions, as well as the scheme constraints and interdependencies with other projects, to address the identified issues.
- 2.10.2 In order to devise specific objectives for the MATS Improvement Schemes, an Objective Setting Workshop was held on 17<sup>th</sup> June 2020. This was attended by transport, planning and engineering representatives from key stakeholders, including:
- CPCA
  - CCC
  - FDC
  - Skanska (Milestone) / Capita.
- 2.10.3 Strategic and local policy drivers, scheme constraints and dependencies, identified transport issues and overall drivers for change, were discussed during the workshop. From this, a set of specific objectives were devised for the proposed schemes in line with the broad themes set out in section 2.4.
- 2.10.4 The objectives of the MATS Improvement Schemes, which were established at the SOBC stage, are defined as follows. Those objectives which are specific to the MATS Broad Street Scheme are shown in teal-green.

### 1. Regeneration of March Town Centre

- a. Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme
- b. Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth
- c. Maximise public realm within Broad Street
- d. Enhance pedestrian safety and accessibility around the town centre

### 2. Address Existing Traffic Congestion and Safety Issues

- a. Address existing congestion issues within the town centre (Broad Street area)
- b. Address existing congestion issues along the A141 around Peas Hill roundabout
- c. Improve pedestrian level of service around Broad Street
- d. Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction

### 3. Facilitate Housing and Employment Growth

- a. Support Local Plan development proposals
- b. Ensure sustainable access to proposed Local Plan development

### 4. Improve Local Environmental Conditions

- a. Improve air quality conditions around Broad Street
- b. Facilitate the enhancement of heritage assets around Broad Street.

2.10.5 It is considered that the scheme objectives above meet HMT's updated Green Book Review requirements to develop "clear objectives and success measures... for all interventions" and do not need to be updated for this stage of work.

2.10.6 Monitoring of the objectives specific to the MATS Broad Street Scheme will be undertaken following completion of that scheme in 2024, and ahead of completion of the remaining four MATS schemes. Monitoring and evaluation of the remaining MATS schemes will be undertaken following completion of the NILR in 2027 as many of the remaining objectives refer to implementation of the full package of schemes. Further information on the strategy for monitoring and evaluation, and benefits realisation, are provided in the Management Dimension.

Almost all the objectives listed above either directly relate to, or are relevant to, the MATS Broad Street Scheme.

### SMART Objectives

The following SMART Objectives have been developed to enable the success and benefits of the MATS Broad Street Scheme to be clearly and accurately measured through post scheme monitoring and evaluation. The SMART measure for each of the objectives is provided beneath in green.

#### 1. Regeneration of March Town Centre

- a. Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme: *Deliver an improvement at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction which replaces the existing traffic signal-controlled junction with a roundabout and reduces Broad Street to a single lane in each direction.*
- b. Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth: *Deliver an improvement at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction that enables the FHSF scheme design to be realised.*
- c. Maximise public realm within Broad Street: *Reduce the carriageway footprint to enable the creation of an additional 50% of Public Realm.*
- d. Enhance pedestrian safety and accessibility around the town centre: *Increase the number of pedestrian crossing locations at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction and along Broad Street and reduce the B1101 Broad Street to a single lane in each direction.*

## 2. Address Existing Traffic Congestion and Safety Issues

- a. Address existing congestion issues within the town centre (Broad Street area): Reduce delay to less than 30 seconds (average per vehicle) on all approaches to the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction
- b. Address existing congestion issues along the A141 around Peas Hill roundabout: This objective does not relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.
- c. Improve pedestrian level of service around Broad Street: Achieve an 80% increase in user satisfaction in the level and quality of pedestrian provision in post scheme surveys.
- d. Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction: This objective does not relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.

## 3. Facilitate Housing and Employment Growth

- a. Support Local Plan development proposals. This objective does not directly relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.
- b. Ensure sustainable access to proposed Local Plan development: This objective does not directly relate to the MATS Broad Street Scheme as there is no Local Plan development situated within the immediate vicinity of the town centre.

## 4. Improve Local Environmental Conditions

- a. Improve air quality conditions around Broad Street. Reduce NOx and PM2.5 emissions by 5% by 2026.
- b. Facilitate the enhancement of heritage assets around Broad Street: Enable the refurbishment and relocation of the March Town Centre Fountain as part of the MATS / FHSF Broad Street Scheme to enhance its position and enjoyment by local residents.

## 2.11 Impact of Not Progressing

- 2.11.1 There are clear implications of not progressing the proposed schemes and not acting on the identified issues.
- 2.11.2 In relation to March Town Centre, a failure to progress the proposed MATS Improvement Schemes will likely result in a further failure to bring about desired changes in the town centre to facilitate its regeneration. The successful delivery of the MHCLG funded FHSF scheme proposals for Broad Street and the adjacent river frontage, are reliant on the delivery of the MATS Improvement Scheme proposals for Broad Street. Reducing road space along Broad Street and maximising public realm, relies on wider highway changes in the Broad Street area to provide sufficient capacity for traffic in future years. A failure to progress the MATS Improvement Schemes would result in the continued prevalence of traffic and transport issues acting as a barrier to the town's regeneration, suppressing its potential and delaying efforts to bring about change.
- 2.11.3 It should also be noted that the case for progressing the proposed schemes to facilitate the regeneration of March Town Centre is even stronger in the wake of Covid-19. The Covid-19 pandemic has accelerated trends such as declining footfall and increasing internet retail sales<sup>26</sup> and as such poses a serious threat to the future vitality of town centres. It is envisaged that the likely impact of not progressing the proposed schemes in the challenging aftermath of Covid-19, is that March Town Centre will continue to decline. This would have a negative impact on local employment opportunities, access to services and deprivation levels.
- 2.11.4 In relation to traffic and safety issues, the issues associated with congestion, a lack of capacity and the dominance of traffic within the town centre are likely to persist, with a continued deterioration in future years. Issues around highway safety at specific locations across March will also go unaddressed.
- 2.11.5 Investment in local transport infrastructure is required to provide sufficient capacity for the level of forecast traffic growth in future years and to facilitate housing and employment growth ambitions defined in the adopted Fenland Local Plan.
- 2.11.6 The do minimum (DM) base year (2018) and 2031 AM peak model results for select junctions in March are presented in Table 2.7 overleaf. Note that this data has come from the MATS VISSIM model, and the full set of results for all the junctions is included in the OAR.

<sup>26</sup> <https://www.local.gov.uk/parliament/briefings-and-responses/future-high-street-house-commons-10-december-2020>



Table 2.7: Do Minimum 2018 vs 2031 AM Peak Hour Model Comparison

Junction	Max QL (m)		Average Delay (s)		LOS	
Name	Base	2031	Base	2031	Base	2031
A141 Wisbech Road / Twenty Foot Road	48	245	4.6	14.3	A	B
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill Roundabout)	162	965	10.2	91.3	B	F
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	147	159	26.3	33.1	C	C
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	188	598	42.7	156.3	D	F

2.11.7 The results in Table 2.7 suggest that, without intervention:

- The maximum queue length at all the junctions will increase by the 2031 AM peak, with substantial increases anticipated at the A141 Wisbech Road / Twenty Foot Road junction, Peas Hill Roundabout, and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction. Notably, the maximum queue length at Peas Hill Roundabout is anticipated to increase by 496% (803 metres) by the 2031 AM peak.
- The average delay at all the junctions will increase by the 2031 AM peak, with substantial increases anticipated at the A141 Wisbech Road / Twenty Foot Road junction, Peas Hill Roundabout, and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction. Notably, the average delay at Peas Hill Roundabout is anticipated to increase by 795% (81.1 seconds) by the 2031 AM peak.
- The level of service will decrease at three of the junctions by the 2031 AM peak compared to the base year. It is forecast that Peas Hill Roundabout and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction will be operating over capacity during the 2031 AM peak.

2.11.8 The DM base year (2018) and 2031 PM peak model results for select junctions in March are presented in Table 2.8 overleaf. Note that the full set of results for all the junctions is included in the OAR.

Table 2.8: Do Minimum 2018 vs 2031 PM Peak Hour Model Comparison

Junction  Name	Max QL (m)		Average Delay (s)		LOS	
	Base	2031	Base	2031	Base	2031
A141 Wisbech Road / Twenty Foot Road	98	398	7.0	43.9	A	E
A141 Isle of Ely Way / A141 Wisbech Rd / B1099 Wisbech Rd / Whittlesey Road / Retail Park (Peas Hill Roundabout)	173	791	11.5	61.0	B	F
B1099 Dartford Road / B1101 Broad Street / B1101 Station Road / Robingoodfellow's Lane	156	159	33.6	39.2	C	D
B1101 The Causeway / B1101 High Street / B1099 St Peter's Road	265	566	40.1	123.5	D	F

2.11.9 The results in Table 2.8 suggest that, without intervention:

- The maximum queue length at all the junctions will increase by the 2031 PM peak, with substantial increases anticipated at the A141 Wisbech Road / Twenty Foot Road junction, Peas Hill Roundabout, and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction. Notably, the maximum queue length at Peas Hill Roundabout is anticipated to increase by 357% (618 metres) by the 2031 PM peak.
- The average delay at all the junctions will increase by the 2031 PM peak, with substantial increases anticipated at the A141 Wisbech Road / Twenty Foot Road junction, Peas Hill Roundabout, and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction. Notably, the average delay at Peas Hill Roundabout is anticipated to increase by 430% (49.5 seconds) by the 2031 PM peak.
- The level of service will decrease at all the junctions by the 2031 PM peak compared to the base year. It is forecast that Peas Hill Roundabout and the B1101 The Causeway / B1101 High Street / B1099 St Peter's Road junction will be operating over capacity during the 2031 PM peak, and that the A141 Wisbech Road / Twenty Foot Road will be approaching capacity.

2.11.10 The modelling results presented in Table 2.7 and Table 2.8 support the case for intervention, to mitigate forecast increases to queuing, delays, and junction capacity issues.

2.11.11 In relation to local environmental conditions, local air quality issues around Broad Street will not be addressed with a persistence of congestion and poor traffic flow conditions. March Town Centre, the local townscape, historic buildings and the riverfront setting, are likely to remain underutilised in future years, with a failure to make the most of the town's heritage assets.

The impact of not delivering the MATS Broad Street Scheme is that congestion and delay continue to rise along Broad Street as demonstrated by the modelling reported above.

Critically, the adjacent FHSF could not progress without the MATS Broad Street Scheme, and the funding associated with that scheme would be lost, and March would not realise the benefits associated with much need regeneration in the town centre.

## 2.12 Measures of Success

- 2.12.1 The measures of success were established at the SOBC stage. Overall performance of the schemes and their success will be monitored relative to its stated objectives. What constitutes successful delivery of the MATS Improvement Schemes relative to defined scheme objectives, can be found in Table 2.9 overleaf.

Table 2.9: Measures of Scheme Success

Objective Number	Scheme Objective	Measure of Success
Regeneration of March Town Centre		
1a	Deliver a Transport scheme for Broad Street that enables delivery of the FHSF scheme	Transport interventions across March that remove traffic and transport barriers to the proposed FHSF A redistribution of traffic away from the town centre onto alternative routes.
1b	Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth	A transport scheme for Broad Street that enables the proposed FHSF scheme to deliver on its stated objectives.
1c	Maximise public realm within Broad Street	A reduction in road space and an increase in space given over to pedestrian users of Broad Street.
1d	Enhance pedestrian safety and accessibility around the town centre	Transport schemes within the town centre which maximise pedestrian safety and ensures the town centre is accessible to all users
Address Existing Traffic Congestion and Safety Issues		
2a	Address existing congestion issues within the town centre (Broad Street area)	A reduction in congestion, queuing, and traffic delay in the Broad Street area. A redistribution of traffic away from the town centre onto alternative routes.
2b	Address existing congestion issues along the A141 around Peas Hill roundabout	A reduction in congestion, queuing, and traffic delay along the A141 around the Peas Hill Roundabout
2c	Improve pedestrian level of service around Broad Street	Enhanced provision for pedestrian users in the Broad Street area relative to existing condition measured through established metrics.
2d	Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction	A reduction in traffic collisions associated with the junctions in future years and delivery of highway infrastructure that is safe for all users.
Facilitate Housing and Employment Growth		
3a	Support local plan development proposals	Delivery of transport infrastructure across March that mitigates the overall impact of local plan housing and employment growth sites.
3b	Ensure sustainable access to proposed local plan development.	Delivery of transport infrastructure across March that mitigates the overall impact of local plan housing and employment growth sites.
Improve Local Environmental Conditions		
4a	Improve air quality conditions around Broad Street	An improvement in air quality in future years from existing levels at established air quality monitoring sites.
4b	Facilitate the enhancement of heritage assets around Broad Street	A transport scheme for Broad Street which facilitates a wider improvement in local environmental conditions in the Broad Street area. Enhanced pedestrian accessibility to key heritage assets along Broad Street.

## 2.13 Options Identification and Appraisal

2.13.1 An overview of the option development, modelling, and assessment processes through the pre-SOBC, SOBC, OBC and FBC1 stages is provided in Figure 2.5 below.

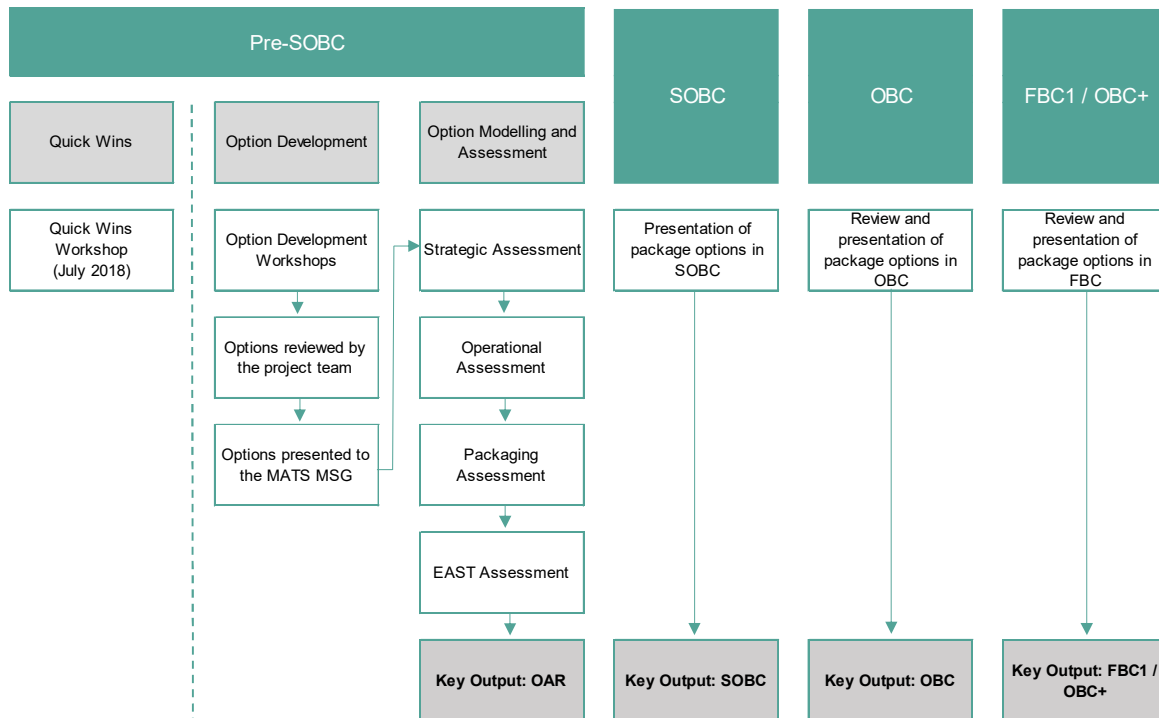


Figure 2.5: Overview of the Option Development, Modelling and Assessment Processes

2.13.2 These processes are discussed in more detail in the subsequent paragraphs.

### Quick Wins

2.13.3 The quick wins were progressed as a separate workstream to the Option Development and Option Modelling and Assessment components, during the pre-SOBC stage of the MATS.

2.13.4 A Quick Wins Workshop for the MATS was held in July 2018. The purpose of the workshop was to identify any potential schemes and improvements that could be accelerated to design and construction ahead of the main study.

2.13.5 For context, an improvement or scheme was considered a quick win if it satisfied the following criteria:

- It is easily deliverable and has no known constraints (such as engineering, land ownership, or complex stakeholder engagement)
- It does not require complex assessment (traffic modelling or engineering)
- It can be designed and built within approximately two years
- It does not jeopardise other potential MATS schemes.

2.13.6 The quick wins identified during the Quick Wins Workshop are listed in Table 2.10 below.

Table 2.10: MATS Quick Wins

MATS Quick Wins	
1	A141 / Twenty Foot Road junction
1A	Station Road Zebra Crossing
2	Upwell Road / Cavalry Drive
9	Peas Hill Roundabout
11, 12, 13	Pedestrian and Cycling Strategy Proposal
15	St Peters Road / Elwyn Road / Eastwood Avenue
16	March wide HGV Signage Strategy
19	A141 Junctions Street Lighting
20	Revalidation of All Signal Timings Across March
21	Norwood Avenue Footpath
22	Norwood Road Traffic Calming
23	Hundred Road Footpath
24	Broad Street Stats

2.13.7 For context these quick wins are mapped in Figure 2.6 below.

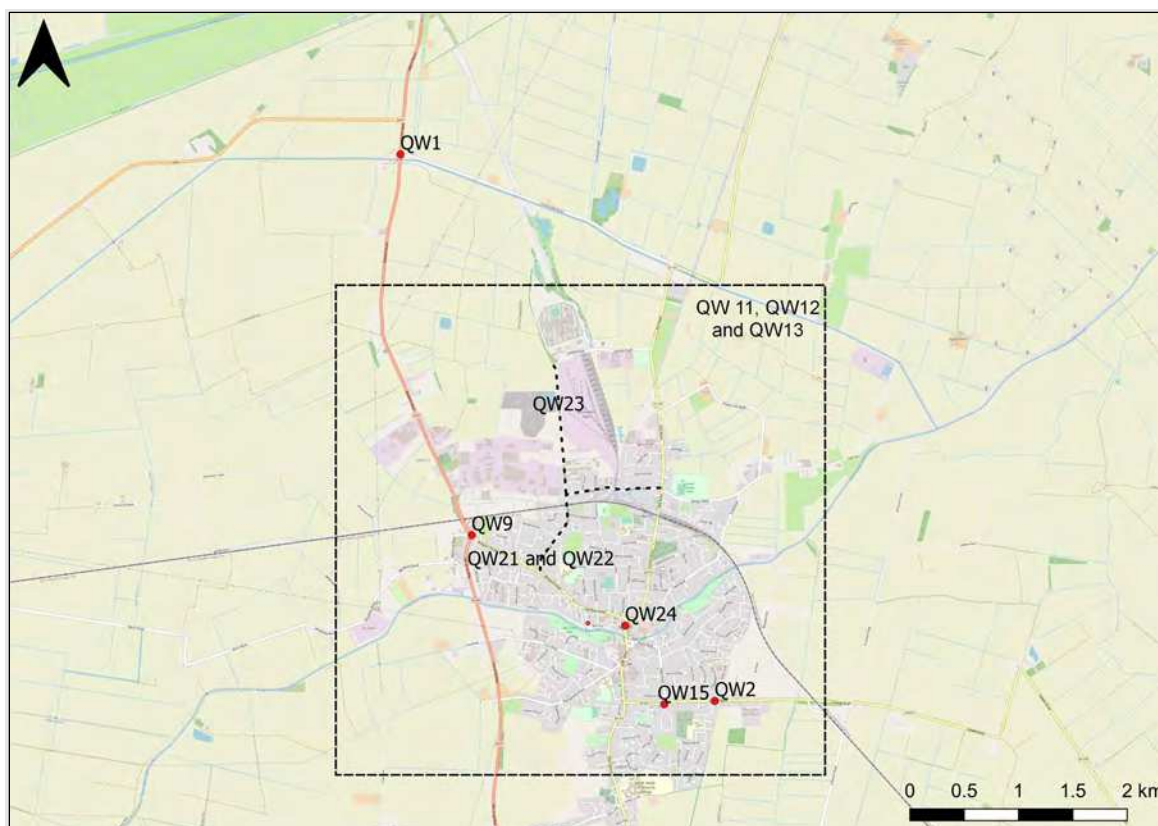


Figure 2.6: Locations of Quick Wins



2.13.8 Further assessment of the quick win proposals, listed in Table 2.10, above, has resulted in some of these proposals being dropped or put on hold. Table 2.11 below, provides an update on the delivery of the quick win proposals.

Table 2.11: MATS Quick Wins

MATS Quick Wins		
Quick Win Scheme		Details
1	A141 / Twenty Foot Road junction	No Construction. Project is now on hold awaiting the outcome of the main study and the impact of the Northern Link Road. This is one of the schemes in the business case.
1A	Station Road Zebra Crossing	Construction start: 03/2021 Scheme Complete
2	Upwell Road / Cavalry Drive	Construction start: 11/2021 Design includes speed limit gateway and traffic calming features. Scheme complete.
9	Peas Hill Roundabout	No Construction. Proposal suspended by MATS Improvement Scheme for Peas Hill Roundabout. This is one of the schemes in the business case
11, 12, 13	Pedestrian and Cycling Strategy	Pedestrian and Cycling Study completed in 2020. Recommendations fed into the main MATS study.
15	St Peters Road / Elwyn Road / Eastwood Avenue	Construction start: 11/2020 and now completed.
16	March wide HGV Signage Strategy	Construction start: 01/2021 and now completed.
19	A141 Junctions Street Lighting	No Construction Project was halted due to high possibility of affecting bats' habitat.
20	Revalidation of All Signal Timings Across March	Completed in July 2019
21	Norwood Avenue Footpath	Construction started August 2021 and now complete
22	Norwood Road Traffic Calming	Detailed design required. Construction estimated to commence in March 2021
23	Hundred Road Footpath	Construction started August 2021 and now complete
24	Broad Street Stats	Delivered May 2020.

## Option Development, Modelling and Assessment at Pre-SOBC and SOBC Stages

### Overview

- 2.13.9 To address the identified challenges across March and develop targeted interventions which meet the stated objectives, an extensive option development and review process was completed prior to the production of the SOBC.
- 2.13.10 The Options Appraisal Report (OAR), produced as part of the MATS project, set out the development process and assessment of transport improvement options across March, including traffic modelling and an initial economic assessment. The best performing options at specific locations were grouped into packages of schemes that could be implemented across March. The OAR concluded with a review of scheme packages and provided recommendations on the relative merits of progressing these further.

### Option Development

- 2.13.11 As part of the options development process, 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 key stakeholders from various transport, engineering and environmental disciplines, including conservation officers, with delegates representing:
- CCC
  - FDC
  - Skanska (Milestone) / Capita.
- 2.13.12 During each workshop attendees developed and discussed a range of potential options for different locations across March.
- 2.13.13 Following the workshop, the options were reviewed by the project team and presented to the MATS Member Steering Group (MSG) for further discussion. The role of the MSG is to ensure that MATS delivers the best possible outcomes for the residents of March and maintains focus on its stated aims. It brings together key stakeholders from planning and engineering disciplines, local authority officers and elected members from:
- CCC
  - FDC
  - March Town Council (MTC).
- 2.13.14 Several options were discounted during this stage following a review by the MSG, with the remaining options taken forward for modelling and further assessment.

### Option Modelling and Assessment

2.13.15 The assessment process used was broken down into three distinct phases, with each informing the next. The three phases were:

- Strategic Assessment
- Operational Assessment
- Packaging Assessment.

2.13.16 The Strategic Assessment, which was undertaken using a bespoke SATURN model developed for the MATS, considered larger infrastructure improvements, and was used for a number of purposes. Firstly, to understand the effects of traffic reassignment and re-routing because of specific interventions. Secondly, to undertake an economic assessment of the larger, more substantial options to determine at an early stage if they offer value for money. Finally, to generate different sets of traffic flows, which take account of traffic re-routing created by larger options, for use in the Operational Assessment. This process, including the performance of each component is detailed in the OAR which is provided as a supporting document.

2.13.17 The Operational Assessment was undertaken using a bespoke VISSIM micro-simulation model developed for the MATS. It provided a detailed assessment of how each of the options performed. The options that performed well within the Operational Assessment were then taken forward for use within the Packaging Assessment. Again, this is detailed in the OAR which is provided as a supporting document.

2.13.18 The Packaging Assessment took the best performing options from the Strategic and Operational Assessments and combined these into packages of schemes that could be implemented across March. This Packaging Assessment was undertaken using the MATS SATURN model. Multiple different packages have been assessed, representing different levels of impact within March.

2.13.19 The following packages were assessed:

- **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 High Street / St Peter's Road junction improvements.
- **Package 1a** – Package 1 plus development of a Northern Industrial Link Road.
- **Package 3** – Package 1 plus a scheme to reduce Broad Street to a single 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 development of a 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 development of a Northern Industrial Link Road.

- 2.13.20 The packaging assessment showed that all packages, in conjunction with the local plan mitigations, are expected to perform well to varying degrees.
- 2.13.21 The DfT's Early Assessment and Sifting Tool (EAST) has also been completed for each of the assessed option packages. The EAST is a decision support tool that summarises and presents evidence on potential options in a clear and consistent format. It provides decision makers with relevant, high-level information to help them form an early view of how options perform and compare.
- 2.13.22 A summary of the EAST assessment can be found in Table 2.12, below. The information presented in the EAST assessment has been considered during a review of potential option packages and used to inform a decision on a preferred package of schemes to be taken forward.

Table 2.12: EAST Assessment Summary

Option/ Package	Scale of Impact	Fit with DfT Objectives	Fit with Scheme Objectives	Expected VFM Category	Public Acceptability	Practical Feasibility	Capital Cost
<b>Package 1</b>	2	3	2	High	3	5	~£5.5m
<b>Package 1a</b>	3	3	2	High	3	4	~£11.5m
<b>Package 3</b>	3	4	5	High	3	4	~£6.0m
<b>Package 3a</b>	4	4	5	High	3	3	~£12.5m
<b>Package 4</b>	5	4	5	Low	2	2	~£41.0m
<b>Package 4a</b>	5	4	5	Low	2	1	~£47.0m

- 2.13.23 Package 3a as defined above, formed the package of schemes which featured in the SOBC.
- 2.13.24 Packages 2 and 2a were developed, but not tested as part of the Packaging Assessment. These packages were based on Package 1 and 1a respectively, but also included improvements to Broad Street with an alternative traffic signal design. This option was dismissed following an engineering review which raised safety concerns over the proposed arrangement and because this was contrary to emerging FHSF aspirations to create public realm along Broad Street.
- 2.13.25 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 FDC's FHSF aspirations for the regeneration of March Town Centre.
- 2.13.26 Packages 4 and 4a were shown to provide the greatest overall level of benefit relative to other packages, but also involve significant disruption (and cost) within the town centre. It was recommended that these packages were not considered any further within the parameters of the current scheme but could be revisited in future should further capacity enhancements be needed in March Town Centre.

2.13.27 Packages 3 and 3a are closely aligned to the FHSF proposals and have the highest Benefit to Cost Ratios (BCRs) relative to their counterpart packages. Package 3a builds upon Package 3 with the addition of the NILR. The addition of the NILR is considered to generate significant additional benefit to the scheme package overall, attracting additional trips away from the residential areas (particularly Norwood Road) and the Town Centre, and makes a significant contribution towards achieving the MATS scheme's stated objectives. The locations of specific interventions across March within Package 3a can be found in Figure 2.7 below.

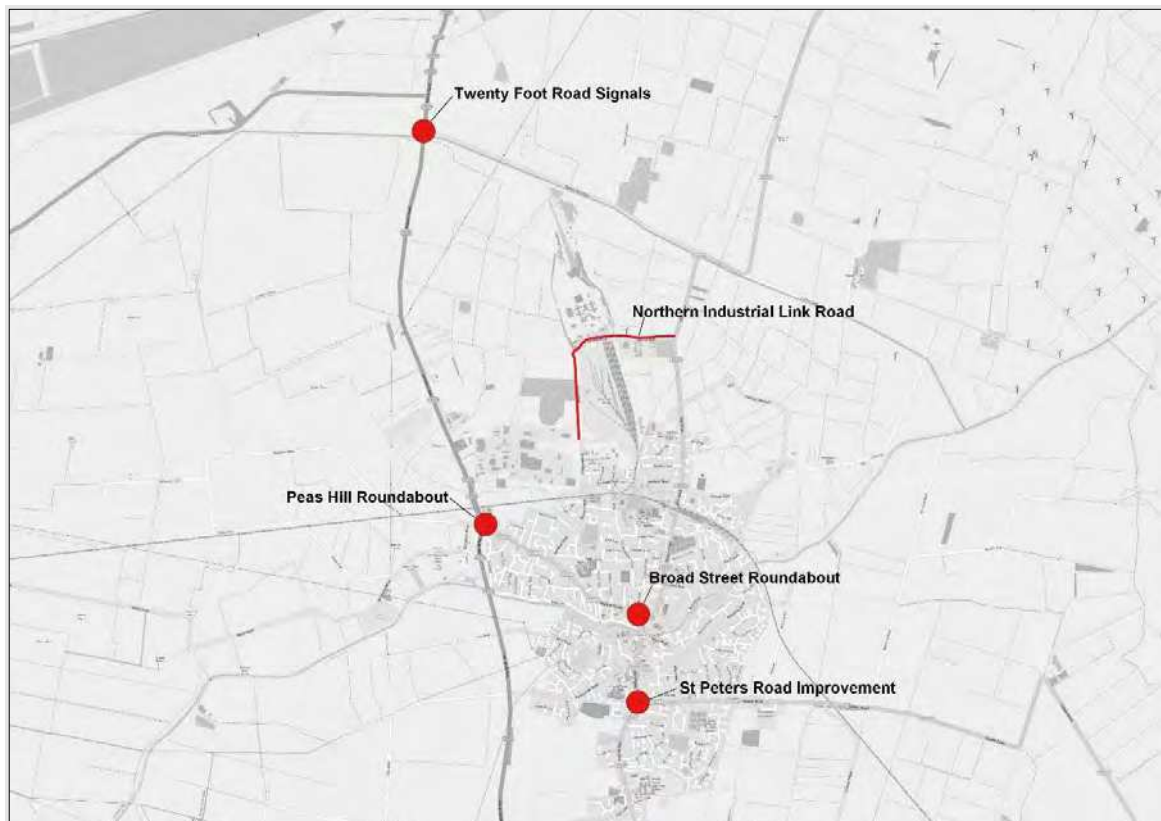


Figure 2.7: MATS Improvement Scheme Locations

#### Option Development, Modelling and Assessment at OBC Stage

2.13.28 Package 3a was subject to further development, modelling, and assessment at the Preliminary Design and OBC stage of the MATS, and any significant changes to design or scope that occurred during this stage are detailed beneath in the paragraphs below. Note that these changes were included in the MATS OBC that was submitted in October 2021.

Broad Street / Dartford Road / Station Road Mini Roundabout with Broad Street one lane in each direction

2.13.29 The scope of the Broad Street Roundabout scheme was extended to incorporate the highway down to the River Nene bridge and the north-bound bus stops on Broad Street.

#### Development of Northern Industrial Link Road

- 2.13.30 The scope of the Northern Industrial Link Road design was increased to include the provision of a segregated cycle facility along the length of the route.

#### A141 / Peas Hill Roundabout (60m ICD), in conjunction with development of a Hostmoor Avenue Roundabout

- 2.13.31 No significant amendments were made to the design of the A141 / Peas Hill Roundabout at OBC.

#### High Street / St Peter's Road Traffic Signal Improvements

- 2.13.32 No significant amendments were made to the design of the B1101 High Street / B1099 St Peters Road Scheme at OBC.

#### A141 / Twenty Foot Road Signals

- 2.13.33 No significant amendments were made to the design of the A141 / Twenty Foot Road Junction at OBC.

## **2.14 Scheme Development During Detailed Design**

- 2.14.1 Further design led refinements have been made to several of the schemes during the Detailed Design and FBC1 phase of the project. These amendments are described beneath.
- 2.14.2 The latest scheme drawings for the MATS schemes are shown beneath and included in Appendix B.

#### Broad Street / Dartford Road / Station Road Mini Roundabout with Broad Street one lane in each direction

- 2.14.3 This scheme remains fundamentally unchanged since the OBC and is shown in Figure 2.8 overleaf.





Figure 2.8: MATS Broad Street Scheme General Arrangement

### A141 / Peas Hill Roundabout (60m ICD), in conjunction with development of a Hostmoor Avenue Roundabout

- 2.14.4 The Inscribed Circular Diameter (ICD) of the roundabout has been reduced from 60m, which was presented in OBC, to 52m to reduce the footprint of the junction and mitigate the requirement for land take. Sensitivity testing undertaken in both the VISSIM micro-simulation model, and the MATS Saturn based strategic model has demonstrated that this scheme still performs well operationally and delivers a similar level of benefit to the 60m ICD roundabout.
- 2.14.5 The scope of the MATS A141 / Peas Hill scheme has also been increased to include delivery of the A141 / Hostmoor Junction. This was included within the design scope at the OBC stage on the understanding that a developer led scheme would materialise at this location prior to construction of the MATS schemes. The creation of an all-movement junction at Hostmoor Avenue is critical to the success of the A141 / Peas Hill scheme as it removes a large number of u-turning trips from Peas Hill Roundabout which have an adverse impact on capacity.
- 2.14.6 As the MATS has progressed at a faster pace than developer proposals, construction of the scheme has been brought into scope to avoid it posing a risk to the successful operation of the A141 / Peas Hill scheme and ultimately the wider MATS package.
- 2.14.7 The form of this junction has been amended since OBC to ensure that it is appropriate for the forecast traffic flows and can be delivered with minimal land take. The current proposals are to construct a three arm, all movement, signalised junction. A General Arrangement (GA) drawing for the junction is provided along with the other schemes in Appendix B. The exact form of this junction will be further assessed and reviewed ahead of the submission of FBC2 and updated if necessary.
- 2.14.8 The scheme is shown in Figure 2.9 overleaf.



Figure 2.9: A141 / Peas Hill & A141 / Hostmoor Avenue Road Scheme General Arrangement

## High Street / St Peter's Road Traffic Signal Improvements

2.14.9 This scheme remains fundamentally unchanged since the OBC and is shown in Figure 2.10 beneath.

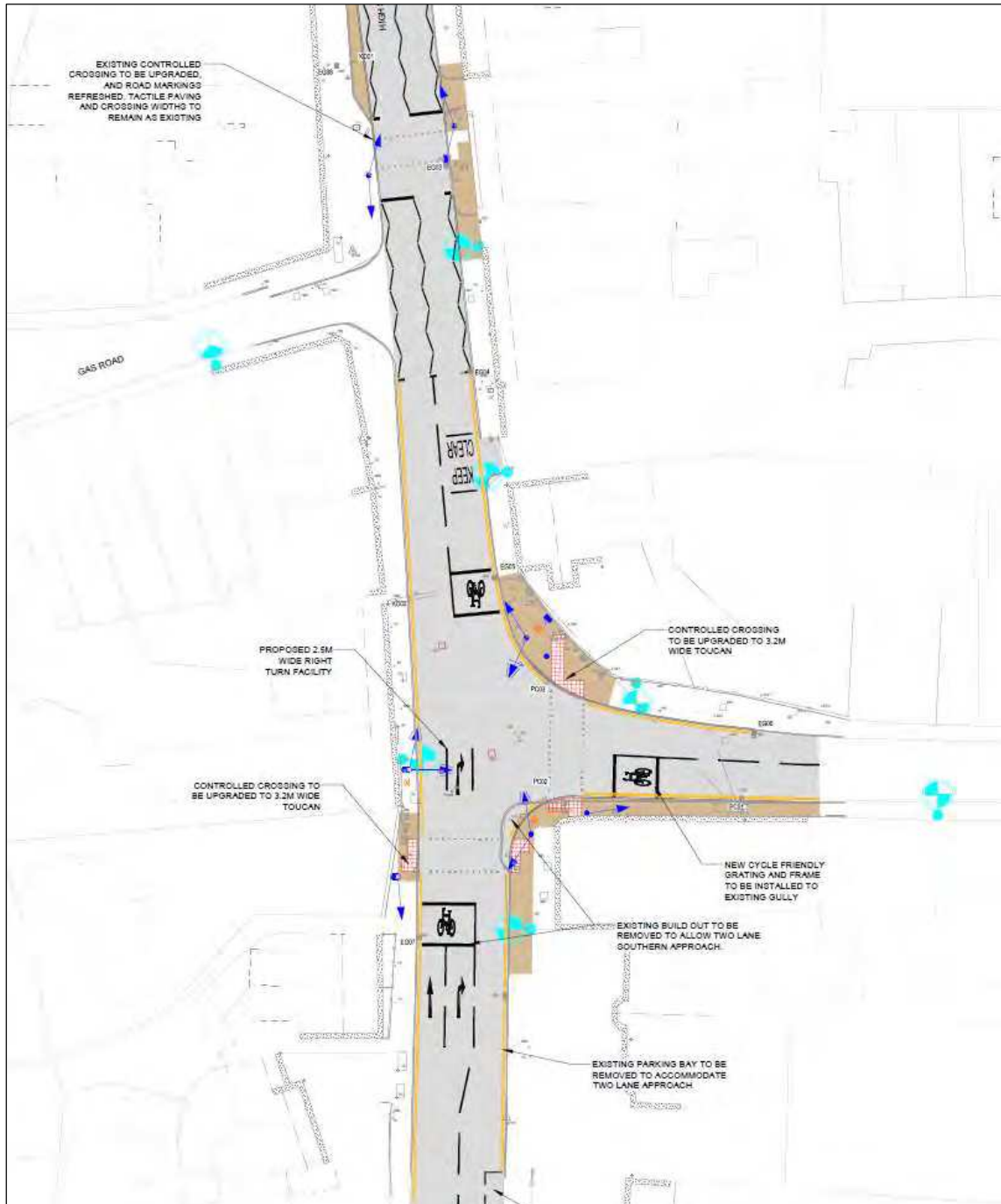


Figure 2.10: MATS High Street / St Peter's Road Scheme General Arrangement



## A141 / Twenty Foot Road Signals

2.14.10 This scheme remains fundamentally unchanged since the OBC and is shown in Figure 2.11 beneath.



Figure 2.11: MATS A141 / Twenty Foot Road Scheme General Arrangement

### Development of Northern Industrial Link Road

- 2.14.11 There has been an upgrade to the B1101 Elm Road / Longhill Road Junction since OBC, and the junction form has been changed from a priority junction to a roundabout to improve road safety and reduce the requirement for land acquisition.
- 2.14.12 The scheme is shown in Figure 2.12 overleaf.

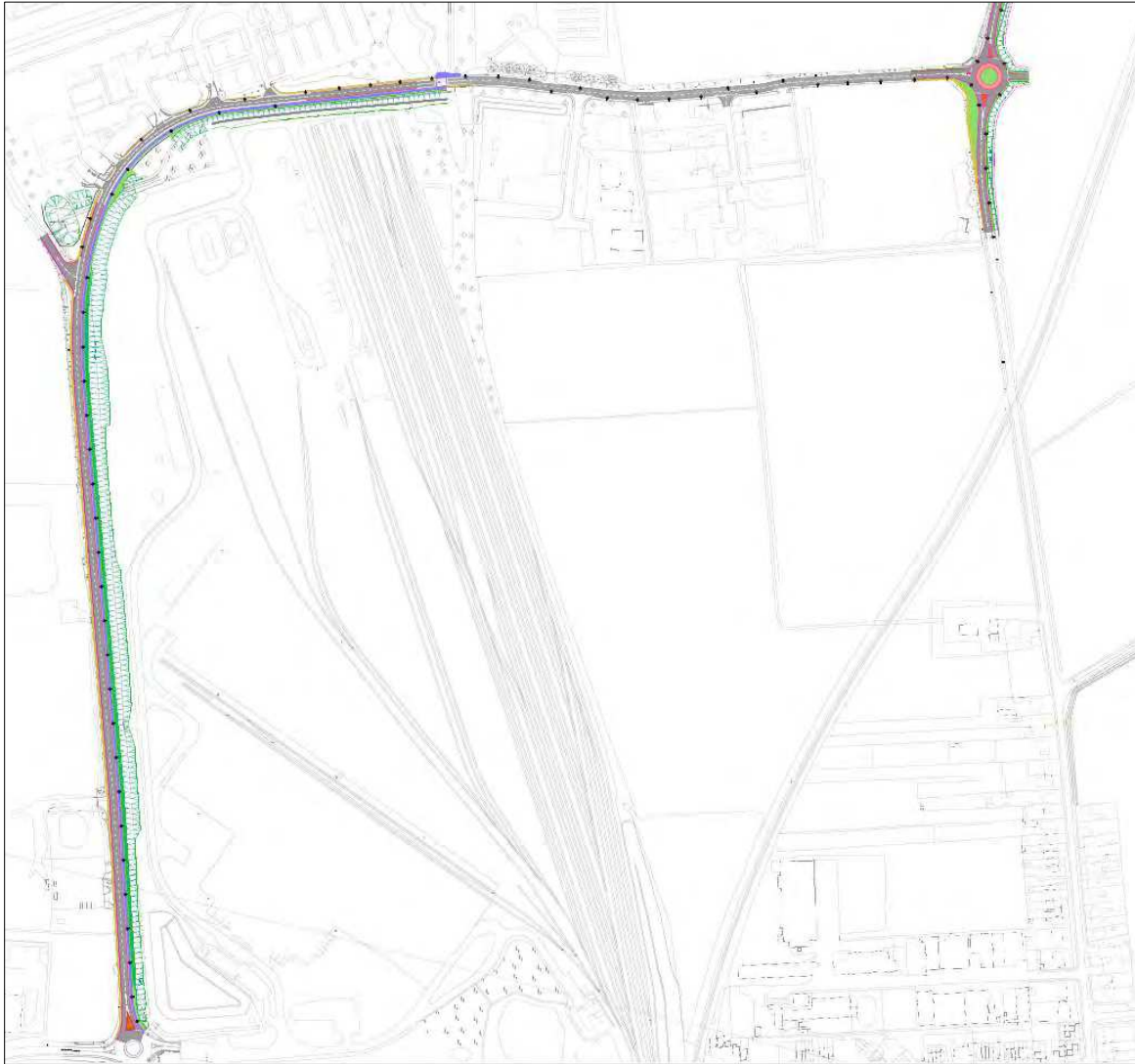


Figure 2.12: MATS NILR Scheme General Arrangement



### Confirmation of Package 3a

2.14.13 As explained in Section 1.3, delivery of the MATS scheme will be phased into three stages, each represented by and updated FBC. The updated package of schemes being delivered by the MATS project includes:

#### FBC1:

- B1101 Broad Street / B1099 Dartford Road / B1101 Station Road (see Figure 2.7 beneath)
  - Replacement of the traffic signal-controlled junction with a roundabout
  - Reduction of Broad Street to a single lane in each direction.
  - Please see Figure 2.7 beneath.

#### FBC2:

- B1101 High Street / B1099 St Peter's Road (See Figure 2.8 beneath)
  - Upgrade the traffic signal control junction to include a separate northbound right turn lane on the B1101 The Causeway approach.
- A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue Junction (see Figure 2.9 beneath)
  - Upgrade the existing roundabout to 52m ICD
  - Upgrade of A141 Isle of Ely Way (northbound), B1099 Wisbech Road and Whittlesey Road to two lane approaches
  - Upgrade to pedestrian crossing facilities around Peas Hill Roundabout
  - Creation of two lanes on the A141 Isle of Ely Way (northbound) from Peas Hill Roundabout to the A141 / Hostmoor Avenue Junction
  - Creation of an all-movement, three-arm signalised junction at the A141 / Hostmoor Avenue Junction, with two lane approaches on the A141 Isle of Ely Way (northbound) and Hostmoor Avenue and a three-lane approach on the A141 Isle of Ely Way (southbound).
- A141 / Twenty Foot Junction (see Figure 2.10 beneath)
  - Upgrade the existing priority junction to a signalised junction, with a northbound right turn flare on the A141 Isle of Ely Way northbound approach.

#### FBC3:

- Northern Industrial Link Road (See Figure 2.11 beneath)
  - Creation of a physical link between Hundreds Road and Longhill Road to create the Northern Industrial Link Road
  - Upgrade the B1101 Elm Road / Longhill Road Junction from a priority junction to a roundabout.
  - Provide a segregated cycle facility along the length of the route.

### LTN 1/20 and Gear Change Compliance

- 2.14.14 The initial designs for each of the MATS schemes were developed before the emergence of LTN 1/20 guidance, however efforts have been made during the Preliminary and Detailed Design phases to ensure that the schemes do not have a detrimental impact on local cycling aspirations.
- 2.14.15 Both the MATS Broad Street and St Peter's Road improvement schemes are considered to offer an improvement in cycling provision over the existing arrangements. Separate technical notes discussing the scheme designs in the context of the LTN 1/20 guidance and encouraging cycling are included in Appendix C.

The MATS Broad Street Scheme is considered to improve cycling provision through the town centre. A review of the scheme design within the context of LTN 1/20 has been undertaken and a technical note setting out the detail of this is included in Appendix C. In summary, the technical note confirms that:

*"The proposed highway works will reallocate road space to remove car parking (which is currently situated within a 'central reserve' between the north and southbound carriageways) and provide a single two-way carriageway with 3.25m lane widths, in line with LTN 1/20 recommendations. This will help reduce the vehicle dominance in the town centre by increasing public space and addressing issues of severance. It will also help reduce the number of different movements by motorists, so making it safer for cyclists and pedestrians".<sup>27</sup>*

- 2.14.16 A similar technical review will be undertaken for the Northern Industrial Link Road once the Detailed Design for that scheme is complete, however the provision of a dedicated cycling route where none currently exists is considered to be a significant improvement.
- 2.14.17 No significant changes have been made to cycling provision at the A141 / Peas Hill Roundabout, A141 / Hostmoor Avenue Junction and A141 / Twenty Foot Road due to the nature of the A141 route which is not considered appropriate for cyclists.

### Policy Objectives Alignment of MATS Improvement Schemes

- 2.14.18 Table 2.13 illustrates how the MATS Improvement Schemes align with relevant National, Regional and Local policy objectives.

<sup>27</sup> CCCFHSF-ATK-HGN-XX-RP-CH-000006, Broad Street and Riverside, March, LTN 1/20 Compliance Review, Atkins, October 2022.

Table 2.13: Alignment of MATS Schemes with Policy Objectives

Policy		MATS Improvement Schemes (Package 3a)				
		Broad Street	Northern Industrial Link Road (NILR)	Peas Hill Roundabout	St Peters Road Improvement	Twenty Foot Road Signals
National Policy						
Levelling Up	Investing in the regeneration of town centres and high streets	<b>Yes</b> – will encourage footfall and facilitate delivery of FHSF public realm improvements and reduce congestion, traffic dominance and severance created by current highway layout.	<b>Yes</b> – will reduce through traffic congestion in town centre and improve journey times.	<b>Yes</b> - indirectly by reducing congestion and facilitating traffic flow on the A141, around March, to support sustainable growth.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Indirectly</b> - by reducing journey time to March.
	Improving local transport links and investing in local culture	<b>Yes</b> – will reduce congestion, improve journey times and encourage visitor numbers.	<b>Yes</b> – will reduce through traffic congestion in town centre and improve journey times.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.
DfT Single Departmental Plan	Make journeys easier and reliable	<b>Yes</b> – will reduce congestion and improve journey times.	<b>Yes</b> – will reduce through traffic congestion in town centre and improve journey times.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.
	Make transport sustainable	<b>Yes</b> – will reduce congestion, improve journey times and accessibility by sustainable modes.	<b>Yes</b> – will encourage mode shift to sustainable modes, by creating new active travel link and reducing through traffic congestion in March.	<b>Indirectly</b> – by reducing through traffic in March Town Centre will encourage uptake of sustainable travel.	<b>Indirectly</b> – by reducing through traffic in March Town Centre will encourage uptake of sustainable travel.	<b>No</b>
NPPF	Easier job creation	<b>Yes</b> – will encourage investment and economic growth.	<b>Yes</b> - will improve journey time reliability and encourage investment.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow, access and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.
	Improve travel	<b>Yes</b> – will reduce congestion, improve journey times.	<b>Yes</b> – will improve accessibility, and journey time reliability.	<b>Yes</b> – will improve traffic flow, access and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.

Policy		MATS Improvement Schemes (Package 3a)				
		Broad Street	Northern Industrial Link Road (NILR)	Peas Hill Roundabout	St Peters Road Improvement	Twenty Foot Road Signals
Regional Policy						
CPCA Local Transport Plan	New Housing	<b>Yes</b> – will reduce congestion to accommodate sustainable growth.	<b>Yes</b> – will reduce congestion to accommodate sustainable growth.	<b>Yes</b> – will reduce congestion to accommodate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.
	Access Jobs	<b>Yes</b> – will improve accessibility, and journey time reliability.	<b>Yes</b> – will improve accessibility, and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.
	Connect Business	<b>Yes</b> – will improve accessibility, and journey time reliability.	<b>Yes</b> – will improve accessibility, and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.	<b>Yes</b> – will improve traffic flow and journey time reliability.
	Journey Reliability	<b>Yes</b> – will improve journey time reliability by reducing congestion.	<b>Yes</b> – will improve journey time reliability by reducing congestion.	<b>Yes</b> – will improve journey time reliability by reducing congestion.	<b>Yes</b> – will improve journey time reliability by reducing congestion.	<b>Yes</b> – will improve journey time reliability by reducing congestion.
	Accessibility	<b>Yes</b> – will improve accessibility by all transport modes.	<b>Yes</b> - by reducing congestion and improving journey times.	<b>Yes</b> - by reducing congestion and improving journey times.	<b>Yes</b> – by improving traffic flow and journey time reliability.	<b>Yes</b> – by improving traffic flow and journey time reliability.
	Health/Well being	<b>Yes</b> will encourage active travel and improve public realm access. Reduction in congestion will improve air quality.	<b>Yes</b> – will deliver new active travel link.	<b>No</b>	<b>Yes</b> will encourage active travel.	<b>No</b>

Policy		MATS Improvement Schemes (Package 3a)				
		Broad Street	Northern Industrial Link Road (NILR)	Peas Hill Roundabout	St Peters Road Improvement	Twenty Foot Road Signals
Local Policy						
Fenland Local Plan	Improve transport Infrastructure to support growth in:					
	<ul style="list-style-type: none"> <li>Housing</li> <li>Employment</li> <li>Retail</li> </ul>	<b>Yes</b> – will support sustainable growth by reducing congestion, journey time reliability and access.	<b>Yes</b> – will support growth by reducing through traffic congestion in town centre and improve journey times across March.	<b>Yes</b> – will support growth by reducing traffic congestion and improve journey times across March	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.
Growing Fenland: March Masterplan	Improve appearance of March Town Centre	<b>Yes</b> – creation of new public realm and reduced traffic congestion will facilitate regeneration, increase footfall and encourage investment.	<b>Yes</b> – indirectly, by reducing through traffic in March Town Centre.	<b>Yes</b> – indirectly, by reducing through traffic in March Town Centre.	<b>Yes</b> – indirectly, by reducing through traffic in March Town Centre.	<b>No</b>
	Reduce traffic flow through March Town Centre	<b>Yes</b> – will reduce congestion, improve journey times and accessibility.	<b>Yes</b> – will reducing through traffic congestion in town centre.	<b>Yes</b> – will reducing through traffic congestion in town centre.	<b>Yes</b> – will regulate traffic flow through the town centre.	<b>No</b>
March Neighbourhood Plan	Infrastructure to support sustainable growth	<b>Yes</b> – will reduce congestion, improve journey times and accessibility by sustainable modes.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.	<b>Yes</b> – will increase capacity of network, by improving traffic flow and reducing existing congestion, to facilitate sustainable growth.
	Regenerate March Town Centre	<b>Yes</b> – creation of new public realm and reduced traffic congestion will facilitate regeneration, increase footfall and encourage investment.	<b>Yes</b> – indirectly, by reducing through traffic congestion in town centre, and improve journey times.	<b>Yes</b> – indirectly, by reducing through traffic in March Town Centre and improving journey times.	<b>Yes</b> – by improving traffic flow and journey times through the town centre.	<b>No</b>

## Contribution of the Options to the Scheme Objectives

2.14.19 A logic map that shows how the components of Package 3a will contribute to the scheme objectives is provided in Figure 2.13 below.

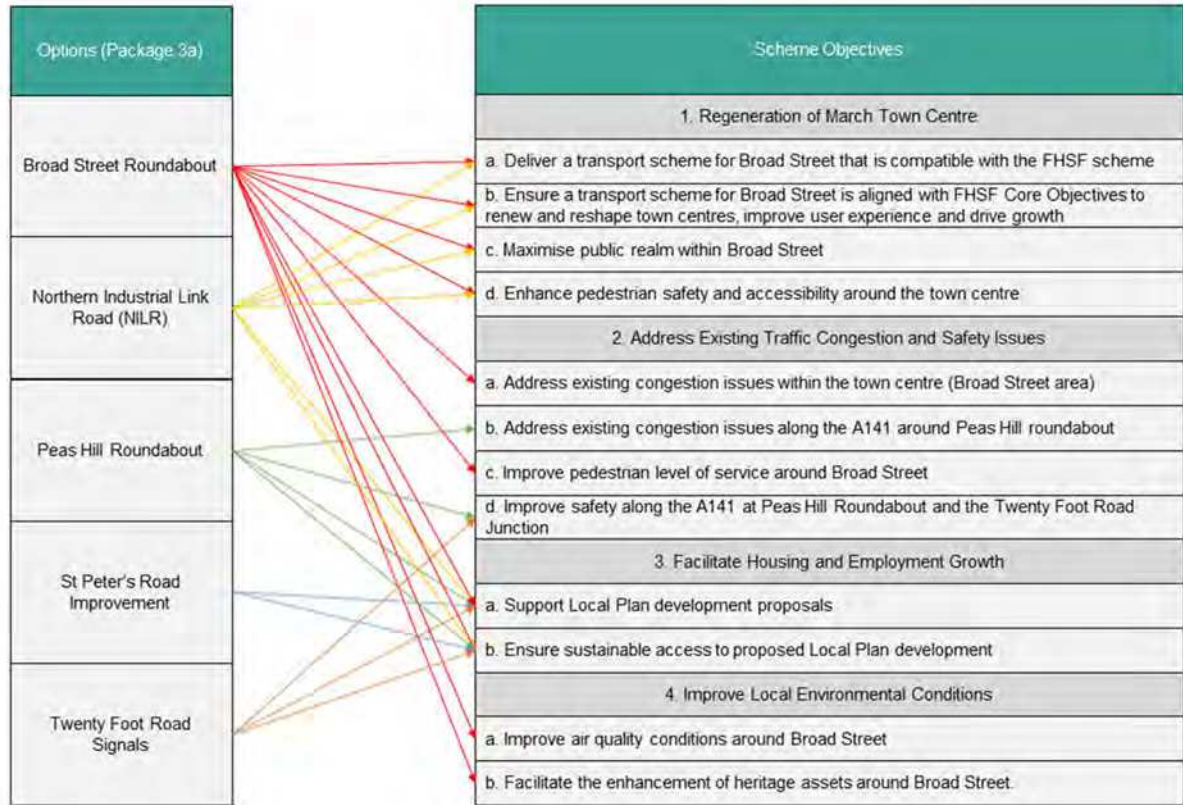


Figure 2.13: Logic Map of MATS Options and Objectives



## 2.15 Carbon Assessment

- 2.15.1 CPCA and PCC have committed to combat climate change and PCC aim to achieve 'Net Zero' carbon emissions by 2030. Carbon assessments have been undertaken for the March Area Transport Study (MATS) schemes in accordance with the following commitment from the Council's Carbon Management Action Plan (Council CMAP) 2021: *"Develop detailed carbon assessments for major highway projects and use the information to influence the final design."*
- 2.15.2 The purpose of the preliminary design carbon assessments was to baseline the construction carbon cost of the schemes early in the design process and highlight 'hotspot' areas where carbon reduction efforts now need to be focused. Where possible, detailed design carbon assessments were undertaken to highlight any carbon reductions achieved to date, as well as any other variations in carbon linked to scheme design changes. Detailed design assessments also demonstrate where construction phase carbon reduction initiatives need to be focused and provide a foundation for future workshops.
- 2.15.3 Table 2.14 and Figure 2.14 below present the preliminary and, where possible, detailed design carbon footprints for each of the MATS schemes. Based on the most recent carbon assessment undertaken, the total carbon output for all MATS schemes is 4070 tCO<sub>2</sub>e, which is equivalent to the average annual emissions from 50 London buses.

Table 2.14: MATS Schemes Carbon Footprint by Design Phase

Scheme	Preliminary (tCO <sub>2</sub> e)	Detailed (tCO <sub>2</sub> e)	% change
Broad Street	<b>523</b> (£1.6m)	-	-
Northern Industrial Link Road	<b>1697</b> (£7m)	-	-
Peas Hill	<b>549</b> (£2.3m)	<b>1479</b> (£3.5m)	<b>+169%</b>
St Peters Signals	<b>91</b> (£0.3m)	<b>80</b> (£0.5m)	<b>-12%</b>
Twenty Foot Signals	<b>224</b> (£1.1m)	<b>291</b> (£2m)	<b>+29%</b>
<b>Total</b>	<b>3084</b> (£12.3m)	-	-

- 2.15.4 The increases in carbon output for the detailed design carbon assessments can be attributed to significant increases in scopes of work and having additional information available for more comprehensive carbon accounting (Figure 2.1). Although such increases can partly mask the impacts of certain carbon reduction initiatives, it does increase the accuracy of the assessment and ensures efforts are focused in the correct areas during future stages.

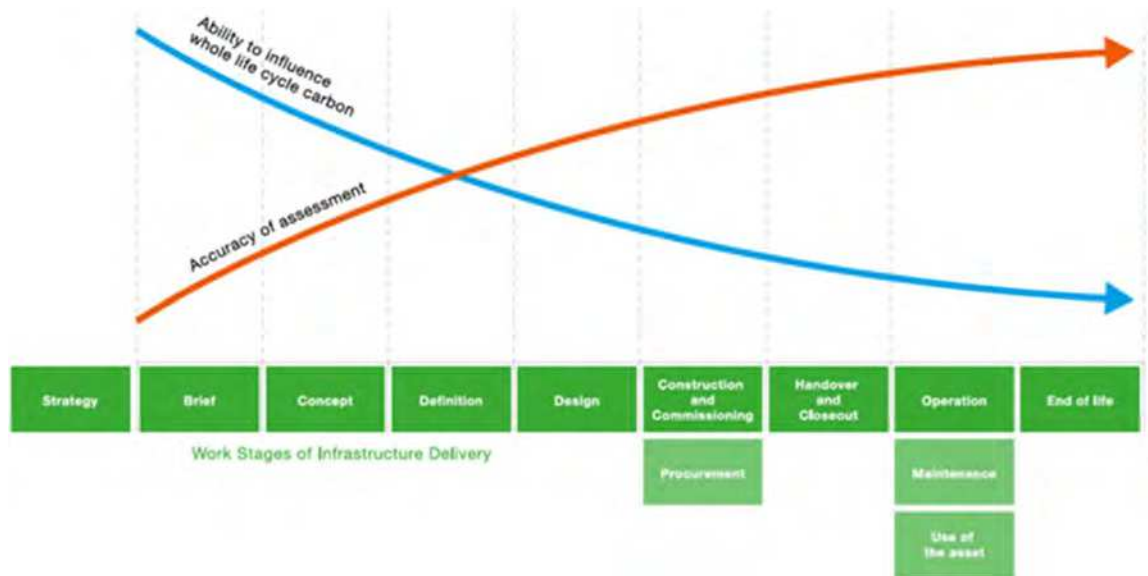


Figure 2.14: Relationship between Work Stages, Assessment Accuracy, and Ability to Influence Whole Life Cycle Carbon (Green Construction Board)

- 2.15.5 The most significant detailed design carbon output increase was associated with the Peas Hill scheme. As shown in Table 2.15 below, the detailed design BoQ included additional carbon intensive activities, such as sheet piling (318 tCO<sub>2</sub>e) and structural concrete works (64 tCO<sub>2</sub>e). There were also significant increases in drainage (107 tCO<sub>2</sub>e), earthworks (515 tCO<sub>2</sub>e), kerbs, footways & paved areas (59 tCO<sub>2</sub>e), and traffic signs & road markings (64 tCO<sub>2</sub>e). Such variations are matched by consistent increases in construction costs.

Table 2.15: Peas Hill Carbon Footprint by Design Phase

Series	Preliminary (tCO <sub>2</sub> e)	Detailed (tCO <sub>2</sub> e)	% change
Drainage & Service Ducts	26.85	134.34	400%
Earthworks	52.57	567.37	979%
Electrical Work for Road Lighting & Traffic Signs	12.69	2.15	-83%
Fencing	0.31	0	-100%
Kerbs, Footways, Cycleways and Paved Areas	60.27	119.22	98%
Landscape and Ecology	0.62	1.23	97%
Piling and Embedded Retaining Walls	0	317.89	318%
Preliminaries	163.75	118.33	-28%
Road Lighting Columns and Brackets, CCTV Masts & Cantilever Masts	31.52	23.42	-26%
Road Pavements	151.91	13.26	-91%
Road Restraint Systems (Vehicle and Pedestrian)	0	9.69	10%
Site Clearance	22.34	24.22	8%
Structural Concrete	0	64.35	64%
Traffic Signs & Road Markings	26.36	83.85	218%

2.15.6 The exception was St Peters Signals, where a 12% reduction (11 tCO<sub>2</sub>e) in carbon output was achieved during the detailed design phase. This can be linked primarily to retaining existing street lighting columns and reducing the scope of road marking & traffic sign activities.

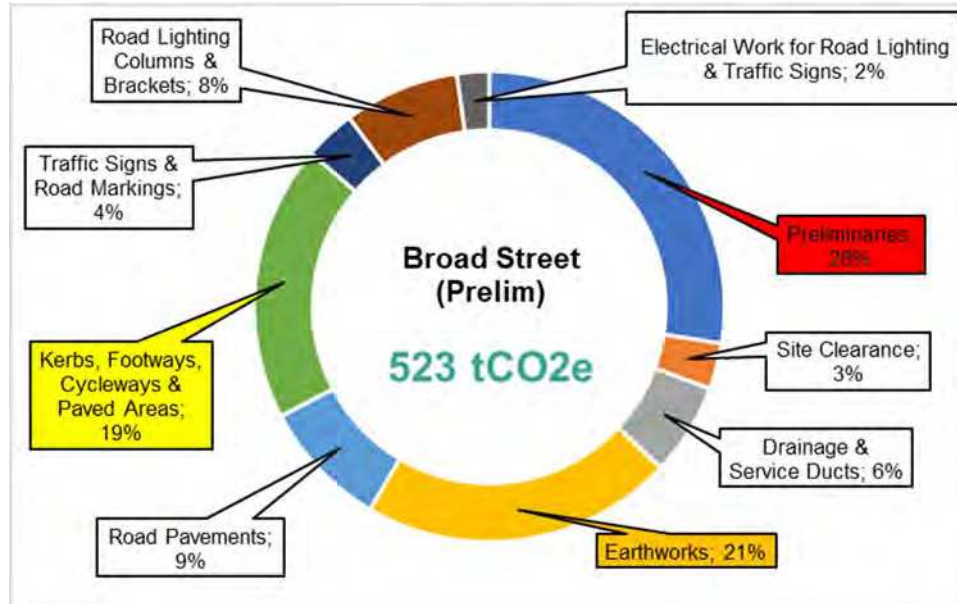


Figure 2.15: Broad Street Preliminary Design Carbon Footprint

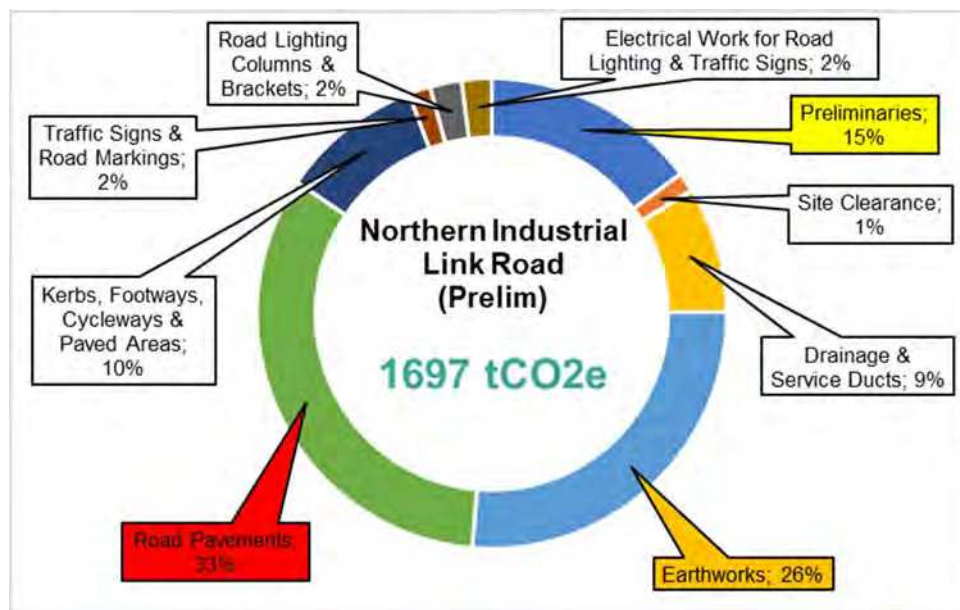


Figure 2.16: NILR Preliminary Design Carbon Footprint

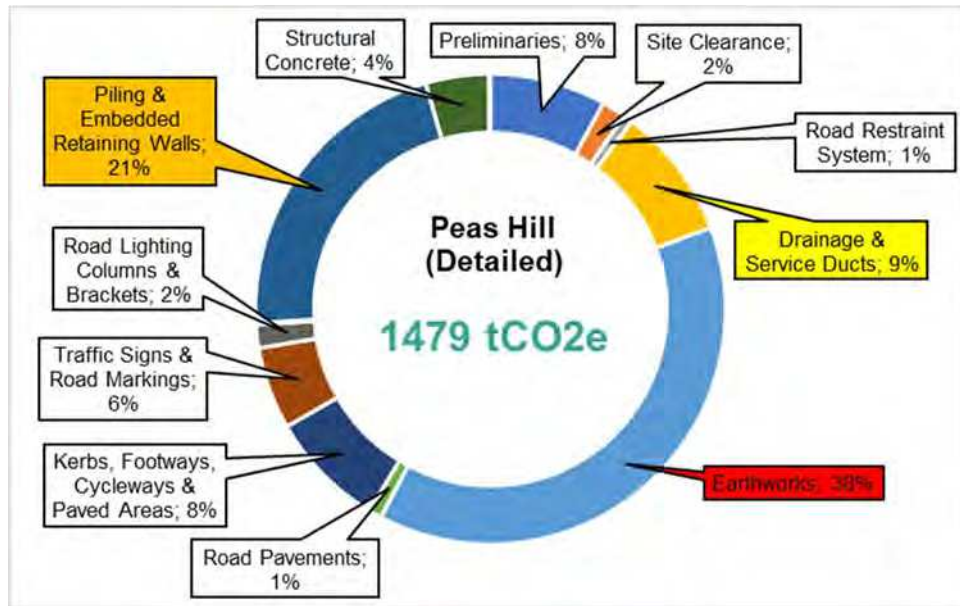


Figure 2.17: Peas Hill Detailed Design Carbon Footprint

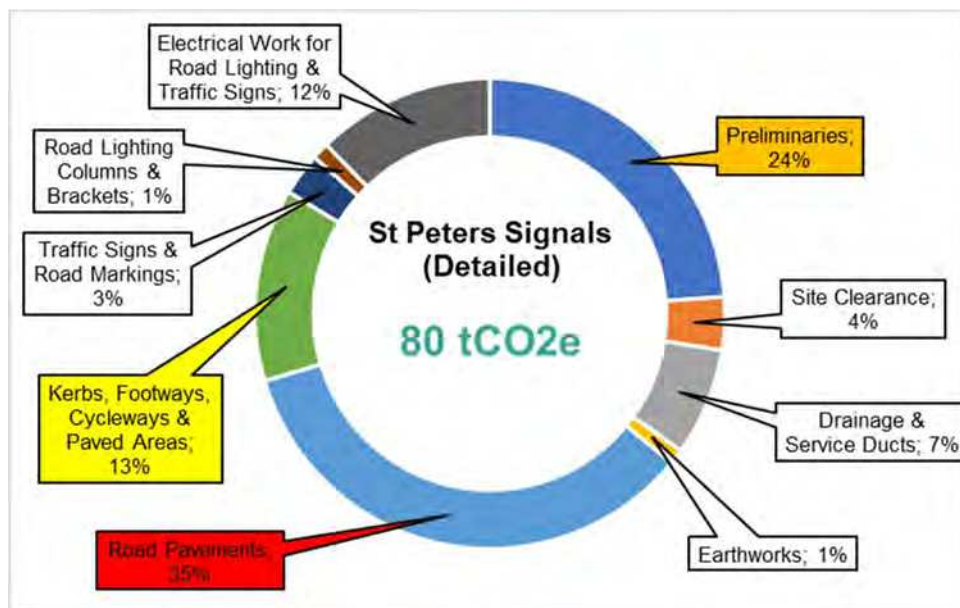


Figure 2.18: St Peters Road Detailed Design Carbon Footprint



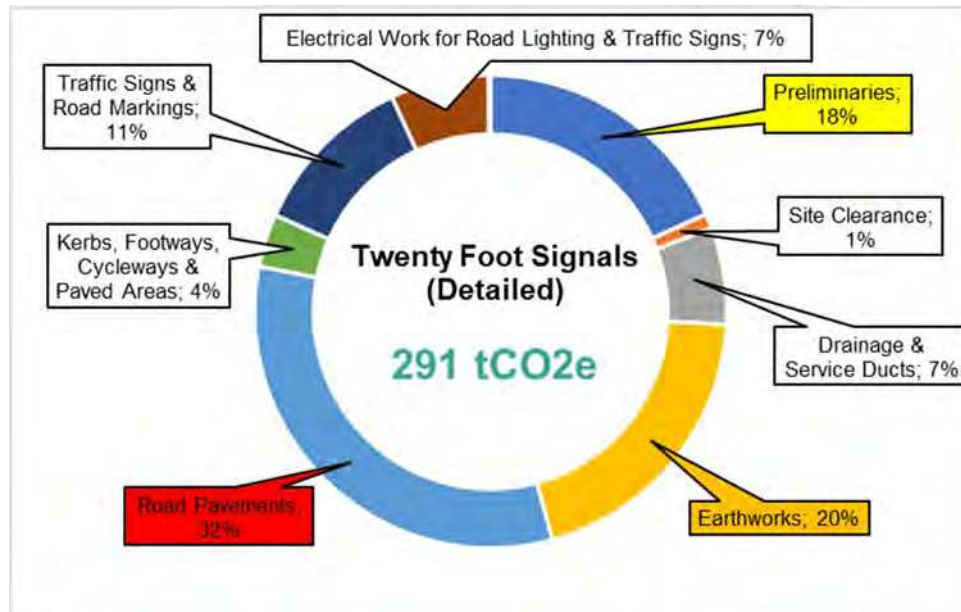


Figure 2.19: Twenty Foot Road Detailed Design Carbon Footprint

2.15.7 Carbon calculations were undertaken using the Milestone Infrastructure Carbon Tool supplemented by manual calculations to estimate carbon emissions using spend data. The assessments were based on the Bill of Quantities (BoQ) provided for both the preliminary and detailed design phases by Milestone estimators and Atkins designers respectively.

2.15.8 Figures 2.15 – 2.19 demonstrate that the highest carbon contributors based on the latest designs are:

**Broad Street (Preliminary Design):**

- Series 100: Site Preliminaries – 144 tCO<sub>2</sub>e (28%)
- Series 600: Earthworks – 112 tCO<sub>2</sub>e (21%)
- Series 1100: Kerbs, Footways, Cycleways & Paved Areas – 99 tCO<sub>2</sub>e (19%)

**Northern Industrial Link Road (Preliminary Design):**

- Series 700: Road Pavements – 562 tCO<sub>2</sub>e (33%)
- Series 600: Earthworks – 449 tCO<sub>2</sub>e (26%)
- Series 100: Site Preliminaries – 252 tCO<sub>2</sub>e (15%)

**Peas Hill (Detailed Design):**

- Series 600: Earthworks – 567 tCO<sub>2</sub>e (38%)
- Series 1600: Piling & Embedded Retaining Walls – 317 tCO<sub>2</sub>e (21%)
- Series 500: Drainage & Service Ducts – 134 tCO<sub>2</sub>e (9%)

#### St Peters Signals (Detailed Design):

- Series 700: Road Pavements – 28 tCO<sub>2</sub>e (34%)
- Series 100: Site Preliminaries – 19 tCO<sub>2</sub>e (24%)
- Series 1100: Kerbs, Footways, Cycleways & Paved Areas – 11 tCO<sub>2</sub>e (13%)

#### Twenty Foot Signals (Detailed Design):

- Series 700: Road Pavements – 94 tCO<sub>2</sub>e (32%)
- Series 600: Earthworks – 58 tCO<sub>2</sub>e (20%)
- Series 100: Site Preliminaries – 53 tCO<sub>2</sub>e (18%)

2.15.9 The methods used to undertake these carbon assessments and collate the data allow further scrutiny of carbon hotspots. For example, those shown in Figures 2.15 - 2.19 above can be further scrutinised to identify specific work 'categories' and 'activities' which are contributing the most significant proportions of carbon and facilitate a more focused carbon reduction effort. Table 2.16 and Figures 2.20 – 2.24 below highlight these and provide some suggested carbon reduction measures for consideration.

Table 2.16: MATS Schemes Carbon Footprint by Work Category

Activity	Carbon Output (tCO <sub>2</sub> e)	Potential Carbon Reduction Measures
<b>Broad Street (Preliminary Design)</b>		
Disposal of Material	100.95	<ul style="list-style-type: none"> <li>• Value engineering to reduce scope</li> <li>• Re-use of material on-site</li> </ul>
Traffic Management	84.31	<ul style="list-style-type: none"> <li>• Use of electric vehicle alternatives</li> <li>• Use of HVO fuel</li> </ul>
Paved Areas	60.26	<ul style="list-style-type: none"> <li>• Use of warm mix asphalt</li> <li>• Use of 'superlow' asphalt mix</li> </ul>
Preliminaries	59.47	<ul style="list-style-type: none"> <li>• Mains power connection for welfare</li> <li>• On-site renewable energy solutions</li> <li>• Use of HVO fuel within diesel generators</li> </ul>
Beacons	39.21	<ul style="list-style-type: none"> <li>• Reuse of existing assets</li> <li>• Use components with higher recycled content</li> </ul>
<b>Northern Industrial Link Road (Preliminary Design)</b>		
Subbase	180.11	<ul style="list-style-type: none"> <li>• Use of recycled aggregates</li> <li>• Use of geotextiles to reduce thickness</li> </ul>
Base Course	148.56	<ul style="list-style-type: none"> <li>• Use of asphalt with higher recycled content</li> <li>• Use of cold recycled bound materials</li> </ul>
Disposal of Material	143.67	<ul style="list-style-type: none"> <li>• Value engineering to reduce scope</li> <li>• Re-use of material on-site</li> </ul>
Imported Fill	136.72	<ul style="list-style-type: none"> <li>• Use of recycled aggregates</li> <li>• Use of geotextiles to reduce thickness</li> </ul>
Traffic Management	133.16	<ul style="list-style-type: none"> <li>• Use of electric vehicle alternatives</li> <li>• Use of HVO fuel</li> </ul>



Activity	Carbon Output (tCO <sub>2</sub> e)	Potential Carbon Reduction Measures
<b>Peas Hill (Detailed Design)</b>		
Piling and Embedded Retaining Walls	317.89	<ul style="list-style-type: none"> <li>• Use of 'plastic' sheet piles</li> <li>• Use of HVO fuel in sheet piling plant</li> </ul>
Disposal of Material	219.65	<ul style="list-style-type: none"> <li>• Value engineering to reduce scope</li> <li>• Re-use of material on-site</li> </ul>
Surface Course	112.59	<ul style="list-style-type: none"> <li>• Use of warm mix asphalt</li> <li>• Use of 'superlow' asphalt mix</li> </ul>
Kerbs, Channels, Edgings, Combined Drainage, Kerb Blocks etc.	74.61	<ul style="list-style-type: none"> <li>• Use of Durakerb products</li> <li>• Use of concrete with higher GGBS content</li> </ul>
Service Ducts	58.66	<ul style="list-style-type: none"> <li>• Reuse existing assets</li> <li>• Use of ducts with higher recycled content</li> </ul>
<b>St Peters Signals (Detailed Design)</b>		
Binder Course	14.74	<ul style="list-style-type: none"> <li>• Use of asphalt with higher recycled content</li> <li>• Use of cold recycled bound materials</li> </ul>
Surface Course	8.87	<ul style="list-style-type: none"> <li>• Use of warm mix asphalt</li> <li>• Use of 'superlow' asphalt mix</li> </ul>
Traffic Signals	8.48	<ul style="list-style-type: none"> <li>• Reuse existing assets</li> <li>• Use of 'superlow' asphalt mix</li> </ul>
Traffic Management	8.36	<ul style="list-style-type: none"> <li>• Use of electric vehicle alternatives</li> <li>• Use of HVO fuel</li> </ul>
Compound, Office & Welfare Facilities	6.48	<ul style="list-style-type: none"> <li>• Mains power connection for welfare</li> <li>• On-site renewable energy solutions</li> <li>• Use of HVO fuel within diesel generators</li> </ul>
<b>Twenty Foot Signals (Detailed Design)</b>		
Subbase	45.77	<ul style="list-style-type: none"> <li>• Use of recycled aggregates</li> <li>• Use of geotextiles to reduce thickness</li> </ul>
Imported Fill	36.00	<ul style="list-style-type: none"> <li>• Use of recycled aggregates</li> <li>• Use of geotextiles to reduce thickness</li> </ul>
Base Course	27.75	<ul style="list-style-type: none"> <li>• Use of asphalt with higher recycled content</li> <li>• Use of cold recycled bound materials</li> </ul>
Compound, Office & Welfare Facilities	19.91	<ul style="list-style-type: none"> <li>• Mains power connection for welfare</li> <li>• On-site renewable energy solutions</li> <li>• Use of HVO fuel within diesel generators</li> </ul>
Traffic Management	18.88	<ul style="list-style-type: none"> <li>• Use of electric vehicle alternatives</li> <li>• Use of HVO fuel</li> </ul>

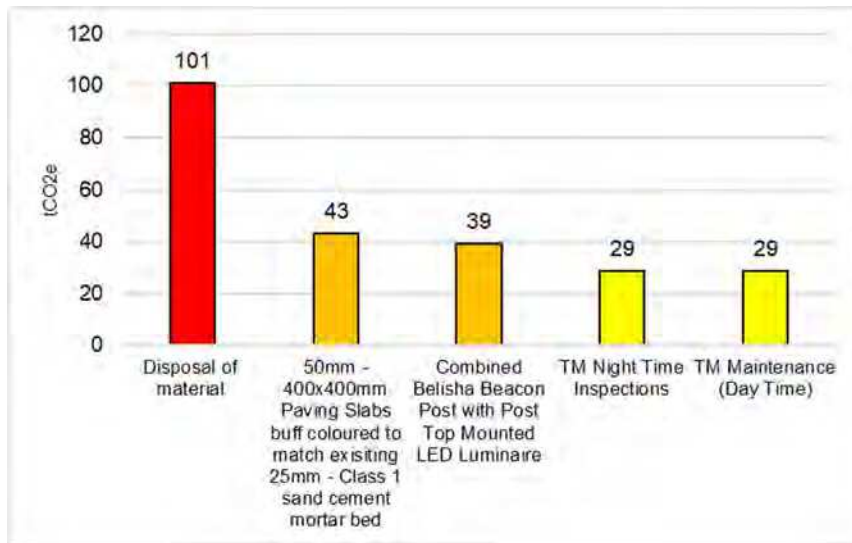


Figure 2.20: Broad Street – Work Activity Carbon Hotspots

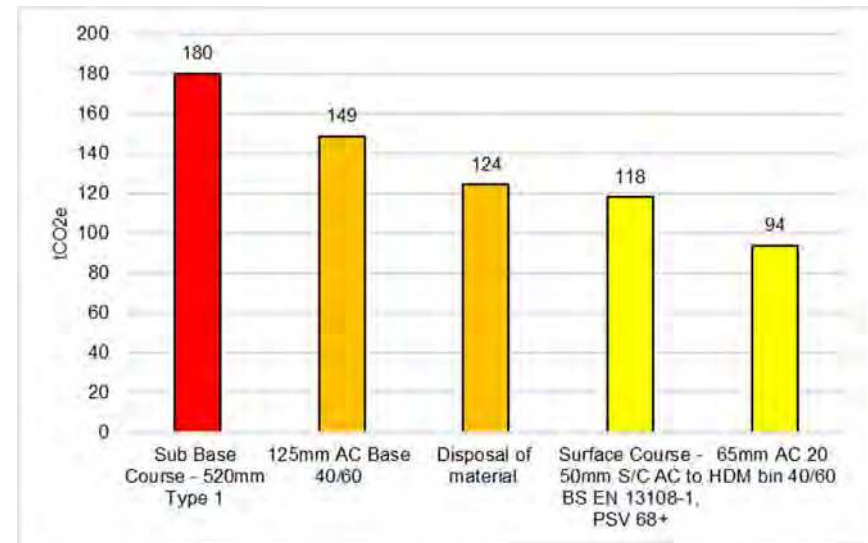


Figure 2.21: NILR – Work Activity Carbon Hotspots

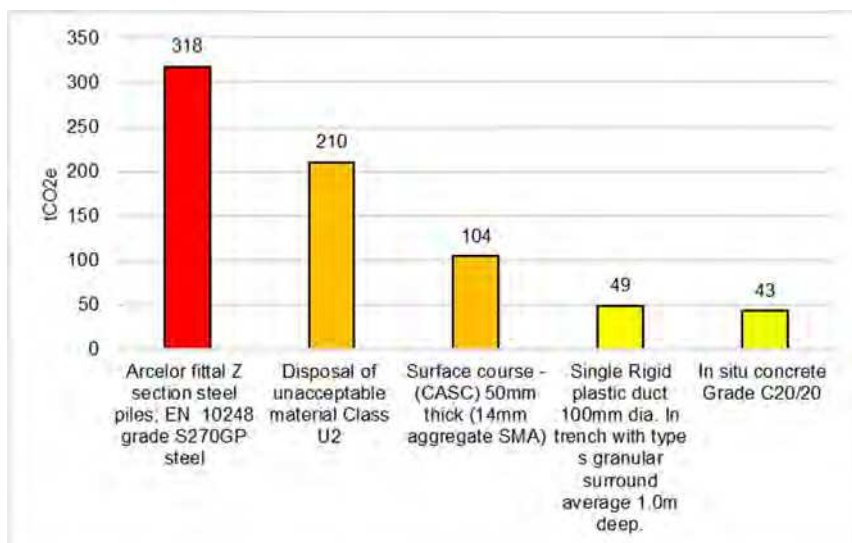


Figure 2.22: Peas Hill – Work Activity Carbon Hotspots

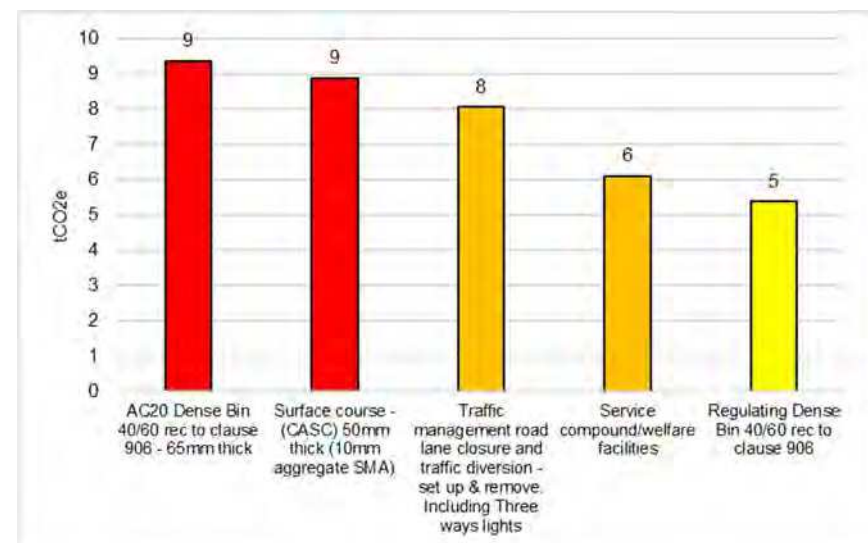


Figure 2.23: St Peters Road – Work Activity Carbon Hotspots

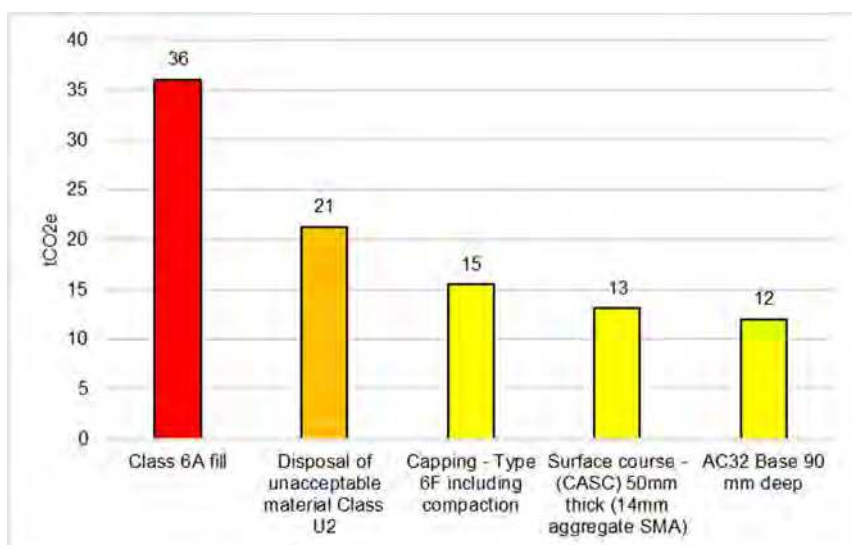


Figure 2.24: Twenty Foot Road – Work Activity Carbon Hotspots

- 2.15.10 It is recommended that a carbon reduction workshop is arranged at the earliest opportunity to help collaboratively identify further initiatives which could be considered for implementation. It is advised that this is coordinated at the earliest opportunity with representation from client, design, principal contractor, and supply chain organisations. Linked to the carbon ‘hotspots’ identified above, the workshop should focus on construction phase carbon reduction initiatives for Peas Hill, St Peters Signals, and Twenty Foot Signals schemes. For Broad Street and Northern Industrial Link Road schemes, the workshop should aim to identify detailed design value engineering and alternative material options. This will provide an opportunity to develop a carbon reduction plan for the schemes incorporating clear actions, responsibilities, and deadlines to ensure effective implementation of carbon reduction measures which also deliver cost savings. In all cases, construction will prioritise non-hazardous, reused, refurbished, recycled, and recyclable equipment and materials within specification, and those made from renewable sources with low(er) embodied energy, carbon footprint and water footprint.
- 2.15.11 The data generated from these carbon assessments can also be used to quantify the potential carbon savings associated with such interventions. This helps to ensure that we get the greatest carbon reductions for any additional expenditure required though, overall, it is anticipated that there will be a cost saving associated with such initiatives. For example, simple switches to Hydrotreated Vegetable Oil (HVO) and warm mix asphalt could reduce carbon outputs linked to diesel and asphalt use by 90% and 15% respectively. This would generate significant carbon savings overall considering the carbon hotspots presented above.
- 2.15.12 The principles of ‘Build Less’ and ‘Build Clever’ should always be embedded within the design development of a scheme to help drive the most significant carbon reductions possible (Figure 2.25). In the interest of continuous improvement, this reinforces the importance of undertaking the initial carbon assessment and workshop at the earliest opportunity when there is sufficient information available (i.e. BoQ). It should also be noted that there are operational phase carbon savings associated with the MATS schemes which have not yet been quantified, such as reducing congestion and idling traffic, and promoting active travel instead of driving. The intention is to quantify these aspects more effectively as suitable carbon accounting methods are developed and agreed.

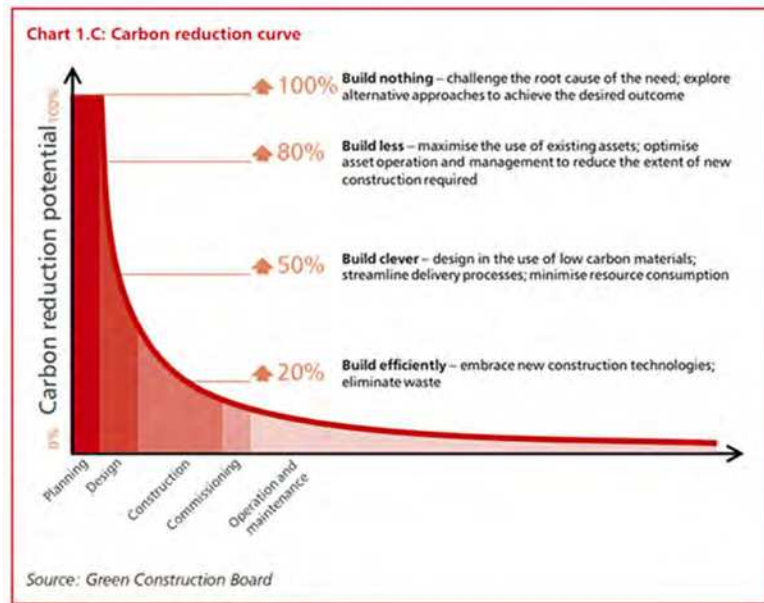


Figure 2.25: Relationship between Work Stages and Carbon Reduction Potential

2.15.13 These carbon assessments should also be updated when there are as-built (Peas Hill, St Peters Signals, Twenty Foot Signals) and detailed design (Broad Street, Northern Industrial Link Road) BoQ available. This will allow us to confirm the final carbon outputs associated with the schemes and highlight carbon reductions achieved throughout the whole project life cycles. This will require effective data collection during the construction phase. It is envisaged that this will provide another case study for future PCC and CPCA projects to replicate and build on adopting the approach summarised in Figure 2.26 below.

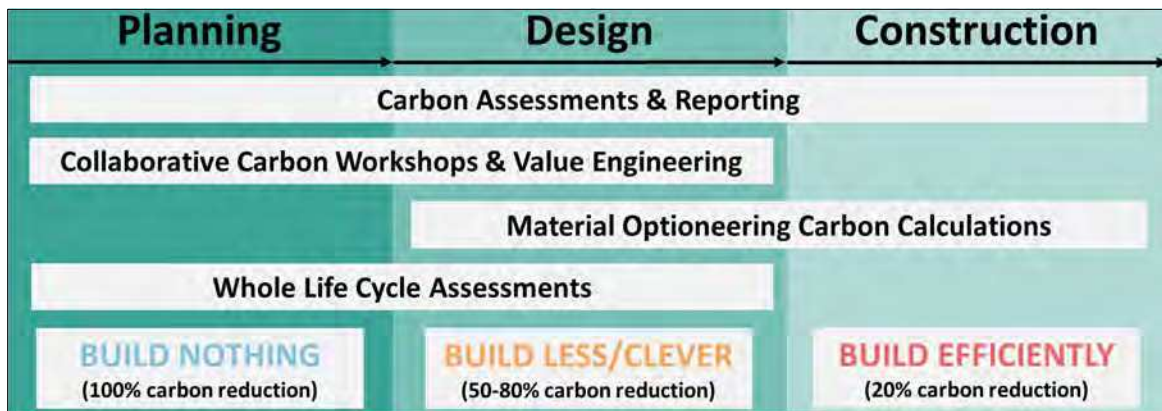


Figure 2.26: Key Carbon Management Processes Throughout the Project Lifecycle

## 3. Economic Dimension

### 3.1 Introduction

- 3.1.1 The Economic Dimension provides evidence of how the schemes are predicted to perform in relation to the stated objectives, the identified problems, and targeted outcomes. The Economic Dimension determines if the proposed schemes are likely to form a viable investment, whose strengths outweigh its weaknesses, and provides good value for money, with benefits outweighing its costs.
- 3.1.2 This section sets out the approach taken to assess the Economic Dimension for the MATS Improvement Schemes and demonstrates that the Full Package of schemes offer High Value for Money (VfM).

The Economic Dimension demonstrates that the MATS Broad Street Scheme offers Very High Value for Money.

- 3.1.3 The scheme appraisal focuses on the aspects of performance that are relevant to the nature of the intervention. These impacts are not limited to those directly impacting on the economy or those which can be monetised. The economic, environmental, social and distributional impacts of the proposal are all examined, using qualitative, quantitative and monetised information where appropriate.

### 3.2 Identified Scheme Package

- 3.2.1 As detailed in the Strategic Dimension, an extensive option assessment has been undertaken to identify a package of schemes which addresses the identified issues across March and meets the stated objectives. The MATS OAR recommended Package 3a as the preferred package of schemes across the town as a result of this option development and assessment process. The preferred package of schemes has evolved throughout the design process, and includes:

- Creation of a signalised junction at the A141 / Twenty Foot Road Junction
- Improvements to the A141 / Peas Hill Roundabout (52m ICD) in association with the creation of an all-movement signalised junction at the A141 / Hostmoor Avenue junction.
- High Street / St Peter's Road Traffic Signal Improvements
- Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction
- Development of a Northern Industrial Link Road (NILR).

- 3.2.2 Scheme designs for each of the interventions detailed above are provided in Appendix B.



### 3.3 Economic Assessment

#### Approach to Appraisal

3.3.1 The Economic Dimension for the recommended package of MATS Improvement Schemes is focused on the following aspects:

- Assessing the monetised direct, localised, and economic efficiency benefits of Package 3a (**Full Package**)

- Assessing the monetised direct, localised, and economic efficiency benefits of delivering improvements to Broad Street / Dartford Road / Station Road junction, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction (**MATS Broad Street Scheme**)

- Qualitative appraisal of wider scheme economic, environmental, and social benefits, as well as the enablement of planned development
- Distributional appraisal of total user benefits and non-working time (personal affordability)
- Offsetting identified benefits against the scheme costs to provide a Benefit to Cost (BCR) ratio.

3.3.2 It is acknowledged that a scheme can only be considered value for money if it meets the strategic objectives, and so this has been considered throughout the economic assessment.

#### Assessment Guidelines

3.3.3 Economic assessment undertaken to date has considered the DfT's TAG guidelines, with specific reference to the following documentation:

- Value for Money Framework: Moving Britain Ahead (July 2017)
- TAG Unit A1.1 – *Cost-benefit analysis* (November 2022)
- TAG Unit A1.2 – *Scheme Costs* (May 2022)
- TAG Unit A1.3 – *User and provider impacts* (May 2022)
- TAG Unit A3 – *Environmental Impact Appraisal* (May 2022)
- TAG Unit A4.1 – *Social Impact Appraisal* (November 2022)
- TAG Unit A4.2 – *Distributional Impact Appraisal* (May 2020)
- TAG Unit M1.1 – *Principles of Modelling and Forecasting* (January 2014)
- TAG Unit M3.1 – *Highway Assignment Modelling* (May 2020)
- TAG Unit M4 – *Forecasting and Uncertainty* (May 2019).



### Modelling Assessment

- 3.3.4 The transport user benefits of the schemes were assessed using the SATURN-based MATS model. The model / appraisal forecast years developed in SATURN are 2026 and 2031, which have been used to appraise the impacts of the schemes and represent the growth outlined within the Local Plan.
- 3.3.5 The modelling approach is based on fixed demand and does not consider changes in modal share as a result of the package of schemes. The schemes are not expected to generate any significant mode shift because of the remoteness of March within the region and therefore the application of variable demand modelling (VDM) is not considered appropriate.
- 3.3.6 The SATURN Local Model Validation Report (LMVR) produced for the MATS provides details of the SATURN base model calibration and validation to a 2018 base year. This reported a strong level of model validation across all base year time periods in line with TAG criteria and is considered a suitable tool for evaluating the MATS Improvement Schemes.
- 3.3.7 The SATURN Forecasting Report produced for the MATS provides details of the traffic forecasting methodology used, as well as key assumptions made during the forecasting process. This has been undertaken in line with TAG guidelines and established 'Reference Case' conditions for 2026 and 2031 future forecast years.
- 3.3.8 The key objective of the SATURN models is to forecast, accurately, the likely transport impacts that the proposed schemes would have on highway users of the surrounding road network. User benefits can be calculated by modelling the highway network, in various years, and comparing with / without scheme scenarios to determine how introducing a scheme will impact on travel behaviour and patterns.
- 3.3.9 As detailed in the Strategic Dimension, the preferred package of schemes making up the MATS Improvement Schemes have been assessed relative to reference case conditions using the MATS SATURN Model with results presented in the MATS OAR.
- 3.3.10 Construction of the proposed schemes has been phased across future forecast years, with the A141 / Twenty Foot Road Signals, A141 / Peas Hill Roundabout (in conjunction with the developer funded Hostmoor Avenue Roundabout), High Street / St Peter's Road Signal Improvements and the Broad Street MATS Improvement Schemes, all considered deliverable by 2026, with the NILR deferred until 2031 to reflect the potential complexities associated with land acquisition at this location.

## Economic Assessment Approach

- 3.3.11 Table 3.1 below outlines the monetised impacts that have been assessed as part of the economic assessment.

Table 3.1: Value for Money Framework Impacts Assessed

Value for Money Framework Impact Type	Impact	Method
Established	Journey Time Savings	TUBA
	Vehicle Operating Costs	TUBA
	Accidents	COBALT
	Noise	Noise Workbook
	Air Quality	Air Quality Valuation Workbook Local Air Quality Workbook
	Greenhouse Gases	TUBA
	Indirect Tax	TUBA
Evolving	Journey Time Reliability	TAG Unit A1.3 – Section 6.3
Non-Monetised Impacts	Landscape	Landscape Worksheet
	Townscape	Townscape Worksheet
	Historic Environment	Historic Environment Worksheet
	Biodiversity	Biodiversity Worksheet
	Water Environment	Water Environment Worksheet
	Journey Quality	Journey Quality Worksheet
	Security	Security Worksheet
	Affordability	TUBA & Distributional Impacts Worksheet
	Severance	Severance Worksheet

- 3.3.12 Established monetised impacts are those that produce monetary values that are widely accepted, well-researched, and tried and tested. Established monetised impacts are used to generate an initial Value for Money metric, which is reported in the Value for Money Statement.
- 3.3.13 Evolving monetised impacts are less widely accepted, researched, or tried and tested than established impacts and any resultant monetary values should be reported after the initial Value for Money metric. The adjusted metric can still be reported in the Value for Money Statement.
- 3.3.14 Indicative monetised impacts are not sufficiently widely accepted, researched, or tried and tested and cannot be considered definitive. Methodologies for indicative impacts are developing and have a high degree of uncertainty. No indicative monetised impacts have been assessed.
- 3.3.15 Non-monetised impacts involve the estimation of the magnitude of each impact, which is then assessed on a seven-point scale. Non-monetised impacts can be informed by a variety of evidence sources and analytical judgement.
- 3.3.16 Journey time savings, vehicle operating costs, greenhouse gases, and indirect tax have been assessed within TUBA 1.9.17 using model outputs from the Do Minimum and Do Something 2026 and 2031 SATURN models.

3.3.17 Annualisation factors shown below in Table 3.2 were specified within TUBA to calculate the likely annual transport user benefits for the AM, Inter and PM peak hours and have been derived from nearby ATC data. It was found that the hourly flows and speeds either side of the modelled AM and PM peak hours closely resembled the AM and PM peak hour flows and speeds, as shown in Figures 3.1 and 3.2 below. AM and PM annualisation factors have therefore been calculated that convert the single peak hour demand to annual peak period demand. None of the estimated annualisation factors exceeded the expected maximum threshold for each time period.

Table 3.2: TUBA Annualisation Factors

Time Slice	Time Period	Estimated Annualisation Factor	TUBA Expected Maximum Hours	Description
1	AM Peak	<b>750</b>	759	Convert from 08:00 – 09:00 to annual 07:00 – 10:00 period
2	PM Peak	<b>699</b>	759	Convert from 17:00 – 18:00 to annual 16:00 – 19:00 period
3	Inter Peak	<b>1,469</b>	1,518	Convert from 14:00 – 15:00 to annual 10:00 – 16:00 period

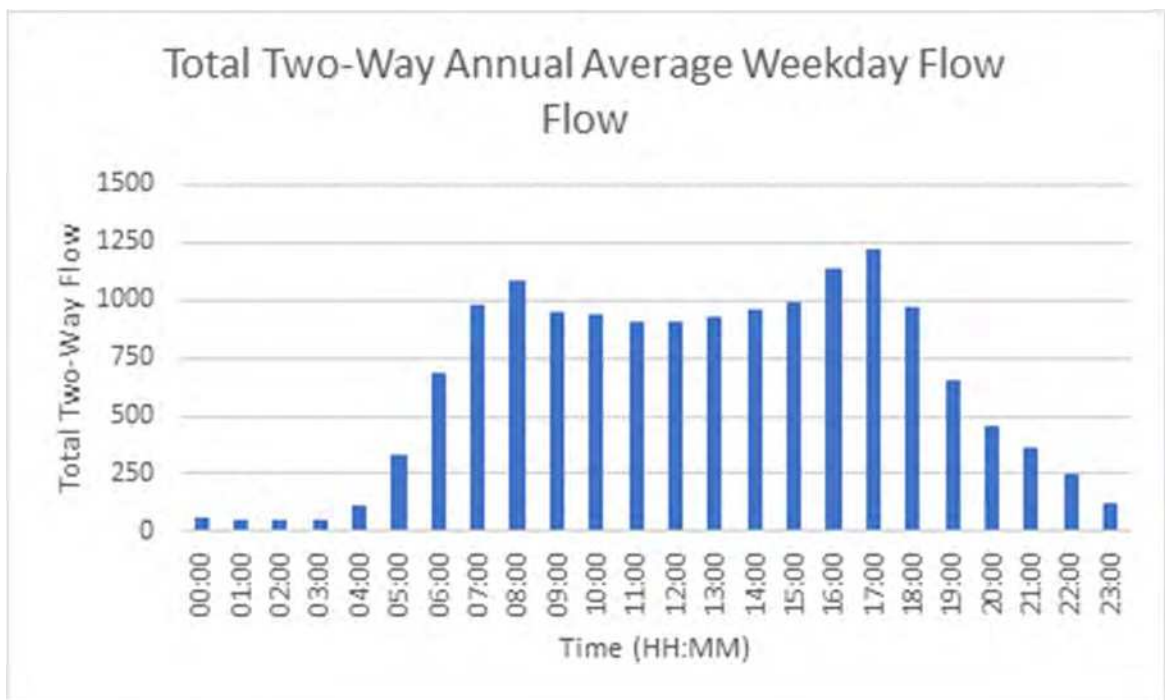


Figure 3.1: 24-hour Total Two-Way Annual Average Weekday Flow

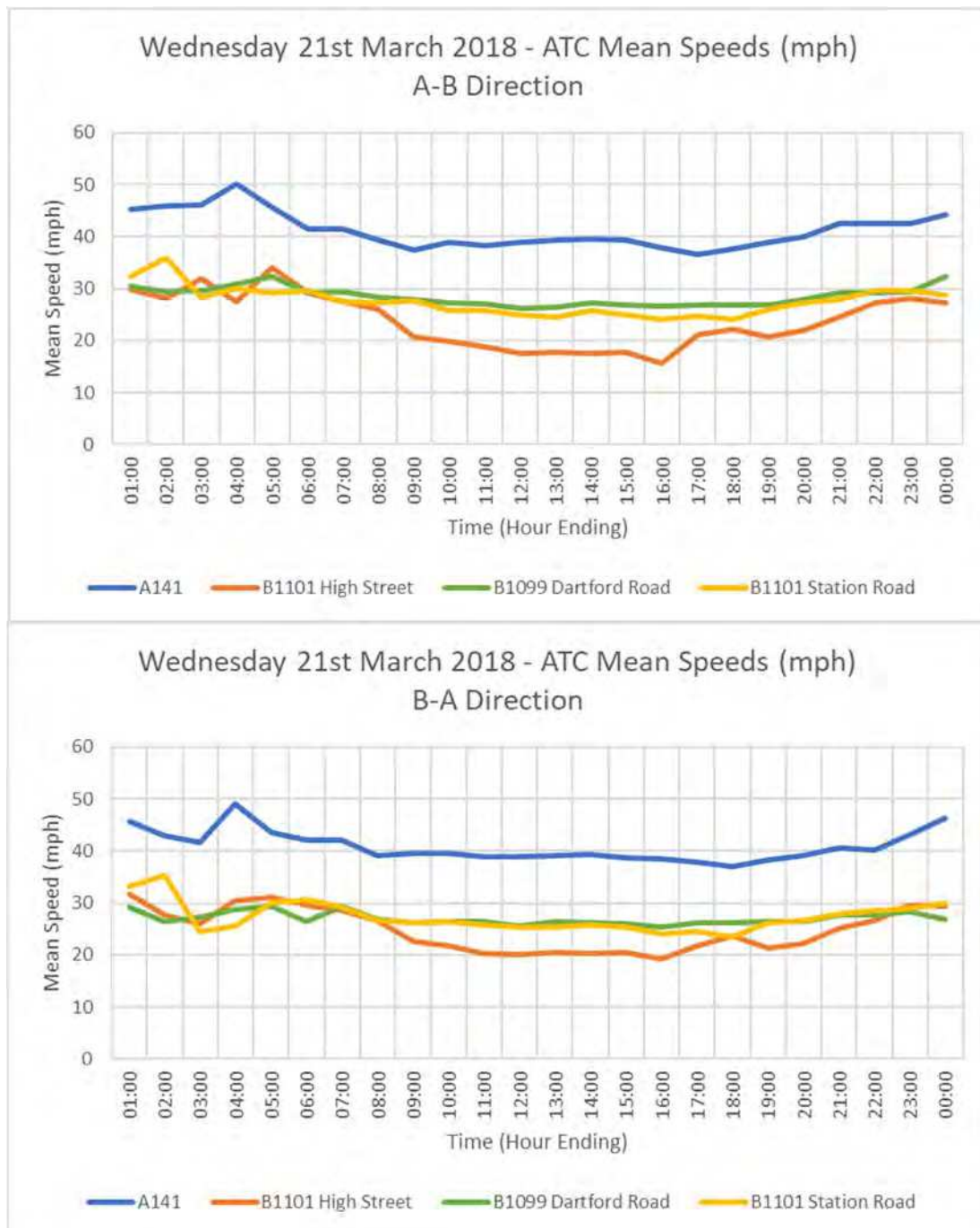


Figure 3.2: 24-hour Speed Profile by Direction at each ATC Site

- 3.3.18 The impact of construction has been accounted for within the TUBA assessment through introducing construction-related highway restrictions on the modelled network for each scheme location in the 12 months prior to opening. The benefits / disbenefits associated with the construction of each scheme have been annualised within TUBA to reflect the construction programme for each scheme.
- 3.3.19 The COBALT assessment uses 24-hour AADT base and forecast year model flows at each scheme location to estimate the accident benefits for the MATS Broad Street Scheme and the Full Package.

- 3.3.20 All established monetised impacts have been calculated over 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 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 in Table 3.3 below.

Table 3.3: DfT Value for Money Categories

Value for Money Category	Description
Very High	BCR greater than or equal to 4.0
High	BCR between 2.0 and 4.0
Medium	BCR between 1.5 and 2.0
Low	BCR between 1.0 and 1.5
Poor	BCR between 0.0 and 1.0
Very Poor	BCR less than or equal to 0.0

- 3.3.21 The Net Present Value (NPV) is also reported, and this represents the net total value of a scheme with scheme costs subtracted from its monetised benefits. PVB, PVC and NPV values are expressed in £'000s in 2010 market prices and values to allow direct comparison.
- 3.3.22 Monetised journey time reliability benefits have been assessed for the core scenario of the MATS Broad Street Scheme and the Full Package using the methodology outlined in TAG Unit A1.3 Section 6.3. Benefits have been annualised using the factors used in TUBA and discounted to 2010.
- 3.3.23 Journey time reliability benefits are an evolving monetised impact and should be identified separately from other more established economic benefits. Reliability benefits cannot be included in the main BCR for the MATS Broad Street Scheme or Full Package and should only be combined with other economic benefits to form the 'adjusted BCR'.

#### Key Risks, Sensitivities, and Uncertainties

- 3.3.24 Table 3.4 overleaf outlines the sensitivity tests undertaken to confirm the robustness of the business case.

Table 3.4: Sensitivity Tests

TAG Unit	Description	Software
A1.3	High Value of Time (VOT) – +25% for Commuting and Business, and +60% for Other purpose types	TUBA
A1.3	Low Value of Time (VOT) – -25% for Commuting and Business, and -60% for Other purpose types	TUBA
M4	Low Growth	TUBA and COBALT
M4	High Growth	TUBA and COBALT
M4	Common Analytical Scenario (CAS) Behavioural Change	TUBA
A3	High Estimate for Air Quality Improvements	Air Quality Valuation Workbook
A3	Low Estimate for Air Quality Improvements	Air Quality Valuation Workbook
A1.2	Optimism Bias – P Value for Cost Change to achieve a specific Value for Money Category	TUBA

3.3.25 Sensitivity tests have been undertaken to understand the potential impact of uncertainty around assumptions and forecasts on the project's value for money. The main risks to value for money are:

- Lower traffic growth than forecasted in the core scenario
- Lower Values of Time (VOT) for commuting, business and other travellers than estimated in the most recent value of time research and outlined in the TAG Data Book
- Lower than estimated reductions in air pollution
- Higher than estimated scheme costs.

3.3.26 The COVID-19 pandemic resulted a significant drop in highway usage as part of national lockdowns. The post-lockdown recovery periods have seen total national traffic levels recover close to pre-COVID-19 levels as shown in Figure 3.3 below. Mobility levels for each journey purpose in Fenland have not returned to pre-COVID-19 patterns as shown in Figure 3.4, with workplace and residential mobility below and above baseline levels, respectively.



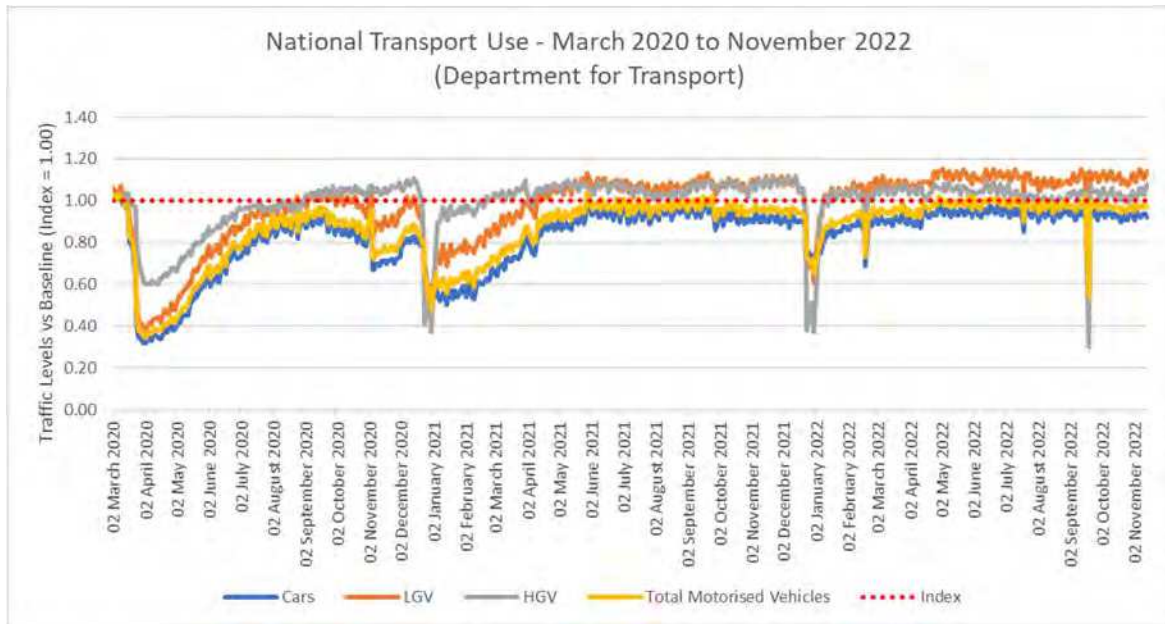


Figure 3.3: National Transport Use – March 2020 to November 2022 (Department for Transport)



Figure 3.4: Fenland Mobility Levels by Travel Purpose – February 2020 to October 2022 (Google)

- 3.3.27 As no-one knows what overall impact this will have on highway usage and growth moving forward, the low growth and behavioural change sensitivity tests are considered robust proxies for measuring the scheme benefits against a scenario where traffic growth does not match pre-COVID-19 levels.
- 3.3.28 As the benefits of the package of MATS Improvement Schemes largely relate to reducing delay to existing and future traffic, a growth in future traffic levels beneath that anticipated is the greatest risk to the package of schemes. The results of the sensitivity tests, and their impact on the business case, are detailed later in this chapter.
- 3.3.29 As part of the scheme design and costing process, optimism bias has been calculated and is incorporated into the scheme costs used within the Economic Assessment. Further details on these costs are provided beneath.

### 3.4 Present Value Costs

- 3.4.1 Robust scheme cost estimates have been produced based on Detailed Designs produced in 2022, and with contractor input (ECI) into construction planning and risk review. Note that the design for the Northern Industrial Link Road is less mature and is more accurately described as an advanced Preliminary Design, and the Optimism Bias rates for this scheme have been amended to reflect this.

*"The proposed highway works will reallocate road space to remove car parking (which is currently situated within a 'central reserve' between the north and southbound carriageways) and provide a single two-way carriageway with 3.25m lane widths, in line with LTN 1/20 recommendations. This will help reduce the vehicle dominance in the town centre by*

- 3.4.2 The Base Investment Costs are detailed below in Table 3.4 and the subsequent steps taken to calculate the Present Value Costs (PVC) are described beneath.
- 3.4.3 The benefits assessment was undertaken for a 60-year appraisal period from the scheme opening year (2024 to 2083), with costs included from 2023 through to 2024. Further detail about the scheme costs is provided in the Financial Dimension.
- 3.4.4 The Base Investment Cost is the capital cost required to construct the scheme in current year (2022) prices, without a risk allowance or optimism bias. This is derived from the scheme cost estimate based on design information and early contractor involvement (ECI) and is the building block for all subsequent cost calculations. All Sunk Costs (those already incurred) have been omitted from the economic assessment in line with TAG unit A1.2.
- 3.4.5 Table 3.5 shows the Base Investment Cost for the Full Package profiled over the next six calendar years and broken down by cost type.

Table 3.5: Base Investment Cost (2022 Prices) – Full Package

Calendar Year	Construction (£)	Land & Property (£)	Preparation / Supervision (£)	Other (£)	Total
2023	2,212,997		389,042	532,337	<b>3,134,376</b>
2024	603,545	440,000	661,145	824,916	<b>2,529,606</b>
2025	5,400,204		1,344,186	841,843	<b>7,586,234</b>
2026	3,803,003	80,000	899,681	645,620	<b>5,428,304</b>
2027	8,004,122		1,137,596	531,861	<b>9,673,579</b>
2028			20,000		<b>20,000</b>
<b>Total</b>	<b>20,023,871</b>	<b>520,000</b>	<b>4,451,650</b>	<b>3,376,577</b>	<b>28,372,098</b>

3.4.6 Table 3.6 shows the Base Investment Cost for the MATS Broad Street Scheme profiled over the next three calendar years and broken down by cost type.

Table 3.6: Base Investment Cost (2022 Prices) – MATS Broad Street Scheme

Calendar Year	Construction (£)	Land & Property (£)	Preparation / Supervision (£)	Other (£)	Total
2023	2,212,997		149,286	292,508	<b>2,654,791</b>
2024	603,545		40,714	79,775	<b>724,034</b>
2025					
2026					
2027					
2028					
<b>Total</b>	<b>2,816,542</b>		<b>190,000</b>	<b>372,283</b>	<b>3,378,825</b>

3.4.7 The PVC has been calculated as follows:

- Real Cost increases were calculated using the Base Investment Cost spend profile. The Base Cost adjustment factor was calculated by dividing the Construction Industry Inflation Rate (12% in 2022 / 2023 and 2023 / 2024, 10% in 2024 / 2025, and then 5%<sup>28</sup> per annum thereafter) by the Annual GDP Factor derived from the TAG Databook (May 2022) for each of the years within the assessment period. The inflation rate was derived from construction output price indices as well as knowledge of costs associated with recent schemes in the Cambridgeshire region. Note that inflation has not been applied for the MATS Broad Street Scheme as this was included in the Contractor price and is therefore already captured in the Base Investment Cost.
- Optimism Bias was then applied in line with TAG unit A1.2 (May 2022). An Optimism Bias rate of 20% has been used for all schemes with completed Detailed Designs to represent the level of design maturity, however, an Optimism Bias rate of 23% has been applied to the NILR in acknowledgement that this design is not as progressed as the others.

The total Optimism Bias applied for the Full Package was £7,716,547.

The total Optimism Bias applied for the MATS Broad Street Scheme was £675,765.

<sup>28</sup> [Turner & Townsend raises inflation forecast to 8.5% \(theconstructionindex.co.uk\)](https://www.theconstructionindex.co.uk)

The Optimism Bias rates used are confirmed in Table 3.7 beneath:

Table 3.7: Application of Optimism Bias

Scheme	Design Stage	Optimism Bias Rate
Broad Street	Detailed Design	20%
A141 Peas Hill + A141 Hostmoor Avenue	Detailed Design	20%
A141 / Twenty Foot Road	Detailed Design	20%
St Peter's Road	Detailed Design	20%
Northern Industrial Link Road	Preliminary Design	23%

- Costs were then rebased back to 2010 using factors derived from the TAG Databook (May 2022) GDP Deflator.
- Costs were then discounted to 2010 in line with guidance provided in TAG unit A1.2.
- Finally, costs were converted to 2010 Market Prices using a factor of 1.19.

3.4.8 Note that the final three steps are undertaken within the TUBA software, and that risk has been excluded from the Economic Assessment in line with the latest TAG guidance.

3.4.9 Tables 3.8 and 3.9 below show the costs described above for the Full Package and MATS Broad Street Scheme, split into construction costs and maintenance costs.

3.4.10 Maintenance costs have been calculated based on an indicative maintenance schedule for the new infrastructure identified as representing an increased maintenance liability above existing infrastructure. Further detail on the calculation of maintenance costs is provided within the Financial Dimension (Chapter 4).

3.4.11 Note that CCC, as the Highway Authority, are liable for all future maintenance costs, and that these costs are not requested from the CPCA as part of the scheme funding. They are calculated to demonstrate the whole life cost of the scheme, and for use within the Economic Assessment.

Table 3.8: Economic Dimension Cost Estimates – Full Package

Description of Cost Type	Construction Cost (£)	Maintenance Cost Over 60 Years (£)
Base Investment Cost	28,372,098	206,500
Base Cost with Real Cost Increases	35,581,123	1,730,778
Base Cost with Real Cost Increases and Optimism Bias	43,297,671	1,730,778
Rebased to 2010 Price Year	34,115,431	1,363,727
Discounted to 2010 Prices	19,910,150	267,313
Adjusted to Market Prices	23,693,078	318,102

- 3.4.12 Please note that there is no increase in maintenance costs predicted for the MATS Broad Street Scheme, which will result in a significant reduction in transport infrastructure due to the removal of traffic signals.

Table 3.9: Economic Dimension Cost Estimates – MATS Broad Street Scheme

Description of Cost Type	Construction Cost (£)	Maintenance Cost Over 60 Years (£)
Base Investment Cost	3,378,825	0
Base Cost with Real Cost Increases	3,378,825	0
Base Cost with Real Cost Increases and Optimism Bias	4,054,590	0
Rebased to 2010 Price Year	3,194,723	0
Discounted to 2010 Prices	2,027,917	0
Adjusted to Market Prices	2,413,221	0

- 3.4.13 A full profile for the Economic Dimension cost calculations is provided within Appendix D.



### 3.5 Present Value Benefits

#### Transport User Benefits

- 3.5.1 The transport benefits of the MATS Broad Street Scheme and the Full Package were assessed using SATURN 11.4.07H.
- 3.5.2 Full details relating to the calibration and validation of the base model can be found in the LMVR, and details about the forecasting procedure can be found in the Forecasting Report.
- 3.5.3 Two core network scenarios were developed for the economic assessment, these were the Do Minimum (DM) and Do Something (DS) scenarios. The DM scenario represents future growth without highway intervention (without scheme), and the DS scenario (with scheme) includes the package of schemes (Full Package) within the model with the same level of future core traffic growth. An additional DS scenario has been developed that considers only the MATS Broad Street Scheme with the same growth assumptions as described for the DM and Full Package scenarios.
- 3.5.4 The difference between the DM and DS scenarios demonstrates the benefits of implementing the scheme. These benefits are measured using:
  - Network assignment statistics
  - Link flow changes
  - Journey times
  - Journey routing.
- 3.5.5 The Model output files are then entered into the Transport User Benefits Appraisal (TUBA, 1.9.17) and COBALT v2.3 software to undertake the Economic Assessment and calculate a BCR.
- 3.5.6 TUBA produces figures for a number of benefits, including Greenhouse Gases, User benefits by purpose, and Indirect Taxation. Indirect taxation often provides a negative benefit figure. This is a result of the reduced fuel being purchased due to the improvements, which reduces the money the government receives in taxes.
- 3.5.7 The impact of construction has been assessed in TUBA for the following scheme locations for the Full Package only:
  - Peas Hill Roundabout (Phase 1) – Approaches reduced to a single lane for 40 weeks
  - Peas Hill Roundabout (Phase 2) – Wisbech Road approach closed for 17 weeks
  - B1101 / St. Peter's Road – Full closure of junction for 2 weeks
  - Twenty Foot Road – Full closure of road for 9 weeks.
- 3.5.8 The total Present Value of Benefits (PVB) of the construction period for the Full Package is a disbenefit of £169,000.

The traffic management required for delivering the MATS Broad Street Scheme will only reduce capacity to levels similar to the end scheme (i.e., with two lanes reduced to one, and the traffic signals removed) and is therefore not been assessed in detail.

3.5.9 The total core TUBA PVB for the Full Package is £44,807,000.

The total core TUBA PVB for the MATS Broad Street Scheme is £16,590,000.

#### Accident Benefits

3.5.10 Separate COBALT assessments have been undertaken for the MATS Broad Street Scheme and the Full Package. Tables 3.10 and 3.11 summarise the results of the Full Package COBALT assessment and MATS Broad Street Scheme. All benefits have been discounted to 2010 and are reported in multiples of a thousand pounds.

Table 3.10: Full Package COBALT Results

Scenario	Full Package COBALT Accident Benefits (£'000s)		
	Links	Junctions	Total
Low Growth	217.4	4,950.6	5,168.0
Core Growth	125.5	5,559.5	5,685.0
High Growth	97.0	5,766.6	5,863.6

Table 3.11: Broad Street COBALT Results

Scenario	MATS Broad Street Scheme COBALT Accident Benefits (£'000s)		
	Links	Junctions	Total
Low Growth	-52.4	4,835.4	4,783.0
Core Growth	-75.6	4,748.1	4,672.5
High Growth	-77.5	4,835.4	4,757.9

3.5.11 The total combined TUBA and COBALT PVB for the Full Package is £50,492,000.

The total combined TUBA and COBALT PVB for the MATS Broad Street Scheme is £21,263,00.

### Air Quality and Noise Benefits

- 3.5.12 Changes in air quality and noise have been quantitatively and monetarily assessed, with and without scheme for the MATS Broad Street Scheme and the Full Package. Air quality and noise impact assessments have been undertaken as part of the latest design phase and the results of which have been outlined within the Air Quality Valuation and Noise Workbooks (See Appendix F). Modelled 24-hour Annual Average Daily Traffic (AADT) and 18-hour Annual Average Weekday Traffic (AAWT) total vehicular flows, HGV percentages, and speed data have been extracted from SATURN and used as input for these assessments.
- 3.5.13 Baseline noise surveys were undertaken in line with the Calculation of Road Traffic Noise (CRTN) using the 1988 Shortened Measurement method. All surveys have been carried out by suitably qualified acousticians.
- 3.5.14 Road traffic noise calculations have been carried out in accordance with the methodology set out in the DfT's Memorandum 'Calculation of Road Traffic Noise' using SoundPLAN noise modelling software.
- 3.5.15 Existing receptor locations have been considered and used to establish the change in the daytime LA10, 16h noise levels. As per TAG Unit A3, the results have been converted to LAeq 16h (07:00 to 23:00 hours) to avoid overlap with the Lnight period (23:00 to 07:00).
- 3.5.16 Predictions were generated for the following scenarios:
- Short-term Assessment – Do Minimum scenario vs the Do Something scenario in the opening year (2026)
  - Long-term Assessment (without scheme) – Do Minimum scenario in the opening year against the Do Minimum scenario in the future year (opening + 15 years). The latest available modelled year is 2031.
  - Long-term Assessment (with Scheme) – Do Minimum scenario in the opening year vs the Do Something scenario in the future year (opening + 15 years). The latest available modelled year is 2031.
- 3.5.17 The impact magnitude scales for road traffic noise have been determined based on the guidance within the DMRB LA 111 (Rev 2) and mitigation options will be presented, if required.

3.5.18 The total noise benefits in 2010 values and prices for the Full Package are £3,220,240 over a 60-year appraisal period, and combines the following benefits:

- Sleep disturbance – £1,382,693
- Amenity – £1,238,898
- Acute Myocardial Infarction (AMI) – £288,260
- Stroke – £123,665
- Dementia – £186,724.

The total noise benefits in 2010 values and prices for the MATS Broad Street Scheme are £863,212 over a 60-year appraisal period, and combines the following benefits:

- Sleep disturbance – £394,468
- Amenity – £320,831
- Acute Myocardial Infarction (AMI) – £80,009
- Stroke – £27,069
- Dementia – £40,835.

It was estimated that the MATS Broad Street Scheme would result in an increase in households experiencing daytime noise of 59 and a reduction in households of 197.

Noise benefits for the MATS Broad Street Scheme are relatively high due to the town centre location, and the smoothing of traffic flow (resulting from the replacement of traffic signals with a roundabout) along a route with a high number of receptors. There is also some trip diversion as part of the full scheme as additional capacity is created on the A141 corridor (where there are fewer receptors) and trips from the Broad Street route re-route to the A141 to the west.

3.5.19 It was estimated that the MATS Broad Street Scheme would result in an increase in households experiencing daytime noise of 63 and a reduction in households of 480.

3.5.20 The scope of the operational Air Quality assessment includes the following:

- Liaise with the local planning authority to define and agree a scope of works
- Carry out a review of existing local, regional, national, and international policies and guidelines regarding the protection of air quality and identify any potential impacts from neighbouring facilities and sensitive receptors with the potential to be affected by the proposed development
- Review existing baseline conditions utilising existing local authority monitoring data and DEFRA's background mapping concentrations
- Undertake a detailed dispersion modelling using ADMS-Roads to determine the change in pollutant concentrations as a result of the operation of the scheme at existing sensitive receptor locations.

3.5.21 The following scenarios have been assessed:

- Baseline / Model verification
- Do Minimum (2026) – opening year of the scheme without development
- Do Something (2026) – opening year of the scheme with development.

3.5.22 The methodology outlined within TAG Unit A3 Section 3 has been followed and the TAG Local Air Quality (LAQ) and Air Quality Valuation Workbooks utilised.

3.5.23 The study area used for the assessment has been calculated using DMRB LA105 Guidance.

The total air quality benefits in 2010 values and prices for the MATS Broad Street Scheme are £164,745 over a 60-year appraisal period. It was estimated that the scheme would result in a reduction in NO<sub>x</sub> emissions of 15 tonnes and PM2.5 emissions of 3 tonnes over a 60-year period.

3.5.24 The total air quality benefits in 2010 values and prices for the Full Package are £321,746 over a 60-year appraisal period. It was estimated that the scheme would result in a reduction in NO<sub>x</sub> emissions of 12 tonnes and PM2.5 emissions of 8 tonnes over a 60-year period. This is likely due to an overall reduction in congestion despite the schemes collectively drawing more traffic onto the network.

3.5.25 The total combined TUBA, COBALT, noise, and air quality PVB for the Full Package is £54,034,000.

The total combined TUBA, COBALT, noise, and air quality PVB for the MATS Broad Street Scheme is £22,290,000.

## Benefit Cost Ratio

- 3.5.26 The Benefit Cost Ratio (BCR) is the ratio of PVB to PVC. Tables 3.12 and 3.13 below summarise the Core and Adjusted BCRs for the MATS Broad Street Scheme and the Full Package.

Table 3.12: Analysis of Monetised Costs and Benefits (Core – MATS Broad Street Scheme)

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	353
Consumer Users (Commuting)	3,591
Consumer Users (Other)	8,253
Business Users / Providers	4,757
Indirect Taxes	-364
Total Impact of Construction	0
Noise	863
Air Quality	165
Accidents	4,673
Journey Reliability (Adjusted only)	1,397
<b>Present Value of Benefits (PVB)</b>	<b>22,290</b>
<b>Adjusted PVB</b>	<b>23,688</b>
Costs	
Broad Transport Budget	2,413
<b>Present Value of Costs (PVC)</b>	<b>2,413</b>
Net Benefit / BCR Impact	
<b>Net Present Value (NPV)</b>	<b>19,877</b>
<b>Benefit Cost Ratio (BCR)</b>	<b>9.24</b>
<b>Adjusted NPV</b>	<b>21,275</b>
<b>Adjusted BCR</b>	<b>9.82</b>

Transport user, accident, noise, and air quality benefits combined for the MATS Broad Street Scheme will provide an NPV of £19,877,000 and a BCR of 9.82, which equates to Very High Value for Money.



Table 3.13: Analysis of Monetised Costs and Benefits (Core – Full Package)

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	1,193
Consumer Users (Commuting)	12,184
Consumer Users (Other)	19,059
Business Users / Providers	13,747
Indirect Taxes	-1,207
Total Impact of Construction	-169
Noise	3,220
Air Quality	322
Accidents	5,685
Journey Reliability (Adjusted only)	4,490
<b>Present Value of Benefits (PVB)</b>	<b>54,034</b>
<b>Adjusted PVB</b>	<b>58,524</b>
Costs	
Broad Transport Budget	24,160
<b>Present Value of Costs (PVC)</b>	<b>24,160</b>
Net Benefit / BCR Impact	
<b>Net Present Value (NPV)</b>	<b>29,874</b>
<b>Benefit Cost Ratio (BCR)</b>	<b>2.24</b>
<b>Adjusted NPV</b>	<b>34,364</b>
<b>Adjusted BCR</b>	<b>2.42</b>

3.5.27 Transport user, accident, noise, and air quality benefits for the Full Package will provide an NPV of £29,874,000 and a BCR of 2.24, which equates to High Value for Money.

### TUBA Benefits Breakdown

- 3.5.28 As well as providing a BCR, TUBA also provides data on where the benefits of the package of schemes are found including, but not limited to, benefits by time saving and benefits by distance. These benefits are broken down by vehicle type and journey purpose to best understand who benefits from the scheme. Tables 3.14 and 3.15 show the time benefits saving by vehicle for the MATS Broad Street Scheme and the Full Package, respectively.

Table 3.14: Non-Monetised Time Benefits by Time Saving (MATS Broad Street Scheme)

Non-Monetised Time Benefits by Time Saving					
Time Benefits ('000s of Person Hours) by Size of Time Saving					
< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	> 5 mins
-5	-9	-414	5,621	416	1

The table shows that the majority of journey time savings relating to the MATS Broad Street Scheme are between 0 to 2 minutes, followed by 2 to 5 minutes.

Table 3.15: Non-Monetised Time Benefits by Time Saving (Full Package)

Non-Monetised Time Benefits by Time Saving					
Time Benefits ('000s of Person Hours) by Size of Time Saving					
< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	> 5 mins
0	0	-2,852	8,442	8,202	724

- 3.5.29 The table shows that the majority of journey time savings are between 0 to 2 and 2 to 5 minutes, followed by 5 minutes or greater.
- 3.5.30 Tables 3.16 and 3.17 show the time benefits by distance for the MATS Broad Street Scheme and the Full Package, respectively.

Table 3.16: Non-Monetised Time Benefits by Distance (MATS Broad Street Scheme)

Non-Monetised Time Benefits by Distance					
Time Benefits ('000s of Person Hours) by Distance					
Vehicle Type	Purpose	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 25 kms
Car	Business	4	85	93	1
Car	Commuting	24	340	430	3
Car	Other	129	2,629	1,205	3
LGV	Business	6	249	337	4
HGV	Business	-14	11	70	1

Table 3.17: Non-Monetised Time Benefits by Distance (Full Package)

Non-Monetised Time Benefits by Distance					
Time Benefits ('000s of Person Hours) by Distance					
Vehicle Type	Purpose	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 25 kms
Car	Business	6	182	249	-2
Car	Commuting	32	1,038	1,697	18
Car	Other	174	5,115	4,113	25
LGV	Business	7	504	954	15
HGV	Business	0	9	372	6

- 3.5.31 The tables show that those making localised trips (5-10km) benefit most from the proposed package of schemes, although those making slightly shorter trips (1-5km) also benefit significantly from the schemes. As with the time savings, car users experience the greatest benefits, mostly those who commute or travel for other purposes.

3.5.32 Tables 3.18 and 3.19 show that the benefits of the schemes are greatest in the PM peak, but all peaks have significant benefits.

Table 3.18: User Benefits by Time Period (MATS Broad Street Scheme)

MATS Broad Street Scheme	
Period	User Time Benefits (£'000s)
AM Peak	3,082
PM Peak	7,671
Inter Peak	4,465

Table 3.19: User Benefits by Time Period (Full Package)

Full Package	
Period	User Time Benefits (£'000s)
AM Peak	16,114
PM Peak	20,344
Inter Peak	4,617

### 3.6 Sensitivity Testing

- 3.6.1 Sensitivity testing has been undertaken to determine whether the proposed schemes could still achieve value for money under different uncertainty scenarios.
- 3.6.2 The TAG Low Growth and Common Analytical Scenarios (CAS) Behavioural Change scenarios are considered to represent possible post COVID-19 and Brexit growth, although not enough is yet known about how transport will be affected in the long term. This testing has been undertaken by using figures from TEMPro 8.0 and the method outlined in TAG Unit M4 to create both 'low' and 'high' growth scenarios.
- 3.6.3 As stated in the TAG Uncertainty Toolkit, the CAS Behavioural Change scenario specifically considers a world in which people embrace alternative ways of working, shopping and travelling, including remote and flexible working and online shopping. The trends observed in the 2010s have been accelerated by the COVID-19 pandemic and extrapolated until 2040. The result of this is significantly lower (or negative) traffic growth over much of the forecast period.
- 3.6.4 The trip matrix totals are shown in Figures 3.5 to 3.7.

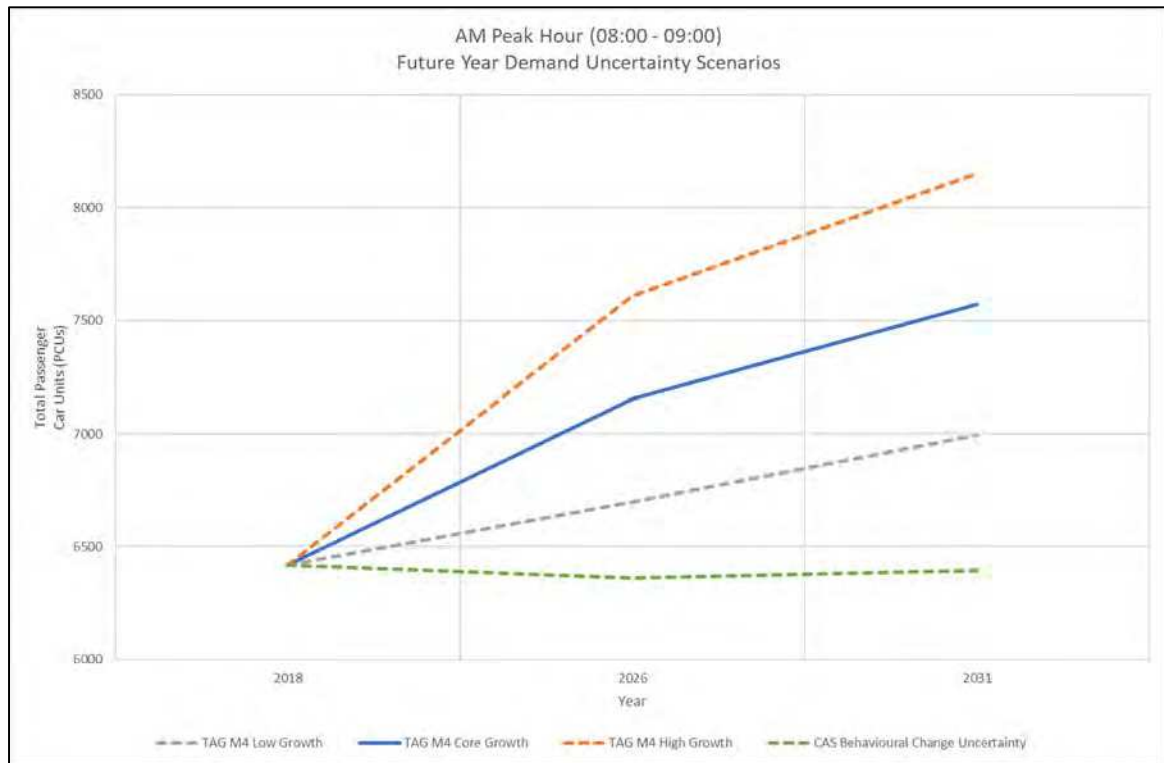


Figure 3.5: AM Peak Hour – Total Number of Trips in Model

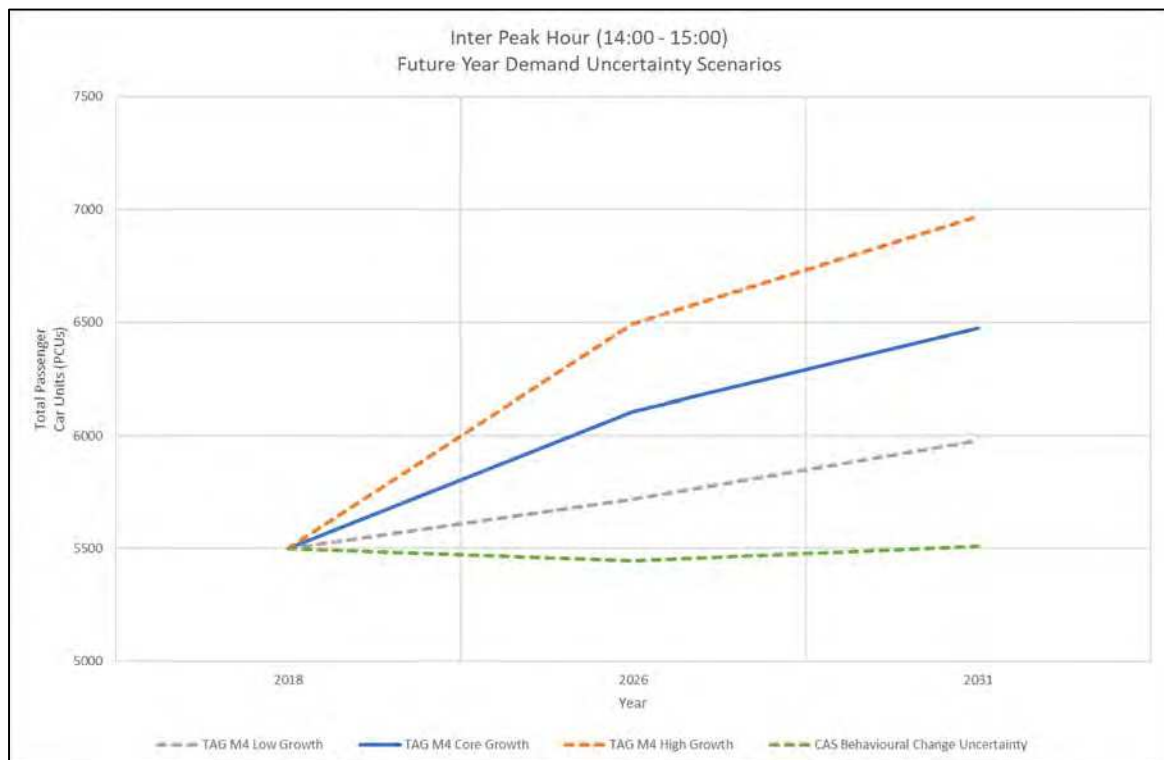


Figure 3.6: Inter Peak Hour – Total Number of Trips in Model

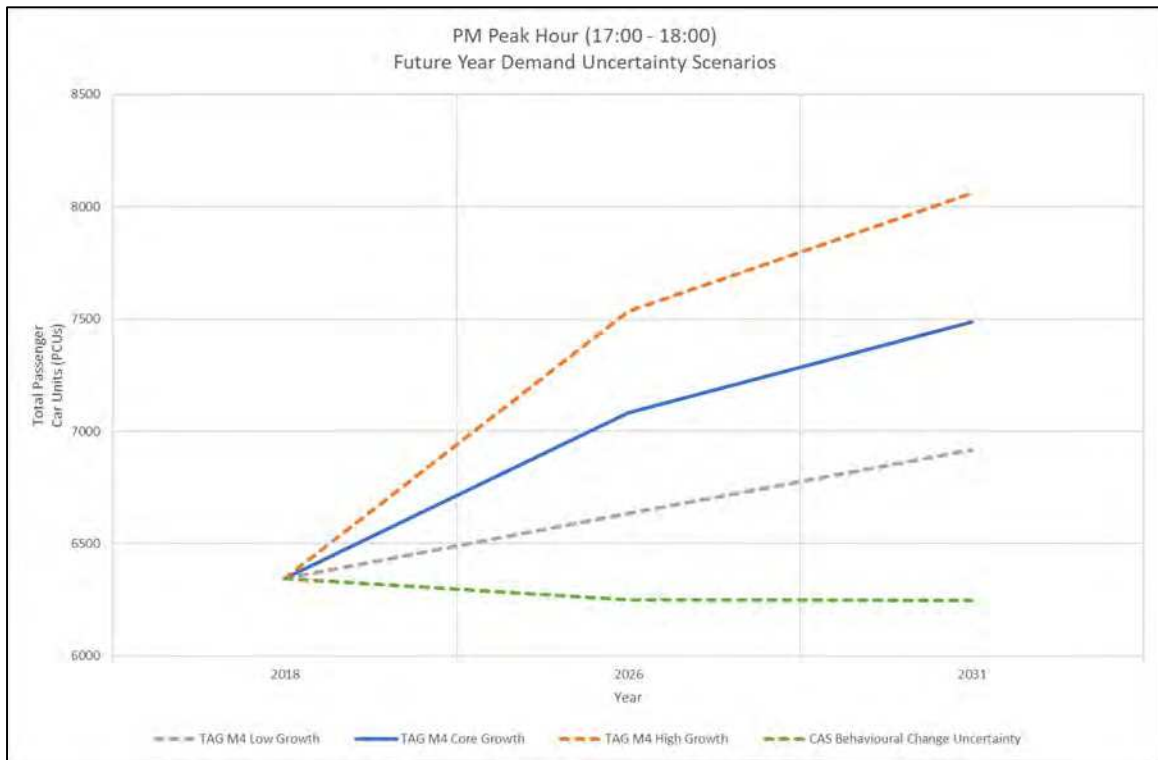


Figure 3.7: PM Peak Hour – Total Number of Trips in Model

- 3.6.5 Once the behavioural change, low and high growth scenarios had been run and assessed within the modelling, the Economic Assessment was repeated to determine whether the MATS Broad Street Scheme and the Full Package would still operate well and offer value for money if lower or higher than anticipated traffic growth occurred.
- 3.6.6 A summary of the economic results for each of the growth ranges used in the sensitivity test is presented in Tables 3.20 and 3.21 below, respectively.

Table 3.20: Benefit-Cost Ratio Under Different Growth Scenarios (MATS Broad Street Scheme)

Scenario	MATS Broad Street Scheme - Growth Sensitivity Tests			
	PVB (£'000s)	PVC (£'000s)	NPV (£'000s)	BCR
Behavioural Change Growth	7,343	2,413	4,930	3.04
Low Growth	15,621	2,413	13,208	6.47
Core Growth	22,290	2,413	19,877	9.24
High Growth	34,619	2,413	32,206	14.35

The results from the growth sensitivity tests show that the MATS Broad Street Scheme will offer at least High Value for Money in all growth scenarios, with BCRs ranging between 3.04 and 14.35.



Table 3.21: Benefit-Cost Ratio Under Different Growth Scenarios (Full Package)

Scenario	Full Package - Growth Sensitivity Tests			
	PVB (£'000s)	PVC (£'000s)	NPV (£'000s)	BCR
Behavioural Change Growth	10,694	24,160	-13,466	0.44
Low Growth	26,683	24,160	2,523	1.10
Core Growth	54,034	24,160	29,874	2.24
High Growth	89,940	24,160	65,780	3.72

- 3.6.7 The Full Package would offer Poor Value for Money in the Behavioural Change Scenario, Low Value for Money in the Low Growth Scenario, and at least High Value for Money in the Core and High Growth scenarios, with BCRs ranging between 0.44 and 3.72.
- 3.6.8 It is expected that the Behavioural Change Growth scenario would produce a particularly low BCR because the level of growth is significantly lower than the other scenarios, with negative growth in 2026, and there would therefore be significantly fewer trips experiencing the journey time savings produced by the Full Package.
- 3.6.9 Additional scheme benefit sensitivity tests have been undertaken on the Values of Time (VOT) used in TUBA for the core scenario. These scenarios consider VOT in the ranges of  $\pm 25\%$  for Commuting and Business trips and  $\pm 60\%$  for Other trips.
- 3.6.10 Tables 3.22 and 3.23 summarise the economic results for the Low VOT and High VOT tests for the MATS Broad Street Scheme and the Full Package.

Table 3.22: Benefit-Cost Ratio under Different VOT Scenarios (Full Package)

Scenario	Full Package - Growth Sensitivity Tests			
	PVB (£'000s)	PVC (£'000s)	NPV (£'000s)	BCR
Low VOT	33,959	24,160	9,799	1.41
Core VOT	54,034	24,160	29,874	2.24
High VOT	66,643	24,160	42,483	2.76

Table 3.23: Benefit-Cost Ratio under Different VOT Scenarios (MATS Broad Street Scheme)

Scenario	MATS Broad Street Scheme - Growth Sensitivity Tests			
	PVB (£'000s)	PVC (£'000s)	NPV (£'000s)	BCR
Low VOT	15,809	2,413	13,396	6.55
Core VOT	22,290	2,413	19,877	9.24
High VOT	28,771	2,413	26,358	11.92

The results from the VOT sensitivity tests show that the MATS Broad Street Scheme will offer at least Very High Value for Money in all VOT scenarios, with BCRs ranging between 6.55 and 11.92.

- 3.6.11 The Full Package would offer Low Value for Money in the Low VOT scenario and at least High Value for Money in the Core and High VOT scenarios, with BCRs ranging between 1.41 and 2.76.
- 3.6.12 Figures 3.8 and 3.9 summarise the core and sensitivity test BCRs calculated for the Full Package and the MATS Broad Street Scheme respectively.

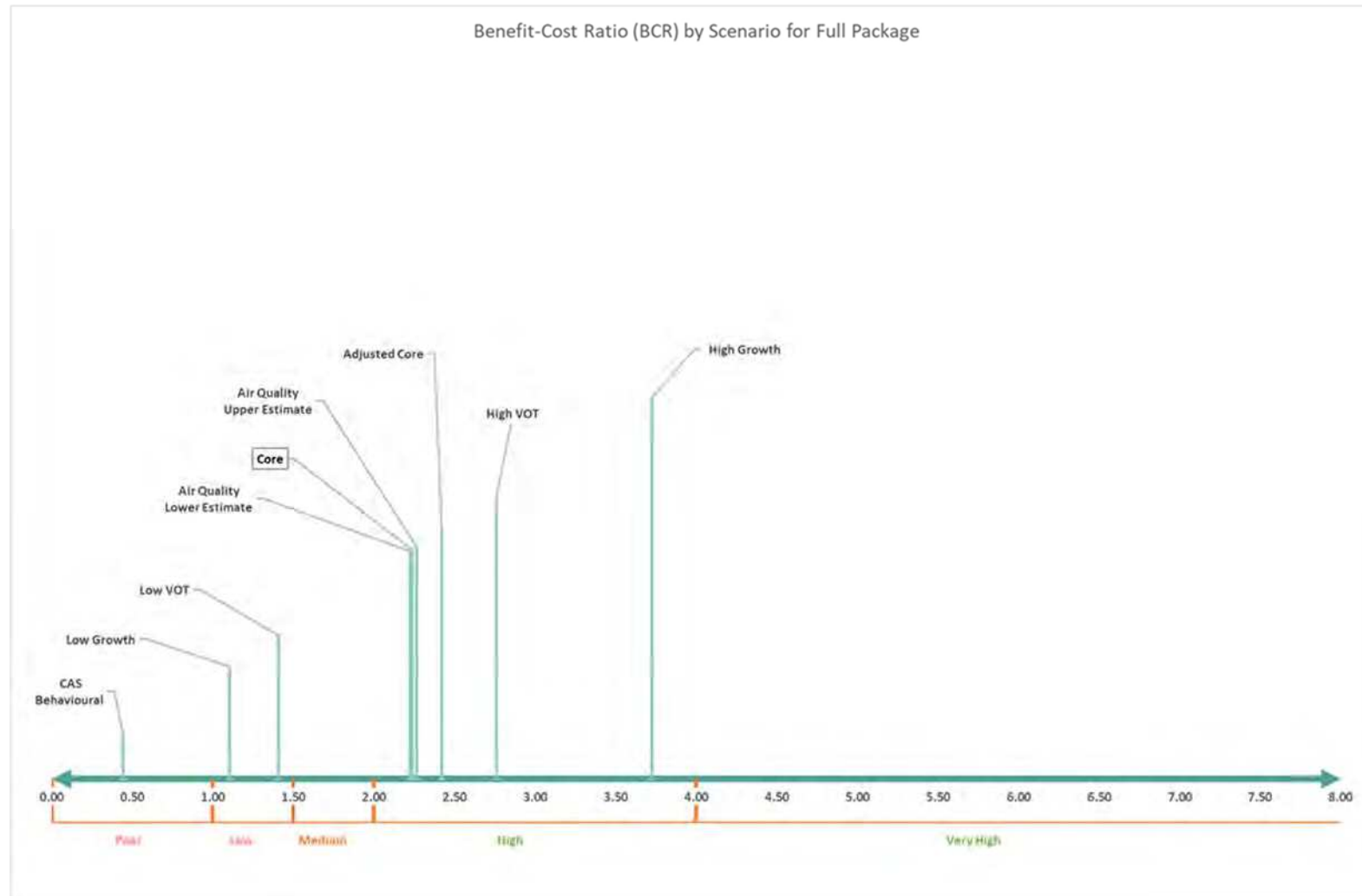


Figure 3.8: Core and Sensitivity Test BCRs – Full Package

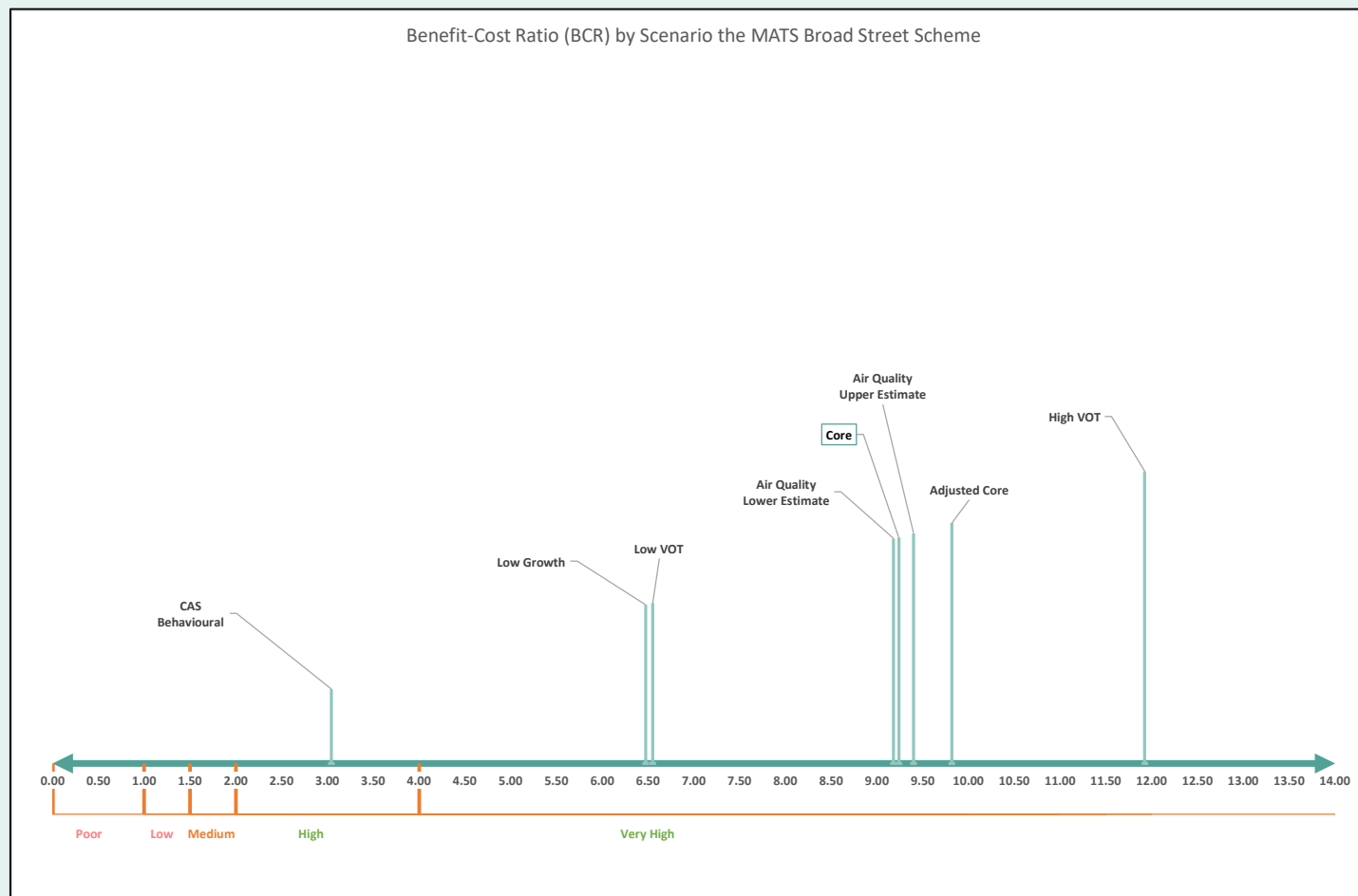


Figure 3.9: Core and Sensitivity Test BCRs – MATS Broad Street Scheme

- 3.6.13 A sensitivity test on the uncertainty around cost estimates has been undertaken for the MATS Broad Street Scheme and Full Package, using the method outlined in TAG Unit A1.2 Section 6. This approach considers P Values for different levels of Optimism Bias from the Reference Class Forecasting (RFC) values found in the latest TAG Optimism Bias Workbook. The RCF distribution can be used to analyse the sensitivity of a project's VfM rating to cost overrun.
- 3.6.14 Table 3.24 summarises the cost changes required to reduce the Full Package BCR from 2.2 to over 4.0 (Very High Value for Money) and below 2.0 (Medium Value for Money).

Table 3.24: Cost Change Required to Reduce Full Package BCR to Lower Value for Money Categories

Item	Value	Units
Present Value of Cost (Exc. Optimism Bias)	20.1	£m
Present Value of Cost (Inc. Optimism Bias)	24.2	£m
Scheme Benefits	54.0	£m
Benefit to Cost Ratio	2.2	
Cost Change Needed for BCR of 4.0	-10.7	£m
Cost Change Needed for BCR of 2.0	2.9	£m
Total Cost Overrun Needed for BCR of 4.0 (%)	-33	%
Total Cost Overrun Needed for BCR of 2.0 (%)	34	%

- 3.6.15 Table 3.25 uses the calculated percentage cost overruns for each BCR rating from Table 3.26 to find the corresponding P Value on the RCF distribution curve.

Table 3.25: Associated P Values for Full Package

Cost Overrun Level	Expressed as a % of PVC (exc. OB)	Associated P Value
P-mean overrun	20%	54
Percentage overrun needed for Very High Value for Money	-33%	0
Percentage overrun needed for Medium Value for Money	34%	77

- 3.6.16 Table 3.25 shows that the Full Package has a 0% chance of costs being low enough to shift the scheme up to a BCR greater than 4.0 (Very High Value for Money). There is a 77% chance that costs will remain low enough that the VfM does not fall to Medium Value for Money.

Table 3.26 summarises the cost changes required to reduce the MATS Broad Street Scheme BCR from 6.2 to under 4.0 (High Value for Money) and 2.0 (Medium Value for Money).

**Table 3.26: Cost Change Required to Reduce MATS Broad Street Scheme BCR to Lower Value for Money Categories**

Item	Value	Units
Present Value of Cost (Exc. Optimism Bias)	2.0	£m
Present Value of Cost (Inc. Optimism Bias)	2.4	£m
Scheme Benefits	16.6	£m
Benefit to Cost Ratio	6.9	
Cost Change Needed for BCR of 4.0	1.7	£m
Cost Change Needed for BCR of 2.0	5.9	£m
Total Cost Overrun Needed for BCR of 4.0 (%)	106	%
Total Cost Overrun Needed for BCR of 2.0 (%)	313	%

Table 3.27 uses the calculated percentage cost overruns for each BCR rating to find the corresponding P Value on the RCF distribution curve.

**Table 3.27: Associated P Values for MATS Broad Street Schemes**

Cost Overrun Level	Expressed as a % of PVC (exc. OB)	Associated P Value
P-mean overrun	20%	54
Percentage overrun needed for High Value for Money	106%	100
Percentage overrun needed for Medium Value for Money	313%	100

Table 3.27 shows that the MATS Broad Street Scheme has a 100% chance that costs will remain low enough that the VfM does not fall to either Medium or High Value for Money.

## 3.7 Distributional Impacts

### User Benefits

- 3.7.1 The distributional impacts of the MATS Broad Street Scheme and the Full Package have been considered to understand the variance of transport user benefits of non-business journeys across social groups using grading outlined in TAG Unit A4.2 Distributional Impact Appraisal.
- 3.7.2 The transport user benefits have been assessed against the Income Deprivation domain from the latest English Indices of Multiple Deprivation (IMD 2019), as shown in Tables 3.29 and 3.30 below.



Table 3.28: Distributional Impact Appraisal of Non-Business User Benefits (Full Package)

Census 2011 Lower Super Output Area (LSOA)	Full Package - User Benefits Distributional Analysis					
	IMD Income Domains £m					Total
	Most deprived areas ←		→ Least deprived areas			
	0-20%	20-40%	40-60%	60-80%	80-100%	
E01018077	0.53	1.74				1.74
E01018078						0.53
E01018079			0.87			0.87
E01018080			0.39			0.39
E01018081		7.88				7.88
E01018082			0.34			0.34
E01018083		1.37				1.37
E01018084			1.51			1.51
E01018085					1.38	1.38
E01018086		0.45				0.45
E01018087	2.71				2.71	
E01018088			2.59			2.59
Total LSOA Benefits	0.53	14.15	5.70	1.38	0.00	21.76
Share of User Benefits	2%	65%	26%	6%	0%	100%
Share of Population	8%	41%	44%	8%	0%	100%
Assessment	✓	✓ ✓ ✓	✓	✓ ✓	Neutral	

Table 3.29: Distributional Impact Appraisal of Non-Business User Benefits (MATS Broad Street Scheme)

Census 2011 Lower Super Output Area (LSOA)	FBC 1 - User Benefits Distributional Analysis					
	IMD Income Domains £m					Total
	Most deprived areas ← → Least deprived areas					
	0-20%	20-40%	40-60%	60-80%	80-100%	
E01018077	0.15	1.29				1.29
E01018078						0.15
E01018079			0.14			0.14
E01018080			0.33			0.33
E01018081		1.29				1.29
E01018082			0.30			0.30
E01018083		0.88				0.88
E01018084			0.63			0.63
E01018085					0.39	0.39
E01018086		0.24				0.24
E01018087	1.18				1.18	
E01018088			0.67			0.67
Total LSOA Benefits	0.15	4.88	2.07	0.39	0.00	7.48
Share of User Benefits	2%	65%	28%	5%	0%	100%
Share of Population	8%	41%	44%	8%	0%	100%
Assessment	✓	✓ ✓ ✓	✓	✓ ✓	Neutral	

- 3.7.3 The assessment shows that all IMD 2019 quintiles benefit from the intervention and there are no net disbenefits. The lowest two IMD quintiles (most deprived) would receive the greatest proportion of the transport user benefits and are therefore better off in relative terms.

### Personal Affordability

- 3.7.4 The distributional impacts of the MATS Broad Street Scheme and the Full Package have been considered to understand the variance of the fuel and non-fuel vehicle operating cost benefits of non-business journeys across social groups using grading outlined in TAG Unit A4.2 Distributional Impact Appraisal.
- 3.7.5 The distribution of fuel and non-fuel vehicle operating cost benefits have also been assessed against the Income Deprivation domain, as shown in Tables 3.30 and 3.31 below.

**Table 3.30: Distributional Impact Appraisal of Non-Business Fuel and Non-Fuel Vehicle Operating Cost Benefits (Full Package)**

Census 2011 Lower Super Output Area (LSOA)	Full Package - Fuel and Non-Fuel Vehicle Operating Costs Distributional Analysis					Total
	IMD Income Domains £m					
	Most deprived areas ←		→ Least deprived areas			
	0-20%	20-40%	40-60%	60-80%	80-100%	
E01018077	0.02	0.00				0.00
E01018078						0.02
E01018079			0.03			0.03
E01018080			0.01			0.01
E01018081		0.68				0.68
E01018082			0.01			0.01
E01018083		0.16				0.16
E01018084			0.00			0.00
E01018085				0.06		0.06
E01018086		0.02				0.02
E01018087		0.11				0.11
E01018088			0.09			0.09
Total LSOA Benefits	0.02	0.99	0.15	0.06	0.00	1.21
Share of User Benefits	1%	81%	12%	5%	0%	100%
Share of Population	8%	41%	44%	8%	0%	100%
Assessment	✓	✓ ✓ ✓	✓	✓ ✓	Neutral	

**Table 3.31: Distributional Impact Appraisal of Non-Business Fuel and Non-Fuel Vehicle Operating Cost Benefits (MATS Broad Street Scheme)**

Census 2011 Lower Super Output Area (LSOA)	FBC 1 - Fuel and Non-Fuel Vehicle Operating Costs Distributional Analysis					Total
	IMD Income Domains £m					
	Most deprived areas ←		→ Least deprived areas			
	0-20%	20-40%	40-60%	60-80%	80-100%	
E01018077	0.00	0.06				0.06
E01018078						0.00
E01018079		0.02				0.02
E01018080		0.01				0.01
E01018081		0.10				0.10
E01018082		0.01				0.01
E01018083		0.12				0.12
E01018084			0.02	0.03		0.02
E01018085					0.03	0.03
E01018086		0.02				0.02
E01018087		0.06				0.06
E01018088			0.03			0.03
Total LSOA Benefits	0.00	0.35	0.09	0.03	0.00	0.48
Share of User Benefits	1%	74%	20%	6%	0%	100%
Share of Population	8%	41%	44%	8%	0%	100%
Assessment	✓	✓ ✓ ✓	✓	✓ ✓	Neutral	

- 3.7.6 The assessment shows that all IMD 2019 quintiles benefit from the intervention and there are no net disbenefits. The lowest two IMD quintiles (most deprived) would receive the greatest proportion of the fuel and non-fuel vehicle operating cost benefits and are therefore better off in relative terms.

### 3.8 Qualitative Appraisal

- 3.8.1 Thus far, appraisal of the schemes and VfM assessment has focused primarily on the likely transport user, accident, noise, and air quality economic benefits for the MATS Broad Street Scheme and the Full Package. No adjustments have been made to the initial BCR value. However, it is anticipated that there will be a number of additional social, distributional, and environmental benefits resulting from the proposed schemes. Consequently, the current core scenario PVB is considered to provide a conservative estimate of the overall level of benefit likely to result from the proposed schemes.
- 3.8.2 As such, a qualitative appraisal of the likely key additional benefits and impacts of the MATS Improvement Schemes has been undertaken. The qualitative point scales as outlined in TAG Unit A3 have been used to provide an overall assessment score for each impact, with TAG appraisal worksheets used where appropriate.
- 3.8.3 The results from this appraisal are detailed below and summarised in the Appraisal Summary Table (AST) contained within Appendix E.

#### Economy – Wider Impacts

- 3.8.4 It is anticipated that the MATS Improvement Schemes will deliver wider economic benefits, by facilitating the regeneration of March Town Centre and enabling housing and employment growth, including at the sites identified in the Fenland Local Plan. The schemes will also benefit business users and transport providers, through reduced congestion, reduced journey times, and improved journey time reliability.

#### Economy – Regeneration

- 3.8.5 The other MATS Improvement Schemes (Full Package) will support regeneration and growth, through reducing thorough traffic and existing congestion in the town centre, increasing the capacity of the transport network, improving traffic flow, and journey time reliability.

The package of MATS Improvement Schemes are anticipated to facilitate significant regeneration benefits in March Town Centre. The MATS Broad Street Scheme will reduce traffic congestion, traffic dominance and severance created by the current highway layout and facilitate the delivery of the FHSF public realm improvements scheme. This is likely to attract an increase in footfall and visitor dwell times in March Town Centre, stimulating an increase in economic activity and further investment.

## Environment – Landscape

- 3.8.6 Landscape relates to both the physical and cultural characteristics of the land itself and the way in which those characteristics are perceived. The mix of characteristics and perceptions that contribute to landscape character give the study area a 'sense of place'.
- 3.8.7 The following landscape features have been assessed for each scheme location:
- Pattern – the relationship between topography and form, elevation and the degree of enclosure and scale.
  - Tranquillity – the remoteness and sense of isolation within the landscape. This can be affected or determined by noise levels and visual amenity.
  - Cultural – how landscape elements of an historic or traditional nature contribute to landscape character.
  - Landcover – the way in which the land is farmed or managed and how this contributes to the character of the landscape. The presence of semi-natural habitats and their associated landscape elements, as well as the structural diversity provided by trees and woods, are also considered.
  - Summary of Character – a summary of the relationship between each primary landscape features, with more general observations on the texture and diversity of the landscape, its scenic qualities, degree of development and visual unit or disharmony.
- 3.8.8 Each landscape feature has been assessed based on:
- The geographic scale at which features matter to policy makers and local stakeholders.
  - The rarity of landscape features within the locality. This can directly relate to importance.
  - The importance of each feature and at what level geographically.
  - Whether landscape features and their elements are replaceable within a given time frame, e.g., 100 years.
- 3.8.9 The impact of each scheme on the landscape has been determined based on the assessment, with a score provided using a seven-point scale ranging from 'Very Large Adverse (Negative) Effect' to 'Large Beneficial (Positive) Effect' as recommended in TAG Unit A3.
- 3.8.10 Full results have been summarised in the TAG Landscape Worksheet for each scheme, which can be found in Appendix F.
- 3.8.11 Table 3.32 overleaf summarises the landscape assessment scores for each scheme.

Table 3.32: Landscape Impact Assessment

Scheme	Summary Assessment Score	Qualitative Comments
Creation of a signalised junction at A141 / Twenty Foot Road	Neutral	The proposed scheme has a negligible effect on the landscape and can be accommodated well in this location.
Improvements to the A141 / Peas Hill Roundabout (52m ICD) and all-movement signalised junction at A141 / Hostmoor Avenue	Neutral	The proposed scheme has a negligible effect on the landscape and can be accommodated well in this location.
High Street / St. Peter's Road Traffic Signal Improvements	Neutral	Not Assessed
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(MATS Broad Street Scheme)</b>	Neutral	Not Assessed
Development of a Northern Industrial Link Road (NILR)		To be assessed at FBC 3.

## Environment – Townscape

3.8.12 Townscape is the physical and social characteristics of the built and non-built urban environment and how those characteristics are perceived. The mix of characteristics and perceptions that contribute to townscape character give the study area a 'sense of place' or identity. Physical characteristics relate to the development form of buildings, structures, and spaces. Social characteristics relate to the how the physical characteristics are used and managed.

3.8.13 The following townscape features have been assessed for each relevant scheme location:

- **Layout** – the way that buildings, routes, and open spaces are placed in relation to each other.
- **Density and Mix** – the amount of floorspace of buildings relative to an area and range of uses.
- **Scale** – the size of building and structures in relation to their surroundings.
- **Appearance** – the local distinctiveness of buildings and structures within a townscape, which can be influenced by their detail and materials.
- **Human Interaction** – the way people (not vehicles) interact with the urban environment.
- **Cultural** – how townscape elements of a traditional or historic nature contribute to character.
- **Summary of Character** – a summary of the relationship between the primary townscape characteristics and features. More general observations on the texture and diversity of the townscape, its scenic qualities, type and degree of development and visual unity or disharmony are made here.

3.8.14 Each townscape feature has been assessed based on:

- The geographic sale at which features matter to policy makers and local stakeholders.
- The rarity of townscape features within the locality. This can directly relate to importance.
- The importance of each feature and at what level geographically.
- Whether townscape features and their elements are replaceable within a given time frame.
- Changes in the 'Without Scheme' case. This relates to changes that would happen irrespective of the scheme.

3.8.15 The impact of each scheme on the townscape has been determined based on the assessment, with a score provided using a seven-point scale ranging from 'Very Large Adverse (Negative) Effect' to 'Large Beneficial (Positive) Effect' as recommended in TAG Unit A3.

3.8.16 Full results have been summarised in the TAG Townscape Worksheet for each scheme, which can be found in Appendix F.



3.8.17 Full results have been summarised in the TAG Townscape Worksheet for each scheme, which can be found in Appendix F.

3.8.18 Table 3.33 below summarises the townscape assessment scores for each scheme.

Table 3.33: Townscape Impact Assessment

Scheme	Summary Assessment Score	Qualitative Comments
Creation of a signalised junction at A141 / Twenty Foot Road	Neutral	Not assessed
Improvements to the A141 / Peas Hill Roundabout (52m ICD) and all-movement signalised junction at A141 / Hostmoor Avenue	Neutral	Not assessed
High Street / St. Peter's Road Traffic Signal Improvements	Neutral	The scheme involves very small-scale interventions that are unlikely to have a noticeable effect on townscape.
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(MATs Broad Street Scheme)</b>	Large Beneficial	<p>The scheme design will significantly improve the appearance and amenity of Broad Street and setting of distinct historic features, by increasing the public realm areas for users, removing the central parking areas and substantially reducing the dominance of traffic and improving safety.</p> <p>The scheme will result in the loss of some trees and the demolition of the 1920's toilet block that will result in a permanent change in layout and views. It is considered that this loss will be offset by the positive impact on connectivity – opening up views and improving visual links to the river frontage. The scheme reverses what had become a car-dominant environment, into a truly 'Broad Street' for pedestrians to enjoy within a unique setting.</p>
Development of a Northern Industrial Link Road (NILR)		To be assessed at FBC 3.

The MATS Broad Street Scheme will have a Large Beneficial Impact on the Townscape of March through significant improvements to the appearance and amenity of Broad Street and setting of distinct historic features. This will be achieved by increasing the amount of public realm, removing central parking areas on Broad Street, and improving non-motorised user safety. The town centre will no longer be a car-dominant environment.

### Environment – Historic Environment

3.8.19 The historic environment relates to buildings, areas, and sites of architectural or historic significance, which contribute to the character of the study area and its 'sense of place' or identity.

3.8.20 The following historic environment features have been assessed for each scheme location:

- **Form** – the physical form of the site, buildings, historic land / townscapes or other heritage assets.
- **Survival** – the state of completeness of each heritage asset.
- **Condition** – the appearance and present management of the historic environmental resource and the likely rate of change from the existing condition.
- **Complexity** – the diversity of elements and their relationships within a part of the historic environmental resource and the wider complexity of its relationships beyond the immediate limits.
- **Context** – the immediate setting of a site, building or area, and its intelligibility within its surroundings. The quality and detail of the immediate visual context and the value of any associations within that context with other elements are considered here.
- **Period** – a representation of the date of origin and duration of use of the historic environmental resource, e.g., Medieval (AD1066 – AD1540).

3.8.21 Each historic environment feature has been assessed based on:

- The geographic scale at which features matter to policy makers and local stakeholders.
- The significance relating to the value of a heritage asset to current and future generations.
- The rarity of historic environment features within the locality.

3.8.22 The impact of each scheme on the historic environment has been determined based on the assessment, with a score provided using a seven-point scale ranging from 'Very Large Adverse (Negative) Effect' to 'Large Beneficial (Positive) Effect' as recommended in TAG Unit A3.

- 3.8.23 Full results have been summarised in the TAG Historic Environment Worksheet for each scheme, which can be found in Appendix F.
- 3.8.24 Table 3.34 overleaf summarises the townscape assessment scores for each scheme.

Table 3.34: Historic Environment Impact Assessment

Scheme	Summary Assessment Score	Qualitative Comments
Creation of a signalised junction at A141 / Twenty Foot Road	Neutral	As the Scheme will predominantly entail widening and alterations to the existing road, it is expected that impacts will largely be to the historic landscape character. No substantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology.
Improvements to the A141 / Peas Hill Roundabout (52m ICD) and all-movement signalised junction at A141 / Hostmoor Avenue	Slight Adverse (Negative) Effect	As the Scheme will predominantly entail widening and alterations to the existing road, it is expected that impacts will largely be made to the ground. No substantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology.
High Street / St. Peter's Road Traffic Signal Improvements	Neutral	As the scheme will predominantly entail alterations to the existing road, it is expected that impacts will largely be absent. No substantial adverse setting impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology.
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(MATS Broad Street Scheme)</b>	Neutral	Providing that appropriate management and mitigation measures are taken, no substantial adverse setting impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology. It is expected there will be significant benefits relating to better access and user experience associated with relocating the Coronation Fountain.
Development of a Northern Industrial Link Road (NILR)	Neutral	Overall, an assessment of moderate to high potential for archaeology is made. Any finds are likely to be pre-Roman cut features and / or scattered artefacts or post-medieval evidence related to the former use of the area as a marshalling yard for the railway. No impact is expected to any of the listed buildings or non-designated assets as a result of the scheme.

The MATS Broad Street Scheme will have a Neutral Effect on March's historic environment unless appropriate management and mitigation measures are taken. Any damage to the Coronation fountain canopy could amount to substantial adverse effects but the relocated fountain would provide significant benefits relating to improved access and user experience. There is also potential for yet unknown archaeology.

## Environment – Biodiversity

- 3.8.25 The following biodiversity features and mitigation plans have been assessed for each scheme location:
- **Area** – all key biodiversity and earth heritage environmental resources affected, or potentially affected. This should include both designated and non-designated sites and protected species.
  - **Feature** – each feature of an environmental resource. A key environmental resource may have more than one feature that requires assessment.
- 3.8.26 Each biodiversity feature has been assessed based on:
- The geographic scale at which features matter to policy makers and local stakeholders.
  - The importance of each feature based on rarity, representativeness, distinctiveness, quality, or designation status.
  - The abundance of each feature relative to its target level and trend, where known.
  - Whether biodiversity features and their elements are replaceable within a given time frame. Irreplaceable natural features are often considered more significant than one that is replaceable.
  - The biodiversity and earth heritage value of features, which is determined based on the previous four indicators and criteria outlined in TAG Unit A3.
- 3.8.27 The magnitude of impact has then been considered based on the impact of the scheme on the significance of the identified features. Impacts may be direct or indirect, individual or cumulative, temporary or permanent, geographically dispersed, and may be harmful or beneficial. The criteria for determining the magnitude of the impact are outlined in TAG Unit A3 and is based on a five-point scale ranging from 'major negative' to 'positive'.
- 3.8.28 The appraisal of biodiversity and earth heritage value and the magnitude of impacts are combined to provide an overall assessment score, which determines the consequence of those impacts. The overall assessment score is based on a seven-point scale, ranging from 'Very Large Adverse (Negative) Effect' to 'Large Beneficial (Positive) Effect' as recommended in TAG Unit A3.
- 3.8.29 Full results have been summarised in the TAG Biodiversity Worksheet for each scheme, which can be found in Appendix F.
- 3.8.30 Table 3.35 overleaf summarises the biodiversity assessment scores for each scheme.

Table 3.35: Biodiversity Impact Assessment

Scheme	Summary Assessment Score	Qualitative Comments
Creation of a signalised junction at A141 / Twenty Foot Road	Slight Adverse (Negative) Effect	The score is based on there being no mitigation in place for any of the areas or species identified. The impacts on Nene Washes SAC/SPA/Ramsar will be determined following the outcome of the HRA. Slight adverse impacts are anticipated to coastal and floodplain grazing marsh, bats, breeding and wintering birds, otter, reptiles, amphibians, water vole, other priority mammals, Twenty Foot River, Ring's End LNR and Nene Washes SSSI. It is thought that with mitigation as outlined within the preliminary ecological appraisal, such as the implementation of a precautionary method of working and additional bat surveys, impacts on ecological receptors will be minimised.
Improvements to the A141 / Peas Hill Roundabout (60m ICD) and Roundabout at Hostmoor Avenue Roundabout	Slight Adverse (Negative) Effect	Slight adverse impact on broadleaved woodland, watercourses (ditches), ponds, badgers, bats, otters, water voles, priority mammals, breeding and wintering birds, reptiles, and amphibians.
High Street / St. Peter's Road Traffic Signal Improvements	Neutral	The score is based on there being no mitigation in place for any of the areas or species identified in the worksheet. This is because works are confined to the existing hardstanding road carriageway, with no vegetation clearance or disturbance to adjacent habitats anticipated.
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(MATS Broad Street Scheme)</b>	Slight Adverse (Negative) Effect	The score is based on there being no mitigation in place for any of the areas or species identified in the worksheet. Slight adverse impacts are anticipated to deciduous woodland, the River Nene (Old Course), bats, nesting birds, otters, and water voles. It is thought that with mitigation as outlined within the preliminary ecological appraisal, impacts on ecological receptors will be minimised.
Development of a Northern Industrial Link Road (NILR)		To be assessed at FBC 2

The MATS Broad Street Scheme will have a Slight Adverse (Negative) Effect on March unless appropriate management and mitigation measures are taken. The scheme will have a Slight Adverse (Negative) Effect on March's biodiversity unless appropriate management and mitigation measures are taken. Slight adverse impacts are anticipated to deciduous woodland, the River Nene, bats, nesting birds, otters, and water voles.



## Environment – Water Environment

- 3.8.31 The following water environment resources and features have been considered for each scheme location:
- **Resources** – rivers / canals, floodplains, groundwater, sea and estuaries, and lakes and ponds.
  - **Features** – water supply, transport and dilution of waste products, biodiversity, aesthetics, cultural heritage, recreation, value to economy, conveyance of flow and material, and conveyance of flood flows.
- 3.8.32 Each water environment feature has been assessed based on the following indicators:
- The quality of the physical condition of each feature.
  - The geographic scale at which features have importance at a regional, national, or global scale. The greater scale, the greater the importance.
  - The rarity of the water attribute being evaluated.
  - Whether features are replaceable within a given time frame.
- 3.8.33 The importance of each feature is then determined based on the four indicators listed above and the four-point scale outlined in TAG Unit A3, which ranges from 'low' to 'very high'.
- 3.8.34 The magnitude of impact has then been considered based on the impact of the scheme on each identified feature. The criteria for determining the magnitude of the impact are outlined in TAG Unit A3 and is based on a seven-point scale ranging from 'large adverse' to 'large beneficial'.
- 3.8.35 The appraisal of importance and the magnitude of impact are then combined to provide an overall assessment score, which determines the significance of potential impacts. The overall assessment score is based on a five-point scale ranging from 'insignificant' to 'very highly significant' as recommended in TAG Unit A3.
- 3.8.36 Full results have been summarised in the TAG Water Environment Worksheet for each scheme, which can be found in Appendix F.
- 3.8.37 Table 3.36 overleaf summarises the biodiversity assessment scores for each scheme.

Table 3.36: Water Environment Impact Assessment

Scheme	Summary Assessment Score	Qualitative Comments
Creation of a signalised junction at A141 / Twenty Foot Road		To be assessed at FBC 2.
Improvements to the A141 / Peas Hill Roundabout (60m ICD) and Roundabout at Hostmoor Avenue Roundabout	Neutral	See Appendix F
High Street / St. Peter's Road Traffic Signal Improvements	Neutral	See Appendix F
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(Construction – MATS Broad Street Scheme)</b>	Neutral	See Appendix F
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(Operational – MATS Broad Street Scheme)</b>	Slight Adverse (Negative) Effect	See Appendix F
Development of a Northern Industrial Link Road (NILR)		To be assessed at FBC 2.

The MATS Broad Street Scheme will have a Neutral Effect on March's water environment during its construction. Any deterioration of the River Nene's water quality from fuel spillages and other contaminating liquids from construction-related activities can be mitigated by adopting a CEMP, which relates to mitigation measures associated with good site practice. Advice from the Pollution Prevention Guidelines and Control of Water Pollution from Linear Construction Sites will be followed. Good working practices will also minimise floodplain working and involve locating compounds outside of Flood Zones 2 and 3.

The MATS Broad Street Scheme will have a Slight Adverse (Negative) Effect on March's water environment during its operation. The scheme will not result in an increase in impermeable road area and therefore no water quality or flood risk impacts are anticipated. No impacts to hydromorphology are anticipated. However, there is potential for the installation of the attenuation tank to interact with groundwater, which could impact groundwater quality, levels, and flows. It is not known yet if mitigation measures are required and therefore these impacts should be investigated further.

FBC 1 will have a Slight Adverse (Negative) Effect on March unless appropriate management and mitigation measures are taken. FBC 1 will have a Neutral Effect on March during construction.

### Social – Physical Activity Impacts

- 3.8.38 The NILR will provide new opportunities for physical activity through new and improved walking and cycling infrastructure. A DfT Active Mode Appraisal Toolkit (AMAT) assessment of the physical activity impacts of the NILR will be undertaken for the Full Package and is not required at this stage to support the FBC for the MATS Broad Street Scheme.

### Social – Journey Quality Impacts

- 3.8.39 The NILR will provide new opportunities for journey quality through new and improved walking and cycling infrastructure. A DfT Active Mode Appraisal Toolkit (AMAT) assessment of the journey quality impacts of the NILR will be undertaken for the Full Package and is not required at this stage to support the FBC for the MATS Broad Street Scheme.
- 3.8.40 A qualitative assessment of the journey quality impacts of each scheme has been undertaken and Table 3.37 below summarises the overall assessment scores.

Table 3.37: Journey Quality Impact Assessment

Scheme	Summary Assessment Score	Total Two-Way AADT Flow (PCUs) in 2031 (With Scheme)
Creation of a signalised junction at A141 / Twenty Foot Road	Large Beneficial	21,132
Improvements to the A141 / Peas Hill Roundabout (60m ICD) and Roundabout at Hostmoor Avenue Roundabout	Large Beneficial	26,405
High Street / St. Peter's Road Traffic Signal Improvements	Large Beneficial	14,205
Improvements to Broad Street / Dartford Road / Station Road, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction. <b>(MATS Broad Street Scheme)</b>	Large Beneficial	23,737
Development of a Northern Industrial Link Road (NILR)	Moderate Beneficial	4,402

- 3.8.41 Table 3.37 demonstrates that all schemes provide a **Large Beneficial Impact** on journey quality, except for the NILR which will have a Moderate Beneficial Impact.

### Social – Security

- 3.8.42 As stated in TAG Unit A4.1, road users are more vulnerable to crime where they are required to stop their vehicles or travel at slow speeds, such as at the approaches to signals or in congested conditions.
- 3.8.43 The MATS Improvement Schemes will reduce delays and queueing in March and in particular in March Town Centre where road users are often stationary for long periods, waiting for the signals to turn green.
- 3.8.44 The security indicators in the Security Impacts Worksheet have been considered and it is expected that based on these indicators alone there would be a **neutral security impact** from the MATS schemes.

### Social – Severance

The MATS Broad Street Scheme will reduce road space allocated to vehicles and provide an additional uncontrolled crossing on Broad Street, which will improve pedestrian accessibility within the town centre and will likely result in a net **slight beneficial impact** on community severance.

### Social – Access to Services

- 3.8.45 Accessibility, as described in TAG Unit A4.1 and 4.2, focuses on the public transport accessibility aspect of accessing employment, services, and social networks.
- 3.8.46 A key part of accessibility is understanding the needs of vulnerable social groups, which can include:
- People with children
  - Older people
  - People with a long-term illness
  - People with disabilities
  - People living in rural areas
  - Women – who can be less likely than men to have access to a car during the day and are often undertaking more complex trip chains relating to caring responsibilities
  - People with low incomes living in households with no access to a car.

3.8.47 TAG Unit A4.2 states that the appraisal of accessibility impacts should include a:

- **Strategic accessibility assessment** – identifying changes in opportunity to access services and journey time changes.
- **Accessibility Audit** – an assessment of the accessibility of infrastructure associated with the intervention and the access onto and within the public transport network.

3.8.48 There are no specific public transport interventions relating to the MATS improvement schemes and therefore a detailed distributional assessment of public transport accessibility with and without the schemes has not been undertaken. However, it is expected that the journey time benefits resulting from the schemes will have direct benefits for local bus services.

3.8.49 Figure 3.10 overleaf shows the number of services that can be reached with a mean journey time by public transport longer than the national average for March. A score of 0 (best) equates to no journey times to services longer than the national average. A score of 7 (worst) shows that journey times to all seven services are above the national average.

Map showing the number of services (out of seven) in each area with a mean journey time, by public transport, longer than the national average, in 2017, across England



Figure 3.10: Number of Key Services with a Mean Journey Time by Public Transport Longer than the National Average in 2017

- 3.8.50 Most residential areas in central and southern March have a score no greater than 2. However, residential areas in the north and east of March have scores ranging between 4 and 7.

It is expected that the MATS Broad Street Scheme will result in a reduction in journey times for buses operating through March Town Centre and will therefore increase the number of services that can be reached within a journey time equal to or less than the national average.



- 3.8.51 In October 2022 it was announced by Stagecoach that 18 bus services across Cambridgeshire would be cut, which includes the 33 route that operates between March Town Centre and Peterborough. The loss of this service will reduce the accessibility to key services in Peterborough for March residents.
- 3.8.52 It should also be noted however that there are fewer bus stops in the north and east of March that are served by existing bus services as shown in Figure 3.11. Residents in these locations would have to walk further to reach their nearest bus stop, increasing the overall journey time to reach key services. The CIHT Buses in Urban Developments guidance recommends a maximum walking distance of 300m for less frequent routes and 250m for town / city centres.

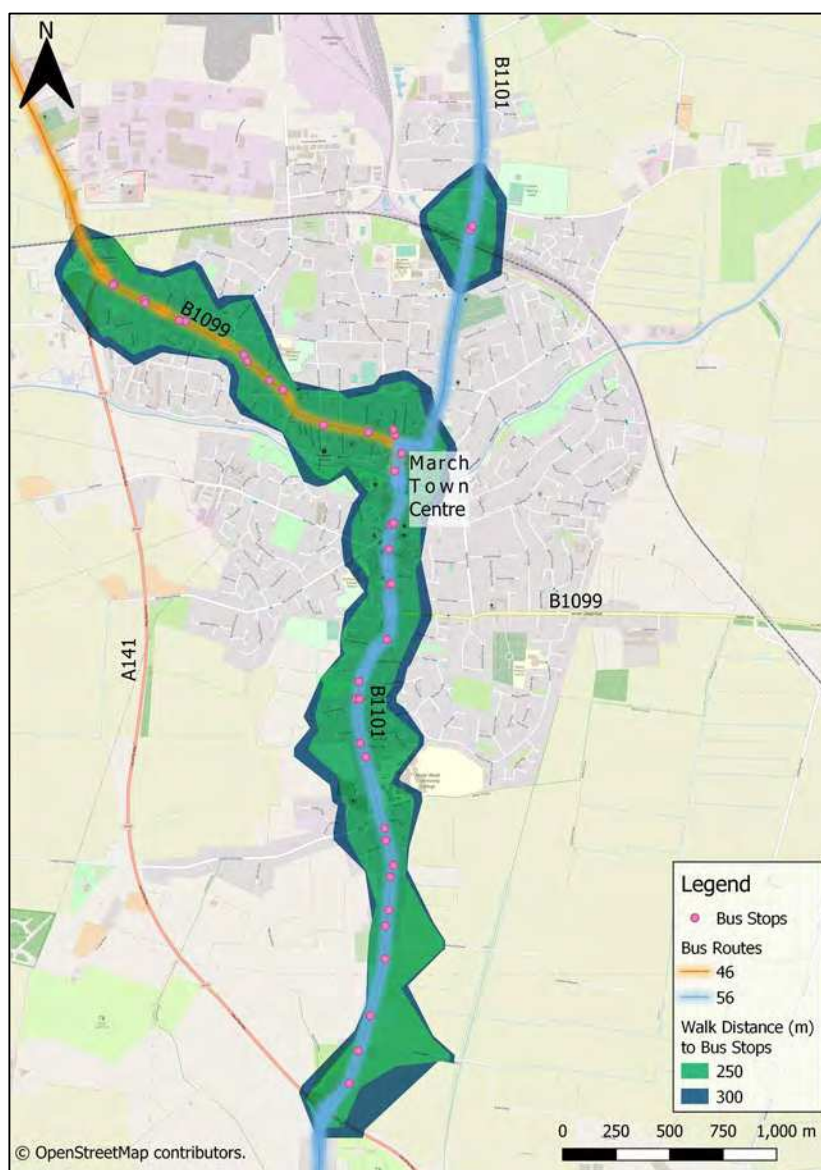


Figure 3.11: Walk Distance (m) to Bus Stops in March

- 3.8.53 The MATS Improvement Schemes will not reduce the walk distance to bus stops and therefore residents outside of a 300m distance from their nearest bus stop will likely remain disadvantaged.

### 3.9 Value for Money Statement

- 3.9.1 The Full Package is expected to provide **High Value for Money**, based on a Core BCR of **2.24**. The BCR could increase to 2.42, if journey time reliability scheme benefits are realised. The scheme will deliver significant transport user, noise, greenhouse gas, air quality, and accident benefits.
- 3.9.2 The BCR is considered conservative as it is only based on the benefits that can be monetised. Other scheme benefits relating to improved townscape, severance, personal affordability for income deprived groups, and journey quality are anticipated from the delivery of the Full Package.
- 3.9.3 There are also some Slight Adverse (Negative) Effects relating to the Full Package, which include impacts to the historic environment, biodiversity, and water environment.
- 3.9.4 Sensitivity testing has shown that the BCR could range between 0.44 and 3.72 based on uncertainty relating to value of time, travel behaviour, growth, and air quality.

In line with the DfT VfM Framework and based on updated quantitative analysis of detailed scheme costs and benefits, the MATS Broad Street Scheme is expected to provide **Very High Value for Money**, based on a Core Scenario BCR of **9.24**. The BCR could increase to 9.82, if journey time reliability scheme benefits are realised.

The scheme will deliver significant transport user, noise, greenhouse gas, air quality, and accident benefits.

The BCR is considered conservative as it is only based on the scheme benefits that can be monetised. Other scheme benefits relating to improved townscape, severance, personal affordability for income deprived groups, and journey quality are anticipated from the delivery of MATS Broad Street Scheme.

It is also likely that the scheme will facilitate significant regeneration benefits in March Town Centre through reduced congestion and severance, which will facilitate the delivery of the Future High Street Fund Public Realm Improvements scheme. This is likely to attract an increase in footfall and visitor dwell times in the town centre, stimulating increased economic activity and further investment.

There are also some Slight Adverse (Negative) Effects relating to the scheme, which include impacts to biodiversity and water environment.

Sensitivity testing has shown that the BCR could range between 3.04 and 14.35 based on uncertainty relating to value of time, travel behaviour, growth, and air quality.

## 4. Financial Dimension

### 4.1 Introduction

- 4.1.1 The Financial Dimension concentrates on the affordability of the proposed schemes, the funding arrangements and technical accounting issues. Costs within the Financial Dimension are presented for the complete MATS package, and for the MATS Broad Street Scheme in isolation (teal-green boxes).

### 4.2 Scheme Costing

#### Cost Build-Ups

- 4.2.1 The scheme cost estimates for the Financial Dimension have been prepared in line with guidance set out in TAG Unit A1.2 Scheme Costs (DfT, May 2022). Each of the steps taken to produce the cost estimates are explained beneath.
- 4.2.2 The scheme cost estimates have been robustly costed based on bills of quantities, ECI input into scheme delivery and indicative construction programmes based on Detailed Design information (note: this was Preliminary Design information for the Northern Industrial Link Road). These costs have been peer reviewed in collaborative costing workshops, and include:
- Any further design costs, as well additional surveys where required
  - Staff costs, including local overheads and consultation costs
  - Land acquisition and planning costs
  - Construction costs, including mobilisation, supervision and costs associated with statutory undertakers works
  - Risk Allowance

The scheme cost estimate for the MATS Broad Street Scheme is based on Target Cost prices received from the tendering exercise undertaken through the Eastern Highway Alliance (EHA).

- 4.2.3 Note that project costs incurred to date have been omitted from the costs presented beneath as “sunk costs” in line with TAG guidance.

- 4.2.4 The cost profile used in the preparation of scheme costs is based upon the milestone activities set out in the Management Dimension (Chapter 6) and reflects the phased approach taken to the FBC as explained in Section 1.3. It includes construction of the MATS Broad Street Scheme in 2023 at the same time as planning and procurement are progressed for the A141 / Twenty Foot Road, A141 Peas Hill Roundabout, A141 / Hostmoor Avenue Junction and High Street / St Peter's Road schemes which are due to begin construction in 2025 / 2026.
- 4.2.5 Detailed Design and delivery of the NILR has a longer programme due to the complexities involved with the scheme, including engagement with multiple stakeholders and the environmental sensitivities around the site. Further Preliminary Design work was undertaken in 2022, and Detailed Design for this scheme is profiled to commence in 2024. The construction phase of the NILR is profiled to begin in January 2027 and last for one year. These timescales will be confirmed in FBC3 which will set out the case for investment in the NILR.
- 4.2.6 The dates used to calculate the scheme costs, including the application of inflation, are shown in Table 4.1 overleaf.

Table 4.1: MATS Key Implementation Dates

Activity	Dates
MATS Broad Street Improvement Scheme (FBC1)	
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Broad Street Construction and FBC2	January 2023 - February 2023
Procurement of MATS Broad Street Contractor	October 2022 - February 2023
Construction of MATS Broad Street scheme (in conjunction with FHSF scheme construction)	February 2023 - March 2024
MATS Peas Hill & Hostmoor Avenue, Twenty Foot Road and St Peter's Road Schemes (FBC2)	
Obtain Utility Cost (C4s), Outline Planning, Land Engagement and Target Cost Procurement for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	February 2023 - December 2023
Submit FBC2, requesting release of funding for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	December 2023
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction and FBC3	December 2023 - March 2024
Obtain Full Planning Approval and Land Agreement (If no need for CPO) for Peas Hill and Twenty Foot Road Schemes.	March 2024 - December 2024
CPO and Side Road Order Statutory process	June 2023 - March 2025
Construction of Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	March 2025 - March 2026
MATS NILR Scheme (FBC3)	
Commence NILR Detailed Design, including Governance Process and statutory orders	March 2024 - March 2025
Begin Planning Process and supporting surveys (Ecology / Topography)	March 2024 - August 2025
Obtain Statutory Orders including CPO (approval from FDC, CCC)	March 2024 - October 2026
Target Cost Procurement for NILR	March 2025 - September 2025
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction	September 2025 - November 2025
NILR Construction	October 2026 - December 2027
MATS Post Scheme Monitoring and Evaluation	December 2028 - December 2033

- 4.2.7 It is likely that construction programme efficiencies will be identified during the procurement phase of the remaining MATS schemes, and the timescales presented above are considered robust.

The programme for the construction of the MATS Broad Street Scheme is fixed by the constraints associated with TCF funding and its interdependency with the FHSF Broad Street Scheme, which is funded separately (and outside the scope of this FBC). Like TCF funding, the funding requirements associated with the FHSF Broad Street Scheme require its completion before the end of the 2023 / 2024 Financial Year, which is why the MATS Broad Street Scheme has been accelerated for funding ahead of the remaining MATS schemes.

### Scheme Cost Estimates

- 4.2.8 Each of the scheme cost estimates presented within the Financial Dimension are shown beneath in Table 4.2 and explained in greater detail throughout this chapter. The costs are presented for the entirety of the MATS project, reflecting the strategic significance of delivering all schemes as a package of improvements, and for the Broad Street Scheme alone to satisfy the requirements of FBC1.
- 4.2.9 Table 4.2 presents a summary of the Financial Dimension cost estimates for the entirety of the MATS improvement schemes.

Table 4.2: Financial Dimension Scheme Cost Estimates (2022 Price Base)

Description of Cost Type	Cost (£)
Base Investment Cost	28,372,098
Risk Adjusted Base Cost	34,851,794
Risk Adjusted Base Cost with Construction Industry Inflation ( <b>Outturn Cost</b> )	<b>47,693,154</b>
Inflated Risk Adjusted Costs incorporating Whole Life Costs (60 year assessment period)	49,423,931

Table 4.3 beneath presents the Financial Dimension cost estimates in relation to the MATS Broad Street Scheme in isolation, which is the subject of this funding request.

Table 4.3: Financial Dimension Scheme Cost Estimates (Broad Street)

Description of Cost Type	Cost (£)
Base Investment Cost	3,378,825
Risk Adjusted Base Cost	4,149,825
Risk Adjusted Base Cost with Construction Industry Inflation ( <b>Outturn Cost</b> )	<b>4,149,825</b>
Inflated Risk Adjusted Costs incorporating Whole Life Costs (60 year assessment period)	4,149,825

- 4.2.10 Please note that the costs calculated for use within the Economic Assessment are presented in the Economic Dimension (Chapter 3).
- 4.2.11 A full 60-year schedule showing how the costs have been calculated is presented in Appendix G.



## Base Investment Cost

- 4.2.12 The Base Investment Cost is the capital cost required to construct the scheme in current year (2022) prices, without a risk allowance or inflation. This cost is the building block for all other scheme cost calculations.
- 4.2.13 A breakdown of the Base Investment Costs for each of the individual schemes is shown in Table 4.4 beneath. These costs have been used to calculate the total package cost, which has then been used for the Financial Dimension assessment.

Table 4.4: Base Investment Cost by Scheme (2022 Prices)

Base Investment Cost	St Peters Road	Broad Street	Northern Industrial Link Road	Peas Hill & Hostmoor Avenue	Twenty Foot Road	Total
Design	£ 81,598	£ 100,000	£ 1,614,952	£ 506,210	£ 240,441	£ 2,543,201
Land	£ -	£ -	£ 80,000	£ 420,000	£ 20,000	£ 520,000
Construction	£ 720,231	£ 2,816,542	£ 10,187,064	£ 4,583,100	£ 1,716,934	£ 20,023,871
Supervision	£ 179,900	£ 90,000	£ 970,875	£ 406,104	£ 261,570	£ 1,908,449
Other	£ 5,000	£ 372,283	£ 2,175,794	£ 569,205	£ 254,296	£ 3,376,577
<b>Total</b>	<b>£ 986,729</b>	<b>£ 3,378,825</b>	<b>£ 15,028,685</b>	<b>£ 6,484,618</b>	<b>£ 2,493,241</b>	<b>£ 28,372,098</b>

- 4.2.14 Over half of the costs associated with the MATS Improvement Schemes relate to the Northern Industrial Link Road. This scheme has evolved significantly since the concept stage and has been upgraded to include segregated active travel facilities along the length of the route, and an enhanced junction where Longhill Road meets the B1101 Elm Road. The costs associated with this scheme have a significant bearing on the economic assessment and viability of the full MATS package, and the scheme will be reviewed (value engineered) during the Detailed Design phase to ensure that it continues to provide value for money.
- 4.2.15 Table 4.5 below shows the Base Investment Cost for the full package, broken down into Construction, Land (and Property), Preparation and Supervision costs (including further design and FBC work), and Other costs which relate to procurement and project management.

Table 4.5: Base Investment Cost (2022 Prices)

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Total Base Investment Cost (£)
2023	2,212,997		392,971	532,337	3,138,305
2024	603,545	440,000	657,216	824,916	2,525,677
2025	5,400,204		1,349,186	841,843	7,591,234
2026	3,803,003	80,000	899,681	645,620	5,428,304
2027	8,004,122		1,137,596	531,861	9,673,579
2028			20,000		20,000
<b>Total</b>	<b>20,023,871</b>	<b>520,000</b>	<b>4,456,650</b>	<b>3,376,577</b>	<b>28,377,098</b>

- 4.2.16 The scheme Base Investment Cost in 2022 prices is £28,377,098 for the full package of MATS Improvement Schemes. This includes £20,023,871 of Construction related costs and £4,456,650 for Design and Supervision costs (£2,548,201 Design / £1,908,449 Supervision).

- 4.2.17 The Design costs include all necessary surveys and costs to fully develop the Detailed Design for the NILR and to produce FBC2 and FBC3 for the remaining schemes.
- 4.2.18 The costs also include £520,000 of Land and Property Costs and £3,376,577 of Other Costs (access permits, TTROs, project management, staff costs and procurement).
- 4.2.19 Agricultural land costs have been informed by a review of agricultural land available for sale in Fenland in July 2021, with the maximum value per acre used.
- 4.2.20 Property costs have also been calculated based on a review of average property prices in March for properties near to the relevant schemes, and the highest average estimate has been used.
- 4.2.21 In the absence of any known information, costs associated with Network Rail land acquisition have been assumed based on a review of commercial and industrial land value in Fenland.
- 4.2.22 The values used to estimate land and property costs are shown beneath:
- Agricultural Land = £20,000 per acre / £48,000 per hectare
  - Property Value = £360,000 per property
  - Network Rail Land = £100,000 per hectare.

The Base Investment Cost for the Broad Street Scheme is shown in beneath in Table 4.6.

Table 4.6: Base Investment Cost (2022 Prices) (Broad Street)

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Total Base Investment Cost (£)
2023	2,212,997		149,286	292,508	2,654,791
2024	603,545		40,714	79,775	724,034
2025					
2026					
2027					
2028					
<b>Total</b>	<b>2,816,542</b>		<b>190,000</b>	<b>372,283</b>	<b>3,378,825</b>

The scheme Base Investment Cost in 2022 prices is £3,378,825 for the MATS Broad Street Scheme. This includes £2,816,542 of Construction related costs and £190,000 for Design and Supervision costs (£100,000 Design / £90,000 Supervision).

The Design costs include designer support during the construction phase, as well as post scheme monitoring and evaluation.

The costs also include £372,283 of Other Costs (project management, staff costs and procurement).

### Risk Adjusted Base Cost

- 4.2.23 The Risk Adjusted Base Cost includes a Quantified Risk Allowance (QRA) for each scheme. A priced Risk Register has been prepared for each of the schemes and is included in Appendix H. These Risk Registers have been developed by the project team with ECI support and have been peer reviewed.
- 4.2.24 The risk allocation for each of the five schemes is shown in Table 4.7 below, and totals £6,479,696 (or 23% of the Base Investment Cost).

**Table 4.7: Risk Adjusted Base Cost by Scheme (2022 Prices)**

MATS Scheme Intervention	Base Investment Cost (excl. Risk)	Quantified Risk Allowance	Risk Adjusted Base Cost
Broad Street	£ 3,378,825	£ 771,000	£ 4,149,825
B1101 / St Peter's Road	£ 986,729	£ 192,043	£ 1,178,772
A141 Peas Hill Roundabout & A141 Hostmoor Junction	£ 6,484,618	£ 1,074,765	£ 7,559,384
A141 / Twenty Foot Road	£ 2,493,241	£ 376,212	£ 2,869,453
Northern Industrial Link Road	£ 15,028,685	£ 4,065,676	£ 19,094,360
<b>Total</b>	<b>£ 28,372,098</b>	<b>£ 6,479,696</b>	<b>£ 34,851,794</b>

- 4.2.25 Table 4.8 beneath shows the Risk Adjusted Base Cost for the full package. The application of risk has been profiled to match the construction programme.

**Table 4.8: Risk Adjusted Base Cost by Year (2022 Prices)**

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Risk Allowance (£)	Risk Adjusted Base Cost (£)
2023	2,212,997		389,042	532,337	605,786	<b>3,740,162</b>
2024	603,545	440,000	661,145	824,916	165,214	<b>2,694,820</b>
2025	5,400,204		1,344,186	841,843	1,263,862	<b>8,850,095</b>
2026	3,803,003	80,000	899,681	645,620	1,250,375	<b>6,678,678</b>
2027	8,004,122		1,137,596	531,861	3,194,459	<b>12,868,038</b>
2028			20,000			<b>20,000</b>
<b>Total</b>	<b>20,023,871</b>	<b>520,000</b>	<b>4,451,650</b>	<b>3,376,577</b>	<b>6,479,696</b>	<b>34,851,794</b>

- 4.2.26 The application of the Risk Allowance generates a Risk Adjusted Base Cost of £34,851,794.

The Risk Adjusted Base Cost for the MATS Broad Street Scheme is shown in beneath in Table 4.9.

Table 4.9: Risk Adjusted Base Cost (2022 Prices) (Broad Street)

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Risk Allowance (£)	Risk Adjusted Base Cost (£)
2023	2,212,997		149,286	292,508	605,786	3,260,577
2024	603,545		40,714	79,775	165,214	889,248
2025						
2026						
2027						
2028						
<b>Total</b>	<b>2,816,542</b>		<b>190,000</b>	<b>372,283</b>	<b>771,000</b>	<b>4,149,825</b>

The total Risk Allowance for the Broad Street Scheme is £771,000 which takes the Risk Adjusted Base Cost to £4,149,825. This represents a Risk Allowance of 23% of the Base Investment Cost.

#### Inflated Risk Adjusted Cost (Outturn Cost)

- 4.2.27 The Inflated Risk Adjusted Cost, or Outturn Cost, is the Risk Adjusted Base Cost with inflation applied.
- 4.2.28 This construction industry inflation has been reviewed against the BCIS General Civil Engineering Cost Index (October 2022). The inflation forecasts from the BCIS Index show 14.29% inflation in 2022 which then drops to around 3% from 2023 onwards. However, there is no indication that inflation is beginning to ease and current prices continue to outstrip forecasts, and these forecasts have therefore been treated with a high degree of caution.
- 4.2.29 Table 4.10 beneath sets out the inflation rates that have been used in the assessment compared to the BCIS forecasts. The table shows that the inflation rate applied reduces incrementally from 12% in 2023 (when construction begins) to 5% by 2025 and that the value used exceeds the BCIS forecast for each year, demonstrating that it is robust.

Table 4.10: Construction Industry Inflation Forecasts (October 2022)

Index Date	Jan-21	Jan-22	Jan-23	Jan-24	Jan-25
Year Applicable	2021	2022	2023	2024	2025
BCIS General Civil Engineering Cost Index	164.5	181.3	207.2	214.3	220.5
% Inflation by Year	10.21%	14.29%	3.43%	2.89%	2.90%
Inflation Used in Assessment	12.00%	12.00%	12.00%	8.00%	5.00%

Note that inflation has not been applied for the MATS Broad Street Scheme as this is included in the Contractor price (at a rate of 10%) and is therefore already captured in the Base.

- 4.2.30 Inflation has been applied in line with the construction profile discussed above and shown in the Management Dimension (Chapter 6). The annual cost of inflation is presented in Table 4.11 below.

Table 4.11: Inflation Increases on Construction Costs 2023-28

Calendar Year	Risk Adjusted Base Cost (£)	Cost of Inflation (£)	Total with Inflation (£)
2023	3,740,162	57,550	3,797,712
2024	2,694,820	459,338	3,154,158
2025	8,850,095	3,139,589	11,989,684
2026	6,678,678	2,821,672	9,500,351
2027	12,868,038	6,351,845	19,219,883
2028	20,000	11,366	31,366
<b>Total</b>	<b>34,851,794</b>	<b>12,841,360</b>	<b>47,693,154</b>

- 4.2.31 The cost of inflation is £12,841,360 which is accrued between 2023 and 2028 when all capital expenditure occurs. The application of inflation brings the Package Outturn Cost to £47,693,154. Almost all of the inflation costs from 2026 onwards relate to the NILR, which accounts for 68% (or £9,173,517) of the total inflation costs.
- 4.2.32 The Outturn Cost represents the amount required by CCC to deliver the full package of schemes.

The Inflated Risk Adjusted Base Cost (Outturn Cost) for the Broad Street Scheme is shown in beneath in Table 4.12. Note that this is the same as the Risk Adjusted Base Cost as inflation costs have been included in the Contractor price.

Table 4.12: Inflated Risk Adjusted Cost (2022 Prices) (Broad Street Scheme)

Calendar Year	Risk Adjusted Base Cost (£)	Cost of Inflation (£)	Total with Inflation (£)
2023	3,260,577		3,260,577
2024	889,248		889,248
2025			
2026			
2027			
2028			
<b>Total</b>	<b>4,149,825</b>		<b>4,149,825</b>

#### Inflated Risk Adjusted Cost Including Whole Life Costs

- 4.2.33 Maintenance costs have also been calculated for the 60-year assessment period taking account of the same 5% construction industry inflation rate applied (from 2025 onwards) to the Inflated Risk Adjusted Cost. Maintenance costs have been applied from 2028 onwards, following construction of the final scheme.
- 4.2.34 Maintenance costs have only been included for the creation of additional infrastructure as all maintenance costs associated with existing infrastructure will continue to occur with or without the MATS intervention. Note that funding for future maintenance costs is not requested as part of the scheme funding, but instead becomes part of the Local Highway Authorities ongoing maintenance liability. The rationale for the inclusion or exclusion of maintenance costs is shown on the following page for each scheme:



- **A141 / Peas Hill Roundabout:** No maintenance costs have been included as the asset footprint remains largely unchanged. The improvement works at this location are not considered to have a significant impact on any future maintenance liability. The small increase in carriageway (as a result of the addition of flares) is considered to be offset by the removal of two lanes from Broad Street.
- **A141 / Hostmoor Avenue:** No maintenance costs have been included as the removal of traffic signals from the Broad Street Junction is considered to offset the implementation of traffic signals at the A141 / Hostmoor Avenue Junction, which will also have less traffic signal infrastructure than the outgoing Broad Street junction.

- **Broad Street:** No maintenance costs have been included as a junction already exists at this location. The removal of traffic signals from this site is a significant maintenance benefit (and will offset the creation of a signalised junction at A141 / Hostmoor Avenue). The amount of carriageway to be maintained along Broad Street will also be halved in future as the two lanes in each direction are reduced to a single lane.

- **A141 / Twenty Foot Road:** An allowance of £37,500 has been included for every fifteen years for maintenance at this junction. This reflects the addition of traffic signal infrastructure at this location and is based on recent experience (2022) of traffic signal maintenance in Cambridgeshire, which assumes £12,500 per approach (every fifteen years). This cost has been applied from 2041 onwards (fifteen years post scheme opening).
- **B1101 / St Peter's Road:** No maintenance costs have been included as the impact of the scheme on future maintenance is negligible.
- **Northern Industrial Link Road:** Maintenance costs have been included for the Hundred Road section of the scheme (550 metres) as this will be a significant upgrade to the existing infrastructure. Maintenance Costs have not been included for the Longhill Road section of the scheme, which is already a maintenance commitment. It is unknown who owns the streetlighting outside HMP Whitemoor, but it is assumed that this asset will continue to be maintained by the current owner.

- 4.2.35 An indicative cost estimate for maintenance of the Hundred Road section of the NILR indicates that annual maintenance as part of a wider cyclic maintenance programme would be in the region of an additional £550 per year, including repair works, landscaping, traffic management and contract fees. However, this value has been increased to £2,000 per year for the purpose of this assessment, representing a substantial contingency.
- 4.2.36 The maintenance costs are considered to be robust as highway maintenance is currently procured and delivered through a term maintenance contractor, and there is no reason to assume that this will differ in future. This means that future highway maintenance for this portion of the NILR will be carried out as part of the area wide cyclic maintenance programme, rather than in isolation, and thus benefit from the financial efficiencies of a term maintenance contract.
- 4.2.37 The portion of the scheme which represents an increase in maintenance liability is shown in yellow in Figure 4.1 beneath.



Figure 4.1: Additional Maintenance Liability on Northern Industrial Link Road

- 4.2.38 The additional maintenance costs have been applied from 2038 onwards (ten years after scheme completion, at which point the asset would require active maintenance), and the resultant costs are shown in Table 4.13 below.

Table 4.13: Calculation of Whole Life Maintenance Costs (2022 Prices)

Whole Life Maintenance Costs	Cost (£)
Maintenance Cost for 60 Assessment Period (without inflation)	206,500
Maintenance Cost for 60 Assessment Period (with inflation)	1,730,778

4.2.39 Table 4.14 shows the total Inflated Risk Adjusted Cost Including Whole Life Costs.

Table 4.14: Inflated Risk Adjusted Cost Including Whole Life Costs

Inflated Risk Adjusted Cost Including Whole Life Costs	Calendar Years	Cost (£)
Risk Adjusted Base Cost with Construction Industry Inflation ( <b>Outturn Cost</b> )	2022 - 2028	47,693,154
Inflated Whole Life Costs	2029 - 2081	1,730,778
Inflated Risk Adjusted Cost Including Whole Life Costs	2021 - 2081	49,423,931

4.2.40 The Inflated Risk Adjusted Cost Including Whole Life Costs over the assessment period is £49,423,931. The Outturn Cost required to deliver the scheme is £47,693,154.

No maintenance costs have been included for the MATS Broad Street Scheme as the scheme is expected to generate a reduction in maintenance liability due to the removal of existing traffic signal infrastructure and a reduction in the number of lanes along Broad Street. As such, the Inflated Risk Adjusted Cost including Whole Life Costs for the MATS Broad Street Scheme is the same as the Outturn Cost.

4.2.41 All future maintenance costs will be the responsibility of Cambridgeshire County Council as the Highway Authority and are not requested as part of this Business Case.

4.2.42 A full 60-year schedule (2023 – 2083) showing how the costs have been calculated is presented in Appendix G.

## 4.3 Funding and Budgets

- 4.3.1 The following potential funding sources have been identified for the construction of the MATS schemes.

### Transforming Cities Fund

- 4.3.2 The Transforming Cities Fund (TCF), which closed to applications in 2018, was a £2.45 billion capital grant transport fund aimed at driving up productivity through investments in public and sustainable transport infrastructure in some of England's largest city regions.<sup>29</sup>
- 4.3.3 The Cambridgeshire and Peterborough Combined Authority (CPCA) was awarded £95 million in total through the TCF.<sup>30</sup> An initial £74 million was secured up to the 2020 / 2021 financial year, and an additional £21 million secured up to the 2022 / 2023 financial year.<sup>31</sup> Confirmation has been given that this funding can be used into 2023 / 2024 to complete TCF funded schemes that began in the 2022 / 2023 Financial Year.
- 4.3.4 The TCF money awarded to the CPCA has been identified as a funding source for the MATS Broad Street Scheme which is an appropriate use for this funding. TCF funding will not be available for the construction of the remaining MATS schemes as the time limitation will have expired.

### CPCA Single Investment Fund

- 4.3.5 It is possible that a portion of the Outturn Cost for the MATS Improvement Schemes will be funded by the CPCA from the Single Investment Fund. The CPCA has an infrastructure delivery budget of £20 million per year, allocated for the next 30 years. This funding will be invested in the Cambridgeshire and Peterborough Single Investment Fund, to boost growth within the region.
- 4.3.6 There is currently no allocation within the CPCA Medium Term Financial Plan for the MATS Improvement Schemes (beyond the MATS Broad Street Improvement).

### S106 Developer Contributions

- 4.3.7 Parts of the overall package may be funded through Section 106 developer contributions where there is a clear link to a development's impact on the network, and a mitigation provided by a MATS improvement scheme. Engagement with Cambridgeshire County Council's Transport Assessment Team will remain ongoing to identify any potential opportunities for developer contributions as FBC2 and FBC3 develop. This is most likely to apply to funding for the A141 / Peas Hill Roundabout and A141 / Hostmoor Avenue Junction which are both situated along an identified growth corridor.

<sup>29</sup> <https://www.gov.uk/government/publications/apply-for-the-transforming-cities-fund>

<sup>30</sup> <https://www.gov.uk/government/publications/apply-for-the-transforming-cities-fund/awarded-funding-allocations>

<sup>31</sup> <https://cambridgeshirepeterborough-ca.gov.uk/news/mayor-james-palmer-welcomes-budget-2018-including-21-million-to-combined-authority-from-transforming-cities-fund/>

### CPCA Funding Commitment

- 4.3.8 Due to the total scheme cost it is expected that funding will come from several different sources. The CPCA's Single Investment Fund will also likely be used to supplement funding from all other sources.
- 4.3.9 The CPCA are committed to funding the MATS schemes, which clearly features in the authority's Mid Term Financial Strategy (MTFS), subject to a Full Business Case satisfying the requirements of the technical assurance review and approvals at the Combined Authority Board. The funding strategy for the MATS Broad Street Scheme is confirmed beneath, and the exact composition of funding will be confirmed in the Full Business Case for each of the subsequent stages.

Funding for the MATS Broad Street Scheme has been secured from the CPCA's Single Investment Fund which is invested to boost growth within the region. This funding pot is supplemented by further capital budgets.

The full scheme Outturn Cost of £4,149,825 will be funded through the CPCA Single Investment Fund using the authority's Transforming Cities Fund (TCF). A budget has already been allocated in the CPCA's Medium Term Financial Strategy (MTFS) subject to approval of this FBC. The funding profile for this allocation is shown beneath:

• FY 2022 / 2023:	£	2,114,000
• FY 2023 / 2024:	£	4,149,825
• Total:	£	6,263,825

The funding profile demonstrates that there is adequate funding available in FY 2023 / 2024 to cover the MATS Broad Street Scheme Outturn Cost (£4,149,825).

The TCF funding is time limited, and construction must begin in the 2022 / 2023 financial year and be complete by the of the 2023 / 2024 financial year (31<sup>st</sup> March 2024) to satisfy the funding requirements. The construction programme for the MATS Broad Street Scheme has been developed to fit within this timeframe, and to compliment the FHSF requirements which mirror those of the TCF.

There are not known to be any other financial constraints associated with the funding for the MATS Broad Street Scheme.



## 5. Commercial Dimension

### 5.1 Introduction

- 5.1.1 This chapter sets out the Commercial Dimension, outlining how the schemes can be procured, delivered, and operated as required through established channels. Adopting a commercial approach to project delivery is fundamental to ensuring scheme promoters get the best deal from the market. As such, the Commercial Dimension provides evidence that the schemes can be progressed through feasible procurement routes and ensures value for money is maximised during delivery of the schemes.
- 5.1.2 A high-level Commercial Dimension was outlined in the OBC, which included an outline 'output-based specification' and discussion on potential procurement options. In addition, outline information pertaining to sourcing options, payment mechanisms, pricing framework and charging mechanisms, risk allocation and transfer, contract length, and contract management was provided.
- 5.1.3 This Business Case now confirms the commercial approach and procurement route for the MATS Broad Street Scheme and re-affirms the options for the remaining MATS schemes.

### 5.2 Output Based Specification

- 5.2.1 Any chosen procurement option must be able to ensure delivery of infrastructure which delivers the intended scheme outcomes and meets the identified objectives.
- 5.2.2 Detailed designs of the MATS Improvement Schemes have been completed following on from the Preliminary and Feasibility designs produced in earlier phases of the project. Note that the Northern Industrial Link Road scheme remains at an advanced stage of Preliminary Design.
- 5.2.3 In preparation for procurement, the Broad Street scheme Detailed Design, produced by Atkins, was supported with ECI by Volker Highways. It is expected that these measures will reinforce the cost and programme certainties and minimise risk of cost, programme and quality challenges arising during construction. Similar ECI support was provided by Milestone Infrastructure for the remaining four projects, again to further develop cost, programme and quality certainty ahead of procurement.
- 5.2.4 In line with the identified scheme package and the associated Detailed Designs, the chosen procurement option must ensure successful development of the proposed highway interventions and ensure delivery of the following:
  - Construction of the A141 / Twenty Foot Road traffic signal-controlled junction.
  - Construction of the A141 / Peas Hill Roundabout (52m ICD) enhancements in conjunction with the construction of a traffic signal-controlled junction at Hostmoor Avenue.
  - Construction of the High Street / St Peter's Road traffic signal improvements.

- Construction of the proposed changes along Broad Street, including reducing Broad Street to a single lane in each direction and the creation of a Broad Street / Dartford Road / Station Road Roundabout.
- Construction of the Northern Industrial Link Road and its active travel improvements.

5.2.5 It is expected that any preferred option will meet all the primary objectives outlined in the Strategic Dimension, and as many of the secondary objectives as possible. Details of how the schemes will be measured against these objectives are provided in the Benefits Realisation Plan and Monitoring and Evaluation Plan, as detailed in the Management Dimension.

### 5.3 Procurement Strategy

5.3.1 The following routes to procurement are available to the scheme promotor for delivery of the MATS Improvement Schemes:

- **Framework:** CCC is part of the Eastern Highways Alliance Framework 3. The contractors on this framework are BAM Nuttall, Dyer & Butler Ltd, John Sisk & Son, Eurovia UK Ltd, Galliford Try Infrastructure Ltd, Octavius Infrastructure Ltd, Interserve Construction Ltd, Jackson Civil Engineering Group Ltd and Marlborough Highways, across three differing value bands, some of which overlap. The framework has a limit of £30m per Work Package, across 3 value bands, with the option for higher value schemes with the approval of the EHA Board.
- **Standalone** – ‘Find a Tender’ service. This is the new UK e-notification service, introduced on 1<sup>st</sup> January 2021, where notices for new procurements from public sector organisations are required to be published in place of the Official Journal of the European Union’s Tenders Electronic Daily (OJEU / TED), following the end of the Brexit Transition Period. The thresholds for works from January 1<sup>st</sup> 2022 is £5,336,937 (excl. VAT).
- **Existing Cambridgeshire Highways Services Contract:** Procurement could be secured through the Cambridgeshire Highway Services Contract with Milestone Infrastructure, subject to any thresholds and caps.
- **Cambridgeshire and Peterborough Joint Professional Services Framework:** A new joint framework between CCC and Peterborough City Council for the procurement of professional services was awarded to Atkins and WSP in April 2021. This framework enables CCC and other public sector bodies within Cambridgeshire and Peterborough to enter into work orders with either of the two suppliers to provide professional and technical services to support the delivery of construction projects. The expectation is that CCC will use this framework to supplement existing arrangements, where appropriate, to support the development and delivery of infrastructure projects, from feasibility through to scheme construction.



5.3.2 The relative advantages and disadvantages of established procurement routes are summarised in Table 5.1 below.

Table 5.1: Comparison of Procurement Routes

Procurement Route	Advantages	Disadvantages
Eastern Highways Alliance Framework 3	<ul style="list-style-type: none"> <li>• Reduces procurement process time and cost.</li> <li>• Quality checks have already been carried out through a framework tender process.</li> <li>• Further benefits from historical programme of work through efficiency savings and lessons learnt.</li> </ul>	<ul style="list-style-type: none"> <li>• May exclude contractors that could potentially offer benefits not offered by framework contractors.</li> <li>• Framework contractors may not bid as competitively as those in an open procurement.</li> <li>• There are only two providers on each lot (except the highest value lot where there are only three) and so there is a risk that only one contractor bids for the work which could make the price uncompetitive. In the worst-case scenario, there may be no bids.</li> </ul>
Scape	<ul style="list-style-type: none"> <li>• Single source framework, so no need for secondary competition, which in theory makes it quicker as to progress straight to working with the provider (BBLP).</li> <li>• Reduces procurement process time and cost.</li> <li>• Quality checks have already been carried out through a framework tender process.</li> <li>• Further benefits from historical programme of work through efficiency savings and lessons learnt.</li> </ul>	<ul style="list-style-type: none"> <li>• May exclude contractors that could potentially offer benefits not offered by framework contractors.</li> <li>• Framework contractors may not bid as competitively as those in an open procurement.</li> <li>• Evidencing VfM.</li> </ul>
Pagabo	<ul style="list-style-type: none"> <li>• Reduces procurement process time and cost.</li> <li>• Quality checks have already been carried out through a framework tender process.</li> <li>• Further benefits from historical programme of work through efficiency savings and lessons learnt.</li> </ul>	<ul style="list-style-type: none"> <li>• May exclude contractors that could potentially offer benefits not offered by framework contractors.</li> <li>• Framework contractors may not bid as competitively as those in an open procurement.</li> </ul>
Crown Commercial Services (CCS)	<ul style="list-style-type: none"> <li>• Reduces procurement process time and cost.</li> <li>• Quality checks have already been carried out through a framework tender process.</li> <li>• Further benefits from historical programme of work through efficiency savings and lessons learnt.</li> </ul>	<ul style="list-style-type: none"> <li>• May exclude contractors that could potentially offer benefits not offered by framework contractors.</li> <li>• Framework contractors may not bid as competitively as those in an open procurement.</li> </ul>

Procurement Route	Advantages	Disadvantages
Open Procurement Process	<ul style="list-style-type: none"> <li>Competitive tender process provides reassurance that a competitive price has been achieved and the most suitable contractor selected.</li> <li>Opportunity for a wide range of contractors to be invited to tender.</li> </ul>	<ul style="list-style-type: none"> <li>Tender process can be lengthy and costly.</li> <li>Risk that an unfamiliar contractor winning the tender based on price but does not deliver to required performance criteria.</li> </ul>
Cambridgeshire Highways Services Contract	<ul style="list-style-type: none"> <li>Reduces procurement process and timescale.</li> <li>Quality checks already carried out.</li> </ul> <p>Milestone involvement in preliminary design process and scheme development from the beginning reduces risk and potentially cost.</p>	<ul style="list-style-type: none"> <li>Price comparisons cannot be made.</li> <li>Different approaches to delivery and risk not available.</li> </ul>
Joint Professional Services Framework (JPSF)	<ul style="list-style-type: none"> <li>Reduces procurement process and timescale.</li> <li>Quality checks already carried out.</li> </ul>	<ul style="list-style-type: none"> <li>Price comparisons cannot be made.</li> <li>Different approaches to delivery and risk not available.</li> </ul>

5.3.3 CCC has a broad experience of procuring consultancy services to support scheme delivery, through the Cambridgeshire Highways Services Contract, JPSF, the Eastern Highways Alliance Framework and Scape, to deliver a range of highways, public transport, active travel and logistics schemes. Examples include:

- Northstowe Bus Link – this is a scheme to link an existing housing estate to a nearby bus station. The value of the scheme was approximately £500,000 and it was procured through the Eastern Highway Alliance (EHA) in September 2022.
- Kings Dyke Level Crossing – this scheme is due to complete in December 2022 and has a total construction value of £21m. Procurement was undertaken in early 2020 with the contract awarded in April 2020 via the OJEU route.

The MATS Broad Street Scheme has been procured through the Eastern Highways Alliance (EHA) Framework 3. The procurement process began in July 2022 and tender packs were submitted in October 2022. Responses were received on 2<sup>nd</sup> December 2022. These are currently being reviewed by Cambridgeshire County Council, and the chosen Contractor will be confirmed in February 2023, with mobilisation expected to begin shortly afterwards (in February 2023).

5.3.4 Procurement options for the remaining schemes are currently under review and the preferred option will be confirmed at the respective FBC stages.

## 5.4 Market Maturity

- 5.4.1 CCC have successfully worked with the local supply chain to develop and deliver similar highway schemes across the County over recent years, demonstrating that they have the experience and knowledge needed to procure schemes in such a fashion. The team currently leading the procurement of the MATS schemes have in the region of 150 years of combined experience in procuring and managing the delivery of highway improvement schemes.
- 5.4.2 Recent schemes which have been procured along similar routes, include the Ely Bypass, Kings Dyke and the Northstowe Bus Link (further details are provided in the Management Dimension). The successful procurement of these schemes in recent years demonstrates that there is adequate maturity within the local contracting market (both within CCC and amongst Contractors) to deliver the MATS schemes successfully.

## 5.5 Sourcing Options

- 5.5.1 There are several options available to the scheme promoter for procuring the best suited contractor to deliver the preferred package of schemes. These include:
- A **traditional arrangement**, where the scheme promoter appoints a consultant to design the project in detail and prepare tender documentation including drawings, work schedules and bills of quantities etc. Contractors are then invited to submit tenders for the construction of the scheme. This allows close control of the design process by the client, however, offers limited opportunity for the contractor to influence design, increasing risks and costs.
  - A **single-stage Design & Build contract**, where the design and construction of the scheme is tendered as one package, with a contractor appointed to complete the design process started by Milestone Infrastructure, as well as undertaking the construction of the scheme. This arrangement offers an incentive for the contractor to ensure that the design is buildable and can facilitate a quicker start on construction.
  - A **two-stage Design & Build contract**, where the design and construction of the scheme is again tendered as one package. However, there is potential to review the contractor's performance and construction target cost and stop the process at the end of the design phase if necessary.

- **Early Contractor Involvement (ECI)** is similar to a traditional arrangement; however a contractor is appointed during the preliminary design stage under a consultancy agreement to provide construction advice on the design process being undertaken by the design consultant. ECI is a collaborative form of contract, bringing the contractor into the project team early, reducing overall project risk.
- **Private Finance Initiative (PFI)** – the scheme promoter buys the scheme from the private sector on a long-term basis, typically for 25 years. This will usually involve constructing and maintaining the delivered asset, which incentivises the supplier to have the highest regard to whole-life costing as the supplier has the risk of future operation and maintenance costs for a substantial period of time.

The MATS Broad Street Scheme will be let under a traditional arrangement NEC4 Engineering and Construction Contract (Option C).

This is recommended on the basis that the use of a target price contract for this project will enable a reduced risk premium to be paid by the Employer through the use of the pain / gain share mechanism. This is particularly advantageous for this project as the design will not be fully complete prior to tender.

Further detail on the rational for the procurement strategy chosen for the MATS Broad Street Scheme is provided in Appendix L.

- 5.5.2 Procurement options for the remaining MATS schemes will be considered by CCC in the respective FBC's in relation to the scheme objectives / outputs, commercial constraints, exit strategy, risks, innovation, experience / control, and available contractors.

## 5.6 Payment Mechanisms

- 5.6.1 Payment timing will be adopted to maximise the value from the contract through minimising financing and construction costs. Prompt and fair payment mechanisms will be applied throughout the supply chain, in accordance with the contract tender documents issued as part of the procurement process.
- 5.6.2 It is envisaged that for each of the MATS schemes, the contract will be an NEC form of contract, which will be written to ensure that:
- The project objectives are achieved
  - Risks are mitigated before and during construction
  - Best value is achieved in terms of overall delivery.

- 5.6.3 Guidance from the Local Government Task Force states that “where practicable, payment mechanisms should be chosen to reflect opportunities offered by integrated team working. Wherever possible steps should be taken to discourage the potential abuse of retentions within the supply chain.”<sup>32</sup>
- 5.6.4 Examples of possible payment mechanisms for the MATS schemes are provided in Table 5.2 below.<sup>33</sup>

Table 5.2: Examples of Payment Mechanisms

Payment Mechanism	Description	Advantages	Disadvantages
Fixed Price (Design and Build)	The integrated supply team is appointed to design and construct the facility and is paid a combined fixed price for both components of the project. The risk of the design not working is transferred to the integrated supply team.	The client has certainty as to the final price of the facility.  Buildability may be considered during design.	Transferring all risk to the integrated supply team may not be cost-effective, as the client still carries the risk to their business of the new facility not being available when required.  Changes to requirements can be very expensive and destroy price certainty.  The output specification needs to be very clear and avoid weaknesses or ambiguities, to prevent a reduction in the finished quality of the facility. There may be a break point between stages to review affordability and continued value for money.
Target Price	Client and supply team work together to develop a target price for the facility. Often there can be some sharing of efficiency improvements as well as risk.	The client has certainty over price and the integrated project team has an incentive to make cost savings for the benefit of both the supply team and the client.	The target and arrangements for sharing efficiency and cost savings need to be established carefully to ensure value for money.
Payment on The Basis of Outcomes	The integrated supply team is paid on the basis of achieved outputs such as delivery on time and achieving agreed standards of reliability, capacity and safety.	Incentivises the integrated supply team to consider the long-term needs of end-users and the overall performance of the completed scheme.	This form of contract can be complex, and it may take time to reach agreement with the integrated supply team on the outputs to be achieved and how achievement will be measured.

<sup>32</sup> [https://constructingexcellence.org.uk/wp-content/uploads/2015/04/Common\\_Minimum-Standards.pdf](https://constructingexcellence.org.uk/wp-content/uploads/2015/04/Common_Minimum-Standards.pdf)

<sup>33</sup> Office of Government Commerce (2007). *Procurement and Contract Strategies: Achieving Excellence in Construction Procurement Guide*.

Payment Mechanism	Description	Advantages	Disadvantages
Target Price with Agreed Profit and Overhead	A target price is developed during the design stage.	<p>The price has two elements – cost, which all those involved in the integrated project team seek to reduce, and profit, which increases as a result of greater efficiency and innovation.</p> <p>Pain / gain share lump sum profit and overhead as opposed to percentage.</p>	<p>All members of the integrated supply team need to know their individual costs, which they are incentivised to keep to a minimum.</p> <p>The target price has to be set at a level that gives sufficient incentive and value for money for the type and complexity of scheme being constructed.</p>

- 5.6.5 It should also be noted that incentives and performance targets can be used to achieve best value, including a bonus for early completion, target cost, and KPIs.

The MATS Broad Street Scheme is being procured using the NEC4 Engineering and Construction Contract (Option C), which is a Target Cost contract with a pre-agreed pain / gain percentage mechanism.

- 5.6.6 Payment mechanisms for the remaining four schemes will be confirmed in the respective FBCs, though they are likely to follow a similar model.

## 5.7 Pricing Framework and Charging Mechanisms

- 5.7.1 Under the adopted procurement approach, the contractor will provide the MATS Improvement Schemes construction works described in the contract for a sum of money. The contract will provide for specified risks to be carried by the employer, which will result in the lump sum being adjusted if the compensation events occur.

Any changes to the Target Cost will be valued in accordance with the NEC4 Engineering and Construction Contract (Option C) for the MATS Broad Street Scheme.

- 5.7.2 The pricing framework and charging mechanisms for the remaining schemes will be confirmed in the respective FBCs, although they are likely to be similar to those agreed for the MATS Broad Street Scheme.



## 5.8 Risk Allocation and Transfer

- 5.8.1 The allocation of risk is a pre-requisite to considering the optimum procurement approach and contracting model. For example, “price certainty” is bought by paying the contractor to accept the risk of fixing a price in a commercial, changing market. The degree of risk involved in key aspects of the delivery must therefore be assessed to consider whether it is more economic for CCC or the contractor to manage these risks.
- 5.8.2 The usual approach to risk transfer is that the management of a particular risk will rest with the party best placed to manage it. Risks associated with land acquisition and funding would tend to remain with CCC, while specific risks associated with construction would tend to be transferred to the contractor.
- 5.8.3 Although many of the design risks can only be resolved through rigorous design and review processes, once the design options are clear and the scope of land acquisition, planning requirements, and environmental requirements are fully identified, the primary risks will be related to construction. There is potential for transferring these risks through the construction procurement process.

The Broad Street Scheme has a fully costed Risk Register detailing the risk allocation and owner. This Risk Register has been shared with contractors and used to inform the Target Cost and procurement.

- 5.8.4 The risk allocation for the remaining four MATS schemes will be agreed during the procurement and confirmed in the respective FBCs.

## 5.9 Contract Length

- 5.9.1 A high-level overview of the project timescales is provided in Table 5.3 below. Note that timescales relating to CPCA review and approval for FBC2 and FBC3 are assumed and have not yet been agreed.

Table 5.3: Project Implementation Timescales

Activity	Dates
<b>MATS Broad Street Improvement Scheme (FBC1)</b>	
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Broad Street Construction and FBC2	January 2023 - February 2023
Procurement of MATS Board Street Contractor	October 2022 - February 2023
Construction of MATS Broad Street scheme (in conjunction with FHSF scheme construction)	February 2023 - March 2024
<b>MATS Peas Hill &amp; Hostmoor Avenue, Twenty Foot Road and St Peter's Road Schemes (FBC2)</b>	
Obtain Utility Cost (C4s), Outline Planning, Land Engagement and Target Cost Procurement for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	February 2023 - December 2023
Submit FBC2, requesting release of funding for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	December 2023
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction and FBC3	December 2023 - March 2024
Obtain Full Planning Approval and Land Agreement (If no need for CPO) for Peas Hill and Twenty Foot Road Schemes.	March 2024 - December 2024
CPO and Side Road Order Statutory process	June 2023 - March 2025
Construction of Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	March 2025 - March 2026
<b>MATS NILR Scheme (FBC3)</b>	
Commence NILR Detailed Design, including Governance Process and statutory orders	March 2024 - March 2025
Begin Planning Process and supporting surveys (Ecology / Topography)	March 2024 - August 2025
Obtain Statutory Orders including CPO (approval from FDC, CCC)	March 2024 - October 2026
Target Cost Procurement for NILR	March 2025 - September 2025
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction	September 2025 - November 2025
NILR Construction	October 2026 - December 2027
MATS Post Scheme Monitoring and Evaluation	December 2028 - December 2033

Procurement of the MATS Broad Street Scheme began in October 2022 and tender responses have been received. The independent technical assurance review of this Business Case (FBC1) and resultant Board decision on funding is expected to conclude by January 25<sup>th</sup>, 2023, with a preferred Contractor selected in the week commencing 6<sup>th</sup> February 2023. Mobilisation and construction will then follow shortly after and have commenced by the end of February 2023.

The MATS Broad Street Scheme has been accelerated ahead of the remaining four MATS schemes to ensure compliance with the timescales associated with the FHSF and TCF funding. The financial restraints dictating this approach are explained in Section 4.3 of the Financial Dimension and the interdependency with the adjacent FHSF Broad Street Scheme is set out in Section 2.8 of the Strategic Dimension. Details on how delivery of the MATS Business Cases have been phased are provided in Section 1.3 of the introduction.

- 5.9.2 Timescales for the FBC2 activities are indicative and subject to approval to proceed at the CPCA Board Meeting on 25<sup>th</sup> January 2023. The programme for later tasks (associated with FBC2 and FBC3) are considered to be conservative with further opportunities for acceleration. For example, the programme for construction of the NILR assumes the requirement for land acquisition, however it may be possible for this to begin twelve months earlier if the land can be obtained through agreement.

## 5.10 Contract Management

- 5.10.1 The design works and the associated professional services contract will be managed by CCC's project management team. This will include the monitoring of project fees and the effective management of change. Monthly progress meetings are to be held, with standing items on the agenda such as programme, risks and financial review. For the site works, the responsibilities of the Project Manager and Supervisor will be carried out by the procured contractor. As part of this role, the procured contractor will audit costs to ensure that they are within scheme budgets, monitor the programme, monitor the monthly payment applications, assess compensation events (with client approval), resolve disputes, and supervise the works on site.

## 6. Management Dimension

### 6.1 Introduction

- 6.1.1 The purpose of the Management Dimension is to outline how the proposed schemes and the intended outcomes will be delivered successfully. It provides assurances that scheme accountability, programming, resources, assurances, risks, and communications can be managed effectively to ensure the scheme's delivery is ultimately successful.
- 6.1.2 This includes information relating to the management of project constraints and scheme dependencies; project governance, management and reporting structures; programme delivery milestones, assurance and approvals; communications and stakeholder management; outline plans for project monitoring, evaluation and benefits realisation; and the risk management of project delivery and construction.
- 6.1.3 This Management Dimension builds upon that reported within the OBC and provides further detail, especially in relation to the MATS Broad Street Scheme.

### 6.2 Evidence of Similar Projects

- 6.2.1 Evidence of the delivery of similar projects is provided below to re-affirm the feasibility of successfully delivering the MATS improvement schemes.

#### Ely Southern Bypass

- 6.2.2 The Ely Southern Bypass, as shown in Figure 6.1, below, is a new road that connects the A142 at Angel Drove to Stuntney Causeway and includes bridges over the railway line and the River Great Ouse and its floodplains.



Figure 6.1: Ely Southern Bypass (Source: VolkerFitzpatrick)

- 6.2.3 The purpose of the bypass is to ease congestion in and around Ely by providing a new link between Stuntney Causeway and Angel Drove to the south of the city. In addition, the new route removes the need for heavy goods vehicles to route through the city centre, which thus facilitated the permanent closure of a level crossing and eliminated the possibility of vehicle strike incidents at a low bridge accident hotspot.
- 6.2.4 The Ely Southern Bypass also facilitated active travel mode improvements, with enhanced walking and cycling provision around Ely Railway Station through the railway underpass. In addition, a new walkway attached to the bypass road bridge facilitates improvements to pedestrian access over the River Great Ouse, connecting the Fen Rivers Way and Ouse Valley Way footpaths together.
- 6.2.5 A contract for the detailed design, technical approval and construction of the bypass was tendered in line with procurement regulations and the contractor VolkerFitzpatrick was appointed in summer 2016. The Ely Southern Bypass opened to traffic on 31st October 2018 with the level crossing closed on 1st November 2018. The bridge walkway opened on 23rd January 2019 and the Ely underpass opened on 28th February 2019.
- 6.2.6 The project was funded by the CPCA, CCC, East Cambridgeshire District Council, Cambridgeshire and Peterborough Combined Authority (£22 million Growth Deal which includes £16 million from Department for Transport) and Network Rail.

#### Kings Dyke

- 6.2.7 The Kings Dyke scheme is located on the A605 between Peterborough and Whittlesey and the purpose of the scheme is to close the existing level crossing where considerable delays currently exist.



Figure 6.2: Kings Dyke (Source: Jones Brothers)



- 6.2.8 The scheme consists of the construction of approximately 1km of new road to the south of the existing road, a bridge over the railway line, an underpass for private access, two roundabouts and associated tie-ins to the existing highway. The existing level crossing will be stopped up upon completion of the scheme.
- 6.2.9 In spring 2020 the scheme went through a two-stage open tender under OJEU to procure a design and build contractor to carry out the Detailed Design and construction of the scheme. The successful contractor was Jones Bros and construction work commenced on site in June 2020. Construction is still ongoing and due to complete by December 2022.
- 6.2.10 The project is part funded by the Cambridgeshire and Peterborough Combined Authority (£24.4m) and by Cambridgeshire County Council (£7.6m).

### 6.3 Scheme Constraints and Dependencies

- 6.3.1 A number of potential constraints and interdependencies for the delivery of the MATS Improvement Schemes have been identified and are detailed in Section 2.7 and Section 2.8 respectively and summarised beneath.

#### Scheme Constraints

- 6.3.2 The key constraints requiring further consideration and potential management during the detailed design and construction phase of the MATS Improvement Schemes are summarised as follows:

- Funding: Confirmation of the CPCA and CCC funding sources, as detailed in the Financial Dimension (Chapter 4), will need to be secured and documented for inclusion in respective FBCs. Delays in securing the required funding, due to competing priorities or other issues, could delay the construction phase of the MATS Improvement Schemes. There is also the risk that the required funding will not be available.

Note that funding has been secured for the construction of the MATS Broad Street Scheme subject to CPCA Board approval. Therefore, this constraint only applies to the remaining MATS schemes.

- Land Acquisition: The requirement for land acquisition for the construction of the A141 / Peas Hill and A141 / Hostmoor Avenue, A141 / Twenty Foot Road junctions and NILR schemes requires negotiation with private landowners. There are also potential complexities associated with the compulsory purchase process if this is required, which may impact on the programme delivery schedule.



Note that there is no land acquisition required for the construction of the MATS Broad Street Scheme, and that this constraint only applies to the MATS schemes listed above.

- **Planning:** Planning permission is likely to be required for the A141 / Peas Hill and Hostmoor Avenue, the A141 / Twenty Foot Road and the NILR schemes, as the design proposals involve a change of land use and represent an extension or change to the existing highway boundary.

Note that there are no planning requirements for the MATS Broad Street Scheme, however planning is needed for the FHSF scheme. This is well progressed and discussed further in Section 2.8 of the Strategic Dimension.

- **Spatial and Utility Constraints:** The Broad Street scheme is constrained by the built environment as well as proximity to locally important historic structures within March Town Centre. This will require ongoing consultation with Historic England and FDC's Conservation Team. Ground surveys have identified the requirement for additional drainage and utility diversion assessments as part of the construction works, and these will need to be accommodated within the existing constraints. The Detailed Design and ECI stage have accounted for this.
- **Construction Programming:** Individual scheme construction phases will be scheduled to accommodate other planned highways works across March, in order to minimise disruption to road users.

The delivery of the Broad Street scheme is aligned to the delivery of the FHSF Broad Street and Riverside public realm proposals and has been procured as a single package.

- **Stakeholder / Public Acceptability:** The detailed design of the MATS Improvement Schemes should continue to be supported by key stakeholders impacted by scheme proposals, as well as members of the public.
- **Environmental Constraints:** Scheme design will need to take account of local ecological receptors, protected land and Habitats of Principle Importance within the defined study area. These requirements predominantly relate to the NILR scheme proposals.

### Scheme Dependencies

- 6.3.3 The key scheme interdependencies which will influence the successful management and delivery of the MATS Improvements Schemes are summarised as follows:

#### Future High Street Fund Scheme

- 6.3.4 The FHSF public realm proposals adjoin the MATS Broad Street Scheme design boundary. The designs for the two schemes have been developed in parallel, with constant dialogue between the two project delivery teams, culminating in a joint procurement exercise. This will ensure that the schemes complement each other to deliver the optimal highway and public realm improvements for Broad Street.
- 6.3.5 The MHCLG award of FHSF funding is conditional on these funds being spent by March 2024. The interdependence between the FHSF scheme and the MATS Broad Street scheme dictates that both schemes be constructed at the same time, during 2023, as explained in Section 4.3 (Financial Constraints) of this Business Case.

#### Hostmoor Avenue Planning Applications

- 6.3.6 Although technically not a dependency, there are several live and anticipated planning applications in the vicinity of the A141 / Hostmoor Avenue Junction which are expected to have a future impact on the junction's operation. These include two sites directly to the east of the junction (one for a food store and one for a fast-food restaurant) which have submitted live planning applications, and a site to the west of the junction which has permitted planning permission for a retail park<sup>34</sup>.
- 6.3.7 Growth from each of these developments has been considered within the assessment undertaken by the MATS project, ensuring that the scheme design can accommodate future trips generated by these sites.
- 6.3.8 The MATS project itself is not dependent on these developments, and alternate junction forms have been tested and proven to operate at this location should the development sites not come forward. Any changes required to the form of the A141 / Hostmoor Avenue Junction resulting from the progression of these planning applications, along with details of any S106 developer contributions, will be confirmed in FBC2.

#### Local Plan Growth Sites

- 6.3.9 The economic viability of the MATS Improvement Schemes for supporting local housing and employment growth aspirations requires the delivery of these growth ambitions to be realised. The degree of dependency has been explored through sensitivity testing and the assessment of a 'low growth' scenario, which is detailed in the Economic Dimension (Chapter 3).

<sup>34</sup> 1) F/YR19/1093/F - Erection of a A3 / A5 two-storey drive-thru restaurant / takeaway with associated parking and new access onto Hostmoor Avenue, 2) F/YR21/0885/F - Erection of a Class E(a) retail food store with associated parking and new access onto Hostmoor Avenue, 3) F/YR15/0640/F - Westry Retail Park.

### March Pedestrian, Signage and Cycling Strategy

- 6.3.10 Proposals identified for delivery via the March Pedestrian, Signage and Cycling Strategy will encourage the use of active travel in March. These schemes will facilitate the impact of the MATS Improvement Schemes for ensuring the transport network in March can sustainably accommodate future growth in travel demand.

## **6.4 Governance, Organisational Structures, Roles and Responsibilities**

- 6.4.1 The CPCA is the organisation ultimately responsible for the delivery of the MATS Improvement Schemes, with CCC nominated as the delivery partner, with delegated authority.
- 6.4.2 Figure 6.3 overleaf sets out the roles and responsibilities for managing the project of the key project staff and shows the reporting lines between the CPCA, CCC and wider project team.
- 6.4.3 The Figure shows that the CCC Project Manager is responsible for management of the project (delegated down from the CPCA) and is supported by the CPCA Programme Manager where needed. The CCC Project Manager manages delivery of the project with input from key stakeholders, including Fenland District Council, as well as technical specialists (transport planning, design, environment, etc.) and contractors procured to develop and construct the package of MATS Schemes.



Figure 6.3: Project Management Structure

- 6.4.4 A detailed Governance structure for the delivery of the MATS schemes is provided in Figure 6.4 below. It details the delegated authority structure of CCC's delivery teams and the reporting lines between CPCA, CCC, FDC and the Members' Steering Group. The structure will continue to be refined throughout each of the remaining phases of the MATS project, and indicate the specific roles assigned for project governance and management.

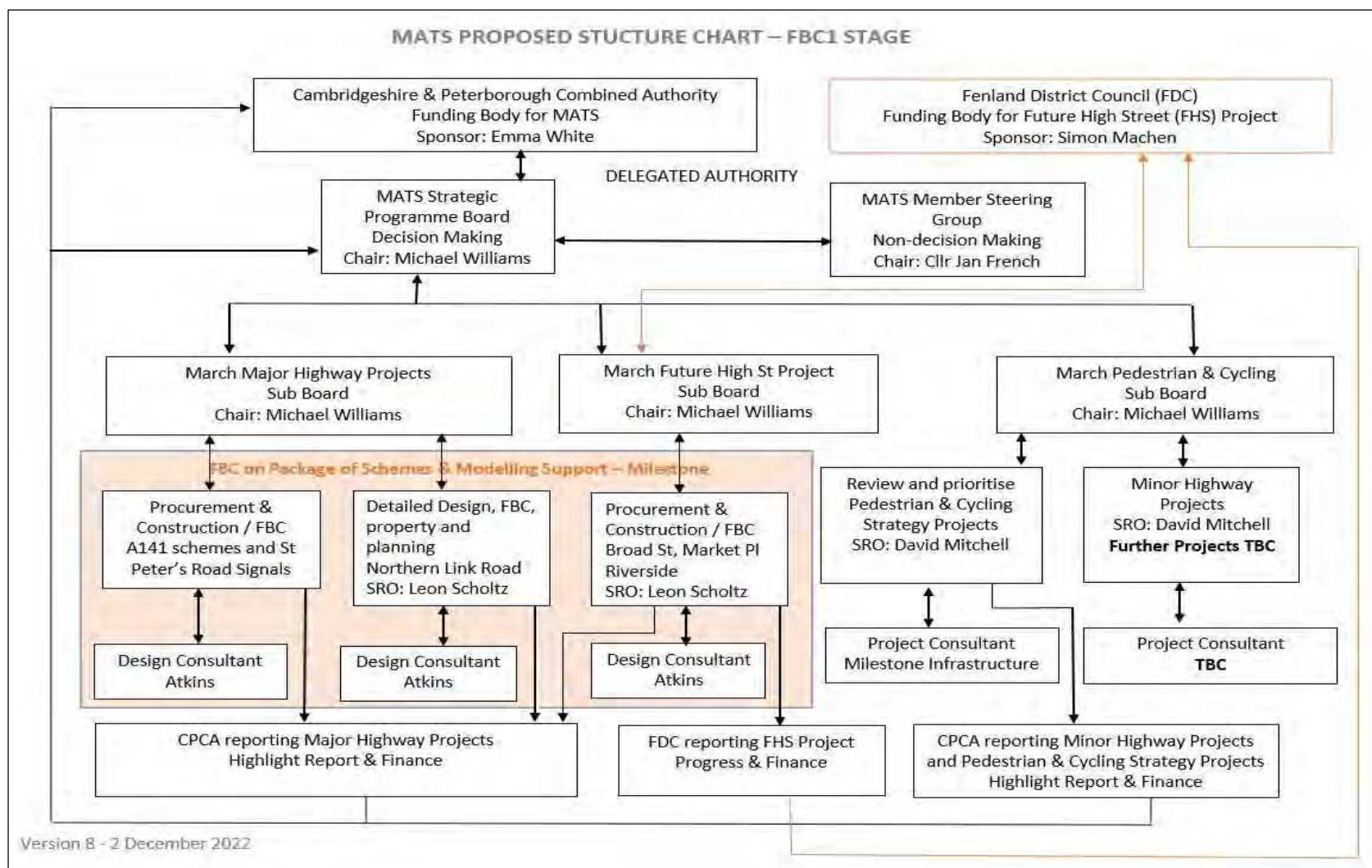


Figure 6.4: MATS Proposed Governance Structure Chart (FBC1 Stage)



- 6.4.5 The MATS Strategic Programme Board will oversee the continued development and delivery of the schemes and make key decisions relating to the delivery of the project. The purpose of the Strategic Programme Board is to provide oversight of the project and make the key decisions regarding governance, finance, risk management, and programme delivery.
- 6.4.6 CCC will take responsibility for the development and delivery of the MATS schemes, with four 'Project Sub Boards' set up to deliver the schemes as follows:
- March Major Highway Projects
    - A141 / Peas Hill Roundabout including A141 / Hostmoor Ave all-movement 3-arm signalised junction
    - A141 / Twenty Foot Road traffic signals.
    - High Street / St Peter's Road traffic signals.
  - March FHSF / MATS Project
    - Broad Street.
  - March Northern Link Road
    - Northern Industrial Link Road
  - March Minor Highway Projects
    - Quick Win Projects including Pedestrian / Cycling Strategy schemes.
- 6.4.7 Each 'Project Sub Board' will be supported by a Project Team of technical specialists, managed by a Project Team lead, designated by the CCC Project Sub Board.
- 6.4.8 Each Project Team will consist of key project delivery partners / stakeholders. The Project Team will be responsible for the daily running of the project, coordinating and managing all key stakeholders and partners, and managing scheme delivery. The Project Team will co-ordinate inputs from technical advisors responsible for the delivery of key work streams within an agreed programme, including:
- Stakeholder engagement
  - Design development
  - Transport modelling
  - Environmental assessment
  - Business case development.
- 6.4.9 Each Project Sub Board will report monthly to the MATS Strategic Programme Board on how the project is performing against the project objectives, key programme milestones, financial targets and whether there are any new risks that could impact on scheme delivery.

- 6.4.10 Regular Project Progress Meetings will be held throughout the duration of the schemes to allow the team to discuss important issues that could affect delivery.
- 6.4.11 The MATS Member Steering Group, consisting of elected members and key stakeholders, forms part of the Governance role. Further information regarding the role of the MSG is provided in the Communications and Stakeholder Engagement section, below.

## 6.5 Project Plan: Project Delivery Milestones

- 6.5.1 A timescale for the key project delivery milestones is illustrated in Table 6.1, below. These project delivery timescales assume funding will be available to progress each of the stage activities.

Table 6.1: Timescale for Project Milestones

Activity	Dates
<b>MATS Broad Street Improvement Scheme (FBC1)</b>	
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Broad Street Construction and FBC2	January 2023 - February 2023
Procurement of MATS Broad Street Contractor	October 2022 - February 2023
Construction of MATS Broad Street scheme (in conjunction with FHSF scheme construction)	February 2023 - March 2024
<b>MATS Peas Hill &amp; Hostmoor Avenue, Twenty Foot Road and St Peter's Road Schemes (FBC2)</b>	
Obtain Utility Cost (C4s), Outline Planning, Land Engagement and Target Cost Procurement for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	February 2023 - December 2023
Submit FBC2, requesting release of funding for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	December 2023
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction and FBC3	December 2023 - March 2024
Obtain Full Planning Approval and Land Agreement (If no need for CPO) for Peas Hill and Twenty Foot Road Schemes.	March 2024 - December 2024
CPO and Side Road Order Statutory process	June 2023 - March 2025
Construction of Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	March 2025 - March 2026
<b>MATS NILR Scheme (FBC3)</b>	
Commence NILR Detailed Design, including Governance Process and statutory orders	March 2024 - March 2025
Begin Planning Process and supporting surveys (Ecology / Topography)	March 2024 - August 2025
Obtain Statutory Orders including CPO (approval from FDC, CCC)	March 2024 - October 2026
Target Cost Procurement for NILR	March 2025 - September 2025
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction	September 2025 - November 2025
NILR Construction	October 2026 - December 2027
<b>MATS Post Scheme Monitoring and Evaluation</b>	<b>December 2028 - December 2033</b>

- 6.5.2 The delivery of the MATS Broad Street scheme is prioritised to align with the construction programme for the FHSF scheme, in order to meet the FHSF expenditure timeframe of March 2024.

- 6.5.3 The other MATS schemes project activity timelines will be revised and confirmed at FBC2 following procurement, to accommodate requirements associated with land acquisition negotiations, which will be reported through the Sub-Boards and Strategic Programme Board structure and documented in FBC2.

## 6.6 Assurance and Approvals Plan

- 6.6.1 The CPCA will manage the project in line with their existing assurance and approvals process. The CPCA Programme Manager, working closely with the CCC Project Manager and FDC Lead Officer, will be responsible for the daily running of the project, and any approvals required will be provided by the Strategic Programme Board.
- 6.6.2 The CPCA Assurance Framework<sup>35</sup> sets out the fundamental principles in relation to the use and administration of all funds within the Cambridgeshire and Peterborough Medium Term Financial Plan and outlines a culture underpinned by processes, practices, and procedures. The Assurance Framework sits alongside a number of other CPCA documents including the Constitution and Devolution Deal.
- 6.6.3 As part of the CPCA Assurance Framework, an Independent Technical Evaluation (ITE) of the Business Case will be undertaken at each stage of the project. The ITE will be undertaken by a third-party organisation and will assess the Business Case (and supporting information) against the CPCA's Technical Assurance Framework to make a recommendation to the CPCA Transport Board as to whether each phase of the Business Case is ready for submission to the CPCA Board for approval.
- 6.6.4 Further to the above, the Combined Authority has developed the 'Ten Point Guide'<sup>36</sup> to project management which outlines the governance requirements which should be followed throughout the life cycle of the project. It details the requirements at project initiation, including reiterating the need to establish a Project / Programme Board with the Combined Authority and delivery partners. The Project / Programme Board should also establish a RACI chart; a copy of the RACI template is included in the Combined Authority's Ten Point Guide.

<sup>35</sup> <https://mk0cpcamainsitehdbtm.kinstacdn.com/wp-content/uploads/documents/business-board/governance/Local-Assurance-Framework-.pdf>

<sup>36</sup> <https://cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/Monitoring-and-Evaluation-Framework-v1.6.pdf>

## 6.7 Communication and Stakeholder Engagement

6.7.1 Communication and Stakeholder engagement for the MATS project consists of:

- Providing regular updates on delivery progress and key activities to the local community, businesses and key stakeholders
- Engaging with the local community, businesses and key stakeholders about delivery to ensure local needs are taken into account throughout the duration of the project
- Ensuring information is shared, using appropriate methods of communication, to all sectors of the community, businesses and key stakeholders.

### Stakeholder Engagement and Communication

6.7.2 Throughout the development of the MATS Improvement Schemes to date, regular Member Steering Group meetings (MSGs) have been held. MSGs include elected members from CCC, FDC and March Town Council (MTC), as well as local authority officers and consultants from planning, transport and engineering disciplines. Other stakeholders have attended as required, for example from the FHSF team. The MSG is not a decision-making group. The MATS Strategic Programme Board makes decisions relating to the delivery of the project as detailed in Section 6.4.

6.7.3 MSGs to date have provided key project stakeholders with regular updates on development of the schemes, given elected councillors the opportunity to steer the project, and provided information relating to transport works ongoing in the local area. It is expected that further MSGs will be held as the schemes develop.

6.7.4 Key stakeholder support has been received from representatives of HMP Whitemoor Prison, in regard to the NILR scheme. The scheme will enable an alternative entry / exit route to the facility, which is required to comply with national guidelines for prison access<sup>37</sup>. Network Rail have also responded favourably, giving permission for access to their land for scheme survey work.

The Stakeholder Engagement Strategy for the MATS Broad Street Scheme lists details when and how stakeholder engagement will take place for the MATS and FHSF Broad Street Scheme. This is included in Appendix A.

<sup>37</sup> [CCC/HMP Whitemore Prison Meeting, 29th August 2019](#)

## Public Consultation

- 6.7.5 Significant consultation with members of the public has already been undertaken during the development of the adopted Fenland Local Plan, the March Neighbourhood Plan and the Growing Fenland project.
- 6.7.6 In relation to the current schemes, proposals for a public consultation were due to take place over a six-week period during April and May 2020. A number of events were scheduled to engage with local residents and gather public opinion around specific interventions, as well as to gauge levels of support for the schemes as a whole. As a result of the onset of the Covid-19 pandemic, with central government restrictions placed on social interactions and a requirement for social distancing, proposals for traditional public consultation events were postponed on public safety grounds.
- 6.7.7 As an alternative, a fully online public consultation event was hosted by CCC over a six-week period during May and June 2020. This took members of the public through a virtual consultation 'room', which displayed key information about the MATS Improvement Schemes. This included the overall transport vision for March, the different options tested, and the individual schemes proposed at specific locations. This also offered residents the opportunity to fill out an online survey expressing their opinions in relation to specific interventions and the proposed scheme as a whole.



Figure 6.5: MATS Online Public Consultation (May – June 2020)

- 6.7.8 The online consultation event was heavily promoted to local residents by the CPCA, CCC and FDC through traditional channels and social media. There were approximately 5,400 visits to the online consultation site between 15<sup>th</sup> May 2020 and 28<sup>th</sup> June 2020, with a total of 115 usable completed surveys. Approximately 78% stated they were residents of March and covered a broad age range, reflective of the town's population.



6.7.9 Initial results from the online consultation indicated the following proportion of respondents either 'Strongly Supported' or 'Supported' each of the MATS Improvement Scheme elements:

- A141 / Twenty Foot Road Traffic Signals - 63%
- A141 / Peas Hill Roundabout - 62%
- Hostmoor Avenue Roundabout - 76%
- High Street / St Peter's Road Traffic Signal Improvements - 53%

- Broad Street Roundabout with associated public realm – 57%

- Northern Industrial Link Road - 70%.

6.7.10 This indicated that each of the MATS Improvement Scheme elements are supported by the majority of respondents. Full results and analysis from the online consultation are presented in the Future March: Summary Report of Consultation Findings (July 2020), available on CCC's website.<sup>38</sup>

6.7.11 FDC also undertook a public consultation exercise regarding the March Future High Street Fund proposals, in May 2020.

6.7.12 A final round of Public Engagement was undertaken in September 2022 through a series of in-person events in March Town Centre. These events were attended by Cambridgeshire County Council and Fenland District Council Officers and presented the Detailed Design proposals for the schemes. A total of 55 people engaged with these events and feedback was collected and relayed to the project team.



Figure 6.6: MATS Public Engagement Event (September 2022)

<sup>38</sup> <https://www.cambridgeshire.gov.uk/asset-library/Future-March-consultation-report-and-appendices.pdf>



## 6.8 Benefits Realisation Plan

- 6.8.1 A Benefits Realisation Plan has been prepared for the MATS, which sets out the approach to managing the realisation of benefits of the proposed improvement schemes. This document is included in Appendix I of this report.
- 6.8.2 The plan has been prepared in accordance with the guidance provided by the DfT (Transport Business Cases<sup>39</sup>), HMT (The Green Book<sup>40</sup>), and the Infrastructure and Projects Authority (Guide on Assurance of Benefits Realisation in Major Projects<sup>41</sup>).

## 6.9 Monitoring and Evaluation

- 6.9.1 A Monitoring and Evaluation Plan has also been prepared for the MATS schemes, which outlines the arrangements for monitoring and evaluating the proposed improvement schemes in accordance with guidance from the DfT<sup>42</sup>. This document is included in Appendix J of this report.
- 6.9.2 The Monitoring and Evaluation Plan has been prepared in accordance with the guidance provided by the DfT (The Transport Business Cases<sup>43</sup>; Monitoring and Evaluation Framework for Local Authority Major Schemes<sup>44</sup>) and HMT (The Green Book<sup>45</sup>).
- 6.9.3 The plan provides information relating to the scheme background and context, scheme objectives and outcomes, data collection methods, resourcing and governance arrangements, delivery plan, and dissemination plan.
- 6.9.4 Crucially, the delivery plan identifies the key monitoring and evaluation tasks to be undertaken during pre-construction, construction, and post construction phases of scheme development. The monitoring and evaluation work will culminate with the production of a One Year After Monitoring and Evaluation Report (to be produced 12 months post scheme implementation) and a Final Monitoring and Evaluation Report (to be produced approximately five years post scheme implementation).
- 6.9.5 Note that Monitoring and Evaluation will be assessed in three phases to match the phasing developed for the FBCs, with the outcomes specific to the MATS Broad Street Scheme assessed following completion of that scheme (in 2024). Two further rounds of post scheme monitoring will then be undertaken following submission of FBC2 and FBC3.

<sup>39</sup> DfT (2013). [The Transport Business Cases](#)

<sup>40</sup> HMT (2020). [The Green Book: Central Government Guidance on Appraisal and Evaluation](#)

<sup>41</sup> Infrastructure and Projects Authority (2016). [Guide on Assurance of Benefits Realisation in Major Projects](#)

<sup>42</sup> DfT (2013). [The Transport Business Cases](#)

<sup>43</sup> DfT (2013). [The Transport Business Cases](#)

<sup>44</sup> DfT (2012). [Monitoring and Evaluation Framework for Local Authority Major Schemes](#)

<sup>45</sup> HMT (2020). [The Green Book: Central Government Guidance on Appraisal and Evaluation](#)

## 6.10 Risk Management Strategy

- 6.10.1 A Project Risk Register, managed by CCC, and a Construction Risk Register, produced by the lead design consultant, are provided for the delivery of the MATS Improvement Schemes. Both Risk Registers are reviewed regularly at progress meetings with updates reported to the Project Team and Strategic Programme Board through the monthly Highlight Reports.
- 6.10.2 The construction Risk Register for the MATS Broad Street Scheme was shared with contractors as part of the procurement process and has fed into the Target Cost exercise.

### Project Risk Register

- 6.10.3 The live Project Risk Register has been developed by CCC to guide and inform the project. This identifies potential risks, considers the impact they may have, the likelihood of them occurring, and the measures that will be taken to mitigate these.
- 6.10.4 CCC update the Project Risk Register on a fortnightly basis and issue it to the CPCA every month. The latest version of the MATS Project Risk Register is provided in Appendix K. As of December 2022, there are 10 live risks identified of which 10 are rated as red, with the highest likelihood impact RAG score (12+) and 2 are rated as amber (5+ RAG score).
- 6.10.5 Each of these risks are actively managed and reviewed at CCC Progress Meetings and CPCA Project Board Meetings and have proposed mitigations in place.

### Construction Risk Register

- 6.10.6 Construction Risk Registers identifying potential levels of risk associated with the Detailed Design and construction of each MATS Improvement Scheme have been developed and are included in Appendix H. These are live documents which will be continually evaluated as the design and procurement for each of the MATS Improvement Schemes evolve to ensure that all potential risks are identified that could have a detrimental effect on the construction and operation of the built schemes, with mitigation plans developed.
- 6.10.7 A summary of the evaluation of key construction risks identified for the construction of the MATS Improvement Schemes are provided in Table 6.3 below.

The MATS Broad Street Risk Register was shared with Contractors as part of the procurement exercise and is included in Appendix H. Costs from the Risk Register were incorporated into the scheme costs used in the Economic and Financial Dimensions.

## Appendices

## Appendix A: Stakeholder Engagement Strategy

## **March Future High Streets Communications Plan 2022**

This Communication Plan identifies the types of communication and documentation that will be delivered to specified audiences for the March Future High Street Fund project, including residents and other stakeholders. The Plan specifies the way in which information will be shared and sets the schedule for communications throughout the project. The plan will be reviewed by key project stakeholders to ensure that all interested groups and all types of project information are covered, as well as to confirm the plans for timely delivery of that information.

### **Aim**

To deliver consistent, coordinated, and targeted messaging to inform and engage a range of stakeholders, with the aim of raising awareness of planned works at key stages and the benefits they will bring to local people, businesses, and visitors to the town.

### **Key audiences**

- Residents
- Partners (including March Town Council and Cambridgeshire County Council)
- Market traders
- Shop managers/owners
- Investors (DLUHC and CPCA)
- Media representatives
- March schools
- March Society
- FDC Members and Cambridgeshire County Council Members
- FDC staff

### **Objectives**

- Raise awareness: Build awareness of project, timescales, processes, benefits, issues, successes.
- Clarify Broad Street road scheme: Ensure stakeholders are aware that the Broad Street road scheme is a March Area Transport Study (MATs) project, resulting from traffic assessments.
- Provide up-to-date information: Ensure stakeholders are provided with and can access the latest information.
- Influence perceptions: Increase understanding of works to encourage positive opinions and perceptions.
- Build positive relationships: Build trust with all stakeholders to increase confidence in the project, minimise uncertainty and improve problem-solving.

### **Key messages**

- Project will help the town centre to remain vibrant and viable for the future.
- Project will help increase footfall into the town centre and increase the amount of time people spend there.
- Need for change – MATs work will reduce traffic congestion and pollution in the town centre, making it safer and healthier in the long-term.
- Loss of parking in town centre to be resolved with City Road car park mitigation and other parking options.

### Communications approaches and target audiences

- Press Releases (all)
- Regularly update MFHSF webpage: [www.fenland.gov.uk/mfhsf](http://www.fenland.gov.uk/mfhsf) (all)
- Ongoing social media updates (all)
- Manned consultation pop-up in March Library (residents, traders, shop owners/managers)
- Manned consultation pop-up on March Market Place (residents, traders, shop owners/managers)
- Business letters and drop-in workshops (traders, shop owners/managers)
- Monthly email updates (FDC and CCC members and partners)

### Communications Action Plan Undertaken to Date:

Date	Communications Activity	Lead Officer	Key stakeholders	Delivery by	Complete
May 2022	Update MFHSF webpage	DW/AA	All	6 May	
	Consult with Market Traders (Market Place)	MW	Traders	20 May	
	Consult with Street Licence holders	MW	Traders	20 May	
	March Town Council briefing	PH/MW	Partners	30 May	
June 2022	Update MFHSF webpage with preliminary designs for Riverside/Broad Street scheme	DW/AA	All	End June	
	Press Release with preliminary designs for Riverside/Broad Street scheme	AA	All	End June	
	Design MFHSF branding for comms materials (i.e. pull-up banners, Survey Monkey, social media, Library video)	CM	/	14 June	
	Town Centre walkaround and retailer engagement on Riverside/Broad Street scheme	MW	Shop owners /managers	16 & 22 June	
	Invites to traders/shop owners to attend Library consultation pop-up	MW	Market traders/shop owners/managers	16 & 22 June	
	Library pop-up information stand installed (prelim designs)	MW	/	20 June	
	Manned pop-up event at Library	MW	Residents, traders, shop owners	20 June 30 June	



	Social media engagement	AA/CM	All	Ongoing	Ongoing
	Monthly email update	MW	Members/partners	End June	
July 2022	Updated MFHSF webpages with FAQs from socials	MW/AA	All	1 July	
	Town Centre walkaround and retailer engagement on Riverside/Broad Street scheme	MW	Shop owners /managers	Completed	
	Manned pop-up event at Library	MW	Residents, traders, shop owners	7 July	
				14 July	
				21 July	
	Manned Market Place pop-up, Saturday market	MW	Residents, traders, shop owners	23 July	
	Re-engage with Market Traders on Market Place designs	MW	Market traders	Completed	
	Social media engagement	AA/CM	All	Ongoing	
August 22	Highlight Report	MW	Members/partners	End July	
	Email response to people who completed feedback survey	MW/SM	Residents, traders, shop owners	End August	
	Market Trader relocation meeting	MW	Market traders	TBC	
	Social media engagement	AA/CM	All	Ongoing	
Sept 22	Highlight Report	MW	Members/partners	End August	
	Update MFHSF webpage with detailed designs for Riverside/Broad Street and FAQs	DW/AA	All	End Sept	
	Library pop-up information stand updated (detailed designs for Broad Street/Riverside)	MW	/	TBC	
	Update comms branding with new materials	CM	/	TBC	Postponed - December
	Press Release on war memorial flag poles	AA	All	End Sept	Postponed - TBC
	Highlights Report	MW	Members/partners	End Sept	

### Future Communications Plan 22/23:

#### Marketplace:

ITEM	METHOD	DATE	AUDIENCE
Letters to Traders	Email / Letter	October	Traders
Comms on Relocation	Social / Press Release	November - Ongoing	General Public
Comms on Works	Social / Press Release	December	General Public
Signage for Relocation	Physical Signs	January	General Public
Member photo op	Press Release	WC Jan 9th	Members / MP / Leader / Minister?
Comms on re-opening	Social / Press Release	March	Public
Re-opening	Press Release	March	Members

**Broad Street and Riverside:**

ITEM	METHOD	DATE	AUDIENCE
Comms on Closures (GAS WORKS)	Social / Press Release	Early Jan	General Public
Comms on Contractor secured	Social / Press Release	Early Jan	General Public
Project Update	Website	January	All
Comms on works commencing (FHSF)	Social / PR / Website	April	All
Breaking Ground PR	Press Release	May	Members / MP / Leader / Minister
Ongoing Updates	Social / Website / Letters to Shopkeepers	May onwards (per 2 months)	Public / Shopkeepers
Physical Signage	Physical / Banners	Duration of Works	All

**Premises Grants:**

ITEM	METHOD	DATE	AUDIENCE
Grant Relaunch	Social / PR	Jan	Landlords
Press on successful applicants	Social / PR /website	Duration	Public
Press on works completed	Social / Website	Duration	All

**Future Comms Investment Umbrella for March.**

Officers received a steer from the Member Steering Group to identify and separate all elements of investment in March over the coming years, to be communicated with the public via an “investment umbrella” brand. As such officers have currently identified the following upcoming investment and projects which will be covered by this umbrella:

- ▶ Cityfibre Fibre Broadband Connections £5m
- ▶ Market Place £440k FHSF DLUHC Funding
- ▶ Riverside £1.25m FHSF DLUHC Funding
- ▶ Broad Street £2.3m FHSF DLUHC Funding
- ▶ March Area Transport Strategy investment into Broad Street £4.2m
- ▶ CPCA investment into March £2m
- ▶ Vacant Unit Investments £680k FHSF
- ▶ Cadent Gas – TBC (paid for through MATS)
- ▶ Changing Places £240k
- ▶ Further Potential Developer Investment in Development Sites in the future

### **Operational Notes –**

Officers from Fenland District Council hold monthly meetings to discuss previous communications successes/challenges as well as to align upcoming communications with the project. All communications are approved via David Wright – Policy and Communications Manager before being published as well as relevant DLUHC (where required) approvals. Where applicable the team will always look to seek comment from relevant partners, members or ministerial stakeholders to support communications.

## Appendix B: General Arrangement (GA) Drawings

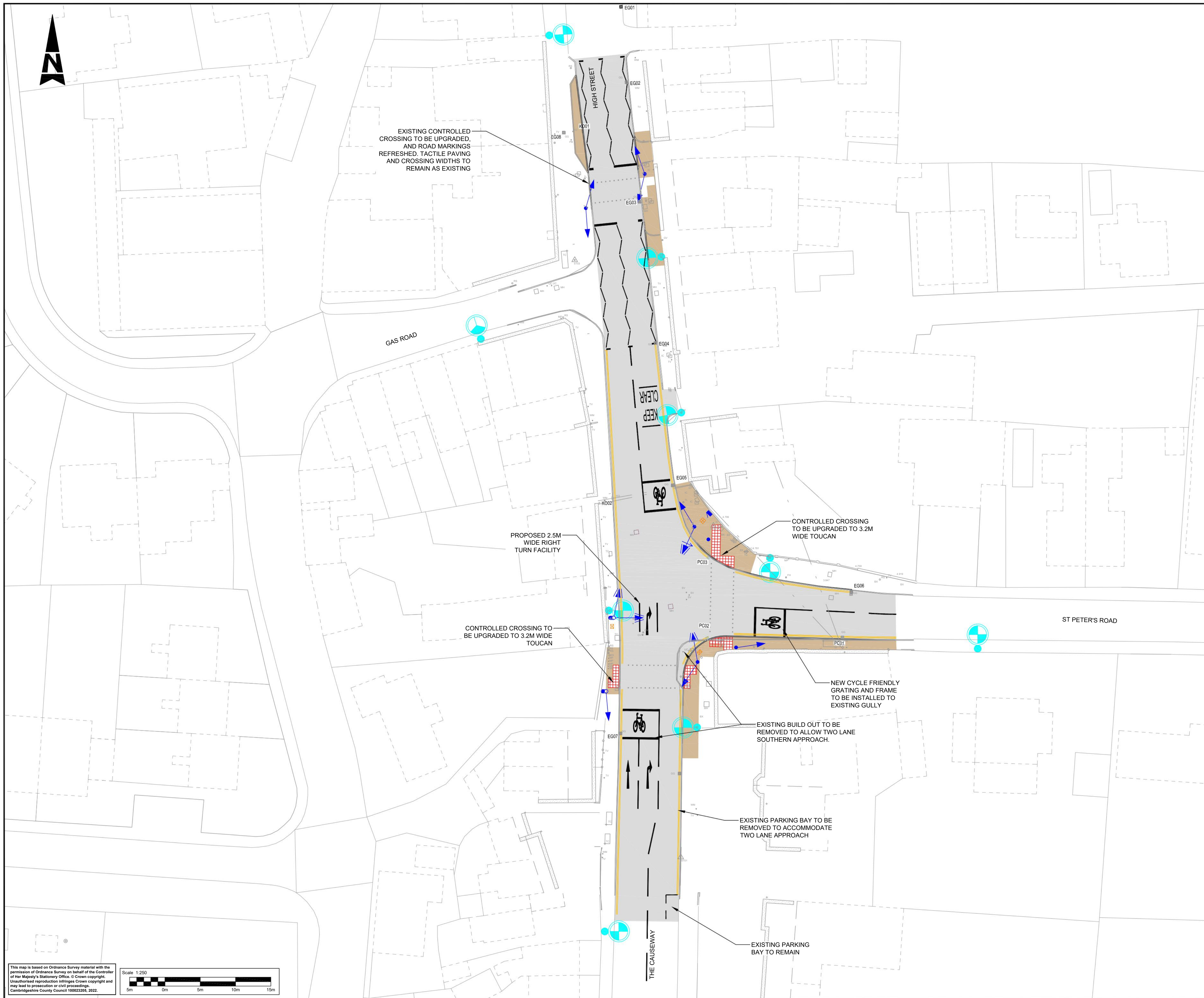




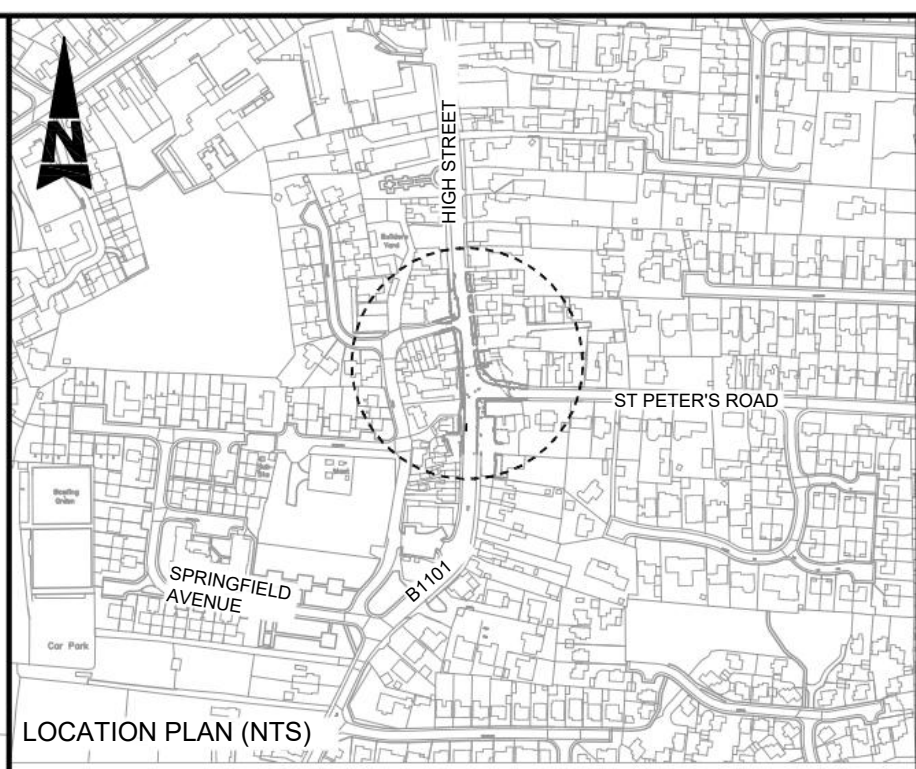
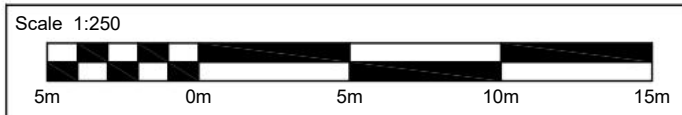


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LOCATION PLAN (NTS)

NOTES:  
1. DO NOT SCALE FROM THIS DRAWING.  
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTS AND DRAWINGS.

- KEY:
- PROPOSED CARRIAGEWAY
  - PROPOSED FOOTWAY
  - PROPOSED SIGNAL HEAD
  - LOCATION OF NEW SIGNAL CONTROLLER
  - EXISTING MANHOLE TO REMAIN
  - PROPOSED SIGNAL MANHOLE
  - EXISTING GULLY TO REMAIN
  - PROPOSED GULLY
  - EXISTING LIGHTING COLUMN WITH NEW LED UNIT
  - PROPOSED LIGHTING COLUMN

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Drawing Suitability						Status
APPROVED - PUBLISHED						A1



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Cambridgeshire  
County Council

Project Title  
**MATS St Peter's Road  
Junction Improvement Scheme**

Drawing Title  
**PUBLIC ENGAGEMENT  
GENERAL ARRANGEMENT**

Drawing Number		Originator		Volume	
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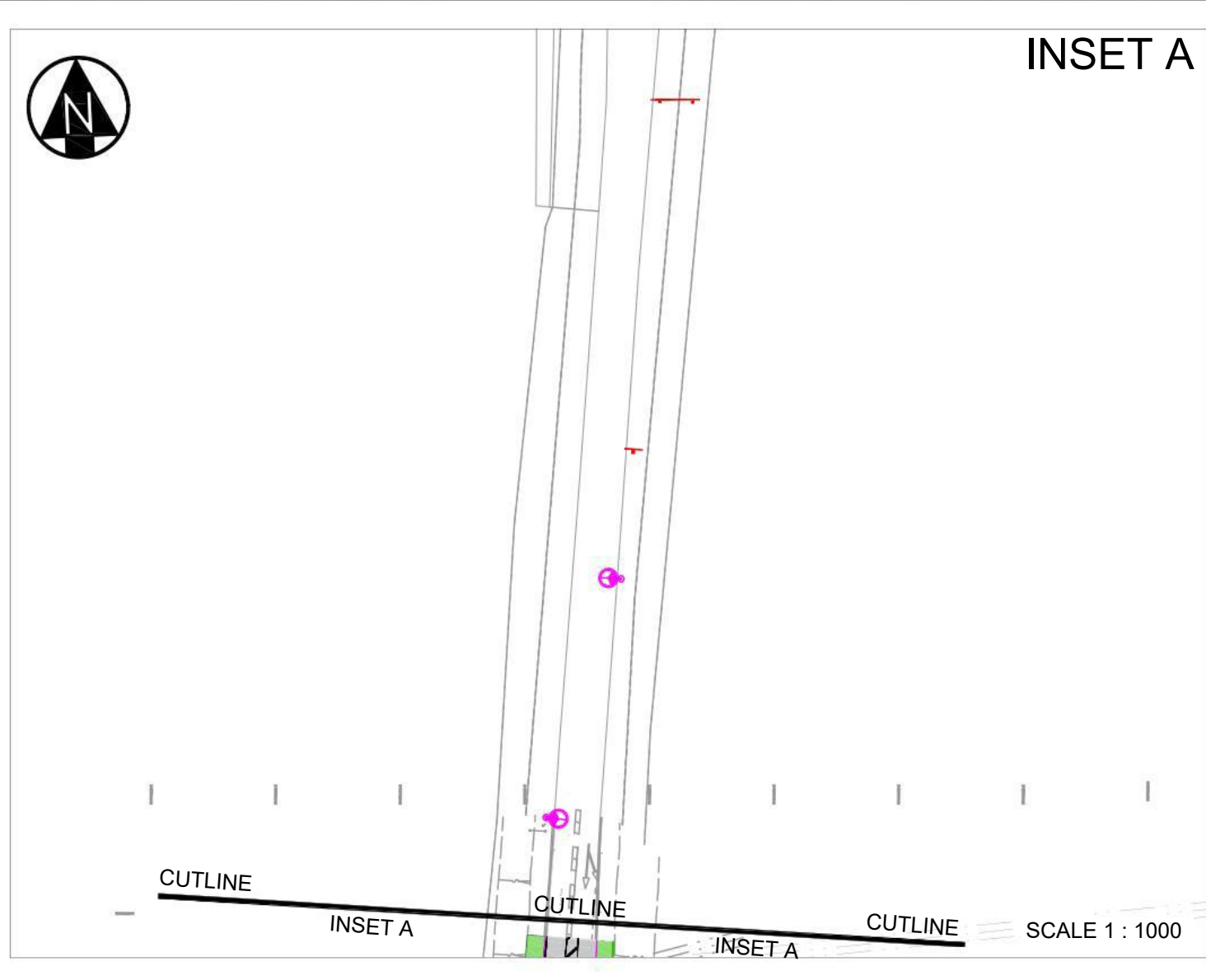
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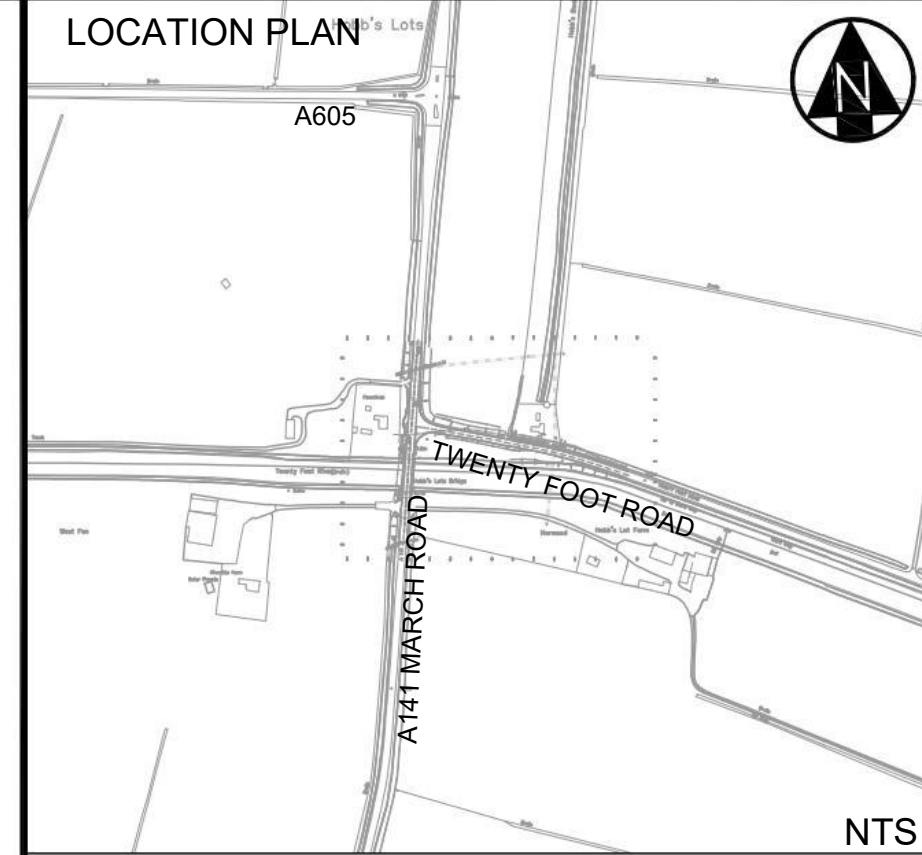
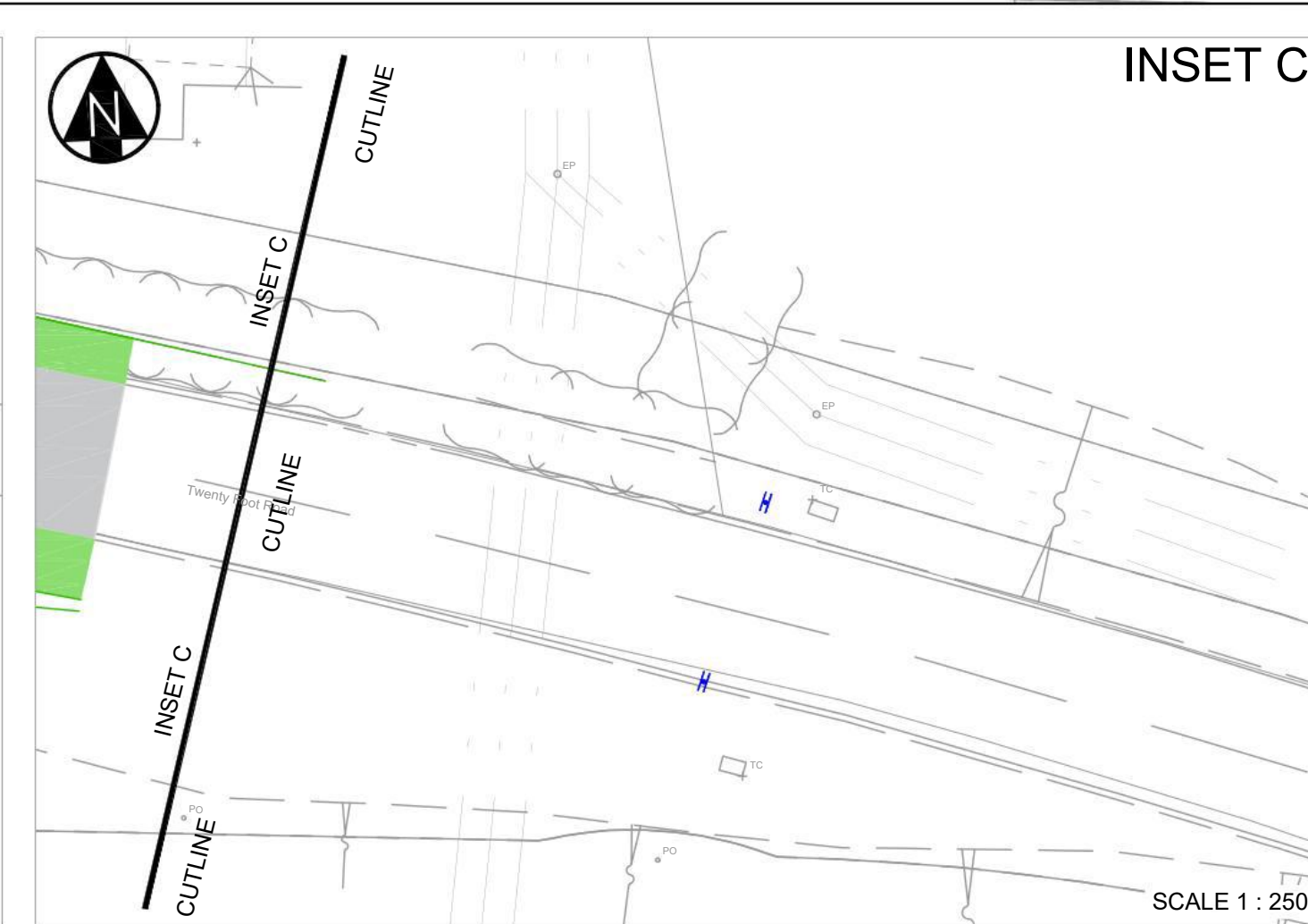
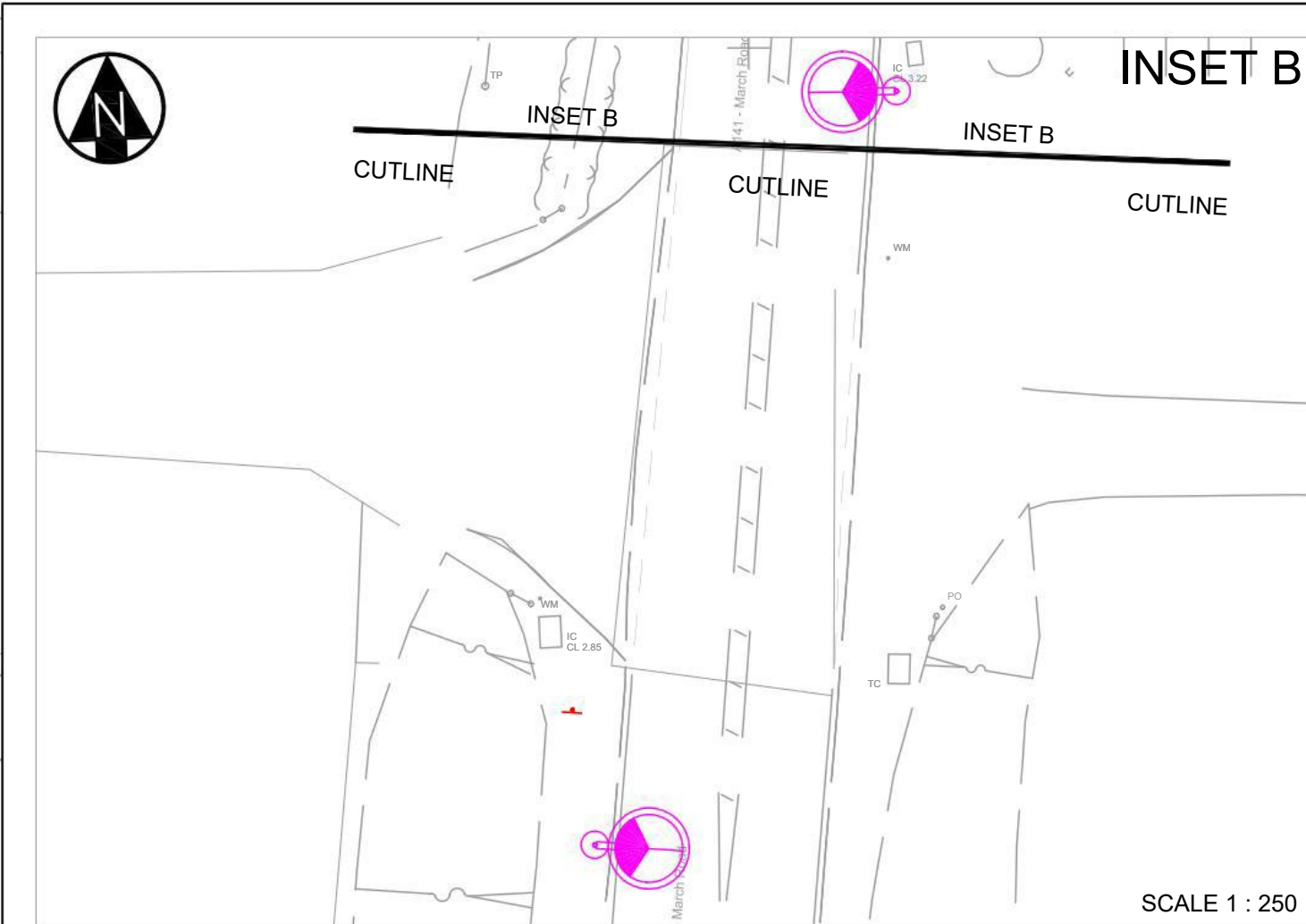
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- Notes:
1. Do not scale from this drawing.
  2. Verify all dimensions on site prior to construction.
  3. Report all discrepancies to the Drawing Originator immediately.
  4. This drawing is to be read in conjunction with all relevant documents and drawings.
  5. All works to be carried out in accordance with the 'Housing Estate Road Construction Specification' (HERCS) and the 'Specification for Highway Works' (SHW). Where any discrepancies arise, the HERCS will take precedence.
  6. Measures for the temporary diversion and routing of traffic on existing roads for the purpose of undertaking the works shall be proposed by the Contractor. All such diversions shall be to the approval of the project manager, highway authority and the police.
  7. Do not scale from this drawing.
  8. Report all discrepancies to the drawing originator immediately.
  9. This drawing is to be read in conjunction with all relevant documents and drawings.
  10. For series 200 Site Clearance drawing refer to CPX31152 -ATK-HSC-XX-DR-CX-000001.
  11. For series 500 Drainage drawing refer to CPX31152-ATK-HDG-XX-DR-CD-000001.
  12. For series 600 Earthworks drawing refer to CPX31152 -ATK-HGN-XX-DR-CX-000002.
  13. For Series 700 Pavement drawing refer to CPX31153-ATK-HPV-XX-DR-CX-000001.
  14. For series 1200 Road Markings drawing refer to CPX31153-ATK-HMK-XX-DR-CH-000002.
  15. For series 1200 Sign Design drawing refer to CPX31152-ATK-HSN-XX -SN-DR-CH-000001.
  16. For series 1200 Sign Layout drawing refer to CPX31152-ATK-HSN-XX-DR-CH-000001.
  17. For series 3000 Landscape drawing refer to CPX31152-ATK-HGN-XX-DR-CX-000006.



- Key:
- Proposed Carriageway.
  - Traffic Island.
  - Highway Verge.
  - Maintenance Hardstanding.
  - Proposed 10.0m tall passively safe lighting column.
  - Edge of carriageway kerb 125mm upstand.
  - Bi-directional Reflective Road Stud.
  - Uni-directional Reflective Road Stud.
  - Traffic Signal Head.
  - Proposed New Sign.
  - Proposed New Lit Sign.
  - Proposed Keep Left Bollard.

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## Appendix C: Design Review Considering LTN1/20 Guidance

# Technical Note

Project:	Broad Street and Riverside, March		
Subject:	LTN 1/20 Compliance		
Author:	Mark Gearing		
Date:	25/10/2022	Project No.:	5210127
Atkins No.:	CCCFHSF-ATK-HGN-XX-RP-CH-000006		

## Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	For Information	MG	PM	DG	PM	3/11/22

## Client signoff

Client	Cambridgeshire County Council
Project	Broad Street and Riverside, March
Project No.	5210127
Client signature / date	



Local Transport Note, LTN 1/20 provides a national standard for the design of cycle infrastructure. The national guidance recommends a basis for those standards based on 5 design principles and 22 summary principles. The guidance contains tools which give local authorities flexibility on infrastructure design and sets out measurable quality threshold to achieve when designing cycling schemes.

The 5 core design principles which represent the essential requirements to achieve more people travelling by cycle or on foot are:

- **Coherent** – Cycle networks should be planned and designed to allow people to reach their day-to-day destinations easily, along routes that connect, are simple to navigate and are of a consistently high quality. Neither cyclists nor pedestrians benefit from unintuitive arrangements that put cyclists in unexpected places away from the carriageway.
- **Direct** – Cycle routes should be at least as direct and preferably more direct than those available for motor vehicles. Routes involving extra distance or lots of stopping and starting will result in some cyclists choosing to ride on the main carriageway instead because it is faster and more direct, even if less safe.
- **Safe** – Not only must cycle infrastructure be safe, it should also be perceived to be safe so that more people felt able to cycle. Space for cycling is important but a narrow advisory cycle lane next to a narrow general traffic lane and guardrail at a busy junction is not an acceptable space for cyclists.
- **Comfortable** – Comfortable conditions for cycling require routes with good quality, well maintained smooth surfaces, adequate width for the volume of users, minimal stopping and starting and avoiding steep gradients. Uncomfortable transitions between on-and-off carriageway facilities are best avoided, particularly at locations where conflict with other road users is more likely.
- **Attractive** – Cycle infrastructure should help to deliver public spaces that are well designed and finished in attractive materials and be places that people want to spend time using. Sometimes well-intentioned signs and markings for cycling are not only difficult and uncomfortable to use, but are also unattractive additions to the street scape.

In relation to cycling, and as per the DMRB GG142 – Walking, cycling and horse-riding assessment and review, a WCHAR has been undertaken. The report reviews the policies and strategies at the time of the review along with accident data, trip generators and current provisions inside and outside of the scheme extents and proposing user opportunities for consideration of the designers.

Due to the rurality of the area and the historic nature of the market towns that developed along the route of the River Nene, road links from town to village and onwards consist of a mix of fast and winding country lanes and busy (mostly) single carriageway A roads. Travel by road to connect to wider links is therefore often slow, especially in comparison to using rail. Within March the road network is heavily constrained due to relative narrow streets, high parking demands and limited river crossings. Due to the rural nature of the district, there is a high dependency on motorised vehicles. There is also a high dependency on heavy goods vehicles (HGVs) due to the nature of the local economy. These issues make opportunities to reallocate road space for walking and cycling more limited and challenging.

At present the cycle network within and around March is not coherent and this was not part of the remit of the scheme. Broad Street has traditionally been considered a destination, rather than a through route for cyclists. Cycle stands are available within the 'central reserve' area which requires pedestrians and cyclists to cross the existing carriageways. Cyclists wishing to travel to or from Station Road to Broad Street also must negotiate the existing signalised junction.

Cycle routes were considered but with the low speeds along Broad Street it was felt that the proposed highway can safely accommodate cyclists, it would have also meant putting in a short length of off-road facility which would create two transitions for the cyclists to negotiate which LTN 1/20 advises against. LTN 1/20 also advises that cycles are treated as vehicles and are physically segregated from pedestrians. The simplest and most easily understood and neatest solution is by providing a kerb which keeps cyclist on the carriageway.

The proposed highway works will reallocate road space to remove car parking (which is currently situated within a 'central reserve' between the north and southbound carriageways) and provide a single two way carriageway with 3.25m lane widths, in line with LTN 1/20 recommendations. This will help reduce the vehicle dominance in the town centre by increasing public space and addressing issues of severance. It will also help reduce the number of different movements by motorists, so making it safer for cyclists and pedestrians

Additional cycle symbols to TRSGD diagram 1057 are to be placed in primary positions to guide cyclists along Broad Street, although this not suitable for roads of high volumes of motor traffic or high speeds, it is felt that with

the lower traffic speeds along Broad Street these will be beneficial to cyclist and alert motorists of their presence. Advanced Stop Lines are also to be provided at the signalised pedestrian crossing at the southern end of Broad Street. This enables cyclists to take up the appropriate position in the waiting area between the two stop lines, for their intended manoeuvre ahead of general traffic, before the signals change to green.

The provision of four new Zebra crossings; three single stage and one split stage crossings will make it easier for pedestrians and cyclists (once they have dismounted) wishing to cross Broad Street and Station Road. The improvement of footway and carriageway surfaces and refurbished guard railings will make it a more comfortable environment for pedestrians and cyclists. There will also be cycle parking based on the capacity suggested within LTN1/20 Table 11-1 with more convenient and secure cycle stands within Broad Street and a covered cycle stand within Grays Lane.

The removal of the existing signalised junction will be replaced with a mini-roundabout this can work well for cycling in a mixed traffic environment when traffic speeds and volumes are low and means that traffic on all arms has to give way. Despite the inscribed circle diameter (ICD) being greater than 15.0m recommended in LTN1/20 paragraph 10.7.35, the provision of single lane approaches and exits means that cyclists and motor vehicles can pass through the roundabout in a single stream compared to multi lane approaches for the existing signalised junction. An ICD in line with the LTN1/20 requirements could not be provided at the proposed mini-roundabout as it would restrict the turning movements of larger vehicles.

Following the stage 2 Road Safety Audit review of the design, no safety concerns were raised in relation to the provisions for cyclists.

# MATS St Peter's Road Junction Improvement Scheme

Design Compliance with LTN 1/20 Technical Note  
Cambridgeshire County Council

November 2022

STPETERS-ATK-HGN-XX-RP-CH-000001

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## Document history

**Document title:** Design Compliance with LTN 1/20 Technical Note

**Document reference:** STPETERS-ATK-HGN-XX-RP-CH-000001

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## Client signoff

Client	Cambridgeshire County Council
Project	MATS St Peter's Road Junction Improvement Scheme
Job number	5210324
Client signature/date	

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# 1. Purpose

This Technical Note has been produced to document the compliance of the MATS St Peter's Road Junction Improvement scheme with Local Transport Note 1/20: Cycle Infrastructure Design (LTN 1/20) on promoting a modal shift away from the use of private vehicles to the use of cycling and walking as a preferred mode of transport.

The purpose of this report is to support the Full Business Case for MATS scheme. The intention of this report is to appraise the proposed scheme against the requirements of LTN 1/20, being mindful of the existing road environment.

# 2. Background

The proposed work would provide alterations to the existing traffic signal-controlled junction at St Peter's Road and B1101, including as follow:

- The removal of parking bays and a build-out on B1101 to accommodate a two-lane approach to the junction from the south;
- The provision of a 2.5m wide right turn facility to accommodate vehicles turning right from B1101 onto St Peter's Road;
- The replacement of the existing controlled crossings with 3.2 metre (m) wide Toucan crossings on B1101 and St Peter's Road arms of the junction;
- The provision of a cycle friendly gully grate and frame on the St Peter's Road westbound approach to the junction;
- The upgrade of the existing signal-controlled crossing on High Street to the north of Gas Street;
- The resurfacing of the carriageway and some sections of footway within the extents of the scheme; and
- Improvements to drainage to resolve an existing ponding issue.



**Figure 2-1 – St Peter's Road Junction Location Plan – Google Earth 2022**

A stage 1 Road Safety Audit has been undertaken: no safety concerns were raised in relation to the provisions for cyclists.

## 2.1. Motor Traffic Flow

In the table 2-1 below, it indicates the existing motor traffic flow in pcu between 07:00 to 19:00 recorded on 27/03/2018 and estimated motor traffic in pcu for 24 hours by multiplying annual average weekday factors for non-motorway of 1.2.

**Table 2-1 - Existing Traffic Figures 2018**

Location	Traffic Flow (pcu/ 12 hour)	Estimated Traffic Flow (pcu/24 hour)
B1101 High Street Approach to Junction	4527	5468
B1101 High Street Exit from Junction	6029	7234
St Peter's Road Approach to Junction	2831	3397
St Peter's Road Exit from Junction	1954	2345
B1101 The Causeway Approach to Junction	5010	6012
B1101 The Causeway Exit from Junction	4414	5297

## 3. LTN 1/20 Cycle Infrastructure Design Requirements

Local Transport Note, LTN 1/20 provides a national standard for the design of cycle infrastructure. The national guidance recommends a basis for those standards based on 5 design principles and 22 summary principles. The guidance contains tools which give local authorities flexibility on infrastructure design and sets out measurable quality threshold to achieve when designing cycling schemes.

The 5 core design principles which represent the essential requirements to achieve more people travelling by cycle or on foot are:

- **Coherent** – Cycle networks should be planned and designed to allow people to reach their day-to-day destinations easily, along routes that connect, are simple to navigate and are of a consistently high quality. Neither cyclists nor pedestrians benefit from unintuitive arrangements that put cyclists in unexpected places away from the carriageway.
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- **Safe** – Not only must cycle infrastructure be safe, it should also be perceived to be safe so that more people feel able to cycle. Space for cycling is important but a narrow advisory cycle lane next to a narrow general traffic lane and guardrail at a busy junction is not an acceptable space for cyclists.
- **Comfortable** – Comfortable conditions for cycling require routes with good quality, well maintained smooth surfaces, adequate width for the volume of users, minimal stopping and starting and avoiding steep gradients. Uncomfortable transitions between on-and-off carriageway facilities are best avoided, particularly at locations where conflict with other road users is more likely.
- **Attractive** – Cycle infrastructure should help to deliver public spaces that are well designed and finished in attractive materials and be places that people want to spend time using. Sometimes well-intentioned signs and markings for cycling are not only difficult and uncomfortable to use, but are also unattractive additions to the street scape.



## 4. LTN 1/20 Compliance

### 4.1. LTN 1/20 Compliance on existing arrangement

There is an off-road cycle facility on the north-western side of the scheme, providing a path from the on-carriageway facility on Gas Lane towards the Town Centre. The off-road route is currently blocked by a pillar box.

The existing St Peter's Road junction includes advanced cycle stop lines, with short lengths of advisory on-carriageway cycle lane on each approach to the junction.

At present, the arrangement is not coherent. There are no cycle facilities on the exits from the junction, and there is no coherent link to the off-road facility north of Gas Road.

There are commercial properties within the scheme extent, but there are currently no cycle parking facilities.

### 4.2. Review of proposed scheme against LTN 1/20

It should be noted that this scheme is a small scale congestion relief scheme, primarily providing a right turn lane. As such the impact on other road users, including cyclists, is minimal.

The proposed scheme affects existing cycling facilities in the following areas:

- Removal of short length of approach cycle lane on northbound approach to the junction.
- Widening existing shared use surface and cycle track on the B1101 High Street Northbound footway.
- Resurfacing carriageway and footway.
- No resolution to coherence of cycle facilities
- No increased cycle parking provision

#### 4.2.1. Removal of B1101 The Causeway Northbound cycle track

At the B1101 Northbound approach to the junction, it is proposed to remove the existing cycle lane to accommodate the provision of a 2.5m wide right turn facility for vehicles turning right from B1101 onto St Peter's Road. There is insufficient space within the highway boundary to accommodate both the additional right turn lane and the cycle lane. Provision of the right turn lane is the core justification for this scheme.

On B1101 Northbound, the existing Motor Traffic Flow is above 6000 pcu/24 hour. According to figure 4.1 in LTN 1/20, the provision of a short length of on carriageway advisory cycle lane in an area of such high traffic flows is unlikely to be beneficial to all but the most competent cyclists. These cyclists are likely to be comfortable cycling through the existing junction.

#### 4.2.2. Widening existing shared use surface and cycle track

The works include removal of an existing parking bay on B1101 High Street, the regained space will be used the space to widen the existing shared use surface and segregated cycle track. This will provide adequate width for cyclists to negotiate the pillar box which obstructs the existing cycle way.

It was considered to use this area for cycle parking, but it was believed that the improved coherence and usability of the existing cycle facility offered the greater benefit to cyclists.

#### 4.2.3. Resurfacing carriageway and footway

The improvement of carriageway surfaces will provide a more comfortable ride quality for cyclists.

#### 4.2.4. No improved coherence

No improvements have been made to the coherence of the cycle facilities, particularly the link from the north bound on-carriageway route (the advanced cycle stop line) to the off-carriageway route. The introduction of a cycle symbol on this length of road was considered, however the symbol would not be being used in the standard way, as such it was not believed appropriate.

It should be noted that this does not make the existing situation worse, but it does not make an improvement where the existing site does not conform to LTN1/20 guidance.

#### 4.2.5. No increased cycle parking provision

No increased cycle parking facilities are proposed as part of this scheme. There is available space at the site of the existing parking lay-by, as noted in 4.2.2, it is felt that this space is better used to provide a cycle facility to avoid the pillar box.

Again, it should be noted that this does not make the existing situation worse, but it does not make an improvement where the existing site does not conform to LTN1/20 guidance.

## 5. Conclusion

The proposed scheme is relatively minor, as such there is a limited scope to make improvements.

The scheme does not provide further cycling facilities to encourage less confident and young cyclists to use the junction due to space constraints. However, experienced cyclists will continue to use the junction.

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## Appendix D: Economic Dimension Cost Schedule (60 years)

March Area Transport Study - Do Something Scheme Costs in 2010 Market Prices for Input to Econmc Case (Broad Street Only)

Calendar Year	Assessment Year	(1) Base Cost Estimate (2022 Prices)						(2) Base Cost Estimate Including Real Cost Increases (2022 Prices)			(3) Total Contribution of Optimism Bias		(4) Rebased to 2010 Price Base	(5) Discounted to 2010 Prices			(6) Adjusted to Market Prices
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2023	1	£2,212,997	£0	£0	£149,286	£292,508	£2,654,791	1.000	£0.00	£2,654,791	£530,958	£3,185,749	£2,510,140	1.035	0.639	£1,604,994	£1,909,942.68
2024	2	£603,545	£0	£0	£40,714	£79,775	£724,034	1.000	£0.00	£724,034	£144,807	£868,841	£684,584	1.035	0.618	£422,923	£503,278.70
2025	3	£0	£0	£0	£0	£0	£0	1.256	£0.00	£0	£0	£0	£0	1.035	0.597	£0	£0.00
2026	4	£0	£0	£0	£0	£0	£0	1.296	£0.00	£0	£0	£0	£0	1.035	0.577	£0	£0.00
2027	5	£0	£0	£0	£0	£0	£0	1.339	£0.00	£0	£0	£0	£0	1.035	0.557	£0	£0.00
2028	6	£0	£0	£0	£0	£0	£0	1.381	£0.00	£0	£0	£0	£0	1.035	0.538	£0	£0.00
2029	7	£0	£0	£0	£0	£0	£0	1.426	£0.00	£0	£0	£0	£0	1.035	0.520	£0	£0.00
2030	8	£0	£0	£0	£0	£0	£0	1.472	£0.00	£0	£0	£0	£0	1.035	0.503	£0	£0.00
2031	9	£0	£0	£0	£0	£0	£0	1.520	£0.00	£0	£0	£0	£0	1.035	0.486	£0	£0.00
2032	10	£0	£0	£0	£0	£0	£0	1.571	£0.00	£0	£0	£0	£0	1.035	0.469	£0	£0.00
2033	11	£0	£0	£0	£0	£0	£0	1.624	£0.00	£0	£0	£0	£0	1.035	0.453	£0	£0.00
2034	12	£0	£0	£0	£0	£0	£0	1.678	£0.00	£0	£0	£0	£0	1.035	0.438	£0	£0.00
2035	13	£0	£0	£0	£0	£0	£0	1.735	£0.00	£0	£0	£0	£0	1.035	0.423	£0	£0.00
2036	14	£0	£0	£0	£0	£0	£0	1.795	£0.00	£0	£0	£0	£0	1.035	0.409	£0	£0.00
2037	15	£0	£0	£0	£0	£0	£0	1.854	£0.00	£0	£0	£0	£0	1.035	0.395	£0	£0.00
2038	16	£0	£0	£0	£0	£0	£0	1.915	£0.00	£0	£0	£0	£0	1.035	0.382	£0	£0.00
2039	17	£0	£0	£0	£0	£0	£0	1.979	£0.00	£0	£0	£0	£0	1.035	0.369	£0	£0.00
2040	18	£0	£0	£0	£0	£0	£0	2.045	£0.00	£0	£0	£0	£0	1.035	0.356	£0	£0.00
2041	19	£0	£0	£0	£0	£0	£0	2.114	£0.00	£0	£0	£0	£0	1.035	0.344	£0	£0.00
2042	20	£0	£0	£0	£0	£0	£0	2.186	£0.00	£0	£0	£0	£0	1.035	0.333	£0	£0.00
2043	21	£0	£0	£0	£0	£0	£0	2.260	£0.00	£0	£0	£0	£0	1.035	0.321	£0	£0.00
2044	22	£0	£0	£0	£0	£0	£0	2.338	£0.00	£0	£0	£0	£0	1.035	0.310	£0	£0.00
2045	23	£0	£0	£0	£0	£0	£0	2.419	£0.00	£0	£0	£0	£0	1.035	0.300	£0	£0.00
2046	24	£0	£0	£0	£0	£0	£0	2.504	£0.00	£0	£0	£0	£0	1.035	0.290	£0	£0.00
2047	25	£0	£0	£0	£0	£0	£0	2.592	£0.00	£0	£0	£0	£0	1.035	0.280	£0	£0.00
2048	26	£0	£0	£0	£0	£0	£0	2.684	£0.00	£0	£0	£0	£0	1.035	0.271	£0	£0.00
2049	27	£0	£0	£0	£0	£0	£0	2.779	£0.00	£0	£0	£0	£0	1.035	0.261	£0	£0.00
2050	28	£0	£0	£0	£0	£0	£0	2.879	£0.00	£0	£0	£0	£0	1.035	0.253	£0	£0.00
2051	29	£0	£0	£0	£0	£0	£0	2.982	£0.00	£0	£0	£0	£0	1.035	0.244	£0	£0.00
2052	30	£0	£0	£0	£0	£0	£0	3.089	£0.00	£0	£0	£0	£0	1.035	0.236	£0	£0.00
2053	31	£0	£0	£0	£0	£0	£0	3.199	£0.00	£0	£0	£0	£0	1.030	0.281	£0	£0.00
2054	32	£0	£0	£0	£0	£0	£0	3.314	£0.00	£0	£0	£0	£0	1.030	0.272	£0	£0.00
2055	33	£0	£0	£0	£0	£0	£0	3.433	£0.00	£0	£0	£0	£0	1.030	0.264	£0	£0.00
2056	34	£0	£0	£0	£0	£0	£0	3.556	£0.00	£0	£0	£0	£0	1.030	0.257	£0	£0.00
2057	35	£0	£0	£0	£0	£0	£0	3.683	£0.00	£0	£0	£0	£0	1.030	0.249	£0	£0.00
2058	36	£0	£0	£0	£0	£0	£0	3.814	£0.00	£0	£0	£0	£0	1.030	0.242	£0	£0.00
2059	37	£0	£0	£0	£0	£0	£0	3.949	£0.00	£0	£0	£0	£0	1.030	0.235	£0	£0.00
2060	38	£0	£0	£0	£0	£0	£0	4.089	£0.00	£0	£0	£0	£0	1.030	0.228	£0	£0.00
2061	39	£0	£0	£0	£0	£0	£0	4.234	£0.00	£0	£0	£0	£0	1.030	0.221	£0	£0.00
2062	40	£0	£0	£0	£0	£0	£0	4.383	£0.00	£0	£0	£0	£0	1.030	0.215	£0	£0.00
2063	41	£0	£0	£0	£0	£0	£0	4.536	£0.00	£0	£0	£0	£0	1.030	0.209	£0	£0.00
2064	42	£0	£0	£0	£0	£0	£0	4.694	£0.00	£0	£0	£0	£0	1.030	0.203	£0	£0.00
2065	43	£0	£0	£0	£0	£0	£0	4.857	£0.00	£0	£0	£0	£0	1.030	0.197	£0	£0.00
2066	44	£0	£0	£0	£0	£0	£0	5.025	£0.00	£0	£0	£0	£0	1.030	0.191	£0	£0.00
2067	45	£0	£0	£0	£0	£0	£0	5.195	£0.00	£0	£0	£0	£0	1.030	0.185	£0	£0.00
2068	46	£0	£0	£0	£0	£0	£0	5.367	£0.00	£0	£0	£0	£0	1.030	0.180	£0	£0.00
2069	47	£0	£0	£0	£0	£0	£0	5.548	£0.00	£0	£0	£0	£0	1.030	0.175	£0	£0.00
2070	48	£0	£0	£0	£0	£0	£0	5.736	£0.00	£0	£0	£0	£0	1.030	0.170	£0	£0.00
2071	49	£0	£0	£0	£0	£0	£0	5.932	£0.00	£0	£0	£0	£0	1.030	0.165	£0	£0.00
2072	50	£0	£0	£0	£0	£0	£0	6.133	£0.00	£0	£0	£0	£0	1.030	0.160	£0	£0.00
2073	51	£0	£0	£0	£0	£0	£0	6.343	£0.00	£0	£0	£0	£0	1.030	0.155	£0	£0.00
2074	52	£0	£0	£0	£0	£0	£0	6.564	£0.00	£0	£0	£0	£0	1.030	0.151	£0	£0.00
2075	53	£0	£0	£0	£0	£0	£0	6.796	£0.00	£0	£0	£0	£0	1.030	0.146	£0	£0.00
2076	54	£0	£0	£0	£0	£0	£0	7.040	£0.00	£0	£0	£0	£0	1.030	0.142	£0	£0.00
2077	55	£0	£0	£0	£0	£0	£0	7.297	£0.00	£0	£0	£0	£0	1.030	0.138	£0	£0.00
2078	56	£0	£0	£0	£0	£0	£0	7.563	£0.00	£0	£0	£0	£0	1.030	0.134	£0	£0.00
2079	57	£0	£0	£0	£0	£0	£0	7.840	£0.00	£0	£0	£0	£0	1.030	0.130	£0	£0.00
2080	58	£0	£0	£0	£0	£0	£0	8.130	£0.00	£0	£0	£0	£0	1.030	0.126	£0	£0.00
2081	59	£0	£0	£0	£0	£0	£0	8.433	£0.00	£0	£0	£0	£0	1.030	0.123	£0	£0.00
2082	60	£0	£0	£0	£0	£0	£0	8.743	£0.00	£0	£0	£0	£0	1.030	0.119	£0	£0.00
2083	61	£0	£0	£0	£0	£0	£0	9.061	£0.00	£0	£0	£0	£0	1.030	0.116	£0	£0.00
2084	62	£0	£0	£0	£0	£0	£0	9.389	£0.00	£0	£0	£0	£0	1.030	0.112	£0	£0.00
Total		£2,816,542	£0	£0	£190,000	£372,283	£3,378,825		£0	£3,378,825	£675,765	£4,054,590	£3,194,723			£2,027,917	£2,413,221

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£3,378,825
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	£3,378,825
(3)	The next stage is to apply optimism bias.	£4,054,590
(4)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	£3,194,723
(5)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	£2,027,917
(6)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	£2,413,221

March Area Transport Study - Do Something Scheme Costs in 2010 Market Prices for Input to Econmc Case (Broad Street Only)

Calendar Year	Assessment Year	(1) Base Cost Estimate (2022 Prices)		(2) Base Cost Estimate Including Real Cost Increases (2022 Prices)			(3) Total Contribution of Optimism Bias		(4) Rebased to 2010 Price Base	(5) Discounted to 2010 Prices			(6) Adjusted to Market Prices
		Maintenance Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2023	1	£0	£0	1.120	£0.00	£0	£0.00	£0	£0	1.035	0.639	£0	£0.00
2024	2	£0	£0	1.254	£0.00	£0	£0.00	£0	£0	1.035	0.618	£0	£0.00
2025	3	£0	£0	1.355	£0.00	£0	£0.00	£0	£0	1.035	0.597	£0	£0.00
2026	4	£0	£0	1.422	£0.00	£0	£0.00	£0	£0	1.035	0.577	£0	£0.00
2027	5	£0	£0	1.494	£0.00	£0	£0.00	£0	£0	1.035	0.557	£0	£0.00
2028	6	£0	£0	1.568	£0.00	£0	£0.00	£0	£0	1.035	0.538	£0	£0.00
2029	7	£0	£0	1.647	£0.00	£0	£0.00	£0	£0	1.035	0.520	£0	£0.00
2030	8	£0	£0	1.729	£0.00	£0	£0.00	£0	£0	1.035	0.503	£0	£0.00
2031	9	£0	£0	1.815	£0.00	£0	£0.00	£0	£0	1.035	0.486	£0	£0.00
2032	10	£0	£0	1.906	£0.00	£0	£0.00	£0	£0	1.035	0.469	£0	£0.00
2033	11	£0	£0	2.002	£0.00	£0	£0.00	£0	£0	1.035	0.453	£0	£0.00
2034	12	£0	£0	2.102	£0.00	£0	£0.00	£0	£0	1.035	0.438	£0	£0.00
2035	13	£0	£0	2.207	£0.00	£0	£0.00	£0	£0	1.035	0.423	£0	£0.00
2036	14	£0	£0	2.317	£0.00	£0	£0.00	£0	£0	1.035	0.409	£0	£0.00
2037	15	£0	£0	2.433	£0.00	£0	£0.00	£0	£0	1.035	0.395	£0	£0.00
2038	16	£0	£0	2.555	£0.00	£0	£0.00	£0	£0	1.035	0.382	£0	£0.00
2039	17	£0	£0	2.682	£0.00	£0	£0.00	£0	£0	1.035	0.369	£0	£0.00
2040	18	£0	£0	2.816	£0.00	£0	£0.00	£0	£0	1.035	0.356	£0	£0.00
2041	19	£0	£0	2.957	£0.00	£0	£0.00	£0	£0	1.035	0.344	£0	£0.00
2042	20	£0	£0	3.105	£0.00	£0	£0.00	£0	£0	1.035	0.333	£0	£0.00
2043	21	£0	£0	3.260	£0.00	£0	£0.00	£0	£0	1.035	0.321	£0	£0.00
2044	22	£0	£0	3.423	£0.00	£0	£0.00	£0	£0	1.035	0.310	£0	£0.00
2045	23	£0	£0	3.595	£0.00	£0	£0.00	£0	£0	1.035	0.300	£0	£0.00
2046	24	£0	£0	3.774	£0.00	£0	£0.00	£0	£0	1.035	0.290	£0	£0.00
2047	25	£0	£0	3.963	£0.00	£0	£0.00	£0	£0	1.035	0.280	£0	£0.00
2048	26	£0	£0	4.161	£0.00	£0	£0.00	£0	£0	1.035	0.271	£0	£0.00
2049	27	£0	£0	4.369	£0.00	£0	£0.00	£0	£0	1.035	0.261	£0	£0.00
2050	28	£0	£0	4.588	£0.00	£0	£0.00	£0	£0	1.035	0.253	£0	£0.00
2051	29	£0	£0	4.817	£0.00	£0	£0.00	£0	£0	1.035	0.244	£0	£0.00
2052	30	£0	£0	5.058	£0.00	£0	£0.00	£0	£0	1.035	0.236	£0	£0.00
2053	31	£0	£0	5.311	£0.00	£0	£0.00	£0	£0	1.030	0.281	£0	£0.00
2054	32	£0	£0	5.576	£0.00	£0	£0.00	£0	£0	1.030	0.272	£0	£0.00
2055	33	£0	£0	5.855	£0.00	£0	£0.00	£0	£0	1.030	0.264	£0	£0.00
2056	34	£0	£0	6.148	£0.00	£0	£0.00	£0	£0	1.030	0.257	£0	£0.00
2057	35	£0	£0	6.455	£0.00	£0	£0.00	£0	£0	1.030	0.249	£0	£0.00
2058	36	£0	£0	6.778	£0.00	£0	£0.00	£0	£0	1.030	0.242	£0	£0.00
2059	37	£0	£0	7.117	£0.00	£0	£0.00	£0	£0	1.030	0.235	£0	£0.00
2060	38	£0	£0	7.473	£0.00	£0	£0.00	£0	£0	1.030	0.228	£0	£0.00
2061	39	£0	£0	7.846	£0.00	£0	£0.00	£0	£0	1.030	0.221	£0	£0.00
2062	40	£0	£0	8.239	£0.00	£0	£0.00	£0	£0	1.030	0.215	£0	£0.00
2063	41	£0	£0	8.651	£0.00	£0	£0.00	£0	£0	1.030	0.209	£0	£0.00
2064	42	£0	£0	9.083	£0.00	£0	£0.00	£0	£0	1.030	0.203	£0	£0.00
2065	43	£0	£0	9.537	£0.00	£0	£0.00	£0	£0	1.030	0.197	£0	£0.00
2066	44	£0	£0	10.014	£0.00	£0	£0.00	£0	£0	1.030	0.191	£0	£0.00
2067	45	£0	£0	10.515	£0.00	£0	£0.00	£0	£0	1.030	0.185	£0	£0.00
2068	46	£0	£0	11.041	£0.00	£0	£0.00	£0	£0	1.030	0.180	£0	£0.00
2069	47	£0	£0	11.593	£0.00	£0	£0.00	£0	£0	1.030	0.175	£0	£0.00
2070	48	£0	£0	12.172	£0.00	£0	£0.00	£0	£0	1.030	0.170	£0	£0.00
2071	49	£0	£0	12.781	£0.00	£0	£0.00	£0	£0	1.030	0.165	£0	£0.00
2072	50	£0	£0	13.420	£0.00	£0	£0.00	£0	£0	1.030	0.160	£0	£0.00
2073	51	£0	£0	14.091	£0.00	£0	£0.00	£0	£0	1.030	0.155	£0	£0.00
2074	52	£0	£0	14.796	£0.00	£0	£0.00	£0	£0	1.030	0.151	£0	£0.00
2075	53	£0	£0	15.535	£0.00	£0	£0.00	£0	£0	1.030	0.146	£0	£0.00
2076	54	£0	£0	16.312	£0.00	£0	£0.00	£0	£0	1.030	0.142	£0	£0.00
2077	55	£0	£0	17.128	£0.00	£0	£0.00	£0	£0	1.030	0.138	£0	£0.00
2078	56	£0	£0	17.984	£0.00	£0	£0.00	£0	£0	1.030	0.134	£0	£0.00
2079	57	£0	£0	18.883	£0.00	£0	£0.00	£0	£0	1.030	0.130	£0	£0.00
2080	58	£0	£0	19.828	£0.00	£0	£0.00	£0	£0	1.030	0.126	£0	£0.00
2081	59	£0	£0	20.819	£0.00	£0	£0.00	£0	£0	1.030	0.123	£0	£0.00
2082	60	£0	£0	21.860	£0.00	£0	£0.00	£0	£0	1.030	0.119	£0	£0.00
2083	61	£0	£0	22.953	£0.00	£0	£0.00	£0	£0	1.030	0.116	£0	£0.00
2084	62	£0	£0	24.101	£0.00	£0	£0.00	£0	£0	1.030	0.112	£0	£0.00
Total		£0	£0		£0	£0	£0	£0	£0			£0	£0

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£0
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	£0
(3)	The next stage is to apply optimism bias.	£0
(4)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	£0
(5)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	£0
(6)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	£0

March Area Transport Study - Do Something Scheme Costs in 2010 Market Prices for Input to Economic Case

Calendar Year	Assessment Year	(1) Base Cost Estimate (2022 Prices)						(2) Base Cost Estimate Including Real Cost Increases (2022 Prices)			(3) Total Contribution of Optimism Bias		(4) Rebased to 2010 Price Base	(5) Discounted to 2010 Prices			(6) Adjusted to Market Prices
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2023	1	£2,212,997	£0	£0	£389,042	£532,337	£3,134,376	1.079	£37,962.67	£3,172,339	£634,468	£3,806,807	£2,999,488	1.035	0.639	£1,917,885	£2,282,283.53
2024	2	£603,545	£0	£440,000	£661,145	£824,916	£2,529,606	1.188	£338,973.32	£2,868,579	£573,716	£3,442,295	£2,712,279	1.035	0.618	£1,675,597	£1,993,960.26
2025	3	£5,400,204	£0	£0	£1,344,186	£841,843	£7,586,234	1.256	£1,943,208.85	£9,529,442	£1,905,888	£11,435,331	£9,010,213	1.035	0.597	£5,378,112	£6,399,952.96
2026	4	£3,803,003	£0	£80,000	£899,681	£645,620	£5,428,304	1.296	£1,606,243.45	£7,034,547	£1,617,946	£8,652,493	£6,817,538	1.035	0.577	£3,931,715	£4,678,740.42
2027	5	£8,004,122	£0	£0	£1,137,596	£531,861	£9,673,579	1.339	£3,275,008.11	£12,948,587	£2,978,175	£15,926,762	£12,549,136	1.035	0.557	£6,992,426	£8,320,986.81
2028	6	£0	£0	£0	£20,000	£0	£20,000	1.381	£7,628.27	£27,628	£6,355	£33,983	£26,776	1.035	0.538	£14,415	£17,154.01
2029	7	£0	£0	£0	£0	£0	£0	1.426	£0.00	£0	£0	£0	£0	1.035	0.520	£0	£0.00
2030	8	£0	£0	£0	£0	£0	£0	1.472	£0.00	£0	£0	£0	£0	1.035	0.503	£0	£0.00
2031	9	£0	£0	£0	£0	£0	£0	1.520	£0.00	£0	£0	£0	£0	1.035	0.486	£0	£0.00
2032	10	£0	£0	£0	£0	£0	£0	1.571	£0.00	£0	£0	£0	£0	1.035	0.469	£0	£0.00
2033	11	£0	£0	£0	£0	£0	£0	1.624	£0.00	£0	£0	£0	£0	1.035	0.453	£0	£0.00
2034	12	£0	£0	£0	£0	£0	£0	1.678	£0.00	£0	£0	£0	£0	1.035	0.438	£0	£0.00
2035	13	£0	£0	£0	£0	£0	£0	1.735	£0.00	£0	£0	£0	£0	1.035	0.423	£0	£0.00
2036	14	£0	£0	£0	£0	£0	£0	1.795	£0.00	£0	£0	£0	£0	1.035	0.409	£0	£0.00
2037	15	£0	£0	£0	£0	£0	£0	1.854	£0.00	£0	£0	£0	£0	1.035	0.395	£0	£0.00
2038	16	£0	£0	£0	£0	£0	£0	1.915	£0.00	£0	£0	£0	£0	1.035	0.382	£0	£0.00
2039	17	£0	£0	£0	£0	£0	£0	1.979	£0.00	£0	£0	£0	£0	1.035	0.369	£0	£0.00
2040	18	£0	£0	£0	£0	£0	£0	2.045	£0.00	£0	£0	£0	£0	1.035	0.356	£0	£0.00
2041	19	£0	£0	£0	£0	£0	£0	2.114	£0.00	£0	£0	£0	£0	1.035	0.344	£0	£0.00
2042	20	£0	£0	£0	£0	£0	£0	2.186	£0.00	£0	£0	£0	£0	1.035	0.333	£0	£0.00
2043	21	£0	£0	£0	£0	£0	£0	2.260	£0.00	£0	£0	£0	£0	1.035	0.321	£0	£0.00
2044	22	£0	£0	£0	£0	£0	£0	2.338	£0.00	£0	£0	£0	£0	1.035	0.310	£0	£0.00
2045	23	£0	£0	£0	£0	£0	£0	2.419	£0.00	£0	£0	£0	£0	1.035	0.300	£0	£0.00
2046	24	£0	£0	£0	£0	£0	£0	2.504	£0.00	£0	£0	£0	£0	1.035	0.290	£0	£0.00
2047	25	£0	£0	£0	£0	£0	£0	2.592	£0.00	£0	£0	£0	£0	1.035	0.280	£0	£0.00
2048	26	£0	£0	£0	£0	£0	£0	2.684	£0.00	£0	£0	£0	£0	1.035	0.271	£0	£0.00
2049	27	£0	£0	£0	£0	£0	£0	2.779	£0.00	£0	£0	£0	£0	1.035	0.261	£0	£0.00
2050	28	£0	£0	£0	£0	£0	£0	2.879	£0.00	£0	£0	£0	£0	1.035	0.253	£0	£0.00
2051	29	£0	£0	£0	£0	£0	£0	2.982	£0.00	£0	£0	£0	£0	1.035	0.244	£0	£0.00
2052	30	£0	£0	£0	£0	£0	£0	3.089	£0.00	£0	£0	£0	£0	1.035	0.236	£0	£0.00
2053	31	£0	£0	£0	£0	£0	£0	3.199	£0.00	£0	£0	£0	£0	1.030	0.281	£0	£0.00
2054	32	£0	£0	£0	£0	£0	£0	3.314	£0.00	£0	£0	£0	£0	1.030	0.272	£0	£0.00
2055	33	£0	£0	£0	£0	£0	£0	3.433	£0.00	£0	£0	£0	£0	1.030	0.264	£0	£0.00
2056	34	£0	£0	£0	£0	£0	£0	3.556	£0.00	£0	£0	£0	£0	1.030	0.257	£0	£0.00
2057	35	£0	£0	£0	£0	£0	£0	3.683	£0.00	£0	£0	£0	£0	1.030	0.249	£0	£0.00
2058	36	£0	£0	£0	£0	£0	£0	3.814	£0.00	£0	£0	£0	£0	1.030	0.242	£0	£0.00
2059	37	£0	£0	£0	£0	£0	£0	3.949	£0.00	£0	£0	£0	£0	1.030	0.235	£0	£0.00
2060	38	£0	£0	£0	£0	£0	£0	4.089	£0.00	£0	£0	£0	£0	1.030	0.228	£0	£0.00
2061	39	£0	£0	£0	£0	£0	£0	4.234	£0.00	£0	£0	£0	£0	1.030	0.221	£0	£0.00
2062	40	£0	£0	£0	£0	£0	£0	4.383	£0.00	£0	£0	£0	£0	1.030	0.215	£0	£0.00
2063	41	£0	£0	£0	£0	£0	£0	4.536	£0.00	£0	£0	£0	£0	1.030	0.209	£0	£0.00
2064	42	£0	£0	£0	£0	£0	£0	4.694	£0.00	£0	£0	£0	£0	1.030	0.203	£0	£0.00
2065	43	£0	£0	£0	£0	£0	£0	4.857	£0.00	£0	£0	£0	£0	1.030	0.197	£0	£0.00
2066	44	£0	£0	£0	£0	£0	£0	5.025	£0.00	£0	£0	£0	£0	1.030	0.191	£0	£0.00
2067	45	£0	£0	£0	£0	£0	£0	5.195	£0.00	£0	£0	£0	£0	1.030	0.185	£0	£0.00
2068	46	£0	£0	£0	£0	£0	£0	5.367	£0.00	£0	£0	£0	£0	1.030	0.180	£0	£0.00
2069	47	£0	£0	£0	£0	£0	£0	5.548	£0.00	£0	£0	£0	£0	1.030	0.175	£0	£0.00
2070	48	£0	£0	£0	£0	£0	£0	5.736	£0.00	£0	£0	£0	£0	1.030	0.170	£0	£0.00
2071	49	£0	£0	£0	£0	£0	£0	5.932	£0.00	£0	£0	£0	£0	1.030	0.165	£0	£0.00
2072	50	£0	£0	£0	£0	£0	£0	6.133	£0.00	£0	£0	£0	£0	1.030	0.160	£0	£0.00
2073	51	£0	£0	£0	£0	£0	£0	6.343	£0.00	£0	£0	£0	£0	1.030	0.155	£0	£0.00
2074	52	£0	£0	£0	£0	£0	£0	6.564	£0.00	£0	£0	£0	£0	1.030	0.151	£0	£0.00
2075	53	£0	£0	£0	£0	£0	£0	6.796	£0.00	£0	£0	£0	£0	1.030	0.146	£0	£0.00
2076	54	£0	£0	£0	£0	£0	£0	7.040	£0.00	£0	£0	£0	£0	1.030	0.142	£0	£0.00
2077	55	£0	£0	£0	£0	£0	£0	7.297	£0.00	£0	£0	£0	£0	1.030	0.138	£0	£0.00
2078	56	£0	£0	£0	£0	£0	£0	7.563	£0.00	£0	£0	£0	£0	1.030	0.134	£0	£0.00
2079	57	£0	£0	£0	£0	£0	£0	7.840	£0.00	£0	£0	£0	£0	1.030	0.130	£0	£0.00
2080	58	£0	£0	£0	£0	£0	£0	8.130	£0.00	£0	£0	£0	£0	1.030	0.126	£0	£0.00
2081	59	£0	£0	£0	£0	£0	£0	8.433	£0.00	£0	£0	£0	£0	1.030	0.123	£0	£0.00
2082	60	£0	£0	£0	£0	£0	£0	8.743	£0.00	£0	£0	£0	£0	1.030	0.119	£0	£0.00
2083	61	£0	£0	£0	£0	£0	£0	9.061	£0.00	£0	£0	£0	£0	1.030	0.116	£0	£0.00
2084	62	£0	£0	£0	£0	£0	£0	9.389	£0.00	£0	£0	£0	£0	1.030	0.112	£0	£0.00
Total		£20,023,871	£0	£520,000	£4,451,650	£3,376,577	£28,372,098		£7,209,025	£35,581,123	£7,716,547	£43,297,671	£34,115,431			£19,910,150	£23,693,078

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£28,372,098
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	£35,581,123
(3)	The next stage is to apply optimism bias.	£43,297,671
(4)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	£34,115,431
(5)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	£19,910,150
(6)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	£23,693,078



March Area Transport Study - Do Something Scheme Costs in 2010 Market Prices for Input to Econmc Case

Calendar Year	Assessment Year	(1) Base Cost Estimate (2022 Prices)		(2) Base Cost Estimate Including Real Cost Increases (2022 Prices)			(3) Total Contribution of Optimism Bias		(4) Rebased to 2010 Price Base	(5) Discounted to 2010 Prices			(6) Adjusted to Market Prices
		Maintenance Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2023	1	£0	£0	1.120	£0.00	£0	£0.00	£0	£0	1.035	0.639	£0	£0.00
2024	2	£0	£0	1.254	£0.00	£0	£0.00	£0	£0	1.035	0.618	£0	£0.00
2025	3	£0	£0	1.355	£0.00	£0	£0.00	£0	£0	1.035	0.597	£0	£0.00
2026	4	£0	£0	1.422	£0.00	£0	£0.00	£0	£0	1.035	0.577	£0	£0.00
2027	5	£0	£0	1.494	£0.00	£0	£0.00	£0	£0	1.035	0.557	£0	£0.00
2028	6	£0	£0	1.568	£0.00	£0	£0.00	£0	£0	1.035	0.538	£0	£0.00
2029	7	£0	£0	1.647	£0.00	£0	£0.00	£0	£0	1.035	0.520	£0	£0.00
2030	8	£0	£0	1.729	£0.00	£0	£0.00	£0	£0	1.035	0.503	£0	£0.00
2031	9	£0	£0	1.815	£0.00	£0	£0.00	£0	£0	1.035	0.486	£0	£0.00
2032	10	£0	£0	1.906	£0.00	£0	£0.00	£0	£0	1.035	0.469	£0	£0.00
2033	11	£0	£0	2.002	£0.00	£0	£0.00	£0	£0	1.035	0.453	£0	£0.00
2034	12	£0	£0	2.102	£0.00	£0	£0.00	£0	£0	1.035	0.438	£0	£0.00
2035	13	£0	£0	2.207	£0.00	£0	£0.00	£0	£0	1.035	0.423	£0	£0.00
2036	14	£0	£0	2.317	£0.00	£0	£0.00	£0	£0	1.035	0.409	£0	£0.00
2037	15	£0	£0	2.433	£0.00	£0	£0.00	£0	£0	1.035	0.395	£0	£0.00
2038	16	£2,000	£2,000	2.555	£3,109.17	£5,109	£0.00	£5,109	£4,026	1.035	0.382	£1,536	£1,828.33
2039	17	£2,000	£2,000	2.682	£3,364.63	£5,365	£0.00	£5,365	£4,227	1.035	0.369	£1,559	£1,854.83
2040	18	£2,000	£2,000	2.816	£3,632.86	£5,633	£0.00	£5,633	£4,438	1.035	0.356	£1,581	£1,881.71
2041	19	£39,500	£39,500	2.957	£77,311.52	£116,812	£0.00	£116,812	£92,039	1.035	0.344	£31,683	£37,702.32
2042	20	£2,000	£2,000	3.105	£4,210.23	£6,210	£0.00	£6,210	£4,893	1.035	0.333	£1,627	£1,936.64
2043	21	£2,000	£2,000	3.260	£4,520.74	£6,521	£0.00	£6,521	£5,138	1.035	0.321	£1,651	£1,964.71
2044	22	£2,000	£2,000	3.423	£4,846.78	£6,847	£0.00	£6,847	£5,395	1.035	0.310	£1,675	£1,993.19
2045	23	£2,000	£2,000	3.595	£5,189.12	£7,189	£0.00	£7,189	£5,665	1.035	0.300	£1,699	£2,022.07
2046	24	£2,000	£2,000	3.774	£5,548.58	£7,549	£0.00	£7,549	£5,948	1.035	0.290	£1,724	£2,051.38
2047	25	£2,000	£2,000	3.963	£5,926.01	£7,926	£0.00	£7,926	£6,245	1.035	0.280	£1,749	£2,081.11
2048	26	£2,000	£2,000	4.161	£6,322.31	£8,322	£0.00	£8,322	£6,557	1.035	0.271	£1,774	£2,111.27
2049	27	£2,000	£2,000	4.369	£6,738.42	£8,738	£0.00	£8,738	£6,885	1.035	0.261	£1,800	£2,141.87
2050	28	£2,000	£2,000	4.588	£7,175.34	£9,175	£0.00	£9,175	£7,230	1.035	0.253	£1,826	£2,172.91
2051	29	£2,000	£2,000	4.817	£7,634.11	£9,634	£0.00	£9,634	£7,591	1.035	0.244	£1,852	£2,204.40
2052	30	£2,000	£2,000	5.058	£8,115.81	£10,116	£0.00	£10,116	£7,971	1.035	0.236	£1,879	£2,236.35
2053	31	£2,000	£2,000	5.311	£8,621.61	£10,622	£0.00	£10,622	£8,369	1.030	0.281	£2,348	£2,793.98
2054	32	£2,000	£2,000	5.576	£9,152.69	£11,153	£0.00	£11,153	£8,788	1.030	0.272	£2,393	£2,848.23
2055	33	£2,000	£2,000	5.855	£9,710.32	£11,710	£0.00	£11,710	£9,227	1.030	0.264	£2,440	£2,903.53
2056	34	£39,500	£39,500	6.148	£203,342.76	£242,843	£0.00	£242,843	£191,343	1.030	0.257	£49,125	£58,458.29
2057	35	£2,000	£2,000	6.455	£10,910.63	£12,911	£0.00	£12,911	£10,173	1.030	0.249	£2,536	£3,017.39
2058	36	£2,000	£2,000	6.778	£11,556.16	£13,556	£0.00	£13,556	£10,681	1.030	0.242	£2,585	£3,075.98
2059	37	£2,000	£2,000	7.117	£12,233.97	£14,234	£0.00	£14,234	£11,215	1.030	0.235	£2,635	£3,135.71
2060	38	£2,000	£2,000	7.473	£12,945.67	£14,946	£0.00	£14,946	£11,776	1.030	0.228	£2,686	£3,196.59
2061	39	£2,000	£2,000	7.846	£13,692.95	£15,693	£0.00	£15,693	£12,365	1.030	0.221	£2,738	£3,258.66
2062	40	£2,000	£2,000	8.239	£14,477.60	£16,478	£0.00	£16,478	£12,983	1.030	0.215	£2,792	£3,321.94
2063	41	£2,000	£2,000	8.651	£15,301.48	£17,301	£0.00	£17,301	£13,632	1.030	0.209	£2,846	£3,386.44
2064	42	£2,000	£2,000	9.083	£16,166.55	£18,167	£0.00	£18,167	£14,314	1.030	0.203	£2,901	£3,452.20
2065	43	£2,000	£2,000	9.537	£17,074.88	£19,075	£0.00	£19,075	£15,030	1.030	0.197	£2,957	£3,519.23
2066	44	£2,000	£2,000	10.014	£18,028.62	£20,029	£0.00	£20,029	£15,781	1.030	0.191	£3,015	£3,587.56
2067	45	£2,000	£2,000	10.515	£19,030.05	£21,030	£0.00	£21,030	£16,570	1.030	0.185	£3,073	£3,657.23
2068	46	£2,000	£2,000	11.041	£20,081.56	£22,082	£0.00	£22,082	£17,399	1.030	0.180	£3,133	£3,728.24
2069	47	£2,000	£2,000	11.593	£21,185.63	£23,186	£0.00	£23,186	£18,269	1.030	0.175	£3,194	£3,800.63
2070	48	£2,000	£2,000	12.172	£22,344.91	£24,345	£0.00	£24,345	£19,182	1.030	0.170	£3,256	£3,874.43
2071	49	£39,500	£39,500	12.781	£465,352.67	£504,853	£0.00	£504,853	£397,787	1.030	0.165	£65,551	£78,005.86
2072	50	£2,000	£2,000	13.420	£24,840.27	£26,840	£0.00	£26,840	£21,148	1.030	0.160	£3,383	£4,026.36
2073	51	£2,000	£2,000	14.091	£26,182.28	£28,182	£0.00	£28,182	£22,206	1.030	0.155	£3,449	£4,104.54
2074	52	£2,000	£2,000	14.796	£27,591.40	£29,591	£0.00	£29,591	£23,316	1.030	0.151	£3,516	£4,184.24
2075	53	£2,000	£2,000	15.535	£29,070.97	£31,071	£0.00	£31,071	£24,482	1.030	0.146	£3,584	£4,265.49
2076	54	£2,000	£2,000	16.312	£30,624.51	£32,625	£0.00	£32,625	£25,706	1.030	0.142	£3,654	£4,348.31
2077	55	£2,000	£2,000	17.128	£32,255.74	£34,256	£0.00	£34,256	£26,991	1.030	0.138	£3,725	£4,432.74
2078	56	£2,000	£2,000	17.984	£33,968.53	£35,969	£0.00	£35,969	£28,341	1.030	0.134	£3,797	£4,518.82
2079	57	£2,000	£2,000	18.883	£35,766.95	£37,767	£0.00	£37,767	£29,758	1.030	0.130	£3,871	£4,606.56
2080	58	£2,000	£2,000	19.828	£37,655.30	£39,655	£0.00	£39,655	£31,246	1.030	0.126	£3,946	£4,696.01
2081	59	£2,000	£2,000	20.819	£39,638.07	£41,638	£0.00	£41,638	£32,808	1.030	0.123	£4,023	£4,787.19
2082	60	£2,000	£2,000	21.860	£41,719.97	£43,720	£0.00	£43,720	£34,448	1.030	0.119	£4,101	£4,880.15
2083	61	£2,000	£2,000	22.953	£43,905.97	£45,906	£0.00	£45,906	£36,171	1.030	0.116	£4,181	£4,974.91
2084	62	£2,000	£2,000	24.101	£46,201.27	£48,201	£0.00	£48,201	£37,979	1.030	0.112	£4,262	£5,071.51
Total		£206,500	£206,500		£1,524,278	£1,730,778	£0	£1,730,778	£1,363,727			£267,313	£318,102

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£206,500
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	£1,730,778
(3)	The next stage is to apply optimism bias.	£1,730,778
(4)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	£1,363,727
(5)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	£267,313
(6)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	£318,102

## Appendix E: Appraisal Summary Table (AST)

Appraisal Summary Table			Date produced: 6 12 2022			Contact:		
Name of scheme: FBC 1 - Broad Street Scheme			Name: Emma White			CPCA		
Description of scheme: Improvements to Broad Street / Dartford Road / Station Road junction, including replacing the traffic signals with a mini-roundabout, and altering Broad Street to be one lane in each direction			Organisation: Promoter/Official					
Impacts		Summary of key impacts		Assessment				
				Quantitative		Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	The scheme will improve journey times for business users and transport providers travelling to / through the town centre, with the majority of journey time savings in the 0 to 2 minute range.	Value of journey time changes(£) 4,727,474		Not Assessed	4,757,000	Not Assessed	
	Net journey time changes (£)							
	0 to 2min	2 to 5min	> 5min					
	Reliability impact on Business users	The scheme will improve journey time reliability for business users travelling to / through the town centre	4,327,611	385,911	13,952	Not Assessed	400,309	
	Regeneration	It is anticipated that the scheme will facilitate significant regeneration benefits in March town centre. The Broad Street scheme will reduce traffic congestion, traffic dominance and severance created by the current highway layout and facilitate the delivery of the FHSF public realm improvements scheme. This is likely to attract an increase in footfall and visitor dwell times in March town centre, stimulating an increase in economic activity and further investment.	Not Assessed		Not Assessed	Not Assessed		
Wider Impacts	It is anticipated the scheme will deliver wider economic benefits, by facilitating the regeneration of March town centre and enabling housing and employment growth, including at the sites identified in the Fenland Local Plan. The scheme will also benefit business users and transport providers, through reduced congestion, reduced journey times, and improved journey time reliability.	Not Assessed		Not Assessed	Not Assessed			
Environmental	Noise	Sleep disturbance – £394,468 Amenity – £320,831 Acute Myocardial Infarction (AMI) – £80,009 Stroke – £27,069 Dementia – £40,835.  Overall net reduction in households experiencing daytime noise	There would be an increase of 59 households experiencing daytime noise and a reduction in households of 197.		Not Assessed	863,212	Not Assessed	
	Air Quality	There is an overall net improvement in local air quality with the scheme.	Reduction of 15 tonnes of NOx emissions and 3 tonnes of PM2.5 emissions		Not Assessed	164,745	Not Assessed	
	Greenhouse gases	Reduced fuel consumption as a consequence of significant journey time savings has resulted in a reduction in non-traded and traded carbon emissions over a 60-year appraisal period.	Change in non-traded carbon over 60y (CO2e) -4,434 Change in traded carbon over 60y (CO2e) -45		Not Assessed	353,000		
	Landscape	Not Assessed	Not Assessed		Neutral	Not Assessed		
	Townscape	The scheme design will significantly improve the appearance and amenity of Broad Street and setting of distinct historic features, by increasing the public realm areas for users, removing the central parking areas and substantially reducing the dominance of traffic and improving safety.	Not Assessed		Large Beneficial	Not Assessed		
	Historic Environment	Providing that appropriate management and mitigation measures are taken, no substantial adverse setting impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology. It is expected there will be significant benefits relating to better access and user experience in relation to the relocated Coronation Fountain.	Not Assessed		Neutral	Not Assessed		
	Biodiversity	The score is based on there being no mitigation in place for any of the areas or species identified in the worksheet. Slight adverse impacts are anticipated to deciduous woodland, the River Nene (Old Course), bats, nesting birds, otters, and water voles. It is thought that with mitigation as outlined within the preliminary ecological appraisal, impacts on ecological receptors will be minimised	Not Assessed		Slight Adverse (Negative) Effect	Not Assessed		
	Water Environment	The Scheme will not result in an increase in impermeable road area, therefore no water quality impacts are anticipated. Also because there is no increase in impermeable area there will be no increase in flood risk which could be caused by an increase in surface water runoff. Although the Scheme footprint extends into Flood Zone 2 and 3, works in this area will only be related to road markings. Therefore, no encroachment is expected into flood zone 2 or 3. Additional attenuation will be incorporated into the Scheme which will be a beneficial impact to flood risk.  The Scheme does not include any modifications to the bridge which crosses the River Nene (Old Course). Additionally, the works to the steps leading down to the tow path adjacent to the watercourse will not interact with the watercourse. Therefore no impacts to hydromorphology are anticipated.  There is no bedrock aquifer underlying the study area. Both Secondary (A) Superficial aquifer and Secondary (undifferentiated) Superficial Aquifer underlay the study area. There is the potential for the installation of the attenuation tank to interact with groundwater, potentially impacting groundwater quality, levels and flow. At this stage, it is unknown if mitigation measures are required. Hence, these impacts should be further investigated and if necessary mitigation incorporated into the design.	Not Assessed		Slight Adverse (Negative) Effect	Not Assessed		
	Social	Commuting and Other users	The scheme will improve journey times for commuting and other users travelling to / through the town centre, with the majority of journey time savings in the 0 to 2 minute range.	Value of journey time changes(£) 11,787,229 Net journey time changes (£) 0 to 2min 2 to 5min > 5min 11,017,229 770,000 0		Not Assessed	11,844,000	0-20% - ✓ 20-40% - ✓✓✓ 40-60% - ✓✓ 60-80% - ✓✓ 80-100% - Neutral
		Reliability impact on Commuting and Other users	The scheme will improve journey time reliability for commuting and other users travelling to / through the town centre.	Not Assessed		Not Assessed	996,691	
Physical activity		Not Assessed	Not Assessed		Not Assessed	Not Assessed		
Journey quality		Improvements in pedestrian crossing facilities, road surfacing, and journey times. Reductions in frustration, fear of potential accidents and route uncertainty. All of which are likely to be experienced by about 23,747 two-way 24-hour AADT flow along Broad Street	Not Assessed		Large Beneficial	Not Assessed		
Accidents		Replacing the town centre signals with a mini-roundabout and reducing Broad Street to a single lane in each direction improves the safety of the town centre by reducing the likelihood of PIAs and casualties of occurring at the current frequency.  Road users are more vulnerable to crime where they are required to stop their vehicles or travel at slow speeds during congested periods. The MATS Improvement Schemes will reduce delays and queuing in March and in particular in March Town Centre where road users are often stationary for long periods, waiting for the signals to turn green.  There are no specific public transport interventions relating to the Broad Street scheme and therefore a detailed distributional assessment of accessibility has not been undertaken. However, it is expected that a reduction in journey times in March Town Centre as a result of the scheme will improve journey times for buses, improve reliability of services, and improve accessibility of key services for local residents	A reduction of 129 PIAs over a 60-year appraisal period. There would be a reduction of 174.1 slight, 10.8 serious, and 0.8 fatal casualties.		Not Assessed	4,673,000	Not Assessed	
Security			Not Assessed		Neutral	Not Assessed	Not Assessed	
Access to services			Not Assessed		Not Assessed	Not Assessed	Not Assessed	
Affordability		Improvements in journey times and distances will reduce fuel and non-fuel vehicle operating costs and provide significant benefits for all social groups. The largest share of user benefits are for those residing in the 20% to 40% IMD Income Domains.	75% of fuel and non-fuel VOC benefits will be received by those living in the 0% to 40% domains.		Not Assessed	480,000 (Fuel and Non-Fuel VOC)	0-20% - ✓ 20-40% - ✓✓✓ 40-60% - ✓✓ 60-80% - ✓✓ 80-100% - Neutral	
Severance		The scheme will reduce road space allocated to vehicles and provide an additional uncontrolled crossing on Broad Street, which will improve pedestrian accessibility within the town centre and will likely result in a net slight beneficial impact on community severance.	Not Assessed		Slight Beneficial	Not Assessed	Not Assessed	
Option and non-use values		Not Assessed	Not Assessed		Not Assessed	Not Assessed		
Public Account	Cost to Broad Transport Budget	Not Assessed		Not Assessed	2,413,000			
	Indirect Tax Revenues	Not Assessed		Not Assessed	-364,000			

Appraisal Summary Table				Date produced: 6 12 2022		Contact: Emma White			
Name of scheme: MATS Package 3a		Broad Street, A141 Peas Hill + A141 Hostmoor Avenue, A141 / Twenty Foot Road, St. Peter's Road, Northern Industrial Link Road (NILR)				Name	CPCA		
Description of scheme:						Organisation	Promoter/Official		
Impacts		Summary of key impacts		Assessment					
				Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp		
Economy	Business users & transport providers	The scheme will improve journey times for business users and transport providers travelling to, from and through March, with the majority of journey time savings in the 0 to 2 and 2 to 5 minute bands.	Value of journey time changes(£) 13,355,180	Net journey time changes (£)		Not Assessed	13,747,000	Not Assessed	
				0 to 2min	2 to 5min				> 5min
				6,300,182	7,817,998				1,267,000
	Reliability impact on Business users	The scheme will improve journey time reliability for business users travelling to / through the town centre.				Not Assessed	1,371,950		
	Regeneration	It is anticipated that the scheme will facilitate significant regeneration benefits in March town centre. The Broad Street scheme will reduce traffic congestion, traffic dominance and severance created by the current highway layout and facilitate the delivery of the FHSR public realm improvements scheme. This is likely to attract an increase in footfall and visitor dwell times in March town centre, stimulating an increase in economic activity and further investment.		Not Assessed		Not Assessed	Not Assessed		
Wider Impacts	It is anticipated the scheme will deliver wider economic benefits, by facilitating the regeneration of March town centre and enabling housing and employment growth, including at the sites identified in the Fenland Local Plan. The scheme will also benefit business users and transport providers, through reduced congestion, reduced journey times, and improved journey time reliability.		Not Assessed		Not Assessed	Not Assessed			
Environmental	Noise	•Sleep disturbance – £1,382,693 •Nuisance – £1,238,898 •acute Myocardial Infarction (AMI) – £288,260 •Stroke – £123,665 •Demeritis – £186,724.  Overall net reduction in households experiencing daytime noise		There would be an increase of 63 households experiencing daytime noise and a reduction in households of 480.		Not Assessed	3,220,240	Not Assessed	
	Air Quality	There is an overall net improvement in local air quality with the scheme.		Reduction of 12 tonnes of NOx emissions and 8 tonnes of PM2.5 emissions.		Not Assessed	321,746	Not Assessed	
	Greenhouse gases	Reduced fuel consumption as a consequence of significant journey time savings has resulted in a reduction in non-traded and traded carbon emissions over a 60-year appraisal period.		Change in non-traded carbon over 60y (CO2e) -15,171 Change in traded carbon over 60y (CO2e) -109		Not Assessed	1,193,000		
	Landscape	All MATS schemes are expected to have a negligible effect on the landscape and can be accommodated well in the scheme locations.  The Broad Street scheme design will significantly improve the appearance and amenity of the Broad Street and setting of distinct historic features, by increasing the public realm areas for users, removing the central parking areas and substantially reducing the dominance of traffic and improving safety.		Not Assessed	Neutral	Not Assessed			
	Townscape	The scheme will result in the loss of some trees and the demolition of the 1920's toilet block that will result in a permanent change in layout and views. It is considered that this loss will be offset by the positive impact on connectivity – opening up views and improving visual links to the river frontage. The scheme reverses what had become a car dominant environment, into a truly 'Broad Street' for pedestrians to enjoy within a unique setting.  The impact on townscape is expected to be neutral in all other scheme locations.		Not Assessed	Large Beneficial	Not Assessed			
Historic Environment	Providing that appropriate management and mitigation measures are taken, no substantial adverse setting impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for yet unknown archaeology. It is expected there will be significant benefits relating to better access and user experience in relation to the relocated Coronation Fountain.  The Peas Hill scheme will entail widening and alterations to the existing road and this could mean potential impacts in relation to yet unknown archaeology.		Not Assessed	Slight Adverse (Negative) Effect	Not Assessed				
Biodiversity	The score is based on there being no mitigation in place for any of the areas or species identified in the worksheets. Slight adverse impacts are anticipated to deciduous woodland, the River Nene (Old Course), bats, nesting birds, otters, and water voles in the vicinity of the Broad Street scheme. It is thought that with mitigation as outlined within the preliminary ecological appraisal, impacts on ecological receptors will be minimised.  Similar impacts are expected for the Twenty Foot Road and Peas Hill scheme locations. The MATS Broad Street scheme will not result in an increase in impermeable road area, therefore no water quality impacts are anticipated. Also because there is no increase in impermeable area there will be no increase in flood risk which could be caused by an increase in surface water runoff. Although the Scheme footprint extends into Flood Zone 2 and 3, works in this area will only be related to road markings. Therefore, no encroachment is expected into flood zone 2 or 3. Additional attenuation will be incorporated into the Scheme which will be a beneficial impact to flood risk.		Not Assessed	Slight Adverse (Negative) Effect	Not Assessed				
Water Environment	The MATS Broad Street scheme does not include any modifications to the bridge which crosses the River Nene (Old Course). Additionally, the works to the steps leading down to the tow path adjacent to the watercourse will not interact with the watercourse. Therefore no impacts to hydromorphology are anticipated.  There is no bedrock aquifer underlying the Broad Street study area. Both Secondary (A) Superficial aquifer and Secondary (un differentiated) Superficial Aquifer underlay the study area. There is the potential for the installation of the attenuation tank to interact with groundwater, potentially impacting groundwater quality, levels and flows. At this stage, it is unknown if mitigation measures are required. Hence, these impacts should be further investigated and if necessary mitigation incorporated into the design.		Not Assessed	Slight Adverse (Negative) Effect	Not Assessed				
Social	Commuting and Other users	The scheme will improve journey times for commuting and other users travelling to, from and through March, with the majority of journey time savings in the 0 to 2 and 2 to 5 minute bands.	Value of journey time changes(£) 34,692,810	Net journey time changes (£)		Not Assessed	31,243,000	0-20% - ✓✓ 20-40% - ✓✓✓ 40-60% - ✓✓ 60-80% - ✓✓ 80-100% - Neutral	
				0 to 2min	2 to 5min				> 5min
				16,834,810	16,355,000				1,503,000
	Reliability impact on Commuting and Other users	The scheme will improve journey time reliability for commuting and other users travelling to / through the town centre.				Not Assessed	3,118,000		
	Physical activity	Not Assessed at FBC 1		Not Assessed		Not Assessed	Not Assessed		
Journey quality	Improvements in pedestrian crossing facilities, road surfacing, and journey times. Reductions in frustration, fear of potential accidents and route uncertainty. All of which are likely to be experienced by about 23,737 two-way 24-hour AADT flow along Broad Street, 21,132 at the A141 / Twenty Foot Road Junction, 26,405 at the Peas Hill Roundabout, 14,205 at the St. Peter's Broad Street, and 4,402 along the NILR.		Not Assessed	Large Beneficial	Not Assessed				
Accidents	The MATS Improving Schemes will significantly reduce the likelihood of PIAs and casualties occurring at the current frequency.		A reduction of 124 PIAs over a 60-year appraisal period. There would be a reduction of 156.7 slight, 16.2 serious, and 1.5 fatal casualties.		Not Assessed	5,685,000	Not Assessed		
Security	Road users are more vulnerable to crime where they are required to stop their vehicles or travel at slow speeds during congested periods. The MATS Improvements Schemes will reduce delays and queuing in March and in particular in March Town Centre where road users are often stationary for long periods, waiting for the signals to turn green.		Not Assessed	Neutral	Not Assessed	Not Assessed	Not Assessed		
Access to services	There are no specific public transport interventions relating to the schemes and therefore a detailed distributional assessment of accessibility has not been undertaken. However, it is expected that a reduction in journey times in March Town Centre and along the A141 as a result of the schemes will improve journey times for buses, improve reliability of services, and improve accessibility of key locations for local residents.		Not Assessed		Not Assessed	Not Assessed	Not Assessed		
Affordability	Improvements in journey times and distances will reduce fuel and non-fuel vehicle operating costs and provide significant benefits for all social groups. The largest share of user benefits are for those residing in the 20% to 40% IMD Income Domains.		82% of fuel and non-fuel VOC benefits will be received by those living in the 0% to 40% domains.		Not Assessed	1,210,000 (Fuel and Non-Fuel VOC)	0-20% - ✓✓ 20-40% - ✓✓✓ 40-60% - ✓ 60-80% - ✓✓ 80-100% - Neutral		
Severance	The Broad Street scheme will reduce road space allocated to vehicles and provide an additional uncontrolled crossing on Broad Street, which will improve pedestrian accessibility within the town centre and likely result in a net slight beneficial impact on community severance.		Not Assessed	Slight Beneficial	Not Assessed	Not Assessed	Not Assessed		
Option and non-use values	Not Assessed		Not Assessed		Not Assessed	Not Assessed			
Cost to Broad Transport Budget	Not Assessed		Not Assessed		Not Assessed	24,160,000			
Indirect Tax Revenues	Not Assessed		Not Assessed		Not Assessed	-1,207,000			
Public Account									

## Appendix F: TAG Sheets

## Air Quality Valuation Workbook - Worksheet 3

Scheme Name: MATS All Schemes

Present Value Base Year

Current Year

Proposal Opening year:

Project (Road/Rail or Road and Rail):

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### Overall Assessment Score:

#### Damage Costs Approach (Emissions)

Present value of change in NOx emissions (£):

Present value of change in PM2.5 emissions (£):

OR

Present value of change in PM10 emissions (£):

#### Impact Pathways Approach (Concentrations)

Present value of change in NO2 concentrations (£):

Of which:

Concentration costs:

Other impacts:

Present value of change in PM2.5 concentrations (£):

Of which:

Concentration costs:

Other impacts:

#### Total Change

Total value of change in air quality (£):

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### Quantitative Assessment:

#### Impact Pathways Approach (Concentrations)

Change in NO2 assessment scores over 60 year appraisal period:

(between 'with scheme' and 'without scheme' scenarios)

Change in PM2.5 assessment scores over 60 year appraisal period:

(between 'with scheme' and 'without scheme' scenarios)

#### Damage Costs Approach (Emissions)

Change in NOx emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

Change in PM2.5 emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

OR

Change in PM10 emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

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**Qualitative Comments:**

The total NPV is predicted to be £321,746 as a result of the scheme presenting a benefit. This is likely due to a reduction in congestion despite the schemes collectively drawing more traffic onto the network.

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**Sensitivity Analysis:**

Upper estimate net present value of change in air quality (£):

Lower estimate net present value of change in air quality (£):

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**Data Sources:**

DEFRA Emission Factor Toolkit version 11.0  
Traffic data was provided from Milestone Infra, Nov 2022





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£48,503

£273,242

£0



£0

£0

£0

£0

£0

£0



£321,746

\*positive value reflects a **net benefit** (i.e. air quality improvement)

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0.00

0.00



-12

-8

0

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\_\_\_\_\_

a overall reduction in

\_\_\_\_\_

£1,032,760

£63,334

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\_\_\_\_\_

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## Noise Workbook - Worksheet 1

Proposal Name: March Area Transport Study

Present Value Base Year 2010

Current Year 2022

Proposal Opening year: 2026

Project (Road, Rail or Aviation): road

Net present value of change in noise (£):

£3,220,240

positive value reflects a net benefit (i.e. a reduction in noise)

Net present value of impact on sleep disturbance (£):

£1,382,693

Net present value of impact on amenity (£):

£1,238,898

Net present value of impact on AMI (£):

£288,260

Net present value of impact on stroke (£):

£123,665

Net present value of impact on dementia (£):

£186,724

### Quantitative results

Households experiencing increased daytime noise in forecast year:

63

Households experiencing reduced daytime noise in forecast year:

480

Households experiencing increased night time noise in forecast year:

n/a

Households experiencing reduced night time noise in forecast year:

n/a

### Qualitative Comments:

Night-time results estimated from daytime traffic data based on national averages of the differences between daytime and night-time flows.

The overall effects of the schemes can be classified as beneficial in terms of noise effects.

### Data Sources:

Road traffic model provided by MilestoneInfra on 23/11/2022.

Dwellings within 300 metres of each of the five schemes part of the March Area Transport Study identified through Ordnance Survey (OS) AddressBase Premium as provided by Cambridgeshire County Council on 23/11/2022.

In accordance with OS AddressBase Premium, no dwellings are present within 300m of the Twenty Foot Road Signals scheme.

**TAG Townscape Impacts Worksheet**

	Step 2	Step 3					Step 4
Features	Description	Scale it matters	Rarity	Importance	Substitutability	Changes in Without-scheme case	Impact
Layout	Broad Street - a wide open character of Broad Street marked at each end by a war memorial and coronation fountain, crosses Town Bridge to the south to link with the narrower High Street. Lined on both sides by a wide pavement and shops and restaurants. Central parking areas are a dominant feature, resulting in severance and fragmentation of this principal street. Historic street layout to east and along the river Nene, where garden frontages are a feature, is characterised by a finer grain, smaller and more frequent layout of buildings.	Local	Commonplace	High importance at a local level	Substitutable	Unlikely to change for the better - due to traffic and congestion.	Large beneficial - coordinated design strategy for public realm will enhance layout and relationship of Broad Street to river whilst reducing dominance of traffic.
Density and mix	Medium to high density development with distinct residential areas to north, east and west of Broad Street, and along Nene Parade and West End. Interspersed with Sainsburys, car parking and the George Campbell Leisure Centre and open space to the south of the river as well as the riverside and tree lined walks.	Local	Commonplace	Medium importance at a local level	Substitutable	Unlikely to change	Moderate beneficial - fits well and will enhance the mix and relationship between Broad Street and riverside amenity.
Scale	Mostly two storey buildings line Broad Street, Nene Parade and West End along the river. Small to medium scale historic street layout and the small scale of buildings is a feature to the east and along the river Nene contributing to the sense of place and contrasting with the open space and larger scale development of the leisure centre to the south.	Local	Commonplace	Medium importance at a local level	Substitutable	Unlikely to change	Moderate beneficial - fits well and will enhance the scale and sense of place particularly the relationship between Broad Street and riverside amenity.

Appearance	The Victorian development, war memorial and coronation fountain are characteristic features along Broad Street as well as the cottages on Nene Parade and at West End which include predominantly local materials, styles and traditional details. The existing 1920's toilet block and shelter is also a distinct feature to the south which in combination with existing trees prevents views to the River Nene. The central parking areas in Broad Street are a dominant feature and detract from the appearance of this principal street.	Local	Commonplace	Medium importance at a local level	Substitutable	Unlikely to change for the better - due to traffic and congestion.	Moderate beneficial - well designed inc features that reflect existing characteristics and materials.
Human interaction	Broad Street shops and restaurants are a focus for pedestrian activity with people arriving on foot, cycle and by car. The River Nene is a navigation channel used by leisure craft. The riverside walk is also the National Trail (Hereward Way) linking to and sharing views to the public open space to the south. A national cycle network route is also a feature.	Local	Commonplace	Medium importance at a local level	Substitutable	Unlikely to change	Large beneficial - improved connectivity between broad street and riverside enhancement area. Enhanced public realm improving experience. The new scheme promotes interaction, and encourages visitors to dwell within the space, which will result in greater human interaction, and interaction with surrounding townscape.
Cultural	Buildings of architectural and historic interest from 17C contribute positively to the cultural value of March, located on the second largest fenland island. Broad Street shops and restaurants and the riverside walk, open space and development provide a community focus. Strong road, rail and waterway transport connections with the wider Fen. As one of the ancient fen rivers and former inland port the navigation channel of the River Nene has strong historic links with adjacent development corresponding with former quays and port cottages.	Regional	Commonplace	Medium importance at a regional level	Older buildings less substitutable	Unlikely to change	Moderate beneficial - scheme brings local improvement and enhancement s to public realm. With scope to increase the benefits of other transport schemes in wider area to help relieve traffic and congestion. The proposals gives greater prominence to the two historic assets, the war memorial and fountain, reconnecting these elements with the public realm.
Land use	Mix of distinct residential interspersed with retail, commercial along main and local roads and recreational facilities including a leisure centre and open space to the south. Car parking and congestion a distinct feature of the area.	Local	Commonplace	Medium importance at a local level	Substitutable	Unlikely to change - due to traffic and congestion.	Moderate benefit - potential to encourage investment in shops and restaurants and attract visitors to the area.

Summary of character	<p>The townscape character within the study area comprising Broad Street and the Riverside to the south of Broad Street is considered to be of medium to high sensitivity and is located within the March Conservation Area.</p> <p>The townscape is characterised by a small to medium scale historic street layout and the finer grain and small scale of buildings of architectural and historic interest dating back to 17C that predominantly include local materials, styles and traditional details.</p> <p>The area comprises distinct areas with residential properties located to the north of the B1101 and along and to west of Gray's Lane, as well as commercial, retail and recreational facilities including George Campbell Leisure Centre, a national cycle network route, a river walk and other areas of amenity value that include public open space to the south, play areas and tree lined walks that form an attractive setting and backdrop.</p> <p>Broad Street is a principal street in the town centre that links to the High Street via the Town Bridge to the south. Broad Street is a wide open Victorian street dominated by traffic. It is bordered by a uniform width pavement and lined by many of the original early 19th century two storey buildings comprising shops and restaurants. The central area is designated for parking, which is a dominant feature in Broad Street and has resulted in a one way movement. The central islands are also characterised by a Grade II listed cast iron Coronation Fountain to the north and the WW1 west memorial raised on steps to the south, lighting and mature trees.</p> <p>The existing 1920s toilet block and shelter located at the southern end of Broad Street in combination with the riverside trees screen views of the River Nene, a navigation channel used by leisure craft. Riverside development is characterised by cottages and some garden frontages.</p>	Large beneficial
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#### Reference Sources

Natural England National Character Area 46 - The Fens
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#### Step 5 - Summary Assessment Score

Large beneficial
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#### Qualitative Comments

<p>The scheme design will significantly improve the appearance and amenity of Broad Street and setting of distinct historic features, by increasing the public realm areas for users, removing the central parking areas and substantially reducing the dominance of traffic and improving safety.</p> <p>The scheme will result in the loss of some trees and the demolition of the 1920's toilet block that will result in a permanent change in layout and views. It is considered that this loss will be offset by the positive impact on connectivity - opening up views and improving visual links to the river frontage. The scheme reverses what had become a car dominant environment, into a truly 'Broad Street' for pedestrians to enjoy within a unique setting.</p>
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## Noise Workbook - Worksheet 1

Proposal Name: Broad Street Roundabout

Present Value Base Year

Current Year

Proposal Opening year:

Project (Road, Rail or Aviation):

Net present value of change in noise (£):

positive value reflects a net benefit (i.e. a reduction in noise)

Net present value of impact on sleep disturbance (£):

Net present value of impact on amenity (£):

Net present value of impact on AMI (£):

Net present value of impact on stroke (£):

Net present value of impact on dementia (£):

### Quantitative results

Households experiencing increased daytime noise in forecast year:

Households experiencing reduced daytime noise in forecast year:

Households experiencing increased night time noise in forecast year:

Households experiencing reduced night time noise in forecast year:

### Qualitative Comments:

Night-time results estimated from daytime traffic data based on national averages of the differences between daytime and night-time flows.

The effects of the scheme can be classified as beneficial in terms of noise effects.

### Data Sources:

Road traffic model provided by MilestoneInfra on 23/11/2022.

Dwellings within 300 metres of the Broad Street Roundabout identified through

Ordnance Survey (OS) AddressBase Premium as provided by Cambridgeshire County Council on 23/11/2022.



## Air Quality Valuation Workbook - Worksheet 3

Scheme Name: MATS Broad Street

Present Value Base Year

Current Year

Proposal Opening year:

Project (Road/Rail or Road and Rail):

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### Overall Assessment Score:

#### Damage Costs Approach (Emissions)

Present value of change in NOx emissions (£):

Present value of change in PM2.5 emissions (£):

OR

Present value of change in PM10 emissions (£):

#### Impact Pathways Approach (Concentrations)

Present value of change in NO2 concentrations (£):

Of which:

Concentration costs:

Other impacts:

Present value of change in PM2.5 concentrations (£):

Of which:

Concentration costs:

Other impacts:

#### Total Change

Total value of change in air quality (£):

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### Quantitative Assessment:

#### Impact Pathways Approach (Concentrations)

Change in NO2 assessment scores over 60 year appraisal period:

(between 'with scheme' and 'without scheme' scenarios)

Change in PM2.5 assessment scores over 60 year appraisal period:

(between 'with scheme' and 'without scheme' scenarios)

#### Damage Costs Approach (Emissions)

Change in NOx emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

Change in PM2.5 emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

OR

Change in PM10 emissions over 60 year appraisal period (tonnes):

(between 'with scheme' and 'without scheme' scenarios)

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**Qualitative Comments:**

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**Sensitivity Analysis:**

Upper estimate net present value of change in air quality (£):

Lower estimate net present value of change in air quality (£):

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**Data Sources:**

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£56,210

£108,535

£0



£0

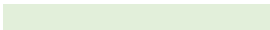
£0

£0

£0

£0

£0



£164,745

\*positive value reflects a **net benefit** (i.e. air quality improvement)

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£551,871
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£28,440
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# TAG Historic Environment Impacts Worksheet

Step 2		Step 3			Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	The study area for this scheme was 300 metres. The scheme boundary is on Broad Street, a typical Victorian street lined with shops and with many of the original buildings remaining. It has an early 19th century cast iron memorial fountain canopy to the north and a First World War War Memorial to the south, both listed. There is also a Grade II listed ex Public House, now occupied for commercial use, adjacent to the fountain. This is within the Conservation Area. There are 18 listed buildings within the Study Area. The toilet block is apparently not a listed asset on the HER but the FDC Conservation Officer advised that it was a 1920s build and one of the first to allow women. Although the HER was not consulted for this exercise, heritage statements completed for this project concluded that there were medieval and Roman below ground remains within the Study Area. There is potential for unknown remains.	Local to regional	Low to medium, with the significance of the Coronation fountain canopy being higher, due to the high profile of the manufacturer and quality of skill and workmanship.	Most of the assets are common. The Coronation fountain canopy is more unusual, manufactured by one of the most prolific suppliers of architectural cast-iron in the world, there are over 80 listed structures by the same manufacturer but an unknown number of canopies such as this.	Relocation of the Grade II listed Coronation fountain canopy is required. Renewal of the memorial steps. Impact to below ground remains is anticipated to be low. Any permanent setting impacts to the listed buildings, particularly the coronation fountain and war memorial, are anticipated to be a positive as a result of reduced vehicle dominance and increased pedestrian access to these historic features.
Survival	Good survival generally, regarding built heritage. The fountain below the canopy is no longer present. The survival of below ground remains is unknown. The Conservation Area Appraisal and Management Plan described the need for the inclusion of Broad Street within the Conservation Area, saying that Broad Street was vulnerable to further change that would negatively impact the significance of its historic character. The Conservation Area Appraisal and Management Plan describes the existing record of survival of archaeological remains of all periods. The potential for survival of remains is high within the town due to accumulated layers of peat deposits .	Generally, the survival of Listed Buildings matters on a regional to national scale. Any unknown remains preserved within the peat could be of regional to national importance. The memorial matters on a	The survival of the built heritage within the Study Area is important to understand the development of the town during the 19th-20th century. Any unknown remains preserved within the peat could be of high significance. The memorial is of more significance as it represents the work of the erstwhile largest century supplier of cast iron in the world and represents lost skills and irreplaceable workmanship.	Common. With the exception of the Coronation fountain, which is more unusual, manufactured by one of the most prolific suppliers of architectural cast-iron in the world, there are over 80 listed structures by the same manufacturer but an unknown number of canopies such as this.	Removal of the public toilets/shelter is not expected to have a significant permanent adverse impact on the conservation area; however, planning permission will be required for their demolition. Planning permission for demolition within a Conservation Area and a listed building consent application will be required (for both the memorial conservation work and the memorial relocation). The relation will require the close observation and advice of a specialist Conservation Engineer. All works will require the consultation of a heritage specialist and the Conservation Officer and County Archaeologist.
Condition	The Conservation Area Appraisal and Management Plan mentions details on listed buildings and assets that require conservation and mending. Broad Street was added to the Conservation Area recently for the purposes of giving its historic character the protection that was felt it needed. Any surviving unknown archaeological remains have the potential to be well preserved due to peat layers, The Coronation fountain was refurbished in 2011 by Heritage Engineering. It is important that a specialist Conservation Engineer is employed and consulted, for the moving of the fountain, as the workmanship and materials are irreplaceable and its condition unknown to the author at the time of writing.	Local with the exception of the fountain which is national	Low with the exception of the Coronation fountain, which is medium to high	Common with the exception of the Coronation fountain which is rare	
Complexity	The historic environment consists of built heritage, largely comprising buildings, also including a war memorial, a Coronation fountain, and below ground remains of Roman and Medieval date.	Local	Low	Common	
Context	March is the county town of the Isle of Ely and before the draining of the fens, was an island in its own right, overlooking the former fen. It is on the second largest fenland island. It sits on the old course of the River Nene where the road between Ely and Wisbech (the two chief towns of the Isle) fords the river	Local and National	Medium	Rare - the settlement type, being a town on a fenland island, is rare.	
Period	The built heritage is largely 19th and 20th century, whilst below ground remains are, where known, of medieval and Roman date.	Local	Medium	Common	

## Reference Sources

The National Heritage List for England. Publicly available local authority information relating to conservation areas and non-designated heritage assets, was consulted. The March Conservation Area , Appraisal and Management Plan, <https://memorialdrinkingfountains.wordpress.com/2013/09/26/coronation-fountain/> , PCAS Archaeology Heritage Statement: Coronation Fountain, Broad Street, March, Fenland, Cambridgeshire, PCAS Archaeology Heritage Statement: Site of Public Toilets, Broad Street, March, Fenland, Cambridgeshire (both August 2022).

## Step 5 - Summary Assessment Score

The overall effect on the historic environment resource is considered to be Neutral to Slight Adverse, depending on further assessment. This assessment is subject to change following the introduction of any new information.

## Qualitative Comments

Providing that appropriate management and mitigation measures are taken, no substantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for as yet unknown archaeology. Any damage to the Coronation fountain canopy could amount to substantial adverse effects.

## TAG Biodiversity Impacts Worksheet

Step 2		Step 3				Step 4	Step 5
Area	Description of feature/ attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment Score
Traditional orchard (priority habitat)	<p>There is one parcel of priority traditional orchard habitat present approximately 280 m southwest of the scheme extent.</p> <p>This habitat parcel is separated from the scheme extent by roads and residential and commercial properties. There is no direct hydrological link between the scheme extent and the traditional orchard.</p>	Regional	Priority Habitats are of regional importance with potential for substitution in some instances	Unknown	Medium	<p>Neutral</p> <p>Due to the distance between the scheme extent and the traditional orchard, and the fact there is no hydrological connection between the scheme and the traditional orchard, no direct or indirect impacts are anticipated.</p>	Neutral
Deciduous woodland (priority habitat)	The desk study revealed there are two parcels of deciduous woodland priority habitat within 500 m of the scheme extent, the closest of which is approximately 5 m west. During the walkover survey, an additional parcel of deciduous woodland was identified within the scheme boundary, on the north bank of the River Nene Old Course.	Regional	Priority Habitats are of regional importance with potential for substitution in some instances	Unknown	Medium	<p>Minor negative</p> <p>No vegetation clearance is anticipated as a result of the proposed scheme, however, the woodland could be subject to disturbance impacts and pollution events during the construction phase of the proposed scheme.</p>	Slight adverse
River Nene Old Course (priority habitat)	The River Nene Old Course is directly adjacent to the south of the scheme extent, running in a west to east direction along the south of the site extent.	Regional	Regional - The River Nene (Old Course) extends from Peterborough to Upwell, Norfolk. It provides habitat for local wildlife such as commuting otter.	Unknown	Low	<p>Minor negative</p> <p>No in-channel works are anticipated to the River Nene, however, it could be subject to disturbance impacts such as pollution events during construction.</p>	Slight adverse
Amphibians	The desk study provided recent records of common frogs, common toads, and great crested newts within 500 m of the scheme extent. However, there are no ponds or drains within the scheme extent nor within 500 m of the scheme, and the habitat on site primarily consists of hardstanding and developed land. The deciduous woodland on site likely would provide suitable foraging and hibernation habitat for amphibians, however as there is no connectivity to breeding habitats, they are unlikely to be present. Furthermore, no vegetation clearance is anticipated within the deciduous woodland.	Local	Local - The lack of suitable habitat means that any amphibians present within or close to site will be of local importance at most only.	Unknown	Low	<p>Neutral</p> <p>Due to the fact there is no nearby suitable breeding habitat for amphibians, and limited vegetation on site, no direct or indirect habitats are anticipated.</p>	Neutral
Bats	<p>The desk study provided 35 recent bat records within 2 km of the scheme, including a record of a soprano pipistrelle approximately 10 m southeast of the scheme extent. This is not a roost record.</p> <p>The toilet block which is due to be demolished was determined to have moderate suitability to support roosting bats. The sanitation building which is due for demolition could not be fully assessed for bat roosting potential, therefore bat potential is assumed.</p> <p>None of the trees in the woodland had roosting potential, however, the woodland provides suitable habitat for commuting and foraging bats. The street trees on Broad Street itself were all immature and did not have bat roosting potential.</p>	Local	Local - trees and buildings within and adjacent to the scheme extent may support bat populations of local importance. Due to the urban nature surrounding the site, bat populations on and adjacent to site are unlikely to be of higher importance.	Unknown	Low	<p>Intermediate negative</p> <p>As buildings with bat roosting potential are to be demolished, in the absence of mitigation there is the potential for a direct loss of bat roosts. Bats commuting and foraging within the woodland and along the river may be subject to disturbance impacts such as lighting, noise and vibration during the construction phase of the scheme.</p>	Slight adverse

Badger	The desk study returned no records for badgers within 500 m of the scheme. The deciduous woodland on site may support commuting and foraging badgers, or opportunities for badger sett building, however, the site visit revealed no evidence of badger within the woodland. Furthermore, there are no impacts anticipated to the deciduous woodland.	Local	Local - the deciduous woodland habitat on site may support local populations of badgers	Unknown	Low	Neutral  As a result of there only being a small area suitable for badgers on site, which is an area unaffected by the works, no impacts to badger are anticipated.	Neutral
Nesting birds	The trees in the deciduous woodland on site could support populations of nesting birds on site. Furthermore, the toilet block which is due for demolition was noted as having an old bird nest adjacent to the drainpipe.	Local	Local - the deciduous woodland habitat and buildings on site may support local nesting bird populations	Unknown	Low	Minor negative  Demolition of buildings on site may result in direct loss of nests, and loss of opportunities for nesting birds. No impacts are anticipated to trees in the deciduous woodland.	Slight adverse
Reptiles	The deciduous woodland on site may provide suitable habitat for basking, foraging, commuting and hibernating reptiles. Furthermore, the River Nene (Old Course) may provide opportunities for grass snakes. The desk study returned four recent records of reptiles within 500 m of the scheme, the closest of which is a common lizard approximately 100 m from the site extent.	Local	Local - the deciduous woodland habitat on site may support local populations of reptiles	Unknown	Low	Neutral  As a result of there only being a small area suitable for reptiles on site, an area which is unaffected by the works, no impacts to common species of reptile are anticipated.	Neutral
Otter	The River Nene (Old Course) may support populations of otters. The river banks within the survey area have heavily modified brick walls with little to no aquatic vegetation present and therefore do not provide suitable resting habitat for otter. The woodland adjacent to site has no understorey and therefore provides no suitable cover for resting otter. However, there is the opportunity for otters who may commute and forage along the river, and the banks of the river are more natural upstream and therefore could provide suitable habitat for otter resting.	Local	Otter are a European Protected Species and as such are of value at a European level. However, owing to the site location and the urban nature of the surroundings, otter have been evaluated as being of local importance.	Unknown	Medium	Minor negative  No in-channel or bank works are anticipated to the river, however, there is the possibility of pollution events which could harm commuting otter.	Slight adverse
Water vole	The River Nene (Old Course) may support populations of water vole. The river within the survey area has heavily modified brick walls with little to no aquatic vegetation present, therefore is not suitable for water vole burrowing or foraging. However, there is the opportunity for water vole who may commute along the river, and the banks of the river are more natural upstream and therefore could provide suitable habitat for water vole burrowing.	Local	Water voles are afforded legal protection under the Wildlife and Countryside Act 1981 (as amended). However, they are present across the local and wider environment and due to the urban nature of the site, water vole have been evaluated as being of local importance.	Unknown	Medium	Minor negative  No in-channel or bank works are anticipated to the river, however, there is the possibility of pollution events which could harm commuting water vole.	Slight adverse
River Nene Old Course (aquatic habitat)	The River Nene (Old Course) is an artificial watercourse which forms part of the Middle Level Water Body, which has an overall classification of "moderate". Its biological quality elements are classified as "moderate", with fish and invertebrates classified as "high" and macrophytes and phytobenthos classified as "moderate".  No in-channel or bank works to the River Nene (Old Course) are required as a result of the scheme. Therefore, there are no mechanisms for direct watercourse or riparian habitat loss or disturbance as a result of the scheme. However, works close to the river bank could result in pollution events. No significant increase in noise disturbance is anticipated due to the non-intrusive nature of the works, and the high levels of turbidity in the watercourse limits the potential for visual disturbance associated with workforce and plant movements.	Regional	Regional - The River Nene (Old Course) extends from Peterborough to Upwell, Norfolk. It provides habitat for local wildlife.	Unknown	Medium	Neutral	Neutral



Aquatic macrophytes	<p>The desk study returned no results for protected or priority aquatic macrophytes within 2 km of the site. It was noted during the survey that the depth and turbid nature of the watercourse is likely to limit the growth of submerged and marginal emergent macrophytes within the river channel.</p> <p>No in-channel or bank works to the River Nene (Old Course) are required. As such, there are no mechanisms for direct disturbance that could affect aquatic macrophytes. Works close to the river banks could cause pollution events which could limit the suitability of the channel to support aquatic macrophytes.</p>	Local	Local - The River Nene (Old Course) supports aquatic macrophytes of local importance	Unknown	Low	Neutral	Neutral
Aquatic macroinvertebrates	<p>The desk study returned no results for protected or priority macroinvertebrates within 2 km of the site. There is a nearby Environment Agency macroinvertebrate monitoring site 3.4 km downstream with a similar typology to the river course near to the study area. This monitoring site indicates poor habitat and/or water quality, with a macroinvertebrate assemblage which has a low sensitivity to reduced flows and indicative of a heavily sedimented channel bed.</p> <p>It is unlikely that aquatic macroinvertebrates are present at any great number within the river channel.</p>	Local	Local - The River Nene (Old Course) supports aquatic macroinvertebrates of local importance at most	Unknown	Low	Neutral	Neutral
Fish	<p>The desk study returned no records of protected or priority fish species within 2 km of the Site. One Environment Agency fish monitoring site is located on the River Nene (Old Course) approximately 2 km downstream of the Site. The fish assemblage is dominated by coarse fish species, with survey yielding records of roach (<i>Rutilus rutilus</i>), rudd (<i>Scardinius erythrophthalmus</i>), common bream (<i>Abramis brama</i>), pike (<i>Esox lucius</i>), perch (<i>Perca fluviatilis</i>), silver bream (<i>Abramis bjoerkna</i>) and tench (<i>Tinca tinca</i>).</p> <p>No in-channel or bank works to the River Nene (Old Course) are required as a result of the scheme. Therefore, there are no mechanisms for direct watercourse or riparian habitat loss or disturbance as a result of the scheme. However, works close to the river bank could result in pollution events. No significant increase in noise disturbance is anticipated due to the non-intrusive nature of the works, and the high levels of turbidity in the watercourse limits the potential for visual disturbance associated with workforce and plant movements.</p>	Local	Local - The River Nene (Old Course) supports fish populations of local importance	Unknown	Low	Neutral	Neutral

#### Reference Sources

Multi-Agency Geographic Information for the Countryside (MAGIC) website (<https://magic.defra.gov.uk/MagicMap.aspx>), information from Cambridgeshire and Peterborough Environmental Records Centre, Bing Maps (<https://www.bing.com/maps>), Google Earth (<https://earth.google.com/web/>), Woodland Trust Ancient Tree Inventory (<https://ati.woodlandtrust.org.uk/>), Ordnance Survey maps, Environment Agency Ecology and Fish Data Explorer website (<https://environment.data.gov.uk/ecology-fish>), Environment Agency Catchment Data Explorer website (<https://environment.data.gov.uk/catchment-planning>), Environment Agency Water Framework Directive classification data (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy), Environment Agency River Basin Management Plans, Environment Agency Main River Map, OS District Vector Map (<https://www.ordnancesurvey.co.uk/business-government/products/vectormap-district>).

#### Summary Assessment Score

Slight adverse

#### Qualitative Comments

The summary score of slight adverse is based on there being no mitigation in place for any of the areas or species identified in column B. Slight adverse impacts are anticipated to deciduous woodland, the River Nene (Old Course), bats, nesting birds, otter and water vole. It is thought that with mitigation as outlined within the preliminary ecological appraisal, impacts on ecological receptors will be minimised.

## TAG Water Environment Impacts Worksheet - Construction

Description of study area/ summary of potential impacts	Key environmental resource	Features	Quality	Possible Measures	Assessment data availability	Scale	Rarity	Substitutability	Importance	Magnitude	Significance	Resource assessment score with mitigation		
Study area: 1 km radial buffer from the works area (which consists of a 100m buffer on the General Arrangement)														
Potential Construction Impacts:														
<p>Potential for deterioration in water quality resulting from construction activities e.g. spillages of fuels and other contaminating liquids, accidental leaks of hazardous materials, mobilisation of contamination following disturbance of contaminated ground or groundwater.</p> <p>This impact can likely be mitigated by adopting a Construction Environmental Management Plan (CEMP) which will include mitigation measures associated with good site practice and the preparation of robust method statements (e.g. Pollution Prevention).</p> <p>At waterbody scale this impact would not be significant.</p>	River Nene (old course) (Ordinary Watercourse)	WFD reportable reach: Middle Level (GB205033000050)	Water Supply	Use of water supply (potable, industrial or agricultural)	Location and number of abstraction points	No abstraction licence information available at the time of reporting. Indicator of quality not used in assessment.								
					Volume of water abstracted									
					Use of water (potable most important)									
			Chemical water quality	Existing chemical classification/status and objective under the WFD.	Existing chemical classification: Fail (2019) Chemical objective: Good by 2063	Regional	Commonplace	Replaceable	Medium	Moderate Adverse	Low Significance	Neutral		
													Likelihood of a change in classification arising (+ve or -ve)	No information available to indicate direction of change.
			Transport and dilution of waste products	Presence of surface water discharge points	Location and number of discharge points Volume of effluent discharged Proportion of flow made up by effluent at different times of the year	No discharge consents information available at the time of reporting Indictor of quality and measures not used in assessment.								
			Biodiversity	Biological water quality	Existing ecological classification/status and objective under the WFD	Existing classification: Moderate (2019) Objective: Good by 2027	Regional	Commonplace	Replaceable	Medium	Moderate Adverse		Low Significance	
														Likelihood of a change in classification arising (+ve or -ve)
				Fisheries quality	EC Fishery designation (Salmonid, Cyprinid or undesignated)	Not considered in the water environment assessment, refer to Biodiversity assessment. Indicator of quality and measure not used in assessment.								
							Conservation value of river corridor	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting. Indicator of quality and measure not used in assessment.					
					Presence of designations (e.g. SSSI, NNR, LNR, SINC's)	Not considered in the water environment assessment, refer to Biodiversity assessment. Indicator of quality and measure not used in assessment.								
					Presence of protected species or BAP species	Presence of protected species or BAP species not considered in the water environment assessment, refer to Biodiversity assessment. Indicator of quality and measure not used in assessment.								
				Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment	Contribution to landscape character and quality not considered in the water environment assessment, refer to landscape assessment. Feature not used in assessment.							
			Cultural heritage	Presence of historic features associated with river	Results of historic environmental assessment	Presence of historic features associated with river not considered in the water environment assessment, refer to Culture Heritage assessment. Feature not used in assessment.								
					Presence of designations (e.g. SAMs, listed buildings)									
			Recreation	Riverside access	Presence of route and importance	Indicator of quality and measure not used in assessment								
					Use of the river for recreation	Presence of facilities and clubs for using the river environment	Indicator of quality and measure not used in assessment							
						Use for angling (number of clubs/membership)	Indicator of quality and measure not used in assessment							
Value to economy	Value of the uses of the river (e.g. commercial fishing, abstractions, discharges, navigation, leisure and riverside development land)	Value to local economy (e.g. employment, relative property prices, cost of alternatives, etc)	Indicator of quality and measure not used in assessment											
Conveyance of flows and material	Presence of watercourses	Number and size of watercourse	Indicator of quality and measure used in floodplain resource so as to not duplicate scoring.											
		Existing flood risk	Indicator of quality and measure used in floodplain resource so as to not duplicate scoring.											
<p>Potential increase in flood risk, both to the Scheme and surrounding land uses arising from: the storage of materials or temporary changes in topography and earthworks reducing floodplain capacity or impeding flood flow routes, an increase in temporary impermeable areas at site compounds increasing rainfall runoff and discharge of abstracted water (used in construction processes).</p> <p>This impact can likely be mitigated. Mitigation measures could include:</p> <ul style="list-style-type: none"><li>- Developing a drainage strategy to address the management of surface waters to ensure flood risk to the surrounding area is not increased.</li><li>- Developing Flood Management Plans to ensure the proposed construction site can be safely operated and will not be affected in the event of a flood, where floodplain working to be minimised as far as possible;</li><li>- Ensuring temporary land-take for construction include adequate areas of land set aside for robust flood control measures, for example sustainable drainage control;</li><li>- Ensuring temporary flood compensation areas are put in place in advance of any earthworks</li></ul>	River Nene (old course) ordinary watercourse floodplain	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period	Although the watercourse is not designated as Main River, there are areas of Flood Zones 2 and 3 adjacent to this watercourse. This indicates that the Flood Zones may be associated with the watercourse. Areas to the east of the study area (surrounding Gaul Road), and areas to the north west (majority of Creek road and surrounding roads) are within Flood Zones 2 and 3. Also, the southern area of the proposed Scheme passing over the River Nene (old course) sits within these Flood Zones.	Regional	Commonplace	Limited to substitution	Very High	Large Adverse	Very Highly Significant			
			Flood flow routes	Location / importance of flood flow routes	Unknown at the time of reporting. Indicator of quality not used in assessment.									
			Surface water flooding	Location of surface water flooding	There is currently low to high risk of surface water flooding throughout the study area. There is a small section at high risk of flooding from surface water within Broad Street close to the junction connecting to Dartford Road in the north side of the Scheme. The majority of the east side of Broad Street has a medium and low risk of flooding from surface water. The southern extent of the Scheme, connecting Broad Street to West End is at low risk of flooding. The majority of Dartford Road is shown to be at low to medium risk of flooding from surface water.	Regional	Commonplace	Limited to substitution	Very High	Large Adverse	Very Highly Significant			
			Biodiversity	Conservation value of river corridor	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting. Feature not used in assessment								

resulting in loss of floodplain.				Presence of designations (e.g. SSSI, NNR, LNR, SINC's)	Presence of designations is not considered under the floodplain resource. Feature not used in assessment.							
				Presence of protected species or BAP species	Presence of protected species or BAP species not considered in the water environment assessment, refer to Biodiversity assessment. Feature not used in assessment.							
				Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment	Contribution to landscape character and quality not considered in the water environment assessment, refer to landscape assessment. Feature not used in assessment.					
No impacts anticipated.  These watercourses are not located in the study area, however, it is assumed their floodplains are located in the study area. However, the floodplains are located on the periphery of the study area and therefore no impacts are anticipated.	Mortons Leam (Main River) floodplain  River Nene Tidal (Main River) floodplain  Tidal River (100 ft) (Main River) floodplain  Delph (Main River) floodplain	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period								
			Flood flow routes	Location / importance of flood flow routes								
			Surface water flooding	Location of surface water flooding								
		Biodiversity	Conservation value of river corridor	Results of River Habitat Survey								
				Presence of designations (e.g. SSSI, NNR, LNR, SINC's)								
				Presence of protected species or BAP species								
		Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment								
		Conveyance of flood flows	Flow routes	Location and importance of flow routes								
			Groundwater levels	Charges in levels and recharge								
Potential for deterioration in groundwater quality resulting from construction activities (particularly the installation of the underground attenuation tank) e.g. from spillages of fuels and other contaminating liquids, accidental leaks of hazardous materials, mobilisation of contamination following disturbance of contaminated ground or groundwater.  This impact can likely be mitigated by adopting a CEMP which will include mitigation measures associated with good site practice and the preparation of robust method statements (e.g. Pollution Prevention).  At waterbody scale this impact would not be significant.	Secondary (undifferentiated) Superficial Aquifer  WFD groundwater body: No WFD groundwater body present.	Water supply	Use for water supply (potable, industrial or agricultural)	Location and number of abstraction points	No abstraction licence information available at the time of reporting.  Indicator of quality not used in assessment.							
				Volume of water abstracted								
				Use of water (potable most important)								
			Groundwater vulnerability	Location and grade of source protection zone	There are no Source Protection Zones (SPZ) within the 1km boundary							
				Classification of aquifer vulnerability		Local	Rare	Limited to substitution	Low	Moderate Adverse	Insignificant	
				Classification/status and objective under WFD								
		Transport and dilution of waste products	Presence of discharge points	Location and number of discharge points	No discharge consents information available at the time of reporting.  Feature not used in assessment.							
				Location and number of discharge points								
		Value to the economy	Value of the uses of the groundwater (e.g. abstractions and discharges)	Value to local economy (e.g. employment, cost of alternatives, etc.)	No abstraction licence or discharge consent information available at the time of reporting.  Feature not used in assessment.							
		Biodiversity	Conservation value of areas fed by groundwater	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting.  Feature not used in assessment							
				Presence of designations (e.g. SSSI, NNR, LNR, SINC's)	Feature not used in assessment							
				Presence of protected species or BAP species	Presence of protected species or BAP species not considered in the water environment assessment, refer to Biodiversity assessment. Feature not used in assessment.							
				Presence of Groundwater Dependant Terrestrial Ecosystems under the WFD	Unknown at the time of reporting. Feature not used in assessment.							
		Conveyance of flood flows	Flow routes	Location and importance of flow routes	Unknown at the time of reporting. Feature not used in assessment.							
			Groundwater levels	Charges in levels and recharge								
		Water supply	Use for water supply (potable, industrial or agricultural)	Location and number of abstraction points	No abstraction licence information available at the time of reporting.  Indicator of quality not used in assessment.							
				Volume of water abstracted								
				Use of water (potable most important)								
		Groundwater vulnerability	Location and grade of source protection zone	There are no Source Protection Zones (SPZ) within the 1km boundary								
				Classification of aquifer vulnerability	The majority of the Scheme has a groundwater vulnerability of-medium-low with the southern extent of the Scheme being unproductive. The northern section of the study area has predominantly a low groundwater vulnerability. The southern section of the study area has predominantly a medium-low groundwater vulnerability.	Local	Rare	Limited to substitution	High	Moderate Adverse	Significant	
				Classification/status and objective under WFD	No WFD groundwater body within the study area.							
		Transport and dilution of waste products	Presence of discharge points	Location and number of discharge points	No discharge consents information available at the time of reporting.  Feature not used in assessment.							
				Location and number of discharge points								
		Value to the economy	Value of the uses of the groundwater (e.g. abstractions and discharges)	Value to local economy (e.g. employment, cost of alternatives, etc.)	No abstraction licence or discharge consent information available at the time of reporting. Feature not used in assessment.							
		Biodiversity	Conservation value of areas fed by groundwater	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting.  Feature not used in assessment							
				Presence of designations (e.g. SSSI, NNR, LNR, SINC's)	Feature not used in assessment							



## TAG Water Environment Impacts Worksheet - Operational

Description of study area/ summary of potential impacts	Key environmental resource	Features	Quality	Possible Measures	Assessment data availability	Scale	Rarity	Substitutability	Importance	Magnitude	Significance	Resource assessment score with mitigation
<b>Study area: 1 km radial buffer from the works area (which consists of a 100m buffer on the General Arrangement)</b>												
<b>Potential Operational Impacts:</b>												
<p>No impacts anticipated.</p> <p>As there will be no increase in impermeable area it is anticipated that there will be no impacts to surface water quality.</p> <p>The extent of the Scheme extends onto the bridge which crosses the River Nene. However, the works on the bridge only include new road markings. Therefore no impacts to hydromorphology are anticipated.</p> <p>Access steps down to the River Nene (Old Course) tow path will be replaced. As these steps are on the embankment no impacts to hydromorphology are anticipated.</p>	<p>River Nene (Old Course) (Ordinary Watercourse)</p> <p>WFD reportable reach: Middle Level (GB205033000050)</p>	Water Supply	Use of water supply (potable, industrial or agricultural)	Location and number of abstraction points								
				Volume of water abstracted								
				Use of water (potable most important)								
		Chemical water quality		Existing chemical classification/status and objective under the WFD.								
				Likelihood of a change in classification arising (+ve or -ve)								
		Transport and dilution of waste products	Presence of surface water discharge points	Location and number of discharge points								
				Volume of effluent discharged								
			Contribution of discharge to total river flow	Proportion of flow made up by effluent at different times of the year								
		Biodiversity	Biological water quality	Existing ecological classification/status and objective under the WFD								
				Likelihood of a change in classification arising (+ve or -ve)								
			Fisheries quality	EC Fishery designation (Salmonid, Cyprinid or undesignated)								
			Conservation value of river corridor	Results of River Habitat Survey								
				Presence of designations (e.g. SSSI, NNR, LNR, SINCs)								
				Presence of protected species or BAP species								
		Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment								
		Cultural heritage	Presence of historic features associated with river	Results of historic environmental assessment								
				Presence of designations (e.g. SAMs, listed buildings)								
		Recreation	Riverside access	Presence of route and importance								
			Use of the river for recreation	Presence of facilities and clubs for using the river environment								
				Use for angling (number of clubs/membership)								
		Value to economy	Value of the uses of the river (e.g. commercial fishing, abstractions, discharges, navigation, leisure and riverside development land)	Value to local economy (e.g. employment, relative property prices, cost of alternatives, etc)								
		Conveyance of flows and material	Presence of watercourses	Number and size of watercourse								
				Existing flood risk								
<p>No impacts anticipated.</p> <p>As there will be no increase in impermeable area it is anticipated that there will be no impacts to flood risk.</p> <p>Although the Scheme footprint extends into flood zone 2 and 3, works in this area will only be related to road markings. Therefore, no encroachment is expected into flood zone 2 or 3.</p>	River Nene (old course) ordinary watercourse floodplain	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period								
			Flood flow routes	Location / importance of flood flow routes								
			Surface water flooding	Location of surface water flooding								
		Biodiversity	Conservation value of river corridor	Results of River Habitat Survey								
				Presence of designations (e.g. SSSI, NNR, LNR, SINCs)								
				Presence of protected species or BAP species								

			Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment										
No impacts anticipated.	Mortons Leam (Main River) floodplain	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period											
Although these watercourses are not within the study area, it is assumed there floodplains are within the study area.	River Nene Tidal (Main River) floodplain			Flood flow routes	Location / importance of flood flow routes										
				Surface water flooding	Location of surface water flooding										
			Biodiversity	Conservation value of river corridor	Results of River Habitat Survey										
	Presence of designations (e.g. SSSI, NNR, LNR, SINC)s														
	Presence of protected species or BAP species														
	Aesthetics		Contribution to landscape character and quality	Results of river landscape assessment											
	Conveyance of flood flows		Flow routes	Location and importance of flow routes											
Groundwater levels		Charges in levels and recharge													
The Scheme includes the installation of an underground attenuation tank which could potentially cause a pathway for pollutants to enter the groundwater and impact groundwater levels and flows.	Secondary (undifferentiated) Superficial Aquifer  WFD groundwater body: No WFD groundwater body present.	Water supply	Use for water supply (potable, industrial or agricultural)	Location and number of abstraction points	No abstraction licence information available at the time of reporting. Indicator of quality not used in assessment.										
				Volume of water abstracted											
				Use of water (potable most important)											
			Groundwater vulnerability	Location and grade of source protection zone	There are no Source Protection Zones (SPZ) within the 1km boundary										
				Classification of aquifer vulnerability	The majority of the Scheme has a groundwater vulnerability of-medium-low with the southern extent of the Scheme being unproductive. The northern section of the study area has predominantly a low groundwater vulnerability. The southern section of the study area has predominantly a medium-low groundwater vulnerability.	Local	Rare	Limited to substitution	Low	Slight adverse	Insignificant				
				Classification/status and objective under WFD	No WFD groundwater body within the study area.										
		Transport and dilution of waste products	Presence of discharge points	Location and number of discharge points	No discharge consents information available at the time of reporting. Feature not used in assessment.										
				Location and number of discharge points											
		Value to the economy	Value of the uses of the groundwater (e.g. abstractions and discharges)	Value to local economy (e.g. employment, cost of alternatives, etc.)	No abstraction licence or discharge consent information available at the time of reporting. Feature not used in assessment.										
		Biodiversity	Conservation value of areas fed by groundwater	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting. Feature not used in assessment										
				Presence of designations (e.g. SSSI, NNR, LNR, SINC)s	Feature not used in assessment										
				Presence of protected species or BAP species	Presence of protected species or BAP species not considered in the water environment assessment, refer to Biodiversity assessment. Feature not used in assessment.										
				Presence of Groundwater Dependant Terrestrial Ecosystems under the WFD	Unknown at the time of reporting. Feature not used in assessment.										
		Conveyance of flood flows	Flow routes	Location and importance of flow routes	Unknown at the time of reporting. Feature not used in assessment.										
						Groundwater levels	Charges in levels and recharge								
		The Scheme includes the installation of an underground attenuation tank which could potentially cause a pathway for pollutants to enter the groundwater and impact groundwater levels and flows.	Secondary A Superficial Aquifer  WFD groundwater body: No WFD groundwater body present.	Water supply	Use for water supply (potable, industrial or agricultural)	Location and number of abstraction points	No abstraction licence information available at the time of reporting. Indicator of quality not used in assessment.								
Volume of water abstracted															
Use of water (potable most important)															
Groundwater vulnerability	Location and grade of source protection zone				There are no Source Protection Zones (SPZ) within the 1km boundary										

Slight adverse

Slight adverse

				Classification of aquifer vulnerability	The majority of the Scheme has a groundwater vulnerability of-medium-low with the southern extent of the Scheme being unproductive. The northern section of the study area has predominantly a low groundwater vulnerability. The southern section of the study area has predominantly a medium-low groundwater vulnerability.	Local	Rare	Limited to substitution	High	Slight Adverse	Significant	
				Classification/status and objective under WFD	No WFD groundwater body within the study area.							
	Transport and dilution of waste products	Presence of discharge points	Location and number of discharge points	No discharge consents information available at the time of reporting.								
			Location and number of discharge points	Feature not used in assessment.								
	Value to the economy	Value of the uses of the groundwater (e.g. abstractions and discharges)	Value to local economy (e.g. employment, cost of alternatives, etc.)	No abstraction licence or discharge consent information available at the time of reporting.								
	Biodiversity	Conservation value of areas fed by groundwater	Results of River Habitat Survey	River Habitat Surveys have not been undertaken at the time of reporting.								
			Presence of designations (e.g. SSSI, NNR, LNR, SINC)s	Feature not used in assessment								
			Presence of protected species or BAP species	Presence of protected species or BAP species not considered in the water environment assessment, refer to Biodiversity assessment.								
			Presence of Groundwater Dependant Terrestrial Ecosystems under the WFD	Feature not used in assessment.								
	Conveyance of flood flows	Flow routes	Location and importance of flow routes	Unknown at the time of reporting.								
		Groundwater levels	Charges in levels and recharge	Feature not used in assessment.								

Slight adverse

<b>Reference Sources</b> Environmental datasets held on Defra's MAGIC website <a href="https://magic.defra.gov.uk/home.htm">https://magic.defra.gov.uk/home.htm</a> Environment Agency - Catchment Data Explorer <a href="http://environment.data.gov.uk/catchment-planning/">http://environment.data.gov.uk/catchment-planning/</a> Flood Map for Planning <a href="https://flood-map-for-planning.service.gov.uk/">https://flood-map-for-planning.service.gov.uk/</a> Check your long term flood risk (surface water flooding extent) <a href="https://check-long-term-flood-risk.service.gov.uk/map">https://check-long-term-flood-risk.service.gov.uk/map</a> Design drawings - CCCFHSF-ATK-HDG-XX_ZZ-DR-CH-001001_C01.pdf , CCCFHSF-ATK-HDG-XX_ZZ-DR-CH-001002_C01.pdf , CCCFHSF-ATK-HDG-XX-DE-CD-001002_C01.pdf
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Summary Assessment Score (post mitigation)

Slight adverse
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<b>Qualitative Comments</b> <p>The Scheme will not result in an increase in impermeable road area, therefore no water quality impacts are anticipated. Also because there is no increase in impermeable area there will be no increase in flood risk which could be caused by an increase in surface water runoff. Although the Scheme footprint extends into Flood Zone 2 and 3, works in this area will only be related to road markings. Therefore, no encroachment is expected into flood zone 2 or 3. Additional attenuation will be incorporated into the Scheme which will be a beneficial impact to flood risk.</p> <p>The Scheme does not include any modifications to the bridge which crosses the River Nene (Old Course). Additionally, the works to the steps leading down to the tow path adjacent to the watercourse will not interact with the watercourse. Therefore no impacts to hydromorphology are anticipated.</p> <p>There is no bedrock aquifer underlying the study area. Both Secondary (A) Superficial aquifer and Secondary (undifferentiated) Superficial Aquifer underlay the study area. There is the potential for the installation of the attenuation tank to interact with groundwater, potentially impacting groundwater quality, levels and flows. At this stage, it is unknown if mitigation measures are required. Hence, these impacts should be further investigated and if necessary mitigation incorporated into the design.</p> <p>As there is a potential impact which is significant the overall assessment score for the operation of the Scheme is <b>Slight Adverse</b>. This has been determined with reference to sections 5.3.15 – 5.3.20 and 10.2 of TAG UNIT A3 - Environmental Impact Appraisal, May 2019, Department for Transport, Transport Analysis Guidance, as summarised below:</p> <ul style="list-style-type: none"> <li>• Most adverse category. The scheme as a whole is assessed according to the most adverse assessment of the features affected i.e. if a single feature scores 'large adverse' and this is the highest individual assessment score for all features then the overall assessment score should be 'large adverse'.</li> </ul> <p>Further assessment is required to determine any potential impacts to groundwater flow, level and quality and to determine if there are any requirements for additional mitigation.</p>
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## TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		No Change	
	Facilities	There will be a new pedestrian crossing provided as part of the Broad Street scheme, which will reduce pedestrian severance in the town centre		
	Information		No Change	
	Environment	All schemes will provide improved surfacing and reduced congestion in March town centre compared to without scheme		
Travellers' Views	-	Broad Street scheme location will be less congested compared to without scheme and will improve travellers' views of the surrounding townscape		
Traveller Stress	Frustration	Reduced frustration expected as congestion is reduced compared to without scheme		
	Fear of potential accidents	It has been estimated that there will be a reduction in accidents as a result of the schemes and consequently the provision of safer infrastructure <u>should reduce the fear of accidents.</u>		
	Route uncertainty	Improvements in journey times in the town centre compared to without scheme will increase certainty in the journey time reliability of bus services and the ability to access the town centre within a reasonable time.		

### Reference Source

### Summary Assessment Score

Large Beneficial.

### Qualitative Comments

Two-Way 24-hour AADT flow of 22,612 PCUs on Broad Street in 2031 Do Something scenario

## TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		No Change	
	Facilities	There will be a new signalised junction provided, which will reduce congestion along Twenty Foot Road and improve safety at the junction		
	Information		No Change	
	Environment	Improved surfacing and reduced congestion compared to without scheme		
Travellers' Views	-		Twenty Foot Road will be less congested compared to without scheme but A141 will experience increased delay with the introduction of additional signals, potentially blocking views of surrounding countryside	
Traveller Stress	Frustration	Reduced frustration at Twenty Foot Road expected as congestion is reduced compared to without scheme. Drivers waiting at this minor arm will no longer have to wait to find a gap in the A141 traffic		
	Fear of potential accidents	It has been estimated that there will be a reduction in accidents as a result of the schemes and consequently the provision of safer infrastructure should reduce the fear of accidents.		
	Route uncertainty		No Change	

### Reference Source

### Summary Assessment Score

Large Beneficial.

### Qualitative Comments

Two-Way 24-hour AADT flow of 21,132 PCUs on A141 in 2031 Do Something scenario (FBC 3)

**TAG Biodiversity Impacts Worksheet**

		Step 2		Step 3	Step 4		Step 5
Area	Description of feature/ attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to land)	Biodiversity and earth heritage value	Magnitude of impact	Assessment Score
Broadleaved woodland (Priority habitat)	There are three parcels of priority deciduous woodland identified through the desk study, all located 270 m south of the scheme extent.	Local	Local - considered to be of importance to biodiversity conservation, but broadleaved woodland habitats are common in the wider landscape	Unknown	Low	Intermediate negative	Slight adverse
	In addition, the walkover survey identified one area of broadleaved woodland located to the east of Wilsbich Road at the junction with Hootmoor Avenue.						
Open mosaic habitat (Priority habitat)	The broadleaved woodland habitat on site consisted of species including silver birch, sycamore, white poplar, field maple, elder, ash, hawthorn, apple sp., and dogrose.	Local	Local - Considered to be of importance to biodiversity conservation, however this is a common habitat in the wider landscape.	Unknown	Low	Neutral	Neutral
	Some of the broadleaved woodland habitat on site may be lost as a result of site clearance to facilitate the scheme. The parcels of priority woodland located 270 m south are unlikely to be affected by the scheme proposals.						
Watercourses (ditches)	The desk study identified one area of open mosaic habitat, located 270 m south of the scheme extent. This habitat parcel is separated from the scheme extent by roads, residential housing, and commercial properties.	Local	Local - Provides habitat to local aquatic species, as well as water vole and other	Unknown	Low	Intermediate negative	Slight adverse
	No direct impacts are anticipated to this priority habitat as a result of the scheme, and no indirect impacts are anticipated such as pollution events, due to the distance between the scheme and the open mosaic habitat, and the fact they are separated by roads and residential and commercial properties with no hydrological link.						
Ponds (priority habitat)	The desk study and walkover survey identified three field drains within the scheme boundary and within 50 m of the scheme extent. Two field drains are within the scheme boundary.	Local	Local - provides habitat to local populations of amphibians and other aquatic species	Unknown	Low	Intermediate negative	Slight adverse
	The drains may be subject to indirect impacts such as pollution events during the construction phase of the scheme. There is no loss of ditches as a result of the scheme.						
Badger	The drains had flowing water or were completely dry at the time of survey, therefore there is limited potential for amphibians including great crested newts.	Local	Local - provides habitat to local populations of amphibians and other aquatic species	Unknown	Low	Intermediate negative	Slight adverse
	There are two ponds within 50 m of the scheme extent, the closest is approximately 8 m east of the scheme.						
Bats	The ponds are not expected to be lost as a result of the scheme, however may be subject to indirect impacts such as pollution events during the construction phase of the scheme.	Local	Local - badgers are common in the landscape, however the scheme area could support locally important populations	Unknown	Low	Minor negative	Slight adverse
	The desk study identified no records of badger within 500 m of the scheme extent. A mammal path was identified leading into dense scrub on site which may be a badger path. The grass verges, woodland, and dense scrub provide opportunities for foraging and commuting badger, and sett building.						
Bats	Vegetation clearance could potentially result in loss of foraging and commuting habitat, or could disturb badger setts if present. Any excavation work could result in loss or disturbance of badger setts. However, due to the small scheme area, the impacts are likely to be localised.	Local	Local - bats are common in the landscape with common species present, however, the scheme area could support locally important populations	Unknown	Low	Intermediate negative	Slight adverse
	Desk study records indicate that bats are present within the surrounding environment. Records comprise of brown long-eared bat, common pipistrelle, Daubenton's, other Myotis sp., noctule, soprano pipistrelle and other unidentified bats.						
Other	The trees and buildings close to the scheme extent could provide opportunities for roosting bats. Furthermore, the trees, watercourses, and scrub could provide commuting and foraging habitat for bats.	Local	Local - the drains on site may provide habitat for local populations of other	Unknown	Low	Minor negative	Slight adverse
	Vegetation clearance could result in loss of potential roosting, foraging, and commuting habitat for bats.						
Water vole	The desk study provided three recent records of other within 500 m from the site, associated with the River Nene old course. The closest record is 480 m from the scheme, separated by roads and buildings. The River Nene is 400 m south of the scheme at its closest point.	Local	Local - the habitats on site may provide habitat for local populations of priority mammals	Unknown	Low	Minor negative	Slight adverse
	Three ditches were identified during the field survey and desk study, which may provide suitable habitat for otters. One ditch which crosses underneath Wilsbich Road is connected hydrologically to the River Nene.						
Priority mammals	No direct impact is anticipated to the drains, however they could be subject to indirect impacts such as pollution events during the construction phase of the scheme, thereby reducing the quality of potential other habitat.	Local	Local - the habitats on site may provide habitat for local populations of priority mammals	Unknown	Low	Minor negative	Slight adverse
	One recent record of water vole was provided by the desk study, associated with the River Nene old course. This record is located 430 m south of the scheme. There are three ditches within or adjacent to the scheme extent which could potentially support water voles.						
Breeding and wintering birds	The drains on site which may support water vole populations may be subject to indirect disturbance impacts such as pollution events during the construction phase of the scheme.	Local	Local - local populations of breeding and wintering birds may use the habitats provided by the scheme area	Unknown	Low	Minor negative	Slight adverse
	The grassland, line of trees, scrub, woodland, and surrounding arable land provides suitable habitat for other priority mammal species such as brown hare and hedgehog.						
Reptiles	Vegetation clearance on site may result in impacts to priority mammals foraging or commuting within the area.	Local	Local - the grassland, scrub, woodland and drain habitats on and adjacent to site may support common species of reptiles in low numbers	Unknown	Low	Minor negative	Slight adverse
	Grassland, woodland, scrub, and trees within and adjacent to site provide suitable nesting habitat for nesting birds, and wintering birds may forage in the surrounding arable land.						
Amphibians	Vegetation clearance on site may result in loss or disturbance of breeding and wintering bird habitat. However, the vegetation loss associated with the scheme is small in area and therefore unlikely to affect local populations.	Local	Local - the pond habitats on site may support populations of amphibians, and the scrub and woodland habitat provides suitable terrestrial habitat	Unknown	Low	Minor negative	Slight adverse
	The field survey identified areas of grassland, woodland, and dense scrub within and adjacent to site which could provide suitable foraging, basking, sheltering and hibernation habitat for all five common species of newt (common pond, grass snail, adder, and slow worm). Grass snakes may be present close to the ditches.						
	Vegetation clearance on site may result in loss or disturbance of small areas of foraging and hibernation habitat for common reedbed scorpions.	Local		Unknown	Low	Minor negative	Slight adverse
	There are approximately 50 field drains and two ponds located within 500 m of the Proposed Scheme. There are two ponds located within 50 m of the scheme which could support populations of amphibians including great crested newts.						
	The grassland, woodland and scrub habitat identified in the survey area may provide suitable foraging and hibernation habitat for populations of amphibian species. Three drains are within the footprint of the scheme however these were either dry or flowing. It is not anticipated that any drains will be directly impacted as a result of the scheme.						
	There is no loss of pond habitat anticipated as a result of the scheme, however, vegetation clearance reduces the amount of terrestrial habitat available for amphibians. There is also potential for damage to breeding ponds through pollution events during the construction phase.						

<b>Reference Sources</b> <small>                     Biot-Agency Geographic Information for the Countryside (BAGIC) website (<a href="https://mapi.dahlg.gov.uk/MapMap.aspx">https://mapi.dahlg.gov.uk/MapMap.aspx</a>), information from Cambridgeshire and Peterborough Environmental Records Centre, Bing Maps (<a href="https://www.bing.com/maps">https://www.bing.com/maps</a>), Google Earth (<a href="https://earth.google.com/web/">https://earth.google.com/web/</a>), Woodland Trust Ancient Tree Inventory (<a href="https://at.i.woodlandtrust.org.uk/">https://at.i.woodlandtrust.org.uk/</a>), Ordnance Survey maps, Extended UKHabit habitat survey                 </small>	
<b>Summary Assessment Score</b> Slight adverse	
<b>Qualitative Comments</b>	

### TAG Historic Environment Impacts Worksheet

Step 2		Step 3			Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	The Historic environment within a 500m study area includes one Grade II listed church approximately 85 m north of the scheme and, within its setting, the old rectory (undesigned asset). Undesigned below ground remains include a Roman road (to the north) and sites containing evidence of prehistoric settlement activity.	The historic environment matters on a local to regional level. Evidence of local early Iron Age settlement is of regional importance.	The known assets are of low to medium significance.	The forms represented within the historic environment are common, with the exception of the early Iron Age site north of Hostmoor Avenue, which is regionally uncommon.	The area of the Scheme is within a varied landscape. There is a likely to be very limited impacts to archaeological remains. The Scheme may have adverse impacts upon non-designated assets, but this cannot be quantified at this point. Due to nature of the Scheme is it not expected that the listed buildings will experience impact or a change in setting.
Survival	Good to Poor. The historic landscape as a whole has been degraded through urban development around March and up to 1m of made ground exists through a lot of the red line area. The state of survival of the non-designated archaeological remains is not currently known - below ground remains within the red line area are not known. It is advised that this is assessed at further assessment through consultation with the Local Planning Authority Archaeologist.	Generally, the survival of non-designated heritage assets matters on a local to regional scale.	The survival of the non-designated heritage assets is of low to medium significance and contributes to an understanding of settlement of the landscape through time.	The survival of below ground remains within the red line area is unknown. The survival of the surrounding historic environment in general is common.	
Condition	It is beyond the remit of this exercise to evaluate the condition of individual heritage assets, the condition of the historic environment as a whole is evaluated in the 'survival' and 'form' sections.	The condition of non-designated heritage assets mainly matters on a local to regional scale.	Overall condition of the cultural heritage landscape is of low to moderate significance.	The condition of below ground remains within the red line area is unknown. The condition of the surrounding historic environment in general has not been assessed but is expected to be common.	
Complexity	The known historic resource largely comprises evidence of settlement, such as pits, houses, and elements of material culture.	The complexity of the historic environment matters on a local level	the complexity of the historic environment is of low significance.	The complexity of the historic environment is common.	
Context	The setting consists of Wesbech Road, the surrounding fields to the west of the scheme, and modern developments to the east and south. The church and rectory retain the boundaries as shown on 19th century mapping.	The setting matters on a local to regional level	The significance of the context is low to medium	the rarity of the context is common	

Period	The historic environment consists of elements dating from the Bronze Age through to Roman period, with a 19th century church. The setting is overwhelmingly modern.	local to regional	low to medium	common	
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<b>Reference Sources</b>
The National Heritage List for England. Only publically available local authority information relating to conservation areas and non-designated heritage assets, obtained from Heritage Gateway, was utilised.

<b>Step 5 - Summary Assessment Score</b>
The overall effect on the historic environment resource is considered to be slight adverse.

<b>Qualitative Comments</b>
As the Scheme will predominantly entail widening and alterations to the exisiting road, it is expected that impacts will largely be to made ground. No sustantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for as yet unknown archaeology.







TAG Landscape Impacts Worksheet

Features	Step 2	Step 3				Step 4
	Description	Scale it matters	Rarity	Importance	Substitutability	Impact
Pattern	The site sits on the north-west edge of the built up area of March. Just to the north of the River Nene. The area to the west is low lying fen land, criss crossed by drainage ditches separating large arable fields. There is a railway line which the A141 crosses over on embankment and along the Pense Hill there is ribbon development of light industrial and commercial buildings.	This pattern of landscape is typical of this part of the country so is likely to matter at a local level.	The type of pattern found here is commonplace and the proposed development would have little effect on it	The landscape pattern here, particularly to the west is distinctive but is not recognised as important.	The landscape pattern here is commonplace and easily substituted.	The proposed works are minor alterations to the existing road layout and would have negligible impact on pattern
Tranquillity	The A141 is a major road taking traffic into and out of March and as such is not tranquil for most of the time. This lack of tranquillity is exacerbated by the development along the A141 and the rail line which it crosses over. To the west in the arable land there is a greater degree of tranquillity which increases with distance from the A141.	There is not a great deal of tranquillity along the A141 and is important at a local scale only.	The A141 is not tranquil, and this is quite common in this area.	As tranquillity is low this is not important to maintain.	This level of tranquillity is easily substituted.	The changes to the road layout are modest and would not affect the tranquillity of the area
Cultural	The landscape to the west of the A141 is a very traditional one of arable fields separated by a complex system of drainage channels which form part of a wider network of water level controls in East Anglia. Just to the north of the site there is the line of a roman road which crosses the A141 indicating historic use of this area. Along the A141 itself however there is a mix of undistinguished 20th and 21st century commercial and housing development with little cultural value.	The cultural aspects of the area are important at a local scale only.	There is little in the way of cultural associations with the A141, it being a relatively new and upgraded route so it's cultural associations are not rare.	The cultural aspects of the parts affected by the works are not important.	Cultural aspects are easily substituted.	The proposals would not affect the cultural aspects of the landscape
Landcover	To the west of the A141 the landcover comprises low lying arable fields with crops of different types and very little in the way of trees or woodland. There is some domestic scale vegetation and small incidental blocks of woodland and individual trees along the A141 but again, this does not form a significant element of the landscape.	The landcover along the A141 is important at a local scale only	The type of landcover found here is not rare.	The landcover is important locally.	The landcover could be substituted quite easily though it would take many years to develop to the same size.	There would be very minor losses of vegetation principally grass and some shrubs so the landcover impact is negligible
Summary of character	The A 141 is a relatively new section of road and is characterised by domestic scale ribbon development for much of the length being studied. It lies on the edge of a large area of agricultural land to the west and there are some fine open views across the landscape from it. The vegetation is patchy along its length with some patches of woodland and individual mature trees adjacent to the road.					The proposals are very minor in scale and would have a neutral effect on the landscape overall.

Reference Sources
Natural England NCA Profile: 46. The Fens (NE424)

Step 5 - Summary Assessment Score
Neutral

Qualitative Comments
The proposed scheme has a negligible effect on the landscape and can be accommodated well I this location.

[illegible]



## TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		No Change	
	Facilities	There will be a new all movement signalised junction provided at the Hostmoor Avenue junction, which will remove the large number of U-turners at Peas Hill Roundabout and reduce congestion		
	Information	Drivers will be able to turn right out of Hostmoor Avenue and signage will be amended accordingly		
	Environment	Improved surfacing and reduced congestion compared to without scheme		
Travellers' Views	-	Peas Hill Roundabout and Hostmoor junction will be less congested compared to without scheme and reduce the potential for views of surrounding countryside to be blocked by queueing vehicles		
Traveller Stress	Frustration	Reduced frustration at both Peas Hill Roundabout and Hostmoor junction expected because drivers from Hostmoor Avenue will no longer be required to travel to Peas Hill Roundabout and do a U-turn to travel north.		
	Fear of potential accidents	It has been estimated that there will be a reduction in accidents as a result of the schemes and consequently the provision of safer infrastructure should reduce the fear of accidents.		
	Route uncertainty	Drivers from Hostmoor Avenue will have greater route certainty for travelling north along the A141		

### Reference Source

### Summary Assessment Score

Large Beneficial

### Qualitative Comments

Two-Way 24-hour AADT flow of 26,405 PCUs on A141 between Hostmoor Avenue junction and Peas Hill Roundabout in 2031 Do Something scenario (FBC 3

TAG Biodiversity Impacts Worksheet

Step 2		Step 3				Step 4	Step 5
Area	Description of feature/ attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment Score
Traditional Orchard (Priority Habitat)	<p>There is one parcel of priority traditional orchard habitat located approximately 480 m northwest of the scheme extent.</p> <p>This habitat parcel is separated from the scheme extent by roads, and residential and commercial properties. There is no hydrological link between the scheme and the parcel of traditional orchard.</p>	Regional	Priority Habitats are of regional importance with potential for substitution in some instances	Unknown	Medium	Neutral Due to the distance between the scheme extent and the traditional orchard, and the fact there is no hydrological connection between the scheme and the traditional orchard, no direct or indirect impacts are anticipated.	Neutral
River Nene Old Course (River, Priority Habitat)	<p>The River Nene Old Course runs in a west to east direction approximately 490 m north of the scheme extent.</p> <p>The river is separated from the scheme extent by roads, and residential and commercial properties. There is no hydrological link between the river and the scheme extent.</p>	Regional	Priority Habitats are of regional importance with potential for substitution in some instances	Unknown	Medium	Neutral Due to the distance between the scheme extent and the river, and the fact there is no hydrological connection, no direct or indirect impacts are anticipated.	Neutral
Other ditches (Priority Habitat)	<p>The desk study identified three drains within 500 m of the scheme extent, the closest of which is approximately 350 m southwest of the scheme extent.</p> <p>The drains are not directly hydrologically connected to the scheme, and the drains and the scheme extent are separated by roads, and commercial and residential properties.</p>	Regional	Priority Habitats are of regionally important sites with potential for substitution	Unknown	Medium	Neutral Due to the distance and lack of hydrological connection between the drains and the scheme extent, no direct or indirect impacts are anticipated.	Neutral
Bats	<p>A review of Google Streetview shows that the scheme extent is surrounded by buildings which may provide roosting opportunities for bat species. There are some immature trees within front gardens of residential properties, however, these appear too small to support roosting bats. There are some hedgerows at the front of residential properties, however, there is no continuity for foraging or commuting bats. Street lighting on both roads of the junction reduces the quality of the habitat for bats.</p> <p>A search on MAGIC for recently granted European Protected Species (EPS) licences for bats within 2 km of the scheme extent returned no results.</p>	Local	Local - The buildings immediately adjacent to site could support bat roosts which are locally important. No impacts to these buildings are anticipated.	Unknown	Low	Neutral There is no vegetation clearance anticipated as a result of the scheme, therefore there is no direct impact anticipated to bats. The works are restricted to the existing road carriageway which are already live roads. Therefore, no additional disturbance is anticipated at the construction or operation phases of the scheme.	Neutral
Nesting birds	Trees and bushes adjacent to the scheme extent may provide opportunities for nesting birds.	Local	Local - trees, hedgerows, and buildings on site could provide habitat for locally important populations of nesting birds	Unknown	Low	Neutral No vegetation clearance is anticipated, and the works are entirely confined to the existing carriageway, therefore no direct or indirect disturbance impacts are anticipated for nesting birds.	Neutral
Amphibians	<p>A search on MAGIC for recently granted EPS licence applications for great crested newts within 500 m of the scheme extent returned no results.</p> <p>The three drains within 500 m of the proposed scheme may support populations of breeding amphibians. However, due to the distance between the scheme extent and the drains, and the lack of both hydrological and vegetation connection between the scheme extent and the drains, it is considered highly unlikely that amphibians will travel from the drains to the scheme extent.</p>	Local	Local - Nearby drains could support breeding amphibian species	Unknown	Low	Neutral The hardstanding habitat on site does not provide suitable terrestrial habitat for amphibians and there are not waterbodies with connectivity to the site. Therefore, no direct or indirect impacts are anticipated for amphiibians.	Neutral

Reference Sources

Multi-Agency Geographic Information for the Countryside (MAGIC) website ( <a href="https://magic.defra.gov.uk/MagicMap.aspx">https://magic.defra.gov.uk/MagicMap.aspx</a> ), Bing Maps ( <a href="https://www.bing.com/maps">https://www.bing.com/maps</a> ), Google Earth ( <a href="https://earth.google.com/web/">https://earth.google.com/web/</a> ), Woodland Trust Ancient Tree Inventory ( <a href="https://ati.woodlandtrust.org.uk/">https://ati.woodlandtrust.org.uk/</a> ), Ordnance Survey maps.
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Summary Assessment Score

Neutral
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Qualitative Comments

The summary score of neutral is based on there being no mitigation in place for any of the areas or species identified in column B. This is because works are confined to the existing hardstanding road carriageway, with no vegetation clearance or disturbance to adjacent habitats anticipated.
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TAG Historic Environment Impacts Worksheet

Step 2		Step 3			Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	This assessment considers the Site and a Study Area of 250m. The Historic environment within a 250m study area comprises 6 Grade II listed buildings and one Grade II* listed building. The red line area falls into the southernmost extent of the March Conservation Area. There is a scheduled monument within 500m of the Site. Undesignated assets have not been assessed as part of this exercise but online sources show none beyond excavations of post medieval building remains in plots adjacent to existing housing. As yet unknown remains cannot be assessed but the Conservation Area Appraisal shows high archaeological potential given the peat layers and evidence of prehistoric occupation in the wider area. The historic landscape consists of 18th-20th century housing.	The historic environment matters on a local level with the exception of the Grade II* listed building, which matters on a national level.	Grade II listed buildings and the Conservation Area are of medium significance, the Grade II* building is of high significance. The significance of the assets reside in both their historical, communal and evidential value.	Listed buildings relating to post-medieval domestic buildings are relatively common both at a regional and national level, examples are well represented in the designated assets list. The Conservation Area is rare in the Marches for being a settlement on a causeway within historic marshland.	Although the Scheme is within a rich built historic environment, it is not anticipated to have adverse impacts upon the significance of assets within the Study Area. The Scheme may have adverse impacts upon unknown non-designated assets, but this cannot be quantified at this point. An appropriate and proportionate scheme of assessment and mitigation may be proposed by the County Archaeologist.
Survival	There are no known assets other than the listed buildings and Conservation Area. The historic landscape appears unchanged since 1st edition mapping. Survival of unknown remains is likely given the high archaeological potential as described within the March Conservation Area Appraisal.	Generally, the survival of Listed Buildings matters on a regional to national scale. Any unknown remains preserved within the peat could be of regional to national importance.	The survival of the built heritage within the Study Area is important to understand the development of the town during the 16th-20th century and their use from the post-medieval to the modern period. Any unknown remains preserved within the peat could be of high significance.	Built Heritage - Common. Unknown remains within peat - rare	
Condition	There are no known assets other than the listed buildings and Conservation Area, of which an assessment of condition is beyond the scope of this document. The condition of unknown assets or of undesignated assets is beyond the scope of this exercise.	Local	low	common	
Complexity	The historic environment comprises a mixture of 20th century commercial premises and 18th-20th century two storey domestic housing along a t junction.	Local	low	common	
Context	The setting of the listed buildings and Conservation Area is that of 18th-20th century buildings set alongside the main road into March, forming part of the core of the historic settlement. March is on the second largest Fenland island, on the River Nene.	Local and National	Medium	Rare - the settlement type, being a town on a fenland island, is rare.	
Period	The listed buildings are largely 18th century in origin, with the exception of the 19th century building at 86 High Street.	Local	Medium	common	

Reference Sources

<p>The National Heritage List for England. Publically available local authority information relating to conservation areas and non-designated heritage assets, was consulted.</p>
---

Step 5 - Summary Assessment Score

<p>The overall effect on the historic environment resource is considered to be neutral. This assessment is subject to change following the introduction of any new information.</p>
---

Qualitative Comments

<p>As the Scheme will predominantly entail alterations to the existing road, it is expected that impacts will largely be absent. No substantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for as yet unknown archaeology.</p>
--

## TAG Townscape Impacts Worksheet

	Step 2	Step 3					Step 4
Features	Description	Scale it matters	Rarity	Importance	Substitutability	Changes in Without-scheme case	Impact
Layout	The townscape is characterised by	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Density and mix	It is a low to medium density	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Scale	The townscape is a mix of one, two or	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Appearance	There are a mix of building types	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Human interaction	The streets affected by the	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Cultural	Some of the buildings along the	Local	Commonplace	Medium importance at a	Older buildings less substitutable	Unlikely to change	Neutral
Land use	The area is predominantly	Local	Commonplace	Medium importance at a	Substitutable	Unlikely to change	Neutral
Summary of character	The area in which the scheme is proposed is an ordinary area of townscape albeit with some attractive residential buildings from the 19th and early 20th century. It is likely to be valued at a local scale.						Neutral

### Reference Sources

Natural England National Character Area 46 - The Fens
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### Step 5 - Summary Assessment Score

Neutral
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### Qualitative Comments

The scheme involves very small scale interventions that are unlikely to have a noticeable effect on townscape.
--

## TAG Water Environment Impacts Worksheet

Description of study area/ summary of potential impacts	Key environmental resource	Features	Quality	Possible Measures	Assessment data availability	Scale	Rarity	Substitutability	Importance	Magnitude	Significance	Resource assessment score with mitigation
Study area: 1 km radial buffer from the works area (which consists of a 100m buffer on the General Arrangement)												
Potential Impacts:												
<p>No impacts anticipated.</p> <p>As there will be no increase in impermeable road area anticipated that there will be no operational impacts to surface water quality.</p> <p>The Scheme does not cross the watercourse, therefore no hydromorphology impacts during operation are anticipated.</p>	<p>River Nene (old course) (Ordinary Watercourse)</p> <p>WFD reportable reach: Middle Level (GB205033000050)</p>	Water Supply	Use of water supply (potable, industrial or agricultural)	Location and number of								
				Volume of water abstracted								
				Use of water (potable most)								
			Chemical water quality	Existing chemical classification/status and objective								
				Likelihood of a change in classification arising (+ve or -ve)								
		Transport and dilution of waste products	Presence of surface water discharge	Location and number of discharge								
				Volume of effluent discharged								
				Proportion of flow made up by effluent at different times of the year								
		Biodiversity	Biological water quality	Existing ecological classification/status and objective under the WFD								
				Likelihood of a change in classification arising (+ve or -ve)								
		Fisheries quality	EC Fishery designation (Salmonid, Cyprinid or undesignated)									
		Conservation value of river corridor	Results of River Habitat Survey									
		Presence of designations (e.g. SSSI, NNR, LNR, SINC)s										
		Presence of protected species or BAP species										
Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment										
Cultural heritage	Presence of historic features associated with river	Results of historic environmental assessment										
		Presence of designations (e.g. SSSI, NNR, LNR, SINC)s										
Recreation	Riverside access	Presence of route and importance										
Use of the river for recreation	Presence of facilities and clubs for recreation											
Value to	Value of the uses of	Value to local economy (e.g. Use for angling (number of										
Conveyance of flows and	Presence of watercourses	Number and size of watercourse										
		Existing flood risk										
<p>No impacts anticipated.</p> <p>There will be no increase in impermeable road area, therefore there will be no increase in surface water runoff.</p> <p>The Scheme does not encroach into flood zones 2 or 3.</p> <p>Although the Scheme footprint extends into an area at Medium and Low risk of surface water flooding, the works in this area are only include new road markings.</p>	<p>River Nene (old course) ordinary watercourse floodplain</p>	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period								
				Flood flow routes								Location / importance of flood flow routes
		Surface water flooding	Location of surface water flooding									
			Biodiversity	Conservation value of river corridor	Results of River Habitat Survey							
					Presence of designations (e.g. SSSI, NNR, LNR, SINC)s							
		Presence of protected species or BAP species										
		Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment								
<p>No impacts anticipated.</p> <p>Although these watercourses are not within the study area, it is assumed there floodplains are within the study area.</p> <p>The Scheme does not encroach into flood zones 2 or 3.</p>	<p>Morton's Leam (Main River) floodplain</p> <p>River Nene Tidal (Main River) floodplain</p> <p>New Bedford River (Main River) floodplain</p> <p>River Delph (Main River) floodplain</p> <p>Counter Drain (Main River) floodplain</p>	Conveyance of flood flows	Presence of flood zones	Existing flood risk/flood return period								
				Flood flow routes								Location / importance of flood flow routes
		Surface water flooding	Location of surface water flooding									
			Biodiversity	Conservation value of river corridor	Results of River Habitat Survey							
					Presence of designations (e.g. SSSI, NNR, LNR, SINC)s							
		Presence of protected species or BAP species										
		Aesthetics	Contribution to landscape character and quality	Results of river landscape assessment								
<p>No impacts anticipated.</p>	<p>Secondary (undifferentiated)</p>	Water supply	Use for water supply (potable, industrial or	Location and number of								
				Volume of water abstracted								

[illegible]

### Reference Sources

Environmental datasets held on Defra's MAGIC website <https://magic.defra.gov.uk/home.htm>  
 Environment Agency - Catchment Data Explorer <http://environment.data.gov.uk/catchment-planning/>  
 Flood Map for Planning <https://flood-map-for-planning.service.gov.uk/>  
 Check your long term flood risk (surface water flooding extent) <https://check-long-term-flood-risk.service.gov.uk/map>  
 Scheme General Arrangement: 5020423-SKA-HGB-DR-CH-0101

## Summary Assessment Score (post mitigation)

Qualitative Comments

It is anticipated that the Scheme will not result in any impacts on the water environment (surface water quality, hydromorphology, groundwater quality, levels and flows and flood risk).

It has been assumed that road runoff discharges to surface water. As the Scheme will not result in an increase in impermeable road area it is anticipated there will be no impacts to surface water quality. Also the Scheme's footprint does not cross any watercourses, therefore no impacts to hydromorphology are anticipated.

No impacts to flood risk are anticipated because the Scheme's footprint does not encroach into flood zones 2 or 3. Also because the Scheme will not result in an increase in impermeable road area there will be no increase in the volume of surface water runoff.

As the scheme involves no major below ground structures, there is no potential for impacts to groundwater quality, flow or levels.

As there are no water environment impacts anticipated with the Scheme a environmental appraisal has not been completed and no overall assessment score has not been assigned.

## TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		No Change	
	Facilities	There will be a new right turn lane for traffic from the B1101 The Causeway south arm destined to St. Peter's Road. This will reduce the frequency of northbound vehicles being stuck behind vehicles waiting to turn right.		
	Information		No Change	
	Environment	Improved surfacing and reduced congestion compared to without scheme		
Travellers' Views	-	B1101 The Causeway will be less congested compared to without scheme and reduce the potential for views of surrounding townscape to be blocked by queueing vehicles		
Traveller Stress	Frustration	Reduced frustration at the junction expected because northbound drivers from B1101 The Causeway will be less frequently be stuck behind vehicles waiting to turn right into St. Peter's Road		
	Fear of potential accidents	It has been estimated that there will be a reduction in accidents as a result of the schemes and consequently the provision of safer infrastructure should reduce the fear of accidents.		
	Route uncertainty		No Change	

### Reference Source

### Summary Assessment Score

Large Beneficial

### Qualitative Comments

Two-Way 24-hour AADT flow of 14,205 PCUs on A141 along B1101 The Causeway in 2031 Do Something scenario (FBC 3)

## TAG Historic Environment Impacts Worksheet

Step 2		Step 3			Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	The Historic environment within a 500m study area comprises no listed buildings or other designated assets. Undesignated assets have not been assessed as part of this exercise but online sources show none. There is potential for unknown remains but as yet these cannot be assessed. The historic landscape consists of fieldsystems, drains (20 ft River), road systems and farms.	The historic environment as currently understood matters on a local level. There is potential for unknown remains.	No known assets have been identified during this assessment. The significance of unknown assets cannot be assessed.	No known assets have been identified during this assessment.	Although no known assets have been identified during this assessment, the scheme is within a varied landscape. The Scheme may have adverse impacts upon unknown non-designated assets, but this cannot be quantified at this point. An appropriate and proportionate scheme of assessment and mitigation may be proposed by the County Archaeologist.
Survival	No known assets have been identified during this assessment but there is potential for unknown remains. The historic landscape appears unchanged since 1st edition mapping.	Local	Low	common	
Condition	No known assets have been identified during this assessment. The condition of unknown assets or of undesignated assets is beyond the scope of this exercise.	Local	low	common	
Complexity	The historic environment comprises only field systems of some age, and the 20 ft drain. No known assets have been identified during this assessment. Further complexity, introduced by unknown assets, cannot be assessed here.	Local	low	common	
Context	There are no known assets for which setting can be described.	na	na	na	
Period	There are no known assets for which period can be described.	na	na	na	

### Reference Sources

The National Heritage List for England. Publically available local authority information, relating to conservation areas and non-designated heritage assets, was consulted on Heritage Gateway.
---

### Step 5 - Summary Assessment Score

The overall effect on the historic environment resource is considered to be neutral. This assessment is subject to change, should new information be introduced.
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### Qualitative Comments

As the Scheme will predominantly entail widening and alterations to the existing road, it is expected that impacts will largely be to the historic landscape character. No substantial adverse settings impacts to designated and non-designated heritage assets are anticipated. Any construction relating to new road elements could mean potential for as yet unknown archaeology.
---





**TAG Landscape Impacts Worksheet**

Step 2		Step 3				Step 4
Features	Description	Scale it matters	Rarity	Importance	Substitutability	Impact
Pattern	The site sits around 2km to the north of March in an area of low lying fen land, criss crossed by drainage ditches separating large arable fields. It is adjacent to the Twenty Foot River and there are other large watercourses to the north.	This pattern of landscape is typical of this part of the country so is likely to matter at a local level.	The type of pattern found here is commonplace and the proposed development would have little effect on it	The landscape pattern here, is distinctive but is not recognised as important.	The landscape pattern is commonplace and easily substituted.	The proposed works are minor alterations to the existing road layout and would have negligible impact on pattern
Tranquillity	The A141 where it joins with Twenty Foot Road is a major route taking traffic into and out of March and as such is not tranquil for most of the time. In the surrounding arable land there is a greater degree of tranquillity which increases with distance from the A141.	There is not a great deal of tranquillity along the A141 and is important at a local scale only.	The A141 is not tranquil, and this is quite common in this area.	As tranquillity is low this is not important to maintain.	This level of tranquillity is easily substituted.	The changes to the road layout are modest and would not affect the tranquillity of the area
Cultural	The landscape at the junction of Twenty Foot Road and the A141 is a very traditional one of arable fields separated by a complex system of drainage channels which form part of a wider network of water level controls in East Anglia. The drainage network was established over many centuries and is a cultural feature in itself.	The cultural aspects of the area are important at a local scale only.	There is little in the way of cultural associations with the A141, it being a relatively new and upgraded route so it's cultural associations are not rare.	The cultural aspects of the parts affected by the works are not important.	Cultural aspects are easily substituted.	The proposals would not affect the cultural aspects of the landscape
Landcover	The landcover comprises low lying arable fields with crops of different types and very little in the way of trees or woodland. There is some domestic scale vegetation and small incidental blocks of woodland and individual trees in the wider area but again, this does not form a significant element of the landscape.	The landcover along the A141 and Twenty Foot Road is important at a local scale only	The type of landcover found here is not rare.	The landcover is important locally.	The landcover could be substituted quite easily.	There would be very minor losses of rough grass so the landcover impact is negligible
Summary of character	The A 141 lies within a large area of low lying agricultural land with a number of major and minor watercourses and there are some fine open views across the landscape from it.					The proposals are very minor in scale and would have a neutral effect on the landscape overall.

**Reference Sources**

Natural England NCA 46. The Fens (NE424)
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**Step 5 - Summary Assessment Score**

Neutral
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**Qualitative Comments**

The proposed scheme has a negligible affect on the landscape and can be accommodated well in this location.
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Area	Step 2 Description of feature/ attribute	Scale of which attribute affects	Step 3 Impacts (as perceived)	Effect on relation to habitat	Buildings and surface waterings	Step 4 Impacts of Step 3	Step 5 Assessment Score
None/Weakly Special Protection Area (SPA), Special Area of Conservation (SAC), Natural Area	The area is situated 1.2 km northwest of the scheme. It is an area of extensive heathland not grazed with a network of drainage ditches.	International	International site supports important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Very high	To be determined following volume of SPA	To be determined following volume of SPA
None/Weakly Special Protection Area (SPA), Special Area of Conservation (SAC), Natural Area	The area supports mostly open grassland and heathland, with scattered trees and shrubs. The area also supports a small population of wintering Sooty Terns.	National	National - A SSSI supports important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	High	Minor negative	Direct adverse
None/Weakly SPA of Special Scientific Interest (SSSI)	No direct impacts are anticipated to the SSSI due to the distance between the SSSI and the scheme. There is potential for noise disturbance and pollution arising during construction phase only, however there are no other hydrological connections and for a distance of 1.3 km, any potential impacts are likely to be very minor.	Regional	Regional - A SSSI supports important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Medium	Minor negative	Direct adverse
Rest of East Local Nature Reserve (LNR)	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Regional	Regional - supports a mosaic of habitats	Unfavourable - associated with the few units associated with the New Thames SSSI	Medium	Minor negative	Direct adverse
Crested and Sandpiper grazing marsh (Priority habitat)	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Twenty Foot Flies (Dolichopodidae, priority habitat)	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Reefers	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Bats	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Water voles	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Priority mammals	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Shedding and wetting birds	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse
Amphibians	The area is located 500 m northwest of the scheme. It supports a mosaic of habitats including heath, three large bogs, and small areas of arable.	Local	Local - a priority habitat contains important habitats, and bird populations	Unfavourable - associated with the few units associated with the New Thames SSSI	Low	Intermediate negative	Direct adverse

Multi-Agency Geographic Information for the Countryside (MAGIC) website (<https://magic.defra.gov.uk/MagicMap.aspx>), Information from Cambridgeshire and Peterborough Environmental Records Centre, Bing Maps (<https://www.bing.com/maps>), Google Earth (<https://earth.google.com/web/>), Woodland Trust Ancient Tree Inventory (<https://at.i.woodlandtrust.org.uk/>), Ordnance Survey maps, Extended 30m habitat survey

	Sight adverse
Qualitative Comments	

# March Northern Link Road

## *Heritage Desk-Based Assessment*

Cambridgeshire County Council

October 2020

Project:	MATS Northern Link Road		
Subject:	Heritage Desk Based Assessment		
Document Reference:	CPX31155-ATK-EHR-XX_XX-RP-LH-000001		
Author:	E Moon		
Date:	18/10/2020	Project No.:	5213480

### Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
C01	First Issue	E Moon	EE	EE	VA	29/11/22

### Client signoff

Client	Cambridgeshire County Council
Project	MATS Northern Link Road
Project No.	5213480
Client signature / date	





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## Executive Summary

The proposed Scheme is to widen and upgrade the Hundred Road, connecting it to Longhill Road so that there will be a continuous road and footpath linking Elm Road to the roundabout at the south of Hundred Road.

There are two listed buildings within the 1km study area: Morgan House, Norwood Road (NHLE 1216356, Grade II Listed Building) located 650m south of the Scheme and Water Tower, Whitemoor, Marshalling Yard, March (NHLE 1228967, Grade II Listed Building) located 250m north and east of the Scheme.

There are 104 non-designated assets within the 1km study area. These consist of records of archaeological evidence dating from the Mesolithic to the post-medieval periods and upstanding historic records from the post-medieval periods.

There is considered to be a very low potential for archaeology associated with the Palaeolithic, a low potential for Mesolithic, Neolithic, Medieval and Modern archaeology. There is assessed to be a moderate potential for archaeology of Bronze Age, Iron Age, Roman and post-Medieval date. Overall, an assessment of moderate potential for archaeology is made. Any finds are likely to be pre-Roman cut features and/or scattered artefacts or post-medieval evidence related to the former use of the area as a marshalling yard for the railway.

No impact to significance is expected to any of the listed buildings or non-designated assets as a result of changes in their setting caused by the Scheme.

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# 1. Introduction

## 1.1 Proposed Development

### Background

- 1.1.1 Cambridgeshire County Council (CCC) have commissioned Atkins, under the Cambridgeshire Joint Professional Services Framework (JPSF) to produce a desk-based assessment (DBA) ahead of the proposed upgrade of the Hundred Road, March centred on TL 41073 99265.

### The Scheme

- 1.1.2 The proposed Scheme is to widen and upgrade the Hundred Road, connecting it to Longhill Road so that there will be a continuous road and footpath linking Elm Road to the roundabout at the south of Hundred Road. The Scheme also involves junction improvements and the installation of a layby for parking. To enable the works, diversion or culverting of some drainage ditches and the removal of hedgerow and shrubland is likely to be required.

### Aims and Objectives

- 1.1.3 The principal aim of this DBA is to establish the nature, extent, and significance of the historic environment within the proposed development to provide a supporting baseline to enable informed decision making on the impacts and effects of the proposed development on the historic environment.
- 1.1.4 In order to achieve this, the specific objectives of this assessment are to:
- Interrogate the historic environment record (HER) data provided by Cambridgeshire County Council;
  - Identify and contextualise the historical and archaeological baseline of the Scheme and the surrounding environs;
  - Identify known designated and non-designated heritage assets within the Scheme boundary which may be impacted by the proposed development;
  - Assess the heritage significance and setting of the known historic environment resource through a programme of desk-based research;
  - Assess the likely impact on the significance of identified heritage assets;
  - Assess the potential for previously unrecorded archaeological remains; and
  - Provide recommendations for an appropriate mitigation strategy, aimed at avoiding or reducing the impact of the proposed development upon the significance of archaeological assets.

### Consultation

- 1.1.5 Emily Rose Moon (Assistant Archaeological Consultant, Atkins) contacted Ruth Beckey (Archaeological Officer, Cambridgeshire County Council) on 08 August 2022 to enquire as to whether she would like anything in particular addressed in the DBA or whether she had any questions or concerns. As of 01 September 2022, no response has been obtained.

## 2. Methodology

### 2.1 Overview

- 2.1.1 This DBA has been produced in accordance with the requirements of National Planning Policy Framework (NPPF) (Department of Communities and Local Government, 2021), Planning Practice Guidance (Department of Communities and Local Government, 2021), standards specified by the Chartered Institute for Archaeologists (CIfA, 2014; 2017), Conservation Principles (Historic England, 2008), and local planning policies (Fenland District Council, 2014). no response has been obtained.
- 2.1.2 The information presented within this document is correct at the time of writing to the best knowledge of the author, within the limits imposed in dealing with historic materials and mapping. The archaeological resource is by its nature an unknown resource prior to confirmation through archaeological investigations.

### 2.2 The Study Area

- 2.2.1 The information presented within this document is correct at the time of writing to the best knowledge of the author, within the limits imposed in dealing with historic materials and mapping. For the purposes of establishing baseline conditions for this assessment, a study area was defined, encompassing an area of 1km around the proposed development and incorporating the boundary of site ownership. Data on all heritage assets was gathered to comprehensively characterise the historic environment, inform the understanding of potential impacts, and identify the potential for as-yet unknown archaeological remains within the study area.
- 2.2.2 Designated heritage assets comprise World Heritage Sites, scheduled monuments, listed buildings, registered parks and gardens, registered battlefields and conservation areas.
- 2.2.3 Non-designated assets comprise monuments, archaeological sites, buildings, places and landscapes which do not meet the criteria for a designated asset but require consideration under planning policy due to their heritage significance.
- 2.2.4 The extents of the study area are based on professional judgement and in line with professional guidance which has been designed to account for the sensitivity of the historic environment and the potential impacts of the Scheme. These, therefore, account for:
- The historical and archaeological context of the proposed development;
  - The settings of heritage assets within the Scheme and surrounding landscape; and
  - The potential for heritage assets to survive within the Scheme footprint.
- 2.2.5 For the purposes of this assessment, 'Scheme' will be used to refer to the proposed development and 'study area' for the land within the 1km buffer.
- 2.2.6 Maps showing asset distribution can be found in **Error! Reference source not found.** and gazetteers of all assets can be found in **Error! Reference source not found.**

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## 2.3 Baseline data collection

2.3.1 The following sources of data were consulted during preparation of this assessment:

- National Heritage List for England (NHLE) maintained by Historic England, for listed buildings, scheduled monuments, Registered Parks and Gardens and Registered Historic Battlefields;
- Cambridgeshire County Council (CCC) for information relating to non-designated heritage assets, including buildings and structures of historic interest (not listed), known archaeological sites and areas of archaeological potential, Historic Landscape Characterisation (HLC), findspots and past archaeological investigations (events);
- British Geological Survey (BGS): Online digital solid and superficial geological data and historic borehole records;
- Ordnance Survey Mapping and other historic map sources;
- Documentary sources: published histories, site reports, and monographs;
- Online resources: Web-published material, including local planning authority planning policies, and aerial photography.

## 2.4 Limitations and Assumptions

2.4.1 This assessment comprises a desk-based review of data from the HER of Cambridgeshire County Council as well as a variety of secondary sources. Whilst this information is assumed to be accurate, it is not a complete record of the historic environment and does not preclude the potential for previously unidentified archaeological remains or deposits to be encountered. The value of any such unknown/unidentified assets cannot be determined at this time.

## 2.5 Assessment Criteria

### Assessment of Significance

2.5.1 Where known historic assets are identified, the heritage significance of such assets is determined by reference to existing designations where available. For previously unidentified sites where no designation has been assigned, an estimate has been made of the likely historic, artistic, or archaeological importance of that resource based on professional knowledge and judgement.

2.5.2 The definition of cultural significance is readily accepted by heritage professionals both in the UK and internationally and was first fully outlined in the Burra Charter, which states in article one that '*cultural significance*' or '*cultural heritage value*' means aesthetic, historic, scientific, social or spiritual value for past, present or future generations (International Council on Monuments and Sites, 2013; Article 1.2). This definition has since been adopted by heritage organisations around the world and is applicable to 'Section 16: Conserving and enhancing the historic environment' of the National Planning Policy Framework (NPPF, 2021).

2.5.3 The following paragraphs as set out in the NPPF include key provisions considered of particular importance to this application which focuses on non-designated assets and the potential for archaeological remains.

- 2.5.4 *Paragraph 194 - In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance.*
- 2.5.5 *Paragraph 199 - When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss, or less than substantial harm to its significance.*
- 2.5.6 *Paragraph 203 – The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgment will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*
- 2.5.7 In the NPPF Glossary, significance is defined as: 'The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting. For World Heritage Sites, the cultural value described within each site's Statement of Outstanding Universal Value forms part of its significance.'
- 2.5.8 For previously unidentified sites where no designation has been assigned, an estimate has been made of the likely historic, artistic or archaeological importance of that resource based on professional knowledge and judgement. Assessment of the significance of heritage assets is undertaken using professional judgement guided by the criteria set out in Table 2.1 below.

**Table 2.1: Assessing the Significance of Heritage Assets**

Significance	Description	Example
Very High	Internationally important or significant heritage assets	World Heritage Sites, or buildings recognised as being of international importance.
High	Nationally important heritage assets generally recognised through designation as being of exceptional interest and value.	Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, Registered Historic Battlefields, Conservation Areas with notable concentrations of heritage assets and non-designated assets of national or international importance.
Medium	Nationally or regionally important heritage assets recognised as being of special interest, generally designated.	Grade II Listed Buildings, Grade II Registered Parks and Gardens, Conservation Areas and non-designated assets of regional or national importance, including archaeological remains, which relate to regional research objectives or can provide important information relating to particular



		historic events or trends that are of importance to the region.
Low	Assets that are of interest at a local level primarily for the contribution to the local historic environment.	Non-designated heritage assets such as locally listed buildings, non-designated archaeological sites, non-designated historic parks and gardens etc. Can also include degraded designated assets that no longer warrant designation.
Negligible	Elements of the historic environment which are of insufficient significance to merit consideration in planning decisions and hence be classed as heritage assets.	Non-designated features with very limited or no historic interest. Can also include highly degraded designated assets that no longer warrant designation.
Unknown	The importance of an asset has not been ascertained.	

## Assessing Buried Archaeological Potential

- 2.5.9 Buried archaeological evidence is often an unknown quantity which can be difficult to fully identify during a desk-based assessment. The assessed potential is based on available evidence, but the physical nature and extent of any archaeological resource surviving within the Site cannot be confirmed without detailed information on the below ground deposits or results of on-site fieldwork, typically through non-intrusive (e.g. geophysical, LiDAR), and intrusive (archaeological, geoarchaeological evaluation) survey.
- 2.5.10 A site's archaeological potential is identified using professional judgement and knowledge and is informed by Historic England's Conservation Principles, Policies and Guidance (2008). A site's baseline potential is compared to the level of existing impact upon it, from modern and historic developments. The potential for surviving archaeological evidence of past activity within the Scheme boundary is expressed in the report as being:
- **High:** The available evidence suggests a high likelihood for past activity within the Scheme boundary and a strong potential for archaeological evidence to survive intact or reasonably intact;
  - **Medium:** The available evidence suggests a reasonable likelihood for past activity within the Scheme and consequently there is a potential that archaeological evidence could survive;
  - **Low:** The available evidence suggests archaeological evidence of activity is unlikely to survive within the Scheme, although some minor land-use may have occurred; and
  - **Uncertain:** Insufficient information to assess.

## Setting

- 2.5.11 A site's archaeological potential is identified using professional judgement and knowledge and is informed by Historic England's Conservation Principles, Policies and Guidance (2008). The setting of each designated asset will be

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assessed in accordance with Historic England's 'The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning: 3' (2<sup>nd</sup> edition 2017). The guidance states that a thorough assessment of setting needs to be considered that is proportionate to the significance of the heritage asset under consideration. The setting of a heritage asset does not just include views to the asset, but also views from it, and can be affected by environmental issues such as noise, dust, and vibration etc. from nearby land use.

## 3. Policy, legislation, and guidance

### 3.1 Planning policy and legislation

3.1.1 Table 3.1. below provides a summary of legislation and policies the Scheme relevant to this assessment.

**Table 3.1: Legislation and national policy**

Legislation and Policy	
Legislation	
Ancient Monuments and Archaeological Areas Act 1979	The Ancient Monuments and Archaeological Areas Act 1979, the Secretary of State (Department of Culture, Media and Sport - DCMS) can schedule any site which appears to be of national importance because of its historic, architectural, traditional, artistic or archaeological interest. It is a criminal offence to damage a scheduled monument. Additional controls are placed upon works affecting scheduled monuments and areas of archaeological importance under the Act. The consent of the Secretary of State (DCMS), as advised by Historic England, is required for certain works affecting Scheduled Monuments.
Planning (Listed Buildings and Conservation Areas) Act 1990	England, under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990, the Secretary of State is required to compile lists of buildings of special architectural or historic interest, on advice from Historic England. Works affecting listed buildings are subject to additional planning controls. Under the Act, planning authorities are instructed to have special regard to the desirability of preserving a listed building, its setting, or any features of special architectural or historic interest which it possesses (Planning (Listed Buildings and Conservation Areas) Act s.66(1)). Designation as a listed building confers additional controls over demolition, alteration and extension through the requirement for Listed Building Consent to be obtained before undertaking works under such circumstances.
National Policy	
National Planning Policy Framework (NPPF) 2021	<p>The National Planning Policy Framework (NPPF, 2021) provides the Government's national planning policy on the conservation of the historic environment, supported by the Planning Practice Guidance (updated June 2021). It was published in March 2012 and revised in July 2021. This DBA aims to address relevant policy within the NPPF in relation to Section 16 'Conserving and enhancing the historic environment'.</p> <p>Section 16 of the NPPF is presented in full in Appendix C.</p>
Local Policy	
Fenland Local Plan 2014	<p>The Fenland District Local Plan was adopted in May 2014. It has one key policy relating to the Historic Environment.</p> <p>Policy LP18 – The Historic Environment</p> <p>The Council will protect, conserve and seek opportunities to enhance the historic environment throughout Fenland. This will be achieved through:</p> <ul style="list-style-type: none"> <li>the consideration of applications for planning permission and listed building consent;</li> <li>the use of planning obligations to secure the enhancement of the significance of any heritage asset, where development might impact on that significance (including impact on setting);</li> </ul>

- keeping up-to-date and implementing conservation area appraisals and management plans, and using such up to date information in the determination of planning applications;
- making use of Article 4 Directions, where appropriate, to prevent unsympathetic alterations to buildings in conservation areas;
- the preparation and maintenance of a list of buildings and other heritage assets of local importance;
- steps to reduce the number of heritage assets in Fenland on English Heritage's Heritage at Risk Register; and the use of grant schemes, as resources permit, to safeguard heritage assets at risk and encourage sympathetic maintenance and restoration of listed buildings and historic shop fronts.

All development proposals that would affect any designated or undesignated heritage asset will be required to:

(a) describe and assess the significance of the asset and/or its setting to determine its architectural, historic or archaeological interest; and

(b) identify the impact of the proposed works on the special character of the asset; and

(c) provide a clear justification for the works, especially if these would harm the asset or its setting, so that the harm can be weighed against public benefits.

The level of detail required should be proportionate to the asset's importance and sufficient to understand the potential impact of the proposal on its significance and/or setting.

All development proposals that would affect a heritage asset will be determined in accordance with local policy in this Plan and national policy in the National Planning Policy Framework. Where permission is granted, a programme of work and/or the implementation of any necessary mitigation measures may be secured by condition or as part of a planning obligation in order to minimise any adverse impact.

## 3.2 Guidance

3.2.1 This assessment has been undertaken in accordance with current best practice and in line with, but not limited to, the following Standards and Guidance:

- **Standards and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists, 2020):** The Chartered Institute for Archaeologists' (CIfA) guidance aims to define good practice principles for the production of desk-based assessments and also aligns itself with CIfA's code of conduct. The document is regarded as a standard only, and therefore avoids a prescriptive level of detail. The standard of this guidance has not been met if an assessment should fail to determine the nature, extent and significance of the historic environment within a specified area.
- **Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (Chartered Institute for Archaeologists, 2020):** The Chartered Institute for Archaeologists' (CIfA) guidance aims to define good practice principles for the commissioning or production of consultancy advice on archaeology and the historic environment.

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- **Managing significance in decision-taking in the historic environment, Historic Environment Good Practice Advice in Planning Note 2 (Historic England, 2015):** This advice note provides information on good practice to assist in implementing historic environment policy in the NPPF and PPG and contains guidance on assessing the significance of heritage assets by using appropriate expertise.
  - **Preserving Archaeological Remains Decision-taking for Sites under Development (Historic England, revised 2016):** This advice is for developers, owners, archaeologists and planners working on projects where the intention is to retain and protect archaeological sites beneath or within the development. It can also be read in relation to other land-use or site management work. It has a particular focus on decision-taking on waterlogged archaeological sites.
  - **The Setting of Heritage Assets Historic Environment Good Practice Advice in Planning Note 3 (Historic England, revised 2017):** This advice note sets out guidance against the backdrop of the National Planning Policy Framework and the related guidance provided in the Planning Practice Guide. Furthermore, the guidance provides advice on understanding setting and how it may contribute to the significance of heritage assets, as well as a suggested methodology for assessing impacts on setting.
  - **Planning Practice Guidance: Conserving and Enhancing the Historic Environment (NPPF, DCLG, 2014: updated 2019):** The Ministry for Housing, Communities and Local Government (MHCLG) published 'Conserving and Enhancing the Historic Environment' in April 2014. This was last updated in February 2018. The Guidance notes that 'conservation is an active process of maintenance and managing change. It requires a flexible and thoughtful approach to get the best out of assets as diverse as listed buildings to as yet undiscovered, non-designated buried remains of archaeological interest'. It should be noted that the wording of PPG is reflective of the now superseded 2012 NPPF.



## 4. Baseline Conditions

### 4.1 Site Overview

#### Introduction

- 4.1.1 The location, topography, and geology of a development site can provide indication of its suitability for past human activity. Topography and geology can provide information on whether ground levels have been raised or terraced away and can contribute to our understanding of the archaeological survival potential of a site.

#### Site Location

- 4.1.2 The site is located on Longhill Road and Hundred Road (see **Error! Reference s** **ource not found.**). To the east it joins Elm Road and to the south Hundred Road becomes Norwood Road before joining the B1099 Wisbech Road further south. The site is shown in Figure 4-2 to Figure 4-6.
- 4.1.3 The site is bounded to the north by HM Whitemoor and agricultural fields to the north-east, east and west. To the west, there is also the location of a former quarry, now a recycling centre. It is bounded to the south by Whitemoor Yard and to the south-east by an industrial park and March Bears Rugby Club sports field.

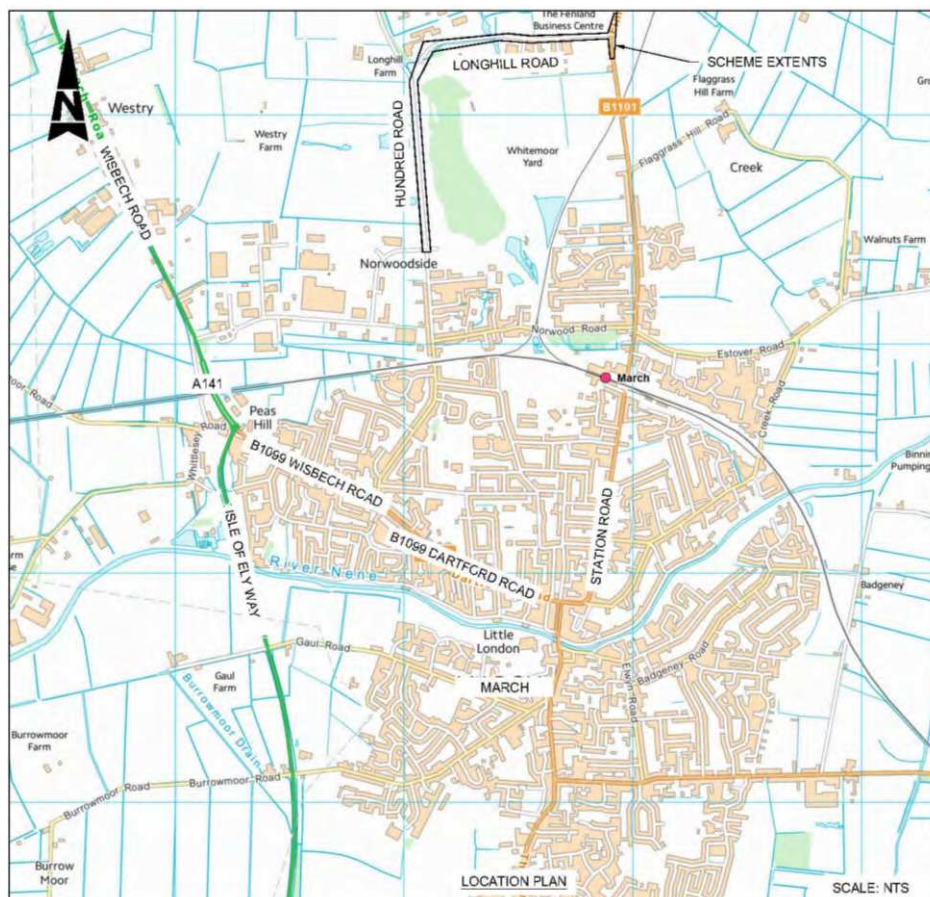


Figure 4-1 Site location plan.





**Figure 4-2: View north along Elm Road.**



**Figure 4-3: View south along Hundred Road of the road without pedestrianisation.**





**Figure 4-4: View south showing Hundred Road with agricultural fields to the west.**



**Figure 4-5: Pedestrian link between Longhill Road and Hundred Road.**

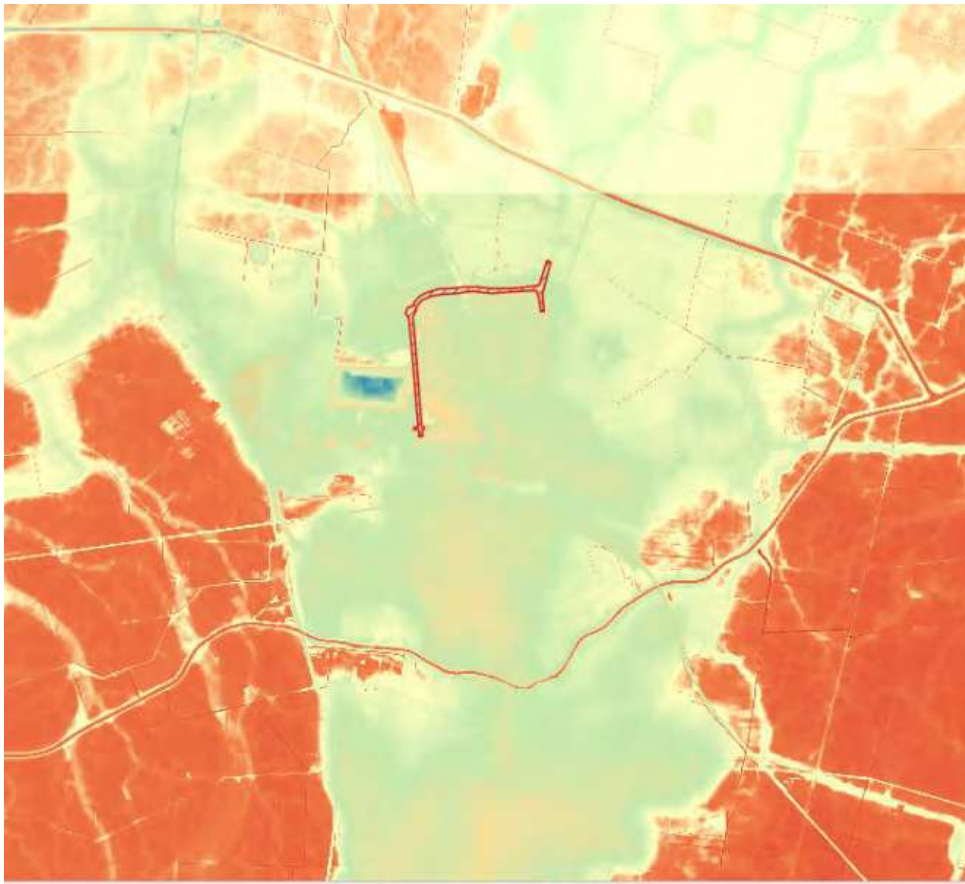




**Figure 4-6: View west along Longhill Road.**

### Topography and Geology

- 4.1.4 March is the county town of the Isle of Ely and before the draining of the fens, was an island in its own right, overlooking the former fen (see Figure 4-7**Error! Reference source not found.**). It sits on the old course of the River Nene where the road between Ely and Wisbech (the two chief towns of the Isle) fords the river. The study area is fairly consistent at 4-6m Above Ordnance Datum (AOD). The topography is clearly visible in the LiDAR results (Figure 4-7).
- 4.1.5 The British Geological Survey (BGS) online map identifies the bedrock of the area as Ampthill Clay Formation – Mudstone. To the north of the study area, there is a superficial deposit of Oadby Member - Diamicton. To the west of the study area, there is a superficial deposit of March Gravels Member - sand and gravel. There are superficial deposits that surround the fenlands which largely comprise of lowland, wetland and flat deposits around the town of March which was created on higher land within the fens. March is situated on a north-south aligned ridge of gravel running from Doddington and Town End Common (to the south of March) to Norwood Common (to the north of March) and is surrounded by former moor and fenland.
- 4.1.6 The Site, which runs along Hundred Road, runs through countryside unsurprisingly associated with industrial activity such as Roman salt working. The location of March on high ground will have attracted early settlement in the area and made it a nodal point within an extensive network of fen edge routeways.



**Figure 4-7: LiDAR data showing the Site (Environmental Agency).**

### Fen Causeway

- 4.1.7 The Site runs north south across the former Fen Causeway, a northeast-southwest (MCB19672) Roman road dating to AD. 2 (MCB07938) which ran from the Roman Towns of Brampton (south of March) and Venta Icenorum at Caistor St Edmund from Stalham in Norfolk. The March section of the causeway runs on higher ground over the Fenland. Locally, it includes two parallel ditches that flanked a metalled surface (CB15033) and is characterised by a layer of gravel overlying a thin alluvial soil (MCB16828). Archaeological work carried out along the route of the causeway, including within the marshalling yard and sidings where truncation of all remains was expected (ECB3561/3845/104), identified settlement features, evidence of a 1st century AD date for the Roman road, pre-causeway enclosures, roadside burials (ECB497) and industrial activity. Roman salterns (ECB496) have also been identified close by.
- 4.1.8 Hundred Road is one of a network of roads that run along the ridge referred to in 4.1.3; depicted in Figure 4-9 as Norwood Drove, it is shown leading to Norwood Common and almost certainly connected with the Fen Causeway. Having a long history, nationwide, drove roads hit their height during the medieval period and (locally) as the fens were drained, being particularly necessary for driving animals to the commons and to market. Given the evidence for the longevity of activity at March, it is very possible that Hundred Road has more ancient origins.

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## 4.2 Previous Archaeological Investigations (Events)

- 4.2.1 There have been 37 previous archaeological investigations occurring from 1959 to 2020 which can be divided into five geographical areas of the study area: North (Longhill Road), Central (Hundred Road/Whitemoor), West (Westry), East (Elm Road) and South (March centre). A map of the events can be found in **Error! Reference source not found..**
- 4.2.2 There are a number of previous events which have occurred in immediate proximity to the Scheme in the Central area around Whitemoor Sidings and Hundred Road. Evaluation at Barn Farm, Hundred Road in 1995 revealed a series of probable field boundary ditches and concentration of activity likely Roman in date (ECB282). The same year, an aerial photograph assessment identified a number of cropmarks of various dates. Between November 2003 and 2004, Archaeological Project Services revealed archaeology dating from the early Bronze Age to probable Roman occupation however, no evidence of the Fen Causeway was encountered (ECB2014). In 2004, further evaluation trenches revealed a truncated ditch and pit of unknown date (ECB2032). No dateable evidence was uncovered during evaluation in 2004 by CCC AFU to the south-west of this area (ECB2032). In July 2008, nineteen trenches at the Trading Park to the west of Hundred Road, revealed artefactual evidence of Late Mesolithic and early Neolithic, a dense concentration of Bronze Age activity and Roman agricultural evidence (ECB2965). Further large-scale investigations took place at the Marshalling Yard in 2010 by North Pennines Archaeology Ltd (ECB3845) in which early prehistoric features were encountered and evidence of Roman field systems seeming to correspondence to the location of the Fen Causeway. Evidence of the former railway yard and track beds of the marshalling yard were uncovered. A year prior in May 2009, Wardell Armstrong recorded the remaining three air raid shelters or pill boxes at the site. Most recently in 2020, Britannia Archaeology Ltd undertook an archaeological evaluation at Nelson House, 22 Norwood Road as a condition of planning permission (ECB6244). The site uncovered a post-medieval Fenland drain.
- 4.2.3 Adjacent to this central area is the northern grouping of events which is the location of the earliest archaeological intervention at the site occurring 1959-1960 which produced extensive evidence for 1<sup>st</sup>-4<sup>th</sup> century occupation (ECB496). To the north of the Longhill Road portion of the Scheme, an evaluation occurred in 2003 (ECB3504) in which the thirteen trenches revealed evidence of a major early Roman salt making site and associated settlement dating to the first and second centuries. Evidence was extensive and well preserved. Further excavation at this site was carried out in 2006 by Cambridgeshire County Council Archaeological Fieldwork Unit (ECB1437). A significant further excavation was carried out by Cambridge Archaeological Unit in 2008 totalling 0.17ha providing evidence of extensive early Roman occupation as well as earlier prehistoric activity (ECB3085). In 2013, archaeological excavation was carried out as a condition of planning permission which revealed four broad phases of activity from the Iron Age to post-medieval (ECB4048). No archaeological findings were made during a watching brief by Oxford Archaeology East in May 2009 (ECB3191).
- 4.2.4 The western portion of archaeological works consists of an evaluation at Foundry Way in 2013 (ECB4048) which revealed activity dating to the post-medieval and modern periods. Evaluation at land south of Westry Hall in 2015 (ECB4462)



revealed Iron Age features suggestive of a built structure. Evaluation at land to the north of Woodville in 2019 revealed no archaeological features (ECB5833).

- 4.2.5 In the eastern portion, Roman occupation was uncovered during excavations at Estover Road, Fen Causeway in 1985 (ECB497) which allowed for the conclusion that there was an earlier, likely Iron Age trackway associated with the Fen Causeway. Further evidence for Roman occupation was uncovered at 128 Elm Road where ceramic building material was recovered from a gully (ECB3561). At land off Elm Road, post-medieval drainage and former greenhouses were uncovered at the site as well as residual flint (ECB3737). Geophysical surveys and subsequent evaluation revealed a number of features and finds of Iron Age and Roman date (ECB4500). Further evaluation nearby in May 2015 also revealed a number of artefacts and features of this date with some evidence of early Neolithic artefacts (ECB4477). Cropmarks and possible field boundaries were also identified through an aerial photography assessment conducted in June 2015 which included parallel ditches associated with the Fen Causeway (ECB4642). No archaeological features or finds were uncovered during evaluation at 53 Elm Road in 2002 (ECB283) nor Evaluation at Dagless Way, Elm Road 2001 (ECB408) or evaluation at 92 Elm Road in 2005 (ECB1929) nor at land east of Berryfields in 2018 (ECB5295).
- 4.2.6 The remaining events occurred to the south of the study area and largely fall on the southern side of the railway line. In March 2001, excavations revealed evidence for 19<sup>th</sup> to 20<sup>th</sup> century activity as well as probable prehistoric features (ECB280). Following this, further excavations occurred in 2002 and revealed features relating to occupation in the Late Bronze Age through to the Medieval period (ECB928). A Roman complex of ditches and field systems were uncovered by Cambridgeshire County Council Archaeological Field Unit in 2006 (ECB2346) and further Roman ditches uncovered by Oxford Archaeology East in April 2009 (ECB3170). No archaeological finds or features were uncovered in excavations in March 2010 by Archaeological Solutions at land to the west of Robingoodfellows Lane (ECB3349) nor at works at 168 Norwood Road by Witham Archaeology in August 2012 (ECB3823) or Queen Street Close in 2014 by Pre-Construct Archaeology (ECB4219) or 327 Norwood Road in March 2019 by University of Leicester Archaeological Services (ECB5821). Just north of the railway line, an evaluation occurred along the route of the proposed Anglian Water pipeline in August 2005 by CCC AFU revealing a single neolithic flake and six small modern trenches (ECB1992).

## 4.3 Historic and Archaeological Chronological Overview

### Baseline data

#### Listed Buildings

- 4.3.1 There are two listed buildings within the 1km study area. These are:
- Morgan House, Norwood Road (NHLE 1216356, Grade II Listed Building) located 650m south of the Scheme.
  - Water Tower, Whitemoor, Marshalling Yard, March (NHLE 1228967, Grade II Listed Building) located 250m north and east of the Scheme.
- 4.3.2 These will be discussed in context in the following baseline assessment.

#### Non-designated Assets



- 4.3.3 There are 104 non-designated assets within the 1km study area. These consist of records of archaeological evidence dating from the Mesolithic to the post-medieval periods and upstanding historic records from the post-medieval periods. The details of these assets are set out in the following sections.

### Chronological Overview

#### Palaeolithic (800,000 – c.12,000BC)

- 4.3.4 This period was characterised by the development of stone tool technologies. It spans the end of the Pleistocene geological epoch and marks the emergence of modern humans from earlier hominid species by the Upper Palaeolithic period (c. 40,000 – c.10,000 BC.). By the end of the Palaeolithic, the ice retreated for the last time as the climate got warmer and drier, and woodlands expanded.
- 4.3.5 The landscape in general would have been unfavourable for people to live permanently due to its cold climate. However, during the short summers, it is possible that hunter gatherer communities crossed the landmass which connected Britain to continental Europe. Human settlers in Britain would have survived by hunting reindeer and elk and gathering the few edible plants.
- 4.3.6 There is no evidence of this time period in the study area.

#### Mesolithic (10,000 – 4,000BC)

- 4.3.7 The landscape changed during this period, corresponding with a period of rising sea levels and landward inundation as the post-glacial ice sheet melted. The arrival of microlithic technologies marks this period, many of which were fixed onto spears and harpoons required for hunting. Mesolithic people followed a seasonal pattern of occupation depending on food source management. Activity would likely have been focused close to rivers for predictable resources sourced through hunting, gathering and fishing.
- 4.3.8 There is very little evidence of this time period in the study area however, at a site on the Hundred Road (MCB18211) 85m west of the Scheme, a small lithic assemblage of 58 residual worked flints was recovered from the topsoil. No clear concentrations were evident, but a significant later Mesolithic or early Neolithic component to the assemblage indicates activity in the vicinity. In line with wider archaeology of the Fenland, it is likely that this area was utilised for resources on a seasonal basis during the Mesolithic period.

#### Neolithic (4,000 – c. 2,500 B.C)

- 4.3.9 The arrival of farming from continental Europe marks the beginning of the Neolithic period and a radical change in the relationship between people and the natural environment. This period witnessed extensive forest clearances to make way for crops and animal herds, and a marked almost absolute decline in inclusion of hunted meat or foraged wild food, in the diet. The Early Neolithic is comparable to the Mesolithic in terms of stone tool technologies however, this period saw the development of monumental features including long barrows and causewayed enclosures. The Middle Neolithic is marked by the earliest evidence of stone circles, cursus monuments and individual burials. The Late Neolithic period, whilst demonstrating some cultural overlap, saw an introduction of a new style of pottery, along with henges, a replacement of rectangular style dwellings with smaller round ones, palisaded enclosures and an increasing focus on springs and the sources of rivers.

- 4.3.10 There is some evidence of this time period in the study area which is largely concentrated to the south of the Scheme. In 1973, a Neolithic flaked flint axe was uncovered near to the Fen Causeway (MCB02010) 200m south-east of the Scheme, with a further assemblage of struck flints and small animal bones located on Norwood Road, 620m south of the Scheme, which has too been dated to this time period (MCB18159). At Foundry Road, 400m south-east of the Scheme; 16 later prehistoric worked flints were uncovered ground together on an otherwise Roman site which led to a conclusion of background Neolithic occupation (MCB19586). Further evidence has been provided by excavations of a post-medieval site on Elm Road where a small, polished axe (MCB19586) thought to be Neolithic in date was discovered with an assemblage of modern artefacts.
- 4.3.11 This evidence shows that there was likely Neolithic occupation of the study area which was possibly seasonal and/or settled. Further evidence is possibly truncated by extensive Roman occupation of the area.
- Bronze Age (2,000 – 700 B.C)
- 4.3.12 The Bronze Age is characterised by the introduction of metal technologies. This period saw an increase in economic and cultural communications with mainland Europe giving rise to new burial rites, objects and technology. The climate began to deteriorate; where once the weather was warm and dry it became much wetter driving the population away from easily defended sites in the hills and into the fertile valleys. Ore sources, such as tin and copper, were both used as components for bronze smelting and thus became increasingly important as bronze gradually replaced stone as the main material for tools. The period sees the increase in visibility of settlement sites and associated field systems within the archaeological record across much of Britain.
- 4.3.13 There is extensive evidence of Bronze Age occupation in the study area ranging from find spots such as a facettted axe (MCB03844), rough brown glacial flints and jacks (MCB04548), flint scatters (MCB08459) and beaker sherds (MCB07936). A particularly interesting find was a small, one-handed urn found just north of March station in overlying soil (MCB05924). It was elaborately decorated with cross-hatchings, oblong hexagonal compartments, and a broad zigzag around the lower part. It was found 250m west of the Scheme with other pottery in the ballast pit worked at the time of the construction of the Peterborough and Ely branch of the Great Eastern Railway.
- 4.3.14 A number of features have been uncovered during excavations in the area, including in proximity to the footprint of the scheme. At Estover Road, 800m south-east of the Scheme, a few Bronze Age and Iron Age features were revealed which included an isolated pit with Beaker pottery (MCB07936b) but there was insufficient evidence to suggest the presence of any substantial prehistoric site. 330m west of the Scheme, early Bronze Age remains were uncovered in Whitemoor sidings (MCB16673) consisting of ditches, small shallow pits and postholes with small quantities of early Bronze Age pottery, a couple of thumbnail scrapers and several flint flakes. The pottery assemblage includes fragments from a small, collared urn and two beakers with incised decoration. Late Bronze Age remains at the same site (MCB16674) consist of pits containing Late Bronze pottery, flint flakes and burnt stone. The central pit contained a sequence of organic rich fills, containing burnt animal and fish bone, along with charred cereals, weed seed and nut fragments. This site is suggestive of more extensive Bronze Age occupation in this study area.

- 4.3.15 A further high concentration of Bronze Age features have been identified at a site on Hundred Road (MCB18212) 300m west of the Scheme which comprised of a series of linear features and pits with at least two phases of water holes. Post-holes and domestic debris indicated a possible structure which was interpreted as a cremation pyre. Several burials were recovered. Another inhumation burial (MCB15266) was found in an area of many enclosures and/or drove ways dating to the late Bronze Age or mid-Iron Age located 770m south-east.
- 4.3.16 Two further pieces of evidence exist in the form of cropmarks of ring ditches identified from aerial photographs as a possible double concentric ring ditch and round barrow at Westry Farm (MCB29292) 130m north-west and Longhill Farm (MCB29293) 850m west respectively.
- 4.3.17 There is clearly extensive evidence of Bronze Age occupation in the study area which likely consisted of settlement and associated activities. There is evidence suggesting that some areas of Bronze Age occupation continued into settlements of the Iron Age and Roman periods.

#### Iron Age (c. 700BC – AD 43)

- 4.3.18 The Iron Age period is characterised by the adoption of iron working techniques with settlement areas and associated agricultural land division become more extensive. However, generally, people continued to live in small villages and farmsteads. Due to the iron technology, tipped ploughs made farming more efficient and agricultural production increased. The Iron Age also saw the wider use and the further development of hillforts, possibly for the defence of intermittently occupied settlement and storage areas. These began to be built in the late Bronze Age, around 1000 BC, but became much larger and more elaborate throughout the Iron Age.
- 4.3.19 There are a number of recorded assets of this period within close proximity to the footprint of the scheme. 800m north-west of the Scheme, an unploughed earthwork site with possible stock enclosures and signs of industrial activity has been uncovered (MCB07936). The site likely dates to the late Iron Age or early Roman period but it is certain that it dates to before the construction of the Fen Causeway. The site includes local coarse pottery, pottery appropriate to a Claudio-Neronian date and a rural burial placed along the field boundaries. At a multi-phase site on Foundry Way (MCB30645) just 130m south of the Scheme, Late Iron Age features including evidence of a structure, pottery, briquetage and animal bones were uncovered with evidence of reuse of Bronze Age features.
- 4.3.20 In addition, cropmarks of a double-ditched Iron Age or Roman settlement enclosure (MCB08441) can be seen 900m to the west of the Scheme. This is defined by two concentric broad ditches with an entrance through both to the north. It is surrounded by cropmark traces of ditches which may be boundaries and enclosures. Immediately to the north are two overlapping ring ditches which may represent the remains of earlier round barrows.
- 4.3.21 There is clearly evidence of the Iron Age in the study area although it is less extensive than the Bronze Age and Roman periods. It is likely, however, that some evidence may have been truncated by later Roman settlement and/or difficult to differentiate from evidence of these time periods.

#### Romano-British (AD 43- AD 410)

- 4.3.22 The British landscape changed rapidly after the arrival of the Romans in AD43. A new road network was established, connecting the major settlements and forts

located throughout the landscape (Margery, 1967). Many former Oppida (an Iron Age trading settlement/central place) became regional administrative centres, and the new roads saw expansion of rural agricultural settlements, centred on farms or villas with larger market type settlements often located where roads crossed rivers.

- 4.3.23 The Roman occupation of the area is extensive which is likely due to the presence of the Fen Causeway which transects Hundred Road at the southern end of the site boundary (MCB15033). The Fen Causeway runs between Denver in Norfolk in the east and Peterborough in the west. It covers 39km, passing March, before joining the major Roman north-south route, Ermine Street, west of the modern-day Peterborough. Within the study area, the site of the road is identifiable by a number of cropmarks and earthworks to the north and south. Built structures and features within proximity to the road include a shrunken kiln, a possible shrine as well as paddocks and enclosures (MCB09381) and a large roadside ditch (MCB16828). Significantly, evidence of the metalled surface of the road itself was identified 840m south-east of the Scheme in approximate position of the Fen Causeway (MBC20684). Associated with this platform were examples of rare Roman pottery and animal bone, iron and wooden objects, burnt and struck flint. In addition, environmental samples revealed some charcoal and/or charred wood, seeds indicative of damp, rough grassland and some cereal fragments. This all gives evidence of extensive use of this stretch of the road.
- 4.3.24 There are a number of recorded assets of this period within close proximity to the footprint of the scheme. A number of isolated finds have been uncovered dating to this time period including a stamped handle (MCB05905), a grey ware pottery vessel (MCB05906), pottery scatters (MCB08443/MCB08445/MCB08452), two collections of Roman Nene Valley ware and grey ware (MCB17742/MCB17743). The closest of these to the Scheme is a pottery scatter located 15m north of the Scheme on Longhill Road (MCB08445).
- 4.3.25 A number of isolated features indicative of settlement of this area have been identified and/or excavated including two loose groups of Roman enclosures (MCB05907/MCB05925), ditches (MCB18456), a possible ditchway or trackway (MCB08440), a number of NW-SE and NE-SW orientated ditches (MCB16675), a rectilinear enclosure (MCB08972) and a cluster of ditches, pits and gullies containing Roman pottery (MCB15267). An extensive field system of ditches, tracks and watercourses have also been identified (MCB08978) and analysis suggests that the modern field boundary 'Hundred Drove' follows the line of an ancient road from Flagrass Roman settlement 150m east of the Scheme. A further field system was identified 630m south of the Scheme which is thought to have been associated to the settlement on the fringes of March (MCB18160).
- 4.3.26 Evidence of settlement has also been uncovered through archaeological works at Norwood (MCB06016), 15m north of the Scheme where a small group of sub-rectangular enclosures either side of a stream revealed loom weights, a quern, a skeleton of premature baby under a probable hut floor as well as a large area of "saltern pits" producing briquetage and a possible salt works (MCB08444). Further inhumations were uncovered during excavations 200m south-east of the Scheme in 1950 (MCB06001) at a possible Roman burial ground or camp where discoveries included bone instruments, early Roman pottery and silver and copper coins. However, the exact location of these excavation is disputed. Further extensive occupation is evidenced by a site on Foundry Way 80m south of the Scheme (MCB18546) where 24 features including postholes, pits, several



ditches, a watering hole and a possible well with related structure (group of intercutting pits) were identified. Artefactual evidence includes animal and plant remains, a large amount of Roman pottery and a Hertfordshire puddingstone rotary quern. There is evidence of extensive modern disturbance.

- 4.3.27 In addition to the settlement evidence, a major early Roman salt making site has been uncovered dating to the 1st and 2nd centuries also on Foundry Way 140m south of the Scheme (MCB15747). The remains were extensive and well-preserved, comprising structural evidence and industrial features including a kiln with flue and associated postholes. Briquetage, salt and salt-making objects were recovered in abundance. The domestic occupation evidence comprised enclosure ditches, posthole and possible slot structures, wells, pits and other features, in addition to an assemblage of pottery and animal bones suggestive of an average status site. Soil sample evidence suggests grass and reeds were used as fuels and that crops were being processed in the vicinity
- 4.3.28 It is clear that there is some overlap between the Iron Age and Roman periods with Roman activity present at a number of Iron Age sites including 140m south of the Scheme on Foundry Way (MCB30645) where the Roman period of activity consisted of a series of intercutting ditches forming boundaries that appear to respect the earlier Iron Age ditches. Continued field systems from the Bronze Age to Roman periods have also been interpreted at a site on Hundred Road 80m west of the Scheme (MCB18213) where the area has been associated with intensive horticulture.
- 4.3.29 There was clearly extensive occupation of this area during the Roman period which is likely due to the close proximity of the Fen Causeway and development of an earlier settlement.
- Medieval (AD 410 – AD 1520)
- 4.3.30 Historical records show that March was a pre-conquest settlement; it was given to the monastery of Ely in c. 1000 (Atkinson et al, 2002, p116-123) and was recorded as a settlement in the Domesday Book, as Merche, (likely deriving from the Old English, Mearc meaning ‘boundary’). By 1250, it was a fair size village and became the county town of the Isle of Ely. The oldest church in the town, St. Wendreda was originally built in 1346 and is dedicated to the town’s own saint, the 7th century Anglo-Saxon daughter of King Anna of East Anglia. This is the only known dedication to her.
- 4.3.31 Before the draining of the Fens during the 17th century, March was essentially an island in the marshy fens which operated as a minor port for coal and grain trading. A market appears to have been held at the centre of the town during this time period however, this was not formalised until the 17th century.
- 4.3.32 A system of drove roads across the ridge are preserved in the modern road system, Hundred Road (Norwood Drove, shown in Figure 4-8 below) being one such example. Given the established history of trackways and its location on higher ground to facilitate settlement and transportation, it’s likely these were early roads as with other locations in the fens such as Flag Fen and Bradley Fen. Having a long history, nationwide, drove roads hit their height during the medieval period and (locally) as the fens were drained. These helped facilitate the movement of livestock seasonally to and from the fen pastures to the market in March, and via interconnecting droves and markets more widely.
- 4.3.33 There is no surviving evidence of this time period in the study area.

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#### Post Medieval (AD 1520 - AD 1900)

- 4.3.34 The Study area has undergone much change during this period. The area within the footprint of the scheme does, however, include land that has not demonstrably altered since it was depicted on early 19th century mapping,
- 4.3.35 The draining of the Fens in the 17th century, and the construction of the Twenty Foot River (MCB05937) on the Middle Level of the Cambridgeshire Fens (cut by Cornelius Vermuyden in 1651 from Whittlesey Dyke), enabled expansion of March and development of the surrounding countryside. Although the waterway was primarily intended for drainage it was also used for other activities such as the transportation of agricultural produce within the area. This was assisted by the erection of a single arched bridge over the River Nene which linked areas to the north and south of the settlement. In 1670, a charter was granted by Charles II to the Lord of the Manor of Doddington allowing a weekly market and two annual fairs to be held at March. From this time, the town developed in size due to its ever-expanding role in trade and industry.
- 4.3.36 The commons (in which the Site is located) were over stocked during the 17th century due to this population growth and piecemeal inclosure began during this period. Northwood Common was part of a section of the commons set aside for common and cow pasture, administrated in such a way as to manage overstocking.
- 4.3.37 There are a number of asset records in the HER which refer to civil buildings and residences evidencing this expansion of settlement after the inclosure of the commons. These assets have largely been identified through survey of the 19th century OS maps, as further 20th century expansion has led to their demolition.
- 4.3.38 The 1841 tithe map (Figure 4-8) shows the study area as entirely agricultural with little development; Hundred Road is marked as 'Norwood Drove', with small stripfields arranged either side. (The name 'drove' relates to the function of the roads as cattle drove roads, providing access to agricultural land across the fens.) Norwood Road is marked as Mill Road, with Estover Farm (MCB24283) clearly marked. Norwood House (MCB27531) can be seen to the northwest and Elm Road (although not named) is clearly shown to the east of the study area. Longhill Farm (not an asset, now covered by Norwood Junction) is also possibly present as three buildings are marked in the same location.
- 4.3.39 The 19th century draft first edition OS map (Figure 4-9) show that the site is located to the north of March village, on what was once Norwood Common, again with the current Hundred Road labelled as Norwood Drove and with Norwood House to the northwest. Twenty Foot River (MCB5937) can clearly be seen marked to the north. Prosperous House (MCB27997) and garden and Temperance Hall (MCB24290) are also marked.



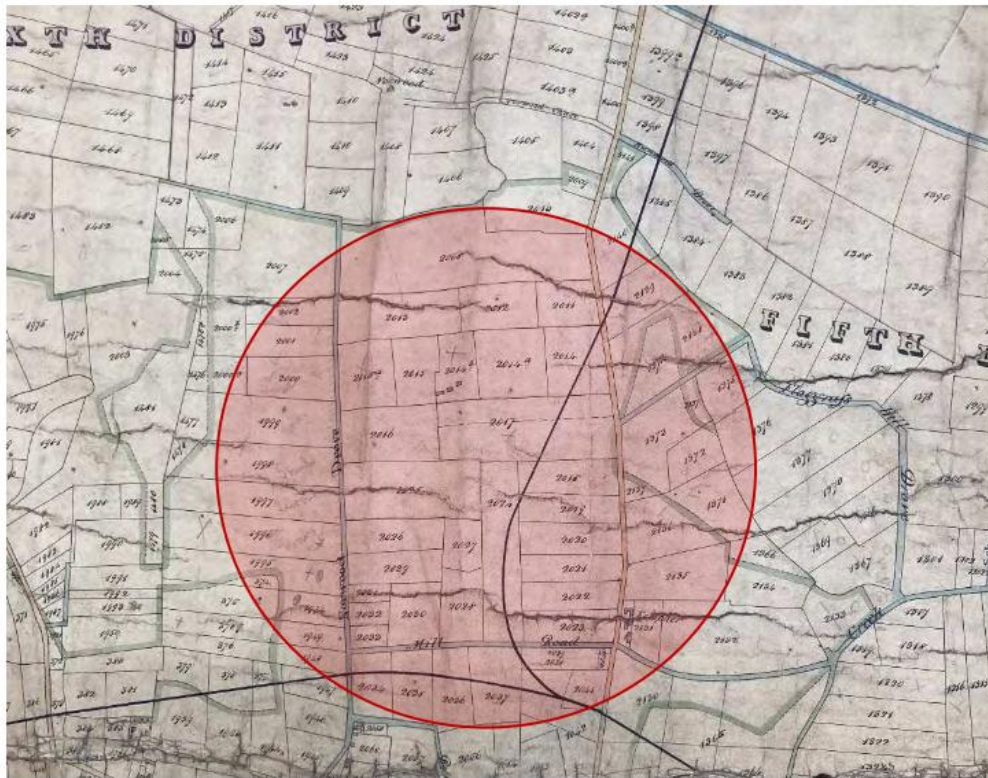


Figure 4-8: 1841 tithe map showing the location of the site as agricultural. Norwood Drove can be seen running north to south, now Hundred Road.



Figure 4-9: 19th century draft first edition OS map showing the area of the site marked as Norwood Common.

- 4.3.40 The 1st edition Ordnance Survey mapping (Cambridgeshire XII.13, 1887, 1:2,500) shows the large amounts of railway infrastructure that were put in place across the study area and surrounding area by the mid-19th century. Residential development (such as Whitemoor Cottages) and new farms, enabled by improved transport infrastructure are evident on the 1st edition, including Longhill Farm (MCB27529), Longhill Farm North (MCB27530), Vinegar Hill Farm, Westry Farm, Flaggrass Hill Farm (MCB24287), The Wrangles (MCB22917).
- 4.3.41 In addition to these residential properties, there is the site of a former windmill marked as 'old windmill' on the 1st edition OS 1885 map (MCB24260). Only the single-storeyed brick base of this smock mill still existed when it was recorded in 1972. At that time an octagonal slate roof had been added to use it as a store in a builder's yard but it has since been demolished. The nature of the survival of this asset is unknown.
- 4.3.42 A Non-Conformist Chapel was also founded in the area in 1859 as an extension of West Fen Chapel but it has since been demolished and the exact former location is uncertain (MCB16676).
- 4.3.43 Morgan House, Norwood Road (Grade II listed building, NHLE 1216356) also dates from this period and is an early 19th century brick house of 2 storeys painted with steeply pitched, pantiled roof and end parapets and stacks.
- 4.3.44 Also mapped are a number of assets associated with various industries in the area including the site of gravel pits (MCB24284) which have since been built over, the site of manure works no longer extant (MCB24285), a former blacksmiths workshop (MCB27532) and beer house (MCB27533) both of which are most likely, non-extant.
- 4.3.45 The historic character of the modern site is dominated by the Whitemoor Marshalling Yard which relates to the March and Wisbech Railway. This opened in 1847 with a station on the South Brink (MCB19612). This original line departed March and St Ives to Wisbech. However, in 1848, The Ely to Peterborough line of the Great Eastern Railway (linking St Ives and March, as well as Peterborough and Wisbech) was opened (MCB 24025). The original 1847 railway line was joined to this new connection and the full line remains in use today. A photograph of the line as it passes under Norwood Road to the south of the site extent can be seen in Figure 4-10. A further line opened in 1879 by the Great Northern Railway (MCB26852) in competition for the northern coal trade and eventually, both rail companies agreed to run the rail in partnership. The intermediate stations closed in the 1950s and 1960s but freight traffic continued into the later 1970s.
- 4.3.46 The influence of these trade routes assisted the town's expansion and due to its location at the north end of the town, encouraged the northward trend of the town plan which was a shift away from St Wendreda's Church as the original nucleus of the town (Atkinson et al, 2002, 117). In 1921, 22.3% of employed males in the local population were employed at the sidings so it had a large impact on the development of the town. March Railway Station (MCB16618) was rebuilt in red brick in the 1860s but has been altered many times since. It has a platform canopy supported by cast-iron columns with decorative spandrels. It has also a cast-iron footbridge over the tracks and an overall use of a multicoloured paint scheme which produces an attractive appearance.
- 4.3.47 The Whitemoor Marshalling Yard (MCB16676) itself is transected by the Scheme at the northern end. The yard was first developed as a railway-sidings in the



1850s as a result of March's location close to the inland port of Wisbech in the highly productive agricultural heartland of East Anglia, and at the nodal point of the web of fenland routeways. It was first depicted on the 1886 first edition OS map as loop lines of the Great Northern and Great Eastern Joint Railway line with an engine shed, good sheds and small structures. The site of an engine shed and associated railway track have been recorded (MCB24286). The sidings progressively expanded westwards until it reached capacity at 1265 wagons. In 1929, the LNER opened a new marshalling yard as a result of increased rail freight traffic. The new yard was referred to as 'Up' yard and was substantially larger than the former sidings now known as 'Down' yard (MCB31729). The 'Up' yard was the first to use the Fröhlich system of hydraulic brakes and with a capacity for over 8000 wagons, it was the largest marshalling yard in Great Britain. Freight traffic slowly declined throughout the late 20th century and the marshalling yard closed in the early 1990s. On closure, the site was largely demolished with the only visible evidence remaining being a layer of ballast, a concrete faced ramp at the NE corner of the site and the 19th century railway water tower in English bond red brick with ashlar dressing and a welded steel tank (Grade II listed building, NHLE 1228967). In 2003-4, archaeological works were conducted at the site in advance of redevelopment on the former marshalling yard which uncovered extensive evidence of the former use of the site including brick and concrete foundations of a goods shed, engine shed, water cooling tank and examination tunnel as well as two railway turntables, inspection pits and sections of rail track (MCB19672).

- 4.3.48 Archaeological excavations have also revealed evidence of this period. Following evaluation in 2006 on land to the east of Norwood Road, 50m east of the Scheme, a series of post holes aligned north-south were uncovered which were interpreted as either a fence line or the remains of an ephemeral building dating to the post-medieval period (MCB18161). In addition, at an excavation at land south of Phoenix House, 1km west of the Scheme, a rough brick surface of 17th-19th century date (MCB20095) was recorded towards the south of the site which has been interpreted as part of a path or garden feature. Other cropmarks of a series of linear and curvilinear features, enclosures and a watercourse of unknown date, directly south of Chain Bridge Farm, Elm (MCB11642) have been recorded as well as two post-medieval ditches (MCB15268) at a site on Northern Office. Evidence of St Mary's Church Rectory formal gardens have also been uncovered (MCB12167) 1km south-west of the Scheme.



**Figure 4-10: Bridge over the railway on Norwood Road (looking north).**

Modern (1900AD - present)

- 4.3.49 Over the course of the eighty years between the 1st edition Ordnance Survey and mid twentieth century mapping, expanding railway infrastructure covered the entirety of land to the east of Norwood Drove/Hundred Road and to the south of Longwood Road, up to Longhill Farm North (OS mapping, not shown). This expansion swallowed Long Hill Farm (MCB27529). Huge commercial and residential development has altered the historic character of the landscape surrounding the site, to the extent that much of the 19th century rural agricultural infrastructure has gone. These include The Wrangles (MCB22917); Westwood House (MCB24261); Estover Cottage (MCB26842); Norwood House (MCB27531) (which can be seen on the 19th century OS map in Figure 4-9); Norwood Cottage (MCB29402); Longhill Farm (MCB27529); Longhill Farm North (MCB27530); Spalding House (MCB27996) and Prosperous House (MCB27997). Estover Farmhouse (MCB24283) is thought to still be extant although the associated farm buildings have been demolished and replaced with modern alternatives. Flaggrass Hill Farm (MCB24287) has been rebuilt over time, although it is possible that aspects of the original building may survive to some extent at the present farm site. Temperance Hall (MCB24290), 1km south-east, remains extant.
- 4.3.50 There are a number of assets of World War II date within the study area, these include a Type 22/24/28 shell proof pillbox (MCB16445) and a Type 28a anti-tank gun emplacement (MCB16446) both located 700m north-east of the Scheme and both destroyed in 1987. Three Type 24 thin-walled brick-shuttered



pillboxes (MCB16447/16448/29658) approximately 300m north of the Scheme. Three Type 22 pillboxes shown on the 1970 1:2500 OS map have since been demolished (MCB29658/29659/29660) as has a Type 24 concrete and brick pillbox at March rail yard, north of Norwoodside (MCB29294) and a former World War Two Home Guard store (MCB16451) located 400m north of the Scheme. In addition, during excavations at the Marshalling Yard, a number of WWII brick-built surface air raid shelters with reinforced roofs were identified (MCB19672). These assets show the extent of military defences in this town during the 1940s however, most don't seem to be extant.

- 4.3.51 At the north-west corner of the Scheme is HMP Whitemoor (MCB29290) which was constructed in 1988 on the site of the former marshalling yard north of March. See view of the prison from the road in Figure 4-11. It was first intended to be a category-B prison however, it was later upgraded to make it a dispersal prison for category-A inmates. The prison opened in October 1991 with accommodation for 534 inmates. Whitemoor is an example of a “New Gallery” prison design with common services in the central spine of buildings with cruciform houseblocks. Cell wings of New Gallery houseblocks are open-galleried and not floored as in 1960s prison design.
- 4.3.52 To the west of the scheme is the March Recycling Centre which is located within an infilled quarry (see Figure 4-12, below). Its presence indicates that there is no archaeological potential in this area, although archaeological potential still exists between Hundred Road and the limits of the recycling centre.



**Figure 4-11: View of HMP Whitemoor on the left facing east on Longhill Road.**





**Figure 4-12: View of the March Recycling Centre facing south-west from Hundred Road.**

#### Unknown

- 4.3.53 A number of assets within the HER are cropmarks of unknown date. These include a number of cropmarks of intersecting banks (MCB08976), a double-ditch or track with a small rectilinear enclosure attached to the east side (MCB08977), possible rectangular enclosure with rounded corners and adjacent enclosures (MCB08979), a ring ditch at MCB08980 and irregular enclosures (MCB30035). Linear features were noted at MCB09380, MCB09433, MCB11000 and at MCB20496, the linear features included buried enclosures and tracks. Cropmark evidence of agricultural features were noted in the form of probable field boundaries at MCB09379, MCB15692 and MCB10694 and trackways conforming to roddon and water systems at MCB11001 as well as undated drains at MCB30648. This shows that there is extensive historic use of the study area.



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## 5. Archaeological Assessment

### 5.1 Potential Impact

- 5.1.1 If any previously unknown archaeological evidence was uncovered as a result of this Scheme, it would be impacted. There are sections of the site, particularly to the west of Hundred Road and north of Longhill Road, where surviving remains are very likely. However, it is important to note two things. Firstly, over large sections of the site, any surviving remains are likely to have been truncated by the railway, the marshalling yard and recycling centre.
- 5.1.2 Secondly, of the areas of greater potential mentioned above. Evaluations have already taken place at Barn Farm west of Hundred Road (ECB282), within the Marshalling Yard (ECB3845) and to the north and south of Longhill Road at the junction with Foundry Way (ECB1437). Excavations of unknown extent also took place during 1950-61, within the field to the north of Longhill Road at the junction with the B1101, where the Roman settlement and possible possible saltworks was identified (MCB6016; ECB496). Compounded with further development at the site, it is unlikely that proposed works within the site would encounter any new archaeology within most of its footprint.
- 5.1.3 It is also important to note that the nature of the proposals largely entail improvements to an existing road and thus it is not considered likely that extensive archaeology would be uncovered that has not previously been identified from the construction and maintenance of the road. Impacts are most likely where ditches and pavements are planned outside of the existing footprint of the road. The possible earthworks within the field surrounding the March Recycling Centre may be the most vulnerable to change introduced by the proposals (MCB10763).

### 5.2 Significance and Potential Survival

- 5.2.1 The Site follows a ridge of higher ground in proximity to the Roman Fen Causeway and within and overlooking former fenland. Given its prominent location on higher ground and the ridge, it would have attracted activity from a very early date. As a result of this, there is a moderate to high archaeological potential within areas of the Site's footprint that have not been previously disturbed.
- 5.2.2 There is considered to be a very low potential for archaeology associated with the Palaeolithic. Similarly, there is considered to be a low potential for archaeology associated with the Mesolithic as there is only fragmentary surviving evidence. There is considered to be low potential for Neolithic archaeology as evidence in the area is limited to flint artefacts with any evidence of more extensive occupation likely truncated by later settlements. Despite this, given the environment of the wider Fenlands and discoveries elsewhere, encountering evidence of the prehistoric cannot be entirely discounted.
- 5.2.3 There is considered to be moderate to high potential to encounter archaeology of Bronze Age date as there is evidence for extensive occupation of this area during this time period. Any evidence encountered is likely to consist of cut features such as pits, ditches and postholes and/or associated or isolated finds of pottery, tools and organic fills.

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- 5.2.4 Surviving evidence of the Iron Age in the study area is restricted to agricultural enclosures and signs of industry. Whilst there is less evidence of Iron Age occupation of the area, it is likely that occupation was continuous from the Bronze Age through to the Roman periods. The lack of surviving evidence could be explained by the continued use of Bronze Age settlements and the similarity of late Iron Age and early Roman archaeology preventing clear categorisation. For this reason, there is considered to be a moderate potential for archaeology of this time period to be uncovered.
- 5.2.5 There is considered to be a moderate to high potential for archaeology associated with the Roman period as there is extensive evidence of settlement likely associated with the Fen Causeway which transects Hundred Road at the southern end of the site boundary. There are surviving features associated with this road and evidence of it is found frequently in excavations in the study area. Any surviving evidence is likely to take the form of cut features, evidence of salt industry, isolated and associated finds and surviving road surface.
- 5.2.6 There is considered to be moderate potential for archaeology associated with the medieval period.
- 5.2.7 Whilst there is a clear post-medieval settlement in the area, it is likely that archaeological potential is restricted to the area of the marshalling yard where previous excavations have revealed extensive evidence for the 19th century railway. As the area has been thoroughly excavated and it is unlikely that further evidence of this period would be uncovered at the site. For this reason, despite the large amount of post-medieval evidence in this location, there is considered to be a moderate to high potential for archaeology associated with the railway to be uncovered as a result of this Scheme.
- 5.2.8 There is considered to be low potential for archaeology associated with the modern periods to be uncovered as a result of this Scheme.

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## 6. Significance and Impact Assessment

### 6.1 Designated Assets

March Whitemoor Yard Marshalling Water Tower (NHLE 1228967, Grade II Listed Building)

#### Significance

- 6.1.1 The significance of the Water Tower (NHLE 1228967, Grade II Listed Building) is entirely related to its age and function as a late 19<sup>th</sup> century railway water tower within a large 19th century marshalling yard. Steam trains would stop to replenish their supplies of the water needed to operate their engines. Aspects of the structure such as the brick cornice and segmentally arched windows, lift the design beyond merely functional which contributes to its architectural significance. The railway is the sole element of its setting which contributes towards its significance. The surrounding roads do not lend much in the way of significance to the water tower, beyond the historical connection between their construction and the development of the area. At the time of survey, the water tower and road are not intervisible, being largely shielded from the road by hedges and trees as shown in Figure 6-1. It is only visible from a westerly view from Elm Road to the east Figure 6-2.

#### Impact

- 6.1.2 It is not anticipated that the Scheme will impact upon the significance of this asset as the road improvements will not alter the relationship between the water tower and those elements of setting which contribute towards its significance (namely the railway). It will not divorce the water tower from the railway infrastructure within which it has historically operated and will not introduce a new element into the setting of this asset and thus, no impact is expected.





**Figure 6-1: View towards the listed water tower which is shielded by these trees and hedges.**



**Figure 6-2: View westwards of the water tower (rectangular structure) from Elm Road.**

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## Morgan House (NHLE 1216356, Grade II Listed Building)

### Significance

- 6.1.3 Morgan House (NHLE 1216356, Grade II Listed Building) derives significance from its evidential value as an early 19<sup>th</sup> century residential property at a time of expansion in the area. It is the only surviving example of a group of rural residential dwellings depicted on the 1841 tithe map. It has minor architectural significance as a reasonable example of an early 19<sup>th</sup> century house. It derives no significance from its surroundings and from Google mapping imagery, appears to have a modern roof (Google 2022).

### Impact

- 6.1.4 It is not anticipated that Morgan House (NHLE 1216356, Grade II Listed Building) will experience impact as a result of this Scheme because it does not derive significance from its surroundings. It is located over 650m south of the southern end of the road improvements, and is surrounded by modern development. The Site does not form part of the setting of the asset, and the asset will not be visible from the works. The Scheme will not result in a change to the setting of this asset. Overall, no impact is expected.

## 6.2 Non-designated Assets

- 6.2.1 It is assumed that most of the non-designated assets will not experience impact as a result of this Scheme as they are either not extant, archaeological records, screened from the Scheme and/or at too great a distance to share a visual relationship. There are however, two assets which warrant consideration.
- 6.2.2 Whitemoor Marshalling Yard (MCB16676) draws its significance from its historical association with the Great Northern and Great Eastern Joint Railway which transformed March and facilitated its growth in the 19th century. It is also historically significant for being both the first marshalling yard to use the Fröhlich system of hydraulic brakes and the biggest marshalling yard in Great Britain at the turn of the 20th century. The yard also draws significance from its continued use from construction during the 1870s to the 1990s showing over a century of use of the site for the purpose for which it was built. This contributes to the significance of the asset as a whole. For this reason, it also has communal value for the development of the community of workers associated with this yard who have memories of this area as a daily place of work.
- 6.2.3 Despite the close proximity of the Scheme to the Whitemoor Marshalling Yard (MCB16676), it is not anticipated that it will result in impact to the significance of the asset as much of the site has previously been cleared for redevelopment at the start of the 21st century. In addition, the nature of this Scheme is to improve an existing road and it will not, therefore, introduce a new element into the setting of this asset. Furthermore, the role of this asset in facilitating greater transport and trade routes would be in line with the improvements proposed in this Scheme. No impact is anticipated.
- 6.2.4 Whitemoor Prison (MCB29290) is the only other asset in close proximity to the road and it draws its significance from its historical value as an example of a late 20th prison designed in the 'New Gallery' style which is a move away from floored houseblocks of the 1960s to open-galleried areas. It is thus aesthetically

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and architecturally significant. It also has communal value for former and current prisoners and their friends and family.

- 6.2.5 It is not anticipated that the Scheme will impact upon the significance of this asset as it is a modern prison built at the same time as the present road. In addition, prison design is, by its nature, inward looking and thus it is any change to the outer setting of this asset will not impact upon the significance of the asset itself. No overall impact is expected.



## **7. Conclusion and Recommendation**

### **7.1 Conclusion**

- 7.1.1 There is considered to be a very low potential for archaeology associated with the Palaeolithic, a low potential for Mesolithic, Neolithic, Medieval and Modern archaeology. There is assessed to be a moderate to high potential for archaeology of Bronze Age, Iron Age, Roman and post-Medieval date within parts of the site. Overall, an assessment of moderate to high potential for archaeology is made. Any finds are likely to be pre-Roman cut features and/or scattered artefacts or post-medieval evidence related to the former use of the area as a marshalling yard for the railway.
- 7.1.2 No impact is expected to any of the listed buildings or non-designated assets as a result of this Scheme.

### **7.2 Recommendations**

- 7.2.1 We propose that a programme of appropriate and proportional phased archaeological investigation is undertaken, using both non-intrusive and intrusive techniques, to develop a robust understanding of the archaeological potential of the Proposed Development site in order to develop a suitable approach to mitigation, be it through avoidance of impacts, preservation of archaeological remains in situ or through archaeological excavation.
- 7.2.2 The nature and scale of this phased programme of archaeological investigation would be developed in consultation with the Cambridgeshire County Council and/or Fenland District Council archaeological advisor(s) and be undertaken in accordance with a Written Scheme of Investigation.

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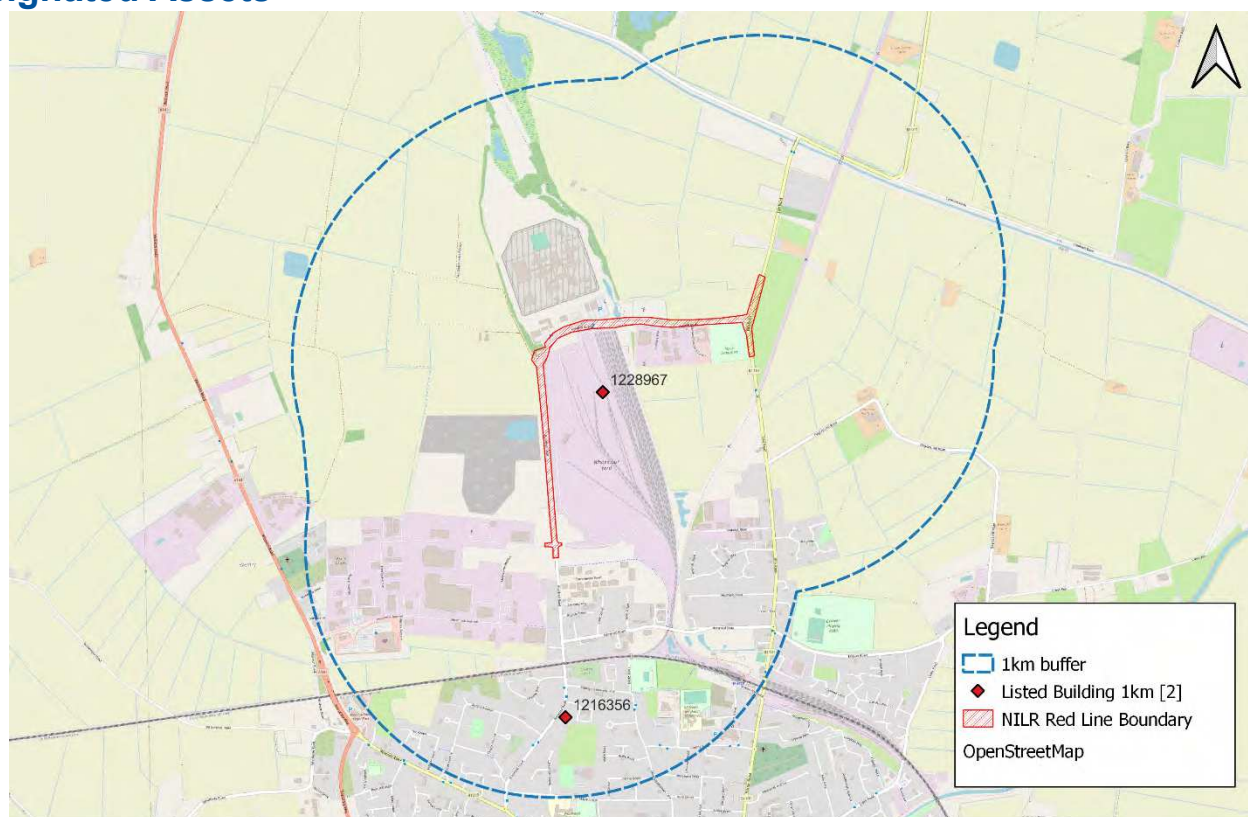
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# Appendices

## 1 Appendix A. Asset Plans

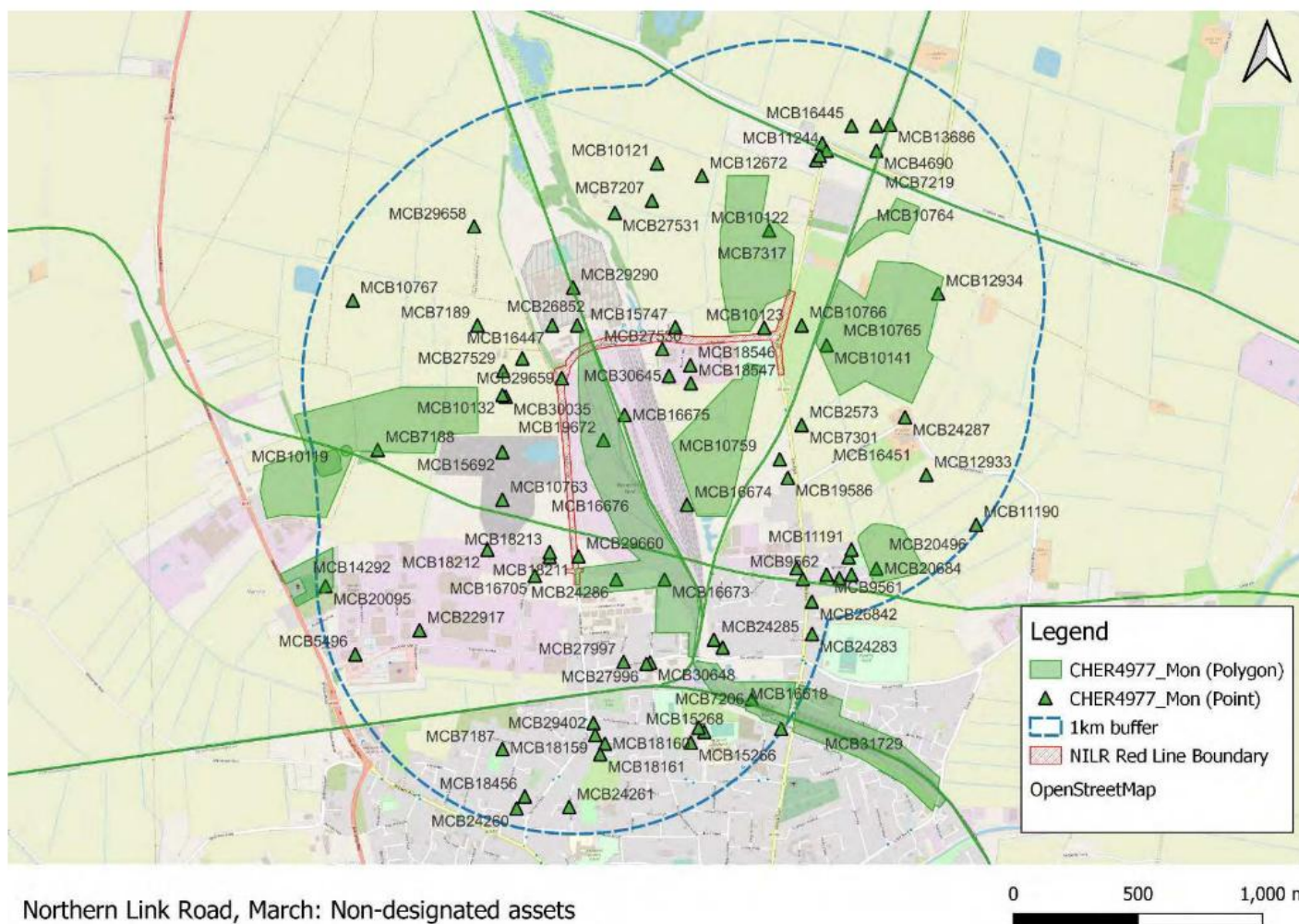
### 1.1 Designated Assets



Northern Link Road, March: Listed Buildings

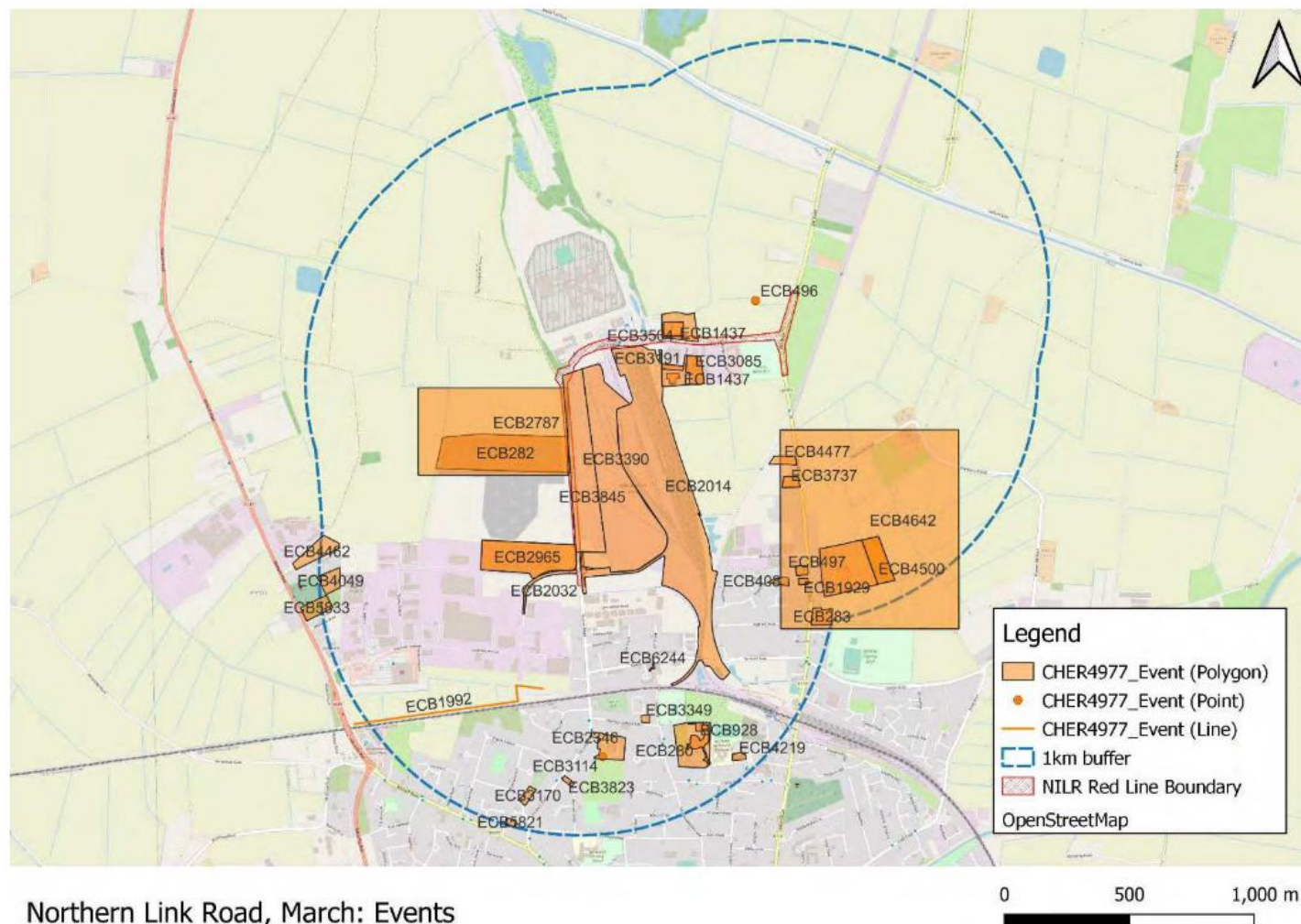


## 1.2 Non-designated Assets



Northern Link Road, March: Non-designated assets

## 1.3 Events



Northern Link Road, March: Events



## 2 Appendix B. Gazetteers

### 2.1 Designated Assets

NHLE Number	National Grid Ref	Site Name	Description (summary)	Designation
1216356	TL 41140 97694	Morgan House, Norwood Road	Early 19 <sup>th</sup> century brick house of 2 storeys, painted with steeply pitched pantiled roof and end parapets and stacks. Symmetrical facade of three original recessed window openings, now with mid C20 fenestration. Central doorway with C20 door.	Grade II Listed Building
1228967	TL 41295 99052	Water Tower, Whitemoor Marshalling Yard, March	Railway water tower. Late C19. Red brick in English bond with ashlar dressings. Welded steel tank. Rectangular plan. Sides have blind arcades; north and south of one bay, east and west two bays; with tall round arches with plain stone imposts. The east and west arches have large segmentally arched windows with cast-iron frames with glazing bars, the centre panes form a pivoted opening light. Brick cornice above and surmounted by large rectangular welded steel tank, probably a replacement.	Grade II Listed Building

### 2.2 Non-designated Assets

HER Number	Type	National Grid Ref	Site Name	Description (summary)	Period
02010	Find spot	TL 42 99	Neolithic axe find, Hundred Road, March	A flaked flint axe found in 1973 near the old Roman Causeway, Hundred Road, March; Length 17,3 cms, maximum width 4,5cms. Presented by H Brighty 23/07/1977	Neolithic
03844	Find spot	TF 423 000	Bronze Age axe, Elm	Late BA facettted axe. Found February 1971.	Bronze Age

04548	Find spot	TL 4021 9808	Bronze Age flint implements, March	Rough brown glacial flints. Ground left rough for building. Flint jacks also, but not kept. Fenland Survey.	Bronze Age
05905	Find spot	TL 408 977	Roman stamped handle, March	March, Russell Avenue: Stamped handle, IVL.SVRI.CR, in possession of Mr. CEM Fyson.	Roman
05906	Find spot	TL 403 989	Roman pottery vessel, March	"Westry" – roman babies bottle in grey ware or Roman lamp filler.	Roman
05907	Monument	TL 407 884	Linear features lying S of River Nene roddon	Loose group of Roman enclosures visible on RAF AP. Indefinite indications of settlement nucleus on drove leading N to W Water. Fragmentary cropmarks possibly associated with this group are visible on HE Reconnaissance aerial photographs taken on 5th September 2013. These are approximately 500m to the west at TL 4020 9944.	Roman
05924	Find spot	TL 418 979	Bronze age urn, March	Small urn with one handle, found just N of March station. Elaborately decorated with cross-hatchings, oblong hexagonal compartments, and a broad zigzag around the lower part. Found with other pottery in the ballast pit worked at the time of the construction of the Peterborough and Ely branch of the Great Eastern Railway. Not found in gravel, but in the overlying soil. Compact, well wrought ware, light-brown in colour.	Bronze Age
05925	Monument	TL 414 999	Roman enclosure, Norwood House, March	Loose enclosure group alongside West Water. No further information. Nothing visible on available RAF APs.	Roman
05937	Monument	TL 376 983	Twenty foot river	The Twenty Foot River is an artificial waterway on the Middle Level of the Cambridgeshire Fens; the Middle Level is the name given the area containing the network of waterways lying between and connecting the River Nene with the Great Ouse. It was cut by Cornelius Vermuyden in 1651 from Whittlesey Dike . Although the waterway was primarily intended for drainage it was also used for other activities such as the transportation of agricultural produce within the area.	Post-Medieval
06001	Monument	TL 42 99	Roman inhumation, March	Reported as mounds with Roman burial urn uncovered by plough in 1950. Possible Roman burial ground or camp. Discoveries include bone instruments, early Roman pottery; silver and copper coins; and a skeleton, believed to be that of a Roman soldier. From an examination of R2, the field might be either at TL/4211/9905 or at TL/4231/9890; more probably the latter as that appears to have some irregularity of surface.	Roman

06016	Monument	TL 418 996	Norwood Roman settlement	Small group of subrectangular enclosures either side of stream. Investigation 1959 - 1961 produced occupation from late C1 to C4 with loom weights, quern, skeleton of premature baby under probable hut floor (another skeleton from adjoining field) and large area of "saltern pits" producing briquetage including fire-bars and baked clay cylindrical stand; more briquetage, ash and burnt clay.	Roman
07936	Monument	TL 421 984	Roman enclosures, Estover Road	Unploughed earthwork site – early Roman or IA as pre-Fen Causeway. Possible stock enclosures with signs of industrial activity. Local coarse pottery uncovered with isolated rural burial placed along field boundaries. The earliest features included a pit containing a quantity of Beaker sherds. Further Early Bronze Age sherds came from other features. One of the earthwork enclosures may have been of Middle Iron Age date, being circular rather than rectangular and yielding potsherds of this earlier date as well as briquetage. The bulk of the earthworks appear to have been Late Iron Age/Early Roman, with pottery appropriate to a Claudio-Neronian date occurring in the primary fills of some of the ditches. The Fen Causeway and associated features produced sherds of 2nd to 4th century date. Unstratified metal finds included a Late Bronze Age/Early Iron Age ring-headed bronze pin and a Roman bronze circular plate-brooch.	Bronze Age to Roman
07936a	Monument	TL 421 984	Late Iron Age Remains, Estover Road	Unploughed earthwork site – early Roman or IA as pre-Fen Causeway. Possible stock enclosures with signs of industrial activity. Local coarse pottery uncovered with isolated rural burial placed along field boundaries (possible Roman).	Iron Age to Roman
07936b	Find spot	TL 421 984	Bronze Age features, Estover Road	A few middle to late Iron Age and BA features were revealed, but insufficient to suggest the presence of any substantial prehistoric site but an isolated pit with Beaker pottery, a further Bronze Age pit group, and a Middle Iron Age ditch were located.	Bronze Age
08440	Monument	TL 4026 9888	Roman settlement and field systems, March	Cropmark of probable later prehistoric or Roman broad double-ditched drove way or trackway visible on aerial photographs. It is centred at TL 4033 9902 and can be seen extending E-W in sweeping curve to the north of Westry Farm, then continuing NE to beyond Longhill Farm where it cannot be traced past Norwood Drove at c.TL 4099 9919. The cropmarks of probable IA/Roman settlement and field system can be seen coinciding with the trackway and further possible IA/Roman enclosures have been identified to the north of Longhill Farm.	Roman

08441	Monument	TL 400 988	Roman remains, March	Cropmarks of the double-ditched Iron Age or Roman settlement enclosure described above can be seen at TL 4008 9884 to the west of Westry Farm, visible on aerial photographs taken in 2009. The enclosure is defined by two concentric broad ditches with an entrance through both to the north. There appears to be an external ditched out-work around the enclosure entrance attached to the outer ditch, particularly prominent on the eastern side. The corners are curved and northern side slightly convex. It is surrounded by cropmark traces of ditches which may be boundaries and enclosures associated with the enclosure. Immediately to the north are two overlapping ring ditches which may represent the remains of earlier round barrows.	Iron Age to Roman
08444	Monument	TL 4186 9977	Roman salt works, March	Roman site 06016 - cropmark site and excavation	Roman
08443	Find spot	TF 4141 0005	Roman pottery, March	Few sherds only (late C2 - late C3) as site, formerly on a roddon, is now bulldozed flat. Cropmarks to SW.	Roman
08445	Find spot	TL 4185 9938	Roman pottery scatter, March	Area of dark occupation with sherds (early C3 -late C4). Saltern not seen but sherds collected.	Roman
08452	Find spot	TL 4080 9911	Roman artefacts, March	Gravelly boulder clay, dark area with burnt stone and a few sherds (late C2 - early C3). Poor crop condition.	Roman
08459	Find spot	TL 4210 9931	Bronze Age flint scatter, March	A scatter of Bronze Age flint was identified by the Fenland Survey on the fen edge.	Bronze Age
08972	Monument	TL 416 989	Ditches and enclosures	Parallel double-ditches heading N from three sides of a rectilinear enclosure towards an area of cropmarks and finds of Romano-British date	Roman
08976	Monument	TL 408 986	Banks, March	Intersecting banks. White cropmarks - presumably banks crossing one another. All may be geological. Disturbed area, which, if archaeological (unlikely) is too vague to plot.	Unknown
08977	Monument	TL 423 997	Cropmark complex, March	Cropmark of a double ditch or track with a small rectilinear enclosure attached to the east side.	Unknown
08978	Monument	TL 423 993	Romano-British agricultural remains, March	Extensive field system of rectilinear ditches and curvilinear tracks and a group of neat ditches in the north west forming a rectangular enclosure with rounded corners. Old watercourses can also be seen, but were not plotted. It seems possible that the modern field boundary "Hundred Drove" follows the line of an ancient road from Flaggrass Roman settlement.	Roman
08979	Monument	TL 420 993	Enclosures, March	Possible rectangular enclosure with rounded corners and adjacent enclosures.	Unknown

08980	Monument	TL 402 994	Ring ditch and possible enclosure, March	Small ring ditch. Three straight ditches meeting to form a right-angled U. Appearance looks too sharp to be archaeological. Lies in area of recent quarrying on light band.	Unknown
09379	Monument	TL 427 985	Field boundaries, March	Field boundaries; road is probably the Fen Causeway	Unknown
09380	Monument	TL 421 985	Enclosures, March	Linear features, possibly geology, but more likely recent boundaries as alignment parallels modern field divisions.	Unknown
09381	Monument	TL 421 984	Cropmarks nr Estover Cottage (Dagless Way, Elm Rd), March	Estover Cottage: small rectilinear enclosures under grass suggest settlement N of drove near probable line of Fen Causeway or fields of gravelly boulder clay. No finds. Adjacent field rough ploughed when visited.	Roman to Medieval
09433	Monument	TL 421 000	March Chain, cropmark	Cropmark, March Chain	Unknown
10694	Monument	TL 416 000	Old River Nene, March	Old river Nene with bordering ditches plus other enclosures adjacent. Some may be recent field boundaries (familiar in layout to some at Upwell associated with 'blocks')	Unknown
11000	Monument	TL 425 987	Linear features, March	Linear features (? part of field system described in RN 07936) plus double ditched track.	Unknown
11001	Monument	TL 425 995	Field system and trackway, March	Centred grid ref for area of fields and tracks irregularly laid out to conform to roddon / water system, although using straight ditches. Abuts Fen Causeway and Flaggrass.	Unknown
11642	Monument	TL 4235 0020	Cropmarks, Elm	Cropmarks of a series of linear and curvilinear features, enclosures and a watercourse of unknown date, directly south of Chain Bridge Farm, Elm	Post-Medieval
12167	Park and Garden	TL 400 983	Saint Mary's Church Rectory, March	St Mary's church rectory formal gardens	Post-Medieval
15033	Monument	TL 36994 98595	The Fen Causeway	Cropmark remains of part of the Roman Fen Causeway, an undated trackway and an undated linear feature adjacent to Sixteen Foot Drain Cropmarks of a Roman rectangular settlement with a trackway and field system, either side of the Fen Causeway. Scatters of Roman pottery have been recovered from the site.	Roman
15266	Monument	TL 41555 97725	Prehistoric and undated features, Northern Office	A series of late Bronze Age to mid Iron Age ditches were found during excavation, suggested to be the remains of enclosures and/or drove-ways. A single crouched inhumation was also excavated aged between 40 and 45 years old. It adhered to the common form of burial practice, it was on the left hand side with its head to north.	Late Bronze Age to Middle Iron Age
15267	Monument	TL 41586 97786	Roman features, Northern Office, March	Ditches, pits and gullies containing Roman pottery were found during the excavation of the site. Little evidence for post-Roman activity was observed.	Roman

15268	Monument	TL 41609 97769	Medieval and Post-Medieval features, Northern Office, March	Excavation revealed one medieval and two post-medieval ditches. Several modern features were found, including land drains and soakaways.	Post-Medieval to Modern
15692	Monument	TL 40800 98891	Field boundary ditches, Barn Farm, March	Excavations have identified a series of probable field boundary ditches peripheral to a concentration of activity to the north of the development area. No structural evidence or concentrations of occupation debris were identified and only six pottery sherds were recovered from 67 excavated sections.	Unknown
15747	Monument	TL 41493 99392	Roman salt working site and settlement, Longhill Road, March	Evidence of a major early Roman salt making site and associated settlement, dating to the first and second centuries AD. The remains were extensive and well preserved, comprising structural evidence and industrial features including a kiln with flue and associated postholes.	Roman
16445	Monument	TL 421 001	Destroyed gun emplacement, Chainbridge	Type 22/24/28 shell proof pillbox. Destroyed c. 1987.	Modern
16446	Monument	TF 423 001	Destroyed gun emplacement, Chainbridge	Type 28a anti-tank gun emplacement. Destroyed c. 1987.	Modern
16447	Monument	TL 410 993	Pillbox, March rail yards	Type 24 thin walled pillbox, brick shuttered.	Modern
16448	Monument	TL 410 993	Pillbox, March rail yards	Type 24 thin walled pillbox, brick shuttered.	Modern
16451	Monument	TL 4212 9885	Home Guard Store, March	The site of a Second World War Home Guard store alongside Flaggrass Hill Road, to the west of Flaggrass Hill Farm.	Modern
16618	Monument	TL 417 979	March railway station	Railway station included multiple sidings and sheds as well as March North and March East Junctions. On the Ely and Peterborough Railway, opened in 1846. Platform canopy supported by cast-iron columns with decorative spandrels at top. Cast-iron footbridge over tracks. Use of multicolour paint scheme produces an attractive appearance. Main building rebuilt in red brick in 1860s, but suffering from many alternations since.	Modern
16673	Monument	TL 4145 9837	Early Bronze Age remains, Whitemoor sidings, March	A number of Early Bronze Age features were identified in a trench in area 9, which was subsequently expanded to allow area excavation. The remains are characterised by ditches, small shallow pits and postholes, containing small quantities of early Bronze Age pottery, a couple of thumbnail scrapers and several flint flakes. The pottery assemblage includes fragments from a small collared urn and two beakers with incised decoration. The abraded nature of the pottery suggests it have been redeposited. The former extent of the	Bronze Age



				remains was not ascertained owing to high levels of disturbance in the surrounding area.	
16674	Monument	TL 4154 9868	Late Bronze Age remains, Whitemoor sidings, March	The remains comprise a line of three large pits on a E-W alignment, containing Late Bronze pottery, flint flakes and burnt stone. The central pit contained a sequence of organic rich fills, containing burnt animal and fish bone, along with charred cereals, weed seed and nut fragments. Two groups of postholes were identified in proximity to the pit alignment, and a further two intercutting pits occurred to the south, one containing late Bronze Age pottery and a complete loom weight	Bronze Age
16675	Monument	TL 4128 9903	Field system, Whitemoor sidings, March	A number of NW-SE and NE-SW orientated ditches were identified in area 2 at the northern end of the site, west of the water tower. Two of which were found to contain Romano-British pottery, and the features are interpreted as a probable Romano-British field system.	Roman
16676	Monument	TL 413 987	Whitemoor marshalling yard, March	19th century marshalling yard including the railwaymen's mess, plant maintenance depot, carriage and wagon workshop, wash plant, boiler house, train crews office, fuel point, and 8cwt crane.	Modern
16828	Monument	TL 4200 9838	Roman roadside ditch, Elm Road, March	Large roadside ditch to Fen Causeway. Some modern features but no evidence Roman settlement.	Roman
16835	Monument	TF 420 000	Site of Baptist Chapel, Chain Bridge, March	Non-Conformist chapel founded in 1859 as off-shoot of West Fen Chapel (also Baptist: MCB16835). Now demolished and exact location uncertain.	Modern
17742	Find spot	TL 42188 98469	Roman pottery, Burnet Gardens, March	A collection of Roman Nene Valley ware and grey ware collected from the garden of 12 Burnet Gardens, March. Much of the pottery is in good condition. At least one bowl was represented and several of the sherds appear to be from the same vessel.	Roman
17743	Find spot	TL 42151 98385	Roman pottery, The Hollies, March	A collection of Roman Nene Valley ware and grey ware collected from the garden of 5 The Hollies, March. Among the sherds were the base of a globular vessel and the rims of a small flagon, a grey ware jar and a grey ware bowl	Roman
18159	Monument	TL 41172 97756	Prehistoric feature, Norwood Road, March	An archaeological evaluation undertaken on land to the east of Norwood Road, March in 2006 encountered one large pit in the northwestern part of the site that contained an assemblage of struck flints and a small amount of animal bone	Neolithic
18160	Monument	TL 41211 97721	Roman ditches and field system, Norwood Road	An archaeological evaluation undertaken on land to the east of Norwood Road, March in 2006 encountered evidence of Roman activity, particularly to the northwest and southwest parts of the site. An east-west aligned ditch was excavated, running	Roman

				across the northwestern part of the site along with a series of large ditches thought to have been part of a field system or property boundaries for nearby settlement on the fringes of March.	
18160	Monument	TL 41192 97679	Post-medieval remains, Norwood Road	Further to evaluation, an excavation was undertaken on land to the east of Norwood Road, March in 2006 which encountered a series of post holes aligned north-south, dating to the post medieval period, thought to be a fence line or the remains of an ephemeral building.	Post-medieval
18211	Monument	TL 4099 9847	Late Mesolithic/early Neolithic activity, Hundred Road, March	A small lithic assemblage of 58 residual worked flints was recovered from the topsoil and later features during evaluation. No clear concentrations were evident, but a significant later Mesolithic/early Neolithic component to the assemblage indicates activity in the vicinity.	Mesolithic to Neolithic
18212	Monument	TL 4074 9850	Bronze Age remains, Hundred Road, March	High concentration of BA features comprising a series of linear features, intercutting and smaller pits, post holes and at least two phases of water holes, and a stretch of curvilinear ditch. Domestic debris. The post built structure was particularly intriguing, at 3m diameter was too small to be a dwelling and showed signs of repeated burning. Some of the cremations contained pyre material suggesting the structure may have been the site of a cremation pyre. Several burials were also recovered, including that of an infant and several children.	Bronze Age
18213	Monument	TL 4099 9848	Prehistoric and Roman remains, Hundred Road	An evaluation revealed at least two phases of field system in the eastern part of the proposed development area, including a truncated pre-Roman field system thought to be of Bronze Age date. A number of closely spaced linear features were recorded in the northern part of area 2, interpreted as a system of cultivation trenches, possibly associated with intensive Romano-British horticulture. Also a four-post structure and pit were also recorded, providing some evidence for prehistoric activity in this area of the site.	Late Prehistoric to Roman
18456	Monument	TL 4088 9750	Possible Roman ditches, Smiths Close, March	Evaluation recorded two ditches of possible Roman date, which may have formed part of an enclosure towards the centre of the site. No further archaeological features were identified and significant levels of modern disturbance were recorded in the southern part of the development area.	Roman
18546	Monument	TL 4155 9923	Early Roman features, Foundry Way, March	24 features including postholes, pits, several ditches and a watering hole. Possible well with related structure (group of intercutting pits). Animal/plant remains and a large amount of Roman pottery. Hertfordshire puddingstone rotary quern. Modern disturbance.	Roman

18547	Monument	TL 4155 9916	Neolithic pit, Foundry Way, March	A number of features of early Roman date. 16 later prehistoric worked flints were also found, several grouped together in a tree throw and also in a small pit to the very southern end of the site, which suggests that there is a level of background Neolithic occupation and further Neolithic activity may be present south of the excavation area.	Neolithic
19467	Monument	TL 4198 9842	Undated ditch and modern gullies, Elm Road, March	Evaluation identified an undated ditch and two modern gullies, with residual Roman ceramic building material being recovered from the gully.	Modern
19586	Monument	TL 4194 9878	Neolithic axehead and Post medieval features at Elm Road	A two trial trench evaluation revealed features relating to post-medieval drainage and evidence of former greenhouses that occupied the site during the 1960s. A single pit containing a small polished Neolithic axe was discovered, although the pit also contained fragments of coal and other potentially modern detritus so it is unclear of what date the pit is.	Neolithic to Post-medieval
19612	Monument	TL 4379 0347	March and Wisbech Branch Railway	The first railway line to reach Wisbech, that from St. Ives and March, was opened in May 1847. The original station was on the South Brink near the Grammar School, but in 1848, the line was prolonged to join the East Anglian Railway at Watlington (now Magdalen Road) and a new station was opened on the site of the present East Station. The two stations were both in use up to at least 1851	Modern
19672	Monument	TL 4120 9893	Roman and Modern features and finds at Whitemoor Marshalling Yard, March	A number of 19th and 20th century earthworks and structures which are directly related to the former Whitemoor Marshalling Yards. These include foundations of the Engine Shed, Water Cooling Tank, Examination Tunnel all recorded on plans of the former railway sidings. Two railway turntables, inspection pits and sections of rail track and brick structures were also identified. A series of WWII air raid structures were also identified, which were simple brick built surface bomb shelters, with a reinforced roof.	Roman to Modern
20095	Monument	TL 4009 9835	Post-Medieval feature at Land South of Phoenix House, Westry	An archaeological evaluation was carried out and revealed activity dating to the post-medieval and modern periods. A recent phase of dumping of waste and demolition material was evident at the eastern extent. A rough brick surface was recorded towards the south of the site and may have been part of a path or garden feature. The bricks used dates to the 17th to 19th century.	Post-Medieval to Modern
20496	Monument	TL 4236 9848	Cropmark features, Berryfield, March	Several linear features running WNW-ESE running parallel to each other and several sub-circular anomalies. Traces of buried enclosures, tracks and boundaries recorded as marks in crops as seen in the earlier geophysical survey. There was an E-W system of boundaries within the site, likely to have been former fields, with associated tracks and small enclosures. Further evidence of cropmarks were found to the east of the site, as well as parallel ditches associated with the Fen Causeway.	Unknown

20684	Monument	TL 4229 9842	Iron Age and Roman pit groups and enclosures, Berryfields, March	Series of Roman features and metal surface in approximate position of Fen Causeway. Some rare Roman pottery and animal bone, iron and wooden objects, burnt and struck flint. Some charcoal/charred wood, seeds indicate of damp, rough grassland and some cereal fragments from samples.	Iron Age to Roman
22917	Monument	TL 4046 9817	The Wrangles, March	Site of a house named The Wrangles illustrated on the 1st edition Ordnance Survey map dated to 1885. The building is no longer extant.	Post-Medieval
23854	Monument	TL 4191 9886	Undated ditch and pit, north of Elm House, March	The finds assemblage comprised a single sherd of prehistoric pottery and an Early Neolithic blade flake. Possible pit in trench 1, a north-south aligned linear feature in trench 2 and a trench 3 comprised a possible linear feature, an east-west aligned ditch, a possible north-south aligned ditch and a possible post-hole.	Unknown
24025	Monument	TL 3954 8864	Great Eastern Railway (Ely & Peterborough Branch)	The Ely to Peterborough line was opened in 1847 linking the line from London to Norwich with Peterborough. The line remains in use.	Post-Medieval to Modern
24260	Monument	TL 4085 9746	Old Windmill	Site of former windmill marked as 'old' on the 1st edition Ordnance Survey map dated to 1885. Only the single-storeyed brick base of this smock mill still existed when recorded in 1972. At that time an octagonal slate roof had been added to use it as a store in a builders yard, but it has since been demolished.	Post-Medieval to Modern
24261	Monument	TL 4106 9746	Westwood House, March	Site of Westwood House illustrated on the 1st edition Ordnance Survey map dated to 1885. The building is no longer extant	Post-Medieval to Modern
24283	Monument	TL 4204 9816	Estover Farm, March	Site of Estover Farm illustrated on the 1st edition Ordnance Survey map dated to 1885. The farm buildings have been demolished. However, the farmhouse appears to remain extant.	Post Medieval
24284	Monument	TL 4168 9810	Gravel pits, March	Site of gravel pits illustrated on the 1st edition Ordnance Survey map dated to 1885. The building is no longer extant. The pits have since been built over.	Post-Medieval
24285	Monument	TL 4146 9813	Manure Works, March	Site of a Manure works illustrated on the 1st edition Ordnance Survey map dated to 1885. The building is no longer extant.	Post-Medieval
24286	Monument	TL 4125 9838	Engine Shed, March	Site of an engine shed and associated railway track illustrated on the 1st edition Ordnance Survey map dated to 1885. The shed building has since been demolished and the railway track removed.	Post-Medieval
24287	Monument	TL 4241 9903	Flaggrass Hill Farm, March	Site of Flaggrass Hill Farm illustrated on the 1st edition Ordnance Survey map dated to 1885. The site is still used as a farm, however, it is unclear how much of the original farm buildings remain as the site appears to have	Post-Medieval

				undergone significant alterations	
24290	Building	TL 4191 9778	Temperance Hall, March	Site of a temperance hall illustrated on the 1st edition Ordnance Survey map dated to 1885. The hall appears to be extant.	Post-Medieval
26842	Monument	TL 4204 9829	Site of former Estover Cottage, March	Site of former Estover Cottage, March on Ordnance Survey First Edition maps from 1885.	Post-Medieval
26852	Monument	TL 3739 0370	Great Northern and Great Eastern Joint Railway	Course of dismantled railway, opened in 1879 and closed in the late 1970s. The railway opened in 1867, more as the product of the competition between the Great Northern and Great Eastern Railway Companies to participate in the northern coal traffic, than for local needs. In 1879, realising the waste of time and resources spent in competition, the companies agreed to run the line jointly. The intermediate stations closed in the 1950s and 60s, but freight traffic continued into the late 1970s, after which the line was dismantled	Post-Medieval to Modern
27529	Building	TL 4080 9921	Longhill Farm, March	Longhill Farm recorded on Ordnance Survey First Edition maps from 1885.	Post-Medieval
27530	Monument	TL 4144 9930	Longhill Farm North, March	Longhill Farm North recorded on Ordnance Survey First Edition maps from 1885.	Post-Medieval
27531	Monument	TL 4125 9985	Norwood House, March	Norwood House recorded on Ordnance Survey First Edition maps from 1885.	Post-Medieval
27532	Monument	TF 4205 0006	Former blacksmiths workshop, March	Former blacksmiths workshop recorded on Ordnance Survey First Edition maps from 1885.	Post-Medieval
27533	Monument	TL 4208 0012	Plough Inn, former beer house, March	Former beer house recorded on Ordnance Survey First Edition maps from 1885.	Post-Medieval
27996	Monument	TL 4137 9804	Spalding House, March	Site of former house recorded on Ordnance Survey maps from 1885. Since demolished.	Post-Medieval
27997	Monument	TL 4128 9805	Prosperous House, March	Site of former house recorded on Ordnance Survey maps from 1885. Since demolished.	Post-Medieval
29290	Monument	TL 4108 9955	Whitemoor Prison	Building work for HMP Whitemoor began in February 1988 on the site of a former railway marshalling yard north of March. Category-A inmates, a vulnerable prisoner unit, an Assessment Centre for Core Sex. Whitemoor is an example of a "New Gallery" prison. Central spine of buildings and the houseblocks are cruciform in plan. Cell wings of New Gallery houseblocks are open-galleried, not floored as in 1960s prisons. HMP Whitemoor is	Modern

				constructed of brick with red bricks at ground floor level and yellow bricks above.	
29292	Monument	TL 4107 9889	Undated ring ditches, Westry Farm, March	Cropmarks of a ring ditch interpreted as a possible double concentric ring ditch seen to the west of Westry Farm at TL 4017 9891 on aerial photographs taken in 2009. The outer circuit measures approximately 15m in diameter. A second single ring ditch can be seen overlapping the south-eastern portion of the double ring ditch.	Bronze Age
29293	Monument	TL 4087 9926	Undated ring ditch, Longhill Farm, March	Cropmarks of a ring ditch interpreted as a possible Bronze Age round barrow seen at TL 4088 9927 to the east of Longhill Farm on aerial photographs taken in 2009.	Bronze Age
29294	Monument	TL 4164 9840	Pillbox, rear of Nighthall Drive, March	The site of a Second World War type 24 concrete and brick pillbox at March rail yard, north of Norwoodside.	Modern
29402	Monument	TL 4116 9780	Site of Norwood Cottage, March	Former Norwood Cottage recorded on Ordnance Survey First Edition maps from 1885. Now demolished.	Post-Medieval
29658	Monument	TL 4068 9979	Pillbox, March	Type 22 Pillbox shown on the 1970 1:2500 OS map and visible on aerial imagery. Extant	Modern
29659	Monument	TL 4103 9918	Pillbox, March	Type 22 Pillbox shown on the 1970 1:2500 OS map and visible on aerial imagery. Since demolished.	Modern
29660	Monument	TL 4110 9847	Pillbox, March	Type 22 Pillbox shown on the 1970 1:2500 OS map and visible on aerial imagery. Since demolished.	Modern
30035	Monument	TL4081 9911	Irregular enclosure, March	Irregular enclosure recorded in fields south of Longhill Farm, March on aerial imagery from 2013. Measures approximately 50m northeast-southwest and 40m northwest-southeast.	Unknown
30645	Monument	TL 4146 9919	Iron Age, Roman and post medieval features, Foundry Way, March	Bronze Age features consisted of a number of pits containing prehistoric, Bronze Age and Iron Age pottery and animal bone. Late Iron Age features including evidence of a structure, pottery, briquetage and animal bones. The Roman period of activity consisted of a series of intercutting ditches forming boundaries that appear to respect the earlier Iron Age ditches. Post-med ditch.	Iron Age to Post-Medieval
30648	Monument	TL 4139 9804	Undated drain, Norwood House, March	An undated drain aligned eastwest and measuring 3.2m by 1.18m across the width of the trench (1.8m). No finds were recovered from the drain, however, it is interpreted as post medieval in date.	Unknown
31729	Monument	TL 4227 9770	March Railway Yards	March 'Down' Yard recorded to the south of the railway on Ordnance Survey First Edition maps from 1885. Yard included several railway sidings and	Post-Medieval



				goods sheds. March 'Up' Yard added to the north of the railway on Ordnance Survey Third Edition maps from c.1927. 'Up' yard was substantially larger than the southern sidings.	
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## 2.3 Events

ID	Event Type	Name	Organisation	Date	Summary
280	Evaluation	Evaluation at Northern Office, March, 2001	CCC AFU	March 2001	Three trenches were machine excavated to evaluate the 1.2 ha site, revealing evidence for 19-20th C activity (a ditch and pit), together with undated features that may be prehistoric, including a double posthole, parallel ditches and ditched enclosures.
282	Evaluation	Evaluation at Barn Farm, Hundred Road, March, 1995	Oxford Archaeology	March to April 1995	An evaluation identified a series of probable field boundary ditches peripheral to a concentration of activity north of the development area. No structural evidence or concentrations of occupation debris were identified, and only 6 pottery sherds were recovered. No dates can be attributed with certainty, but nearby sites are Roman, and that date may apply here. A D-shaped feature seen in the aerial photo assessment may be naturally formed, perhaps the course of a meandering low-energy watercourse.
283	Evaluation	Evaluation at 53 Elm Road, March, 2000	Hertfordshire Archaeological Trust	April 2000	Evaluation was undertaken in advance of development. No archaeological features or finds were recovered
408	DBA	Evaluation at Dagless Way, Elm Road, March, 2001	Hertfordshire Archaeological Trust	July to August 2001	Desk-based assessment and trenching revealed the site to have been largely in agricultural use over the last 250 years. Despite proximity to the reputed course of the Roman fen causeway, and the site's location on the edge of the March 'island', no archaeological features or finds were identified.
496	Excavation	Excavations at Norwood, March, 1959-1960	TWP	1959-1960	investigation 1959 - 1961 by TWP at a produced occupation from late C1 to C4 (R2) with loom weights, quern, skeleton of premature baby under probable hut floor (another skeleton from adjoining field) and large area of "saltern pits" producing

					briquetage including fire-bars and baked clay cylindrical stand; more briquetage, ash and burnt clay, CFP and Miss A Dornier, and bronze brooch.
497	Evaluation	Evaluation at Estover Road, Fen Causeway, 1985	English Heritage	September 1985	An unploughed earthwork site, covering c 4 ha was partially excavated in advance of housing development. Fourteen trenches and small areas were machine-stripped, and revealed features sampled. It was concluded that the Fen Causeway was later than the trackway. Provisionally, the Roman road is at this point early, probably 1st century AD. The enclosures exhibit a precise rectilinear layout, which is aligned on the trackway, not the Roman road. Therefore, they are probably pre-causeway, i.e. very early Roman or more likely late Iron Age, and continued in use into the Roman period, when some additions were made. No indication of a contemporary domestic settlement in the enclosures was found, suggesting these are more likely stock enclosures than arable fields. There are signs of some industrial activity.
928	Excavation	Excavation at Northern County Offices, March 2002	Hertfordshire Archaeological Trust	Feb to March 2002	Following evaluation in 2001, an open area excavation was carried out. A series of features relating to occupation in the Late Bronze Age through to Medieval periods was identified.
1437	Evaluation	Evaluation at Longhill Road, March, 2003	CCC AFU	June to July 2003	Thirteen trenches were machine excavated prior to development, uncovering evidence of a major early Roman salt making site and associated settlement, dating to the first and second centuries AD. The remains were extensive and well preserved, comprising structural evidence and industrial features including a kiln with flue. Much briquetage and salt making objects was recovered. Soil sample evidence suggests grass and reeds were used as fuels.
1929	Evaluation	Evaluation at 92 Elm Road, March, 2005	Archaeological Solutions	May to July 2005	Five trenches were excavated to evaluate the site in advance of proposals to redevelop the land for residential use. The Fen Causeway was located in the northern part of the site, aligned E-W and characterised by a layer of gravel with a large roadside ditch on its southern site. A few modern features were recorded in the southern part of the site, but no other roadside activity or

					evidence of Roman settlement was found
1992	Evaluation	Evaluation along the Anglian water pipeline, A141 to Norwood Road, March, 2005	CCC AFU	August 2005	An evaluation was carried out along the route of a proposed Anglian Water pipeline, comprising 282m of trenching. A single early Neolithic flake was found in the topsoil during trenching, and six small modern trenches were identified in the westernmost trench, thought to be related to the construction of the railway and associated embankment in the early 19th century
2014	Evaluation and monitoring	Evaluation and monitoring at Whitemoor Sidings, March	Archaeological Project Services	November 2003 to Feb 2004	A programme of evaluation, mitigation excavation and monitoring were undertaken in advance of and during the redevelopment of the former marshalling yard. Although the construction and use of the marshalling yards had truncated much of the site, three areas of surviving archaeological remains were identified and investigated. The first, of Early Bronze Age, was characterised by shallow ditches, pits and post holes. A second featured a series of large pits, post holes and gullies, indicative of Late Bronze Age settlement in the vicinity, and the third was a field system, of probable Roman date. No evidence of the Fen Causeway was identified in any of the trenches.
2032	Evaluation	Evaluation at Melbourn Avenue - Hundred Road, March	CCC AFU	Feb 2004	Three evaluation trenches were excavated in advance of the construction of an industrial link road and associated services. The evaluation revealed a truncated ditch and pit, although no datable evidence was recovered.
2346	Evaluation	Evaluation at Norwood Road, March, 2006	CCC AFU	September 2006	Further to evaluation, an excavation was undertaken on land to the east of Norwood Road, March in 2006 which encountered further remains relating to a complex of ditches or field system dated to the Roman period. A series of roughly parallel ditches in the southwestern part of the site suggests that the field system may have originally been Iron Age in date and superseded in the Roman period

2787	AP assessment	AP assessment at Hundred Road, March, 1995	Air Photo Services (Cambridge)	March 1995	An AP assessment was undertaken to examine an area of some 7 hectares, showing a number of possible cropmarked ditches which follow the same axial alignment of cropmarks in the area. A Dshaped feature with broad ditches was recorded, which is likely to have an archaeological origin, with parallels identified elsewhere at March and Cottenham. Two lengths of bank have also been mapped which may be natural features
2965	Evaluation	Evaluation at Trading Park, Hundred Road, March, 2008	Cambridge Archaeological Unit	July 2008	A total of nineteen trenches were excavated to evaluate the site in advance of the proposed construction of a highways depot and waste transfer station. Evidence for Late Mesolithic/early Neolithic activity was demonstrated through the recovery for flint artefacts from the top soil and in secondary contexts. A dense concentration of Bronze Age features, comprising watering holes, pits, urned cremations and land enclosures was identified in the NW area of the site. In contrast evidence for a Roman field system and cultivation pits was recorded in the eastern half of the site, which aligned perpendicular with the Fen Causeway. A small number of prehistoric post holes, pits and a truncated field system were also identified.
3027	Excavation	Excavation at Highways Depot, Hundred Road, March, 2008	Oxford Archaeology East	September to November 2011	Further to previous evaluation, an area excavation totalling 2.2ha was undertaken on land at March Highways depot, prior to development. Archaeological evidence from the Mesolithic to the post medieval period was recorded. The most extensive remains dated to the Bronze Age period and included a sequence of large watering holes and pits to the northern western part of the site, seven cremations, a post built structure, a ring gully and linear gullies. A series of enclosures were recorded across the site, dating from the Roman period. A substantial boundary ditch dating to the Roman period was also located running around the area of the watering holes.
3085	Excavation	Excavation at Foundry Way, March, 2008	Cambridge Archaeological Unit	November to December 2008	An archaeological excavation totalling 0.17ha was undertaken at land south of Foundry Way, March following an trial trench evaluation in 2003 and prior to redevelopment of the site. The site was split into 3 areas arranged around the existing industrial units on site. 24 features including pits, postholes, several ditches and a watering hole were revealed across the site, although many of these had experienced modern truncation to

					the upper levels prior to the import of another topsoil which had previously been laid across the site. The majority of the features were confirmed to be early Roman in date and along with animal and plant remains, a large amount of Roman pottery was retrieved suggesting a continuation of the activity found to the north in 2003. A number of later prehistoric worked flints were also found, several grouped together in a tree throw and also in a small pit to the very southern end of the site, which suggests that there is a level of background Neolithic occupation and further Neolithic activity may be present south of the excavation area. Modern disturbance affected many features on the site and included disused service trenches, 5 field drains and the removal of topsoil as mentioned earlier
3170	Evaluation	Evaluation on land at Smiths Chase, March, 2009	Oxford Archaeology East	April 2009	Four trenches totalling 70m were excavated in advance of proposals for residential development. Two ditches of possible Roman date were recorded, which may have formed part of an enclosure towards the centre of the site.
3191	Watching brief	Watching brief at Foundry Way, March, 2009	Oxford Archaeology East	May 2009	A watching brief was undertaken during ground reduction in preparation for an area of hardstanding. No archaeological features were encountered.
3349	Excavation	Evaluation at land west of Robingoodfellows Lane, March 2010	Archaeological Solutions	March 2010	Two trenches were excavated in advance of proposed residential development. No archaeological finds or features were encountered.
3390	Survey	Survey of Air Raid Shelters and Pill Boxes, Whitemoor sidings	Wardell Armstrong	May 2009	Three air raid shelters/ pill boxes were surveyed in advance of development in 2009. All three of the structures had been covered by made ground. Slit trenches had been opened on two of the structures prior to the survey.
3504	Evaluation	Excavation at Longhill Road, March, 2004	Archaeological Project Services	October 2004 to January 2005	Following evaluation in 2003 (ECB1437), an excavation was carried out and revealed extensive evidence of Early Roman saltmaking, including a hearth along with associated settlement. Saltmaking was indicated through briquetage retrieved from features across the site along with ditches which once contained

					saltwater. Rectangular ditched enclosures and pottery dated to the 2nd-3rd century indicate settlement activity in the same area.
3561	Evaluation	Evaluation on land adjacent to 128 Elm Road, March, 2011	Archaeological Solutions	April 2011	Evaluation comprising four trial trenches was undertaken in advance of construction of 8 residential dwellings. An undated ditch and two modern gullies were identified, and residual Roman ceramic building material was recovered from the gully.
3737	Evaluation	Trial trenching on Land off Elm Road, March 2012	Allen Archaeology	March 2012	A two trial trench evaluation revealed features relating to post-medieval drainage and evidence of former greenhouses that occupied the site during the 1960s. A single pit containing a small polished Neolithic axe was discovered, although the pit also contained fragments of coal and other potentially modern detritus so it is unclear of what date the pit is.
3823	Evaluation	Evaluation at 168 Norwood Road, March, 2012	Witham Archaeology	August 2012	An archaeological trial trench evaluation was undertaken on the proposed site of a new house in grounds currently forming part of 168 Norwood Road, March. No archaeologically significant finds were recorded.
3845	Excavation	Excavation at Whitmoor Marshalling Yard, March 2010	North Pennines Archaeology Ltd	June to August 2010	An archaeological trial trench evaluation and subsequent open area excavation was carried out in June 2010. The evaluation involved 65 trenches divided up into areas. It was carried out prior to the excavation to establish the nature and extent of archaeological remains in the area. Following this, open area excavations focused upon four areas of the site which during the evaluation revealed to be the most densely packed in terms of archaeological features. The most significant archaeological features dated to the Romano-British and modern periods, with a single feature being of possible prehistoric date. This single feature was a ditch located in the south-western part of the site. Romano-British features consisted of a series of pits located in the centre of the site with substantial boundary features in the southern part of the site. Ditches are indicative of a field system being established around an already existing boundary ditch which pottery recovered dated to the 1st-2 <sup>nd</sup> century AD. A trackway running



					northeast-southwest was uncovered and seemed to correspond to the Fen Causeway Roman Road, but further investigation revealed it appeared to be an agglomeration of later features relating to the development of a Romano-British field system. Modern features of interest were the remains of the infrastructure of the former railway marshalling yard with remains of early track beds were noted at several locations.
4048	Evaluation	Excavation at Foundry Way, March in 2013	Archaeological Project Services	October to December 2013	Archaeological excavation carried out in response to an archaeological condition on planning permission for the construction of a wind turbine on the site. The excavation revealed four broad phases of activity from the Iron Age to post medieval period.
4049	Evaluation	Evaluation at Land South of Phoenix House, Westry 2013	Britannia Archaeology Ltd	October 2013	An archaeological evaluation was carried out and revealed activity dating to the post-medieval and modern periods. A recent phase of dumping of waste and demolition material was evident at the eastern extent. A rough brick surface was recorded towards the south of the site and may have been part of a path or garden feature. The bricks used date from the 17th to 19th century.
4219	Evaluation	Evaluation at Queen Street Close, March, 2014	Pre-Construct Archaeology LTD	July 2014	An archaeological evaluation was carried out consisting of five trial trenches. No archaeological finds or features were identified. There was a lot of modern disturbance and no residual finds present in the topsoil.
4462	Evaluation	Evaluation at Land south of Westry Hall, 351 Wisbech Road, March, 2015	Oxford Archaeology East	June 2015	Between 2nd and 4th June 2015, an archaeological evaluation was conducted at land south of Westry Hall, 351 Wisbech Road, March which revealed a single undated linear ditch in one trench and a number of postholes suggestive of a structure in another. Two of the trenches contained no archaeological features. The trench containing the postholes was extended to reveal a sub-circular roundhouse comprising eleven surviving postholes. Small quantities of pottery from the postholes date the building to the Early Iron Age.

4477	Evaluation	Evaluation of land north of Elm House, Elm Road, March in 2015	Witham Archaeology	May 2015	Three trenches were investigated as part of the search including two linear trenches measuring 20m in length and a one T shaped trench measuring 30m in length in total. The evaluation revealed limited archaeological evidence comprising a single undated pit and ditch from trench 3. Only two artefacts were recorded from unstratified deposits comprising a probable Early Neolithic to Early Iron Age fragment of pottery and an Early Neolithic blade flake. Natural deposits were encountered in trench 1 at a depth of 0.34m below present ground level and in trench 2 at a depth of 0.25m below present ground level.
4500	Evaluation and geophysical survey	Evaluation and Geophysical Survey on Land East of Berryfield, March, 2015	Archaeological Solutions	March to July 2015	The geophysical survey identified several anomalies including several linear features running WNW-ESE running parallel to each other and several sub-circular features. There was slight magnetic disturbance along the western most section of the survey which may have masked some archaeological features. An archaeological evaluation was undertaken on Land East of Berryfields, March, following an aerial photography assessment (ECB4642) and geophysical survey. The evaluation revealed a number of multi-period features including several postholes, ditches of Roman and Modern date, Roman pits, a gully, possible ponds of Roman date and a metalled surface which contained highly abraded mid-to-late Iron Age pottery and struck flint.
4642	AP assessment	Aerial Photography Assessment on Land East of Berryfield, March 2015	Air Photo Services Ltd	June 2015	In June 2015 an aerial photography assessment was undertaken on Land East of Berryfield, March, in conjunction with an evaluation and geophysical survey of the site (ECB4500). The survey found extensive traces of buried enclosures, tracks and boundaries recorded as marks in crops. There was an E-W system of boundaries within the site, likely to have been former fields, with associated tracks and small enclosures. Further evidence of cropmarks were found to the east of the site, as well as parallel ditches associated with the Fen Causeway (CB15033).
5295	Excavation	Excavation on Land East of Berryfields in 2018	Independent Archaeology Consultants	April to July 2018	Archaeological excavation carried out in response to an archaeological condition on planning permission for the development of a residential estate. The site was previously

					arable land and comprised approximately 1.2ha and the excavation called for a complete stripping of the area.
5821	Evaluation	Land west of 327 Norwood Road, March in 2019	University of Leicester Archaeological Services	March 2019	Archaeological evaluation undertaken in response to an archaeological condition on planning permission for residential development. The evaluation consisted of two evaluation trenches and identified no significant archaeological finds or features.
5833	Evaluation	Evaluation on land north of Woodville, Wisbech Road, March in 2019	Pre-Construct Archaeology LTD	March 2019	Archaeological evaluation undertaken in response to a condition on planning permission for the redevelopment of the site for residential purposes. The underlying geology comprises West Walton and Ampthill Clay mudstones with Oadby member superficial geology. The site is currently overgrown scrubland measuring 0.66ha in area. The evaluation comprised five trenches - 1 measuring 50m in length, 2 measuring 45m in length and 2 measuring 20m in length - within the development impact area.
6244	Evaluation	Evaluation at Nelson House 22, Norwood Road, March in 2020	Britannia Archaeology Ltd	July 2020	Archaeological evaluation undertaken in response to an archaeological condition on planning permission for redevelopment of the site for residential purposes. The site is currently in use as a public house. The evaluation consisted of two trenches within the proposed development area, one measuring 15m the other measuring 20m. The evaluation revealed an undated Fenland drain or probably post medieval date

## 3 Appendix B. Planning Policies and Guidance

### 3.1 National Planning Policy Framework (2021)

#### 3.1.1. *Conserving and enhancing the historic environment*

3.1.2. *189. Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value (Fn. 66). These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations (Fn. 67).*

3.1.3. *190. Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:*

- 1. the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;*
- 2. the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;*
- 3. the desirability of new development making a positive contribution to local character and distinctiveness; and*
- 4. opportunities to draw on the contribution made by the historic environment to the character of a place.*

3.1.4. *191. When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.*

3.1.5. *192. Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to:*

- 1. assess the significance of heritage assets and the contribution they make to their environment; and*
- 2. predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future (Fn. 66). Some World Heritage Sites are inscribed by UNESCO to be of natural significance rather than cultural significance; and in some cases they are inscribed for both their natural and cultural significance (Fn. 67). The policies set out in this chapter*

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*relate, as applicable, to the heritage-related consent regimes for which local planning authorities are responsible under the Planning (Listed Buildings and Conservation Areas) Act 1990, as well as to plan-making and decision-making.*

- 3.1.6. 193. *Local planning authorities should make information about the historic environment, gathered as part of policy-making or development management, publicly accessible. Proposals affecting heritage assets*
- 3.1.7. 194. *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*
- 3.1.8. 195. *Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.*
- 3.1.9. 196. *Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.*
- 3.1.10. 197. *In determining applications, local planning authorities should take account of:*
- 1. the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
  - 2. the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
  - 3. the desirability of new development making a positive contribution to local character and distinctiveness.*
- 3.1.11. 198. *In considering any applications to remove or alter a historic statue, plaque, memorial or monument (whether listed or not), local planning authorities should have regard to the importance of their retention in situ and, where appropriate, of explaining their historic and social context rather than removal.*

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3.1.12. *Considering potential impacts*

3.1.13. 199. *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.*

3.1.14. 200. *Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:*

1. *grade II listed buildings, or grade II registered parks or gardens, should be exceptional;*
2. *assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II\* listed buildings, grade I and II\* registered parks and gardens, and World Heritage Sites, should be wholly exceptional (Fn. 68).*

3.1.15. 201. *Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*

1. *the nature of the heritage asset prevents all reasonable uses of the site; and*
2. *no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
3. *conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and d) the harm or loss is outweighed by the benefit of bringing the site back into use.*

3.1.16. 202. *Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.*

3.1.17. 203. *The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

3.1.18. 204. *Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.*



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- 3.1.19. *205. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.*
- 3.1.20. *206. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.*
- 3.1.21. *207. Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 201 or less than substantial harm under paragraph 202, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.*
- 3.1.22. *208. Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies*

## **3.2 Planning Practice Guidance (PPG) 2014**

- 3.2.1. The DCLG published Planning Practice Guidance<sup>11</sup> online in 2014, to expand upon the NPPF. ‘Conserving and Enhancing the Historic Environment’ was published in April 2014, and last updated in February 2018. The Guidance notes that ‘conservation is an active process of maintenance and managing change. It requires a flexible and thoughtful approach to get the best out of assets as diverse as listed buildings to as yet undiscovered, non-designated buried remains of archaeological interest’. It should be noted that the wording of PPG is reflective of the now superseded 2012 NPPF.
- 3.2.2. The London Plan (March 2016) lays out the broad strategies guiding future development in London. The Plan recognises the “immeasurable benefit” the historic environment plays in the economy, culture, and quality of life of the city. Policy 7.8 governs heritage assets and archaeology within Greater London. The London Plan also sets out the framework for which local borough plans are produced.
- 3.2.3. Paragraph A – ‘*London’s heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered*

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*battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.'*

- 3.2.4. Paragraph B – '*Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology*'.
- 3.2.5. Paragraph C – '*Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.*'
- 3.2.6. Paragraph E – '*New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.*'

### **3.3 Historic Environment Good Practice Advice (Second Edition 2017)**

- 3.3.1. Historic England have produced guidance documents on planning and the historic environment; three of these are of relevance to the proposed development:
  - 1. Historic Environment Good Practice Advice in Planning Note 1 (GPA 1) – The Historic Environment in Local Plans (March 2015).
  - 2. Historic Environment Good Practice Advice in Planning Note 2 (GPA 2) – Managing Significance in Decision-Taking in the Historic Environment (March 2015).
  - 3. Historic Environment Good Practice Advice in Planning Note 3 (GPA 3) – The Setting of Heritage Assets (March 2015).
- 3.3.2. GPA 1 and GPA 2 provide guidance for local authorities, planning consultants and other heritage organisations in taking decisions on planning developments, particularly in relation to Local Plans. This guidance emphasises the policy of the National Planning Policy Framework in ensuring that all plan-making, heritage protection and decision taking in relation to developments or local plans should be proportionate to the significance of heritage assets affected and the impact on the significance of those assets.
- 3.3.3. GPA 3 lays out a staged approach to proportionate decision making when considering the impact of potential developments on the setting of heritage assets; this guidance also reflects the stance towards setting which is taken in national planning policy.
- 3.3.4. This approach consists of:
  - 1. *Step 1: identify which heritage assets and their settings are affected*

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2. *Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage assets*
  3. *Step 3: assess the effects of the proposed development, whether harmful or beneficial, on that significance*
  4. *Step 4: explore the way to maximise enhancement and avoid or minimise harm*
  5. *Step 5: make and document the decision and monitor outcomes*

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## TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		No Change	
	Facilities	There will be a new link road provided for vehicles travelling between the A141 and B1101.		
	Information	There will be new signage relating to the new link road		
	Environment	Reduced traffic through March Town Centre will reduce the impact of traffic-related noise on residential areas.		
Travellers' Views	-	Town Centre will be less congested compared to without scheme and reduce the potential for views of surrounding townscape to be blocked by queueing vehicles.		
Traveller Stress	Frustration	Reduced frustration for vehicles wanting to travel between the A141 and B1101 compared to without scheme, which currently requires east-west travel via the town centre or low capacity residential streets.		
	Fear of potential accidents	It has been estimated that there will be a reduction in accidents as a result of the schemes and consequently the provision of safer infrastructure should reduce the fear of accidents.		
	Route uncertainty	The NILR will provide the fastest east-west route through the March study area and increase certainty for undertaking this movement.		

### Reference Source

### Summary Assessment Score

Moderate Beneficial

### Qualitative Comments

Two-Way 24-hour AADT flow of 4,402 PCUs on Northern Industrial Link Road (NILR) in 2031 Do Something scenario (FBC 3)

## Appendix G: Financial Dimension Cost Schedule (60 years)



March Area Transport Study - Do Something Scheme Costs for Input to Financial Case (Broad Street Only)

Calendar Year	Assessment Year	(1) Base Cost Estimate 2022 Prices						(2) Risk Adjusted Base Cost		(3) Risk Adjusted Cost Estimate Including Construction Price Inflation			(4) Inflated Risk Adjusted Cost Including Whole Life Costs		
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Quantified Risk Adjustment	Risk Adjusted Cost	Inflation Rate	Cost of Inflation	Total (Including Inflation)	Whole Life Costs	Inflated Whole Life Costs	Total (Including Whole Life Costs)
2023	1	£2,212,997	£0	£0	£149,286	£292,508	£2,654,791	£605,786	£3,260,577	1.000	£0.00	£3,260,577	£0	£0	£3,260,577
2024	2	£603,545	£0	£0	£40,714	£79,775	£724,034	£165,214	£889,248	1.000	£0.00	£889,248	£0	£0	£889,248
2025	3	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2026	4	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2027	5	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2028	6	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2029	7	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2030	8	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2031	9	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2032	10	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2033	11	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2034	12	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2035	13	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2036	14	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2037	15	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2038	16	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2039	17	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2040	18	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2041	19	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2042	20	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2043	21	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2044	22	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2045	23	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2046	24	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2047	25	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2048	26	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2049	27	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2050	28	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2051	29	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2052	30	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2053	31	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2054	32	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2055	33	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2056	34	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2057	35	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2058	36	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2059	37	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2060	38	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2061	39	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2062	40	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2063	41	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2064	42	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2065	43	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2066	44	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2067	45	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2068	46	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2069	47	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2070	48	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2071	49	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2072	50	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2073	51	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2074	52	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2075	53	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2076	54	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2077	55	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2078	56	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2079	57	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2080	58	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2081	59	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2082	60	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2083	61	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
2084	62	£0	£0	£0	£0	£0	£0	£0	£0	1.000	£0.00	£0	£0	£0	£0
Total		£2,816,542	£0	£0	£190,000	£372,283	£3,378,825	£771,000	£4,149,825		£0	£4,149,825	£0	£0	£4,149,825

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£3,378,825
(2)	The base costs have been adjusted to incorporate risk.	£4,149,825
(3)	The risk adjusted costs have been adjusted to incorporate increases in construction costs.	£4,149,825
(4)	The inflated risk adjusted costs have been adjusted to incorporate whole life costs.	£4,149,825

March Area Transport Study - Do Something Scheme Costs for Input to Financial Case

Calendar Year	Assessment Year	(1) Base Cost Estimate 2022 Prices						(2) Risk Adjusted Base Cost		(3) Risk Adjusted Cost Estimate Including Construction Price Inflation			(4) Inflated Risk Adjusted Cost Including Whole Life Costs		
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Quantified Risk Adjustment	Risk Adjusted Cost	Inflation Rate	Cost of Inflation	Total (Including Inflation)	Whole Life Costs	Inflated Whole Life Costs	Total (Including Whole Life Costs)
2023	1	£2,212,997	£0	£0	£389,042	£532,337	£3,134,376	£605,786	£3,740,162	1.120	£57,550.25	£3,797,712	£0	£0	£3,797,712
2024	2	£603,545	£0	£440,000	£661,145	£824,916	£2,529,606	£165,214	£2,694,820	1.254	£459,337.53	£3,154,158	£0	£0	£3,154,158
2025	3	£5,400,204	£0	£0	£1,344,186	£841,843	£7,586,234	£1,263,862	£8,850,095	1.355	£3,139,589.01	£11,989,684	£0	£0	£11,989,684
2026	4	£3,803,003	£0	£80,000	£899,681	£645,620	£5,428,304	£1,250,375	£6,678,678	1.422	£2,821,672.16	£9,500,351	£0	£0	£9,500,351
2027	5	£8,004,122	£0	£0	£1,137,596	£531,861	£9,673,579	£3,194,459	£12,868,038	1.494	£6,351,844.80	£19,219,883	£0	£0	£19,219,883
2028	6	£0	£0	£0	£20,000	£0	£20,000	£0	£20,000	1.568	£11,365.90	£31,366	£0	£0	£31,366
2029	7	£0	£0	£0	£0	£0	£0	£0	£0	1.647	£0.00	£0	£0	£0	£0
2030	8	£0	£0	£0	£0	£0	£0	£0	£0	1.729	£0.00	£0	£0	£0	£0
2031	9	£0	£0	£0	£0	£0	£0	£0	£0	1.815	£0.00	£0	£0	£0	£0
2032	10	£0	£0	£0	£0	£0	£0	£0	£0	1.906	£0.00	£0	£0	£0	£0
2033	11	£0	£0	£0	£0	£0	£0	£0	£0	2.002	£0.00	£0	£0	£0	£0
2034	12	£0	£0	£0	£0	£0	£0	£0	£0	2.102	£0.00	£0	£0	£0	£0
2035	13	£0	£0	£0	£0	£0	£0	£0	£0	2.207	£0.00	£0	£0	£0	£0
2036	14	£0	£0	£0	£0	£0	£0	£0	£0	2.317	£0.00	£0	£0	£0	£0
2037	15	£0	£0	£0	£0	£0	£0	£0	£0	2.433	£0.00	£0	£0	£0	£0
2038	16	£0	£0	£0	£0	£0	£0	£0	£0	2.555	£0.00	£0	£2,000	£5,109	£5,109
2039	17	£0	£0	£0	£0	£0	£0	£0	£0	2.682	£0.00	£0	£2,000	£5,365	£5,365
2040	18	£0	£0	£0	£0	£0	£0	£0	£0	2.816	£0.00	£0	£2,000	£5,633	£5,633
2041	19	£0	£0	£0	£0	£0	£0	£0	£0	2.957	£0.00	£0	£39,500	£116,812	£116,812
2042	20	£0	£0	£0	£0	£0	£0	£0	£0	3.105	£0.00	£0	£2,000	£6,210	£6,210
2043	21	£0	£0	£0	£0	£0	£0	£0	£0	3.260	£0.00	£0	£2,000	£6,521	£6,521
2044	22	£0	£0	£0	£0	£0	£0	£0	£0	3.423	£0.00	£0	£2,000	£6,847	£6,847
2045	23	£0	£0	£0	£0	£0	£0	£0	£0	3.595	£0.00	£0	£2,000	£7,189	£7,189
2046	24	£0	£0	£0	£0	£0	£0	£0	£0	3.774	£0.00	£0	£2,000	£7,549	£7,549
2047	25	£0	£0	£0	£0	£0	£0	£0	£0	3.963	£0.00	£0	£2,000	£7,926	£7,926
2048	26	£0	£0	£0	£0	£0	£0	£0	£0	4.161	£0.00	£0	£2,000	£8,322	£8,322
2049	27	£0	£0	£0	£0	£0	£0	£0	£0	4.369	£0.00	£0	£2,000	£8,738	£8,738
2050	28	£0	£0	£0	£0	£0	£0	£0	£0	4.588	£0.00	£0	£2,000	£9,175	£9,175
2051	29	£0	£0	£0	£0	£0	£0	£0	£0	4.817	£0.00	£0	£2,000	£9,634	£9,634
2052	30	£0	£0	£0	£0	£0	£0	£0	£0	5.058	£0.00	£0	£2,000	£10,116	£10,116
2053	31	£0	£0	£0	£0	£0	£0	£0	£0	5.311	£0.00	£0	£2,000	£10,622	£10,622
2054	32	£0	£0	£0	£0	£0	£0	£0	£0	5.576	£0.00	£0	£2,000	£11,153	£11,153
2055	33	£0	£0	£0	£0	£0	£0	£0	£0	5.855	£0.00	£0	£2,000	£11,710	£11,710
2056	34	£0	£0	£0	£0	£0	£0	£0	£0	6.148	£0.00	£0	£39,500	£242,843	£242,843
2057	35	£0	£0	£0	£0	£0	£0	£0	£0	6.455	£0.00	£0	£2,000	£12,911	£12,911
2058	36	£0	£0	£0	£0	£0	£0	£0	£0	6.778	£0.00	£0	£2,000	£13,556	£13,556
2059	37	£0	£0	£0	£0	£0	£0	£0	£0	7.117	£0.00	£0	£2,000	£14,234	£14,234
2060	38	£0	£0	£0	£0	£0	£0	£0	£0	7.473	£0.00	£0	£2,000	£14,946	£14,946
2061	39	£0	£0	£0	£0	£0	£0	£0	£0	7.846	£0.00	£0	£2,000	£15,693	£15,693
2062	40	£0	£0	£0	£0	£0	£0	£0	£0	8.239	£0.00	£0	£2,000	£16,478	£16,478
2063	41	£0	£0	£0	£0	£0	£0	£0	£0	8.651	£0.00	£0	£2,000	£17,301	£17,301
2064	42	£0	£0	£0	£0	£0	£0	£0	£0	9.083	£0.00	£0	£2,000	£18,167	£18,167
2065	43	£0	£0	£0	£0	£0	£0	£0	£0	9.537	£0.00	£0	£2,000	£19,075	£19,075
2066	44	£0	£0	£0	£0	£0	£0	£0	£0	10.014	£0.00	£0	£2,000	£20,029	£20,029
2067	45	£0	£0	£0	£0	£0	£0	£0	£0	10.515	£0.00	£0	£2,000	£21,030	£21,030
2068	46	£0	£0	£0	£0	£0	£0	£0	£0	11.041	£0.00	£0	£2,000	£22,082	£22,082
2069	47	£0	£0	£0	£0	£0	£0	£0	£0	11.593	£0.00	£0	£2,000	£23,186	£23,186
2070	48	£0	£0	£0	£0	£0	£0	£0	£0	12.172	£0.00	£0	£2,000	£24,345	£24,345
2071	49	£0	£0	£0	£0	£0	£0	£0	£0	12.781	£0.00	£0	£39,500	£504,853	£504,853
2072	50	£0	£0	£0	£0	£0	£0	£0	£0	13.420	£0.00	£0	£2,000	£26,840	£26,840
2073	51	£0	£0	£0	£0	£0	£0	£0	£0	14.091	£0.00	£0	£2,000	£28,182	£28,182
2074	52	£0	£0	£0	£0	£0	£0	£0	£0	14.796	£0.00	£0	£2,000	£29,591	£29,591
2075	53	£0	£0	£0	£0	£0	£0	£0	£0	15.535	£0.00	£0	£2,000	£31,071	£31,071
2076	54	£0	£0	£0	£0	£0	£0	£0	£0	16.312	£0.00	£0	£2,000	£32,625	£32,625
2077	55	£0	£0	£0	£0	£0	£0	£0	£0	17.128	£0.00	£0	£2,000	£34,256	£34,256
2078	56	£0	£0	£0	£0	£0	£0	£0	£0	17.984	£0.00	£0	£2,000	£35,969	£35,969
2079	57	£0	£0	£0	£0	£0	£0	£0	£0	18.883	£0.00	£0	£2,000	£37,767	£37,767
2080	58	£0	£0	£0	£0	£0	£0	£0	£0	19.828	£0.00	£0	£2,000	£39,655	£39,655
2081	59	£0	£0	£0	£0	£0	£0	£0	£0	20.819	£0.00	£0	£2,000	£41,638	£41,638
2082	60	£0	£0	£0	£0	£0	£0	£0	£0	21.860	£0.00	£0	£2,000	£43,720	£43,720
2083	61	£0	£0	£0	£0	£0	£0	£0	£0	22.953	£0.00	£0	£2,000	£45,906	£45,906
2084	62	£0	£0	£0	£0	£0	£0	£0	£0	24.101	£0.00	£0	£2,000	£48,201	£48,201
Total		£20,023,871	£0	£520,000	£4,451,650	£3,376,577	£28,372,098	£6,479,696	£34,851,794		£12,841,360	£47,693,154	£206,500	£1,730,778	£49,423,931

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£28,372,098
(2)	The base costs have been adjusted to incorporate risk.	£34,851,794
(3)	The risk adjusted costs have been adjusted to incorporate increases in construction costs.	£47,693,154
(4)	The inflated risk adjusted costs have been adjusted to incorporate whole life costs.	£49,423,931

## Appendix H: Construction Risk Registers

		Select from Dropdown menu	Sequential Reference Number. Eg 1.01	Select from Dropdown menu	Select from Dropdown menu	A clear description of the Risk. The drafter should describe the risk e.g. 'The Risk is that...' It is important that the description is carefully- worded, to define the scope of that risk.		Brief description of what measures could be taken to reduce or minimise the risk. Could be used to help evaluate.	Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Likelihood of the Risk occurring (regardless of impact)	Based on Modelling	Based on Modelling	Based on Modelling		
Project Number	Project Name	Risk/Opportunity	Ref No.	Classification	Project Stage	Project Risk/Opp Description	Potential Impact	Risk Mitigation / Realisation Measures	Residual Risk Rating			Residual Risk Allowance					Date risk was last updated:
									Likelihood	Impact	Score	Estimated probability	Minimum Impact (£)	Likely Impact (£)	Maximum Impact (£)	Suggested client contingency budget	
30CPX31151	MATS	Risk	1.00	Technical	DS3 - Preliminary Design	3rd party utility works overrunning within the construction works	Delays to construction programme increasing cost	Principal contractor to manage utilities. Engagement with utility companies to manage diversions	3	4	12	50%	£100,000	£300,000	£600,000	£150,000	11/11/2022
30CPX31151	MATS	Risk	4.00	Financial	DS3 - Preliminary Design	Increased inflation due to current global events (war in Ukraine)	Likely to increas fuel costs, which will have a knock on effect to all other commodities.	Ensure inflation is built into cost and cost management system is reflective of global events	4	3	12	65%	£250,000	£500,000	£1,000,000	£325,000	11/11/2022
30CPX31151	MATS	Risk	5.00	Technical	DS3 - Preliminary Design	Unexpected stats / shallow stats affecting proposed design details;	increased time and cost to investigate / deal.	Obtain trial holes at key locations	4	4	16	70%	£75,000	£200,000	£400,000	£140,000	11/11/2022
30CPX31151	MATS	Opportunity	6.00	Technical	DS3 - Preliminary Design	Footway widths v Full depth construction v stats	The reduced footway widths mean we may need to lower the carriageway. This is likely to have an impact on buried services.	Investigation and collaboration	3	4	12	50%	£0	£0	£0	£0	19/08/2022
30CPX31151	MATS	Risk	11.00	Technical	DS3 - Preliminary Design	Loading bay, inc banks, requirements accommodated	There could be objections from the businesses, which could trigger a public inquiry, which would increase costs and delay programme	Liaison with Fenland - decision distributed with highlight report - discussion for Project Board. CCC to identify County Councillors and ensure early engagement that proposals are supported. FDC have engaged businesses, holding event at library and market in June.	3	3	9	20%	£10,000	£20,000	£30,000	£4,000	11/11/2022
30CPX31151	MATS	Risk	13.00	Commercial	DS3 - Preliminary Design	Long lead items – items cannot be ordered until instructed to commence and may potentially delay the overall programme	This could delay start on site, and ultimately completion date	Identification of long lead in items through ECI	1	3	3	15%	£25,000	£75,000	£100,000	£11,250	11/11/2022
30CPX31151	MATS	Risk	15.00	Project	DS3 - Preliminary Design	Compound area	Need area for compound that is practical for both doing the work and minimising impact / disruption (car park behind library?)	ask Fenland re car park. Initial ECI identified that car park would be suitable.	4	3	12	75%	£10,000	£50,000	£100,000	£37,500	11/11/2022
30CPX31151	MATS	Risk	19.00	Technical	DS3 - Preliminary Design	Accidents (and breakdowns) within traffic management	Cost increase and extension of programme due to on site incident and subsequent investigations.	Advanced warning of works. Mass barrier to be used to protect works.	3	3	9	50%	£2,500	£10,000	£50,000	£5,000	11/11/2022
30CPX31151	MATS	Risk	23.00	Technical	DS3 - Preliminary Design	Managing buses during construction	Buses will have to stop in carriageway during construction - or else the bus stops will need to be removed for the duration	Currently ok with planned construction works relating to prelim proposals. Potential challenges with regards to accommodate utility diversion works. C4 designs to be considered under current phasing plan once received.	2	2	4	25%	£7,500	£25,000	£50,000	£6,250	11/11/2022
30CPX31151	MATS	Risk	25.00	Commercial	DS3 - Preliminary Design	Mobilisation period is restricted - upon confirmation to commence construction it is approximately four weeks programmed for mobilisation which is very challenging for the supply chain	This could delay start on site, and ultimately completion date	Liaise with contractor at earliest opportunity to program additional resources - <b>Is this a programming issue? CDM requires sufficient time is allowed for mobilisation</b>	1	2	2	5%	£5,000	£10,000	£15,000	£500	11/11/2022
30CPX31141	MATS	Risk	27.00	Project	DS3 - Preliminary Design	Fountain relocation being delivered by third party, need to ensure that the programmes are aligned.	Delay to moving the fountain could delay the project start..	Close engagement with FDC re: fountain programme	5	3	15	85%	£2,500	£20,000	£40,000	£17,000	11/11/2022
30CPX31151	MATS	Risk	28.00	Governance	DS3 - Preliminary Design	Street lighting - de-acrrual and redesign cost	Increased maintenance cost to BB PFI. Delays to approval process.	Enagement with BB team.	3	3	9	50%	£10,000	£20,000	£60,000	£10,000	11/11/2022
30CPX31151	MATS	Risk	30.00	Project	DS3 - Preliminary Design	Traffic management for the construction works could create disruption for the whole area, equally the length of time traffic management is in place will influence the cost of the scheme.	Disruption to public. Increased cost.	Engage a traffic management contractor and tailor construction to minimise disruption to traffic. NMUs, businesses (by day) and residents (by night) without compromising scheme budget. NB there is interplay between St Peter's Rd and Market Square.	2	3	6	30%	£25,000	£50,000	£75,000	£15,000	11/11/2022
30CPX31151	MATS	Risk	32.00	Communications	DS3 - Preliminary Design	Business access / deliveries during the works;	prolongation / change in working arrangements which increases cost	Ensure access requirements are included in WI	2	3	6	20%	£5,000	£20,000	£30,000	£4,000	11/11/2022
30CPX31151	MATS	Risk	34.00	Project	DS3 - Preliminary Design	Network management for the construction works could create disruption for the whole area, equally the length of time traffic management is in place will influence the cost of the scheme.	Disruption to public. Increased cost.	Ensure programme is mindful of events planned within Market Square / surrounding area including Market Square FHSF scheme.	3	3	9	50%	£2,500	£5,000	£7,500	£2,500	11/11/2022
30CPX31151	MATS	Risk	38.00	Commercial	DS3 - Preliminary Design	The compressed design program is contingent on 3rd party design, roadspace and contractor resourcing, performance and delivery	Extended design period and delayed start on site	regular programme review at progress meeting	2	3	6	30%	£7,500	£15,000	£30,000	£4,500	11/11/2022
30CPX31151	MATS	Risk	40.00	Environmental	DS3 - Preliminary Design	Statutory undertakers' plant: Safety risk of any incidents involving any underground plant	Safety indicent, impacting cost/ programme / reputation	Review the received C2 information, identifying any problem areas. Appropriate surveys (GPR / cat and genny / trial holes) to confirm the location of plant and inform our design. Ensure up to date plans are included in WI.	3	5	15	50%	£5,000	£10,000	£35,000	£5,000	11/11/2022
30CPX31151	MATS	Risk	41.00	Corporate	DS3 - Preliminary Design	MATS construction funding is not awarded	The scheme does not go ahead	Work with Milestone to ensure FBC stacks up. / MATS funding can be released early. Scheme kill	3	5	15						11/11/2022
30CPX31151	MATS	Risk	43.00	Project	DS3 - Preliminary Design	Cellars	Unexpected protection measures + increased cost	Cellars should be visible on GPR survey. Fenland to also ask businesses. Cellar survey information received.	2	2	4	50%	£5,000	£10,000	£15,000	£5,000	11/11/2022
30CPX31151	MATS	Risk	44.00	Communications	DS3 - Preliminary Design	Strong lobbying for separate cycle lane provision;	There could be objections to TROs - risk is likely to be reputational, but may delay start	Early engagement with cycle groups (+ communication with decision making body). Raise decision to Board. Look at alternatives?	2	2	4	30%	£10,000	£20,000	£30,000	£6,000	11/11/2022
30CPX31151	MATS	Risk	46.00	Communications	DS3 - Preliminary Design	Taxi bay	There could be objections from the taxi companies, main impact is likely to be reputational but could increase costs and delay programme	Ongoing conversations between Fenland / Taxi companies	2	2	4	20%	£10,000	£20,000	£30,000	£4,000	11/11/2022
30CPX31151	MATS	Risk	49.00	Governance	DS3 - Preliminary Design	There is a change in legislation with regard to water discharge.	Could add 6-9 months to approval times	Early engagement with approval authority	2	2	4	30%	£2,500	£5,000	£10,000	£1,500	11/11/2022
30CPX31151	MATS	Risk	50.00	Technical	DS3 - Preliminary Design	Tie in of footway adjacent to shop frontages where highway boundary has not been defined	Delays in programme when seeking approval.	Include within works	2	2	4	30%	£10,000	£20,000	£30,000	£6,000	11/11/2022
30CPX31151	MATS	Risk	52.00	Environmental	DS3 - Preliminary Design	Noise complaints during the works – mostly can be mitigated with daytime working;	Mostly reputational - could lead to increased cost for mitigations	Ensure noise information is collected prior to scheme. Ensure appropriate working practices are included in WI. Noise survey is included in MATS estimate. Engagement with Environmental health rep.	2	2	4	30%	£5,000	£10,000	£40,000	£3,000	11/11/2022
30CPX31151	MATS	Risk	55.00	Environmental	DS3 - Preliminary Design	Air quality / dust etc;	Safety / reputational - could lead to increased cost for mitigations	Ensure appropriate working practices are included in WI. Mindful of effects when specifying materials (i.e. minimising cuts)	2	2	4	30%	£5,000	£10,000	£30,000	£3,000	11/11/2022
30CPX31151	MATS	Risk	67.00	Communications	DS3 - Preliminary Design	Access groups: change to disabled parking	There could be objections to TROs - risk is likely to be reputational, but may prevent scheme completion until resolution.	Early engagement with access groups FDC to lead on public engagement. Engagement planned at end of May in local library.	1	3	3	10%	£10,000	£20,000	£30,000	£2,000	11/11/2022
30CPX31151	MATS	Risk	73.00	Financial	DS3 - Preliminary Design	Parallel streams of funding for the "same" scheme	Competing demands from different funding bodies - delay decisions.	Keeping CPCA included with design evolution.	1	2	2	15%	£12,500	£20,000	£40,000	£3,000	11/11/2022
30CPX31151	MATS	Risk	77.00	Political	DS3 - Preliminary Design	Statutory Undertakers: Reputational risk should any undertakers require to install new plant through areas of new high-quality paving.	Reputational damage	Engage with the undertakers' transmission teams to identify any upcoming works, and apply for <b>Section 58 license</b> . Paige to check planned works. Area being designated as high amenity and special surface. Additional pavement surfacing to be included for future maintenance (storage area to be determined).	1	2	2	15%	£0	£0	£0	£0	11/11/2022

Select from Dropdown menu	A clear description of the Risk. The drafter should describe the risk e.g. 'The Risk is that...' It is important that the description is carefully-worded, to define the			Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation	Brief description of what measures could be taken to reduce or minimise the risk. Could be used to help evaluate.	Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation			Likelihood of the Risk occurring (regardless of impact)	Based on Modelling	Based on Modelling	Based on Modelling	
Project Stage	Project Risk/Opp Description	Potential Impact		Inherent Risk/Opp Rating			CCC Lead Officer	Risk Mitigation / Realisation Measures	Residual Risk Rating			Risk/Opp Action Owner	Actions Identified/Taken	Residual Risk Allowance					
			Primary Impact (time/cost):	Likelihood	Impact	Score			Likelihood	Impact	Score			Time Allowance in Programme (days)	Estimated probability	Minimum Impact (£)	Likely Impact (£)	Maximum Impact (£)	Suggested client contingency budget
DS4 - Detailed Design	Risk of MATS being challenged under judicial review over Consultation/Public Engagement.	Delay to programme whilst judicial process is undertaken.	Cost increase	2	3	6	Roland Jordaan	Online Consultation was held over May/June 2021, due to COVID-19 restrictions on public gatherings. OBC was signed off in November and MATS FBC is being developed alongside Detailed Design. Public Engagement event proposed for September 2022.	2	2	4	Project Board	Item presented to MATS Strategic Project Board in May 22 and June 22. Given that Programme has moved past OBC stage, decision to proceed with Public Engagement in September 2022.		30%	£2,000	£5,000	£10,000	£1,500
DS4 - Detailed Design	Risk of statutory undertakers stating that they do need diversion / protection works.	Cost increase, delay to design phase. Delay to construction phase.	Cost increase	3	3	9	Roland Jordaan	Go back out to stats for C3 estimates prior to construction	1	3	3	CCC PM			30%	£50,000	£100,000	£200,000	£30,000
DS5 - Delivery	Risk of finding unexpected stats	Delay to programme	Completion of works date	2	3	6	Roland Jordaan	Limited construction and GRP which should minimise risk	3	2	6	CCC PM			50%	£2,000	£10,000	£50,000	£5,000
DS5 - Delivery	Thin layers of pavement remaining following planing	Cost increase to undertake remedial works	Cost increase	3	3	9	Roland Jordaan	To be allowed for in cost estimate	1	1	1	CCC PM			15%	£2,000	£10,000	£15,000	£1,500
DS4 - Detailed Design	Unable to relocate postbox	Reduction in quality of finished works		4	2	8	Roland Jordaan	Relocation of postbox may require planning permission, which may undermine programme.	4	2	8	CCC PM	No cost - alters quality						£0
DS5 - Delivery	Existing drainage network is found to be poor quality when on site, which will require remedial works	Cost increase to undertake remedial works	Cost increase	3	3	9	Roland Jordaan	To be allowed for in cost estimate	1	1	1	CCC PM	No risk cost - included in cost estimate						£0
DS5 - Delivery	Inflation: world events are impacting inflation rates	Cost increases at a higher rate than accounted for	Cost increase	4	4	16	Roland Jordaan	To be allowed for in cost estimate	3	2	6	CCC PM	Allowance made within estimate - this risk is to cover above and beyond.		50%	£22,500	£45,000	£67,500	£22,500
DS5 - Delivery	Risk of new utilities being added to scheme prior to construction.	New utility diversions have to be undertaken, increasing costs and delaying start of programme	Cost increase	2	3	6	Roland Jordaan	Go back out to stats for C3 estimates prior to construction	2	3	6	CCC PM	Included in cost identified for above stats risk (line 6)						£0
DS5 - Delivery	Unavailability of materials	Items are difficult to procure, increasing lead in times and hence start of works.	Start of works date	2	3	6	Roland Jordaan	No specialist requirements included within scheme - all items should be readily available.	1	3	3	CCC PM			15%	£5,000	£10,000	£15,000	£1,500
DS5 - Delivery	Unavailability of roadspace	Roadspace is not available to deliver works	Start of works date	2	4	8	Roland Jordaan	Early engagement with road space team	2	4	8	CCC PM	main issue is start on site, cots is low - mainly logistics.		30%	£2,000	£5,000	£10,000	£1,500
DS5 - Delivery	Complaints during works due to air quality	Increased staff time dealing with complaints: decrease in customer satisfaction	Cost increase	2	2	4	Roland Jordaan	Consider need for "before" surveys	2	2	4	CCC PM			30%	£2,000	£5,000	£10,000	£1,500
DS5 - Delivery	Complaints during works due to noise	Increased staff time dealing with complaints: decrease in customer satisfaction	Cost increase	2	2	4	Roland Jordaan	Consider need for "before" surveys	2	2	4	CCC PM			30%	£2,000	£5,000	£10,000	£1,500
DS5 - Delivery	Collisions in working area	Health and safety risk to staff. Delays to completion of job, and associated cost increases	Completion of works date	2	2	4	Roland Jordaan	Ensure float is allowed for in prgramme	1	2	2	CCC PM	float allowed in programme		15%	£2,000	£5,000	£10,000	£750
DS5 - Delivery	Adverse weather	Delays to completion of job and associated cost increases.	Completion of works date	3	3	9	Roland Jordaan	Programmed for Autumn 24	3	3	9	CCC PM			50%	£2,000	£10,000	£20,000	£5,000
DS5 - Delivery	Understanding business requirements, esp March MOT Centre	Unclear how well used March MOT Centre is and the truning circle requirements for access / egress. Could add additional constraints on Traffic Management	Completion of works date	3	3	9	Roland Jordaan	Engagement with local business	3	3	9	CCC PM			50%	£2,000	£10,000	£20,000	£5,000
DS5 - Delivery	Location of Compound Area	Unclear where Compound area can viably be located	Start of works date	3	3	9	Roland Jordaan	Due to small area and proximity of March depot - use towable welfare unit within works area	3	3	9	CCC PM	Cost within scheme cost						£0

Select from Dropdown menu	A clear description of the Risk. The drafter should describe the risk e.g. 'The Risk is that...' It is important that the description is carefully-worded, to define the			Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation	Brief description of what measures could be taken to reduce or minimise the risk. Could be used to help evaluate.	Select from Dropdown menu	Select from Dropdown menu	Calculated by formula	Name and organisation			Likelihood of the Risk occurring (regardless of impact)	Based on Modelling	Based on Modelling	Based on Modelling	
DS5 - Delivery	Request for change of scope from Members	Change in political direction leads to scope creep.	Cost increase	3	3	9	Roland Jordaan	Limited opportunity to change scope following FBC	2	5	10	CCC PM			30%	£2,000	£5,000	£10,000	£1,500
DS5 - Delivery	No funding: FBC not granted	Stops scheme	Start of works date	2	5	10	Roland Jordaan	FBC submitted early			0	CCC PM	No cost: scheme kill.						£0
DS5 - Delivery	Coordination of third parties: it may not be possible to coordinate the external lighting and signals team ad the DNO connection.	This may delay the programme, leading to increased cost.	Completion of works date	3	2	6	Roland Jordaan	Early engagement with affected third parties	2	2	4	CCC PM			30%	£5,000	£10,000	£30,000	£3,000
DS5 - Delivery	The arisings are contaminated and have to be disposed of as unacceptable.	Increased cost for disposal	Cost increase	3	4	12	Roland Jordaan	Intrusive investigation at start of works?	3	4	12	CCC PM			30%	£50,000	£100,000	£150,000	£30,000
DS5 - Delivery	Long lead in times for street lighting apparatus	This may delay the programme, leading to increased cost.	Completion of works date	3	2	6	Roland Jordaan	Order lighting and signal apparatus (especially lanterns) in advance	2	2	4	CCC PM			15%	£5,000	£10,000	£30,000	£1,500
DS5 - Delivery	Delay in signals approval	May mean that signals cann	Start of works date	3	2	6	Roland Jordaan	Ensure appropriate time is allowed for approval process	2	2	4	CCC PM			15%	£2,000	£5,000	£10,000	£750
DS5 - Delivery	Delay in street lighting approval	May delay the start of works.	Start of works date	3	2	6	Roland Jordaan	Ensure appropriate time is allowed for approval process	2	2	4	CCC PM			15%	£2,000	£5,000	£10,000	£750



### Peas Hill Roundabout

Project Number	Project Name	Risk/Opportunity	Current Status	Impact Trend	Ref No.	Classification	Project Risk/Op Category	Project Stage	Project Risk/Op Description	Potential Impact	Primary Impact (line/cost)	Inherent Risk/Op Rating			CCC Lead Officer	Risk Mitigation / Realisation Measures			Residual Risk Rating			Risk Assessment category	Maximum potential (£)	Likely impact of CC	Maximum impact (£)	Residual cost/impact change	Date risk was last updated	
												Likelihood	Impact	Score		Likelihood	Impact	Score	Risk/Op Action Owner	Actions Identified/Taken	New Assessment category							Maximum potential (£)
3CCPX01134	Peach Hill	Risk	CLOSED	—	1	Technical	Design	D84 - Detailed Design	Retaining structures/detailed design may be required to reduce land take	Time and cost	Cost increase	4	4	16	Dimitar Petrov	UPDATE 19/09/2022 - A requirement for a retaining feature is now confirmed AP based on available historical data with existing features situated within the proposed site boundary. Review CCC to be issued to CCC.  Redesign would be complete and agree the AP with CCC Structures team and will require an input from the GI Report.  The Detail Design of the retaining feature would align with the Baseline programme and will follow. Costs to be calculated based on the AP preferred option.  Before GI work may need to be extended beyond 10 days, if the right of the retaining feature is not agreed.	4	3	12	Ashley TL	The has been issued - Decision to progress with Retention proposed location has been agreed between CCC and Abies. Abies to prepare detailed design options and submit the retaining solution required on the basis of the commercial parties.  21/07/2022 This is a really new risk closed!	60				£0		
3CCPX01134	Peach Hill	Risk	LIVE	—	2	Project	External Stakeholders	D84 - Detailed Design	Options during planning permission due to impacts on accessibility, road impact on properties, commercial use of land etc may require an update or delay the scheme	Delay and costs		3	5	15	Wale Oleksia	Online Consultation was held over May/June 2022, due to COVID-19 restrictions an online package, CDO was agreed off in November and MATS FRC is being developed alongside Detailed Design. Public Engagement event proposed for September 2022.  New presented to MATS Strategic Project Board in May 23 and June 22. Given that Programme has moved past GDC stage the project is proceed with Public Engagement in September 2022. Risk mitigated with the public engagement events that took part end of September. Initial review period to be incorporated in the scheme programme.  Monthly Consulted basic: met/DK Monthly Legal fees: met/DK Max land acquisition offshore: £30K Max fees: £1k	2	5	10	CCC PM	Stakeholder engagement letters with land owners have already been sent out prior to public engagement planned for September.  New presented to MATS Strategic Project Board in May 23 and June 22. Given that Programme has moved past GDC stage the project is proceed with Public Engagement in September 2022. Risk mitigated with the public engagement events that took part end of September. Initial review period to be incorporated in the scheme programme.  Monthly Consulted basic: met/DK Monthly Legal fees: met/DK Max land acquisition offshore: £30K Max fees: £1k	120	30%	£210,000	£200,000	£310,000	£90,000	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	—	3	Financial	Project Funding	D84 - Detailed Design	Scheme budget may be exceeded	Cost	Cost increase	3	4	12	Vera Andriyantsyn	1) Communicate changes immediately, explore risk mitigation workshops, identify VEC opportunities. Risk Not (Substantially increased) is directly related	3	3	9	CCC PM	In progress - Assumed external of works by three months, monthly design and PM time, additional assumed. Slightly less £30K	60	60%	£60,000	£90,000	£120,000	£54,000	17/05/2022
3CCPX01134	Peach Hill	Risk	CLOSED	—	4	Technical	Scheme Development	D84 - Detailed Design	Changes to the preliminary design may be required at both primary due to residential properties issues and early stages of design of the signalled junction	Cost and programme		3	3	9	Vera Andriyantsyn	1) Confirm client requirements at project inception and try to implement changes into detailed design without internal preliminary design. Efficiency provided as design team involved in planning support and can address impacts.	3	2	6	CCC PM	UPDATE: Maximize new capacity resulting into free state MATS traffic module the SS and S2C2 options that have been provided by Abies.  Update: Abies is progressing with Cdn CO, further to model information.  Update: CCC have asked for as full drawings of the bridge					£0	21/07/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	—	5	Technical	Design	D84 - Detailed Design	Structural assessments to the bridge associated with VRG may be required	Delays and additional design costs		3	3	9	Dimitar Petrov	1) Obtain as built at project inception and discuss with CCC. 2) Technical advice to review the risk and explain whether the can be designed out. To confirm what steps are required for the north west corner of Peach Hill retained across the VRG is being explained. New result of the VRG will need to be reported?	3	1	3	CCC PM	UPDATE: Changes to barrier at northbound direction will be with the existing TSD center as there is sufficient length of the existing system before the bridge approach.  On the other hand, a new barrier will be provided over the new retaining feature without connecting to the existing one providing a gap greater than 10m subject to the detailed design of the retaining features). Alternatively, a departure from standard could be sought for a retained gap between two barrier systems. Please confirm retained gap meet a departure or the other way around? We want to ensure a departure between the gap between the old and new VRG section will be less than 10m. However, no immediate need to touch the proposal, risk can now be closed					£0	17/05/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	—	6	Technical	External Stakeholders	D84 - Detailed Design	Norfolk Rail may object to works over the bridge	Delays		3	5	15	Wale Oleksia	1) Remove the bridge from the scope of works. Improve only road realigning on surface and not across the central reserve	2	2	4	CCC PM	Update: NL have given their ok to proceed - TM to be provided by contractor for access to NR. Need to confirm ownership of the structure.  LTN 100 impact has now moved to new construction - Please refer to Risk 10					£0	17/05/2022	
3CCPX01134	Peach Hill	Risk	LIVE	—	7	Technical	Design	D84 - Detailed Design	New design standards & TND 2021 incorporating more heavily characteristics may delay design and increase costs	Delay and costs	Cost increase	4	4	16	John Stanley	1) Due to space constraints LTN 100 may not be applied in full, the need to make good the widening to place. Currently a cycling strategy is being developed by CCC. Their proposals may be the total cost in respect of the LTN 100 being included in Peach Hill project.	2	3	6	Ashley TL	Update: 17/05/2022 CCC agreed that cycle route can be included in the current programme which has advanced far for and has a budget allocated. Any external design works will be coordinated by a new scheme. CCC to share project coordination with Abies.  Risk calculated relative to future scheme design works that can provide the programme change of management across sections to ensure similar width as bridge but widening works were even assessed, equally no implications from NR for bridge changes. Maximum cost impact: £5M per week including TM etc. Construction cost impact to be added to the scheme. CCC to share project coordination with Abies.	60	5%	£60,000	£70,000	£94,000	£3,500	17/05/2022
3CCPX01134	Peach Hill	Risk	CLOSED	▼	8	Project	Survey	D84 - Detailed Design	Please fix low level obstacles to enable work. TTRQ application process requires 12 weeks' notice	Cost Estimates not ready on time for the business case study		3	4	12	Vera Andriyantsyn	1) Confirm rectify requirements for TTRQ 2) Continued effort to reduce the risk, along may not be end up being mitigated due to existing highways standards.	1	2	2	Ashley TL	Update: Further to the meetings with stakeholders involved in TM assessment and CCC Network Management, those have been confirmed that TTRQs are not required.					£0	21/07/2022	
3CCPX01134	Peach Hill	Risk	LIVE	—	9	Technical	Design	D84 - Detailed Design	Roundabout at Peach Hill may not be constructable without full time closures	Delay		2	5	10	Dimitar Petrov	1) Undertake ECJ 2) Develop the SD design for construction	1	3	3	Ashley TL	Updates 17/05/2022: Roundabout long profile agreement has been signed regarding separate access to change. In order to improve sustainability issue that could be identified, access of the neighbouring residents needs to be changed. CCC to deal with the situation with the property owners to investigate this alternative. Future to ECJ completed the same.  Photogrammetry of design works is assumed 3 months. Monthly consultancy fees £25K	60	70%	£50,000	£75,000	£100,000	£52,500	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	—	10	Environmental	Survey	D84 - Detailed Design	Environmental surveys may retain delays which could trigger further mitigation design and delays	Delay and cost increase		2	4	8	Vera Andriyantsyn	1) Undertake surveys immediately	2	2	4	CCC PM	Update: Env gap analysis is in progress, to be completed next week. Findings and proposed actions to be shared with CCC for discussion.  Gap analysis is now completed. Relevant document has been shared with CCC regarding comments.  Update: CCC will be able to be identified on site.  Abies: Abies to provide cost estimate of anticipated works. Any further work may be needed for the scheme. The significant data has been identified after their mitigation measures to cost data have been identified. Assessed total mitigation cost: To be submitted after the Sustainability Case is completed, cost distribution is below:	60%		£5,000	£15,000	£20,000	£7,500	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	—	11	Environmental	External Stakeholders	D84 - Detailed Design	Scheme could have issues in planning permission if net gain cannot be implemented	Delays		1	4	4	Wale Oleksia	1) Identify stakeholders requirements ahead of junction design and identify areas for potential environmental features. 2) Assess land impacts immediately and discuss with CCC	1	3	3	CCC PM	Abies to progress the Net gain design. Net Gain design started, ecology surveys to take place early November.  Photogrammetry of design works is assumed 3 months. Monthly consultancy fees £25K	120	50%	£60,000	£75,000	£100,000	£37,500	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	—	12	Technical	Stakeholder Process	D84 - Detailed Design	CIs may be submitted at construction	Cost	Cost increase	1	3	3	Dimitar Petrov	1) Request updated CIs before construction commences	1	2	2	Ashley TL	Please advise design not this risk at current stage of design (i.e. detailed, have been taken. Updated CIs have been requested consistent in the GDC once already in hand. If updated CIs are not received on time for the purpose FRC 2023 CIs will be used with confirmed the any design changes.						17/05/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	—	13	Project	Project Scope	D84 - Detailed Design	Programme delay due to change of scope	Delay		3	3	9	Wale Oleksia	1) To monitor and remove other risks related to design programme impact have been captured to action level	2	2	4	CCC PM	In progress WCHMR proposals could have significant impact on the programme.  Scope changes have been initiated under Risk 7, 9, 17 and 24. This risk can close					£0	26/08/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	▼	14	Project	Scheme Development	D84 - Detailed Design	There is a risk that A141/Horseshoe Ave junction will be converted to traffic lights to mitigate impact of A81 supermajor proposed to be built off Horseshoe Ave.	Delay		4	2	8	John Stanley	1) Meetings have been held and a decision was made to progress with signalled junction, refer to risk at 16	1	2	2	CCC PM						£0	21/07/2022	
3CCPX01134	Peach Hill	Risk	LIVE	—	15	Project	Scheme Development	D84 - Detailed Design	There is a risk that McDonalds access will be lost on Horseshoe Ave between A141 and Tesco roundabout, affecting design timeline of proposed A141/Horseshoe Ave junction	Delay		2	3	6	Wale Oleksia	1) McDonald application is not agreement yet, hence it will not be considered. CCC in discussion with transport assessment team	2	2	4	CCC PM	CCC to investigate whether there is a risk for contractors to reject the 5. surface as storm sign before the roundabout. There could be major risk of storm design works, involved Abies is currently conducting the highway agreement, on the basis of a fully signalled 7 junction, rather than a roundabout.  CCC to discuss with contractors with consultation.  Photogrammetry of design works is assumed 3 months. Monthly consultancy fees £25K	60	30%	£50,000	£75,000	£100,000	£22,500	26/08/2022
3CCPX01134	Peach Hill	Risk	CLOSED	▼	16	Project	Design	D84 - Detailed Design	Horseshoe Junction prelan design approval	Delay and costs due to additional works	Cost increase	2	3	6	John Stanley	1) Abies to proceed with detailed design and introduce a traffic signal design team. Relevant LTNs to be confirmed as part of construction from CCC side 2) To consider option of sub constructing traffic signals to Chris Kennel (ex CCC traffic signal team)	1	2	2	CCC PM	Update: Fully signalled junction input is approved. Traffic signals lead for Abies is Peter Chisholm						£0	21/07/2022
3CCPX01134	Peach Hill	Risk	LIVE	—	17	Project	Consultation/Comms	D84 - Detailed Design	Outline planning application is assumed for the purposes of FRC1	Delay, Cost		3	4	12	Wale Oleksia	1) CCC to agree on the Planning procedure and instruct Abies on the expected lead in	2	3	6	CCC PM	To be considered in the next phase of FRC, i.e. FRC2. No need to be brought at this stage. To be discussed with FRC1 owners. In consultation with CCC to ensure the comparison between outline and detailed design construction costs and times (assumed 25% more than 2019)	0	80%	£25,000	£43,750	£82,500	£36,000	17/05/2022
3CCPX01134	Peach Hill	Risk	CLOSED	▼	18	Design	Design	D84 - Detailed Design	Hatched line on NR bridge	Cost	Cost increase	1	3	3	John Stanley	1) NR have confirmed this is not related to bridge structural load bearing	1	1	1	CCC PM	Communication to be shared with Abies					£0	21/07/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	NEW	19	Technical	Project Scope	D84 - Detailed Design	It is assumed that the existing topographical survey is accurate and appropriate for the design.	Cost increase		2	3	6	Vera Andriyantsyn	1) Assess topographical survey information and notify CCC of additional requirements immediately	1	3	3	Ashley TL	Update: CCC reviewed apt/fields to have detailed design top requirements checked and confirmed. CCC to confirm cost and programme impact before starting any works related.  CDO to review the CDO to get approval. Site works are planned for end of July, no TM required.  Update: output of topo surveys to be shared Friday the 26th of August. UPDATE: 17/10/2022 Topo has been confirmed as acceptable					£0	26/08/2022	
3CCPX01134	Peach Hill	Risk	LIVE	NEW	20	External Stakeholders	D55 - Delivery	D55 - Delivery	Risk of new utilities being added on the network between design and construction phase	Delay		2	3	6	Dimitar Petrov	1) Street works team to manage section B5 notices, to be discussed on the QA call weekly	1	2	2	Ashley TL	CCC to confirm progress up to date and monitor. Review risk during detailed design stage and procurement.					£0	17/05/2022	
3CCPX01134	Peach Hill	Risk	CLOSED	NEW	21	Design	Design	D84 - Detailed Design	Design affected due to layout changes	Additional works if redesign is required		3	2	6	Dimitar Petrov	Risk is being designed out, so per the design strategy this is why it is being closed	2	2	4	Ashley TL	Risk is being designed out, so per the design strategy this is why it is being closed					£0	17/05/2022	
3CCPX01134	Peach Hill	Risk	LIVE	NEW	22	Project	External Stakeholders	D84 - Detailed Design	Risk of MATS being challenged under judicial review over Consultation/Public Engagement	Delay to programme		2	4	8	Wale Oleksia	Online Consultation was held over May/June 2022, due to COVID-19 restrictions an online package, CDO was agreed off in November and MATS FRC is being developed alongside Detailed Design. Public Engagement event proposed for September 2022.  New presented to MATS Strategic Project Board in May 23 and June 22. Given that Programme has moved past GDC stage the project is proceed with Public Engagement in September 2022. Risk mitigated with the public engagement events that took part end of September. Initial review period to be incorporated in the scheme programme.  Monthly Consulted basic: met/DK Monthly Legal fees: met/DK Max land acquisition offshore: £30K Max fees: £1k	2	3	6	CCC PM	Stakeholder engagement letters with land owners have already been sent out prior to public engagement planned for September.  New presented to MATS Strategic Project Board in May 23 and June 22. Given that Programme has moved past GDC stage the project is proceed with Public Engagement in September 2022. Risk mitigated with the public engagement events that took part end of September. Initial review period to be incorporated in the scheme programme.  Monthly Consulted basic: met/DK Monthly Legal fees: met/DK Max land acquisition offshore: £30K Max fees: £1k	50	60%	£30,000	£30,000	£90,000	£30,000	17/05/2022
3CCPX01134	Peach Hill	Risk	CLOSED		23	Procurement	Survey	D84 - Detailed Design	The GI works for the retaining wall are increasing time requirements, particularly night shift remains as short as 4h. GI work will be completed on time.	Programme / Cost		4	4	16	Vera Andriyantsyn	Increase night shift by introducing automatic barriers. Update 23/08/2022: CCC highways have not objected to full night shift	2	3	6	CCC PM	Update: CCC to reconsider and confirm	50	50%	£1,000	£2,000	£10,000	£1,000	21/07/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	24	Technical	Design	D55 - Preliminary Design	AP for the new retaining solution at the factory on works to be completed in time for costs estimate	Programme / Cost		2	3	6	Vera Andriyantsyn	Not yet would be complete and agree the AP with CCC Structures team and will require an input from the GI Report.  The Detail Design of the retaining feature would not align with the Baseline programme and will follow. Costs to be calculated based on the AP preferred option.  Assumed construction cost variation between AP and detailed design being 30% of the AP cost. Assumed cost from AP £220K	2	3	6	CCC PM	Abies to issue CE for structures works and progress with the AP. Update 23/08/2022: Detail the TM looks like the most feasible solution. Meeting with CCC structures team is planned for later this week. AP design has been approved. CCC to share project coordination with Abies.  Update: 17/10/2022 For the purposes of FRC1 the retaining feature will be retained as per the current programme.  Assumed construction cost variation between AP and detailed design being 30% of the AP cost. Assumed cost from AP £220K	60%		£40,000	£60,000	£90,000	£36,000	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	25	Technical	Scheme Development	D55 - Delivery	Third party utility works overrunning with the construction works	Delay to programme		3	3	9	Tim Daggett	Principal Contractor to manage utilities	2	2	4	CCC PM	Extensive cost impact. £5K per week overheads to mitigate. Max £120K per week including TM etc	60	50%	£40,000	£60,000	£75,000	£30,000	
3CCPX01134	Peach Hill	Risk	LIVE	NEW	26	Financial	Scheme Development	D55 - Delivery	Increased inflation due to global event	Costs	Cost increase	4	4	16	Levin Scholz	Finance Unit to build into financial models	4	3	12	CCC PM	Update: CCC to review design package and come back with comments in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time.	40%		£240,000	£260,000	£460,000	£144,000	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	27	Technical	Scheme Development	D84 - Detailed Design	GI surveys, and subsequently GDE and GDE, may require for design alterations once construction primary earthworks and scheme layout	Delay to the programme		3	3	9	Dimitar Petrov	New earthwork assumed slope for detailed design is conservative, i.e. 1:3. Equally for the cut 1:3 slope has been assumed.  The data from Groundwater indicates there are no landfill waste management facilities 500m off the site. There are no waste transfer stations within 500m of the site. The nearest waste transfer facility is Baddenham, Walsingham Road, 4.2km to the north-east of the site, which is designated for the storage and high risk for unforeseen ground conditions and Soft and compressible ground.  Earthworks design to be reviewed and finalised after the completion of GIRDOR	2	2	4	Ashley TL	Final cost estimate of project to be completed in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time.	40	60%	£40,000	£50,000	£90,000	£30,000	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	28	Technical	Design	D84 - Detailed Design	CCC review of the design and RS&2 may need to design changes	Delay to the programme		3	3	9	Dimitar Petrov	CCC to review detailed design package and come back with comments in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time. CCC to review design package and come back with comments in time for the project to be completed in time.	2	3	6	Ashley TL	Risk is possibly in low, due to close collaboration between CCC team and Abies delivery team, while exploring	40	30%	£30,000	£40,000	£60,000	£12,000	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	29	Project	External Stakeholders	D55 - Delivery	If agreement to purchase B10 party lot cannot be reached then time-consuming compulsory purchase may be required	Delay of the programme		4	4	16	Wale Oleksia	1) Early identification of stakeholders. 2) Early liaison with affected stakeholders.	3	3	9	CCC PM	Scheme programme to include CPO, then risk to be considered as per updated CCC PM to allow this as an issue, not having considered CPO in the complete scheme FRC programme. Risk level to follow once programme was updated.					£0	17/05/2022	
3CCPX01134	Peach Hill	Risk	LIVE	NEW	30	Project	Survey	D84 - Detailed Design	Damage to services during GI survey could cause programme delays	Delay of the programme		2	4	8	Dimitar Petrov	GID subcontractor to have a good understanding of utilities related at locations, prior to the start of works.	2	3	6	Ashley TL	CIs have been shared with GI subcontractor for information. Also, GI subcontractor's scope includes GPR survey at the vicinity of the borehole, prior to starting works.  Two months delay has been assumed to the programme - impact on detailed design completion being progressed is assumed as per below.  Monthly Consulted management fees met/DK - including any GI survey update works Max fees: £1k	40	30%	£20,000	£25,000	£50,000	£7,500	17/05/2022
3CCPX01134	Peach Hill	Risk	LIVE	NEW	31	Financial	Project Funding	D55 - Preliminary Design	Costs for the retaining wall are increasing time requirements, particularly night shift remains as short as 4h. GI work will be completed on time.	Cost	Cost increase	3	4	12	Wale Oleksia	Include these items into the Quantitative Risk Register. Assess the Cost Estimate once the design is completed after buildability review and GDE	3	2	6	CCC PM	1) CCC has reviewed Estimate to quantify and cost the possible associated risks. 2) CCC has reviewed Estimate to quantify and cost the possible associated risks. 3) CCC has reviewed Estimate to quantify and cost the possible associated risks.	56	50%	£200,000	£300,000	£500,000	£250,000	20/11/2022

20 Foot Road

Project Number	Project Name	Risk/Opportunity	Current Status	Impact Trend	Ref No.	Classification	Project Risk/Opp Category	Project Stage	Project Risk/Opp Description	Potential Impact	Primary Impact (time/cost):	Inherent Risk/Opp Rating			CCC Lead Officer	Risk Mitigation / Realisation Measures		Likelihood	Impact	Score	Risk/Opp Action Owner	Actions Identified/Taken	Time Allowance in Programme (days)	Estimated probability	Minimum Impact (£)	Likely Impact (£)	Maximum Impact (£)	Suggested client contingency budget
												Likelihood	Impact	Score														
30CPX31152	Twenty Foot Road	Risk	CLOSED	NEW	11.00	Technical	Design	DS3 - Preliminary Design	Investigate junction lay out options - i.e. move back to preliminary design stage CCC have suggested to redesign the junction, in order to increase the length of the queuing lane. Threin designer suggests the current length is adequate, however microsimulation results have not been yet shared to support this view. Also, prelim design has not provided island of adequate width to support safety or maintenance works. Increasing the width of the island will have direct impact to the A141 carriageway width.	Both of these issues practically take the project back to optioneering stage, that will have significant impact on the programme and increased costs. May also result in abortive works	Completion of works date	4	4	16	Vana Andritsiogianni	1) Review the microsimulation traffic model results to understand the necessity of increasing the queuing lane. Further to that to identify ways to mitigate impact on the programme, i.e. is the increase of the queuing lane required after all? 2) Identify the impact of the island width modification to the A141 footprint with regards to land, utilities and retaining solutions. Depending on the outcome, it could be that the cost estimates need to be ready by 24th of November will carry a higher risk value, due to pending design works related.	3	4	12	CCC PM	Update: Layout is now agreed with Client, further to amendments to the SE works line and traffic issues						£0	
30CPX31152	Twenty Foot Road	Risk	LIVE	NEW	13.00	Financial	Scheme Development	DS5 - Delivery	Increased inflation due to global event	Costs	Cost increase	4	4	16	Leon Scholtz	Insure inflation is build into financial models	4	3	12	CCC PM	Capital cost for construction is assumed £3M - Construction year 2024 - Difference between inflation impact assumed in the cost estimate and risk of variation in time, has been assumed equal to 2% max		50%	£100,000	£150,000	£200,000	£75,000	
30CPX31152	Twenty Foot Road	RISK	LIVE	NEW	15.00	Project	External Stakeholders	DS5 - Delivery	If agreement to purchase third-party land cannot be reached then time-consuming compulsory purchase may be required.	Delay of the programme	Start of works date	4	4	16	Wole Odetola	1) Early identification of landowners. 2) Early liaison with affected landowners.	3	3	9	CCC PM	Scheme programme to include CPO, then risk to be considered as the variation.  CCC PM to raise this as an issue, not having considered CPO in the complete scheme FBC1 programme. Risk Cost to follow once programme was updated.						£0	
30CPX31152	Twenty Foot Road	Risk	CLOSED	—	2.00	Project	Design	DS4 - Detailed Design	RSA1 comments are not yet addressed in the design.	This may require re-design and subsequent delays to the scheme.	Start of works date	4	3	12	Rohan Joshi	1) Early assessment against RSA1 comments. 2) Notify CCC as early as possible of any design changes needed and recommend next steps to CCC.	4	2	8	Contractor	RSA1 comments have been reviewed - Right turn to 20FR can be fixed during alignment design - Info about junction traffic figures has been requested by CCC.  Update: All RSA1 comments have been addressed for these stage. Anything that will come from RSA2 will need to be addressed at later stage.						£0	
30CPX31152	Twenty Foot Road	Risk	CLOSED	—	4.00	Project	Design	DS4 - Detailed Design	The current design will require HGV's to straddle the two northbound lanes in order to successfully navigate the right turn, blocking the lanes providing stacking.	This may require re-design and subsequent delays to the scheme.	Start of works date	4	3	12	Rohan Joshi	1) Early assessment of swept paths. 2) Atkins to complete swept paths checks and share early sketches for approval.	3	2	6	Contractor							£0	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	6.00	Project	Design	DS4 - Detailed Design	VRS may be required before the Hobbs Lots Bridge parapets.	This may require a structural assessment	Cost increase	4	3	12	Rohan Joshi	1) Complete RRRAP and notify CCC of requirements immediately	3	2	6	Contractor	CCC to come back with as built info of the bridge, while Atkins review the need for an RRRAP.  RRRAP not required as the road will be 40 mph - The gap between the maintenance hard slip and the bridge parapet can be closed by introducing VRS, to mitigate risk through design.  After receiving police view on the speed limit, it may need to remain at 50mph, hence a RRRAP analysis may be required. Once the changes of VRS are completed, there may be a risk on the bridge parapet to be replaced. This is a new task and not in the programme. Although the length is very limited, proposal is to cost the worst case scenario for the purposes of FBC1, regardless of the VRS details design final conclusions, if not on time.	120	90%	£30,000	£60,000	£120,000	£54,000	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	9.00	Project	Consultation/Comms	DS4 - Detailed Design	Outline planning application is assumed for the purposes of FBC1. The planning route has not been yet clarified.	Delay: Cost	Completion of works date	3	4	12	John Stanley	1) CCC to agree on the Planning procedure and instruct Atkins on the expected feed in	2	3	6	CCC PM	To be considered in the next phase of FBC, i.e. FBC2. No land to be bought at this stage. To be discussed with FBC1 owners, in order to manage risk, action with CCC  Costs rational is based on the comparison between outline and detailed planning application costs and fees.	0	80%	£20,000	£35,000	£50,000	£28,000	
30CPX31152	Twenty Foot Road	Risk	CLOSED	NEW	10.00	Environmental	Surveys	DS4 - Detailed Design	Flood risk assessment may be required, this is additional work.	Cost	Cost increase	3	4	12	Vana Andritsiogianni	1)Atkins to check if a flood risk assessment is required	2	3	6	Contractor	The scope included budget of about £1.5K for an initial flood risk assessment. To be progressed by Atkins.  Outline FRA is completed and concludes that no further FRA work is required at this stage.						£0	
30CPX31152	Twenty Foot Road	Risk	CLOSED	—	3.00	Project	Design	DS4 - Detailed Design	Signalised junction 150m north of site, risk of proposed signals interfering and causing congestion.	If this is to be addressed in detailed design, it will incur a cost increase and potential time delay.	Cost increase	3	3	9	Rohan Joshi	1) Early decision required to assess the conflict, with a review of existing traffic models. 2) Atkins to confirm traffic signals info has been received or otherwise to suggest what is missing. Confirmed.	3	2	6	Contractor	Atkins suggests to link the two junctions, as oppose to CCC Daniel Downes who is of the opinion they are so far that there would be no issues with traffic build up, so doesn't see the point in linking them. To be further examined if junction optioneering goes forward (please see new risk No. 11)  Update: New meeting has been planned for Thursday the 21st. Traffic information was uploaded on 19th of July.  Traffic data does not support congestion scenario and traffic signals interference. Risk to be closed.						£0	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	14.00	Technical	Scheme Development	DS5 - Delivery	Third party utility works overrunning within the contruction works	Delay of the programme	Completion of works date	3	3	9	Steven Bown	Principal Contractor to manage utilities	2	2	4	CCC PM	Minimum cost impact: £9K per week overheads to mitigate Max: £12K per week including TM etc	--	50%	£40,000	£60,000	£75,000	£30,000	
30CPX31152	Twenty Foot Road	Risk	LIVE	NEW	16.00	Technical	Design	DS4 - Detailed Design	GI surveys, and subsequently GR and GDR, may suggest for design alterations once completed, primarily earthworks and scheme footprint	Delay to the programme and additional fees	Start of works date	3	3	9	Rohan Joshi	New embankment assumed slope for detailed design is conservative, i.e. 1:3. The data from Geological Desk Top Study indicates there are no active or historical landfills / waste management facilities within 500m of the site (Groundsure Insights, 2022) Earthworks design to be reviewed and finalized after the completion of GR/GDR There is no retaining solution requirement for this project	2	2	4	Atkins TL	GI surveys planned for end of October. GR/GDR to be completed early 2023  Update on the 21st of November: access to the field has not been granted, hence the geotech investigations including water level monitoring need to be now planned prior to FBC2. Risk probability is now increased to 60% from 30% in previous version	30	60%	£20,000	£40,000	£75,000	£24,000	
30CPX31152	Twenty Foot Road	Risk	LIVE	NEW	18.00	Technical	Design	DS4 - Detailed Design	CCC review of the design may result to design changes.	Delay to the programme	Start of works date	3	3	9	Rohan Joshi	CCC to review detailed design package and come back with comments in time for the project to be completed in time. FBC1 will not bear those design changes, to be considered in FBC2	2	3	6	Atkins TL	Risk is possibly low, due to close collaboration between CCC team and Atkins delivery team, while optioning.	30	30%	£20,000	£30,000	£50,000	£9,000	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	5.00	Environmental	Design	DS4 - Detailed Design	Environmental surveys may flag additional issues	This could trigger further mitigation, design and delays	Start of works date	2	4	8	Vana Andritsiogianni	1) Atkins to review existing environmental information and come back with proposals for CCC to review 2) Undertake surveys and notify CCC of requirements immediately	2	2	4	Contractor	Gap analysis completed and will be shared with CCC week starting 25th of July. Update 25/08/2022: FBC requirements have been shared with Atkins - Atkins to provide cost estimate of anticipated works. Any surveys that will result will be identified on time. RPA has been completed. The following surveys are currently being planned: 1. coastal and floodplain grazing marsh visit after rain 2. Survey for bats, access required 3. an other survey needs to be undertaken - any time of year 4. Ecology/water team to be consulted Impact on the planning application has been assumed for the times and/costs	90	50%	£20,000	£35,000	£50,000	£17,500	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	12.00	Project	External Stakeholders	DS4 - Detailed Design	Risk of MATS being challenged under judicial review over Consultation/Public Engagement. Objections during planning permission due to impacts on habitability, land impact on properties, commercial use of land etc. may require re-design or delay the scheme	Delay to programme	Start of works date	2	4	8	John Stanley	Online Consultation was held over May/June 2022, due to COVID-19 restrictions on public gatherings. OBC was signed off in November and MATS FBC is being developed alongside Detailed Design. Public Engagement event proposed for September 2022.	2	3	6	CCC PM	Item presented to MATS Strategic Project Board in May 22 and June 22. Given that Programme has moved past OBC stage, decision to proceed with Public Engagement in September 2022. Risk mitigated with the public engagement events that took part and end of September. Judicial review period to be incorporated in the programme. Monthly Consultant fees: min£5K Monthly Legal fees: min£5K Max land acquisition difference: £50K Max fees 1.5x	90	20%	£30,000	£50,000	£90,000	£10,000	
30CPX31152	Twenty Foot Road	Risk	CLOSED	—	1.00	Technical	Project Scope	DS4 - Detailed Design	It is assumed that the existing topographical survey is accurate and appropriate for the design.	If additional topographical survey is deemed to be required, this will incur an additional cost and potential time delay.	Cost increase	2	3	6	Vana Andritsiogianni	1) Assess topographical survey information and notify CCC of additional requirements immediately.	1	3	3	Contractor	CCC endorses spot checks to have detailed design topo requirements checked and confirmed. CCC to confirm cost and programme impact before starting any works related. Topo checks CE has been issued and approved. Works are planned for early September. There should not be any issues. Highways to cross check topo surveys data provided before this risk is removed.						£0	
30CPX31152	Twenty Foot Road	Risk	LIVE	NEW	17.00	Technical	External Stakeholders	DS4 - Detailed Design	Drainage outfalls on the North East may have impact on the private land	Delay to the programme and additional fees	Start of works date	2	3	6	Vana Andritsiogianni	1) Early identification of landowners. 2) Early liaison with affected landowners.	2	2	4	Atkins TL	This is not a design change. The outfall discharges in the field currently. This is retained in the design, by accommodating the carriageway widening. Discharge is increased slightly. Cost estimate assumes design optioning in order to accommodate the outfall in a different manner MAX buy land	60	40%	£20,000	£20,000	£200,000	£8,000	
30CPX31152	Twenty Foot Road	Risk	CLOSED	—	8.00	Authority	Surveys	DS4 - Detailed Design	Possible lane / road closures to enable work - TTRO application process requires 12 weeks' notice	Cost Estimates not ready on time for the business case study	Completion of works date	1	4	4	Rohan Joshi	1) Confirm notice requirements for TTRO 2) Combined effort to reduce the risk, delay may not be end up being mitigated due to existing highways standards.	1	2	2	Atkins TL	Updates: Further to the meetings with stakeholders involved i.e TM subcontractors and CCC Network Management, it has been confirmed that TTROs are not required.						£0	
30CPX31152	Twenty Foot Road	Risk	LIVE	—	7.00	Environmental	Design	DS5 - Delivery	C2s may be outdated at construction	C2s will need to be requested, delaying works	Cost increase	1	3	3	Rohan Joshi	1) Refresh C2s before construction commences. Maintain engagement with Street Works.	1	2	2	Contractor	Monthly Consultant fees: min£3K Monthly Contractor fees: min£5K Construction additional works: min £20K Max times 3	90	20%	£50,000	£75,000	£150,000	£15,000	
30CPX31152	Twenty Foot Road	Opportunity	LIVE	—	19.00	Technical	External Stakeholders	DS4 - Detailed Design	Value Engineering opportunity for excavated material 1) Re-use a proportion of material on-site in capping and general fill. 2) Deposit on site as landscaping fill material, eg in a bund, wide verges.	Re-use of available material at site and minimise waste material to dispose tip of site		3	-3	-9	Rohan Joshi	1) Contingency covered in BoQs for import of materials and disposal of materials	3	-3	-9	Contractor	To complete geotechnical investigation prior to construction.	60	40%	£10,000	£25,000	£50,000	£10,000	

Northern Link Road

Project Number	Project Name	Risk/Opportunity	Current Status	Impact Trend	Ref No.	Classification	Project Risk/Opportunity Category	Project Stage	Project Risk/Opportunity Description	Potential Impact	Primary Impact (time/cost):	Inherent Risk/Opportunity Rating			CCC Lead Officer	Risk Mitigation / Realisation Measures	Residual Risk Rating				Time Allowance in Programme (days)	Estimated probability	Minimum Impact (£)	Likely Impact (£)	Maximum Impact (£)	Suggested client contingency budget	
												Likelihood	Impact	Score			Likelihood	Impact	Score	Risk/Opportunity Action Owner							Actions Identified/Taken
30CPX31155	Northern Link Road	Risk	LIVE	—	1.00	Environmental	Statutory Process	D03 - Preliminary Design	If land required for road construction is found to be contaminated then remediation may be required.	Delay, Cost	Cost increase	4	4	16	Robin Mason	1) Undertake desk study to review information held on adjacent landfill site. 2) Consider whether site investigation/testing should be brought forward to programme. 3) Check land fill site monitoring points, send email to FDC for information (site board on the board outside). 4) For the refuse site seek information and check for clashes (check Google map for phone on the board).	3	3	9	Akins TL	CCC Env and Waste management team to help Akins with the communication, being the owner. CCC to send contact information for more details and monitoring points coordinates (Possible information sensitivity). Item 1) to provide more info to progress. Update: Geological desktop study is completed and suggests there is high risk for the land to be contaminated. S88 expecting point of communication in CCC. This is still outstanding - action with CCC.  There is a layer of extremely poor ground that needs to be improved. If it is first to be contaminated as well, it may need to be removed in total and treated appropriately. Depth 400mm min ground - import engineering fill.  1) Land treatment 2) Realignment  For risk cost, it has been assumed a variation of an extra 400mm (max scenario) to be replaced. Works to dig out, import and place this extra depth have been roughly: £115k to dig out + £30k to import including fill works	90%	£198,440	£297,660	£396,880	£207,894	
30CPX31155	Northern Link Road	Risk	LIVE	—	2.00	Project	Internal Stakeholder	D05 - Delivery	If agreement to purchase third-party land cannot be reached then time-consuming compulsory purchase may be required.  Scheme unable to proceed if the CPO is not allowed for in the programme	Delay	Start of works date	4	4	16	Steven Bown	1) Early identification of landowners. 2) Early liaison with affected landowners.	3	3	9	CCC PM	A lot of the proposed works take part in third-party land because the existing long hill road appears to have been built on private land (this is in addition to the Prison and Network Rail already identified). Depending on the nature of the agreements and covenants the land acquisition agreement process could be lengthy. Need to create a plan showing the land plots boundaries overlaying the works to understand the impact. Update: Plan has been completed and will be issued next week for CCC to work around the strategy to acquire. Plan was issued - CCC will be procuring land agent to work around the land procurement strategy. This will take place next year for FBCI Scheme programme to include CPO, then risk to be considered as the variation. <b>Risk to be assigned to SHARADONE</b> <b>CCC to raise this as an issue, not having considered CPO in the complete scheme FBCI programme. Risk Cost to follow once programme was updated.</b>	40%				£0	
30CPX31155	Northern Link Road	Risk	LIVE	NEW	17.00	Financial	Scheme Development	D05 - Delivery	Increased inflation due to global event	Cost	Cost increase	4	4	16	Leon Scholtz	Insure inflation is built into financial models	4	3	12	CCC PM	Capital cost for construction is assumed £20M - Construction year 2027. Difference between inflation impact assumed in the cost estimate and risk of variation in time, has been assumed equal to 2% max	100%	£1,000,000	£1,500,000	£2,000,000	£1,500,000	
30CPX31155	Northern Link Road	Risk	LIVE	—	10.00	Technical	Surveys	D03 - Preliminary Design	Network Rail approval is required for topo survey works in their fields, risk of abortive works if not obtained in time.	Cost	Cost increase	3	5	15	John Starkey	1) Akins to liaise with Network Rail to seek approval for works. No. Delays on responses should not keep back the rest of the surveys.	2	3	6	CCC PM	Akins has liaised with NR asking for additional info, expecting response. Network Rail to send BAPAs by 27/06/22. Update: CCC have received BAPAs. Currently with CCC Legal, to complete payment has been made. Akins survey team can access the location. Highway fence is missing on the NLR side CCC to update the above £10k per month Design/PM time for prolongation	180	60%	£30,000	£50,000	£80,000	£30,000
30CPX31155	Northern Link Road	Risk	LIVE	—	3.00	Environmental	Surveys	D03 - Preliminary Design	Ecology survey not included in the current scope of work, associated works may delay programme if required	Delay, Cost	Cost increase	4	3	12	Vana Andriatougare	1) Akins to review the submitted FEA and undertake a gap analysis 2) Identify the potential key constraints within the report and come back to CCC with a certain proposal	3	2	6	Akins PM	Env gap analysis to be completed this week (see 24/06/22) Gap Analysis issued to CCC for comments. CCC have confirmed if ecology surveys are required they can be planned for after FBCI CCC have confirmed if ecology surveys are required they can be planned for after FBCI CCC have confirmed if ecology surveys are required they can be planned for after FBCI	90	50%	£15,000	£15,000	£60,000	£7,500
30CPX31155	Northern Link Road	Risk	CLOSED	—	4.00	Technical	Design	D04 - Detailed Design	If existing carriageway is found to have underlying issues then remediation/reconstruction may be required. (based on evidence of condition of existing road, future road not known at this time)	Delay, Cost	Cost increase	3	4	12	Robin Mason	1) Determine the future mode of existing pavement. 2) Undertake intrusive investigation early in programme. 3) Akins to progress pavement surveys	3	2	6	Akins TL	Decision on pavement full reconstruction needs to be recorded Pavement surveys now completed						£0
30CPX31155	Northern Link Road	Risk	LIVE	—	5.00	Technical	Design	D04 - Detailed Design	If ground conditions are not favourable then ground remediation may be required. (based on evidence of condition of existing road)	Delay, Cost	Cost increase	3	4	12	Robin Mason	1) Undertake PSBR as early in programme as possible. 2) Consider undertaking geotechnical site investigation and subsequent design as early in the programme as possible (road would usually be undertaken during detail design)	3	3	9	Akins TL	Update: Proceed with preliminary Geotech desk top study to understand risks related Ground improvement may need to take place. Full GRI to detail the ground improvement method Action with Akins to complete the risk costs + prob. once the geotechnical data is received Difficult to cost at this stage as optimising is required. In the cost estimate the assumed works will be extra granular base with geotextiles, min 300mm. Variation for the purposes of the risk cost would be the need for complete ground improvement.	60%	£1,000,000	£2,500,000	£4,000,000	£1,500,000	
30CPX31155	Northern Link Road	Risk	CLOSED	—	6.00	Technical	Design	D05 - Delivery	If existing utilities are not accurately identified then there is a risk of delay during construction	Delay, Cost	Completion of works date	3	4	12	Robin Mason	1) Procure an underground utilities mapping survey early in the programme. 2) Develop a risk-led strategy for utilities interfaces. 3) Consider bringing trial-hole activities forward in programme if justified by the level of risk.	2	2	4	Akins TL	GPR + 100mm surveys under preparation. LHM have been received. Surveys are planned for August, pertinent communication has been shared with CCC for access permission. GPR Surveys have started in September. GPR surveys are now completed. Clean analysis workshop to identify any need for redesign at detail stage is planned for November. Considering the risk is now redesigned out, the risk can be closed.						£0
30CPX31155	Northern Link Road	Risk	CLOSED	—	7.00	Authority	Surveys	D03 - Preliminary Design	Possible lane / road closures to enable work - TfRQ application process requires 12 weeks' notice	Cost Estimates not ready on time for the business case study	Completion of works date	3	4	12	Robin Mason	1) Confirm notice requirements for TfRQ 2) Combined effort to reduce the risk, delay may not be up or being mitigated due to existing highways interfaces.	1	2	2	Akins TL	Updates: Further to the meetings with stakeholders involved in TfM substructure and CCC Network Management, it has been confirmed that TfRQs are not required.						£0
30CPX31155	Northern Link Road	Risk	LIVE	—	8.00	Project	Consultation/Comms	D03 - Preliminary Design	Outline planning application is assumed for the purposes of FBC	Delay, Cost	Completion of works date	3	4	12	John Starkey	1) CCC to agree on the Planning procedure and instruct Akins on the expected feed in	2	3	6	CCC PM	To be considered in the next phase of FBC, i.e. FBC2. No land to be bought at this stage. To be discussed with FBCI owners. In order to manage risk, action with Akins to complete the risk costs + prob. once the geotechnical data is received Difficult to cost at this stage as optimising is required. In the cost estimate the assumed works will be extra granular base with geotextiles, min 300mm. Variation for the purposes of the risk cost would be the need for complete ground improvement.	80%	£20,000	£35,000	£50,000	£28,000	
30CPX31155	Northern Link Road	Risk	CLOSED	—	9.00	Technical	Surveys	D03 - Preliminary Design	Survey will be delayed if land information is not available to arrange access	Delay	Start of works date	3	4	12	Steven Bown	1) Use land Search Information registry for identification of ownership and contact details. 2) Send a letter to the previously (Highways Act) with the details of programme etc.	2	3	6	CCC PM	Info received from CCC, further action is to send the letter to the land owners. Update: CCC to confirm letters are out, otherwise surveys cannot be planned. All letters have gone out. Tops surveys to be completed by 11/10/2022.						£0
30CPX31155	Northern Link Road	Risk	CLOSED	—	11.00	Technical	Design	D03 - Preliminary Design	Delayed start of design works, has resulted in surveys time schedule being challenged due to resources limitations	Delay	Start of works date	4	3	12	Vana Andriatougare	1) Either outsource or use LIDAR tops to start design works and complete the ground topography surveys later in the programme. 2) In future design stages undertake a verification exercise to confirm earlier decisions may be required	2	3	6	Akins PM	Design works are progressing using LIDAR tops, as per CCC's approval. Tops surveys to be completed as per the scope. There is a risk that the tops surveys information may not be ready for design update on time for the cost estimate. This is now a reality - Tops survey is almost complete and will be ready for use during the next stage of design. Risk can close						£0
30CPX31155	Northern Link Road	Risk	CLOSED	—	12.00	Environmental	Surveys	D03 - Preliminary Design	Flood risk assessment may be required, this is additional work.	Cost	Cost increase	5	2	10	Vana Andriatougare	1) Initial flood risk assessment - this will be a high level flood risk assessment which is likely to highlight that the primary flood risk concerns are associated with surface water drainage. The aim of the FRA will be to scope out the requirement for floodplain compensation. Risk may business case will not allow for the same, reduce risk with some initial work. 2) Akins to join the QA meeting planned for the 15th to discuss to discuss and request feedback. 3) Further to the meeting, Akins to prepare a cost and time assessment to be used in the business case study.	3	3	9	Akins PM	Update: QA panel endorsed the requirement to prepare a flood risk assessment. Action with Akins to prepare a change control document Flood risk assessment has been confirmed and will progress. Risk to be closed.						£0
30CPX31155	Northern Link Road	Risk	CLOSED	—	13.00	Project	Internal Stakeholder	D05 - Delivery	If third-party land is required that is un-registered then there may be delays in identifying the owner and agreeing to purchase.	Delay	Start of works date	3	3	9	Vana Andriatougare	1) Early identification of landowners 2) Land plan to be prepared by highways team for checks of unregistered land. 3) Further to that, Time Quoted to find information of unregistered land.	2	3	6	Akins PM	Update: (Combined with action of Risk 9) Impact on design programme should be minimum, however it will be risk to a degree. Land acquisition times for next project stages. All owners have been identified, risk to close						£0
30CPX31155	Northern Link Road	Risk	CLOSED	—	14.00	Technical	Design	D03 - Preliminary Design	If access details for adjacent development Local Household Waste Recycling Centre are not provided before preliminary design begins then there is a likelihood of abortive work.	Delay, Cost	Completion of works date	3	3	9	Robin Mason	1) Obtain details for waste recycling centre redesign.	2	2	4	Akins TL	At the moment, there is no confirmed date of planning, hence to consider the existing layout whilst progressing the NLR prelin design on the right time. Completely new access. NLR to consider as is and highlight the problem for next stage, should there be no progress with the planning application, CCC to provide new layout would help to understand impact. Update: information has been provided						£0
30CPX31155	Northern Link Road	Risk	LIVE	NEW	19.00	Technical	Scheme Development	D06 - Delivery	Third-party utility works overrunning within the construction works	Delay to the programme	Completion of works date	3	3	9	Steven Bown	To be re-evaluated during detailed design stage and prior to the beginning of construction	2	2	4	CCC PM	For the purposes of the Risk Cost, BT realignment has been assumed for 200m, last minute before construction.	40	20%	£100,000	£150,000	£300,000	£30,000
30CPX31155	Northern Link Road	Risk	CLOSED	NEW	15.00	Project	Design	D03 - Preliminary Design	The feasibility study and reference design did not identify any need for Equitation provision, however comments made in CCC QA panel meeting, suggest there may be an expectation that this provision be made. If a need for equitation provision is identified then there is a high likelihood of a substantial increase in scheme footprint and cost.	Cost	Cost increase	2	4	8	Vana Andriatougare	1) Progress the WCHAR assessment. 2) CCC to discuss the requirement internally	2	4	8	Akins PM	Update: WCHAR works have started. VA to report any findings to CCC asap. CCC to update as well. Currently a cycling strategy is being developed by CCC Major projects. CCC to provide relevant info. WCHAR Assessment completed. No need for equitation provision has been identified. Risk can be closed						£0
30CPX31155	Northern Link Road	Risk	CLOSED	NEW	18.00	Communications	Internal Stakeholder	D03 - Preliminary Design	The highways fence in the preliminary design appears to allow more land under CCC ownership compared to what is owned	Delay to programme if land acquisition is required	Cost increase	4	2	8	John Starkey	1) Review land search information 2) Finalising the red line boundary plan for definitive mapping 3) Survey required at the location	3	1	3	CCC PM	This is just for one single property where the property fence has probably been set further back, just to have enough room to reverse. Update: Being an improvement having a paved access, it is assumed that design will be accepted by the land owner. Risk to be closed. Refer to Risk 102 for land owner related potential risks that could lead to CPO						£0
30CPX31155	Northern Link Road	Risk	LIVE	NEW	20.00	Communications	Internal Stakeholder	D03 - Preliminary Design	Risk of MATS being challenged under judicial review over Consultation/Public Engagement.	Delay to programme	Start of works date	2	4	8	John Starkey	Online Consultation was held over May/June 2022, due to COVID-19 restrictions on public gatherings. OBC was signed off in November and MATS FBCI is being developed alongside Detailed Design. Public Engagement event happened in September 2022.	2	3	6	CCC PM	Item presented to MATS Strategic Project Board in May 22 and June 22. Given that Programme has moved past OBC stage, decision to proceed with Public Engagement in September 2022. Public Engagement event happened in September 2022. No major negative feedback has been received. Not could potentially raise a judicial review, the risk cost has been qualified for this kind of event £5K per week prolongation (consultant fees have been considered for max for 20.5 weeks)	180	10%	£80,000	£90,000	£127,500	£9,000
30CPX31155	Northern Link Road	Risk	LIVE	—	21.00	Technical	Internal Stakeholder	D03 - Preliminary Design	Risk of new utilities being added on the network between design and construction phase	Delay	Completion of works date	2	3	6	Robin Mason	Street works team to manage section 85 notices, to be discussed on the QA call initially	1	2	2	CCC PM	CCC to confirm progress up to date and monitor. Re-review risk during detailed design stage and procurement.						£0
30CPX31155	Northern Link Road	Risk	LIVE	—	16.00	Technical	Statutory Process	D04 - Detailed Design	C2s may be outdated at construction	Cost	Cost increase	1	3	3	Robin Mason	Consider refresh C2s before construction commences	1	2	2	Akins TL	Proper actions to design out this risk at current stage of design, i.e. prelin, have been taken: GPR survey and C2s requested. C2s are expected to have been gathered by end of November to feed in the cost estimate. May not have been all collected in time for the draft issue on the 14th of November. Expected to arrive by the 24th of November for final issue.						£0
30CPX31155	Northern Link Road	Risk	LIVE	NEW	22.00	Environmental	Internal Stakeholder	D05 - Delivery	Description: If noise levels at nearby properties increase then there is a risk of successful Part 1 claims.	Cost (post-construction)	Cost increase	1	2	2	Roland Jordan	Undertake detailed surveys and noise modelling to determine the true impact of noise. Based on outcome of noise modelling consider use of low noise surfacing and/or screening	1	2	2	CCC PM	Added 17/11/2022: Develop a programme of surveys to include noise surveys to inform detailed noise modelling and build an evidence base for potential future claims. Note that the above actions are 'business as usual' and not exceptional in any way.						£0

## Appendix I: Benefits Realisation Plan





## March Area Transport Study (MATS)

### Benefits Realisation Plan

## Document Control

Document ref: March Area Transport Study Full Business Case 1_BRP						
Rev	Purpose	Originated	Checked	Reviewed	Approved	Date
1.0	FBC1 - First Issue	NP	RPJ	RMJ	RMJ	09.12.2022
2.0	FBC1 – Updated Post ITE	NP	RPJ	RMJ	RMJ	19.12.2022



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# 1. Introduction

## 1.1 Background

- 1.1.1 The purpose of this Benefits Realisation Plan is to support the March Area Transport Study (MATS) Full Business Case (FBC1).

## 1.2 Purpose of This Document

- 1.2.1 DfT guidance<sup>1</sup> stipulates that the Benefits Realisation Plan should set out the approach to managing the realisation of benefits.

- 1.2.2 The Green Book (2020)<sup>2</sup> (paragraph 5.30) states that the “expected benefits of an intervention and how these will be measured and realised should be set out in a **benefits register**. This is a key strand of implementation, operational management, and a key part of the management dimension of a business case.” The **benefits register** template provided in the Green Book includes the following criteria:

- **Benefit category and class** – categories e.g., public sector benefits (direct / indirect), wider social benefits. Classes such as: cash / noncash releasing, quantitative / qualitative etc.
- **Description** – including enabling programme, project, or activity
- **Service feature** – what aspect of the proposal will give rise to the benefit – to facilitate monitoring?
- **Potential costs** – incurred during delivery
- **Activities required** – to secure benefit
- **Responsible officer** – senior responsible officer (SRO) for project or programme
- **Performance measure** – key performance indicators (KPIs) and relationship to SMART objectives
- **Target improvement** – expected level of change
- **Full-year value** – value of benefits (£m)
- **Timescale** – number of years.

- 1.2.3 This document was also prepared in accordance with guidance provided by the Infrastructure and Projects Authority.<sup>3</sup>

<sup>1</sup> DfT (2022). <https://www.gov.uk/government/publications/transport-business-case>

<sup>2</sup> HM Treasury (2020). [The Green Book](#)

<sup>3</sup> <https://www.gov.uk/government/publications/assurance-of-benefits-realisation-in-major-projects>

## 1.3 Document Structure

1.3.1 This document is structured as follows:

- **Chapter Two** provides information relating to the scheme objectives
- **Chapter Three** contains the benefits register for the MATS.

## 2. Scheme Objectives

- 2.1.1 The MATS scheme objectives were developed during the Strategic Outline Business Case (SOBC) stage, following consultation with key stakeholders during an Objective Setting Workshop held in June 2020.
- 2.1.2 The MATS scheme objectives are set out in Table 2.1 beneath. Those shown in teal-green relate specifically to the MATS Broad Street Scheme and are therefore directly pertinent to FBC1. Those shown in white relate to the wider MATS project (either specific schemes, or implementation of the package as a whole) and will be met following FBC3.

Table 2.1: MATS Scheme Objectives

1	Regeneration of March Town Centre	a	Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme
		b	Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience and drive growth
		c	Maximise public realm within Broad Street
		d	Enhance pedestrian safety and accessibility around the town centre
2	Address Existing Traffic Congestion and Safety Issues	a	Address existing congestion issues within the town centre (Broad Street area)
		b	Address existing congestion issues along the A141 around Peas Hill roundabout
		c	Improve pedestrian level of service around Broad Street
		d	Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction
3	Facilitate Housing and Employment Growth	a	Support Local Plan development proposals
		b	Ensure sustainable access to proposed Local Plan development
4	Improve Local Environmental Conditions	a	Improve air quality conditions around Broad Street
		b	Facilitate the enhancement of heritage assets around Broad Street.

- 2.1.3 The scheme objectives above relate to the benefits that the proposed intervention schemes of the MATS seek to realise.

### 3. Benefits Register

3.1.1 The benefits register for the MATS is provided overleaf in Table 3.1.

Table 3.1: MATS Benefits Register

Scheme Objective	Enabling Changes	Benefits Experienced	Key Beneficiaries	Benefit Owners	Benefit Enablers	Timescales
<b>Regeneration of March Town Centre:</b> <ul style="list-style-type: none"> <li>Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme</li> <li>Ensure a transport scheme for Broad Street is aligned with FHSF core Objectives to renew and reshape town centres, improve user experience, and drive growth</li> <li>Maximise public realm within Broad Street</li> <li>Enhance pedestrian safety and accessibility around the town centre</li> </ul>	<ul style="list-style-type: none"> <li>Broad Street / Dartford Road/Station Road Mini Roundabout</li> <li>Reduce the number of lanes to one in each direction on Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Deliver a transport scheme for Broad Street that is compatible with the FHSF</li> <li>Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth</li> <li>Maximise public realm within Broad Street</li> <li>Enhance pedestrian safety and accessibility around the town centre</li> <li>Wider social benefits</li> </ul>	<ul style="list-style-type: none"> <li>Commuters / Business trips</li> <li>Local Residents</li> <li>Visitors to the City</li> <li>Bus Operators</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Monitoring of network performance</li> <li>Promotion of March City Area</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised within one year post scheme opening</li> </ul>
<b>Address Existing traffic Congestion and safety Issues:</b> <ul style="list-style-type: none"> <li>Address existing congestion issues within the town centre (Broad Street area)</li> <li>Address existing congestion issues along the A141 around Peas Hill roundabout</li> <li>Improve pedestrian level of service around the Broad Street</li> <li>Improve safety along the A141 at Peas Hill Roundabout and the Twenty-foot Road junction</li> </ul>	<ul style="list-style-type: none"> <li>A141 / Peas Hill Roundabout Improvements (52m ICD) along with creation of an all-movement signalised junction at the A141 / Hostmoor Avenue Junction.</li> <li>A141 / Twenty Foot Road Signals</li> <li>Development of Northern Industrial Link Road (NILR)</li> </ul>	<ul style="list-style-type: none"> <li>Address existing congestion issues within the town centre (Broad Street area)</li> <li>Address existing congestion issues along the A141 around Peas Hill Roundabout</li> <li>Improve pedestrian level of service around Broad Street</li> <li>Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction</li> <li>Monetise (quantifiable) benefits due to fewer accidents</li> <li>Monetise journey time savings</li> </ul>	<ul style="list-style-type: none"> <li>FDC in regard to fulfilment of the Local Plan</li> <li>Businesses in March</li> <li>Residents / Local Community</li> <li>Commuters / Business trips</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of March City Area</li> <li>Monitoring of network performance</li> <li>Road safety audit</li> <li>Monitoring / investigation of accidents</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>
<b>Facilitate Housing and Employment Growth:</b> <ul style="list-style-type: none"> <li>Support Local Plan development proposals</li> <li>Ensure sustainable access to proposed Local Plan Development</li> </ul>	<ul style="list-style-type: none"> <li>Development of Northern Industrial Link Road (NILR)</li> <li>High Street / St peter's Road Traffic Signal Improvements</li> </ul>	<ul style="list-style-type: none"> <li>Support Local Plan development proposals</li> <li>Ensure sustainable access to proposed Local Plan development</li> <li>Wider social benefits (improved availability of housing and employment)</li> </ul>	<ul style="list-style-type: none"> <li>FDC in regard to fulfilment of the Local Plan</li> <li>Residents / Local Community</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of Fengate businesses and wider City Area</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>
<b>Improve Local Environmental Conditions:</b> <ul style="list-style-type: none"> <li>Improve air quality conditions around Broad Street</li> <li>Facilitate the enhancement of heritage assets around Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Broad Street / Dartford Road / Station Road Mini Roundabout</li> <li>Reduce the number of lanes to one in each direction on Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Improved air quality in future years.</li> <li>Facilitate the enhancement of heritage assets around Broad Street</li> <li>Achievement of 10% biodiversity net gain</li> <li>Wider social benefits</li> </ul>	<ul style="list-style-type: none"> <li>CCC / CPCA in regard to environment and biodiversity</li> <li>Businesses in March</li> <li>Residents / Local Community</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of Fengate businesses and wider City Area</li> <li>Biodiversity Net Gain Calculation</li> <li>Air quality monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>



## Appendix J: Monitoring and Evaluation Plan



## March Area Transport Study (MATS)

### Monitoring and Evaluation Plan

## Document Control

Document ref: March Area Transport Study Full Business Case 1_MEV						
Rev	Purpose	Originated	Checked	Reviewed	Approved	Date
1.0	FBC1 - First Issue	NP	RPJ	RMJ	RMJ	09.12.2022
2.0	FBC1 – Post ITE Review	NP	RPJ	RMJ	RMJ	19.12.2022

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# 1. Introduction

## 1.1 Scope

- 1.1.1 This document is the Monitoring and Evaluation Plan for the March Area Transport Study (MATS) Broad Street Scheme (FBC1) and provides an update on the Outline Business Case (OBC) for the remaining MATS improvement schemes, namely the A141 / Peas Hill Roundabout, A141 / Hostmoor Avenue, A141 / Twenty Foot Road, B1101 High Street / St Peter's Road and the Northern Industrial Link Road. This report has been produced in conjunction with the MATS Full Business Case (FBC1) on behalf of Cambridge County Council (CCC).
- 1.1.2 The aim of this report is to support the March Area Transport Study (MATS) Full Business Case (FBC1) by explaining the proposals for post scheme monitoring and evaluation to determine whether the schemes have successfully met their objectives and the anticipated benefits have been realised.

## 1.2 MATS FBC Structure

- 1.2.1 For context, the MATS FBC will be presented in three phases, with each focusing on the delivery of different schemes from the overall MATS package. Each phase will present the case for investment for the whole MATS package, confirming the strategic benefits associated with delivering all five schemes, as well as demonstrating (through sensitivity testing) that the funding for each phase will still deliver value and benefits should future phases falter.
- 1.2.2 The FBC phasing is presented in Figure 1.1 beneath, with dark teal indicating when each scheme will reach full FBC status, and the light teal showing an update to the information presented in the OBC (but not fully developed to FBC).



FBC 1 Broad Street Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				
FBC 2 Peas Hill Roundabout, Hostmoor Avenue, Twenty Foot Road & St Peters Road Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				
FBC 3 Northern Industrial Link Road Funding Only		SOBC	OBC	FBC
Broad Street Improvement Scheme				
A141 / Peas Hill Roundabout & A141 / Hostmoor Avenue				
A141 / Twenty Foot Road				
B1101 High Street / St Peters Road				
Northern Industrial Link Road				

Figure 1.1: MATS FBC Phasing Structure

- 1.2.3 This approach has been developed to enable the delivery of the Broad Street Scheme to be accelerated ahead of the remaining schemes to support the adjacent Future High Street Fund (FHSF) scheme along Broad Street. For clarity, the MATS Broad Street Improvement Scheme will amend the transport infrastructure along Broad Street, whereas the FHSF project will improve the surrounding public realm. The FHSF is separately funded, and therefore not included within the MATS project, but delivery of both the MATS and FHSF schemes needs to be closely coordinated due to the physical interaction of both schemes. The FHSF funding requires the Broad Street improvements to be completed by March 31st, 2024, and accordingly the MATS Broad Street Scheme has been accelerated for delivery, therefore reducing the risk of delay associated with the remaining MATS schemes from compromising the FHSF programme (and funding).

- 1.2.4 This approach creates an FBC 1 which is focused on the delivery of the MATS Broad Street Scheme. This is effectively a hybrid FBC / OBC + as shown in Figure 1.1. The FBC components relate to the Broad Street Scheme, and the OBC+ components relate to the remaining four schemes which were included in the OBC presented to CPCA Board in November 2021 but have been updated within this submission following completion of the Detailed Designs (and Preliminary Design for the Northern Industrial Link Road).
- 1.2.5 For clarity, the information that relates specifically to the FBC for the Broad Street Scheme (FBC1) is presented within teal-coloured boxes as shown below, enabling the reader to distinguish clearly between information pertinent to the MATS Broad Street Scheme FBC1 and the OBC+ for the remaining MATS schemes.

Information that is pertinent to the MATS Broad Street Scheme (FBC1) is presented within these teal-coloured boxes).

- 1.2.6 It is anticipated that FBC1 will be updated to FBC2 and presented to the CPCA in December 2023 to request the release of construction funding for the A141 / Peas Hill Roundabout and A141 / Hostmoor Avenue Junction, A141 / Twenty Foot Road and B1101 High Street / St Peter's Road schemes. Detailed Design on these schemes has been completed, and the remaining tasks required to produce FBC2, including procurement, planning approvals and land acquisition will be completed throughout 2023.
- 1.2.7 A third phase (FBC 3) will then present the case for investment for the Northern Industrial Link Road (NILR). The technical assessment undertaken in earlier phases of this study identified that the NILR is required in the medium-term future (by 2028) and has been separated from FBC 2 to ensure the necessary information for this scheme, including a confirmed procurement route and a scheme target cost, is current at the time of construction.

## 1.3 Purpose of This Document

- 1.3.1 DfT guidance<sup>1</sup> stipulates that monitoring and evaluation arrangements should be outlined at the Outline Business Case (OBC) stage and completed at the Full Business Case (FBC) stage. The monitoring and evaluation information included in a business case should summarise outline arrangements for monitoring and evaluating the intervention.
- 1.3.2 For context, the Green Book (2020)<sup>2</sup> defines monitoring and evaluation as follows:
- **Monitoring** – the collection of data, both during and after implementation to improve current and future decision making
  - **Evaluation** – the systematic assessment of an intervention’s design, implementation, and outcomes. It tests: if or how far an intervention is working or has worked as expected; if the costs and benefits were as anticipated; whether there were significant unexpected consequences; and how it was implemented and if changes were made why.
- 1.3.3 This document has been prepared in accordance with the Department for Transport’s Monitoring and Evaluation Framework for Local Authority Major Schemes (2012).<sup>3</sup>

## 1.4 Document Structure

- 1.4.1 For the most part, this document is structured in accordance with the monitoring and evaluation plan guidance for standard monitoring, as provided in Appendix 5 of the Department for Transport’s (DfT’s) Monitoring and Evaluation Framework for Local Authority Major Schemes (2012)<sup>4</sup>. It is structured as follows:
- **Chapter Two** provides information relating to the scheme background and context
  - **Chapter Three** provides information relating to the scheme inputs, outputs, outcomes, and impacts
  - **Chapter Four** outlines the data collection methods
  - **Chapter Five** outlines the resourcing and governance arrangements
  - **Chapter Six** outlines the delivery plan
  - **Chapter Seven** outlines the dissemination plan.

<sup>1</sup> DfT (2022). <https://www.gov.uk/government/publications/transport-business-case/transport-business-case-guidance>

<sup>2</sup> HM Treasury (2020). [The Green Book: Central Government Guidance on Appraisal and Evaluation](#)

<sup>3</sup> DfT (2012). [Monitoring and Evaluation Framework for Local Authority Major Schemes](#)

<sup>4</sup> DfT (2012). [Monitoring and Evaluation Framework for Local Authority Major Schemes](#)

## 2. Scheme Background and Context

### 2.1 Introduction

#### Fenland

- 2.1.1 Fenland covers approximately 200 square miles within the county of Cambridgeshire. It is a rural and sparsely populated district with many diverse communities, each with very different needs. Geographically, Cambridge and the rest of Cambridgeshire are to the south, Peterborough to the west, Wisbech and King's Lynn to the north-east, and West Norfolk to the east. The sub-regional centres of Cambridge, Peterborough and King's Lynn have a considerable influence on various parts of the district in terms of employment, retail and health provision.
- 2.1.2 Although the district remains relatively sparsely populated, Fenland has experienced considerable housing and population growth in recent years, in line with growth across Cambridgeshire. According to the 2011 Census, Fenland had a population of approximately 95,300, compared to 83,700 in 2001 and 75,500 in 1991, and has continued to grow rapidly since 2011. In 2020, Fenland had an estimated total population of approximately 102,080<sup>5</sup>, which represents a 7% increase since 2011. This growth is expected to continue and needs to be positively planned for.
- 2.1.3 Growth in employment in Fenland has not matched workforce expansion and out-commuting is increasing. Currently, almost 40% of Fenland's working population commute out of the district for work. To meet the needs of a growing workforce, Fenland requires growth in employment land and business opportunities. To achieve this, infrastructure needs to be improved to retain and attract employers.
- 2.1.4 The population distribution of Fenland is characteristically rural, with the four market towns of Wisbech, March, Whittlesey and Chatteris forming the main population centres, each with their own distinct and individual character.

#### March

- 2.1.5 The location of March relative to surrounding areas is shown in Figure 2.1, below. March is a historic market town at the heart of The Fens with a population of approximately 22,980 as of 2011.<sup>6</sup> It forms the administrative centre of Fenland and lies at the heart of the district's ongoing economic function as a centre for agriculture, reflected in the number of food production businesses which are key employers in the town.

<sup>5</sup> <https://cambridgeshireinsight.org.uk/population/report/view/f7de925f5608420c825c4c0691de5af2/E07000010/>

<sup>6</sup> [https://www.fenland.gov.uk/media/16583/Fenland-Monitoring-Report-2018-2019/pdf/Fenland\\_Monitoring\\_Report\\_2018-2019.pdf?m=637261848570770000](https://www.fenland.gov.uk/media/16583/Fenland-Monitoring-Report-2018-2019/pdf/Fenland_Monitoring_Report_2018-2019.pdf?m=637261848570770000)

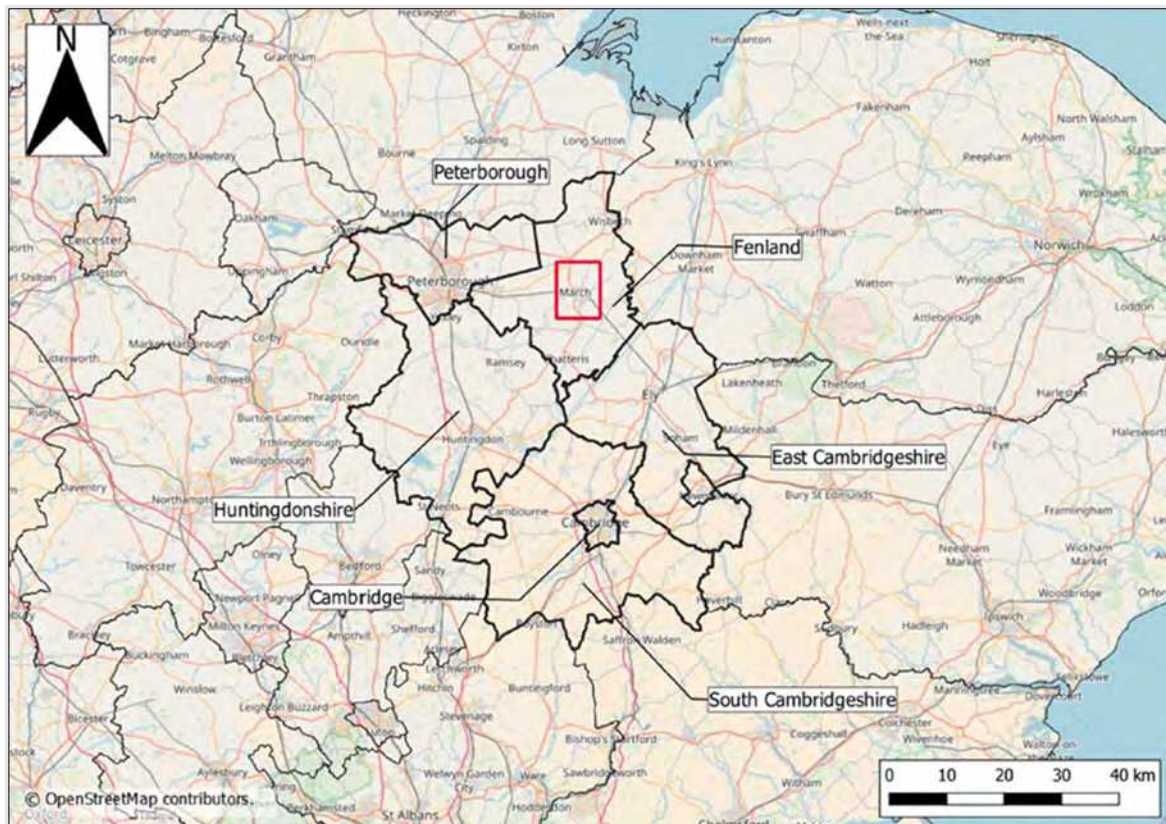


Figure 2.1: March Location Area

- 2.1.6 A review of 2011 Census data revealed that approximately 61% of employed individuals both lived and worked in March, with approximately 39% commuting out of the town for work.
- 2.1.7 Investment in local transport infrastructure is central to ensuring the long-term economic prosperity of March as a thriving market town, by helping to revitalise the town centre, encourage inward investment and realise aspirational housing and employment growth ambitions.

## 2.2 Purpose of the MATS

- 2.2.1 The purpose of the MATS is “to identify potential transport interventions in March to address existing capacity and safety problems whilst mitigating for future growth in the demand for travel resulting from increases in housing and employment opportunities identified in the Fenland Local Plan (2014).”
- 2.2.2 The adopted Local Plan includes targets for the delivery of 4,200 new homes in March and 30 hectares of employment land, with the potential to provide over 2,000 new jobs. March is a focus for housing, employment, and retail growth within the district.
- 2.2.3 The MATS Improvement Schemes are aimed at addressing and realising adopted Local Plan growth by 2031, rather than emerging Local Plan growth

## 2.3 Scheme Objectives and Outcomes

- 2.3.1 To provide focus for the MATS Improvement Schemes, a set of clear, specific objectives have been established which align with the strategic and local policy drivers and address the identified issues. Scheme objectives need to consider the key stakeholder views and opinions, as well as the scheme constraints and interdependencies with other projects, to address the identified issues
- 2.3.2 In order to devise specific objectives for the MATS Improvement Schemes, an Objective Setting Workshop was held on 17<sup>th</sup> June 2020. This was attended by transport, planning and engineering representatives from key stakeholders, including:
- CPCA
  - CCC
  - FDC
  - Skanska (Milestone) / Capita.
- 2.3.3 Twelve scheme objectives, which remain unchanged since the SOBC, will be used to measure the success of the recommended package of MATS Improvement Schemes.
- 2.3.4 The objectives of the MATS Improvement Schemes, which were established at the SOBC stage, are set out in

Table 2.1: MATS Scheme Objectives

- 2.3.5 overleaf. Those objectives which are specific to the MATS Broad Street Scheme are shown in teal-green.



Table 2.1: MATS Scheme Objectives

1	Regeneration of March Town Centre	a	Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme
		b	Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth
		c	Maximise public realm within Broad Street
		d	Enhance pedestrian safety and accessibility around the town centre
2	Address Existing Traffic Congestion and Safety Issues	a	Address existing congestion issues within the town centre (Broad Street area)
		b	Address existing congestion issues along the A141 around Peas Hill roundabout
		c	Improve pedestrian level of service around Broad Street
		d	Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction
3	Facilitate Housing and Employment Growth	a	Support Local Plan development proposals
		b	Ensure sustainable access to proposed Local Plan development
4	Improve Local Environmental Conditions	a	Improve air quality conditions around Broad Street
		b	Facilitate the enhancement of heritage assets around Broad Street.

Almost all the objectives listed above either directly relate to, or are relevant to, the MATS Broad Street Scheme.

### SMART Objectives

The following SMART Objectives have been developed to enable the success and benefits of the MATS Broad Street Scheme to be clearly and accurately measured through post scheme monitoring and evaluation. The SMART measure for each of the objectives is provided beneath in green.

#### 1. Regeneration of March Town Centre

- a. Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme: *Deliver an improvement at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction which replaces the existing traffic signal-controlled junction with a roundabout and reduces Broad Street to a single lane in each direction.*
- b. Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth: *Deliver an improvement at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction that enables the FHSF scheme design to be realised.*
- c. Maximise public realm within Broad Street: *Reduce the carriageway footprint to enable the creation of an additional 50% of Public Realm.*
- d. Enhance pedestrian safety and accessibility around the town centre: *Increase the number of pedestrian crossing locations at the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction and along Broad Street and reduce the B1101 Broad Street to a single lane in each direction.*

## **2. Address Existing Traffic Congestion and Safety Issues**

- a. Address existing congestion issues within the town centre (Broad Street area): Reduce delay to 30 seconds (or less) on all approaches to the B1101 Broad Street / B1099 Dartford Road / B1101 Station Road Junction to during the AM and PM peak hours by 2026.
- b. Address existing congestion issues along the A141 around Peas Hill roundabout: This objective does not relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.
- c. Improve pedestrian level of service around Broad Street: Achieve an 80% increase in user satisfaction in the level and quality of pedestrian provision in post scheme surveys.
- d. Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction: This objective does not relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.

## **3. Facilitate Housing and Employment Growth**

- a. Support Local Plan development proposals. This objective does not directly relate to the MATS Broad Street Scheme, and a SMART objective will be developed for FBC2.
- b. Ensure sustainable access to proposed Local Plan development: This objective does not directly relate to the MATS Broad Street Scheme as there is no Local Plan development situated within the immediate vicinity of the town centre.

## **4. Improve Local Environmental Conditions**

- a. Improve air quality conditions around Broad Street. Reduce NOx and PM2.5 emissions by 5% by 2026.
- b. Facilitate the enhancement of heritage assets around Broad Street: Enable the refurbishment and relocation of the March Town Centre Fountain as part of the MATS / FHSF Broad Street Scheme to enhance its position and enjoyment by local residents.

## 3. Scheme Inputs, Outputs, Outcomes, and Impacts

### 3.1 Introduction

- 3.1.1 The purpose of this chapter is to identify the scheme inputs, outputs, outcomes, and impacts. Assumptions underpinning how the scheme will achieve the associated outcomes and impacts is provided in the form of a logic map.

### 3.2 Inputs

- 3.2.1 The following inputs have been identified:
- Transforming Cities Fund (TCF) via the CPCA Single Investment Fund.

### 3.3 Outputs

- 3.3.1 The following outputs have been identified:
- Broad Street Roundabout
  - Northern Industrial Link Road (NILR)
  - Peas Hill Roundabout & Hostmoor Avenue Traffic Signals
  - St Peter's Road Improvement
  - Twenty Foot Road Signals
  - Northern Industrial Link Road.

### 3.4 Outcomes

- 3.4.1 The following outcomes have been identified:
- Addresses existing congestion issues
  - Enables the delivery of the FHSF scheme
  - Improves pedestrian level of service around Broad Street
  - Improves safety.

### 3.5 Impacts

3.5.1 The following impacts have been identified:

- Ensures sustainable access to proposed Local Plan development
- Facilitates the enhancement of heritage assets around Broad Street
- Fewer accidents
- Improved air quality conditions around Broad Street
- Improved pedestrian experience in March town centre, which encourages active travel and increased footfall (with subsequent economic benefits)
- Positive contribution to the regeneration of March town centre
- Supports Local Plan development proposals.

### 3.6 Logic Map

3.6.1 A logic map, which shows the inputs, outputs, outcomes, and impacts identified above, is provided overleaf in **Error! Reference source not found.**<sup>7</sup>.

<sup>7</sup> Note that the logic map was produced in line with the following report that was commissioned by the DfT:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3817/logicmapping.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3817/logicmapping.pdf)

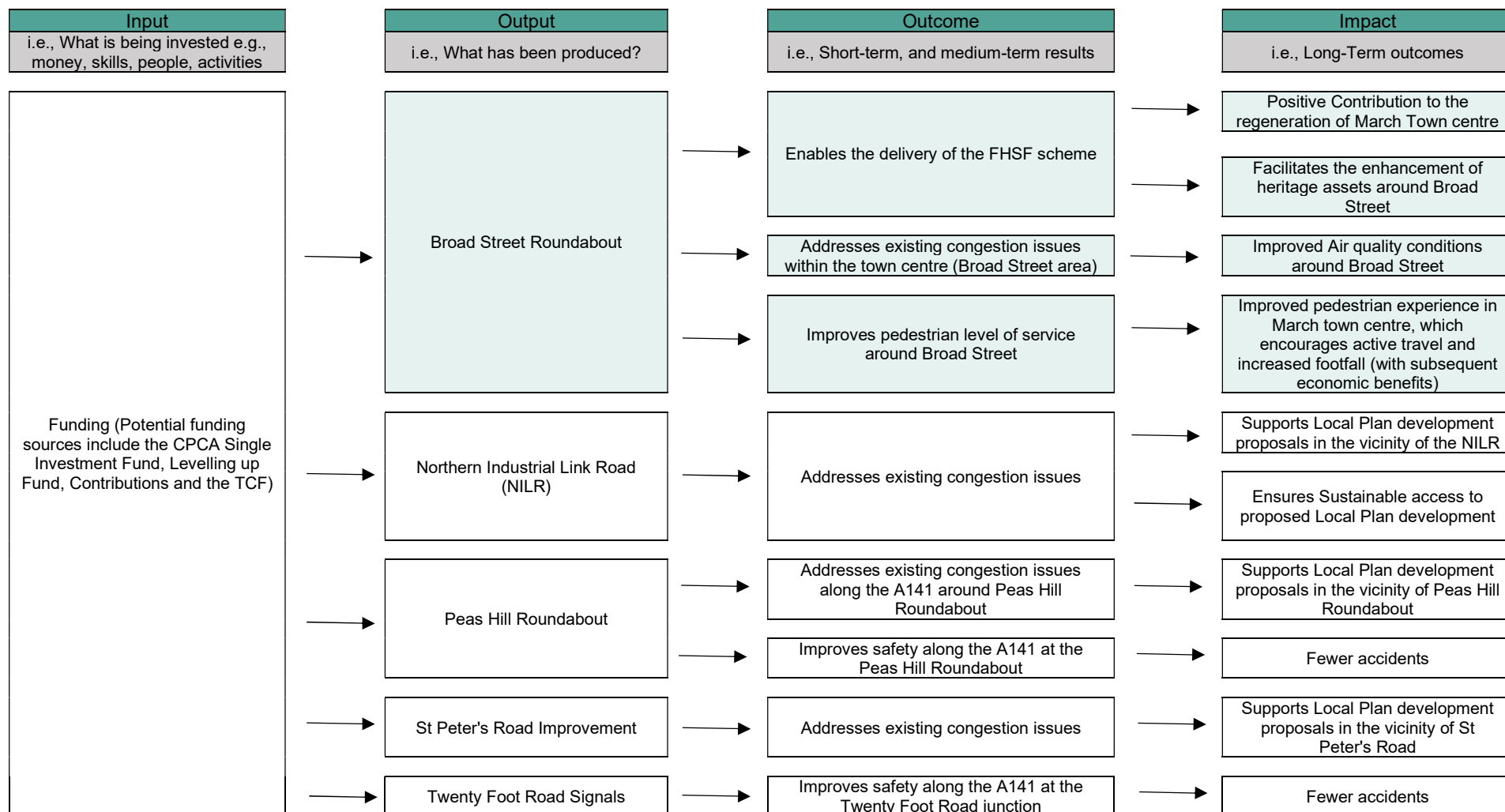


Figure 3.1: Logic Map



### 3.7 Benefits Strategy

Table 3.1: Benefits Strategy

Scheme Objective	Enabling Changes	Benefits Experienced	Key Beneficiaries	Benefit Owners	Benefit Enablers	Timescales
<b>Regeneration of March Town Centre:</b> <ul style="list-style-type: none"> <li>Deliver a transport scheme for Broad Street that is compatible with the FHSF scheme</li> <li>Ensure a transport scheme for Broad Street is aligned with FHSF core Objectives to renew and reshape town centres, improve user experience, and drive growth</li> <li>Maximise public realm within Broad Street</li> <li>Enhance pedestrian safety and accessibility around the town centre</li> </ul>	<ul style="list-style-type: none"> <li>Broad Street / Dartford Road/Station Road Mini Roundabout</li> <li>Reduce the number of lanes to one in each direction on Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Deliver a transport scheme for Broad Street that is compatible with the FHSF</li> <li>Ensure a transport scheme for Broad Street is aligned with FHSF Core Objectives to renew and reshape town centres, improve user experience, and drive growth</li> <li>Maximise public realm within Broad Street</li> <li>Enhance pedestrian safety and accessibility around the town centre</li> <li>Wider social benefits</li> </ul>	<ul style="list-style-type: none"> <li>Commuters / Business trips</li> <li>Local Residents</li> <li>Visitors to the City</li> <li>Bus Operators</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Monitoring of network performance</li> <li>Promotion of March City Area</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised within one year post scheme opening</li> </ul>
<b>Address Existing traffic Congestion and safety Issues:</b> <ul style="list-style-type: none"> <li>Address existing congestion issues within the town centre (Broad Street area)</li> <li>Address existing congestion issues along the A141 around Peas Hill roundabout</li> <li>Improve pedestrian level of service around the Broad Street</li> <li>Improve safety along the A141 at Peas Hill Roundabout and the Twenty-foot Road junction</li> </ul>	<ul style="list-style-type: none"> <li>A141 / Peas Hill Roundabout Improvements (52m ICD) along with creation of an all-movement signalised junction at the A141 / Hostmoor Avenue Junction.</li> <li>A141 / Twenty Foot Road Signals</li> <li>Development of Northern Industrial Link Road (NILR)</li> </ul>	<ul style="list-style-type: none"> <li>Address existing congestion issues within the town centre (Broad Street area)</li> <li>Address existing congestion issues along the A141 around Peas Hill Roundabout</li> <li>Improve pedestrian level of service around Broad Street</li> <li>Improve safety along the A141 at Peas Hill Roundabout and the Twenty Foot Road Junction</li> <li>Monetise (quantifiable) benefits due to fewer accidents</li> <li>Monetise journey time savings</li> </ul>	<ul style="list-style-type: none"> <li>FDC in regard to fulfilment of the Local Plan</li> <li>Businesses in March</li> <li>Residents / Local Community</li> <li>Commuters / Business trips</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of March City Area</li> <li>Monitoring of network performance</li> <li>Road safety audit</li> <li>Monitoring / investigation of accidents</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>
<b>Facilitate Housing and Employment Growth:</b> <ul style="list-style-type: none"> <li>Support Local Plan development proposals</li> <li>Ensure sustainable access to proposed Local Plan Development</li> </ul>	<ul style="list-style-type: none"> <li>Development of Northern Industrial Link Road (NILR)</li> <li>High Street / St peter's Road Traffic Signal Improvements</li> </ul>	<ul style="list-style-type: none"> <li>Support Local Plan development proposals</li> <li>Ensure sustainable access to proposed Local Plan development</li> <li>Wider social benefits (improved availability of housing and employment)</li> </ul>	<ul style="list-style-type: none"> <li>FDC in regard to fulfilment of the Local Plan</li> <li>Residents / Local Community</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of Fengate businesses and wider City Area</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>
<b>Improve Local Environmental Conditions:</b> <ul style="list-style-type: none"> <li>Improve air quality conditions around Broad Street</li> <li>Facilitate the enhancement of heritage assets around Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Broad Street / Dartford Road / Station Road Mini Roundabout</li> <li>Reduce the number of lanes to one in each direction on Broad Street</li> </ul>	<ul style="list-style-type: none"> <li>Improved air quality in future years.</li> <li>Facilitate the enhancement of heritage assets around Broad Street</li> <li>Achievement of 10% biodiversity net gain</li> <li>Wider social benefits</li> </ul>	<ul style="list-style-type: none"> <li>CCC / CPCA in regard to environment and biodiversity</li> <li>Businesses in March</li> <li>Residents / Local Community</li> </ul>	CPCA / CCC	<ul style="list-style-type: none"> <li>Completion of the schemes</li> <li>Promotion of Fengate businesses and wider City Area</li> <li>Biodiversity Net Gain Calculation</li> <li>Air quality monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Benefit(s) to be realised once the scheme has been implemented and is open to the public.</li> </ul>

## 4. Data Collection Methods

### 4.1 Introduction

- 4.1.1 The purpose of this chapter is to provide an overview of the data collection approaches, including assumptions being made about sample sizes, mode, and frequency of data collection.
- 4.1.2 The Monitoring and Evaluation Plan for the MATS Improvement Schemes takes a proportionate and targeted approach and aims to demonstrate how the scheme has performed in relation to its objectives and intended outcomes.
- 4.1.3 The monitoring plan is designed to determine whether the MATS Improvement Schemes:
- Has been designed and delivered efficiently and effectively
  - Has met the requirements of the stated scheme objectives
  - Has achieved the desired outcomes and impacts
  - Represents value for money
  - Resulted in any unintended outcomes and impacts (both positive and negative)

### 4.2 Types of Measures

- 4.2.1 The following types of measure will be monitored, as defined in the DfT framework:
- Inputs – what is being invested to deliver the Scheme
  - Outputs – what has been delivered, and how it is being used
  - Outcomes – intermediate effects of the Scheme, such as changes in traffic flow
  - Impacts – longer-term effects on wider social and economic outcomes, such as economic growth

## 4.3 Stages of Monitoring and Evaluation

4.3.1 Monitoring and Evaluation is required both during the development and construction, as well as in the years following implementation of the improvement scheme, in order to meet the stated evaluation objectives and effectively assess any scheme outcomes and impacts.

4.3.2 As per the DfT standard monitoring guidance, the monitoring process will be split into three stages:

- **Pre-construction and during delivery (monitoring)**
  - Baseline data is 2018 surveys, limited surveys / assessments to be undertaken in 2022 before scheme construction commences as part of FBC
  - Data to monitor scheme delivery will be collected during construction
- **One-year after (Monitoring and Evaluation)**
  - Data to monitor scheme performance will be collected at least one year (but less than two years) after scheme opening.
  - An initial “One Year After” report will be published within two years of scheme opening, focusing on the scheme’s outcomes
- **Five-years after (Monitoring and Evaluation)**
  - Further data will be collected up to approximately five years after scheme opening
  - A final “Five Years After” report will be published within six years of scheme opening, based on analysis of all the data available, including an assessment of the wider impacts of the scheme

## 4.4 Measures to be Monitored

- 4.4.1 The measures which will be monitored for evaluation of the scheme, as stated within the DfT standard monitoring guidance, are set out in Table 4.1 beneath.

Table 4.1: Standard Monitoring Measures

Item	Type of Measure	Data Collection Timing	Rationale
Scheme Build	Input	During Delivery	Knowledge
Delivered Scheme	Output	During Delivery Post Opening (1 Year)	Accountability
Scheme Costs	Input	During Delivery Post Opening (1 Year)	Accountability
Scheme Objectives	Output / Outcome / Impact	Pre-Delivery Post Opening (up to 5 years)	Accountability
Travel Demand	Outcome	Pre-Delivery Post Opening (1 year and up to 5 Years)	Accountability / Knowledge
Travel Time and Reliability	Outcome	Pre-Delivery Post Opening (1 year and up to 5 Years)	Accountability / Knowledge
Impact on Economy	Impact	Pre-Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge
Impact on Local Environment / air quality	Impact	Pre-Delivery During Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge
Carbon	Impact	Pre-Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge

- 4.4.2 In addition, an assessment will be undertaken to determine the extent to which the MATS Improvement Schemes have delivered the Value for Money (VfM) that was anticipated in the appraisal set out in the FBC. This will be done by re-calculating the benefit-cost ratio (BCR) in both the “One Year After” and “Five Years After” reports and comparing it to the BCR calculated in the FBC.
- 4.4.3 Data collection for the package of schemes is required at various stages through scheme development to ensure effective monitoring and evaluation takes place.
- 4.4.4 Table 4.1 overleaf beneath sets out the data that will be collected to monitor and evaluate the MATS improvement schemes, along with the rational for its inclusion, the proposed data collection method, and the proposed frequency of data collection.

Table 4.2: Monitoring and Evaluation Data Requirements

Measure	Data to be Used	Rationale for Inclusion	Data Collection Method	Frequency of Data Collection
Scheme Build	<ul style="list-style-type: none"> <li>Progress of construction against key milestones</li> <li>Qualitative feedback from the Project Team</li> <li>Information from the Risk Register</li> <li>Project programme / disruptions to delivery</li> </ul>	To gain knowledge and understanding of the level of effectiveness of the scheme build processes and to learn lessons for future projects.	<ul style="list-style-type: none"> <li>Analysis of key project documents by the scheme's Project Team, including Risk Register, Review of Early Warnings etc, Interviews with key staff</li> </ul>	On-going throughout the construction and delivery of the schemes, reporting on monthly basis
Delivered Scheme	<ul style="list-style-type: none"> <li>Scheme definition at full funding approval</li> <li>Scheme design drawings</li> <li>Logged design iterations</li> <li>Information from project change control log</li> </ul>	To assess the impact of change during construction, and realisation of scheme objectives.	<ul style="list-style-type: none"> <li>Desk study / site visits</li> <li>Analysis of key project documents by the schemes Project Board</li> </ul>	During construction and 1 year after scheme opening
Scheme Costs	<ul style="list-style-type: none"> <li>Forecast scheme costs at time of funding approval (FBC)</li> <li>Actual outturn costs once scheme is completed</li> </ul>	Cost analysis enables 'performance to budget' to be monitored and corrective actions to be implemented. Lessons Learnt to be realised and implemented for other similar projects, alongside having potential to refine contractual arrangements where necessary.	<ul style="list-style-type: none"> <li>Financial monitoring of the scheme costs from approval to scheme completion</li> <li>Project Manager's monthly reports to Project Board</li> <li>Interviews with key staff</li> </ul>	Ongoing throughout construction and delivery of the scheme, reporting on a monthly basis.
Travel Demand	<ul style="list-style-type: none"> <li>Daily traffic flows classified into vehicle types and by movement</li> </ul>	To monitor changes in traffic flows in March, more specifically at the junctions / links to be improved.	<ul style="list-style-type: none"> <li>Desk study / site visits</li> <li>Collated data from 12-hour manual classified counts</li> </ul>	Baseline 2018 before scheme completion, 1 year after scheme opening and 5 years after scheme opening. ATC - continuous monitoring
Travel Times and Reliability	<ul style="list-style-type: none"> <li>TomTom or Traffic Master data</li> </ul>	To monitor changes in travel times and queuing on key routes in March	<ul style="list-style-type: none"> <li>Desk study / site visits</li> <li>Survey footage review</li> <li>Journey time dataset for a month period</li> </ul>	Baseline 2018 before scheme completion, 1 year after scheme opening and 5 years after scheme opening.
Impact on Economy	<ul style="list-style-type: none"> <li>Local employment statistics</li> </ul>	To assess the economic impact of the scheme on March	<ul style="list-style-type: none"> <li>Desk Study of economic data provided by CCC</li> <li>Review of Local Plan goals for economic growth</li> </ul>	Baseline 2018, before scheme completion, 1 year after scheme opening and 5 years after scheme opening
Impact on the Local Environment / Air Quality	<ul style="list-style-type: none"> <li>Carbon emission workshops / calculations</li> <li>Biodiversity calculations – completed scheme maps</li> </ul>	To monitor and assess the emissions as a result of the MATS schemes and any impact on the environment	<ul style="list-style-type: none"> <li>Desk study / site visits</li> <li>Analysis of key project documents by the schemes Project Board</li> </ul>	Baseline 2018, during construction, before scheme completion, 1 year after scheme opening and 5 years after scheme opening
Carbon	<ul style="list-style-type: none"> <li>Carbon emission workshops / calculations</li> <li>Traffic flows and speeds around the March</li> </ul>	To monitor carbon emission within the March area as a result of the scheme	<ul style="list-style-type: none"> <li>Desk Study analysis FBC calculation for carbon</li> <li>Analysis of key project documents by the schemes Project Board</li> </ul>	Baseline 2018, before scheme completion, 1 year after scheme opening and 5 years after scheme opening

## Outputs

- 4.4.5 The outputs identified for the MATS consist of the infrastructure schemes, comprising the Broad Street Roundabout, NILR, Peas Hill Roundabout, St Peter's Road Improvement, and the Twenty Foot Road Signals. The scheme designs and plans form the baseline information for these outputs. Once the schemes have been delivered, on-street audits can be undertaken to verify that these schemes have been delivered in accordance with the scheme designs and plans, which will constitute successful delivery of these outputs. In this instance, the anticipated output value of the proposed schemes cannot be quantified per se, as the measure is binary in the sense that either: "yes, the schemes have been successfully delivered", or "no, the schemes have not been successfully delivered".

## Outcomes

- 4.4.6 The monitoring and evaluation approach with regard to the outcomes is outlined in Table 4.3 below.

Table 4.3: Monitoring and Evaluation Approach – Outcomes

Outcome	Proposed Approach for Monitoring	Anticipated Outcome Value	Proposed Method of Collecting Baseline Information
Addresses existing congestion issues	Compare pre-scheme traffic data with post-scheme traffic data.	Reduced queue lengths. Reduced delays. Increased junction capacity.	Collect pre-scheme traffic data (e.g., ACTs, MCTCs, queue length surveys).
Enables the delivery of the FHSF scheme	On-street audit to verify that the delivery of the Broad Street Scheme has enabled the delivery of the FHSF scheme.	Successful delivery of the FHSF scheme, including all identified FHSF components.	From previously undertaken site visits, it is evident that the FHSF cannot be delivered without changes to the highway layout around Broad Street. As such, additional baseline information is not required.
Improves pedestrian level of service around Broad Street	On-street audits to understand how the scheme will change pedestrian level of service around Broad Street.	Improved pedestrian level of service.	From previously undertaken site visits, the project team has an understanding of existing pedestrian level of service around Broad Street, and this is documented in the OBC, OAR, and other associated reports. As such, additional baseline information is not required.
Improves safety	Compare pre-scheme accident data with post-scheme accident data.	Fewer accidents. Reduced accident severity.	Obtain data from CCC.



## 4.5 Spatial Coverage

- 4.5.1 Data will be collected for the different scheme locations in Figure 4.1, which comprises the town of March.

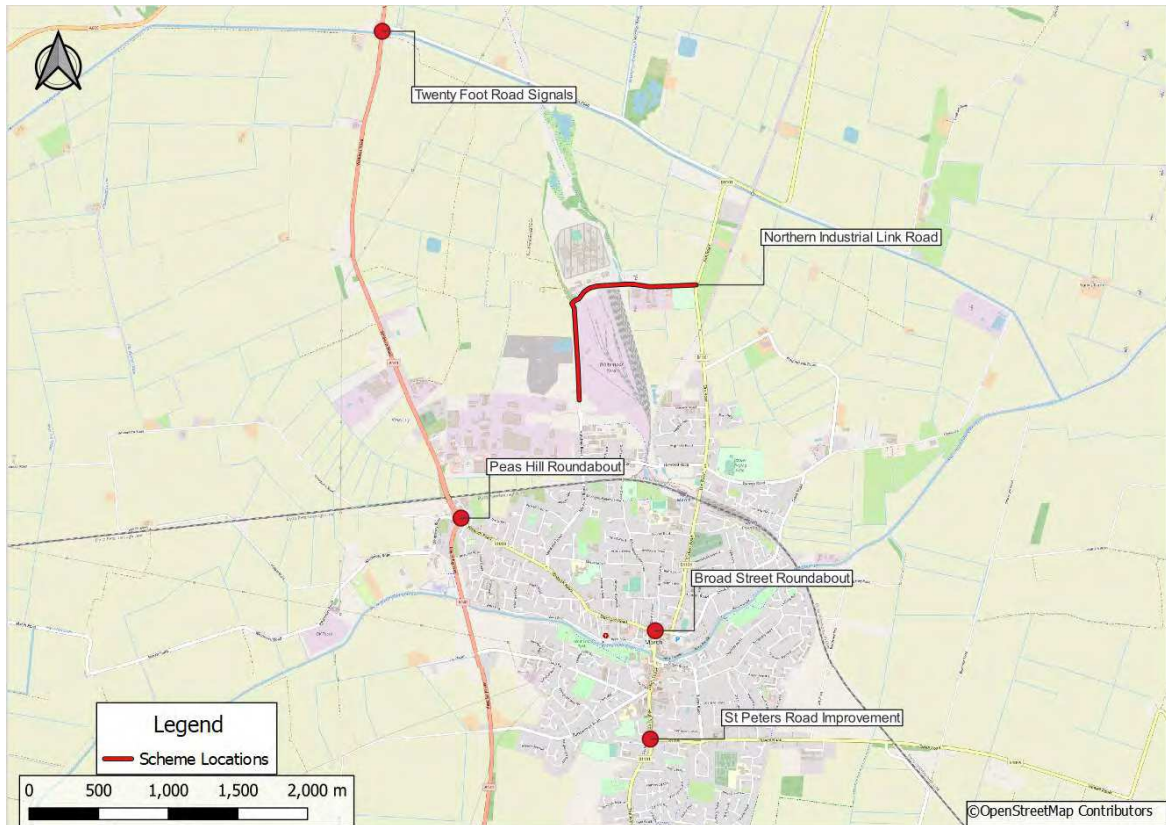


Figure 4.1: Scheme Locations

## 5. Resourcing and Governance

### 5.1 Introduction

- 5.1.1 The purpose of this chapter is to provide details of the monitoring and evaluation budget(s) and the governance structure for the delivery of the Monitoring and Evaluation plan, including details of who will be responsible for delivering the plan and procedures for risk management and quality assurance.

### 5.2 Monitoring and Evaluation Budget(s)

#### Green Book Guidance

- 5.2.1 The Green Book (paragraph 1.7) specifies that the “monitoring and evaluation of all proposals should be proportionately included in the budget and the management plan of all significant proposals as an integral part of all proposed interventions.”

#### MATS Monitoring and Evaluation Budget(s)

- 5.2.2 The cost of baseline / implementation reporting has been included in the scheme development costs and are reported in the MATS FBC1.
- 5.2.3 An indicative cost estimate for monitoring and evaluation activities and reporting is £5,000 (MATS Broad Street) and £20,000 (MATS remaining schemes). A detailed cost estimate for these activities and information relating to budgetary responsibility is provided in the Table 5.1 and Table 5.2 overleaf.

Table 5.1: Monitoring and Evaluation Plan (MATS Broad Street)

	Measure	Measure of Success	Data Source	Data Collection / Reporting Programme			Ownership	Indicative Cost Estimate
				Baseline	Delivery	Post Completion		
Inputs-	Scheme Costs	CPCA Funding	CPCA Funding submission Final Scheme Cost Data	Planned	October 2022 – January 2023	-	CPCA / CCC	-
Outputs	Scheme Build / Delivered Scheme	Infrastructure delivered as part of the scheme	Inspection On-Site	March 2018	February 2023 – March 2024	2025	CPCA / CCC	£300
Objectives	Outcomes							
1 / 2	Travel Time and Reliability	Enhanced Network Performance, particularly during Peak Hours	Satellite Navigation Data / Travel Time data / Site Visits / Survey Footage	October 2019	-	March 2025 / March 2029	CPCA / CCC	£100 for data analysis at both 1 year and 5 year reporting Total = £200
		Enhanced Network Performance for Public Transport, namely for the Stagecoach 46 and 56 Service	Local Bus Company Punctuality Data	2019 / 2022	-	March 2025 / March 2029	CPCA / CCC	£100 for data analysis at both 1 year and 5 year reporting Total = £200
		New Infrastructure for Sustainable Modes	Site Inspection / Usage Data	2021 / 2022	-	March 2025 / March 2029	CPCA / CCC	£100 for data analysis at both 1 year and 5 year reporting Total = £200
		Reduce the number of accidents at Broad Street Area	Cambridghshire County Council	Dataset 2014 - 2019	-	March 2025 / March 2029	CPCA / CCC	£100 for data analysis at both 1 year and 5 year reporting Total = £200
1/2	Travel Demand	Enhanced Network Performance, Broad Street Area	Classified Turning Counts / Site Visits / Video Survey Footage	October 2019	-	March 2025 / March 2029	CPCA / CCC	£750 for count surveys and £100 for data analysis at both 1 year and 5 year reporting Total = £1,700
1/2/3	Impact on Economy	Employment Growth Ambitions in March	CCC Planning Portal - Local and Regional Economic Reports / Development Figures Post scheme opening	2019	-	March 2025 / March 2029	CPCA / CCC	£100 for data analysis at both 1 year and 5 year reporting Total = £200
4	Impact on the Local Environment	Ensure a Net Gain of Biodiversity across the Study Area	Biodiversity Calculation / Site Survey and Desk Based Assessment	October 2022	-	March 2025 / March 2029	CPCA / CCC	£200 for site inspections and data analysis at both 1 year and 5 year reporting Total = £400
2/4	Carbon	Improvement to Air Quality in Future Years	FBC Calculations for Carbon assessment / CCC Air Quality Monitoring Sites / Future traffic demand data	October 2022	-	March 2025 / March 2029	CPCA / CCC	£200 data analysis at both 1 year and 5 year reporting Total = £400
Reporting	Year 1 reports summarising the outcomes of the monitoring and evaluation work			-	-	2025	CPCA / CCC	£600
	Year 5 report summarising local economic growth, scheme impacts and development figures prior and post opening of the scheme			-	-	2029	CPCA / CCC	£600
	Total Monitoring and Evaluation Budget							£5,000

Table 5.2: Monitoring and Evaluation Plan (MATS Remaining Schemes)

	Measure	Measure of Success	Data Source	Data Collection / Reporting Programme			Ownership	Indicative Cost Estimate
				Baseline	Delivery	Post Completion		
Inputs-	Scheme Costs	CPCA Funding	CPCA Funding submission Final Scheme Cost Data	Planned	October 2022 – January 2023	-	CPCA / CCC	-
Outputs	Scheme Build / Delivered Scheme	Infrastructure delivered as part of the scheme	Inspection On-Site	March 2018	November 2022 – March 2024	2028	CPCA / CCC	£1200
Objectives	Outcomes							
1 / 2	Travel Time and Reliability	Enhanced Network Performance, particularly during Peak Hours	Satellite Navigation Data / Travel Time data / Site Visits / Survey Footage	October 2019	-	November 2028 / November 2032	CPCA / CCC	£400 for data analysis at both 1 year and 5 year reporting Total = £800
		Enhanced Network Performance for Public Transport, namely for the Stagecoach 56 and 46 Service	Local Bus Company Punctuality Data	2019 / 2022	-	November 2028 / November 2032	CPCA / CCC	£400 for data analysis at both 1 year and 5 year reporting Total = £800
		New Infrastructure for Sustainable Modes	Site Inspection / Usage Data	2021 / 2022	-	November 2028 / November 2032	CPCA / CCC	£400 for data analysis at both 1 year and 5 year reporting Total = £800
		Reduce the number of accidents along Northern Industrial Link Road, Peas Hill Roundabout and Twenty Foot Road Junction	Cambrighshire County Council	Dataset 2014 - 2019	-	November 2028 / November 2032	CPCA / CCC	£400 for data analysis at both 1 year and 5 year reporting Total = £800
1/2	Travel Demand	Enhanced Network Performance, Broad Street Area, Peas Hill Roundabout and Twenty Foot Road Junction	Classified Turning Counts / Site Visits / Video Survey Footage	October 2019	-	November 2028 / November 2032	CPCA / CCC	£3,000 for count surveys and £400 for data analysis at both 1 year and 5 year reporting Total = £6,800
1/2/3	Impact on Economy	Employment Growth Ambitions in March	CCC Planning Portal - Local and Regional Economic Reports / Development Figures Post scheme opening	2019	-	November 2028 / November 2032	CPCA / CCC	£400 for data analysis at both 1 year and 5 year reporting Total = £800
4	Impact on the Local Environment	Ensure a Net Gain of Biodiversity across the Study Area	Biodiversity Calculation / Site Survey and Desk Based Assessment	October 2022	-	November 2028 / November 2032	CPCA / CCC	£800 for site inspections and data analysis at both 1 year and 5 year reporting Total = £1600
2/4	Carbon	Improvement to Air Quality in Future Years	FBC Calculations for Carbon assessment / CCC Air Quality Monitoring Sites / Future traffic demand data	October 2022	-	November 2028 / November 2032	CPCA / CCC	£800 data analysis at both 1 year and 5 year reporting Total = £1600
Reporting	Year 1 reports summarising the outcomes of the monitoring and evaluation work			-	-	2028	CPCA / CCC	£2,400
	Year 5 report summarising local economic growth, scheme impacts and development figures prior and post opening of the scheme			-	-	2032	CPCA / CCC	£2,400
	Total Monitoring and Evaluation Budget							£20,000

### 5.3 Governance Structure

- 5.3.1 The CPCA have the responsibility for ensuring Value for Money from the MATS package of schemes. Under the CPCA, CCC will be responsible for ensuring the Monitoring and Evaluation Plan is undertaken as outlined within this report.
- 5.3.2 Monitoring during construction and post scheme opening is likely to be undertaken by CCC. However, owners for each monitoring task should be defined following the approval of the FBC.
- 5.3.3 Delivery of the scheme to date has been managed by the CCC Project Manager and wider Project Team, consisting of key project delivery partners. The Project Team have been responsible for the daily running of the project and will continue to meet on a monthly basis throughout the construction period. The main responsibilities being to:
- 5.3.4 The delivery team will continue to meet monthly throughout the construction phase of the project. Its main responsibilities are to:
- Comment on delivery and ensure sufficient resource is allocated to scheme delivery
  - Monitor overall delivery against programme to ensure key activities / milestones are completed
  - Consider project costs and risks and review and advise on any impacts to project delivery
  - Provide governance for the project and initiate corrective action where necessary
  - Provide updates, including written progress reports
- 5.3.5 The existing Project Board will be used to oversee the continued delivery of the scheme by the Project Team, and to make key decisions relating to the delivery of the project. The Project Board will be continuing to meet on a monthly basis until the scheme is complete. Arrangements will then be agreed for the on-going resource / schedule for reporting associated with the monitoring and evaluation plan of the scheme.
- 5.3.6 Full details of the governance structure for the MATS project is provided in the Management Case of the MATS FBC1.

## 5.4 Risk Management

5.4.1 The risk management strategy for the evaluation process is in line with the strategy for the project delivery. Risk areas identified in relation to evaluation of the project are:

- **Baseline data** – transport data issues (completeness, correctness, accuracy, and relevance), impacting on processing.
- **Baseline data collection** – unable to collect data before site opens e.g., weather, or resourcing constraints.
- **Data processing** – inaccuracy of data analysis, impacting on evaluation.
- **Future year data** – funding issues prevent future data survey collection.
- **Evaluation** – post analysis realisation that baseline data will be insufficient for purpose or potential newly identified factors.

5.4.2 Table 5.3 below highlights the calculated likelihood and severity of the risk identified for the project evaluation, as well as mitigation measures that can be taken.



Table 5.3: Risk Matrix and Mitigations

Risk	Likelihood Score (1-5)	Impact Score (1-5)	RAG Score (Likelihood x Impact)	Mitigations
<b>Baseline Data Accuracy</b>  Accuracy lost because of programming or processing errors.	1	2	2	Baseline data has been used throughout the business case lifespan of the project. Baseline data has been reassessed in preparation for the required monitoring and evaluation, and is sufficient for future data comparisons.
<b>Baseline Data Collection</b>  Incorrect data due to road works, weather etc	3	2	6	Construction programme is known, careful planning / weather monitoring to be undertaken when arranging surveys.
<b>Data Processing</b>  Data recieved can be inconsistent due to machine malfunction, Weather etc	1	1	2	Once data is recieved from survey companies, rigourous reviewing to be undertaken to highlight any inconsistencies / issues at the earliest point.
<b>Future Year Data</b>  Lack of funding for future year data collection	2	5	10	Funding required for the monitoring and evaluation of the project has been costed prior to construction and will be recieved with the construction funding (approval January 2023). Funding will be separated for future use.
<b>Evaluation</b>  Lack of funding for evaluation process.	1	2	2	As above.

## 5.5 Quality Assurance

- 5.5.1 The project to date has been managed by CCC in line with their existing assurance and approvals processes, namely the CPCA Assurance Framework. The CPCA Assurance Framework sits alongside a number of Combined Authority documents including the '10-point guide' mentioned above and details the fundamental principles in relation to the use, administration and evaluation of Cambridgeshire and Peterborough Investments.
- 5.5.2 Under the management of The Council, a Project Manager was assigned and has been responsible for the daily running of the project. In instances where approval was required, the Project Manager would be advised and then provided by the Project Board.

5.5.3 The Project Manager will also be responsible for quality assurance for the MEP. Development and ongoing maintenance of the scheme evaluation plan will ensure that it reflects the programme and key milestones.

5.5.4 The Project Manager will also:

- Arrange for the undertaking of quality checks by internal peer review to ensure high quality
- Record proceedings at meetings with the project board, project team and technical specialists, and reporting them in the form of meeting minutes including a clear record of actions and action dates
- Ensure compliance with the consistency in approach / assessment / presentation of documents and output
- Contribute to project close out and post project appraisal exercises for the task.

## 6. Delivery Plan

### 6.1 Introduction

- 6.1.1 The purpose of this chapter is to outline the project plan and timeframe for data collection, provide details regarding progress reporting back to the DfT, and outline the strategy for the reporting of monitoring and evaluation findings.

### 6.2 Delivery Plan and Timeframe for Data Collection

- 6.2.1 A delivery plan for the monitoring and evaluation of the MATS is provided in Table 6.1 below.

Table 6.1: Delivery Plan

Monitoring Activity	Broad Street Scheme Timescale	Twenty Foot / Peas Hill / Hostmoor/ St Peter's Road Scheme Timescale	NILR Scheme Timescale
Prior to scheme Build (Baseline)	2018	2018	2018
During Construction	2023	2025	2026
Scheme Opening	2024	2026	2027
One year post scheme opening	2025	2027	2028
Five years post scheme opening	2029	2031	2032

- 6.2.2 For context, the project milestones are presented in Table 6.2, below, to allow comparison with the delivery plan and timeframe for data collection dates in Table 6.1.

Table 6.2: Project Milestones

Activity	Dates
<b>MATS Broad Street Improvement Scheme (FBC1)</b>	
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Broad Street Construction and FBC2	January 2023 - February 2023
Procurement of MATS Broad Street Contractor	October 2022 - February 2023
Construction of MATS Broad Street scheme (in conjunction with FHSF scheme construction)	February 2023 - March 2024
<b>MATS Peas Hill &amp; Hostmoor Avenue, Twenty Foot Road and St Peter's Road Schemes (FBC2)</b>	
Obtain Utility Cost (C4s), Outline Planning, Land Engagement and Target Cost Procurement for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	February 2023 - December 2023
Submit FBC2, requesting release of funding for Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	December 2023
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction and FBC3	December 2023 - March 2024
Obtain Full Planning Approval and Land Agreement (If no need for CPO) for Peas Hill and Twenty Foot Road Schemes.	March 2024 - December 2024
CPO and Side Road Order Statutory process	June 2023 - March 2025
Construction of Peas Hill and Hostmoor Avenue, Twenty Foot Road St Peters Road Schemes.	March 2025 - March 2026
<b>MATS NILR Scheme (FBC3)</b>	
Commence NILR Detailed Design, including Governance Process and statutory orders	March 2024 - March 2025
Begin Planning Process and supporting surveys (Ecology / Topography)	March 2024 - August 2025
Obtain Statutory Orders including CPO (approval from FDC, CCC)	March 2024 - October 2026
Target Cost Procurement for NILR	March 2025 - September 2025
CPCA Technical Assurance Review, CCC / CPCA Committees, Board Approval to Proceed to Construction	September 2025 - November 2025
NILR Construction	October 2026 - December 2027
MATS Post Scheme Monitoring and Evaluation	December 2028 - December 2033

## 6.3 Reporting of Monitoring and Evaluation Findings

6.3.1 The monitoring and evaluation findings will be issued as the following Reports:

- One Year After Monitoring and Evaluation Report (FBC1) – 2025
- One Year After Monitoring and Evaluation Report (FBC2) – 2027
- One Year After Monitoring and Evaluation Report (FBC3) – 2028
- Five Years After Monitoring and Evaluation Report (FBC1) – 2029
- Five Years After Monitoring and Evaluation Report (FBC2) – 2031
- Final Monitoring and Evaluation Report – 2032.

## 7. Dissemination Plan

### 7.1 Introduction

- 7.1.1 This Scheme Evaluation Plan will be agreed with CCC and CPCA prior to the submission of the FBC. Costs for monitoring and evaluation will be included within the final funding request from the CPCA for construction costs.

### 7.2 Dissemination Reporting

- 7.2.1 Monitoring will be undertaken before and during construction, and after the opening of the Scheme. A “One Year After” evaluation report will be produced within two years of the Scheme opening, followed by a “Five Years After” report within six years of the Scheme opening. The reports associated with this Monitoring and Evaluation will be published on the CCC website.

### 7.3 Stakeholder Engagement

- 7.3.1 CCC and the Project Team have engaged with key stakeholders throughout the development of the Scheme, and this will continue during the delivery phase. The list of stakeholders who received communication regarding the scheme can be found in the Strategic Case of the FBC and the Stakeholder Engagement Strategy is included in Appendix A of the MATS FBC1.

### 7.4 Lessons Learnt

- 7.4.1 The Package of schemes will represent a significant investment of public money for March by the CPCA. Monitoring and evaluation is therefore essential, not only to demonstrate that the schemes have been delivered as planned with the desired impacts, but also to inform and enlighten future decision makers, both locally and nationally. In this way, future investment can be targeted to provide the best value for money.



7.4.2 Post scheme Lessons Learnt workshops will be held with the project delivery team to discuss the following themes. Findings from these workshops will be reported in the 'One Year' Post Scheme Monitoring and Evaluation Reports detailed in Section 6.3.

- **Delivery:** Has the Scheme been delivered as intended and to the expected timetable? If any internal and external factors affected delivery, what impact did these have? Could they have been foreseen or avoided? What went well and what went less well?
- **Cost:** How accurate were the cost estimates? If Outturn costs were different from expectations, why was this, and what actions were taken? Were the allowances for quantified risk and Optimism Bias reasonable, or should a different approach be taken in future?
- **Traffic / Journey Reliability:** Has the scheme produced the expected changes to congestion and journey time reliability in March, and were there any unintended changes? If not, what are the reasons? If there are differences, are they due to Scheme specific, or external factors affecting traffic demand? Are there implications for similar schemes in the future?
- **Economy:** Has the Package of schemes enhanced the position of March in relation to policies and growth aspirations? Has it altered the perception of the town as a place to work, better attracting new investors as a place of opportunity? Have there been any unintended consequences?
- **Value for money:** Did the traffic model provide a realistic forecast of future growth and the effects of the Schemes? If there are differences, are they enough to raise questions about the VfM category attributed to the Scheme?
- **Environment:** Were the environmental impacts of the schemes in line with expectations? Is mitigation perceived to have been effective? Have there been any unintended impacts, and, if so, how might they have been foreseen, or avoided with future schemes?

## Appendix K: Project Risk Register

Risk Information											Cause & Effect		Inherent Score			Risk Control		Residual Score			Action required		Risk cost		Target Score	
Risk Ref	Risk Title	Date Identified	Risk Type	Priority	Risk Estimate	Risk Owner	Risk Lead	Latest Review Date	Last Reviewed By	Last Review Comments	Cause	Effect	Inherent Risk Score	Likelihood Score	Impact Score	Control (mitigation action)	Control Owner	Residual Likelihood Score	Residual Impact score	Residual Risk Score	Action	Person responsible	Date to be implemented by	Cost of risk / control (£k)	Residual Exposure	Target Score
1	3rd party utility works	01/06/2022	Other	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	3rd party utility works overrunning within the construction works	Delay to construction programme/cost increase to project	5	2	4	Principal contractor to manage utilities. Engagement with utility companies to manage diversions	JL/SH	1	4	4	CP's being sought to identify affected utilities	JL/SH	24 Nov 22	£200,000.00	No	4
2	Increased inflation due to current global events (see to Global Unprecedented rates / inflation rates)	01/06/2022	Financial	Asseachine	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	likely to increase fuel costs, which will have a knock on effect to all other commodities	Increased project costs	5	3	2	Secure inflation is built into cost and cost management system is reflective of global events	JL/SH	3	2	6	Secure inflation is built into cost and cost management system is reflective of global events	JL/SH	24 Nov 22	£100,000.00	No	6
3	Footway widths v full depth construction v state	01/06/2022	Financial	Asseachine	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	The reduced footway widths mean we may need to lower the carriageway	Impact on busied services	5	3	3	Obtain trial holes at key locations	JL/SH	2	3	5	Obtain trial holes at key locations	JL/SH	24 Nov 22	£3,000.00	No	4
4	Statutory undertakers' plant	01/06/2022	Safety	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Safety risk of any incidents involving any underground plant	Safety incident, impacting cost/ programme / reputation	5	2	4	Investigation and collaboration	JL/SH	1	4	4	Investigation and collaboration	JL/SH	24/10/2022	£0.00	No	5
5	FSC Programme	01/06/2022	Planning or Enforcement risk	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Release of the MATS Construction funding is dependent on CP's approval of FSC	Delayed approval will impact the flow MATS	5	1	5	Work closely with CP's to understand requirements for FSC approval process, timely update meetings with the CP's have been established	JL/SH	1	5	5	Work closely with CP's to understand requirements for FSC approval process, timely update meetings with the CP's have been established	JL/SH	24/10/2022	£3,750.00	No	5
6	Network Rail BAPs	01/06/2022	Planning or Enforcement risk	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Access required to Network Rail owned land to conduct NCR preliminary surveys	Delays obtaining Network Rail approval will delay Adfms undertaking survey work	5	1	5	Work closely with Network Rail to agree access arrangements, updated in BAPs	JL/SH	1	5	5	Work closely with Network Rail to agree access arrangements, updated in BAPs	JL/SH	24/10/2022	£10,000.00	No	5
8	Private Land	01/06/2022	Planning or Enforcement risk	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Private land access required for Adfms to undertake detailed design surveys	Delays obtaining agreement to access private land are encountered in the MATS FSC review period, this will cause programme delays for the next phase of the project. This is critical given funding obligations	5	3	3	Obtain Land Registry information, Agreed Land Agent, Adfms Knowledge	JL/SH	2	3	5	Obtain Land Registry information, Agreed Land Agent, Adfms Knowledge	JL/SH	24/10/2022	£10,000.00	No	5
9	FSC and GSA Sign Off	01/06/2022	Strategic	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Timely review of the MATS FSC is required to ensure the project progresses smoothly into the next phase	No interested parties. No construction / procurement in place No costs for FSC - delay to approval and transfer to construction and funding	5	2	4	Continued engagement with CP's throughout. Liaison with STGB to assess business case options	JL/SH	1	4	4	Continued engagement with CP's throughout. Liaison with STGB to assess business case options	JL/SH	24/10/2022	£0.00	No	4
10	Procurement DMR	24/07/2022	Strategic	Approaching	Open	JL/SH	JL/SH	24/09/2022	JL/SH	Reviewed	Seeking procurement options from DMR		5	1	4	Talking to Milestone review DMR next November	JL/SH	1	4	4	Continued engagement	JL/SH	26/09/2022	£0.00	No	4

## Appendix L: Procurement Strategy Rational

## CCC Procurement Strategy Rational (NEC vs JCT)

The council delivery vehicles for the Eastern Highways Alliance and the current term services delivery contract with Milestone both use the NEC 4 options A through to E.

Whilst CCC do use JCT within the council, the NEC is considered less adversarial than the JCT form of contract and it's uniquely designed with three key characteristics:

- To stimulate good management between parties and by extension the associated works on site.
- To be used in a wide variety of commercial situations.
- To use a clear and precise language without any legal jargon.

To determine the best form of NEC Contract, CCC have listed the pros and cons for the five options.

### Option A: Priced contract with activity schedule

This option contains a priced lump sum contract which is then linked to a contract programme drafted with an activity schedule. Each activity on the schedule is then allocated a price.

Each interim payment is then made upon the completion of:

1. Each group of completed activities (without defect)
2. Each completed activity not within a group

#### Pros:

- Simplified payment process – it's easier to measure when an activity is completed rather than when the output of work completed on an option with a BoQ
- Greater cost certainty for clients compared to a Target Cost option

#### Cons:

- For contractors – there is no provision for partial payment. If there is an issue with completing an activity, no payment is made until the activity is completed leading to cash flow problems.  
The “all risk” nature of the project for the contractor, often leads to a more adversarial, rather than collaborative, attitude towards scope changes and on-site problems. The “all risk” nature means that a greater percentage of risk is built into the lump sum.
- Not suited to projects where scope/design is incomplete or will be liable to change.

## Option B: Priced contract with bill of quantities

This option contains a priced contract which is linked to a Bill of Quantities (BoQ). The BoQ will contain project specific measurements which are derived from the drawings and specifications. Each measurement will then be linked to a rate.

### Pros:

- If there is any error of measurement in the BoQ then both parties will know how much additional amount needs to be paid and received
- Greater flexibility for all parties in terms of cash flow

### Cons:

- For items which contain multiple elements of work built into a singular rate, it can be difficult to assess the percentage of work complete.
- Whilst the contract is deemed remeasurable, this remeasurement is often restricted to a percentage of the total contract, after which the change is assessed as defined cost-plus fee making it unsuitable for contract without a clearly defined scope.

## Option C: Target contract with an activity schedule

This option contains a target contract which is linked to an activity schedule. The target contract, contains a price which is more commonly referred to as a target cost.

Under Option C, the interim payment process is as follows:

1. The contractor submits an application for payment to the client's representative (often Project Manager) on a monthly basis.
2. The application will contain a breakdown of the contractors cumulative "defined cost" plus fee minus any "disallowed cost". This combined cost is known as the "Price for Work Done to Date" (PWDD).
3. The application is then reviewed by the client to ensure all cost is allowable under NEC.
4. The agreed cumulative cost is then deducted from the amount previously paid under the contract. This amount is then paid to the contractor.

As the works progress, the target cost may be adjusted to reflect any agreed Compensation Event.

Once the works are completed, the final "Defined Cost" plus fee and the Target Cost are compared. The difference between the two is then shared between the contractor and client. This is known as the "pain/gain" mechanism and the method of how the split is calculated will vary from project to project.

### Pros:

- This arrangement encourages both parties to work more collaboratively as the financial success is shared by both client and contractor. Similarly, the financial failure of a project is shared. This collaborative working can reduce disputes and accelerate innovation.



#### Cons:

- Some share ranges can sometimes be disproportionately unfavourable to contractors leading to a higher proportion of risk being included in the initial target.

### Option D: Target contract with Bill of Quantities

This contract contains a target cost contract which is linked to a Bill of Quantities (BoQ). Similar to Option C, the financial loss and financial gain is shared by both Contractor and Client. However, unlike Option C, this Option utilises a Bill of Quantities to make up the price of works.

This Option is sometimes used on framework agreements, where an agreed Schedule of Rates is in place and used to build multiple Target Cost's throughout the framework agreement.

#### Pros:

- This arrangement encourages both parties to work more collaboratively as the financial success is shared by both client and contractor. Similarly, the financial failure of a project is shared. This collaborative working can reduce disputes and accelerate innovation.

#### Cons:

- It should be noted that unlike Option B this is not a re-measure contract. So, any error in measurement which won't amend the price and could cause a financial loss. This may lead to this excessive risk being included within the target cost.
- Not suited to contracts without a clearly defined scope or incomplete design.

### Option E: Cost reimbursable contract

This option is a cost reimbursable option. Works are paid on an open book basis. Under this option the contractor is paid all of their incurred "Defined Cost" and an agreed overhead and profit percentage. The client often takes on huge financial risk with this option.

Although this contract is often referred to as "Cost Plus", contractors should not get complacent and assume Option E means a blank cheque book for works. The terms within the contract should set out clearly what is and isn't to be reimbursed to the contractor.

#### Pros:

- Works that require immediate attention and cannot be defined at the project outset may benefit from a fast contract agreement.

#### Cons:

- Cost certainty for Client is low
- Inability for both parties to accurately plan cashflow.

### **CCC Recommendation**

CCC's preferred form of contract is an Option C, Target Price Contract with an activity schedule. This is recommended on the basis that the use of a target price contract for this project will enable a reduced risk premium to be paid by the Employer through the use of the pain / gain share mechanism. This is particularly advantageous for this project as the design will not be fully complete prior to tender. So, a Bill of Quantities cannot be accurately prepared, therefore this option is recommended over an Option D contract.