MOTT MACDONALD

GREATER CAMBRIDGE PARTNERSHIP
Growing and sharing prosperity
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Foxton Travel Hub

Outline Business Case

May 2020

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Greater Cambridge Partnership

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Introduction

This Outline Business Case (OBC) sets out the Greater Cambridge Partnership's (GCP) proposal for the development of a new travel hub scheme on the A10 corridor, proximate to the village of Foxton. The OBC presents the current status of the Foxton Travel Hub scheme, the Strategic Case for investment and the process that has been followed to identify the preferred option for the scheme based on consultation, options assessment and economic appraisal. The OBC proposes the continued development of the project, by providing evidence that the proposed scheme is robust, affordable, deliverable and sustainable. Ultimately, the OBC aims to demonstrate how the scheme can contribute to the delivery of a modern transport network that helps to keep people and businesses connected in the Greater Cambridge area.

The role of Greater Cambridge in the Cambridgeshire economy

Greater Cambridge is one of the most successful and fastest growing economies in the UK, which is driven to a large extent by its thriving high-tech and biotech industries. Across all key labour market and productivity indicators, Greater Cambridge outperforms the Cambridgeshire and Peterborough Combined Authority (CPCA) area, regional and national averages. Here, Greater Cambridge has a very low level of unemployment and a highly skilled workforce, which is reflected by its high levels of economic participation and productivity.

The continued strong performance of the Greater Cambridge economy, and the committed and proposed investment in the area, shows there is no sign of investors' demand to locate and invest in the area weakening. Indeed, the Cambridgeshire and Peterborough Independent Economic Review (CPIER), published in May 2018, suggests that **growth rates are likely to be much greater for the area** than those set out in the Cambridge and South Cambridgeshire Local Plans, particularly if 2010-2015 growth trends continue.

Capacity constraints threaten further growth and the need to address them

Despite the significant potential for the Greater Cambridge economy to continue its high growth trajectory, **the area faces supply-side threats to its growth, caused in part by issues with the transport network**. These issues include high levels of congestion, which are particularly prominent along the A10 corridor and are predicted to worsen with anticipated growth[1]. Therefore, investments in transport infrastructure, such as enhancements to interchange capacity, could form a crucial part in supporting economic growth by providing effective links to key employment sites and improving the existing issues of congestion.

The A10 corridor is strategically important, because it forms one of the main radial routes into Cambridge and provides access to the Cambridge Southern Fringe (CSF) area. However, the Royston to Cambridge section of the A10 suffers regular peak time congestion. For example, in the AM peak, the eastbound approach to M11 Junction 11 from the A10, and the northbound

[1] Cambridgeshire and Peterborough Combined Authority Local Transport Plan (2020)

approach from the M11 southbound, experience 25-50% slower travel speeds when compared to free flow conditions[2]. Similarly, frequent delays are caused by barrier downtime at the Foxton level crossing. Here, 6-9 barrier downtimes occur per hour making journey times unpredictable.

The demand for a Travel Hub

The success of well-placed transport interchanges across Greater Cambridge is evidenced by the utilisation rates at the existing Park & Ride sites. At present there are five 'inner' bus-based Park & Ride sites and two 'outer' sites serving Cambridge. In January 2020, the mean utilisation rates across all sites was approximately 74% (5,349 spaces) on a weekday. The utilisation rates show that weekday occupancy reached 100% at the Trumpington and Babraham Park & Ride sites; these sites both serve the CSF and Cambridge City Centre, which represent two of the key areas proposed to be served by the Foxton Travel Hub.

The Foxton Travel Hub scheme seeks to capitalise on the success of existing Park & Ride facilities in Cambridge and existing high-quality rail services, by providing secure, convenient and proportionate car parking facilities at Foxton station. This will enable users from the southwest of Cambridge to access Cambridge North, Cambridge Station, and, if developed, the proposed Cambridge South station, and their associated employment clusters.

To understand the potential demand for car parking spaces at the proposed Foxton Travel Hub, a series of demand modelling tests have been carried out using the SATURN highway element of Cambridge Sub Regional Model (CSMR2). Based on current demand calculations, the proposed Foxton Travel Hub would require up to 950 car parking spaces to meet demand by 2036 under a High Growth (HG) scenario, which is in line with CPIER derived growth trajectories.

Objectives to inform option development and assessment

Taking into account the underlying drivers and need for investment, as well as national, regional and local policies and strategies, a set of scheme objectives have been established. The objectives provide overarching direction for the scheme, and are designed to address the identified issues and opportunities set out in the Strategic Case.

Figure A: Scheme Objectives

1	**Maximise the potential for all journeys to be undertaken by sustainable modes of transport**
2	**Improved overall connectivity and accessibility within Greater Cambridge to support economic growth**
3	**To accommodate future growth in trips along the Royston to Cambridge route and reduce impact on traffic levels and congestion**
4	**Contribute to enhanced quality of life for those living and working within Greater Cambridge**

Source: Mott MacDonald

[2] Atkins - Western Orbital Study Options Report (September 2015)

A set of measurable success indicators, or critical success factors, were also established to make the objectives set out above accountable. Here, the objectives and corresponding sub-objectives (set out in Section 2.5) are assigned at least one indicator to allow the performance of the scheme, once delivered, to be measured over time; the success indicators are shown below.

Table A: Proposed success indicators

Proposed indicators	Relating to objective
Increased multimodal trips along the study corridor, via the Foxton Travel Hub, to Cambridge City Centre, the Cambridge Southern Fringe, and the Cambridge Northern Fringe. Increased number of rail trips to Cambridge City Centre, the Cambridge Southern Fringe, and the Cambridge Northern Fringe along the corridor.	**A-1** To increase sustainable transport mode share for trips into the city centre, the Cambridge Northern Fringe and Cambridge Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.
Increased number of car and cycle spaces available at transport interchange facilities along the Royston to Cambridge corridor.	**A-2** To increase travel hub capacity along the Royston to Cambridge A10 corridor.
Journey times on the A10 Harston to J11. Average journey times for all commuters along the A10 corridor from the south west.	**A-3** To reduce journey times from travel hub sites to key employment areas.
Number of people within an acceptable journey time of employment opportunities within Cambridge City Centre, the Cambridge Southern Fringe and the Cambridge Northern Fringe.	**B-1** To increase connectivity between settlements along the Royston to Cambridge route.
Traffic flow through Harston and Hauxton. Traffic flow on the approach to the Junction 11 of the M11.	**C-1** No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.
Air quality within the city centre to be within acceptable levels.	**D-1** To improve quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.
Number of journeys being undertaken using cycling and walking, including those to access the travel hub site.	**D-2** To increase cycling and walking along the Royston to Cambridge A10 corridor.

Source: Mott MacDonald

Public consultation, stakeholder consultation and options assessment

The Foxton Travel Hub scheme has progressed through a series of optioneering steps to identify and assess options that address the scheme objectives in compliance with the three stages of the DfT's transport appraisal process. The OBC stage options assessment presented in this report, represents Step 3 of the options assessment process, concluding with the identification of the preferred option.

In March 2019, the GCP Executive Board decided to progress the Foxton Travel Hub to the OBC stage and the associated public consultation. The two options taken forward for public consultation were as follows:

- Northern Option: located on Barrington Road to the north of Foxton station; and,
- Southern Option: located on Royston Road to the west of Foxton station.

Figure B: Foxton shortlisted options

Source: GCP

Figure C: Foxton shortlisted options

Source: GCP

The public consultation took place for a six-week period between the 9th September and 21st October 2019, in which respondents were asked to return a questionnaire, or email responses to the GCP. In total, there were 217 responses to the public consultation; 52% of whom were residents of Foxton and the surrounding villages. The public consultation results showed that:

- 42% of respondents preferred neither site option;
- 41% of respondents preferred the Southern Option;
- 13% of respondents preferred the Northern Option; and,
- 7% of respondents had no preference.

The feedback received during the public consultation period, and from key stakeholders, recommended the assessment of alternative site configurations including a split site solution, a decked parking solution, and a decked split site solution.

Using the results from the public consultation and applying Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET), the shortlisted options and the additional recommended options were assessed against a series of criteria developed to establish how well each option aligned with the scheme objectives.

The results of the assessment concluded that the **Southern Option scored most highly as a location for the proposed new travel hub, with a net score of 0.64 out of 1.00**. The Northern Option scored 0.54. The Southern Option had the highest scores across the sustainable travel, congestion and quality of life themes and the second highest score in terms of deliverability. The options assessment process recommended that the Southern and Northern Option be progressed for further detailed appraisal to determine which option would provide the greatest Value for Money (VfM).

Economic appraisals

The Economic Case assesses the economic impacts of the identified options and demonstrates their VfM. This requirement aligns with the GCP and HM Treasury specification for the appraisal and demonstration of VfM in the use of taxpayers' money. The Economic Case also identifies what economic, environmental, social and distributional impacts the scheme is expected to deliver.

The economic appraisals process involved calculating the discounted costs and benefits for the shortlisted options and presenting the Benefit Cost Ratios (BCRs) for each option. The purpose of the appraisals was to present the scheme option with the best VfM in order to support the selection of the preferred option. The core BCRs for the Northern and Southern Options are presented below. These BCRs are based on the monetised Level 1 transport user benefits (established monetised impacts).

Table B: Initial Benefit to Cost Ratio results

	Northern Option		Southern Option	
Impact	**Foundation Case (FC)**	**High Growth (HG)**	**Foundation Case (FC)**	**High Growth (HG)**
Initial BCR	1.72	**1.62**	2.58	**2.27**

Source: Mott MacDonald

The economic appraisal of the shortlisted options shows that the Southern Option has the highest initial BCR scores in the modelled FC and HG scenarios. **The BCR scores of the Southern Option thus fall into the 'high' VfM category** (BCR between 2 and 4) in the DfT's Value for Money Framework, whereas the Northern Option falls into the 'medium' VfM category (BCR between 1.5 and 2).

Determining the preferred option

A robust evidenced based process has been used to determine the preferred option for the Foxton Travel Hub. The following table draws on the results of the assessments undertaken in support of the OBC to arrive at the recommended preferred option.

Table C: Summary of OBC assessment

Benefit	The scheme
Journey time	• Cambridge bound commuters who transfer to rail from car-based trips at Foxton station, could save in the region of 10 minutes during the AM Peak (08:00-09:00) under the HG growth scenario in 2026, and in the region of 11 minutes under the HG scenario in 2036.
Demand	• Based on current demand calculations, the proposed Travel Hub would require 950 car parking spaces in the 2036 High Growth scenario with Cambridge South station operational.
Service Frequency	• Access to 2 services per hour to Cambridge in peak periods. • Access to 2 services per hour to London in peak periods.
Economic benefits	• Foundation Case Level 1 Present Value Benefits (PVB) £13,103. • High Growth Level 1 PVB £11,543. • Initial BCR (Foundation Case): 2.58. • Initial BCR (High Growth): 2.27.
Environmental	• The preferred option is estimated to have a neutral effect on air quality, greenhouse gas emissions and the water environment, a slight adverse effect on biodiversity, noise pollution and landscape, and a moderate adverse effect on the historic environment.
Social Impact (SI) Assessment	• The preferred option is estimated to have either a neutral or beneficial impact on all criteria apart from the 'option and non-use values' impact area, which were scoped out.
Distributional Impact (DI) Assessment	• The preferred option is estimated to have either a neutral or beneficial impact for the following criteria: user benefits, security, severance and accessibility. The only area where on a distributional level, there may be an adverse impact for particular social groups as a result of the scheme, is noise.

Source: Mott MacDonald

Based on the results of the economic appraisals, the findings from the INSET multi-criteria assessment, the feedback from the public consultation and the supporting evidence of the other

assessments undertaken in support of the OBC process, **the Southern Option is our recommended preferred option.**

Commercial Case

The purpose of the Commercial Case is to provide evidence on the commercial viability of the proposal and the procurement strategy that will be used to engage the market. The current preferred 'procurement strategy' at the OBC stage is summarised in Table 4 below. This will be further refined and developed as the scheme moves into the Full Business Case phase.

Table D: Preferred 'procurement strategy'

Preferred mechanism	Preferred option
Procurement strategy option	Two stage tender process ('Design' stage followed by 'Build' stage)
Type of contract	Competitive tender
Procurement method	Use of existing framework
Framework for appointing contractors	Eastern Highways Alliance EHA3 Framework.
Framework for appointing consultants	Cambridgeshire and Peterborough Joint Professional Service Framework
Form of contract	New Engineering Contract (NEC)
NEC Engineering Construction Contract conditions of contract	Option A
NEC Professional Services Contract conditions of contract	Option A or Option E depending on the scope of work to be undertaken is 'well defined'

Source: WYG

Financial Case

The Financial Case outlines the affordability of the preferred scheme option, its funding arrangements and technical accounting issues. The Financial Case includes the estimated financial spend profile of the preferred option and an overview of how the scheme will be funded.

The Financial Case presents the indicative base costs of £7.074 million for the preferred option. The base costs are inclusive of construction, design, project management, land and inflation costs. Scheme design for the preferred option is at an early stage of progression; therefore, significant work is required to progress the design to a point where the scheme can be constructed. Hence, a risk adjust cost for the preferred scheme option is also provided, in order to recognise uncertainty in the design and assumptions upon which the costs are based.

A confidence level of P80 risk has been applied to calculate the overall project cost estimate (this represents the base costs plus the risk value); P80 means that there is an 80% chance of the estimate being within that stated cost. The value that has been applied is 25%. A cost range has also been calculated based on P50 (19%) and P90 (29%) contingency allowances. **The risk adjusted cost of the preferred option is thus £8.675m**, with a likely range of £8.291m to £8.931m.

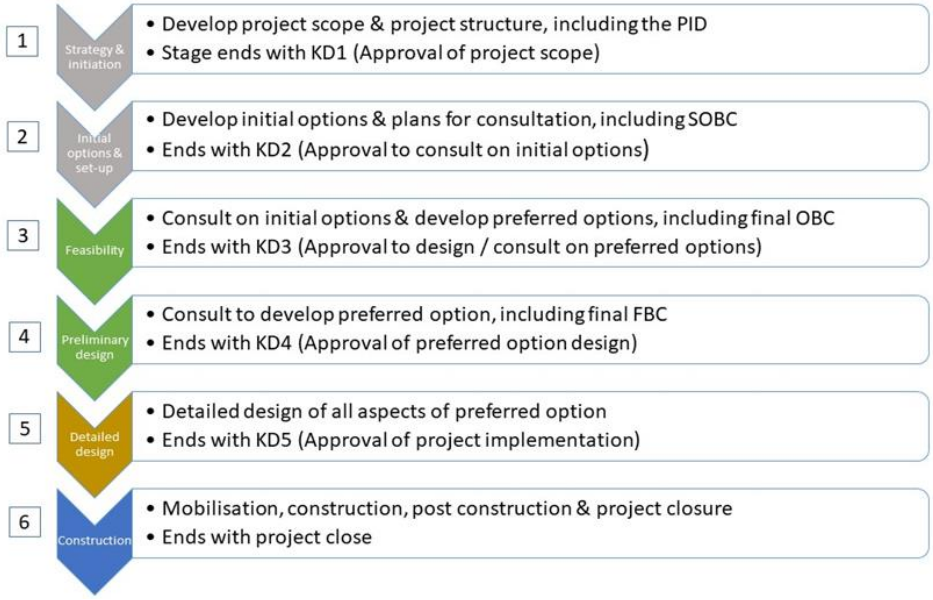
Management Case

The Management Case assesses whether adequate resources are in place to ensure the proposal can be delivered on time, on budget and in accordance with the project specifications.

The Management Case thus considers the project planning, governance structures, risk management, communications and stakeholder management processes of the scheme.

The Management Case sets out the GCP's governance structure and its role as scheme promoter and describes the phased approach to the delivery of the Foxton Travel Hub project. The project is divided into 6 phases that are aligned with the City Deal Assurance Process, which requires all City Deal funded schemes to progress through Key Decision points. The following figure illustrates the framework process for the six phases of scheme development and delivery leading up to each Key Decision.

Figure D: Foxton Travel Hub project development alignment with Key Decision phase



Source: Mott MacDonald

The project programme is set out in the Project Initiation Document (PID) (Appendix R) and has been approved by the GCP Executive Board. If the programme changes this would be reported to the GCP Executive Board for approval with a recommendation as a key decision. The following table provides the key milestones and associated delivery dates for the project as of April 2020.

Table E: Foxton Travel Hub indicative key milestones

Stage	Est. Completion
Stage 0 – Inception	**COMPLETED March 2018**
Stage 1 – Initial Options Development & Assessment	**COMPLETED October 2018**
Stage 2 – SOBC	**COMPLETED April 2019**
Stage 3 – OBC	**CURRENT**
Public consultation	Q3 2019 (Sep-Oct 2019) **COMPLETED**
Short list options assessment & preferred option selection	Q1 2020 (Jan 2020) **COMPLETED**
OBC - preferred option	Q1 2020 (Feb 2020) **COMPLETED**
Key Decision - Phase 3	Q2 2020 (Jun 2020) **CURRENT**
Stage 4 - Statutory Approvals	
Completion of preliminary scheme design	Q1 2021 (Jan 2021)

Stage	Est. Completion
Engagement on preferred option	Q1 2021 (Jan-Feb 2021)
Planning application submission	Q2 2021 (Apr 2021)
Key Decision - Phase 4 (approval to submit Planning Application)	Q2 2021 (Apr 2021)
Planning approval granted	Q2 2021(Jun 2021)
Stage 5 - Procurement Inc. FBC	
Design procurement	Q3-Q4 2021 (Jul-Oct 2021)
Detailed design	Q3 2021-Q2 2022 (Oct 2021-Jun 2022)
Construction procurement	Q3-Q4 2022 (Jun-Nov 2022)
Completed FBC	Q4 2022 (Nov 2022)
Key Decision - Phase 4 (FBC)	Q1 2023 (Mar 2023)
Stage 6 – Construct	
Scheme Construction	2023-24
Scheme Opening	2024
Monitoring & Evaluation / Benefits Realisation	2024+

Source: Mott MacDonald

Conclusions and next steps

In light of the evidence presented in this report, it is recommended that, subject to appropriate approvals, the Southern Option should be taken forward for further development and assessment at the FBC stage as the preferred option.

Should the scheme receive approval at Gateway Review Point 3, at the meeting of the GCP Executive Board in June 2020, it will progress to Stage 4 of the project. Stage 4 involves procuring the proposal and preparing the Full Business Case (FBC), and also producing the work needed to successfully progress the scheme through the Statutory Approvals process.

1. Introduction

This Outline Business Case (OBC) introduces the Greater Cambridge Partnership's proposal for the development of a new travel hub scheme along the A10 between Royston and M11 Junction 11. The OBC provides evidence that the proposed project is robust, affordable, deliverable and sustainable, and demonstrates how the proposed Travel Hub could contribute to the delivery of a modern transport network that helps to keep people and business connected in the Greater Cambridge area.

1.1 Scope of this Outline Business Case

This Outline Business Case (OBC) is for a new travel hub scheme between Royston and M11 Junction, along the Royston to Cambridge corridor. In the Cambridgeshire and Peterborough Combined Authority (CPCA) Local Transport Plan (LTP) for the CPCA area, a travel hub is considered to be "*a flexible transport interchange that will allow people greater access to sustainable transport networks."*

The purpose of an OBC is to identify the investment option which optimises Value for Money (VfM), prepare the scheme for procurement, and put in place the necessary funding and management arrangements for the successful delivery of the scheme.

In line with Department for Transport (DfT)[3] guidelines and GCP requirements, this OBC:

- Revisits the Strategic Outline Business Case (SOBC) and updates the strategic context and case for change;
- Confirms the option short-list, and prepares the economic appraisals for the short-listed options;
- Undertakes the benefits appraisal;
- Undertakes the risk appraisal;
- Presents the overall value for money of the scheme and recommends a preferred option; and,
- Undertakes sensitivity analysis to confirm the selection of the preferred option.

The need for additional travel hub capacity to facilitate transport interchange along the Royston to Cambridge corridor is well documented and identified within the Cambridgeshire Local Transport Plan (2011-2031), and the Transport Strategy for Cambridgeshire and South Cambridgeshire (2014). In addition, the Rural Travel Hub (RTH) Feasibility Study Report, published on behalf of Cambridgeshire County Council (CCC), identified the feasibility of creating a travel hub at Foxton station.

The CPCA published their LTP in February 2020 following a 12-week consultation period held between June 2019 and September 2019. The LTP for the CPCA area describes how transport interventions can be used to address the current and future transport challenges and opportunities within Cambridgeshire and Peterborough. The CPCA LTP specifically highlights the importance of improving journey time reliability along the A10 / M11 corridors into

[3] DfT – The Transport Business Cases – January 2013

Cambridge City Centre and, in *Policy Theme 13 - delivering a seamless public transport system,* explicitly supports the delivery of new and improved integrated, multi-modal transport hubs.

1.2 The scheme

The proposed Travel Hub scheme between Royston and M11 Junction 11 is one of several proposed transport schemes that aim to address the issues associated with high levels of highway congestion along the Royston to Cambridge corridor. These schemes include, but are not limited to, the Cambridge South West Travel Hub, the expansion of Trumpington Park and Ride, the Melbourn Greenway and the Cambridge City Access scheme. The scheme also aims to improve connectivity into existing and future employment sites in Cambridge and facilitate economic growth through sustainable travel.

The proposed Foxton location was identified following a process of sifting and analysis, in order to establish where along the A10 corridor a new travel hub scheme might best be provided. The options assessment process is documented in the accompanying Options Assessment Report (Appendix A) and is summarised in Section 2.7 of this OBC.

The scheme, in conjunction with the proposed Cambridge South West Travel Hub (CSWTH) scheme and the planned 274 space expansion of the existing Trumpington Park & Ride site, could support further economic growth in areas accessible via the existing Cambridge and Cambridge North stations, and at locations accessible via park and ride bus services.

Following the identification of a preferred location for a new travel hub along the corridor proximate to Foxton rail station, further assessment of site-specific locations was carried out (recorded in Appendix A - OAR). A short list of two possible site locations has been carried forward from the SOBC stage to the OBC stage of scheme development. These options have been subject to public consultation and detailed appraisal to inform the selection of a preferred option, which is presented in Section 2.7 of this OBC.

The proposed scheme would comprise a new travel hub site within the proximity of Foxton station, which sits on the Cambridge Line section of the Cambridge to Kings Cross rail line. The proposed Travel Hub could provide up to 950 car parking spaces to accommodate the predicted future growth in transport demand along the corridor. Further detail on how the level of trip demand has been calculated is presented in Section 3.3, whilst the option development process is set out in Section 2.7.

1.3 Geographic scope

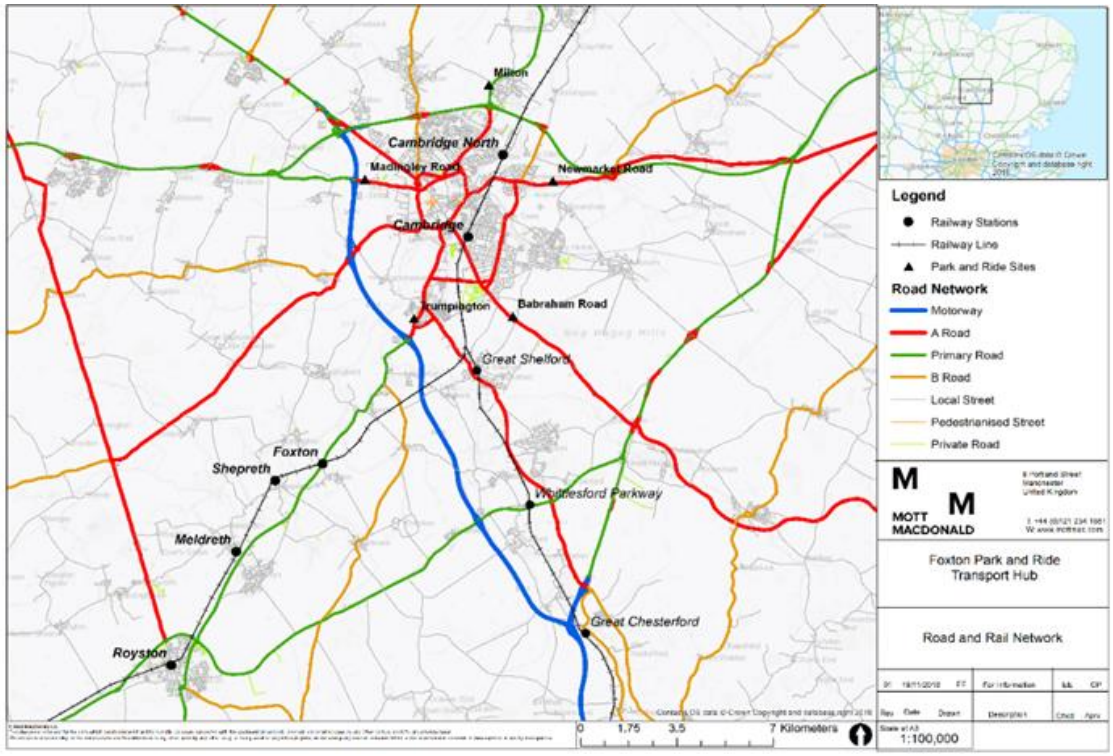
The area under consideration for any potential scheme extends from Royston train station along the A10 through to the existing Trumpington Park & Ride site to the east of Junction 11 of the M11. The location context of the study corridor is shown in Figure 1.1; the corridor is also included as one of Cambridge's seven transport corridors, as identified in the GCP's 'hub and spoke network' diagram, which is presented in Figure 2.8.

The longlist of options considered as part of the development of this scheme (see Section 2.7) are located adjacent to the Cambridge Line heavy railway line and/or the A10; the A10 and Cambridge Line corridors both route southwest between Cambridge and Royston.

The Cambridge Line, which forms part of the Great Northern Route, runs from Cambridge Junction on the East Coast Main Line to the Shepreth Branch Junction on the West Anglia Main Line, as shown in Figure 1.1. Govia Thameslink provide a mix of Express, Fast and Stopping services on the Cambridge Line.

The A10 forms part of the Primary Route Network, providing an important highway link between King's Lynn and London, via Downham Market, Ely, Cambridge and Royston.

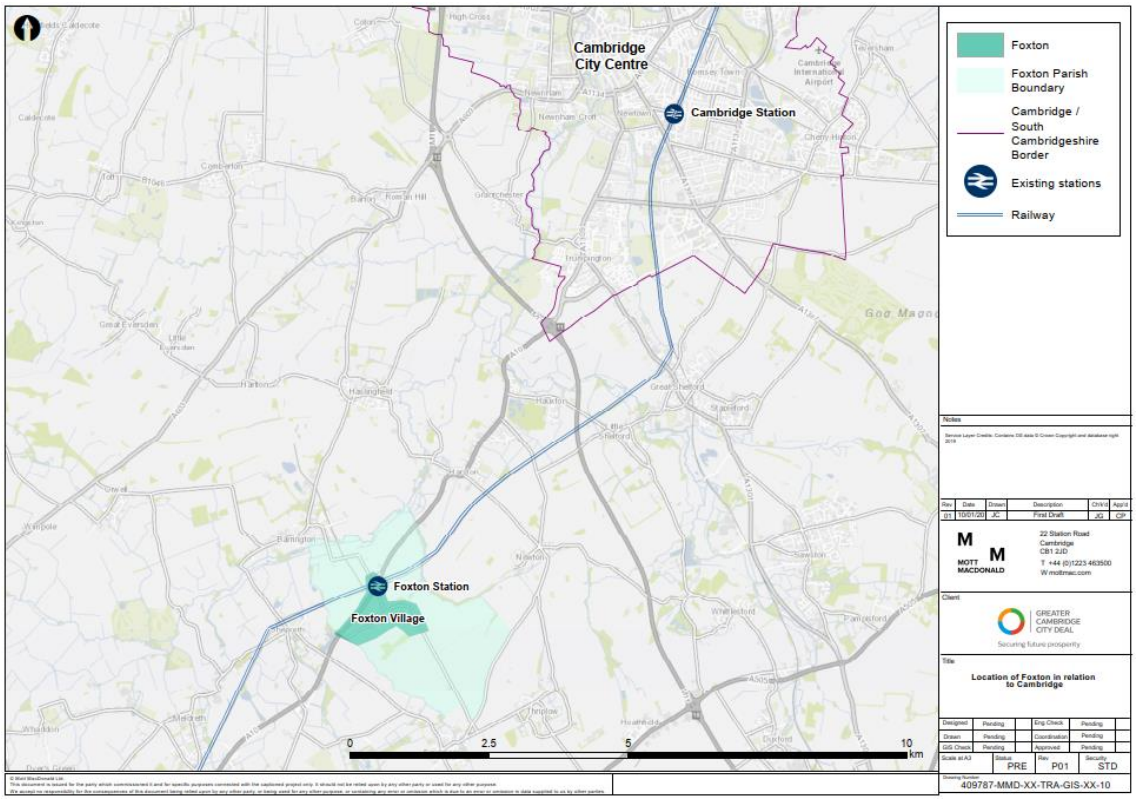
Figure 1.1: Transport network



Source: Mott MacDonald

The location of the village of Foxton, which was established in the Strategic Outline Business Case (SOBC) as the best performing of the strategic locations along the study corridor, is presented in Figure 1.2.

Figure 1.2: Foxton location map



Source: Mott MacDonald

1.4 Document structure

The remainder of this OBC is structured around the five-case model for transport business cases:

- Section 2 presents the **Strategic Case**, considering the 'case for change', including the expected wider economic benefits, policy context, scheme objectives, a discussion of the potential options, and key influences on the scheme;
- Section 3 sets out the **Economic Case**, identifying the range of economic, environmental, social, and public accounts impacts that are expected to arise from the scheme and, therefore, the scheme's anticipated value for money;
- Section 4 presents the **Commercial Case** for the scheme, including an assessment of the current marketplace, and how the new service will be planned and managed in accordance with relevant procurement regulations.
- Section 5 presents the **Financial** Case, including anticipated expenditure and potential funding sources;
- Section 6 contains the **Management case**, including an indicative programme, governance structure, and outline quality, communications, and risk management strategies; and,
- Section 7 outlines the recommendations of this OBC.

2. Strategic Case

The following section of the OBC presents the Strategic Case for a new travel hub scheme along the A10 between Royston and M11 Junction 11. The purpose of this OBC stage Strategic Case is to confirm the case for change of the Project and record any material changes that have occurred since the approval of the SOBC in March 2019.

Since the publication of the SOBC, the scheme has been subject to a consultation period involving the public and key stakeholders. This Strategic Case will thus seek to evidence that the stakeholders, commissioners, and other interested parties have been involved in developing the project throughout the planning of the scheme and the preparation of the OBC.

2.1 Introduction

The purpose of the Strategic Case is to provide strategic context and assess the need for the scheme. The strategic context section assesses whether that the proposed scheme is aligned with the Greater Cambridge Partnership's (GCP) business strategy and provides synergy and holistic fit with other projects and programmes within the GCP's strategic portfolio of City Deal funded schemes. The strategic context also assesses whether the Travel Hub scheme is aligned with relevant local, regional and national policies and targets. The case for change clearly sets out the rationale, drivers and objectives of the scheme.

2.2 Strategic context

The purpose of this section is to set out the strategic context for the project in order to assess whether the scheme supports national, regional, local and organisational policies, initiatives and targets. This section also demonstrates that the proposed Travel Hub has strategic fit with the GCP's business strategy and is aligned with other projects and programmes in the organisation's portfolio. To ensure the project is accountable, the Strategic Case sets out plans for the achievement of key goals, which are linked to the Critical Success Factors (CSFs) presented in Section 2.6.

2.2.1 Organisation overview

The GCP is the local delivery body for a City Deal with central Government, named the Greater Cambridge City Deal (henceforth, City Deal). Therefore, the GCP is responsible for supporting the high levels of local economic growth and development in Greater Cambridge, as set out in the Local Development Plans for South Cambridgeshire and Cambridge.

The GCP is made up of a partnership of councils, businesses and academic institutions. The four partners of the GCP are listed below:

- Cambridge City Council;
- Cambridgeshire County Council (CCC);
- South Cambridgeshire District Council (SCDC); and,
- University of Cambridge.

The vision of the GCP is as follows:

> ***"Unleash a second wave of the 'Cambridge Phenomenon'', with the aim of 'securing sustainable economic growth and quality of life for the people of Cambridge and South Cambridgeshire"***[4]

The GCP aims to achieve this vision by investing in infrastructure, housing and skills, in order to help address housing shortages, congestion problems on the transport network, and the current skills shortage faced by businesses in the area.

2.2.2 Greater Cambridge City Deal

The City Deal was signed between government and the GCP in 2014, with an initial £100 million provided in the 5 years from April 2015, split into 5 equal payments. An additional £400 million will also be available depending on the impacts identified from the initial investments, which will be split into two further tranches of £200 million; if approved the second tranche is anticipated to be available from Spring 2020, subject to the current gateway review process, and the third is anticipated to be available from April 2025.

When government funding is combined with the potential of an additional £500m from local partners such as developer contributions, a potential investment in the region of £1 billion in local infrastructure is achievable[5]. This investment fund offers funding towards proposed infrastructure to help grow and maintain Greater Cambridge's status as a prosperous economic area, and to achieve the following outcomes in support of economic growth:

- Accelerated delivery of **33,500 new homes**;
- Delivery of **44,000 new jobs**; and,
- Transport infrastructure improvements to support housing and employment growth, while retaining the high quality of life in the region.

In order achieve these outcomes, the GCP Assurance Framework sets out four strategic objectives that all schemes being promoted by the GCP will be appraised and prioritised against:

- **Create and retain investment** to nurture the conditions necessary to enable the potential of Greater Cambridge to create and retain the international high-tech businesses of the future;
- **Targeted business investment supporting the Cambridge Cluster** to the needs of the Greater Cambridge economy by ensuring those decisions are informed by the needs of businesses and other key stakeholders such as the universities;
- **Improve connectivity and networks** between clusters and labour markets so that the right conditions are in place to drive further growth; and,
- **Attract and retain skills** by investing in transport and housing whilst maintaining a good quality of life, in turn allowing a long-term increase in jobs emerging from the internationally competitive clusters and more university spin-outs.

[4] GCP Website, https://www.greatercambridge.org.uk/

[5] Local Plan Examination Cambridge City & South Cambridgeshire, CCC 5102 / SCDC 20801.

2.2.3 Business strategy and aims

The GCP actively works with central government, local authorities, businesses, academia and community members to identify and deliver potential infrastructure improvements. The GCP envisages the creation of greener transport networks which connect people, housing and employment centres.

The GCP's aims are presented on its website and are listed below:

- Ease congestion and prioritise greener and active travel, making it easier for people to travel by bus, rail, cycle or on foot to improve average journey time;
- Keep the Greater Cambridge area well connected to the regional and national transport network, opening up opportunities by working closely with partners;
- Reallocate limited road space in the city centre and invest in public transport (including Park & Rail type facilities) to make greater use of the existing rail network;
- Build an extensive network of new cycleways, directly connecting people to homes, jobs, study and opportunity, across the city and neighbouring villages;
- Help make people's journeys and lives easier by making use of research and investing in cutting-edge technology, and;
- Connect Cambridge with strategically important towns and cities by improving our rail stations, supporting the creation of new ones and financing new rail links.

By investing in better and greener transport networks, the GCP will help secure future growth with the right level of supporting infrastructure. The Foxton Travel Hub scheme aims to provide enhanced facilities for transport interchange for people who live and work along the Royston to Cambridge corridor. Hence, the project has the potential to ease congestion, enhance connectivity and make sustainable travel along the corridor more convenient.

2.2.4 Alignment to existing policies and strategies

2.2.4.1 Policy review

Any investment in transport infrastructure needs to align with national, regional, and local policy and strategy. Key relevant points identified in regional and local policy, and strategy documents are set out in Table 2.1. This section also sets out how the proposed Travel Hub aligns with the CPCA LTP.

Table 2.1: Alignment with policy and strategy

Greater Cambridge Partnership – City Deal (2014)[6]	
Description	• The vision of the GCP is: "To unleash a second wave of the 'Cambridge Phenomenon', securing sustainable economic growth and quality of life for the people of Cambridge and South Cambridgeshire" • To support economic growth, the region must accommodate new and growing businesses/developments and the people who work in them, whilst ensuring ease of movement between key economic hubs.
Relevance to the corridor	• A programme to enhance transport capacity is required along key strategic corridors to and from the city particularly where employment growth is planned. • Development of a sustainable transport network is required to strengthen employment hubs and high-tech clusters in Greater Cambridge making movement between them more direct, efficient and convenient. • Areas along the A10, M11 J11, A1307 and A1309 are highlighted as transport links with severe capacity issues. • Significant growth is expected throughout Cambridge and South Cambridgeshire; therefore, improved transport infrastructure will be required to support growth in this area and ensure economic growth is delivered to its full potential.
Wider points of relevance	• Intercepting, or replacing, car trips before they enter the City can support these aspirations. The provision of a new multi-modal interchange is one potential intervention that can help achieve this.
Department for Transport - Transport Investment Strategy (2017)	
Description	• The 2017 Transport Investment Strategy sets out the Department for Transport's (DfT) priorities and approach for future transport investment decisions. The Strategy states that through investment the DfT will seek to: – Create a more reliable, less congested and better-connected transport network that works for the users who rely on it; – Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities; and, – Support the creation of new housing.
Relevance to the corridor	• The Foxton Travel Hub scheme seeks to enhance access to existing Great Northern rail services at Foxton station. Rail services at Foxton station serve Cambridge station, where passengers can change to access regular services to Cambridge North. Depending on the progress of the scheme, direct services to Cambridge South could be provided in the future. • Following a timetable change in December 2020, direct services are no longer provided between Foxton station and Cambridge North via Great Northern services. However, the franchise of the current train operating company (TOC), Govia Thameslink Rail (GTR), expires in September 2021. • The 30-acre mixed-use Cambridge North development within the Cambridge Northern Fringe, which includes for 93,000 sq ft of prime office space, a hotel and 1,000 new homes, is scheduled for completion prior to the Foxton Travel Hub's proposed opening year of 2024. In light of this development coming forward, it is possible that providing services to Cambridge North will be considered viable by the next TOC. • In addition, Cambridge station provides access to Cambridge City Centre, and Cambridge South would provide access to the Cambridge Biomedical Campus and other developments within the Cambridge Southern Fringe. • The DfT has provided £10m to Network Rail to develop detailed proposals for Cambridge South station and associated infrastructure. Network Rail held a 6 week public consultation on proposals for the new railway station and associated infrastructure from 20 January 2020. The plans for Cambridge station are

[6] Greater Cambridge Partnership - Greater Cambridge City Deal (2014)

	presently at an early stage of design; however, the UK Government's Budget in March 2020 included a funding allocation for Cambridge South station, subject to planning approval. • Providing commuters with enhanced access to rail services that connect to key employment areas in Greater Cambridge, has the potential to reduce congestion and enhance journey time reliability along the A10 corridor between Royston and Cambridge.
Wider points of relevance	• The Strategy states that Government will continue investing in transport infrastructure across the UK in support of an industrial strategy for post-Brexit Britain. All potential projects will thus need to demonstrate that they create the right conditions for businesses to invest for the long term because long-term economic growth and improved living standards are key objectives for Government.
Cambridgeshire Long Term Transport Strategy (2015)[7]	
Description	• The Cambridgeshire Long Term Transport Strategy has 8 key objectives, which include supporting sustainable growth and economic prosperity, improving accessibility to employment and services and minimising the impact of transport on the environment. • This Strategy identifies the major infrastructure requirements that are needed to address existing problems and capacity constraints on Cambridgeshire's transport network, and the further infrastructure that is required to cater for the transport demand associated with planned growth.
Relevance to the corridor	• The Strategy suggests schemes that may be required to address capacity issues, including A10 Harston and Hauxton capacity and access improvements and the A10 Foxton level crossing replacement. • This is a longer-term strategy and focuses on the provision of new transport capacity on public transport, walking and cycling.
Wider points of relevance	• The strategy looks to provide or enhance integrated high-quality public transport services on the main corridors into Cambridge, and states that the ability to park and ride will continue to be an important travel option for people in rural areas in particular. • The strategy includes the aim of encouraging a modal shift onto public transport at an earlier stage in people's journeys, by intercepting car traffic at travel hubs and existing Cambridge Park & Ride sites.
Cambridgeshire Local Transport Plan 3 (2015)[8]	
Description	• The Third Local Transport Plan (LTP3) addresses Cambridgeshire County Council's transport priorities. • It seeks to address existing transport challenges as well as ensuring that planned large-scale development can take place in the county in a sustainable way.
Relevance to the corridor	• The LTP3 refers to the A10 Foxton level crossing closure scheme. LTP3 states that the scheme is expected to bring benefits to the Royston to Cambridge corridor such as improving access to development sites, settlements and jobs along the corridor.
Wider points of relevance	• Any transport interventions in the A10 corridor will need to be compliant with policy set out in the LTP. • The recently adopted CPCA LTP now provides the revised local transport planning policy backdrop for schemes promoted in the CPCA area. The CPCA LTP is summarised beneath this table.
Transport Strategy for Cambridge and South Cambridgeshire (2014)[9]	
Description	• The Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) seeks to address a wide range of transport challenges in the district of South Cambridgeshire, the city of Cambridge and the transport corridors beyond the district boundaries. • The TSCSC has eight objectives which support sustainable growth, enhanced transport network and accessibility, air quality targets, quality of life and health and wellbeing measures. • Many of the measures within the TSCSC help to facilitate and support new developments and take account of jobs and housing growth planned in Cambridge and South Cambridgeshire.
Relevance to the corridor	• The A10 is identified within the TSCSC as one of the main corridors in need of improvement.

[7] Cambridge County Council – Long Term Transport Strategy (2015)
[8] Cambridge County Council – The Local Transport Plan 3 (2015)
[9] Cambridge County Council – Cambridge Coty and South Cambridgeshire Transport Strategy (2014)

	• The TSCSC plans for vehicular trips to be intercepted further along the A10 through the provision of a new park and ride site, freeing up capacity at the existing Trumpington Park & Ride. • A core ambition of the strategy document, outlined in Policy TSCSC 15, is for the majority of car traffic accessing Cambridge city centre to use travel hubs or park and ride site, to help reduce congestion on the strategic and local road network. The document specifically outlines the need for "New, replacement or improved park and ride capacity and facilities at or near to the existing ring of five sites serving the city" (Pg. 19). • The Foxton Travel Hub has the potential to enhance connectivity between Cambridge and rural outer-lying parishes where sustainable transport options are limited. • The document also highlights the importance of transport interchanges and highlights how "the convenience and timeliness of interchange is an important factor in many people's choice of how to travel". • The proposed transport interchange could form a key node in the network of transport interchanges within South Cambridgeshire and Cambridge; thus, enabling rural residents to access High Quality Public Transport (HQPT) services more easily.
Wider points of relevance	• The TSCSC contains 21 policies, many of which point towards park and ride or travel hub solutions such as: – Policy TSCSC 3: Additional travel demand on the constrained transport network of South Cambridgeshire and into Cambridge should be accommodated by passenger transport services on main radial corridors. – Policy TSCSC 7: Outer park and ride sites will be introduced, and existing Cambridge Park & Ride sites will be expanded or relocated. – Policy TSCSC 9: Access to jobs and services - access to areas of employment and services will be maximised by sustainable modes of travel. – Policy TSCSC 19: Carbon Emissions- by offering commuters a sustainable option for a portion of their journey, enhanced park and ride capacity will reduce transport related carbon emissions.
Greater Cambridge Greater Peterborough Strategic Economic Plan (2015)[10]	
Description	• The key goal of the Greater Cambridge Greater Peterborough Strategic Economic Plan (SEP), prepared by the Local Enterprise Partnership (LEP) is to grow the nationally significant economy of the area by bringing together its diversity of strengths.
Relevance to the corridor	• The A10 is identified as a key strategic route to move goods and people within and through the LEP area.
Wider points of relevance	• The SEP states that high-quality transport interchange facilities must be provided in order to encourage people to use it. • The Greater Cambridge Greater Peterborough (GCGP) LEP became the Business Board of the Cambridgeshire and Peterborough Combined Authority in September 2018. Hence, the CPCA is the accountable body for the SEP.
Cambridge Local Plan (2018)[11]	
Description	• The Cambridge City Local Plan, adopted in 2018, sets out the vision, objectives and strategy for the future development and spatial planning requirements of Cambridge up to 2031. • The Local Plan seeks to guide and facilitate growth in a sensitive and sustainable manner, ensuring that the high environmental quality of the City is protected and enhanced, and that future developments offer a full range of opportunities to all its citizens.
Relevance to the corridor	• The Local Plan highlights the Cambridge Southern Fringe as an area of major change and states that proposals in this area should create distinctive gateways into Cambridge by road and rail. The Royston to Cambridge corridor connects with the Cambridge Southern Fringe and thus provides a key access point from the southwest. • Policy 80 sets out the Plan's ambition to prioritise access by sustainable modes of travel. Policy 80 specifically states that public transport has a "crucial role to play in meeting Cambridge's transport needs" and in particular that proposed developments should "minimise additional car traffic in the

[10] Greater Cambridge Greater Peterborough Enterprise Partnership – Strategic Economic Plan (2014)

[11] Cambridge City Council – Cambridge Local Plan 2014: Proposed Submission, July 2013

	surrounding area". A travel hub along this corridor has the potential to intercept Cambridge-bound traffic on the A10 and reduce disruptive on-street parking in impacted settlements. • Policy 81 concerns the transport impact of development and specifies that developments will only be permitted where they have an acceptable transport impact. The Foxton Travel Hub is expected to alleviate congestion on the A10 and on Cambridge's highway network by reducing the relative volume of cars travelling into Cambridge; thus, reducing the impacts of congestion on sustainable modes of transport and the attractiveness of the private car. • Policy 85 of the Local Plan concerns the impact of proposed development on local infrastructure, stating that there must be sufficient infrastructure capacity to support the new development. The proposed development will provide improved transport infrastructure to support new development in Cambridge City Centre, the Cambridge Northern Fringe and Cambridge Biomedical Campus; thus, supporting the growth directive of the local plan.
Wider points of relevance	• The Local Plan includes the provision for extension of park and ride services to Addenbrooke's Hospital and other Cambridge Southern Fringe developments, in order to meet the needs of the resident and working population. This supports objectives and goals in the plan such as supporting economic growth, minimising distances people need to travel by private car, and improving accessibility to jobs and services through the sustainable transport network.
South Cambridgeshire Local Plan (2018)[12]	
Description	• The South Cambridgeshire Local Plan is based on the three principles of sustainability including economic, social and environmental to ensure a competitive economy, healthy communities and protection of the environment.
Relevance to the corridor	• The Local Plan defines Foxton as a 'Group Village'. The Local Plan states that Group Villages only provide some of the basic day-to-day requirements of residents. To access more than basic services, residents of Group Villages have to travel outside of their villages; therefore, sustainable transport links are key to connecting residents with employment opportunities and services. • The Local Plan acknowledges that high levels of congestion exist on radial routes into Cambridge at peak times. • In paragraph 10.5, the Local Plan states that few rural parts of South Cambridgeshire are well served by rail, specifically referencing the A10 corridor both north and south of Cambridge.
Wider points of relevance	• The Local Plan states that improved access to stations and interchanges, including improved cycle access, can help encourage more people to cycle and more people to travel by train rather than car.

Source: Mott MacDonald

2.2.4.2 The role of the Cambridgeshire and Peterborough Combined Authority

The CPCA was established to pursue a devolution deal with Central Government that included the devolution of both decision-making powers and funding to the region. The CPCA is made up of eight partners[13] across Cambridgeshire and Peterborough and is led by an elected Mayor. As part of the devolution deal, the Mayor and CPCA were given powers over certain transport functions. These include:

- Duty to produce an LTP;
- Production of a Bus Strategy;
- Rights to franchise local bus services within its area, subject to the completion of the process, set out in the Bus Services Act 2017 powers to enter into quality bus partnerships and enhanced partnerships;
- Responsibility for the provision of bus information and the production of a bus information strategy;

[12] South Cambridgeshire District Council – South Cambridgeshire Local Plan 2018

[13] Cambridge City Council, Cambridgeshire County Council. East Cambridgeshire District Council, Fenland District Council, Huntingdonshire District Council, Peterborough City Council and South Cambridgeshire District Council.

- Powers to support bus services;
- Role of Travel Concession Authority; and,
- Financial powers to enable the funding of community transport.

Mayoral Interim Transport Strategy Statement

A key component of the CPCA and Mayor's transport powers is to produce an LTP. An interim LTP was approved by the CPCA Board in June 2017. This was followed up by the Mayoral Interim Transport Strategy Statement (MITTS) from the Mayor in May 2018. The MITTS set out the guiding principles of the new LTP, that include:

- Economic growth and opportunity by connecting dynamic workforce with a growing number of jobs;
- Equity to ensure that all areas of the CPCA can prosper, and;
- Environmental responsiveness by encouraging active and sustainable travel choices.

The MITTS's key primary goals and targets relevant to investment along the Royston to Cambridge corridor include:

- **Transforming public transport** – Optimising the rail network and creating a modern, reliable and responsive mobility and bus services that supports and complements other forms of public transport;
- **Expanding access** - connecting people with jobs and services that will enable businesses to grow; that addresses social exclusion; and supports the development of new housing and employment sites;
- **Effective travel choice** - providing residents and businesses with a public transport system that is the automatic choice for residents and businesses, and;
- **Creating a network fit for the future** - by adopting a longer-term perspective on transport we will build a network that meets the long-term needs of businesses and residents and ensure that shorter term interventions support these future aspirations.

The MITSS states that "*All schemes should look immediately at measures that will encourage people out of their cars by removing the opportunities for cars to park in and around our cities*". Hence, the mayoral vision for an "*excellent public transport system"* is one that "*provides the opportunity to travel without the car*".

The CPCA approved the MITSS at its meeting in May 2018 and committed the CPCA to undertaking a review of the features and timeframes for all transport corridors to ascertain their alignment with the document. The GCP is now working to the CPCA agreed transport plan and is pursuing schemes that can provide building blocks towards the Mayor's vision for the area.

In terms of park and ride and travel hub related content, the MITSS proposed that the park and ride elements of the GCP projects be "*implemented as temporary solutions to reflect the MITSS aspiration to connect the Metro stops with the wider population through innovative transit solutions and not the private car.*

Contrastingly the MITSS *"aspiration"* is far more aligned to development of new travel hubs and *"includes providing more infrastructure to support greater use of cycle and footpaths, and to put in place measures that move away from a reliance on private cars for short term and commuter journeys*".

Cambridgeshire and Peterborough Combined Authority Local Transport Plan (2020)

The CPCA LTP is the first combined LTP for Cambridgeshire and Peterborough. The LTP replaces the Mayoral Interim LTP, which was published in June 2017, and has been based upon the existing LTP's for Cambridgeshire (LTP3) and Peterborough (LTP4).

A 15-week consultation period on the CPCA draft LTP was held between June 2019 and September 2019. The purpose of the consultation was to allow members of the public, statutory bodies and Local Authorities to comment on the content of the Plan. Following this consultation, the CPCA LTP was adopted in February 2020.

The CPCA LTP describes how transport interventions can be used to address the current and future transport challenges and opportunities within Cambridgeshire and Peterborough. Specifically, the CPCA LTP sets out the policies and strategies required to secure growth and ensure that planned large-scale development can take place in a sustainable way.

The CPCA LTP is split into three parts:

- The 'Local Transport Plan' sets out the vision, goals and objectives, defining the strategic approach up to 2050;
- The 'Transport Delivery Plan' (2019-2035) summarises the projects that the CPCA will aim deliver over the lifetime of the LTP; and,
- The 'Policies' describe the requirements related to transport planning and design.

The CPCA's vision is *"To deliver a world-class transport network for Cambridgeshire and Peterborough that supports sustainable growth and opportunity for all"*; whilst the goals of the LTP are intended to outline (at a strategic level) the wider outcomes for the transport network in Cambridgeshire and Peterborough. The goals are consistent with the guiding principles outlined in the Mayoral Interim Transport Strategy Statement and Growth Ambition Statement. The goals are threefold:

- Economy: to deliver economic growth and opportunity for all out communities;
- Society: to provide an accessible transport system to ensure everyone can thrive and be healthy, and;
- Environment: to protect and enhance our environment and tackle climate change together.

The policies within the CPCA LTP relating to the Foxton Travel Hub are set out in Table 2.2. Each policy is associated with a given objective of the CPCA LTP or a given mode of transport.

Table 2.2: CPCA LTP policies relating to the Foxton Travel Hub

Policy theme	Description	Aims and Policies
2.2 Expanding labour markets	Enabling the transport network to increase the effective size of labour markets by reducing the burden on our transport networks during peak periods, reducing the need to travel and improving accessibility by public transport.	• Support measures to reduce peak demand on the highway network. • Improve the accessibility and connectivity of our public transport links to expand our labour market catchments. • Invest in our highway network to improve accessibility.
6.2 Transport pricing and affordability	Improving public transport to make it an affordable alternative to the car and increasing the affordability of travelling by bus and rail.	• Improve our public transport to provide an affordable alternative to the car. • Increase the affordability of traveling by bus and rail.

Policy theme	Description	Aims and Policies
10. Reducing the carbon emissions from travel	Reducing emissions by encouraging the uptake of new emissions-free technologies and encouraging sustainable alternatives to the private car.	• Utilising new technologies as they become available to minimise the environmental impact of transport. • Managing and reducing transport emissions. • Encouraging and enabling sustainable alternatives to the private car including reducing the need to travel.
13. Delivering a seamless public transport system	Exploring new methods of ticketing, improving journey information, supporting the delivery of new and improved integrated transport hubs and supporting additional park and ride.	• Exploring new methods of ticketing to improve the ease and affordability of travel, including across transport modes and operators. • Improve journey information to make it easier to travel by public transport. • Support the delivery of new and improved integrated, multi-modal transport hubs. • Support additional park and ride provision, in conjunction with CAM, where fully integrated into local transport networks.
15. Improving public transport in our cities	Improving the coverage, frequency, and reliability of all forms of public transport within cities to meet the expectations of residents, visitors and businesses	• Deliver transformational mass transit within our cities to support growth and deliver a step-change in accessibility. • Support measures to better manage demand for road space following the provision of high-quality public transport infrastructure

Source: CPCA LTP

The proposed Travel Hub scheme supports the policies outlined within the CPCA LTP because the scheme aims to improve access to high quality public transport on the A10 Royston to Cambridge corridor, which has the potential to reduce carbon emissions, expand labour markets and ultimately contribute to the vision of a seamless public transport system. Here, the provision of a high-quality transport interchange facility could help to intercept people who currently drive to Cambridge at an earlier point in their journey and enable them to more easily transfer onto public transport services. This will reduce demand for road space on the A10 and into Cambridge city centre and improve journey time reliability on the A10 Royston to Cambridge corridor.

The CPCA LTP refers to the Foxton Travel Hub development within 'Appendix A: High Level Delivery Plan'. The High-Level Delivery Plan (HDLP) provides supplementary information regarding the transport projects described within the plan. Information pertinent to the Foxton Travel Hub is summarised in Table 2.3 below.

Table 2.3: CPCA LTP - Appendix A: High Level Delivery Plan

Project	Description	Local Issues Addressed	Wider regional objectives
A10 Foxton Level Crossing and Travel Hub	• Provision of a highway bridge or an underpass to enable the closure of the level crossing on the A10 to the immediate south of Foxton Station • The GCP are also bringing forward proposals for a new travel hub (Inc. parking) at the station	• Local traffic congestion at Foxton Level Crossing • Poor road safety	• Embed a safe systems approach into all planning and transport operations to achieve Vision Zero – no fatalities or injuries • Build a resilient and adaptive network that is less susceptible to human and environmental disruption, improving journey time reliability
Timescale	**Delivery Partners**	**Status**	
2021-2025	• Cambridgeshire County Council • Network Rail	Costed but not yet committed	

Source: CPCA LTP

Beyond the formal policies and objectives, the CPCA LTP makes a number of points that are of relevance to the Foxton Travel Hub. Firstly, the CPCA LTP highlights the importance of improving journey time reliability along the A10 / M11 corridors into Cambridge City Centre. Here, the level crossing at Foxton is described as a 'pinch point' in the highway network that contributes to severe localised traffic congestion. The draft CPCA LTP also states that removing the problem may require a complementary initiative to avoid 'knock-on impacts' elsewhere on the network.

Providing additional transport interchange capacity in the form of a travel hub on the Royston to Cambridge corridor could help to reduce congestion within central Cambridge by providing a new, more sustainable, travel option.

The CPCA LTP also recognises the importance of rail to unlocking development within the region. The CPCA LTP states that rail usage is increasing within the CPCA area and suggests this trend should be encouraged and accommodated. Cambridge South station and East-West Rail are two projects that are referenced as being able to bring about additional rail capacity into the region. For example, the CPCA LTP supports the proposed development of Cambridge South station stating that it will improve inter-regional connectivity and provide important longer-distance commuting links into the Cambridge Biomedical Campus (CBC). To people who live to the southwest of Cambridge, a travel hub on the Royston to Cambridge corridor could provide a convenient access point to the CBC if Cambridge South is developed.

Alongside addressing local traffic congestion and improving road safety, the HLDP states that the Foxton Travel Hub aligns with the CPCA's wider regional objectives, which include:

- Embedding a safe systems approach into all planning and transport operations, and;
- Building a resilient and adaptive network that is less susceptible to human and environmental disruption.

Therefore, within the CPCA LTP, the Foxton Travel Hub contributes to 'Vision Zero', which sets out a vision for a transport system with no fatalities or injuries, and have a positive influence on journey time reliability, both along the A10 corridor and within Cambridge.

2.2.5 Project dependencies

The following section summarises the project dependencies associated with the Foxton Travel Hub. In accordance with the HM Treasury's *Guide to Developing the Project Business Case*[14], project dependencies are considered to be projects outside of the scope of the project, upon which the ultimate success of the project is dependent. Project dependencies are split into two categories 'inter-dependencies' and 'external dependencies', which are summarised in Table 2.4 below.

[14] HM Treasury (2018). Guide to Developing the Project Business Case.

Table 2.4: The definition of project dependencies

	Inter-dependencies	External dependencies
Summary	Dependencies between an organisation's other programmes and projects.	Dependencies outside the project environment.
Explanation	These are the dependencies that are external to the project but are still within the perimeters of the organisation's project and project management environment, and most likely linked to the scope of another project or project within the strategic portfolio.	These are the dependencies that extend beyond the boundaries of all the projects into other parts of the organisation or even other organisations. These dependencies are outside the control of the project management environment; potentially in business operations, partnering organisations and include external dynamics, such as legislation, strategic decisions and approvals.

Source: HM Treasury (2018)

2.2.5.1 Inter-dependencies

The purpose of this section is to demonstrate that the proposed Travel Hub scheme aligns with other projects and programmes in the GCP's strategic portfolio.

The Foxton Travel Hub is one scheme within a larger strategic package of transport improvements being undertaken as a result of City Deal funding, among others which include:

- Cambridge South East Transport (CSET), Phase 1 and Phase 2;
- Cambridge South West Travel Hub (CSWTH);
- City Access, and;
- Cambourne to Cambridge Public Transport Route.

Although the GCP schemes are not dependent on one another for delivery, they are interrelated in the sense that they form the component parts of a wider strategy to deliver economic growth.

The GCP schemes that have the potential to influence the demand for the travel hub along the Royston to Cambridge corridor include the CSWTH, the Cambridge City Access Scheme and the Melbourn Greenway. The following section summarises these complementary schemes and how they relate to the aims of the proposed Foxton Travel Hub scheme. Also, if further measures to reduce private car accessibility to Cambridge city centre were to be introduced, these too could have implications for travel demand at Foxton.

Cambridge South West Travel Hub

The CSWTH scheme is a component of the larger GCP West of Cambridge Package; the West of Cambridge package aims to provide improved park and ride, cycling and pedestrian facilities to the west of Cambridge

The CSWTH includes the following key measures that aim to relieve congestion and provide additional capacity at Junction 11 and within the CSF, allowing for continued economic growth in the area:

- Major expansion to park and ride and travel hub type facilities in close proximity to M11 Junction 11;
- Capacity improvements at M11 Junction 11;
- High quality provision to encourage walking and cycling between the new Travel Hub and onward connections into Cambridge, and;

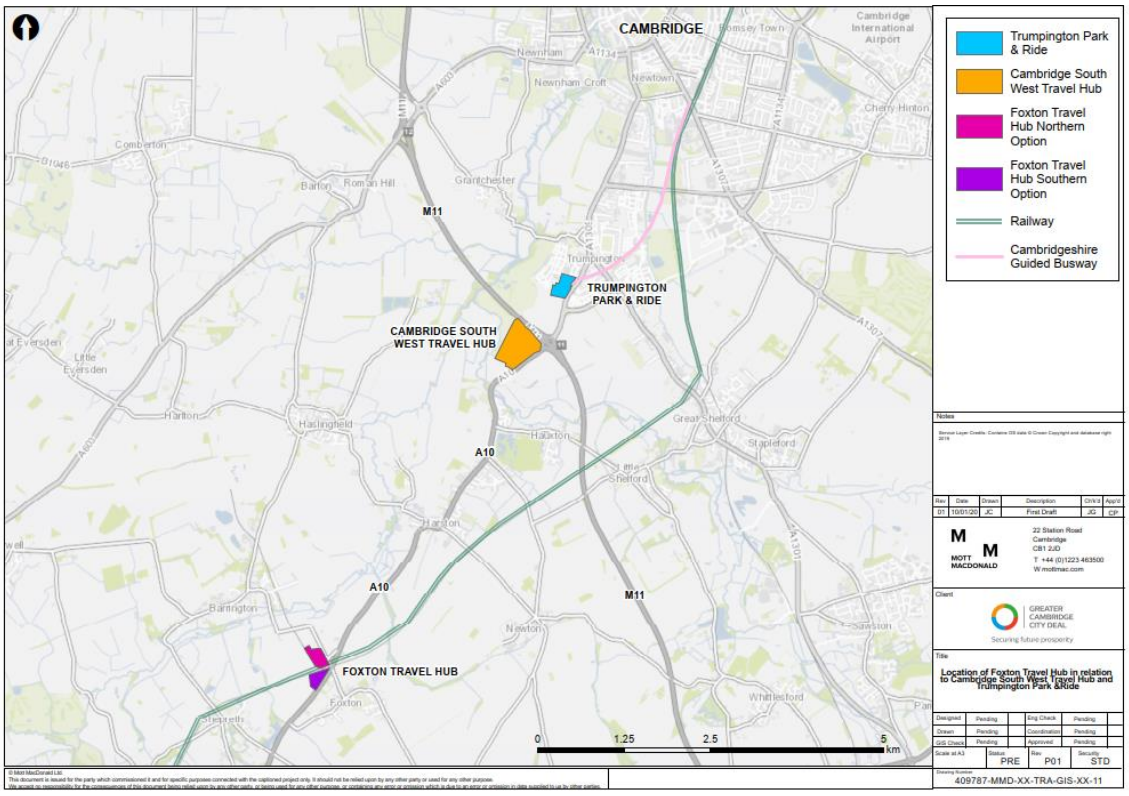
- Enhanced high quality public transport services between the Travel Hub and Cambridge City Centre / CBC.

The CSWTH is currently at Stage 3 of the Business Case Process: procuring the scheme and developing the Full Business Case (FBC). The CSWTH scheme is proposed to open in 2023, approximately one year prior to the proposed opening date of the Foxton Travel Hub.

The CSWTH scheme is a parallel project to the Foxton Travel Hub scheme. Given that the scheme's primary aim is to capture vehicles either leaving the M11 and/or the A10 before they enter the A1309 Hauxton Road corridor into Cambridge, both schemes aim to reduce congestion, promote sustainable multimodal travel and meet future demand for park and ride type trips to the southwest of Cambridge. Whilst CSWTH aims to intercept trips from the M11 and utilise bus based public transport to serve areas to the south of Cambridge City Centre and the city centre itself, Foxton Travel Hub aims to intercept trips further south west along the A10 and utilise the rail network to serve additional areas to the north of Cambridge.

Figure 2.1 illustrates the geographic location of the two proposed schemes and the existing Trumpington Park & Ride site.

Figure 2.1: The location of Foxton Travel Hub in relation to CSWTH



Source: Mott MacDonald

Cambridge City Access Strategy

The Foxton Travel Hub scheme is also being developed to align with, and compliment, the measures included in the emerging Cambridge City Access Strategy (henceforth, City Access). City Access is a GCP initiative designed to reduce congestion, deliver a step-change in public transport, cycling and walking, and significantly improve air quality in Greater Cambridge.

In January 2020, the GCP's Director of Transport presented a Paper[15] to the Greater Cambridge Partnership Joint Assembly, which summarised the technical and analytical work, alongside the recommendations of the Cambridge Citizens' Assembly, to inform the emerging City Access Strategy.

The GCP Paper highlights that "traffic conditions in, and on the approach to Cambridge are bad, and worsening". As a result, the Paper states that existing traffic conditions not only "cause delay and misery for the people of Greater Cambridge" but also prevent business and leisure trips from being made into and around Cambridge quickly and reliably.

The need to address poor air quality in Greater Cambridge is also central to the Paper; here, it is recognised that poor air quality contributes to 106 deaths annually across Greater Cambridge. The Paper also highlights that high levels of car use mean carbon emissions per capita in Cambridgeshire are 150% of the national average and concludes that such conditions are likely to worsen without significant intervention.

In light of the traffic conditions and air quality issues discussed above, the Paper recommends that substantial changes are required, and states that "we need significantly more people travelling by public transport, cycling and walking and significantly fewer people travelling by car" in order to achieve a "world-class public transport system".

In *Section 6 – Public transport, cycling and walking improvements,* the Paper states that new transport infrastructure is required to substantially enhance the current offer and form a "cohesive network throughout the Greater Cambridge area and provide links further afield". The future transport network of Greater Cambridge includes the following recommendations of relevance to the Foxton Travel Hub:

- **Over 10,000 additional Park & Ride spaces** – enabling people from across the area to easily access the new core network; which will be,
- **Complemented by a wider step-change in public transport services across the area** – investment in existing key public transport routes, with packages of works to improve the frequency, reliability, practicality and attractiveness of the local public transport offer.

Section 10 of the report: *Phasing and implementation – approach and suggested immediate action*, provides a phased summary of potential interventions crucial to the future of the City Access package. A summary of immediate recommended actions that are relevant to the Foxton Travel Hub are provided below:

- Increased Park & Ride capacity, through additions to existing sites and delivery of new sites;
- Development of an integrated parking strategy, considering on-street, off-street and Park & Ride provision; and,
- Short term network capacity improvements through upgrading signals, prioritising buses and potential road access restrictions.

In summary, the Foxton Travel Hub could increase the potential for multimodal transport interchange, and enable residents, visitors and business to more easily access existing high

[15] Public Transport Improvements and City Access Strategy: Update on Technical Work and Next Steps. GCP. 30 Jan 2020.

quality public transport services; these qualities align with the GCP's vision of the Greater Cambridge Future Transport Network in 2050, and the aspirations of the City Access Strategy which are set out below:

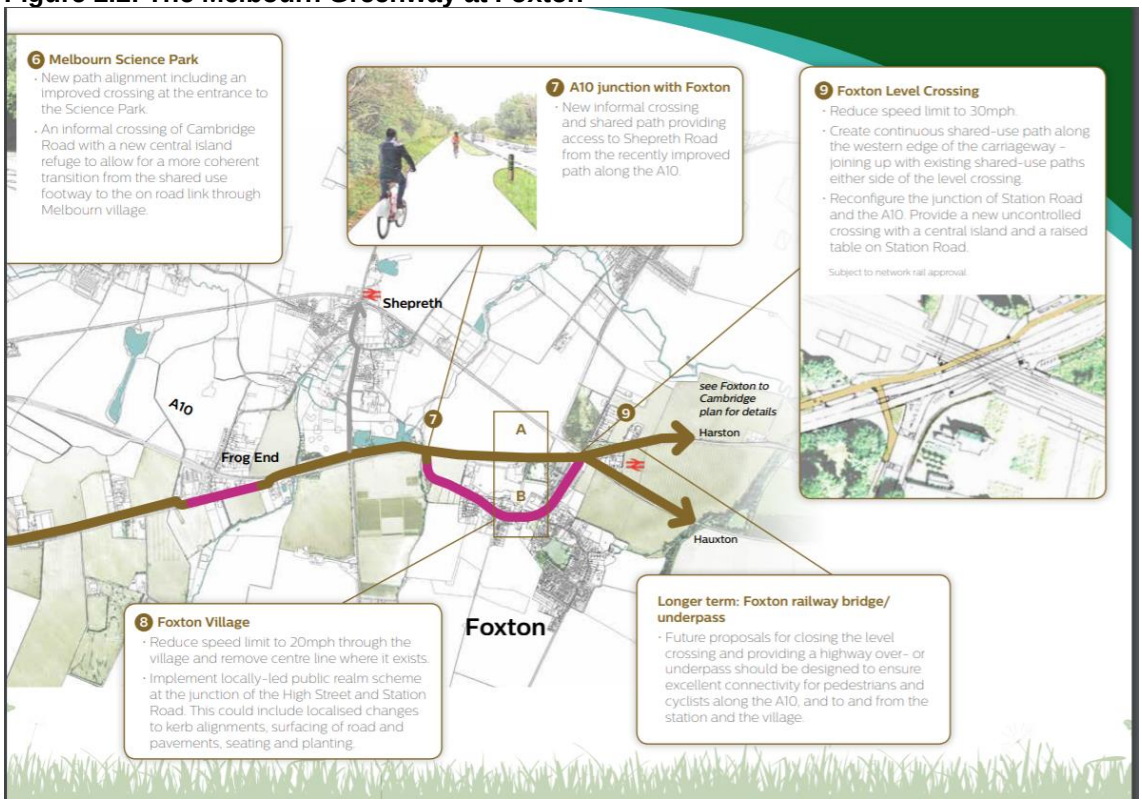
- Reduced congestion within the city centre;
- Safer, easier and more attractive walking and cycling journeys;
- Reduced pollution and cleaner air;
- Fewer stationary or slow-moving vehicles;
- More cycling and pedestrian infrastructure;
- Preservation and enhancement of Cambridge's historic environment;
- Improvements to the quality and reliability of public transport; and,
- Continued growth in cycling.

Melbourn Greenway

The Melbourn Greenway is a proposed shared footway / cycleway that would enable cyclists, walkers and equestrians to travel sustainably from Melbourn into Cambridge.

The Melbourn Greenway is split into three sections; the middle section passes through the village of Foxton. At Foxton, the route follows the A10 carriageway and passes through the Foxton level crossing, as shown in Figure 2.2.

Figure 2.2: The Melbourn Greenway at Foxton



Source: GCP

Proposals for the Melbourn Greenway proximate to Foxton include the provision of a new informal crossing and a shared path providing access to Shepreth Road from the recently improved path along the A10.

At the Foxton level crossing the scheme proposes to reduce the speed limit of the A10 to 30mph and reconfigure the Station Road / A10 junction. Proposals for the Station Road / A10 junction include potentially providing a new uncontrolled crossing with a central island and a raised table on Station Road. The proposal to reduce the speed limit on the A10 is also being considered as part of the Foxton Travel Hub scheme. Discussions regarding a potential change of speed on the A10 have taken place between the project team and members of the Local Highway Authority and the Cambridgeshire Constabulary; the outcomes of these discussions are summarised in Section 2.3.

The Melbourn Greenway scheme also proposes to create a continuous shared-use path along the western edge of the A10 carriageway. The addition of a new shared-use path will connect the two-existing shared-use paths either side of the level crossing.

The purpose of the scheme is to improve people's options for sustainable travel to and from Cambridge and between the corridor's settlements and local rail stations, enabling more people to travel between their homes, jobs and services by non-car modes. Hence, the Melbourn Greenway is aligned with the sustainable travel aims central to the Foxton Travel Hub scheme. In particular, the proposed improvements to pedestrian and cycle infrastructure along the A10, at the Station Road / Royston Road (A10) junction and the Foxton level crossing, have the potential to enhance the accessibility of the Foxton Travel Hub to people from surrounding villages by active modes.

2.2.5.2 External dependencies

The purpose of this section is to summarise the projects that are outside the control of the GCP's project management environment that have the capacity to influence the success of the project. The connectedness of a number of other transport schemes, which fall outside of the GCP's portfolio of schemes, are considered below:

Table 2.5: Royston to Cambridge corridor - complementary transport schemes & investment

Scheme	How the scheme and Foxton Travel Hub complement one another
Foxton Level Crossing Bypass Scheme • The A10 Foxton Level Crossing Bypass scheme involves the provision of infrastructure to enable the closure of the level crossing on the A10 to the immediate south of Foxton station. • The level crossing is currently regarded as a congestion pinch point on the A10, causing journey time delays for those wishing to access and egress Cambridge. • Network Rail previously considered the replacement of the level crossing with a bypass or underpass in a GRIP2 report in 2013. • GCP developed an SOBC for the scheme; however, the GCP Executive Board subsequently decided to refer the scheme to the CA for their consideration as the Local Transport Authority. • The Bypass scheme is listed as a project in the High Level Delivery Plan of CPCA's Local Transport Plan. At present there is no timescale for the delivery of the scheme, and it is not considered to be a priority for the CPCA.	• Both proposed schemes aim to improve the flow of traffic and reduce congestion, and thereby improve journey time delays on the A10. • The Scheme could potentially be accommodated by the Travel Hub site footprint should the scheme be progressed.

Scheme	How the scheme and Foxton Travel Hub complement one another
Cambridge South Train Station • The proposed Cambridge South station would be located adjacent to the internationally significant Cambridge Biomedical Campus (CBC), providing access to the Cambridge Southern Fringe development areas. • The Royal Papworth Hospital relocated to the CBC in 2019 and AstraZeneca's new global headquarters and strategic R&D centre will become operational in 2020. • It is understood that the station would support connections across Cambridgeshire and East Anglia, and provide for journeys to Stansted Airport, Kings Cross, Liverpool Street, and in future, a range of destinations on route to Oxford via the proposed East West Rail scheme.	• Due to its proposed strategic location on the western edge of the CBC, Cambridge South Station would play a fundamental role in helping deliver sustainable growth in the Cambridge Southern Fringe development area. • Specifically, the station would enhance sustainable transport capacity and improve access to the site by non-car modes. The station would improve connectivity between the CBC and international gateways, such as London Stansted Airport • Coupled with a new travel hub at Foxton Station, the proposed Cambridge South Station should make the CBC easier to reach for those living near Foxton and along the Cambridge to Royston corridor, improving access to new and increasing employment opportunities. • A new station is also likely to remove car trips from the M11 and A10 corridors. • Encouraging car users to access the Cambridge Southern Fringe development areas by rail should also help to ease congestion and increase available highway capacity.
East West Rail • East West Rail is a major rail infrastructure project that seeks to re-establish a rail link between Cambridge and Oxford to improve connections between East Anglia and central, southern and western England. • The proposed East West Rail route falls into three distinct sections: – Western Section (Oxford to Bedford and Milton Keynes to London Marylebone via Aylesbury); – Central Section (Bedford to Cambridge); and, – Eastern Section (Cambridge to Norwich and Ipswich)	• Depending on the alignment of the scheme, the proposals for East-West Rail could impact the Cambridge to Royston corridor by increasing the frequency and capacity of rail services along parts of the existing Cambridge Line. • Exploiting the opportunities offered by a wider array of rail linkages could help meet future transport demand associated with job growth, and address capacity issues along the A10 by providing viable rail alternatives for a broader range of commuters.
A505 Corridor Improvement Study • The A505 Corridor Improvement Study (henceforth, the A505 Study) focuses on the section of the A505 between its junction with the A10 at Royston in Hertfordshire, which is approximately 8km to the southwest of Foxton station, and the A11 at Abington in Cambridgeshire. • The A505 corridor provides access onto the motorway network at several key locations, including the M11 at junction 10, the A1(M) at junction 9, and the M1 at junction 11. The A505 also connects with other important north-south corridors that form part of the Strategic Road Network (SRN), notably the A5, A11 and, of importance to the Foxton Travel Hub scheme, the A10. • The A505 corridor study is included in the CPCA LTP, which states that "We [the CPCA] will fund a strategic economic growth and transport study to explore the case for multi-modal investment in the A505 corridor, to improve orbital accessibility and alleviate	• The Foxton Travel Hub will enable users to the southwest of Cambridge to access Cambridge North, Cambridge, and, if developed, the proposed Cambridge South station, and their associated employment clusters, via existing rail services. Given the trip origins and associated travel patterns of people that are likely to use the A505 corridor to access these locations, it is unlikely that the A505 scheme would remove trips that might otherwise use the Foxton Travel Hub. • Therefore, improvements to the A505 corridor would support access to the Cambridge Bio-tech cluster and the Southern Fringe, without impacting the anticipated patronage at the Foxton Travel Hub.

Scheme	How the scheme and Foxton Travel Hub complement one another
congestion". The CPCA LTP recognises that the A505 is one of the busiest roads in Cambridgeshire and provides an important strategic function, providing access to the wider biotech cluster to the south of Cambridge. • The CPCA LTP states that the A505 improvement measures have the potential to enhance the accessibility of the CBC, the Wellcome Genome Campus, Babraham Research Campus and Granta Park. Enhanced access to the biotech cluster could therefore support the creation of high-value jobs, as well as improving connectivity towards Haverhill and supporting future housing growth along the corridor.	

Source: Mott MacDonald

2.2.6 Constraints

This section considers the factors which could constrain the ability to deliver the Foxton Travel Hub scheme, or which could affect the choice of options or the timescale for delivery. The following types of 'high level' constraints are considered:

- Physical constraints;
- Environmental constraints;
- Financial constraints;
- Contractual constraints; and,
- Public acceptability constraints.

2.2.6.1 Physical constraints

The key physical constraints are:

- **Vehicle access to Foxton Travel Hub**: the A10 experiences a high volume of traffic flow, which leads to queuing at the Foxton Level Crossing during the AM and PM peak periods. The proposed access arrangements for the travel hub also have the potential to interact with the level crossing, therefore the positioning and design of this will need to be carefully considered and agreed by the scheme's designers through engagement with Network Rail, and CCC as local highway authority. An appropriate access junction from the site into the A10 will be designed, with the type of junction being determined by assessing the output of the transport modelling and with reference to the Design Manual for Roads and Bridges (DMRB), Volume 6, Road Geometry. This will accommodate the need for Travel Hub users to access and egress the site safely and efficiently. Initial observations made by the CCC Road Safety Team suggested that the proposed highway and pedestrian access solutions of both the Northern and Southern Options are appropriate in principle.
- **Pedestrian access to Foxton station**: the decoupling of the proposed A10 Level Crossing Bypass and the Foxton Travel Hub schemes raised additional issues relating to the provision of pedestrian crossing facilities across the A10 and Cambridge to London Rail Line at Foxton. Here, users will now have to cross the A10, and use the existing level crossing facility to move between northbound and southbound platforms. However, discussions are ongoing with Network Rail regarding the potential to provide a grade-separated pedestrian crossing over the A10 and railway to connect the travel hub with Foxton Station. Further consideration to pedestrian access between the proposed Travel Hub and Foxton station is given in Section 2.7.

- **Existing development**: the scheme has been designed to minimise impacts on existing buildings to ensure that they can continue to be accessed.
- **Planned development**: the scheme will be developed to accommodate any potential development envisaged in the South Cambridgeshire Local Plan and will ensure continued cooperation with Network Rail with regard to the Cambridge Re-signalling scheme, which is discussed in further detail in Section 2.7.

2.2.6.2 Environmental constraints

The principal environmental constraints are as follows:

- **Air quality**: there is no evidence of any current air quality issues along the A10 corridor between Royston and Cambridge, although further research may be required to confirm this. Further detail pertaining to potential air quality impacts of the scheme options is provided in Section 2.7.
- **Noise**: the expected noise impacts of the proposed development range from Moderate Adverse to Neutral depending on which site location is taken forward. Noise impacts are likely to arise from the potential noise disturbance from vehicle movement within the proposed travel hub. The Moderate Adverse impacts are in relation to potential increase in traffic on Barrington Road resulting in an adverse impact on the residents along this road if the travel hub were to be sited near there. Further detail pertaining to the scheme's potential noise impact is provided in Section 2.7.
- **Historic Environment**: the boundary of the Foxton Conservation Area was extended in 2018, to include the 'special qualities' that exist in Foxton:
  - The presence of a travel hub is, however, unlikely to impact on the setting or heritage value of nearby statutory designated heritage assets;
  - Further detail pertaining to the schemes potential impact on the historic environment is provided in Section 2.7.
- **Landscape**: The results of a site Landscape Impact Assessment demonstrated that the proposed options for the travel hub are already partially screened by existing vegetation, and that proposed mitigation planting would further help screen the new site.
- **Biodiversity**: The assessment of the impact of the proposed development on biodiversity is based on a review of the local environmental records and a site visit, to evaluate species potential at each site.
  - There is no Site of Special Scientific Interest (SSSI) in proximity to the proposed option locations, however, depending on the preferred option, there may be a potential for protected species.
  - The SCDC adopted policy on biodiversity (NE/6) states that biodiversity should be preserved and protected from inappropriate development and to enhance biodiversity where possible. The scheme's approach to the preservation and enhancement of biodiversity is provided in the Economic Case.
- **Flood risk**: the proposed Foxton option locations are judged to have a minor ground water vulnerability (see Section 2.7 for further details) and neither site is located in Flood Zone 3.

2.2.6.3 Financial constraints

Details of the way the scheme is to be financed are given in the Commercial and Financial Cases (Sections 4 and 5). Apart from the fact that the scheme requires government funding via the Greater Cambridge City Deal, there are no financial constraints on its delivery. More

information on the Greater Cambridge City Deal and the funding profile of the scheme is provided in Section 5, the Financial Case.

2.2.6.4 Contractual constraints

Details of the arrangements for delivery of the scheme are given in the Management Case (Section 6). The key constraints on project delivery are captured in the Project's Issues Log, which is regularly reviewed and updated.

2.2.6.5 Public acceptability constraints

Based on the results of the six-week public consultation between September and October 2019, there is neither clear public support, nor opposition to, the provision of a travel hub near Foxton station. In response to the question: "Considering the information presented in this consultation, which, if any, of the Foxton Travel Hub options would be your preferred choice" 40% of people selected the Southern Option and 13% selected the Northern Option; however, 41% of people answered neither (further detail on the short listed options is set out in Section 2.7). The responses are summarised in Table 2.6.

Table 2.6: Public consultation responses to site preference question

Site Preference	Percentage
Northern	13%
Southern	40%
Neither	41%
No preference	7%
Total	100%

Source: Mott MacDonald

The results presented above suggest that public acceptability has the potential to be a constraint on the scheme and that it might be difficult to gain public support for the Northern Option.

What does this mean for Foxton?

The physical constraints on the delivery of the Foxton Travel Hub mainly relate to the need to provide appropriate vehicle access to the site, and pedestrian access between the site and Foxton station. However, initial observations made by the CCC Road Safety Team suggested that the proposed highway and pedestrian access solutions associated with the two Foxton options are appropriate in principle.

There are few major environmental constraints associated with the scheme. Despite this, care needs to be taken to manage the visual impact of the Travel Hub, especially for residents on Barrington Road should the Northern Option become the preferred option.

The Foxton Travel Hub has no significant contractual or financial constraints, apart from the reliance on City Deal funding.

Although there is neither strong public support, nor opposition to the scheme, the Southern Option is clearly the favoured of the two options. The consultees' comments presented in Section 2.3 have accordingly been used to inform the options development process, in order to ensure the scheme can address any outstanding concerns.

2.3 Stakeholder engagement

The key stakeholders for the proposed Foxton Travel Hub scheme are listed below; the following list is not exhaustive:

- The East West Rail Consortium;
- Cambridge Biomedical Campus;
- Cambridgeshire Constabulary;
- Hertfordshire County Council;
- Environment Agency;
- Natural England;
- Landowners;
- Lead Local Flood Authority;
- Cambridge City Council;
- South Cambridgeshire District Council;
- Cambridgeshire and Peterborough Combined Authority;
- Cambridgeshire County Council;
- Network Rail;
- Property developer – Axis;
- Rail operator - Govia Thameslink;
- Bus operator – Stagecoach;
- Parish council – Foxton;
- User groups – bus & rail, and;
- Emergency services.

2.3.1 Stakeholder engagement process

Engagement and communication with key stakeholders is an essential element of the planning process for major transport schemes, such as the Foxton Travel Hub scheme. Since the project's inception in 2018, an engagement process with key stakeholders has taken place producing a range of feedback that has been incorporated into the business case process. To ensure a formal record of consultation is retained, a Record of Stakeholder Engagement (RSE) report has been prepared to accompany this OBC (Appendix B).

Table 2.7 summarises consultation that has taken place, the outcome of the engagement and its impact on scheme development. The table also summarises engagement that is likely in the future and what is hoped to be gained from said engagement.

Table 2.7: Consultation and engagement pathway

Consultation	Year	Outcome/ Impact on Scheme Development
Early Engagement with Key Stakeholders	2019	• To outline option locations for the scheme. • To gain initial feedback on the options. • Feedback helps guide the next steps of consultation.
Public Consultation	2019	• To present the shortlisted options. • To obtain general feedback on the options and the scheme. • To identify additional/alternative options. • To identify potential alterations to options in advance of full appraisal.
Further Stakeholder Engagement	2019 / Early 2020	• To assist in identifying a preferred option following public consultation. • This stage has been undertaken as a series of small workshops with key stakeholders.

Source: Mott MacDonald

The first stage of the early engagement phase aimed to assist the project team in the development of scheme options. This involved convening a meeting with Foxton Parish Council to enable representation of the Parish Council, residents and elected representatives. The meeting initiated a formal dialogue between the project team and local stakeholders and was used to provide initial comment on the proposals.

In addition to this meeting, a series of one-to-one meetings with the statutory consultees and wider interest groups listed in Section 2.3 were convened. The aim of these meetings was to keep key stakeholders and external bodies informed of project progress and to receive feedback on scheme proposals

The structure of the meetings ensured that key stakeholders were made fully aware of any proposals that may impact their operations. Stakeholders were then provided with an opportunity to discuss any issues and concerns with the project team in detail. Hence, the process also offered the opportunity for the project team to compile direct feedback on proposals.

Following the public consultation, there have been several further meetings with stakeholders to discuss the outcomes of the consultation and to assist in identifying a preferred option. To date, the Foxton team has convened with the Local Planning Authority (LPA), Network Rail, Foxton Parish Council and the Cambridgeshire Constabulary to discuss design changes following public consultation. In addition, a number of meetings have been held with the Axis Property Group who represent the landowners of the respective Northern and Southern sites. Further details of this engagement are available in the Consultation Report, which is appended to this report in Appendix C.

2.3.2 Results of stakeholder engagement to date

The results of the stakeholder engagement process were grouped into several themes, which are set out below in Table 2.8. The feedback captured in Table 2.8 has been used to inform the scheme option assessment, which is presented in Section 2.7.

Table 2.8: Results of stakeholder engagement

Category	Summary of Feedback
Quality of life	• Concerns were raised about the visual impact of a travel hub, in particular the 'solar carports' from the A10 and surrounding dwellings.
Route Users	• Discussions are ongoing with Network Rail regarding potential for a grade-separated pedestrian crossing over the A10 and railway to join up the travel hub with Foxton Station. • Respondents suggested extra ticket machines should be provided to accommodate demand on both platforms.
Safety	• Concerns were raised over pedestrian and cyclists having to cross the A10 at an uncontrolled crossing point in order to access the Foxton Travel Hub/Station. • Discussions are ongoing with Cambridgeshire County Council and the Cambridgeshire Constabulary regarding a potential reduction in speed limits on the A10.
Congestion	• There were concerns that additional traffic associated with the proposed car park could cause further congestion. • There were also concerns over congestion whilst works were being progressed.
Cost	• The costs of the scheme, and the need to minimise them, were raised.
Environmental	• Concerns were raised about the impact the proposed Travel Hub would have on local air and light pollution. Several respondents raised concerns about the impact of the scheme on the proposed Foxton farmland character area.
General	• Many respondents expressed support for the principle of the scheme but expressed concerns about the location and size of the proposed Travel Hub and the impact it will have on local residents, traffic flows on the A10 and the character of the village environment. • The term 'travel hub' was seen to be misleading. Some respondents suggested it implied greater interchange opportunities were available than proposed in the consultation materials.

Source: Mott MacDonald

2.3.3 Summary of public consultation to date

The public consultation took place for a six-week period between the 9th September and 21st October 2019 in which respondents were asked to return a questionnaire, or email responses to the GCP. Events to promote the consultation occurred at the CBC, Foxton Station, Foxton Village Hall and Melbourn Community Hub during this time period. In addition, promotional material was sent out via email, social media and through letterboxes.

In total, there were 217 responses to the public consultation; 52% of whom were residents of Foxton and the surrounding villages.

A summary of the responses is provided below, grouped into the same themes used above.

Table 2.9: Summary of Public Consultation

Category	Summary of Feedback
Quality of life	• Residents who live near to the site had concerns about the visual impact of the car park, increased noise pollution, air quality degradation and increased delay when accessing and egressing Station Road, Foxton.
Route Users	• A bus interchange should be included in the design to improve interchange facilities. • The provision of cycle parking in the area should be increased. • Extra ticket machines should be provided to accommodate demand on both platforms.
Safety	• Concerns were raised over pedestrian and cyclists having to cross the A10 at an uncontrolled crossing point in order to access Foxton Travel Hub/Station. • The crossing point proposed prior to the public consultation is not deemed safe due to the speed of vehicles and the width of the refuge island.
Congestion	• There were concerns that additional traffic associated with the proposed car park could cause further congestion.
Cost	• The costs of the scheme, and the need to minimise them, were raised.
Environmental	• There were concerns over the impact a car park would have on local air and light pollution. Several respondents raised concerns about any impact of the scheme on the proposed Foxton farmland character area
General	• Respondents displayed general support for the proposed Travel Hub scheme but expressed concerns about the location of the car park and the impact it will have on local residents and the village environment. • The term 'travel hub' was regarded as misleading as it implies greater interchange opportunities than proposed in the consultation, which is felt to be 'just a car park'. • Many respondents were confused over the delivery process of the Foxton Travel Hub and how it links to a potential A10 Level Crossing bypass.

Source: Mott MacDonald

Strategic Context Summary

Greater Cambridge is one of the most successful and fastest growing economies in the UK, driven to a large extent by its high-tech and biotech industries. The city of Cambridge in particular, is a world-renowned centre for research, innovation and technology, with significant levels of inward investment creating jobs and prosperity. For example, the Cambridge Southern Fringe is home to the internationally significant Cambridge Biomedical Campus, which is expected to employ 30,000 people by 2031.

Despite Cambridge's economic success, the city faces supply side threats to its economic growth in the future; these threats include growing highways congestion. Therefore, investments in transport infrastructure will be critical to ensure issues relating to transport network capacity, high congestion levels and poor reliability issues are addressed. Enhancements to transport interchange capacity along the Royston to Cambridge corridor thus has the potential to further support economic growth within the Cambridge Southern Fringe and enhance the quality of life of people living in South Cambridgeshire.

A range of dependencies and constraints have been identified in the strategic context. The key outstanding issues relate to pedestrian and vehicle access to the Proposed Travel Hub and between the Travel Hub and Foxton station. Regarding the public acceptability of the scheme, there is not strong public support for the scheme; however, the Southern Option is clearly the favoured of the two options. The comments of consultees' have been used to inform the options development process to ensure the scheme can address any outstanding concerns where appropriate.

2.4 The case for change

The following section revisits the case for change for the proposed Foxton Travel Hub project provided in the SOBC. This section sets out how the direction of the scheme has evolved following the approval of the SOBC by the GCP Executive Board in March 2019.

The case for change sets out the business needs for the proposed investment. To identify and refine these business needs, the report first provides a summary of existing arrangements, and the associated issues with the service provision along the study corridor. This section sets out the key service requirements needed to bridge the service gap, and the associated level of coverage required to deem the project a success.

2.4.1 Existing arrangements

The following section provides a summary of the baseline socio-economic conditions and the policy environment within which the project is situated. The existing arrangements thus describe what is currently happening in the study corridor and provides the baseline for measuring the potential improvement and Value for Money (VfM) associated with each option (the scheme's VfM is covered in detail in the Economic Case – Section 3).

A more in-depth analysis of the baseline economic conditions for the proposed Foxton Travel Hub is provided in the Strategic Economic Narrative report, which is included in Appendix D.

2.4.1.1 Greater Cambridge economy

Greater Cambridge is one of the most successful and fastest growing economies in the UK, which is driven to a large extent by its thriving high-tech and biotech industries. Regionally, Greater Cambridge is a key driver of the CPCA economy, representing[16]:

- 33% of the total population;
- 42% of total employees; and,
- 46% of all GVA.

In all key labour market and productivity indicators, Greater Cambridge outperforms the CPCA, regional and national averages including:

- **Very high levels of economic participation**, with economic activity and employment rates substantially higher than the comparator areas despite a high student population.
- **Very low levels of unemployment**, at 2.2% (in 2019) compared to 4.2% nationally. South Cambridgeshire has the fifth lowest level of unemployment of all 326 districts in England[17].
- **High levels of productivity**, measured by GVA per worker, that exceed the national average by over £8,000, driven by a very high proportion of employment within knowledge intensive sectors, at 23.4% compared to 10.1% nationally. This is also reflected in the very

[16] Figures calculated from Population Estimates, Business Register and Employment Survey (BRES), Regional Accounts, Workforce Jobs and Annual Population Survey (APS), all ONS.

[17] Based on % of 16-64 population unemployed, using Annual Population Survey (APS), ONS, 2019

high level of workplace wages, an average of £40,500 per annum (compared to £35,800 nationally)[16].

- This economic success and productivity is underpinned by the **very high skills levels of the workforce.** For example, 61.5% of Cambridge residents are qualified to NVQ4 (degree or above); this makes Cambridge the most educationally 'qualified' city in the UK [18].

The continued strong performance of the Greater Cambridge economy, and the committed and proposed inward investment in the area, shows there is no sign of investors' demand to locate and invest in Greater Cambridge weakening. For that reason, Greater Cambridge has significant potential to grow further.

Table 2.10 below compares growth in Cambridge to local, regional and national data based on a range of headline statistics taken from datasets within the last three years. Each statistical measure has been taken from the latest available dataset (as of January 2020) and are therefore not all within the same year.

Table 2.10: Headline statistics comparing Cambridge and surrounding authorities

	Cambridge	South Cambs	Greater Cambridge	CPCA	East	England and Wales
Core Indicators						
Population, 000s, 2018	125.8	157.5	283.3	852.5	6,201.2	59,115.8
Employees, 000s, 2019 (workplace based aged 16-64)	140.2	50.0	190.2	452.8	2,693.3	27,551.0
GVA*, £m, 2017	5,592	5,737	11,330	24,552	147,724	1,695,228
Labour Market						
Economic activity rate (16-64 population), 2019	81.1%	86%	83.6%	82.6%	80.9%	79.0%
Resident employment rate (16-64 population), 2019	80.3%	84.5%	82.4%	79.5%	78.3%	75.7%
Unemployment (aged 16-64), 2019	2.5%	1.8%	2.2%	3.7%	3.2%	4.2%
Workplace wages, annual, 2019	£34,768	£39,541	£33,929	£30,337	£28,908	£30,990
Productivity						
GVA per capita*, £000, 2013 prices, 2017	41.8	36.4	38.9	28.6	23.9	25.7
GVA per worker*, £000, 2013 prices, 2017	50.21	66.10	57.16	50.68	47.06	48.99
% employed in knowledge intensive sectors	17.0%	31.9%	23.4%	14.3%	10.4%	10.1%
% residents aged 16-64 qualified to NVQ4+ (2018)	61.5%	51.4%	56.5%	40.2%	35.2%	38.8%

Sources: Population Estimates, Business Register and Employment Survey (BRES), Regional Accounts, Workforce Jobs and Annual Population Survey (APS), all ONS data. *GVA based on EEFM model and relates to UK rather than England & Wales. *Knowledge intensive sectors* based on high tech manufacturing and service-related activities within the high tech and biotech industries. NVQ4+ refers to those educated to degree level or equivalent.

[18] Figures calculated from Annual Population Survey, ONS, 2018

The continued strong performance of the Greater Cambridge economy, and the committed and proposed inward investment in the area, shows there is no sign of investors' demand to locate and invest in Greater Cambridge weakening.

For that reason, Greater Cambridge has significant potential to grow further. However, the area faces supply-side threats to its economic growth, evidenced in part by the increasing prevalence of disruptive congestion. Greater Cambridge's recent economic success is, in major part, founded upon a connectedness between entrepreneurs, businesses and academia, which has allowed overlapping networks to develop, and has facilitated a culture of cooperation and cross-fertilisation.

Investment in transport and infrastructure to provide improved sustainable links between housing and employment areas will be key to underpinning both the existing economic success of the area and supporting future growth.

As part of the City Deal agreed with government in 2014, the GCP set out their growth targets for an additional:

- **33,500 dwellings**[19], and:
- **44,100 jobs** between 2011-2031.

These are based on proposals set out in the Local Plans for Cambridge and South Cambridgeshire[20], which were formally adopted in 2018. In comparison, the Cambridgeshire and Peterborough Independent Economic Review (CPIER), published in May 2018, suggests that growth rates are likely to be much greater for the area than those set out in the Cambridge and South Cambridgeshire Local Plans, particularly if 2010-2015 growth trends continue[21].

2.4.2 CPIER – long term growth potential[22]

Published in 2018, the CPIER[23] has developed an evidence base on the economic performance and growth potential of Cambridgeshire and Peterborough, which included a consideration of a range of different growth scenarios beyond those set out in the Local Plans. Undertaken by an independent economic commission, the purpose of the review was to create a single strategic position to help Cambridgeshire and Peterborough 'consider the case for greater fiscal devolution and powers to unlock the delivery of major infrastructure, including showing how the area delivers benefits to the rest of UK'[24].

The CPIER 2018 Final Report[25] states that historical growth has been underplayed and that future growth could be much higher than the levels set out above. A central element of the Devolution Deal for the CPCA was the commitment to doubling the area's economic output (GVA) over the following 25 years (from £22bn to over £40bn) in return for new powers.

[19] This figure reflects the modification to the housing figure for South Cambridgeshire by the council following inspection to 19,500 from 19,000.

[20] Cambridge City Council, Cambridge Local Plan 2018; South Cambridgeshire District Council, South Cambridgeshire Local Plan 2018

[21] CPIER (2018). Cambridgeshire and Peterborough Independent Economic Review (CPIER)

[22] This entire section refers and summarises the CPIER report as relevant to this study.

[23] Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridge and Peterborough Independent Economic Commission, September 2018

[24] See https://www.cpier.org.uk/about-us/cpier/ [Accessed 10 May 2019]

[25] Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridge and Peterborough Independent Economic Commission, September 2018

The CPIER report has examined what the future for the CPCA economy could be – termed the Cambridgeshire and Peterborough Futures. The commission sets out four scenarios for the future of the area to inform recommendations about how development will be carried out and what infrastructure is likely to be needed to position the area well in the future. This includes examining the options for densification, fringe growth, dispersal, transport corridors and deeper digital transformations.

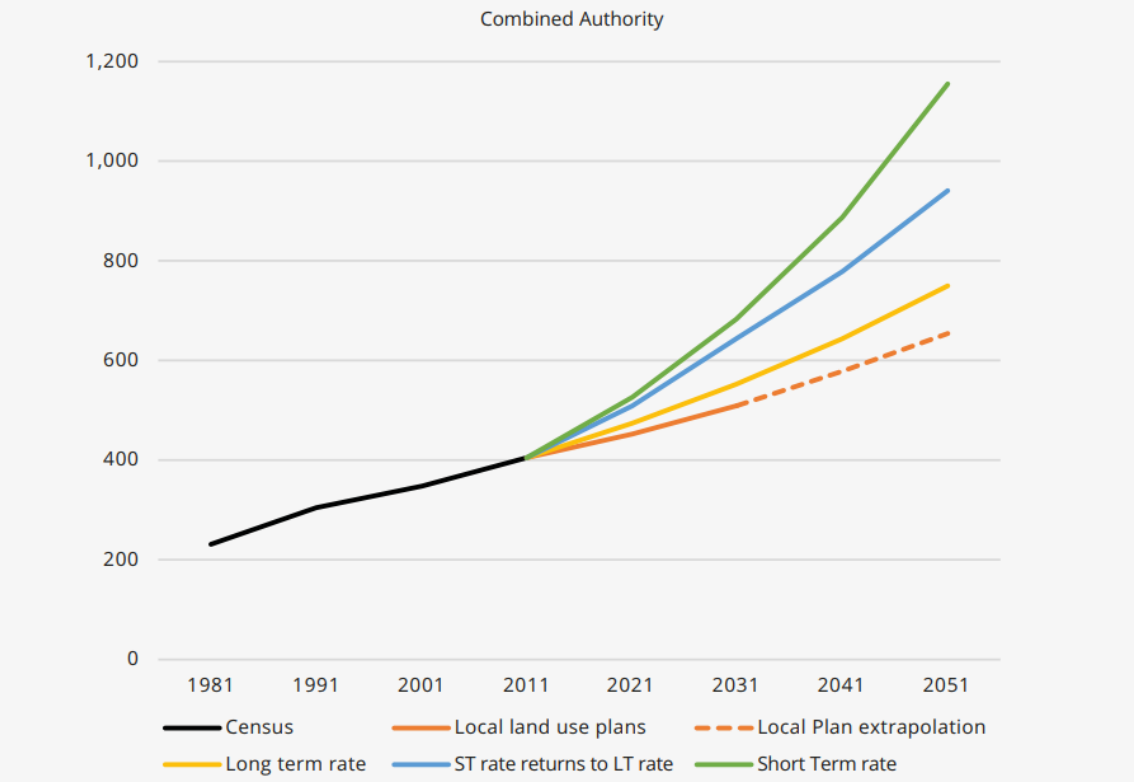
The modelling carried out is driven by employment growth and as this grows so does the demand for housing and the pressure on the transport system. The model has been run by the CPIER for four scenarios:

- **Local land use plans** – Capturing the assumptions around the employment targets underpinning the Local Plans. This can be considered a Business-as-Usual (BAU) scenario.
- **Employment Growth** – Longer term (LT) rate. Based on a continuation of the 1981-2016 trend of employment growth (no weight given to recent high-levels of employment growth).
- **Employment Growth** – Shorter term (ST) rate. Based on a continuation of the 2010-2015 employment growth trends according to recent CPIER data.
- **Employment Growth** – ST rate returning to LT rate. Based on continuation of recent higher growth rates but then a gradual return to LT ONS growth rates. This projection is the commission's central projection of the four model runs.

The findings in relation to these scenarios are shown in Figure 2.3, taken directly from the CPIER report. The data shows that growth taken from historical performance data from the Cambridge and SCDC Local Plans is at the lower bound of the projections. Discrete figures for Greater Cambridge are not available, but the analysis suggests that the 44,100 jobs target within the Local Plans could potentially be pessimistic, particularly if consideration is given to demand beyond the adopted plan period.

The 'central projection' of employment growth in the CPIER report (which continues at the shorter-term rate then returning to the longer term rate) sets out a future where employment increases to 900,000 by 2051 (blue line in Figure 2.3); this significantly exceeds a future projection based solely on extrapolating local plan ambitions (orange line in Figure 2.3) but is lower than the projection that assumes the recent high levels of employment growth continue throughout the period (green line in Figure 2.3).

Figure 2.3: Employment projections for Cambridgeshire and Peterborough – 000's of people – actual and projected



Source: Cambridge and Peterborough Independent Economic Review (CPIER), Interim Report, September 2018

Understanding the future growth potential of Cambridge and South Cambridgeshire is important not just for the sub-region itself, but also due to its potential impacts nationally for the UK, i.e. the net additionality provided by future economic growth in Cambridge once displacement between locations has been accounted for.

Recognising that for some knowledge-intensive sectors Cambridge is the only viable cluster in the UK, the CPIER[26] highlights the net additionality impact of the area to the UK's economic output and its national importance. The CPIER report included results from a qualitative survey which demonstrated that if a knowledge intensive company is forced to move away from the sphere of clustering activity, of those respondents who said they would likely or certainly move activity outside of the area, 44% responded that they would move abroad, compared to just 25% who would stay in the UK.

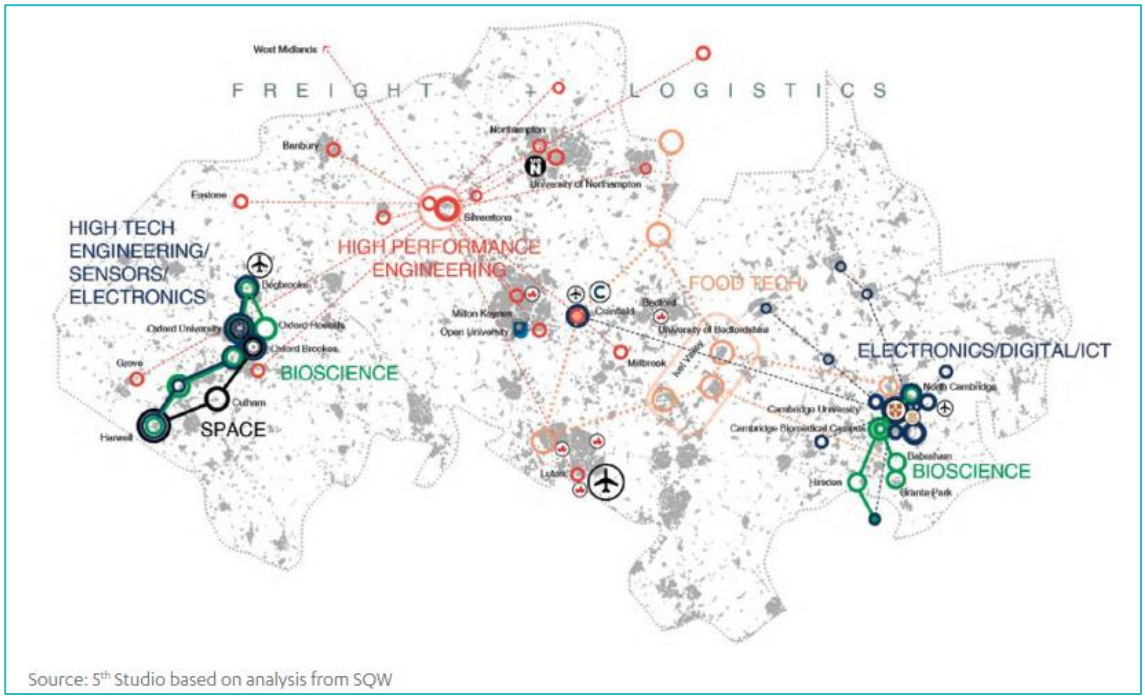
2.4.3 The Cambridge-Milton Keynes-Oxford Knowledge Arc

Cambridge's importance to the national economy is demonstrated by its inclusion in the Cambridge-Milton Keynes-Oxford Knowledge Arc – a corridor which has the potential to become a single, globally competitive, knowledge-intensive cluster. Like Cambridge, Milton Keynes, Oxford, and Northampton are already home to knowledge-intensive sectors, including

[26] Cambridge & Peterborough Independent Economic Review (CPIER), Final Report, September 2018

corporate head offices and leading scientific research and engineering companies (Figure 2.4). Despite their similarities, at present the four locations are not joined up, each having developed their own distinct economies and labour markets, which is exacerbated by poor east-west transport connectivity.

Figure 2.4: Major business clusters in the Cambridge-Milton Keynes-Oxford Arc



Source: National Infrastructure Commission, Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc, 2017

In its 2017 report 'Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc', the National Infrastructure Commission (NIC) argued that the success of the Cambridge-Milton Keynes-Oxford Arc should be a national priority to maximise the Arc's contribution to the UK economy and realise the economic potential of its towns and cities[27]. The Commission argues that without a joined-up approach to housing, jobs and infrastructure the Arc will risk losing out to international competitors.

The report concludes that rates of housebuilding must double if the arc is to achieve its economic potential – delivering up to one million new homes by 2050 – with the required growth to be delivered through large new settlements and major urban extensions. Investments in transport and infrastructure will unlock land for such developments, as well as improving connectivity between the arc's key economic centres and expanding and diversifying their labour markets, for example through the proposed East West Rail and the Oxford-Cambridge Expressway.

For further information on the Cambridge-Milton Keynes-Oxford Knowledge Arc please refer to the Strategic Economic Narrative report in Appendix D.

[27] National Infrastructure Commission, Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc, 2017

2.4.4 House prices

The NIC's recommendations to accelerate new infrastructure, improve connectivity and support the delivery of new homes received Government support as part of the 2017 Autumn Budget.

The Cambridge and SCDC Local Plans which set out the development strategy for Cambridge and South Cambridgeshire, show that rapid growth is planned for the Cambridge Southern Fringe (CSF), including the CBC, significantly increasing the area's employment opportunities. The number of people working at the CBC is expected to increase by more than 50% by 2031. Likewise, significant growth is planned at the Cambridge Northern Fringe (CNF), adjacent to the Cambridge Science Park (CSP), including the development of up to 7,000 new jobs[39.]

Greater Cambridge is, however, already facing negative impacts of its success, with house prices increasing faster than wages, thereby pushing more people out of the city towards surrounding towns and villages[21].

House prices in Cambridge are also amongst the highest in the UK, with a mean price paid of over £500,000 in the year to September 2018[28], which is more than two thirds higher than the national average[29] of approximately £295,000. Both Cambridge and South Cambridgeshire have experienced significant growth post-recession and the house price gap continues to widen when compared to surrounding districts and national averages.

The ambitious economic growth proposals, whilst generating more housing, are also adding extra pressures to the already constrained transport infrastructure, which suffers regular peak time congestion on key corridors and commuter routes into and out of the city.

Any proposals for a new travel hub scheme along the Cambridge to Royston route, following the A10 and Cambridge rail line, has the potential, in combination with the proposed Cambridge South station, to serve the new developments on the CSF as well as other opportunities accessible via the existing Cambridge and Cambridge North stations.

Any proposed travel hub could also intercept vehicular traffic on the A10 by improving accessibility and connectivity between towns and villages to the southwest of the city with jobs in the city centre, CNF (via Cambridge North Station) and CSF (subject to delivery of the proposed Cambridge South station) developments.

2.4.4.1 Cambridge and South Cambridgeshire Local Plans – spatial development strategy

The adopted Local Plans for Cambridge and South Cambridgeshire set out the development strategies for Cambridge and South Cambridgeshire. The two planning authorities have adopted a joint approach to spatial planning given the well-established interdependencies between the two areas in terms of the location of key employment sites, travel to work patterns and access to services and facilities. Across both Local Plans, the overarching spatial development strategy follows a similar preferred sequence, which can be summarised as:

- Being within the existing urban area of Cambridge;
- Being within the defined fringe sites on the edge of Cambridge;
- Within the six small-scale Green Belt site proposed to be released from the inner Green Belt boundary; and,

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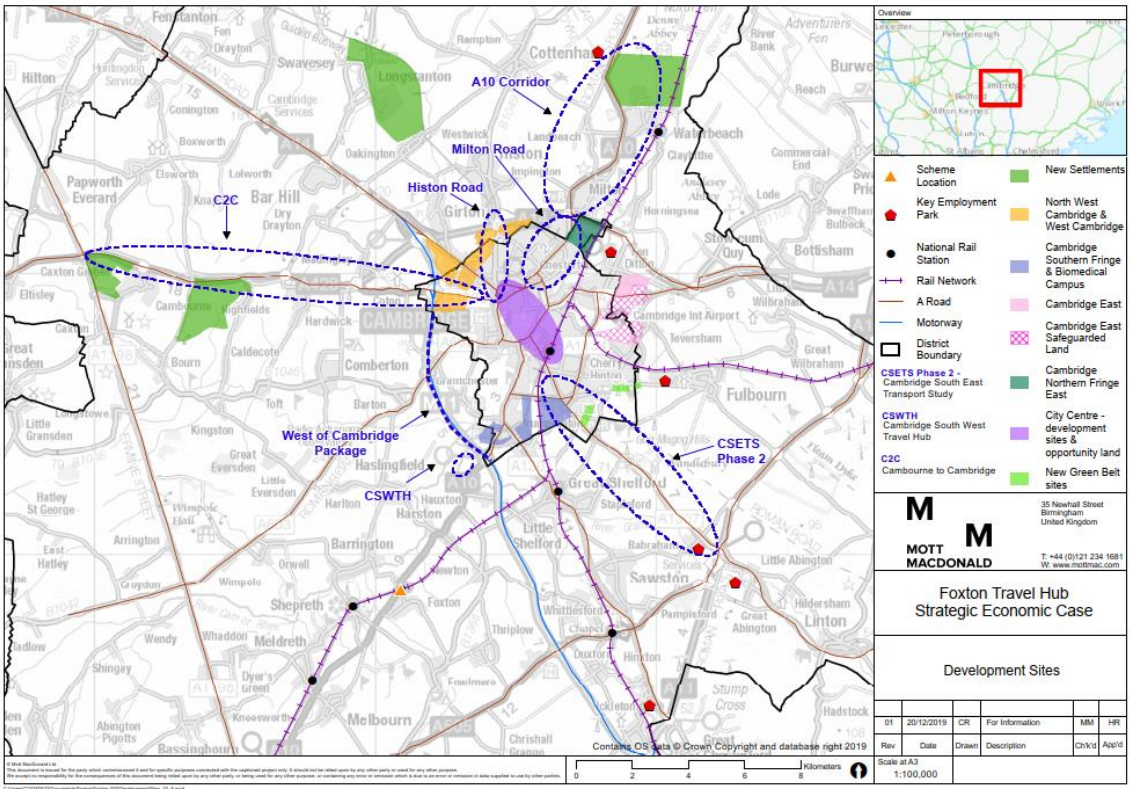
28 Mean house prices for administrative geographies (existing dwellings): HPSSA dataset 14, ONS, 2019.

29 For England and Wales.

- Within existing and newly identified new settlement locations at Cambourne, Northstowe, Bourn Airfield and Waterbeach, and in identified villages.

Figure 2.5 provides a comprehensive map of the key development sites categorised into six key areas including New Settlements, North West Cambridge and West Cambridge, CSF and CBC, CNF, City Centre developments and existing employment locations. The GCP City Deal transport schemes are overlaid on the map for reference.

Figure 2.5: Map of key developments and GCP City Deal schemes



Source: Strategic Economic Appraisal of A428-A1303 Bus Scheme, Mott MacDonald, August 2016.

The provision of a new travel hub along the A10 would not only support access into Cambridge city centre by rail, but also has the potential to address the very high levels of development anticipated to occur within the CSF (assuming delivery of the proposed Cambridge South station) and CNF areas.

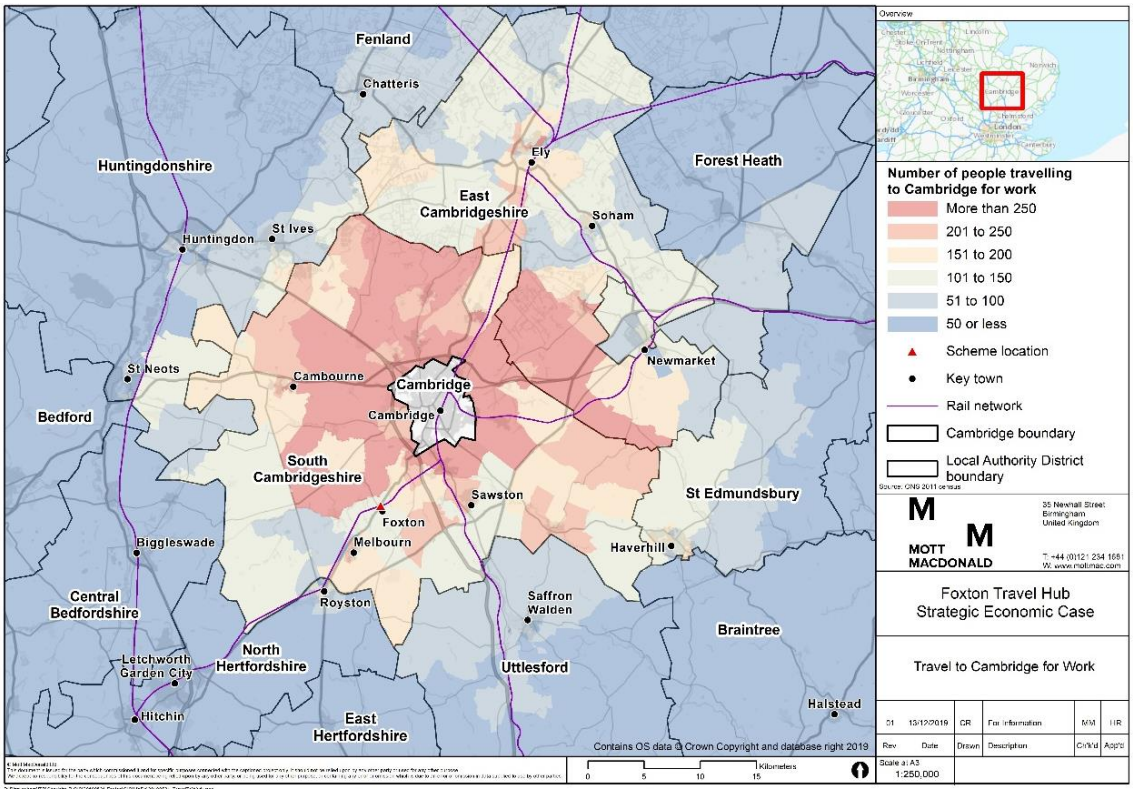
Cambridge City and South Cambridgeshire District Councils are now preparing a joint Local Plan for the two areas (i.e. Greater Cambridge) for the period to 2040. This will build upon the two adopted plans. At the time of writing, the Greater Cambridge Plan is in the 'Issues and Options' phase of its development.

2.4.4.2 The role of market towns, rural centres and villages

Given its role as a key economic and employment centre, it is unsurprising that Cambridge lies at the heart of a broad commuter belt and experiences high levels of net-in commuting. Cambridge's area of influence encompasses most of Cambridgeshire and parts of West Suffolk,

Bedfordshire, Essex and North Hertfordshire[30]. As shown in Figure 2.6 there is a very high level of in-commuting from South Cambridgeshire including established flows along the A10 and Cambridge-King's Cross rail line, along which villages such as Foxton are located.

Figure 2.6: Cambridge travel to work map



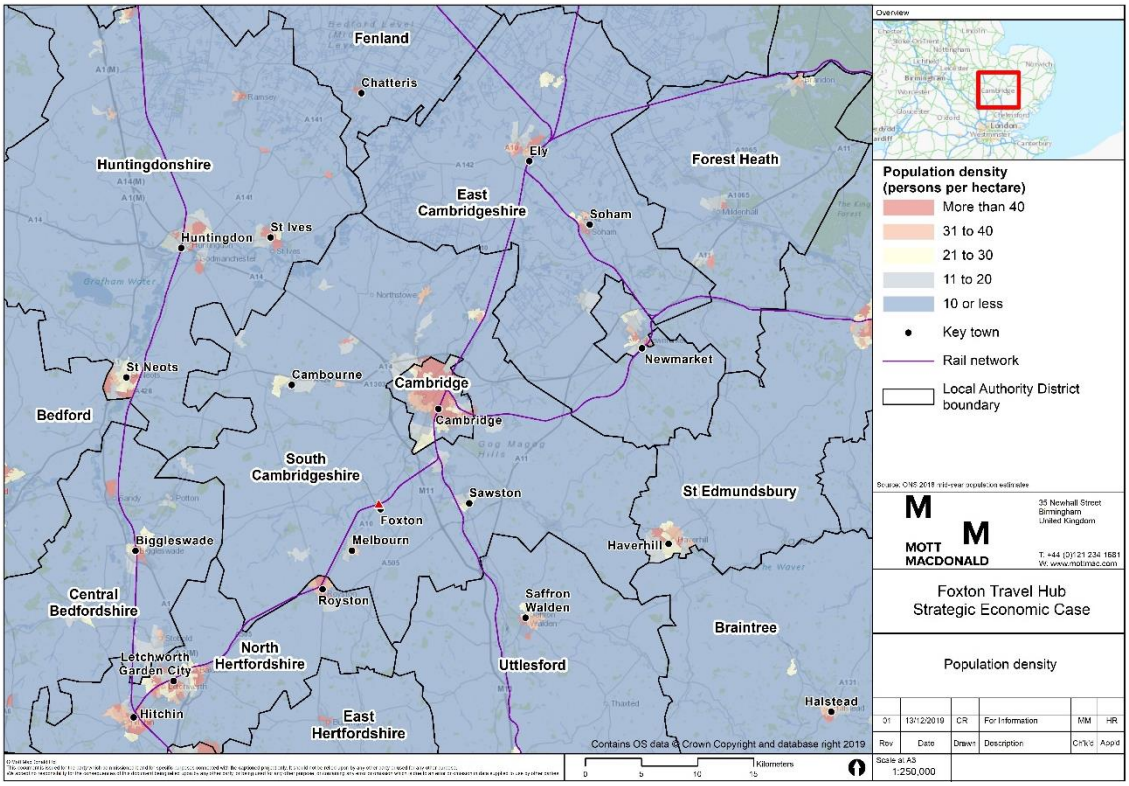
Source: Travel to Work Census data 2011

The Cambridge labour market is itself impacted by the city's own success and continued economic growth. Cambridge's high house prices and high rental rates have made it more difficult for people to buy or rent in the city and are thereby pushing more commuters into villages and market towns in South Cambridgeshire and beyond[31]. Whilst South Cambridgeshire is a largely rural district (as shown in Figure 2.7), it's rural centres and villages play an important role in supporting the Greater Cambridge economy and labour market.

[30] Cambridge City Council, Cambridge Local Plan 2014 – Draft for Submission, July 2013

[31] GCP, Greater Cambridge CaMKOx Firsts/last Mile Strategy, September 2017

Figure 2.7: Population density in Cambridge and surrounding districts



Source: Population Estimates, ONS, 2018

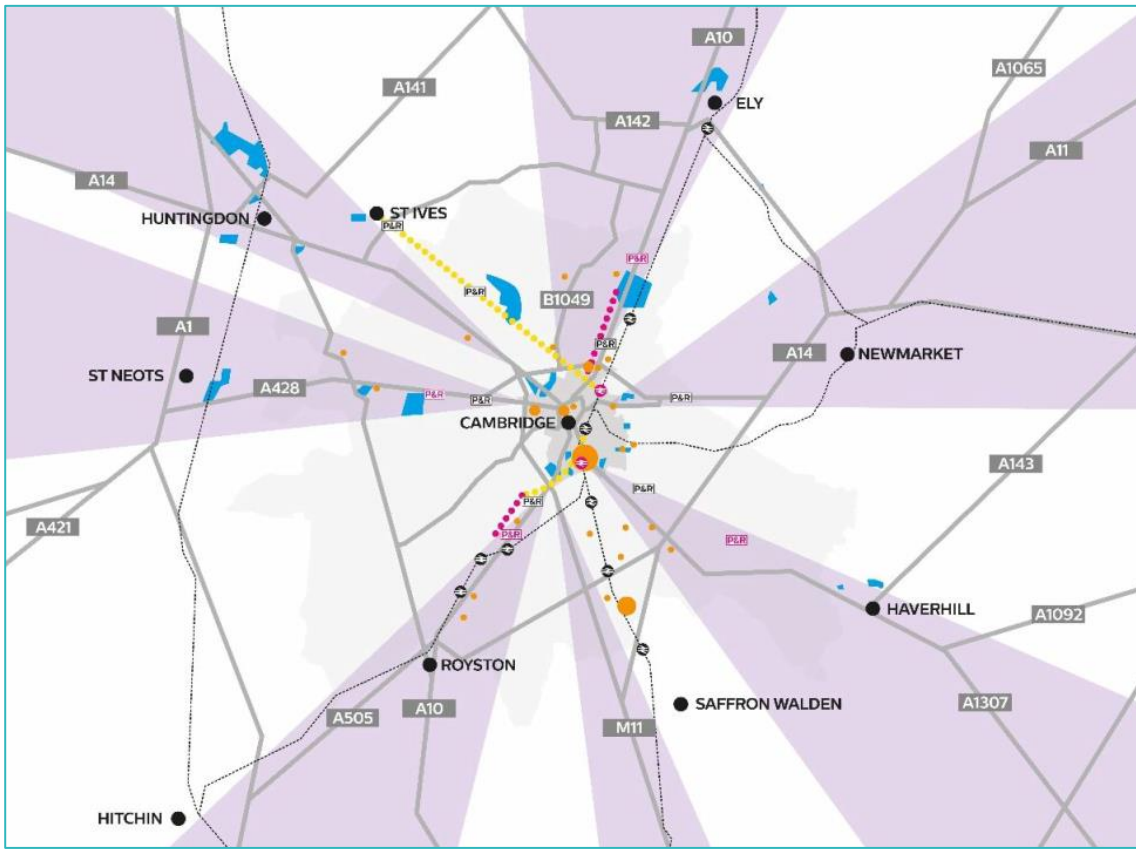
Routes into Cambridge have been mapped into seven radial corridors that connect Cambridge to the surrounding towns and villages in South Cambridgeshire[32]. The GCP describes Cambridge's orientation '*like a hub and spoke network*'[33], with the city of Cambridge as the hub and the seven corridors as the spokes (Figure 2.8). The seven corridors identified are:

- Ely and Waterbeach to Cambridge;
- Newmarket to Cambridge;
- Haverhill to Cambridge;
- Saffron Walden to Cambridge;
- **Royston to Cambridge;**
- St Neots and Cambourne to Cambridge, and;
- Alconbury, Huntingdon, St Ives and Northstowe to Cambridge.

[32] Cambridgeshire County Council, Transport Strategy for Cambridge and South Cambridgeshire, March 2014

[33] GCP, Greater Cambridge CaMKOx Firsts/last Mile Strategy, September 2017

Figure 2.8: Greater Cambridge seven radial corridors ('spokes')



Source: GCP, Greater Cambridge CamMKOx Firsts/last Mile Strategy, September 2017

The proposed scheme falls within the Southwest Royston–Cambridge corridor. Like much of South Cambridgeshire, the corridor has a relatively low population density, interspersed with towns and villages such as Melbourn and Royston.

Whilst geographically Royston falls within North Hertfordshire, its economy is influenced by both the Hertfordshire and Cambridgeshire economies, with Cambridge providing a key centre for employment, primary healthcare, and retail[34] [35]. Conversely, Royston itself also provides an important service role for villages in South Cambridgeshire and North Hertfordshire, toward the southern end of the corridor.

[34] North Hertfordshire District Council, Local Plan 2011-2031 Proposed Submission, October 2016

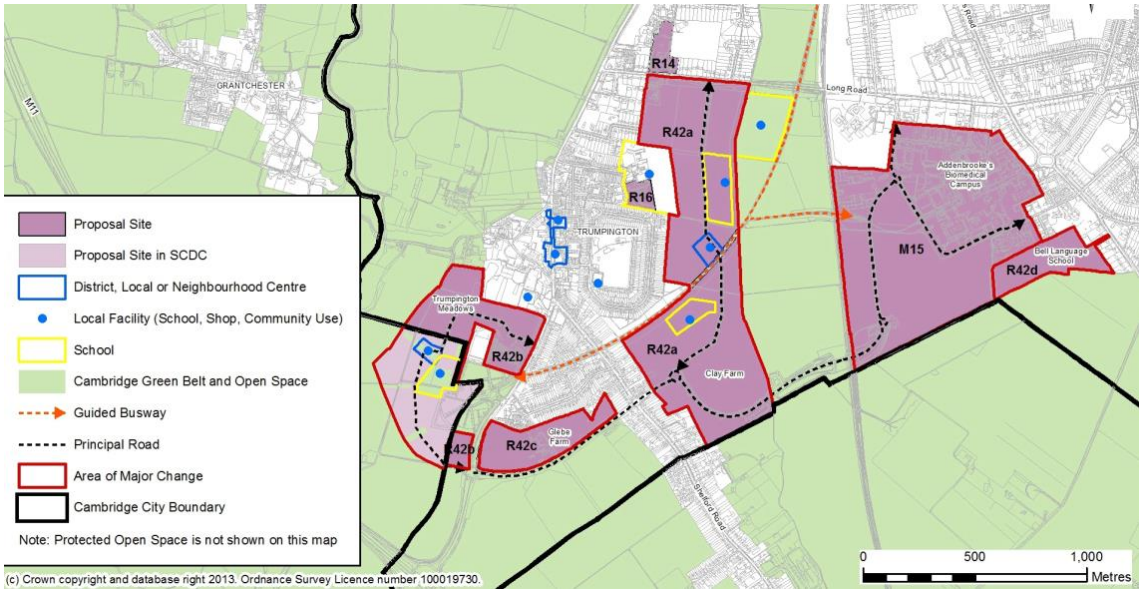
[35] Cambridgeshire County Council, Transport Strategy for Cambridge and South Cambridgeshire, March 2014

2.4.4.3 Spatial analysis

Connection to Cambridge Southern Fringe

A rail-based travel hub along the A10 between Royston and the M11 would have the potential to support labour market access from villages along the Royston to Cambridge corridor to the growing CSF and CBC, assuming the delivery of Cambridge South Station. The CBC is already home to the University of Cambridge's School of Clinical Medicine, Addenbrooke's Hospital, the Royal Papworth Hospital and AstraZeneca, making this "international centre of excellence for patient care, biomedical research and healthcare education"[36] a major employment centre for Cambridge and South Cambridgeshire.

Figure 2.9: Cambridge Southern Fringe Major Development Sites



Source: Cambridge City Council, Cambridge Local Plan (2018)

Figure 2.9 shows the outline of the major development sites within the CSF, taken from the Cambridge Local Plan (2018). The labels correspond with the planned growth outlined below.

Together, the developments across the CSF and CBC are set to provide high-quality new neighbourhoods, high-skilled employment growth and an expansion of the city's existing hospital provision. In summary the following growth is anticipated:

- In 2018, **17,250** people worked on the CBC[40.] In 2019 the new Royal Papworth Hospital (**M15**) opened on the campus, which employs approximately **1,950 people**[37].The number of

[36] Cambridge City Council, Cambridge Local Plan (2018)

[37]Royal Papworth Hospital, Annual Report and Accounts April 2018 to March 2019, April 2019[38] Greater Cambridge Partnership Website, https://www.greatercambridge.org.uk/transport/transport-projects/city-access/cambridge-biomedical-study/. Accessed 14thMay 2018[39] Atkins on behalf of Cambridgeshire County Council, Cambridge Biomedical Campus Transport Needs Review – Part 2 Report, April 2018

employees across the CBC is expected to rise to **26,000 by 2031**[38].The number of patients and visitors is also anticipated to increase significantly, from approximately **798,600 patients in 2017** to a projected **1,382,800 patients in 2031**[39].

- The number of patients and visitors is also anticipated to increase significantly, from approximately **798,600 patients in 2017** to a projected **1,382,800 patients in 2031**[40].
- Residential developments at Clay Farm (**R42a**), Glebe Farm (**R42c**), Trumpington Meadows (**R42b**) and Bell School (**R42d**) could bring up **over 4,000 new homes** and new **student accommodation**[41.]
- AstraZeneca are building their new Global Research and Development Centre and Corporate Headquarters on the CBC. The buildings are set to open in 2020 and will be home to **more than 2,000 AstraZeneca and MedImmune research and development science jobs** across the Campus[42].

The outlined growth in highly skilled jobs, and the growing reputation of Cambridge as an important cluster site for high-tech and biotech industries, may mean that people are willing to travel further to access the 'Cambridge Cluster'. Therefore, with such significant increases forecast for the area's workforce and resident, patient and visitor populations, appropriate transport provision will be required to address future increases in travel to and from the sites; this will help enable the area to reach its full economic potential.

[38] Greater Cambridge Partnership Website, https://www.greatercambridge.org.uk/transport/transport-projects/city-access/cambridge-biomedical-study/. Accessed 14thMay 2018[39] Atkins on behalf of Cambridgeshire County Council, Cambridge Biomedical Campus Transport Needs Review – Part 2 Report, April 2018

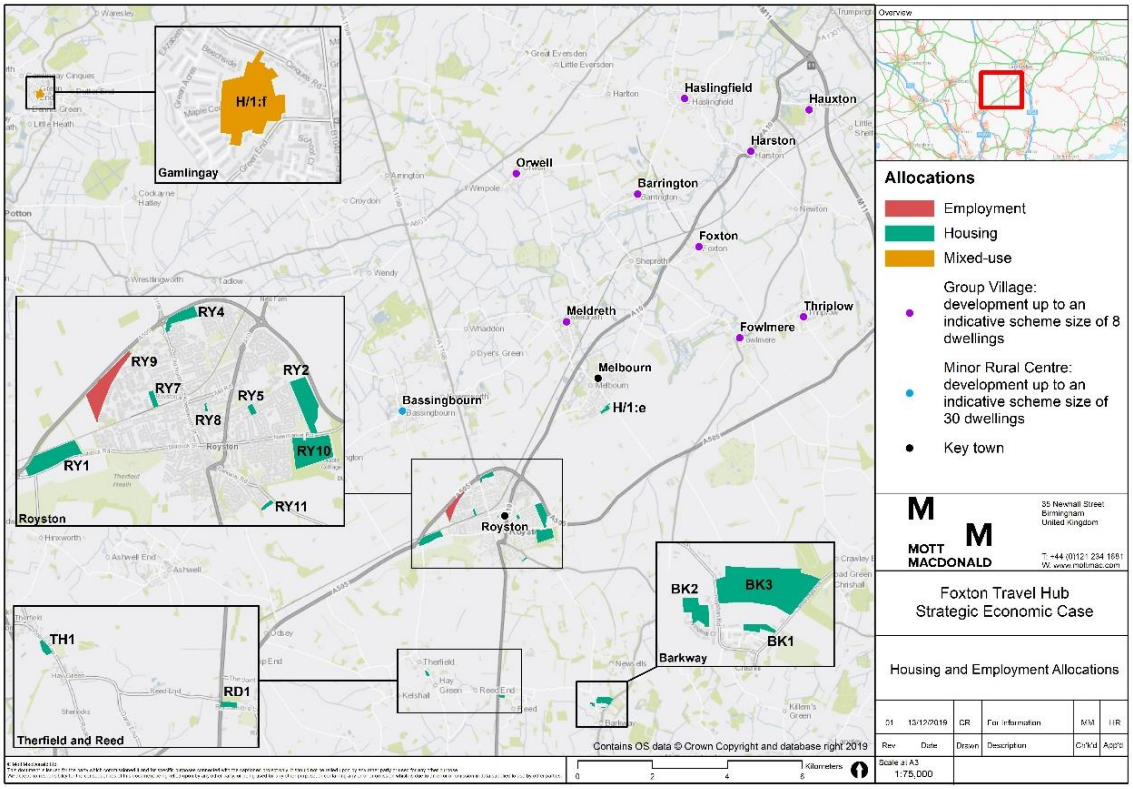
[39] Atkins on behalf of Cambridgeshire County Council, Cambridge Biomedical Campus Transport Needs Review – Part 2 Report, April 2018

[40] Atkins on behalf of Cambridgeshire County Council, Cambridge Biomedical Campus Transport Needs Review – Part 2 Report, April 2018

[41] Cambridge City Council, Growth Site Guide (March 2018): Cambridge Southern Fringe, March 2018

[42] AstraZeneca Website, https://www.astrazeneca.com/our-science/cambridge.html. Accessed 14th May 2018

Figure 2.10: Housing and employment allocations Cambridge-Royston A10 corridor



Source: Mott MacDonald, using housing and employment allocations from North Hertfordshire District Council, Local Plan 2011-2031 Proposed Submission, October 2016 and Cambridge City Council, Cambridge Local Plan 2018.

In **South Cambridgeshire**, the Local Plan identifies a 3-hectare site to extend the village of Melbourn by a total of 65 dwellings. Whilst there are no defined site allocations for any of the smaller South Cambridgeshire villages along the corridor, as a Minor Rural Centre, residential development or redevelopment will be permitted up to an indicative scheme size of 30 dwellings in Bassingbourn and Comberton[43]. Residential development or redevelopment will also be permitted up to an indicative scheme size of 8 dwellings in the villages of Barrington, Fowlmere, Foxton, Haslingfield, Harston, Hauxton, Meldreth, Orwell and Thriplow[44].

The housing and employment allocations summarised in Figure 2.10 above are in addition to developments that are currently being taken forward in the area, which include up to 220 new homes in Barrington on the former Barrington CEMEX cement works[45]. The A10 provides a key strategic route for the Barrington housing development, with the site's closest access point onto the A10 located in Foxton, approximately 2.8km south east of the site[46]. Further details pertaining to the Barrington CEMEX development are provided in Appendix E.

[43] As set out in Policy S/9: Minor Rural Centres. South Cambridgeshire District Council, Local Plan 2018

[44] As set out in Policy S/10: Group Villages. South Cambridgeshire District Council, Local Plan 2018

[45] South Cambridgeshire District Council Website, Planning Application Ref S/2365/14/OL

[46] Vectos (South) Limited, Former CEMEX Cement Works Barrington - Transport Assessment, October 2014

SCDC also undertook a 'Call for Sites' exercise in February and March 2019 to help inform the future Greater Cambridge Joint Local Plan. The Call for Sites represents an early opportunity for individuals, landowners and developers to put forward potential sites for development within the district.

As part of the Call for Sites exercise, a proposed new village proximate to the existing villages of Foxton, Barrington and Shepreth, named Station Fields, was submitted. Figure 2.11 shows the proposed strategic location of the Station Fields development.

Figure 2.11: Strategic location of Station Fields development

Source: New Village at Station Fields, Foxton Parish Council

The proposed Station Fields development is situated in a strategic transport location along the A10 / A505 corridor and is located within a close proximity of Foxton Station. Proposed residential areas allow for between 900-1,800 dwellings alongside a new employment area, increased pedestrian links, a small travel hub facility, and open spaces for informal amenity areas.

Upon the submission of the Foxton Travel Hub OBC report, the proposed Station Fields development did not form part of the SCDC Local Plan, nor did it carry any status in the Emerging Local Plan.

Foxton Parish Council carried out their own Call for Sites in October 2018 to help inform their draft Neighbourhood Plan and feed into the SCDC Call for Sites. Based on an independent review of the Call for Sites submission, the Parish Council identified two sites as potentially suitable for new housing, and a third site for new employment. The Parish supports a total of 6 new dwellings on the old school/chapel site, approximately 30 new homes contingent on the redevelopment of the A10 triangle site, and the extension to Burlington Park as a new employment site. Further detail on these developments are provided in the Foxton Neighbourhood Plan under Policy FOX/09, FOX/10 and FOX/20. No timescales are provided with regard to the development of these sites.

North Hertfordshire's Draft Local Plan[47] includes eight proposed new housing sites in Royston, allocating a combined total of approximately 1,100 dwellings, and 10.9 hectares of land allocated for new employment uses, including a growth in total town centre floorspace of 7,100m^2.

The Draft Local Plan also includes smaller additional development sites allocated in the Category A[48] villages to the south and south-east of Royston, including in Reed (22 dwellings), Barkway (173 dwellings) and Therfield (12 dwellings).

If a rail-based travel hub scheme was provided along the corridor, the scheme would have the potential to support current and future development within the surrounding villages, by providing access to a rail line into the proposed Cambridge South Station, Cambridge City Centre and Cambridge North Station.

Although passenger transport into Cambridge is also available via a commercial bus service that operates on the A10, covering Melbourn, Foxton and Harston, the A10 suffers from high peak time congestion, particularly through the centre of Harston, on the approach to M11 J11, and at the Foxton level crossing (see section 2.4.6). Investments in transport infrastructure are essential to tackle the high congestion levels that are already experienced along the corridor, and to encourage people to access Cambridge by non-car modes.

2.4.5 Business needs

The following section provides a detailed analysis of the business needs and service opportunities that the Foxton Travel Hub is seeking to address. Business needs are considered to be the gaps between the existing conditions, and the goals an organisation would like to achieve, and service opportunities represent some of the solutions that could be developed to meet these goals. Therefore, our analysis identifies the related problems and opportunities with the existing situation along the Royston to Cambridge corridor and seeks to demonstrate how the scheme could affect change in the future.

2.4.6 Transport issues and opportunities

The identified issues of congestion and transport network capacity in Greater Cambridge, which are predicted to worsen with anticipated growth, necessitate improvements to transport infrastructure, and measures to encourage a modal shift away from the private car. The A10

[47] North Hertfordshire Draft Local Plan (2011-2031) September 2016

[48] The North Hertfordshire Local Plan defines Category A villages as normally containing primary schools and having defined boundaries within which development will be allowed and where sites have been allocated towards the District's housing totals. For comparison, Category B villages are defined as having a lower level of facilities, for example village halls and public houses.

corridor is strategically important because it is one of the key corridors providing access to the important CSF area, as well as other key destinations within Cambridge.

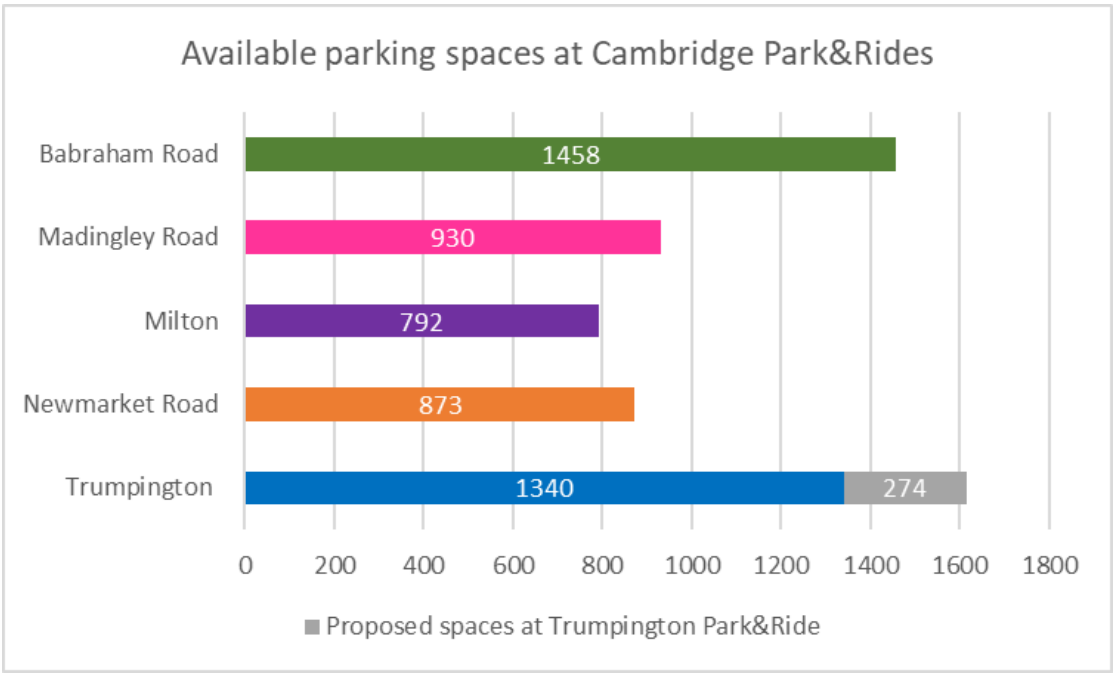
A range of existing and future transport issues, which have the potential to constrain economic growth in Greater Cambridge are identified and summarised below. The transport issues previously identified in the SOBC, which was published in March 2019, have been updated to reflect the latest available information. The issues captured in the following sections are also informed by the Options Assessment Report (OAR) within Appendix A. The OAR was originally produced to support the development of the SOBC and initial long list and short-listed options.

2.4.6.1 Existing Cambridge Park & Ride capacity

In total there are five 'inner' bus-based Park & Ride sites that serve Cambridge: Babraham Road, Madingley Road, Milton, Newmarket Road and Trumpington. The total number of spaces available at each of the Park & Ride sites is shown below in Figure 2.12. Please note an additional 274 spaces and five bus spaces are being added to the existing Trumpington Park & Ride site following a successful planning application in October 2018; this expansion will increase car parking capacity from 1,340 to 1,614 spaces. These additional spaces are due to open in March 2020.

Two additional Park & Ride sites are located to north of Cambridge on the Cambridgeshire Guided Busway (CGB). The two sites are located at St. Ives and Longstanton and provide 1,000 and 350 car parking spaces respectively.

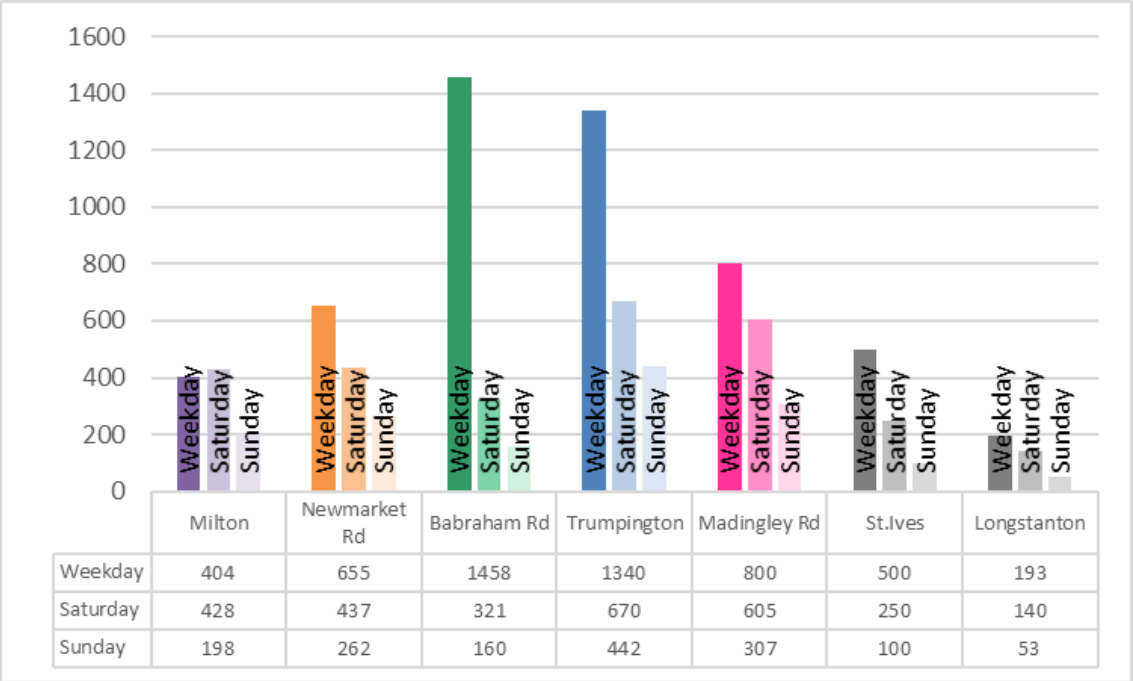
Figure 2.12: Comparison of total car parking spaces available at Cambridge Park & Ride sites (December 2019)



Source: Stagecoach (2019)

In terms of Park & Ride usage, the following charts show the maximum occupancy level of each Park & Ride site on an average weekday, Saturday and Sunday, and how this equates to capacity usage.

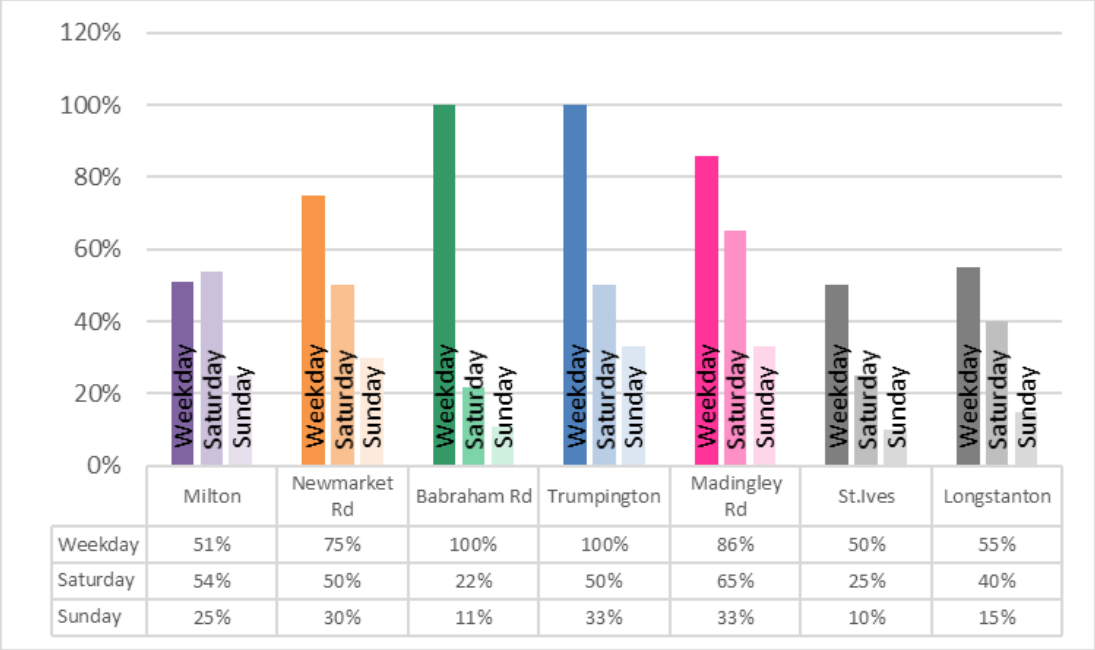
Figure 2.13: Cambridge Park & Ride site average maximum parking level, January 2020



	Milton	Newmarket Rd	Babraham Rd	Trumpington	Madingley Rd	St.Ives	Longstanton
Weekday	404	655	1458	1340	800	500	193
Saturday	428	437	321	670	605	250	140
Sunday	198	262	160	442	307	100	53

Source: Mott MacDonald from Cambridgeshire County Council data (2020)

Figure 2.14: Cambridge Park & Ride site average maximum parking occupancy, January 2020



	Milton	Newmarket Rd	Babraham Rd	Trumpington	Madingley Rd	St.Ives	Longstanton
Weekday	51%	75%	100%	100%	86%	50%	55%
Saturday	54%	50%	22%	50%	65%	25%	40%
Sunday	25%	30%	11%	33%	33%	10%	15%

Source: Mott MacDonald from Cambridgeshire County Council data (2020)

In January 2020, across all sites (totalling approximately 6,750 spaces), the mean utilisation rates were approximately 74% (5349 spaces) on a weekday, 44% on a Saturday (2849 spaces), and 22% (1522 spaces) on a Sunday.

The figures show that weekday demand and occupancy is highest at Trumpington Park & Ride and Babraham Road Park & Ride. Average weekday occupancy at both of these sites was 100% upon assessment. Given that CCC generally consider a car park to be at operational capacity at 85%[49], Madingley Road Park & Ride also reaches and exceeds operational capacity on weekdays with an average occupancy of 86%.

2.4.6.2 Existing Cambridge Park & Ride sites future demand

To understand how existing Park & Ride usage might increase up to 2031 a series of tests were undertaken using the Cambridge Sub-Regional Model (CSRM). The CSRM is a transport model that incorporates land use planning and mode choice elements and can be used to forecast the demand for travel between origin and destination zones by different modes of transport. Further details about the CRSM, and how it has been used within this scheme, are provided in Section 3.3.

The different scenarios identified through this methodology are presented in Table 2.11 below. The 'Medium' scenario assumes Local Plan levels of development will occur, and that there will be increased parking restrictions at the CBC. The 'High' scenario accounts for higher levels of demand which might result in further restrictions on car usage within central Cambridge. Previous work undertaken by Atkins had also identified a 'Low' demand scenario, limited to Local Plan levels of development only. However, the Independent Economic Review of Cambridgeshire and Peterborough, produced by the Cambridgeshire and Peterborough Independent Economic Commission (CPIER), suggested the low demand scenario has already been exceeded because actual employment growth is running higher than the Local Plan trajectory[21].

Table 2.11: Trumpington Park & Ride forecast demand summary

Year	Medium	High
2022	1,825	2,194
2027	2.049	3.034
2031	2,274	3,874

Source: Mott MacDonald

Considering the existing 1,385 spaces at Trumpington, the demand forecasts suggest that approximately 800-900 additional spaces would be required by 2031 to accommodate additional users under the 'Medium' demand scenario. An expansion of up to 2,500 spaces would be required to cater for the 'High' demand scenario.

Due to land availability constraints imposed by forthcoming development to the north and west of the Trumpington Park & Ride site, a multi-storey solution would be required to meet future demand under the 'Medium' demand scenario. However, the 2,500 car parking spaces required in the 'High' demand scenario could not be physically provided at the existing site. Therefore, the opportunity to provide transport interchange facilities further south along the Royston to Cambridge corridor at Junction 11 of the M11, and along the railway between Royston and Cambridge stations, are being considered, capitalising on the popularity of the current Park & Ride services.

To understand the potential demand for car parking spaces at the proposed rail-based Travel Hub along the Royston to Cambridge corridor, a series of demand modelling tests, based on

[49] Trumpington Park & Ride Assessment Report (2017)

AM peak demand (0800-0900), have been carried out using the SATURN highway element of the latest version of the CRSM model, Cambridge Sub Regional Model 2 (CSRM2).

Use of the proposed Travel Hub has been forecast by taking the Do Minimum SATURN highway model, which represents the most likely outcome should no intervention occur, from the D-series CSWTH scheme modelling and adding a direct pseudo rail link from Foxton station, as a proxy, to each of the three Cambridge stations (Cambridge, Cambridge North and the proposed Cambridge South); the pseudo rail link represents the new journey options that delivery of the Travel Hub would bring. The demand forecasts derived from the AM peak scenario have also been factored using a 64% pre-peak assumption to account for additional Cambridge-bound passenger demand using services between 0700 and 0800. The factor used to determine the pre-peak hour was derived from rail utilisation surveys; the methodology behind the rail surveys is explained in the 'Train Capacity' section below.

Traffic forecasts have been prepared for the two CSRM2 forecast years of 2026 and 2036 and for two different levels of growth, namely the Foundation Case (FC), which is based on Local Plan Growth, and the High Growth (HG) scenario from the D Series CSRM2 model, which uses growth forecasts from the Cambridgeshire and Peterborough Independent Economic Review (CPIER). The range of numbers for transferring trips and, therefore, the potential number of car parking spaces required across these scenarios, are summarised in Table 2.12 below.

Table 2.12: Potential number of spaces required at future travel hub site

Source of Demand	2026 Without Cambridge South (FC)	2026 (FC)	2036 (HG)
Cambridge South	N/A	136	181
Cambridge	114	114	144
Cambridge North	53	53	73
Cambridge demand (Inc. pre-peak assumption)	274	498	656
London	150	150	150
Total Trips	424	648	806
Required car park capacity (Inc. 85% capacity rule[50])	**499**	**763**	**948**

Source: Travel Hub Demand Forecasting Technical Note (Appendix F)

Based on current demand calculations, the proposed Travel Hub would require 763 car parking spaces in the 2026 FC growth scenario, assuming Cambridge South was open, and 499 spaces if it was not. Under the 2036 HG scenario, and accounting for predicted demand associated with Cambridge South station, 948 spaces would be required.

This business case assumes that the proposed travel hub on the A10 corridor would be developed to meet the demand for car parking spaces derived from the 2036 HG scenario. The CPIER suggests that if 2010-2015 growth trends continue that future growth rates are likely to be much greater for the area than those set out in the Cambridge and South Cambridgeshire Local Plans.

[50] Cambridgeshire County Council consider a car park to be full when it reaches 85% capacity; this is because 85% occupancy is considered to be the number beyond which issues of circulation, queuing, and a perception amongst users that they may not get a space in the car park occur.

2.4.6.3 Train capacity

Available capacity on Great Northern rail services between Foxton and Cambridge rail stations, has the potential to influence the attractiveness and resulting success of a Travel Hub along the study corridor. As such, rail passenger counts were commissioned to ascertain existing passenger demand and baseline levels of available capacity between Foxton and Cambridge.

Further details pertaining to the rail survey and the methodology underpinning them is presented in the Foxton Rail Passenger Surveys and Capacity Assessment Technical Note (409787-MMD-BCA-XX-TN-BC-0012), which is enclosed in Appendix G for reference.

Table 2.13 displays the rail passenger count survey results for northbound services (toward Cambridge) in the AM peak, and Table 2.14 displays the rail passenger survey results for southbound services (toward London) in the PM peak. Northbound services were surveyed in the AM peak, and southbound services in the PM peak, to provide an understanding of available capacity on services used by Cambridge bound commuters.

Table 2.13 shows that all services leaving Foxton in the AM peak have available capacity. The most utilised service departed Foxton at 08:11; on this service, only 26.7% of overall capacity (including standing capacity) was occupied. Table 2.14 shows that all services departing Cambridge toward London in the PM peak have available capacity. The most utilised service arrived at Foxton at 17:06; on this service, only 9.4% of overall capacity (including standing capacity), was occupied.

Table 2.13: Northbound services – AM peak - Foxton load at departure

Origin Time	Origin Location	Destination Location	Departure time from Foxton	Load upon leaving Foxton	Total Capacity	Percentage of Total Capacity
05:56	Kings Cross	Cambridge North	07:11	104	1146	9.0%
06:21	Kings Cross	Cambridge	07:41	202	1146	17.6%
06:51	Kings Cross	Cambridge North	08:11	306	1146	26.7%
07:21	Kings Cross	Cambridge	08:41	170	1146	14.8%
07:51	Kings Cross	Cambridge North	09:11	61	1146	5.3%

Source: Mott MacDonald

Table 2.14: Southbound service – PM peak: Foxton load upon arrival

Origin Time	Origin Location	Destination Location	Arrival at Foxton	Load upon leaving Foxton	Total Capacity	Percentage of Total Capacity
16:27	Cambridge	Kings Cross	16:36	88	1146	7.6%
16:44	Cambridge North	Kings Cross	17:06	108	1146	9.4%
17:29	Cambridge	Kings Cross	17:38	98	1146	8.5%
17:44	Cambridge North	Kings Cross	18:06	72	1146	6.2%
18:27	Cambridge	Kings Cross	18:36	71	1146	6.1%

Source: Mott MacDonald

In order to provide a high-level indication of the potential for existing rail services to accommodate future passenger demand, additional future year demand associated with the Travel Hub scheme was added to existing rail passenger demand. The assumptions that inform this application are listed in Technical Note 409787-MMD-BCA-XX-TN-BC-0012. Table 2.15 and Table 2.16 present the rail passenger demand for northbound services to Cambridge or

Cambridge North in the AM peak, and the rail passenger demand for southbound services in the PM peak under 2036 HG scenarios respectively.

In the AM peak all but one service is likely to have at least 60-70% total capacity available. However, the busiest service departing Foxton at 08:11 would reach 47.5% of total capacity (including standing capacity) and would require 117 passengers to stand in the HG scenario.

Table 2.15: Northbound services – AM Peak: Foxton load at departure – High Growth

Origin Time	Origin Location	Destination Location	Departure at Foxton	Load at Foxton	Total Capacity	Percentage of Total Capacity
05:56	Kings Cross	Cambridge North	07:11	185	1146	16.13%
06:21	Kings Cross	Cambridge	07:41	359	1146	31.34%
06:51	Kings Cross	Cambridge North	08:11	544	1146	47.47%
07:21	Kings Cross	Cambridge	08:41	302	1146	26.37%
07:51	Kings Cross	Cambridge North	09:11	108	1146	9.46%

Source: Mott MacDonald

In the PM peak, all southbound services to London would have at least 75% of total capacity available. The busiest service would arrive at Foxton at 17:06; the theoretical load of passengers on this service would fill approximately 24% of total capacity (including standing capacity) and would not require any passengers to stand in the HG scenario.

Table 2.16: Southbound services – PM Peak: Cambridge load upon departure

Origin Time	Origin Location	Destination Location	Arrival at Foxton	Load at Foxton	Percentage of Seating	Percentage of Total Capacity
16:27	Cambridge	Kings Cross	16:37	220	1146	19.20%
16:44	Cambridge North	Kings Cross	17:06	270	1146	23.57%
17:29	Cambridge	Kings Cross	17:38	245	1146	21.38%
17:44	Cambridge North	Kings Cross	18:06	180	1146	15.71%
18:27	Cambridge	Kings Cross	18:36	178	1146	15.49%

Source: Mott MacDonald

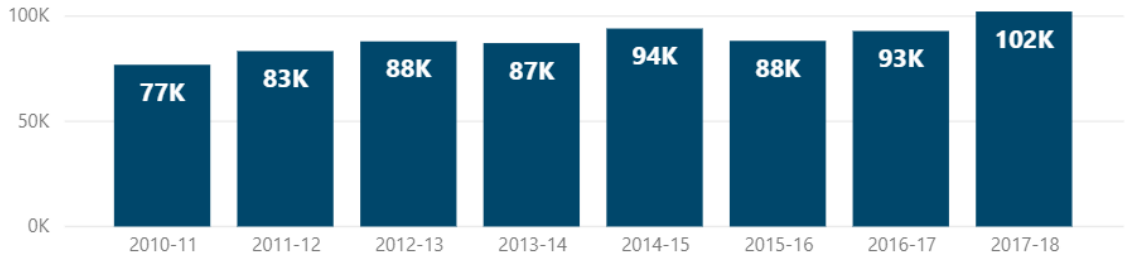
In summary, with the increase in rail passengers associated with the Foxton Travel Hub, all services in both the FC and HG scenarios would theoretically have available capacity to accommodate the potential additional passenger demand associated with the Foxton Travel Hub. With regard to seating capacity, all services would theoretically have available seating capacity, with the exception of the Cambridge-bound service that departs Foxton at 08:11 in the AM peak.

2.4.6.4 Growth in rail use

Stations situated along the Royston to Cambridge corridor have seen above national average growth in rail passengers over the past decade. For example, between 2010-11 and 2017-2018, there was a 62% growth in passenger trips at Cambridge station, and a 47% increase at Foxton

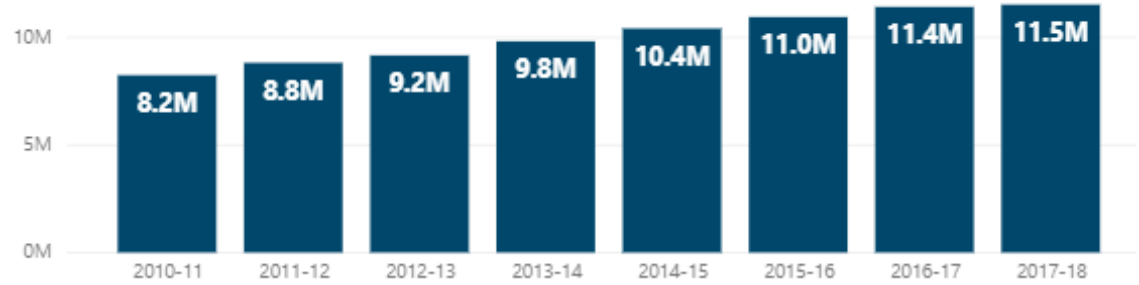
station compared to 30% nationally[51]. The total number of passenger entries and exits between 2010-11 and 2017-18 for Foxton and Cambridge stations is presented in Figure 2.15 and Figure 2.16 respectively.

Figure 2.15: Total numbers of entries and exits by financial year at Foxton Station



Source: ORR

Figure 2.16: Total numbers of entries and exits by financial year at Cambridge Station



Source: ORR

A growth in rail passengers combined with the success of existing Park & Ride facilities along the corridor, suggests there is an opportunity to build on this existing trend toward sustainable modes, and intercept existing and future car-based trips at the proposed Travel Hub before they arrive within Cambridge City Centre, the CNF and, subject to delivery of the proposed Cambridge South station, the CBC and CSF.

2.4.6.5 Rail service reliability

At present, Foxton station is served by Great Northern rail services running between Cambridge and London King's Cross. The punctuality and reliability of these services, as well as interdependent Thameslink services running between Cambridge and Brighton, have the potential to influence the attractiveness of the Foxton Travel Hub scheme.

Rail service reliability is measured by two industry standard Key Performance Indicators (KPI's); the public performance measure (PPM) and 'On Time' rail services.

[51] Office of Rail and Road

The PPM shows the percentage of trains which ran their entire planned journey calling at all scheduled stations and arriving at their terminating station within 5 minutes (for London & South East and regional services) or 10 minutes (for long distance services) of their scheduled arrival time[52]. The 'On Time' KPI is defined by Network Rail as showing "the percentage of recorded station stops where the train arrived less than one minute later than its advertised time"[52].

The most recent 4-week performance results for Great Northern services (Period 6), which recorded a PPM of 81.1%, was marginally above the quarterly statistics for all GTR services in 2018-19, but below the national average PPM of 88%. Table 2.17 shows the PPM data for Great Northern and Thameslink Services.

Table 2.17: Public Performance Measure (Moving Annual Average).

Time period	PPM MMA (Great Northern) (%)	PPM MAA (Thameslink) (%)
2018-2019 Q1	80.1	84.5
2018-2019 Q2	77.6	83.1
2018-2019 Q3	78.4	82.5
2018-2019 Q4	78.9	82.2
Yearly average (2018-19)	78.8	83.1

Source: Office of Rail and Road (2019)

Between 2018-19, Great Northern services were marginally less reliable than Thameslink services, with an average PPM score of 78.8% for the year, compared with 83.1% for Thameslink services. The PPM of Great Northern services was also lower than the national average of 86.2% between 2018-19[53].

The DfT PPM target for all GTR services between 2018-19 was 83.1%. Therefore, Great Northern services had a lower PPM than the national average and the DfT target of 83.1% for the wider GTR group.

What does it mean for the Foxton Travel Hub?

Rail travel along the Royston to Cambridge corridor has the potential to improve journey times for users who currently travel by private vehicle along the A10, as the following 'Highway Congestion' section demonstrates. Despite this, the punctuality record of Great Northern rail services is below the national average, and thus has the potential to reduce the attractiveness of the Foxton Travel Hub.

2.4.6.6 Delay on the highway network

At present, the Royston to Cambridge section of the A10 suffers regular peak time congestion. Figure 2.17, Figure 2.18 and Figure 2.19 show journey time delay on the highway network within the study corridor. The seconds of delay above free-flow conditions are colour coded in the legend, with levels of delay in the AM peak (7-10am), inter-peak (12-4pm) and PM peak (4-

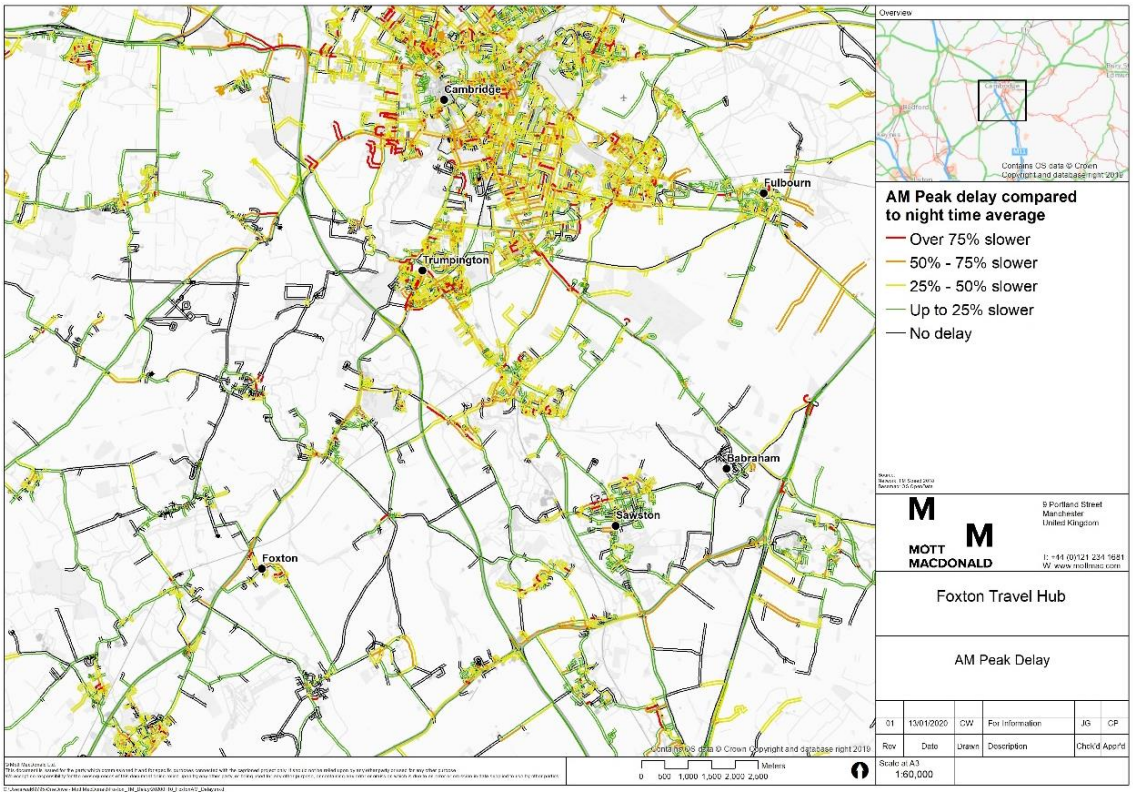
[52] Network Rail (2019). Railway Performance.

[53] ORR. (2019). Passenger Rail Performance.

6pm), compared to periods of time considered to represent free flow conditions (1:30am – 5:30am[54]). This is derived from 2020 TrafficMaster data[55].

The figures show that high levels of congestion occur throughout the day along the A1309 Hauxton Road, which connects the A10 and M11 (at Junction 11) to the CSF, and onward, via the A1134, to Cambridge City Centre.

Figure 2.17: Level of delay – AM Peak (compared to free-flow average)

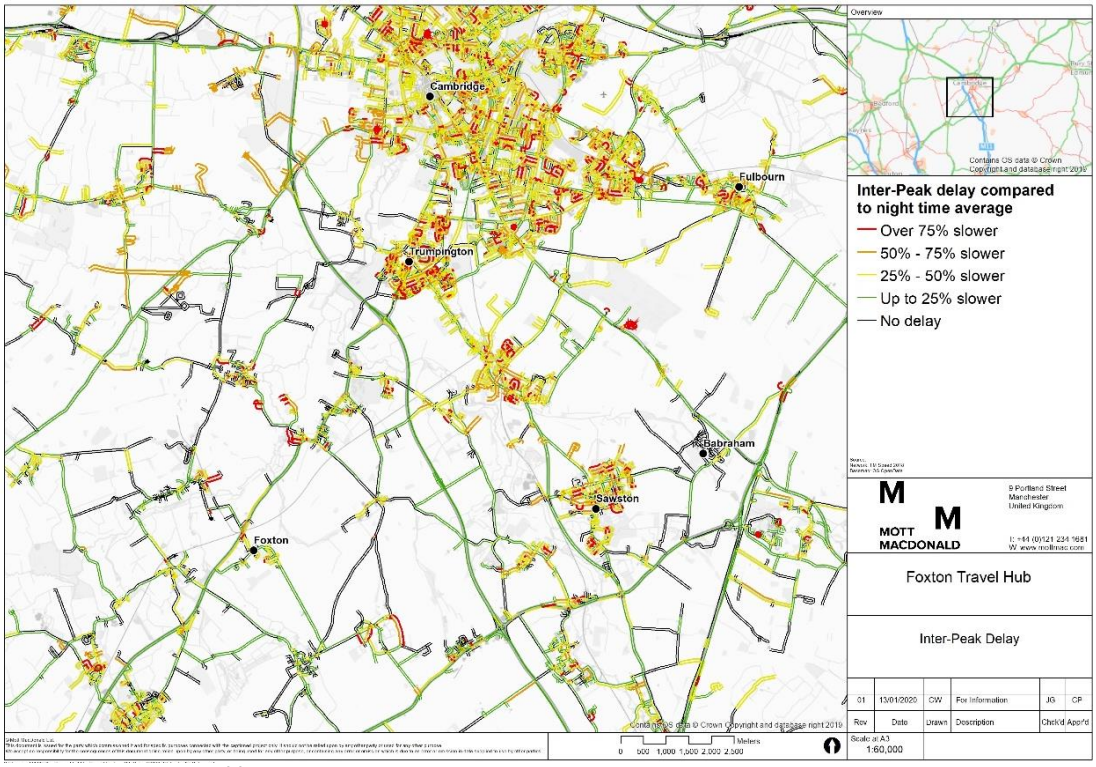


Source: Mott MacDonald

[54] Free flow time period selected to coincide with period when no passenger trains are running, therefore the effect of the level crossing on delay is removed.

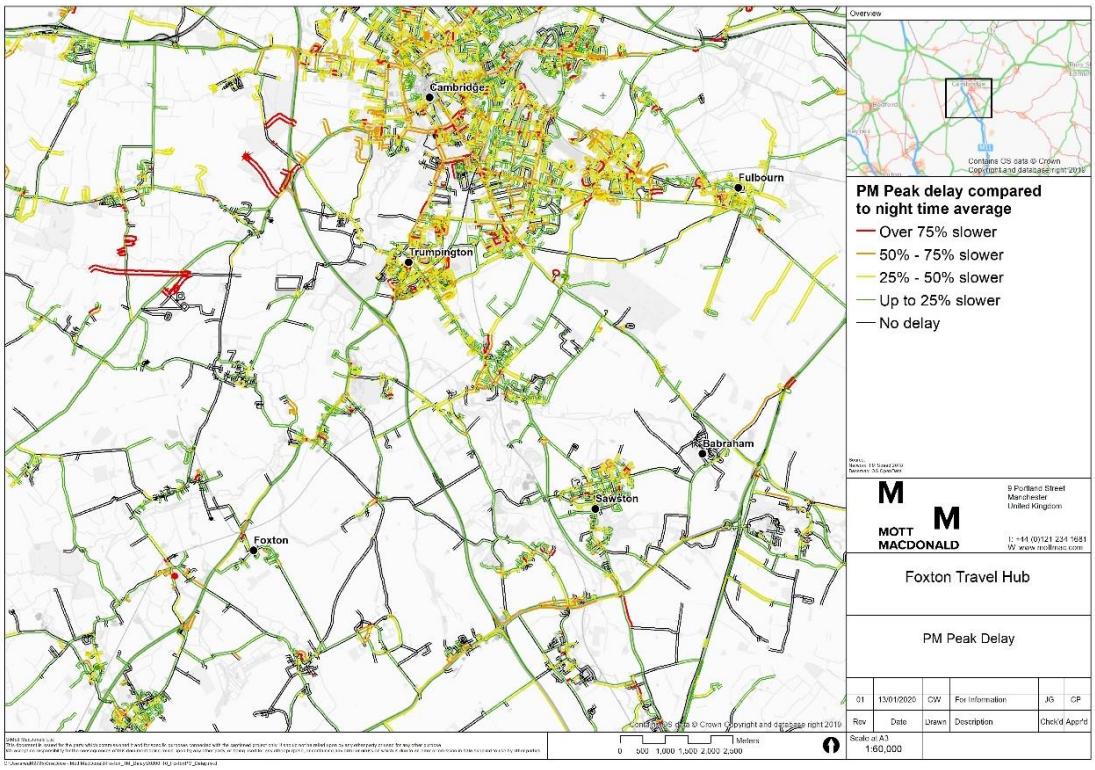
[55] Trafficmaster data excludes weekends and holidays.

Figure 2.18: Level of – Inter-peak (compared to free-flow average)delay



Source: Mott MacDonald

Figure 2.19: Level of PM peak delay (compared to free-flow average)



Source: Mott MacDonald

M11 Junction 11 is a critical pinch point where the M11 and A10 interchange. In the AM peak, the eastbound approach to M11 Junction 11 from the A10, and the northbound approach from the M11, have 25-50% slower travel speeds when compared to free flow conditions[56]. Here, queues can stretch back from Junction 11 through to the northbound approach to the villages of Hauxton and Harston. In addition, congestion on the A10 contributes to delays on the M11 J11 southbound off-slip road.

Further south on the A10 corridor, delays are caused by frequent barrier downtime at the Foxton level crossing. Here, 6-9 barrier downtimes occur per hour causing large delays, which make journey times unpredictable. The project team are seeking to address the impact barrier downtime has on pedestrian connectivity through the design process and coworking with Network Rail. Details of the engagement between the project team and Network Rail is presented in Section 2.7

The results of Manual Traffic Surveys undertaken by Streetwise Ltd. on Monday 14th, Wednesday 16th and Friday 18th May 2018, are presented in the Table 2.18 and Table 2.19 below. The table shows the total length of time the Foxton level crossing was closed during the AM (0800-0900) and PM (1700-1800) peaks. The average length of closure and number of closures themselves are also shown between 0700-1900.

Table 2.18: Duration of level crossing closure at Foxton

Date	AM – Duration of Crossing Closure	PM- Duration of Crossing Closure	Average Length of Closure (7am-7pm)	Number of Closures (7am-7pm)
Monday 14th May 2018	13 mins	20 mins	2 mins 15 secs	93
Wednesday 16th May 2018	15 mins	20 mins	2 mins 25 secs	91
Friday 18th May 2018	17 mins	19 mins	2 mins 24 secs	87

Source: Streetwise Ltd[57]

Table 2.18 shows that total barrier downtimes can exceed 15 minutes in the AM peak, and 20 minutes in the PM peak. These delays correspond with large queues for both northbound and southbound movements on the A10. The average maximum queue lengths are shown, both northbound and southbound, in Table 2.19 below. Maximum queue length represents the highest number of vehicles (in PCU) recorded queuing behind the level crossing barriers during each barrier closure; the average maximum queue is an average of those queues over a specified time period e.g. the AM peak.

Table 2.19: Average maximum queue length in the peak hour

Date	AM – Average Max Queue (PCU)		PM - Average Max Queue (PCU)	
	Northbound	Southbound	Northbound	Southbound
Monday 14th May 2018	28	31	55	32
Wednesday 16th May 2018	37	43	54	51
Friday 18th May 2018	29	33	40	29

Source: Streetwise Ltd[58]

56 Atkins - Western Orbital Study Options Report (September 2015)

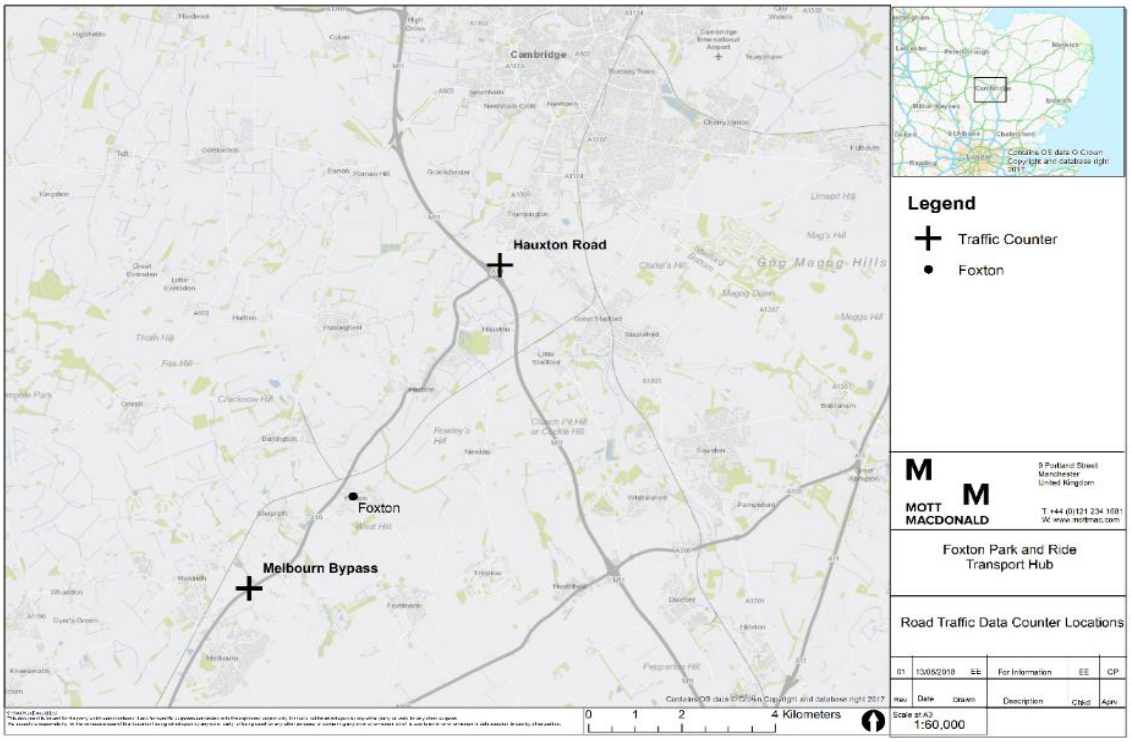
57 Surveys carried out for the purpose of the Foxton Level Crossing Bypass Strategic Outline Business Case (January 2019).

58 Surveys carried out for the purpose of the Foxton Level Crossing Bypass Strategic Outline Business Case (January 2019).

Table 2.19 shows that queue lengths are longer in the PM peak than the AM peak. In the AM peak, queues are broadly similar for northbound and southbound traffic. In the PM peak however, queues are longer for traffic heading northbound toward Cambridge.

Traffic count data has also been collected along the A10 near the Melbourn Bypass (Figure 2.20). This data was collected over a 12-hour period (0700-1900) and provides two-way flow analysis[59]. The results are presented in Table 2.20.

Figure 2.20: Location of road traffic counts



Source: Mott MacDonald

The traffic counts show that the amount of car traffic on the A10 just south of Foxton has increased by 6% between 2012 and 2015. Consequentially, commuters experience average speeds of less than 10mph on multiple road segments travelling northbound during the morning (AM) peak period and southbound during the evening (PM) peak period.

59 CCC, Road traffic data - https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/roads-and-pathways/road-traffic-data/

Table 2.20: A10 Melbourn Bypass traffic counts

Year	Pedal Cyclists	Motorcyclists	Cars	LGVs	HGVs	Buses	Total
2012	5	71	9,484	1,125	343	38	11,066
2013	3	72	9,837	1,534	378	51	11,875
2014	10	60	10,148	1,588	400	36	12,242
2015	6	42	9,809	1,203	661	34	11,755
Difference 2012-15	1	-29	325	78	318	-4	689
% Change	20%	-41%	3%	7%	93%	-11%	6%
2015 % mode share	0.1%	0.4%	83.4%	10.2%	5.6%	0.3%	100%

Source: Cambridgeshire County Council[60]

The growth in traffic and the related levels of delay identified at key points along the A10 corridor indicates that future growth in trips cannot be accommodated without having a further detrimental impact on congestion.

2.4.6.7 Car mode share and ownership

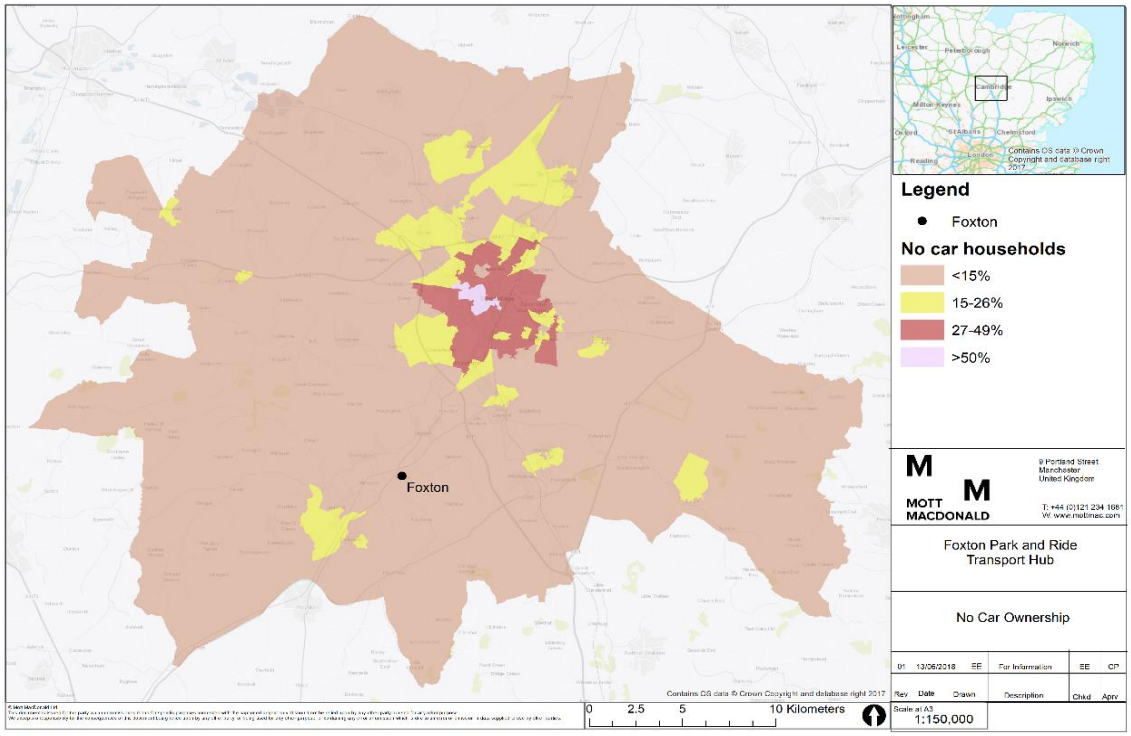
The latest available data shows that private car trips make up 83%[61] of mode share of trips on the A10 to the south of M11 Junction 11 within Cambridgeshire. Car ownership levels are also very high within Cambridge and South Cambridgeshire. Here, less than 15% of households are 'no car households', which is below the national average of 26%[62]. Areas closer into Cambridge city centre have a higher proportion of households with no car ownership; in part, this is likely to reflect the better public transport links, high cycle mode share and shorter average travel distances within Cambridge. Figure 2.21 graphically presents the levels of car ownership across Cambridge and South Cambridgeshire (2011 census).

[60] Cambridgeshire County Council, Road traffic data - https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/roads-and-pathways/road-traffic-data/

[61] Cambridgeshire County Council Traffic Monitoring Report 2016. https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/roads-and-pathways/road-traffic-data/

[62] Office of National Statistics – 2011 Census

Figure 2.21: No car ownership



Source: Mott MacDonald

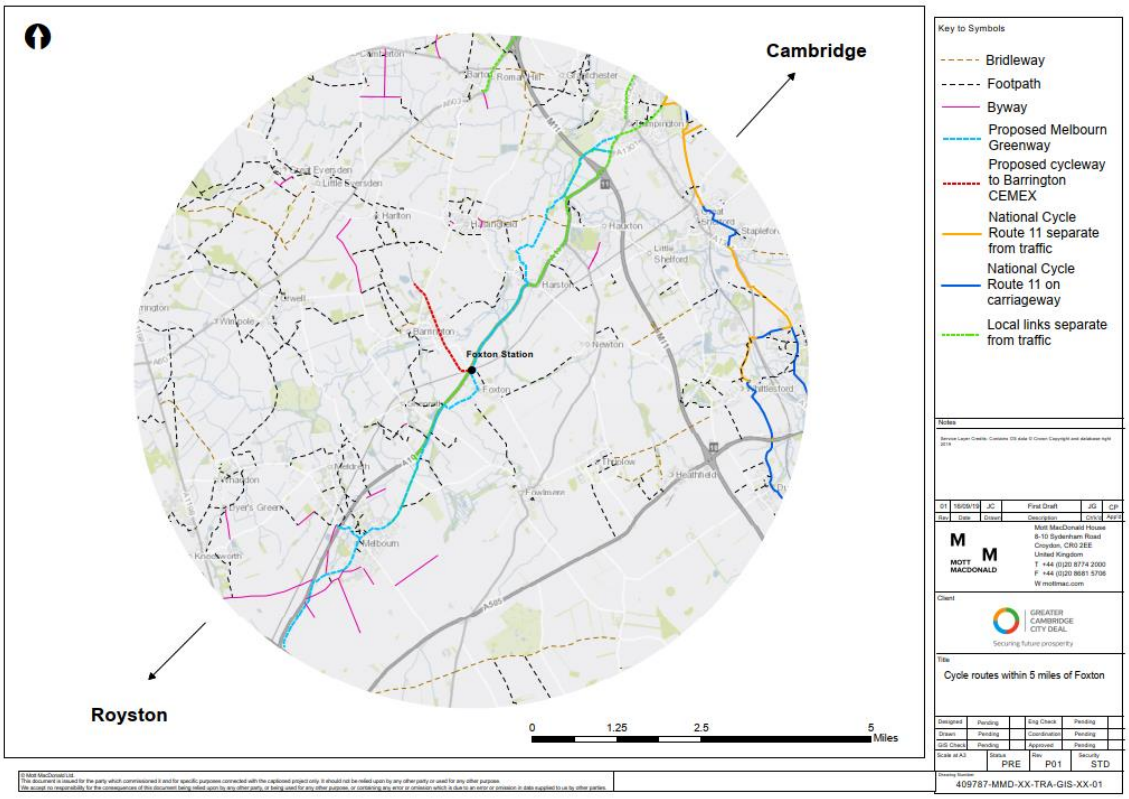
The current transport network provides few attractive alternatives to car travel from areas to the west of Junction 11 of the M11. Firstly, there is limited scope for intermodal transfer, such as Park & Rail, at existing stations in the corridor. Secondly, the absence of frequent bus services (1bph) and priority measures along the corridor, coupled with long journey times and high travel costs, means travelling by bus is not a viable or attractive travel option for many. Accordingly, bus mode share is just 0.3% based on traffic counts along A10 Melbourn Bypass, as shown in Table 2.20.

2.4.6.8 Walking and cycling connections

A high-quality segregated multi-user route is provided along sections of the A10 between Royston and Cambridge, as shown in Figure 2.22. At present, the A10 multi-user route runs from Melbourn and Frog End into Cambridge mostly following the alignment of the A10.

The Melbourn Greenway proposes to provide a complete segregated cycle link along the A10 corridor, as well as potentially introducing cycle infrastructure on the local road network that is complimentary to the existing cycle network. The proposals to enhance walking and cycling as part of the Melbourn Greenway project are summarised in Section 2.2.5.

Figure 2.22: A10 cycle route



Source: GCP

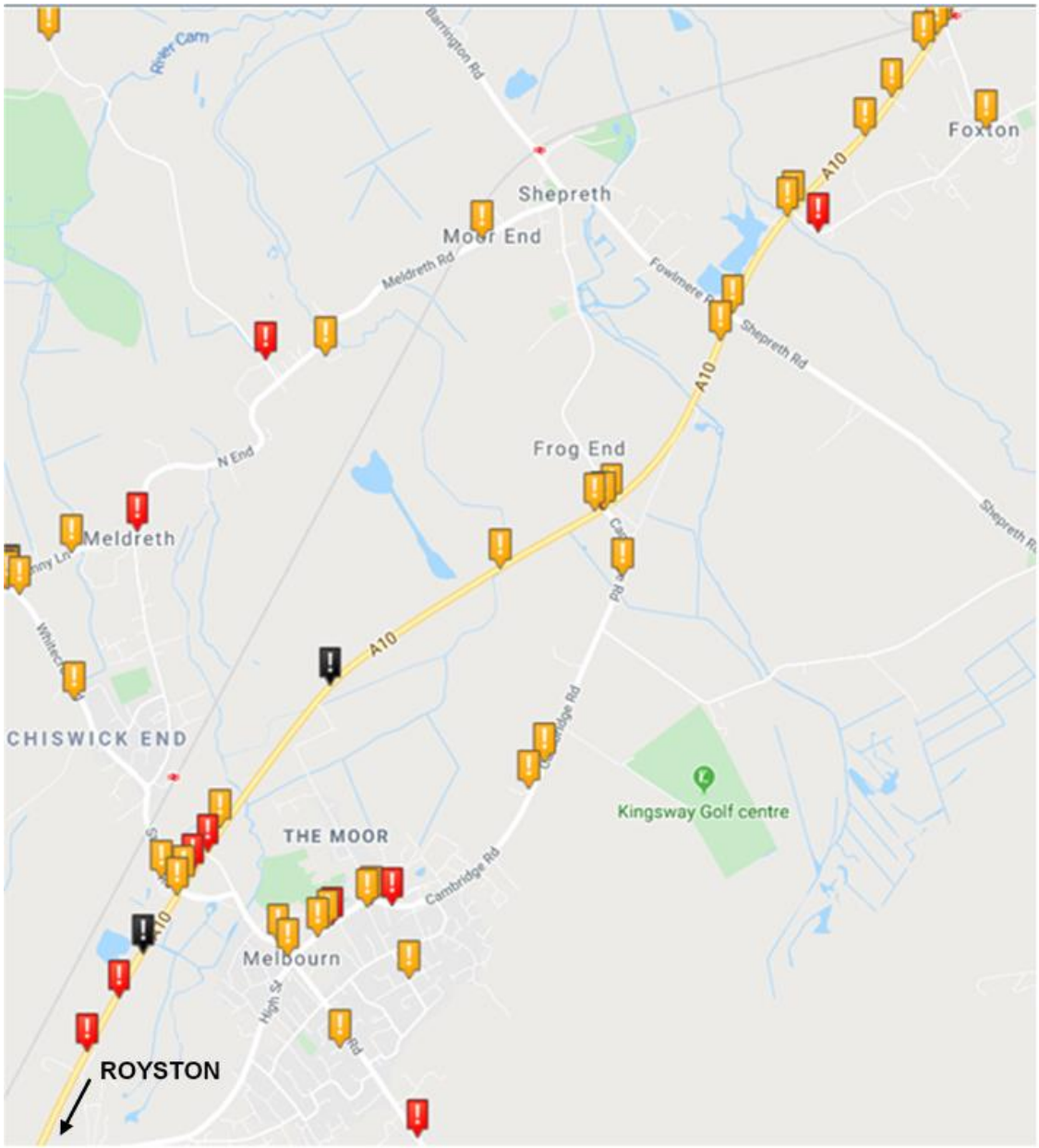
2.4.6.9 Road safety

Recent collision data has been collected for the Royston to Cambridge corridor. Between 2014 and 2018 there was a total of 57 collisions, of which 44 were slight, 10 serious and 3 fatal[63].

Figure 2.23 shows that of the 57 collisions, 31 occurred between Royston and Foxton Station, comprising 21 slight, 7 serious and 3 fatal. The collisions were spread along the route with a cluster at the A10 / Cambridge Road junction near Frog End and a cluster along the A10 adjacent to Melbourn.

63 Crash Map - www.crashmap.co.uk

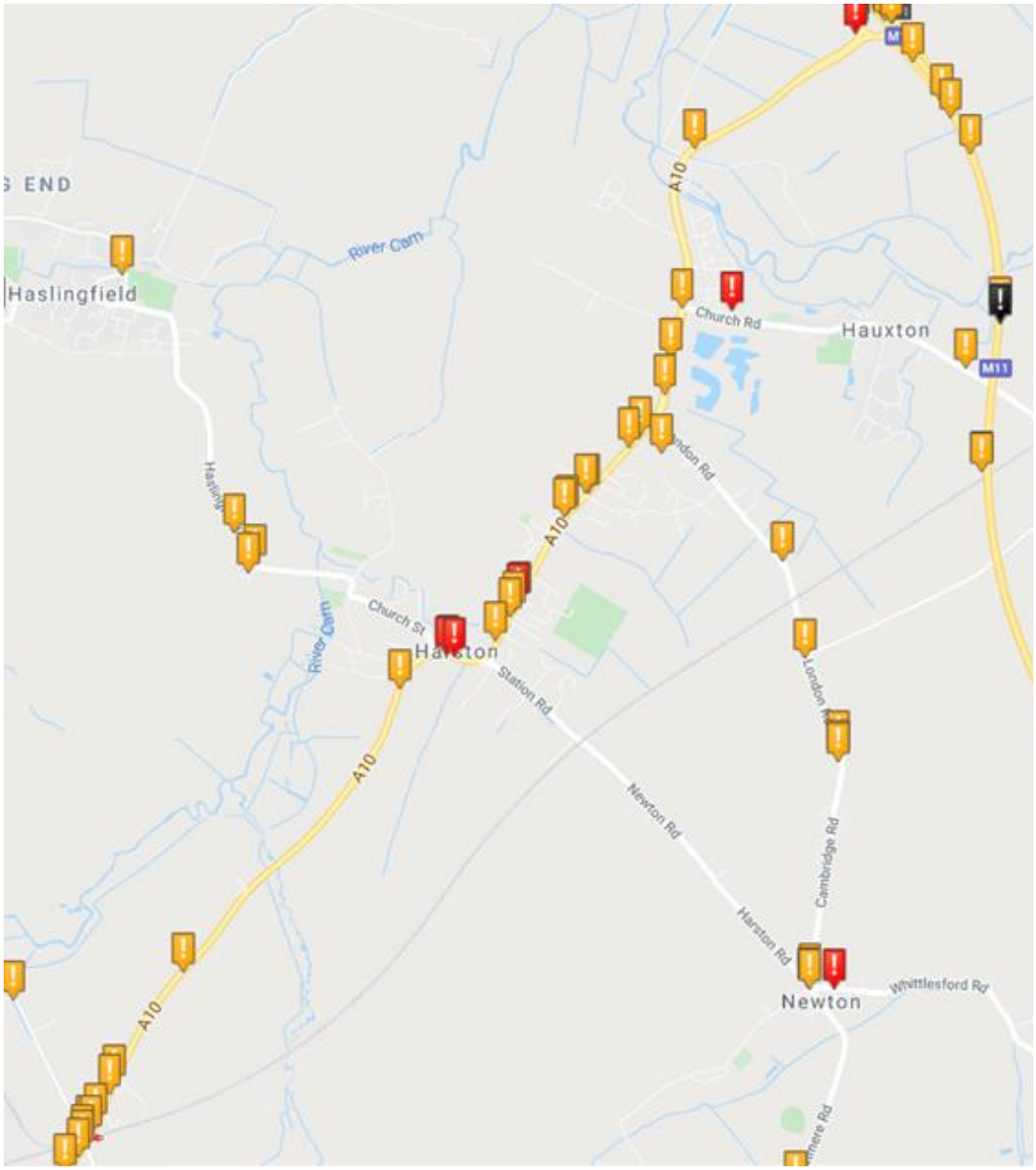
Figure 2.23: Map of collision data along A10 between Royston and Foxton Station



Source: Crash Map

Figure 2.24 shows that the other 26 collisions occurred between Foxton Station and M11 J11 (not including M11 J11), comprising 23 slight and 3 serious. The collisions were clustered around the level crossing at Foxton, through Harston and along the A10 adjacent to Hauxton.

Figure 2.24: Map of collision data between Foxton Station and M11 J11



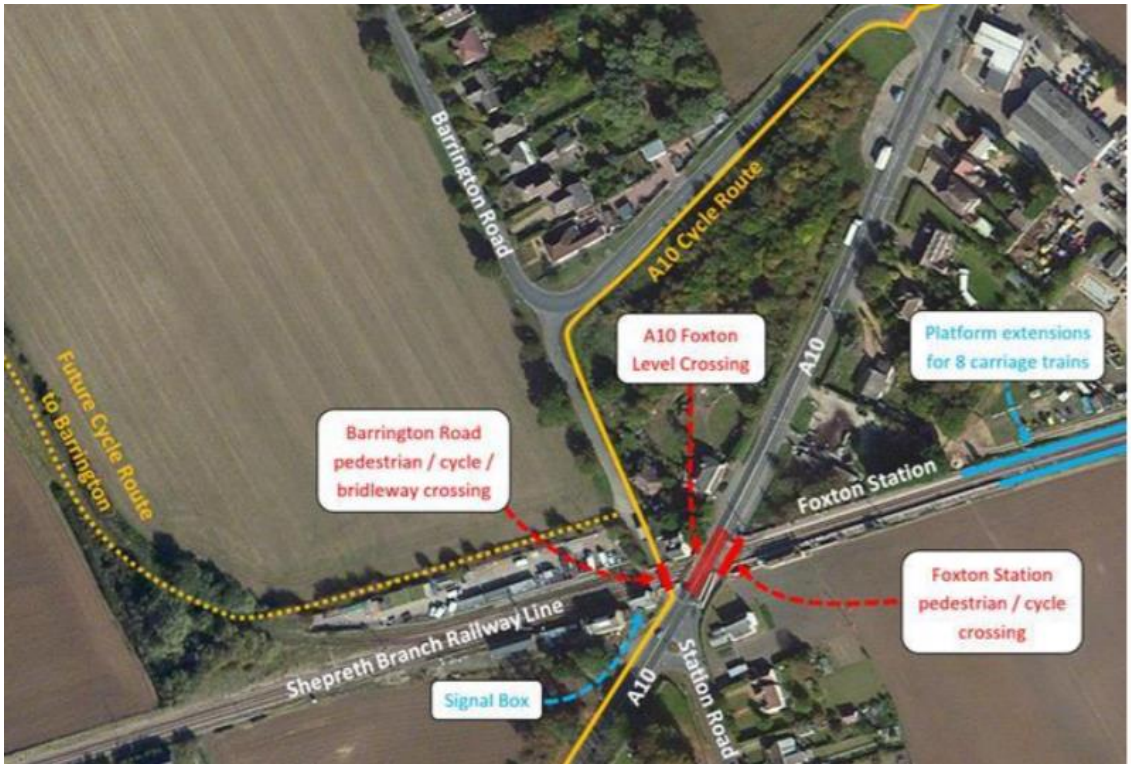
Source: Crash Map

2.4.6.10 Pedestrian access to Foxton station

The proposed Travel Hub scheme will require the provision of safe and convenient access to the proposed Travel Hub site and onward connectivity to Foxton station. Therefore, the proposed scheme should be conveniently accessible by car, cycle and on foot.

Presently, the Foxton Level Crossing is formed of three at grade crossings of the rail track: one road, and two pedestrian / cycle / bridleway, as shown in Figure 2.26. The crossings provide the only means for rail users to change between northbound and southbound platforms at Foxton station.

Figure 2.25: Foxton Level Crossing



Source: GCP (2018): A10 Foxton level crossing bypass and travel hub report.

Manual Traffic Surveys undertaken during May 2018, demonstrated that downtime at the Foxton level crossing can exceed 15 minutes in the AM peak, and 20 minutes in the PM peak. The duration of barrier downtime has a significant severance effect and has the potential to result in journey time delays for pedestrians that reduce the attractiveness of the proposed Travel Hub scheme. If the pedestrian level crossing were also to be closed as part of the CPCA's potential Level Crossing Bypass scheme, then alternative provision for pedestrian access across the rail line would be required.

Although a pedestrian bridge or underpass could further enhance the success of the Travel Hub scheme, the provision of a crossing does not, at present, form a core part of the scheme. However, the project team is engaging with the Network Rail scheme project manager of the Cambridge Inner / Outer Re-signalling Renewal project (henceforth, the Cambridge Re-Signalling project) regarding the possibility of collaborating in a multi-agency approach to delivering a pedestrian and cycle bridge. These discussions are ongoing.

The purpose of the Cambridge Re-signalling project is to re-signal areas of the Cambridge rail area that currently use out of date equipment, including the installation of obstacle detection (OD) technology at manually controlled level crossing barriers, such as Foxton. The Cambridge Re-signalling project has several objectives with the primary focus of improving safety, efficiency and capacity in the signal area controlled by the Cambridge Power Signal Box (PSB). To achieve these objectives, it would be preferable to close the Barrington Road pedestrian level crossing, which forms part of the Foxton level crossing.

The Barrington Road level crossing cannot currently be operated remotely via automatic control boxes. For this reason, the provision of a pedestrian and cycle footbridge over the Cambridge

rail line, which would replace the access function of the Barrington Road level crossing, would be mutually beneficial to both projects.

At present the GCP and Network Rail have agreed to investigate the potential delivery of a pedestrian and cycle bridge over the Cambridge Line and A10 through a multiagency approach. Further details of the engagement between the project team and Network Rail, including information relating to the development, cost and delivery of a proposed pedestrian and cycle bridge, is presented in Section 2.7. Furthermore, the Financial Case presents the costs and wider implications of each potential access options for the proposed Travel Hub.

2.4.6.11 Air quality

At present, there is no evidence of any air quality issues along the A10 corridor between Royston and Cambridge, although further research may be required to confirm this. Furthermore, SCDC do not currently monitor air quality in Foxton, which demonstrates SCDC believes air quality is acceptable in the area.

The closest air quality monitoring station to the village of Foxton is a diffusion tube (which is a passive air quality monitoring device) at 47 High Street in Harston; the diffusion tube has been used to measure roadside annual mean NO_2 concentrations since 2006. While not confirmed, it is possible that the reason why air quality monitoring started in Harston is due to the village being situated around a primary route (A10) a direct junction with the Strategic Road Network (M11). Although Harston is located approximately 3km north of Foxton, the air quality is expected to be broadly similar, because both receptors are adjacent to a similar section of the A10, and traffic flows in the two areas are broadly comparable.

DEFRA's Local Air Quality Management Technical Guidance (2016) provides a list of rail lines where emissions associated with diesel trains should be considered for air quality assessment purposes. The rail line at Foxton is not included in this list, likely due to the electrification of passenger services. In addition, on rail lines with heavy diesel train traffic, emissions from trains only need to be considered where background NO_2 is greater than 25µg/m^3. As shown in Table 2.21 , background NO_2 concentrations in Foxton are less than 8µg/m^3.

Table 2.21 presents the annual NO_2 concentration measured in Harston since 2006 which is considered to be a useful proxy for concentrations in Foxton. The data and associated figures show that the annual NO_2 concentrations have remained below the air quality objective over the measured period.

In summary, the Cambridge Line rail line is electrified, is not heavily trafficked by diesel trains, and background NO_2 concentrations in Foxton are low; furthermore, the proposed Travel Hub does not propose to change the frequency of train movements. Therefore, the effect of trains using the rail line are considered to have a negligible effect on local NO_2 concentrations.

Table 2.21: NO2 monitoring data at 47 High Street, Harston

Year	Annual NO_2 concentration ($\mu g/m^3$)
2006	26.6
2007	26.1
2008	27.0
2009	28.1
2010	29.6
2011	23.7
2012	25.6
2013	25.7
2014	28.0
2015	28.4
2016	28.6
2017	27.3

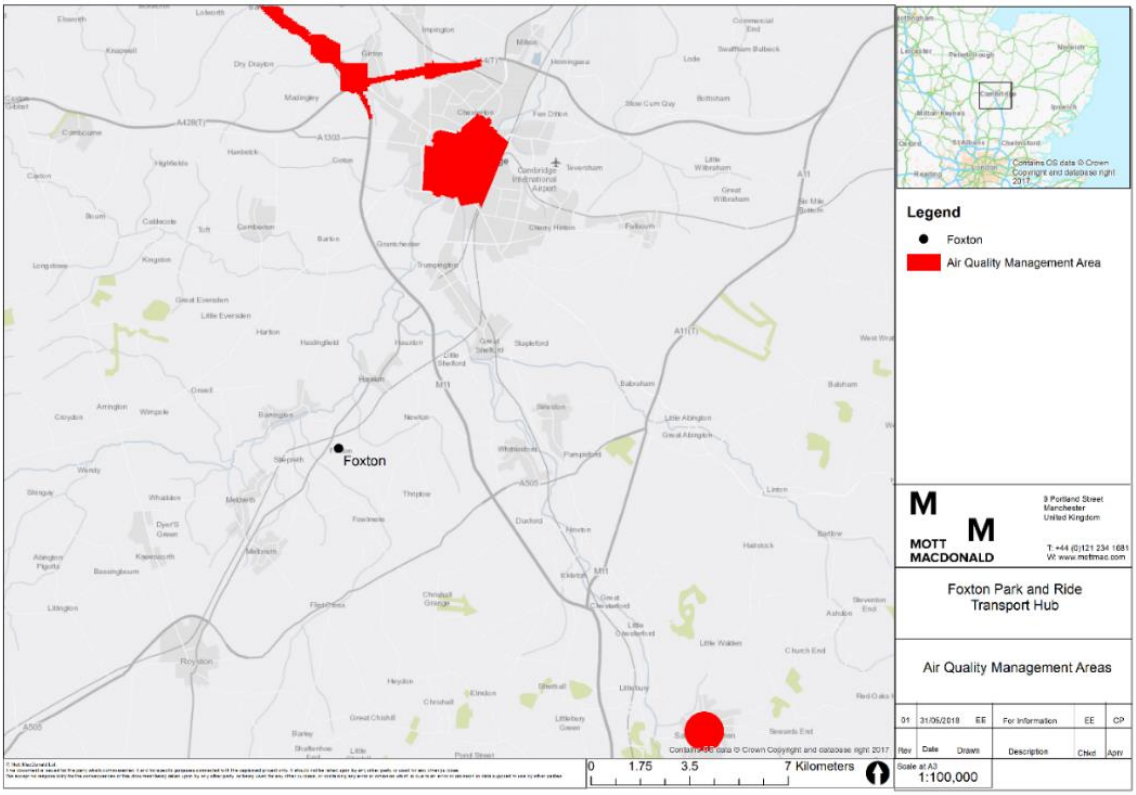
Source: South Cambridgeshire District Council Review and Assessment Documents

The proposed Travel Hub is intended to alleviate congestion arising from the forecast growth in traffic along the A10 in response to committed and planned developments in Greater Cambridge. Therefore, whilst radial routes into Cambridge, such as the A10, do not highlight any air quality issues, there are air quality issues within Cambridge City Centre itself, to which traffic routing along the A10 contributes. This is evident by the presence of an Air Quality Management Area (AQMA) as illustrated in Figure 2.26. An AQMA is an area where national air quality objectives are unlikely to be met, and a plan is put in place to improve the air quality accordingly. The Cambridge AQMA suffers from poor air quality which is in part due to the high number of vehicles that enter the city centre. Indeed, the Cambridge City Council webpage on air pollution states that vehicle exhausts and local combustion are the "*main sources of air pollution in the Cambridge AQMA*"[64].

Promoting and enabling modal shift toward sustainable modes of transport is a central issue set out within the City Deal and the various local transport strategy documents. This includes the greater use of public transport modes such as bus and rail, with the provision of additional transport interchanges sites, such as the Foxton Travel Hub, also providing the opportunity to reduce current and future growth in car trips and correspondingly the harmful pollutants within the Cambridge city centre AQMA.

[64] Cambridge City Council. Air pollution internet information (www.cambridge.gov.uk/air-pollution-levels-and-monitoring-them)

Figure 2.26: Air Quality Management Areas



Source: Mott MacDonald

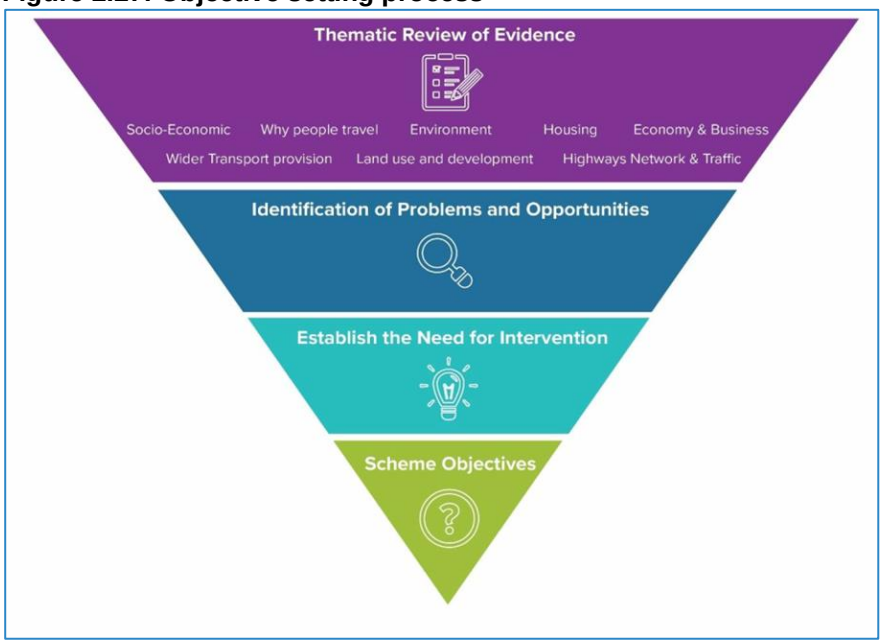
A formal Air Quality technical note has been prepared for the Foxton Travel Hub scheme and is appended in Appendix H for reference.

2.5 Scheme objectives

Taking into account the underlying drivers and need for investment, as well as national, regional and local policies and strategies, a set of scheme objectives has been established to guide the options assessment process for a new travel hub site between Royston and M11 Junction 11 along the A10. The primary purpose of the scheme objectives is to ensure that the option short list is targeted towards meeting the needs of Greater Cambridge.

The objectives generation process is summarised in Figure 2.27 below.

Figure 2.27: Objective setting process



Source: Mott MacDonald

2.5.1 Scheme objectives

Based on the need for investment, the following scheme objectives have been established to provide the overarching direction for this scheme, in order to ensure it addresses the identified issues and opportunities.

Figure 2.28: Scheme objectives[65]

1	**Maximise the potential for all journeys to be undertaken by sustainable modes of transport**
2	**Improved overall connectivity and accessibility within Greater Cambridge to support economic growth**
3	**To accommodate future growth in trips along the Royston to Cambridge route and reduce impact on traffic levels and congestion**
4	**Contribute to enhanced quality of life for those living and working within Greater Cambridge**

Source: Mott MacDonald

For each scheme objective a series of measurable sub-objectives have been identified. The sub-objectives inform the assessment criteria used to test the options and identify the best performing solution. These sub-objectives are set out in Table 2.22.

[65] Scheme objectives developed based on the identified issues and opportunities and in conjunction with GCP.

Table 2.22: Scheme sub-objectives

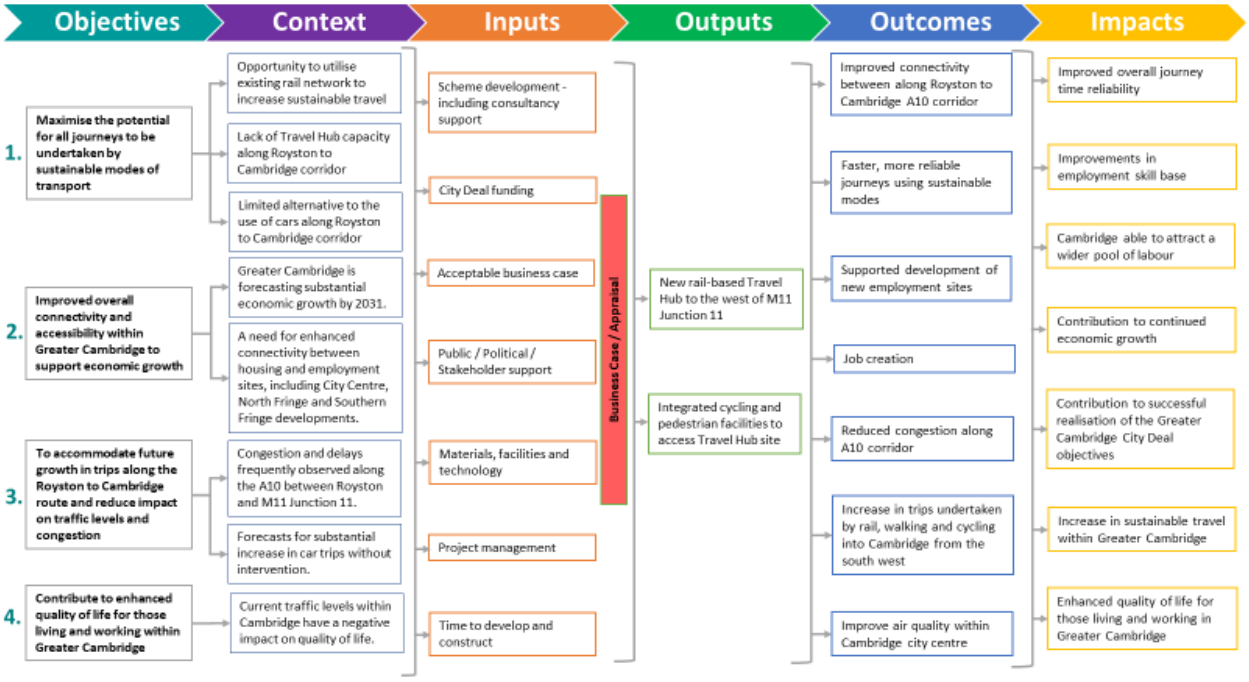
Objective	Sub-Objectives
A. Maximise the potential for all journeys to be undertaken by sustainable modes of transport	**A-1** To increase sustainable transport mode share for trips into the city centre, the Cambridge Northern Fringe and Cambridge Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.
	A-2 To increase travel hub capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.
	A-3 To reduce journey times from travel hub sites to key employment areas to enable public transport journeys to compete more effectively with the private car.
B. Improve overall connectivity and accessibility within Greater Cambridge to support economic growth	**B-1** To increase connectivity between settlements along the Royston to Cambridge route and the city centre, and the Northern and Southern Fringe areas.
C. Accommodate a future growth in trips along the Royston to Cambridge route and reduce impact on traffic levels and congestion	**C-1** No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.
D. Contribute to enhanced quality of life for those living and working within Greater Cambridge	**D-1** To improve quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.
	D-2 To increase cycling and walking along the Royston to Cambridge A10 corridor.

Source: Mott MacDonald

2.6 Critical success factors

The following section summarises how the objectives set out in Section 2.5 are made accountable through the implementation of measurable success indicators. Firstly, a logic map which details how the objectives ultimately link to the desired outcomes of the proposed scheme, is presented below.

Figure 2.29: Logic map



Source: Mott MacDonald

The measurable objectives and sub-objectives set out above have been assigned at least one indicator to allow the performance of the scheme, once delivered, to be measured over time.

The proposed success indicators are set out in Table 2.23.

Table 2.23: Proposed success indicators

Proposed indicators	Relating to objective
Increased multimodal trips along the study corridor, via the Foxton Travel Hub, to Cambridge City Centre, the Cambridge Southern Fringe, and the Cambridge Northern Fringe. Increased number of rail trips to Cambridge City Centre, the Cambridge Southern Fringe, and the Cambridge Northern Fringe along the corridor.	**A-1** To increase sustainable transport mode share for trips into the city centre, the Cambridge Northern Fringe and Cambridge Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.
Increased number of car and cycle spaces available at transport interchange facilities along the Royston to Cambridge corridor.	**A-2** To increase travel hub capacity along the Royston to Cambridge A10 corridor.
Journey times on the A10 Harston to J11. Average journey times for all commuters along the A10 corridor from the south west.	**A-3** To reduce journey times from travel hub sites to key employment areas.
Number of people within an acceptable journey time of employment opportunities within Cambridge City Centre, the Cambridge Southern Fringe and the Cambridge Northern Fringe.	**B-1** To increase connectivity between settlements along the Royston to Cambridge route.
Traffic flow through Harston and Hauxton. Traffic flow on the approach to the Junction 11 of the M11.	**C-1** No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.
Air quality within the city centre to be within acceptable levels.	**D-1** To improve quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.
Number of journeys being undertaken using cycling and walking, including those to access the travel hub site.	**D-2** To increase cycling and walking along the Royston to Cambridge A10 corridor.

Source: Mott MacDonald

Further detail on how scheme performance is to be assessed will be provided in the Benefits Realisation Plan, which is summarised in Section 6.18 and included in Appendix I for reference.

2.7 Options assessment

The following section summarises the details of the appraisal and sifting processes used during the multi-stage optioneering process to arrive at a short list of options. The selection of the preferred option is set out in the Economic Case (Section 3).

2.7.1 Method overview

Since the project's inception, the scheme has progressed through a series of optioneering steps to identify and assess options that address the scheme objectives. The aim of this process was to identify a preferred location for the proposed Travel Hub scheme. The detailed options assessment process, including the results are set out in Appendix A – Options Assessment Report.

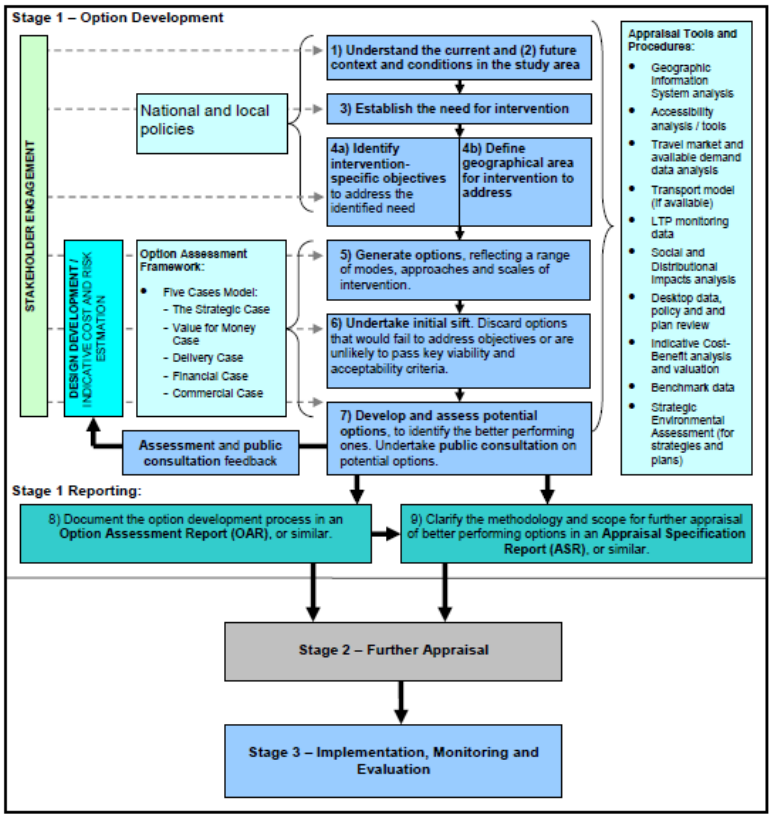
The options assessment for this scheme followed the DfT's guidance 'The Transport Appraisal Process', which provides detailed guidance on appraisal and the requirements needed for transport intervention. A structured approach sets out the necessary steps from initial intervention through to detailed appraisal. The approach taken is designed to support the

preparation of business or investment cases to subsequent approval stages and post implementation evaluation (see Figure 2.30 and Figure 2.31 which illustrate the DfT process).

The three stages in the DfT's transport appraisal process are shown below:

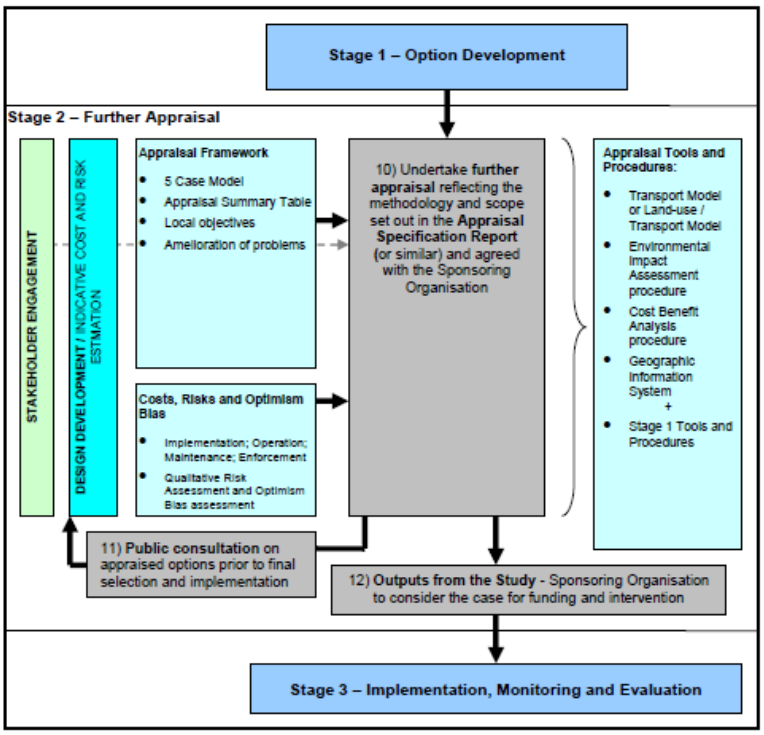
- **Stage 1** – Option Development. This involves identifying the need for intervention and developing options to address a clear set of locally developed objectives that express desired outcomes. The options are then sifted to identify the better performing options, which are progressed to a further detailed appraisal in Stage 2.
- **Stage 2** – Further Appraisal of a small number of better performing options. Stage 2 is designed to enable decision-makers to make a rational and auditable decision about whether or not to proceed with intervention. The further analysis focuses on estimating the likely performance and impacts of intervention(s) in sufficient detail.
- **Stage 3** – Implementation, Monitoring and Evaluation.

Figure 2.30: Stage 1 of the Transport Appraisal Process ('Option Development')



Source: DfT (2014), Transport Analysis Guidance: The Transport Appraisal Process

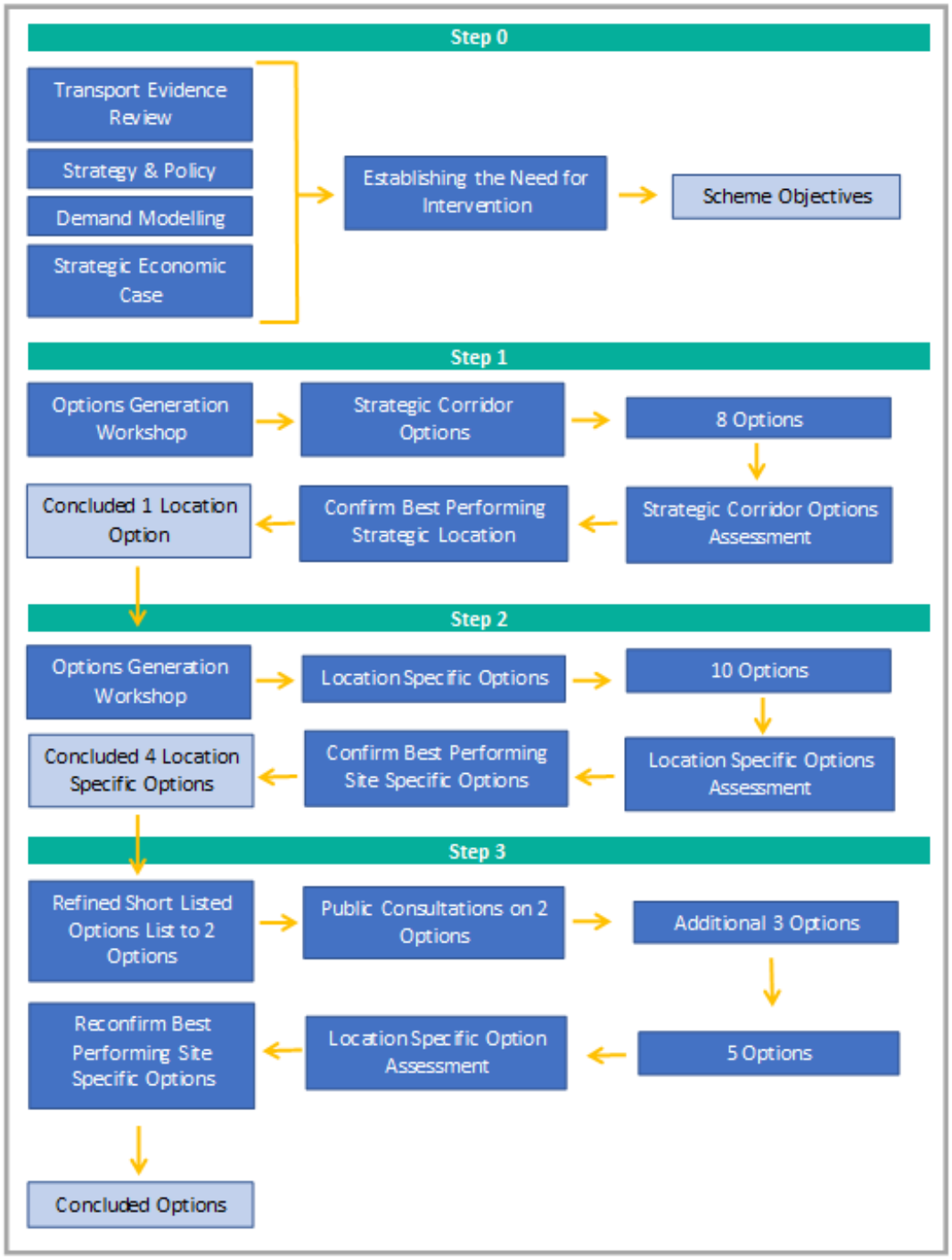
Figure 2.31: Stage 2 of the Transport Appraisal Process ('Further Appraisal')



Source: DfT (2014), Transport Analysis Guidance: The Transport Appraisal Process

The options appraisal process carried out to date for the proposed scheme and reported on in the OAR (Appendix A) was structured to align with Stage 1 of the DfT's transport appraisal model. Our tailored approach to the process is illustrated in Figure 2.32.

Figure 2.32: Foxton options assessment process



Source: Mott MacDonald

Step 0 – Establishing the need for intervention

Step 0 includes identifying the need for intervention and investment in a travel hub on the A10 between Royston and Cambridge based on the issues and opportunities identified from the transport evidence review, the strategy and policy review, demand modelling and the establishment of the strategic economic case.

Taking into account the opportunities, aspirations and problems identified that underpin the need for investment, a set of scheme objectives have been established to guide the option assessment for investment in Travel Hub facilities along the A10 corridor between Royston and Cambridge. These objectives are also aligned to existing policy and strategy to guide the solutions and options selection. Hence, the options short list is targeted towards meeting the needs of Greater Cambridge.

Step 1 – Strategic Corridor Options Generation and Assessment

Step 1 involved the identification of a series of strategic corridor options. All options were judged to have the potential to align with the scheme objectives, derived from evidence-based issues and opportunities through a workshop approach.

The options were assessed against a series of assessment criteria derived from the scheme objectives to identify the most suitable general location for a new Travel Hub along the Royston to Cambridge A10 route i.e. Which strategic location works best as a potential transport interchange?

Step 2 – Location Specific Options Generation and Assessment

Step 2 involved the assessment of location-specific options based around the best performing strategic corridor option from the first step. These options were also generated through a workshop approach.

The purpose of this step was to identify the best performing options to take forward for further assessment and possible stakeholder consultation. Where appropriate the same assessment criteria used to assess the strategic corridor options were applied, with additional criteria included where necessary to differentiate the options. Assessment criteria used during the first step that were not relevant to the location specific options were not used.

Those options that had the lowest scores or failed to meet critical assessment criteria i.e. around deliverability, were deemed to not meet the scheme objectives and discounted from further assessment or appraisal as part of Stage 2 of the DfT's Transport Appraisal Process. These options were not included in any stakeholder consultation or further business case development.

Step 3 - Location Specific Options Generation and Assessment Post Public Consultation

A key aspect of the options assessment during both steps was the grouping of assessment criteria into broad themes that were aligned to the scheme objectives. The grouping process enabled the options to be assessed and weighted differently, depending on the focus of the objective being considered. The themes used for each step are set out in Table 2.24 below.

Table 2.24: Themes Used for the Options Assessment Steps

Stage	Economic Growth	Congestion Relief	Sustainable Travel	Quality of Life	Deliverability
Stage 1 (Corridor)	✔	✔	✔	✔	✔
Stage 2 (Location Specific)	✕	✕	✔	✔	✔
Stage 3 (Location Specific Post Consultation)	✕	✕	✔	✔	✔

Source: Mott MacDonald

2.7.2 INSET methodology

For the options assessment, Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET) was applied to assess options against criteria developed to establish how well each option aligned with a set of assessment criteria derived from the scheme objectives. This facilitated a comparison and ranking of the options.

INSET is a decision support toolkit developed in-house by Mott MacDonald which is used through the development of this scheme to carry out the initial sift. INSET is designed to be simple, flexible, replicable and transparent. It is based on Green Book compliant Multi-Criteria Decision Analysis (MCDA) and is compliant with the DfT's EAST (Early Assessment and Sifting Tool) process.

2.7.3 Options development

The options were developed at as part of a two-part workshop between CCC/GCP officers, Skanska design consultants and Mott MacDonald transport consultants. The first part of the workshop focused on the strategic corridor options between Royston and Cambridge along the A10, and the second part focused on location-specific options.

2.7.4 Step 1: Strategic Corridor Options Assessment

2.7.4.1 Strategic Corridor Options

Eight strategic options were identified along the corridor, including bus-based and rail-based travel hub locations. The primary factor for identifying each option was whether they were located between Royston and the M11 Junction 11. The two options associated with the Cambridge South West Travel Hub proposals; the expansion of the existing Trumpington Park & Ride site and the new travel hub at M11 J11, were also included in the assessment. These sites were included as options to allow for a comparison within the options assessment. It should be noted that because the Trumpington Park & Ride site already exists, the site scores very highly on criteria pertaining to sustainable travel and deliverability.

In addition, one of the main aims of the M11 J11 site is to capture trips from the M11, and reduce congestion and provide additional capacity at M11 Junction 11. However, the purpose of this options sifting process was to assess the impacts of a travel hub scheme along the A10 corridor; hence, the assessment criteria are primarily focused on capturing trips from the A10. Therefore, the benefits the M11 J11 site brings to users of the M11, and M11 J11, are not intended to be fully captured in this assessment.

The full list of options is presented in Table 2.25 below.

Table 2.25: Strategic Corridor Options Descriptions

No.	Option Name	Option Description
1	Trumpington	Bus based park and ride option. Expansion of existing Trumpington Park & Ride.
2	M11 Junction 11	Bus based travel hub option. New travel hub provision situated in the vicinity of M11 Junction 11 – this may be to the north, south, east or west.
3	Hauxton	Bus based travel hub option. Situated to the west of the A10 near the junction of A10 Cambridge Road and Church Road next to Hauxton village.
4	Harston	Bus based travel hub option. Situated either to the east or west of the A10 on the approach to Harston village from the west.
5	Foxton	Rail based travel hub option. Situated on the A10 in the vicinity around Foxton rail station.
6	Shepreth	Rail based travel hub option. Situated east or west off Barrington Road to the north of Shepreth rail station.
7	Meldreth	Rail based travel hub option. Situated off Station Road to the south of Meldreth rail station.
8	Royston	Rail based travel hub option. Expansion of current Royston rail station car park (not including any decking).

Source: Mott MacDonald

Figure 2.33: Royston to Cambridge corridor – strategic travel hub options

Source: Mott MacDonald

2.7.4.2 Step 1 Options Assessment Results

The eight locations have been assessed based on the extent to which they meet the scheme objectives and based on environmental constraints.

The results of the Strategic Corridor options assessment within INSET are summarised in Table 2.26 with the options ranked by their final score. The total score column provides an overall score for each key theme. The total score is based on the appraisal of criteria detailed in the OAR (Appendix A).

All scores have been normalised so that the results shown are out of 1. All themes, main criteria and sub-criteria have been weighted equally. The higher scores for each theme have been shaded in dark green, with middle scores highlighted in lighter green and lower scores in yellow.

Table 2.26: INSET Results – Strategic Corridor Options

Rank	Option	Sustainable Travel	Economic Growth	Congestion Theme	Quality of Life	Deliverability	Total Score
1st	Trumpington	**0.87**	**0.67**	**1.00**	**0.70**	**1.00**	**0.85**
2nd	Foxton	**0.81**	**0.50**	**1.00**	**0.70**	**0.89**	**0.78**
3rd	M11 Junction 11	**0.78**	**0.67**	**1.00**	**0.70**	**0.67**	**0.76**
4th	Meldreth	**0.74**	**0.50**	**1.00**	**0.65**	**0.89**	**0.76**
5th	Shepreth	**0.68**	**0.50**	**1.00**	**0.50**	**0.89**	**0.71**
6th	Royston	**0.35**	**0.83**	**1.00**	**0.50**	**0.78**	**0.69**
7th	Hauxton	**0.65**	**0.33**	**0.50**	**0.68**	**0.11**	**0.45**
8th	Harston	**0.67**	**0.17**	**0.50**	**0.65**	**0.11**	**0.42**

Source: Mott MacDonald

The INSET process determined that the highest scoring potential sites, were as follows:

- Trumpington Expansion
- Foxton
- M11 Junction 11
- Meldreth

It should be noted that the assessment criteria are primarily based on each option's impact on the A10 Royston to Cambridge corridor. Hence, benefits to the M11 derived from any option are not considered. Moreover, M11 Junction 11 scores lower than the Foxton and Trumpington options on sustainable travel, because existing transport services are not provided at the proposed location.

Overall these schemes scored between 0.76 and 0.85. Across each theme these schemes scored predominately high or very high scores.

The second highest scoring group of potential sites are listed below:

- Shepreth
- Royston

These sites are adjacent to existing train stations that provide direct rail services to both Cambridge and London, and thus scored particularly highly on the congestion and deliverability themes.

The lowest scoring group of sites, scoring less than 0.5 overall, were as follows:

- Harston
- Hauxton

The Harston and Hauxton sites scored particularly poorly on deliverability due to their Green Belt location, and space constraints in both villages. Both sites also scored poorly on congestion, due to their probable reliance on the highway network for any proposed High Quality Public Transport services. A combination of poor journey time reliability and low accessibility to the existing housing stock, resulted in a poor score on economic growth.

2.7.4.3 Step 1 Options Assessment Summary

Step 1 of the INSET process indicated that Trumpington, Foxton and M11 J11 were the three highest scoring sites.

The results from the INSET assessment thus support the parallel development of the Trumpington Park & Ride Expansion or Cambridge South West Travel Hub site and indicate that Foxton is the best performing location of the remaining strategic locations along the A10 corridor.

Whilst the Meldreth score (scoring 0.76 out of 1) is close to that of Foxton, Foxton is still shown to be the best performing rail-based option (scoring 0.78 out of 1) based on comparative assessment work. Meldreth did not score as highly for Sustainable Travel (0.74 vs 0.81) because access time to the travel hub site from the A10 is longer under existing conditions, and scored lower on Quality of Life (0.65 vs 0.70) because the site was assessed as having a greater impact on water environment and flooding, as well as having a greater impact on the local community.

In summary, the options assessment process has shown that a travel hub site at Foxton station could form a complementary interface with the proposed CSWTH (previously known as M11 J11 Park & Ride) or the expansion of Trumpington Park & Ride. To demonstrate, improvements to station accessibility and rail connectivity at a potential Foxton Travel Hub site has the potential to reduce the growth in congestion on the A10. Here, the proposed Foxton site would theoretically intercept journeys further south along the A10 corridor that would otherwise continue closer to their end destination. In comparison, the sites included as part of the CSWTH proposals would primarily intercept traffic accessing and egressing Cambridge via the M11.

2.7.5 Step 2: Location Specific Options Assessment

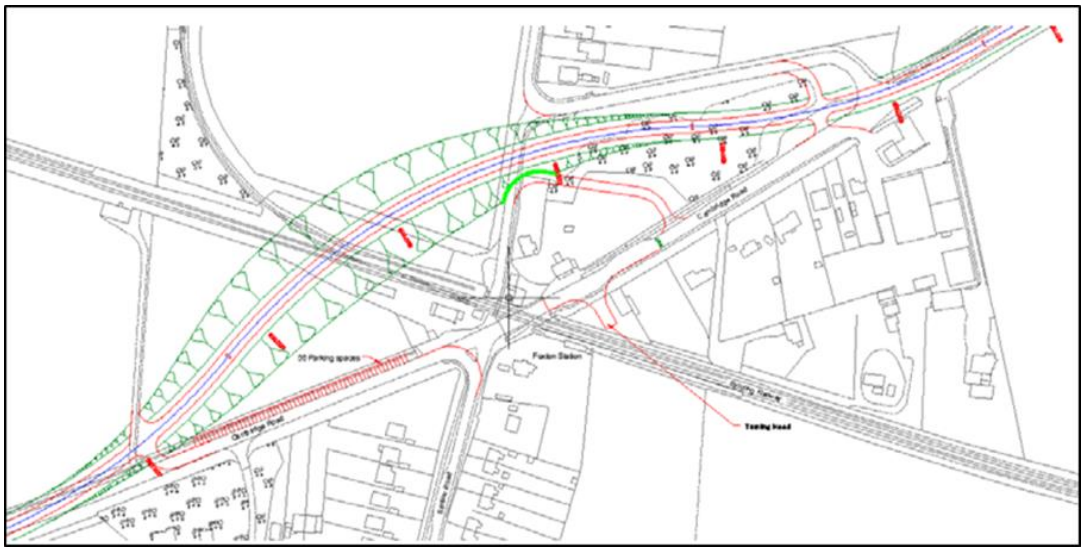
2.7.5.1 Location Specific Options

In line with the Department for Transport's WebTAG appraisal process and the GCP assurance framework, the second stage of the multi-criteria assessment approach was used to short list potential options for a new site at Foxton.

The location-specific options were initially identified based on their ability to provide sufficient land to accommodate the required level of car parking spaces; this figure was identified through the CRSM demand forecasting exercise. However, additional options were identified that included an option to utilise land already in the ownership of CCC (option 4b), and an option to the south of Foxton Station (option 5).

The options also included those based around the existence of a potential new level crossing bypass, which was being considered as a parallel scheme at the time, as well as options without the level crossing bypass. The options that included the level crossing bypass were based on designs included in the GRIP2 Feasibility Study Report (May 2013). The GRIP2 report concluded that Route C was the preferred alignment (see Figure 2.34).

Figure 2.34: Potential level crossing bypass highway route alignment - Route C4



Source: Mott MacDonald – GRIP2 Feasibility Study Report (May 2013)

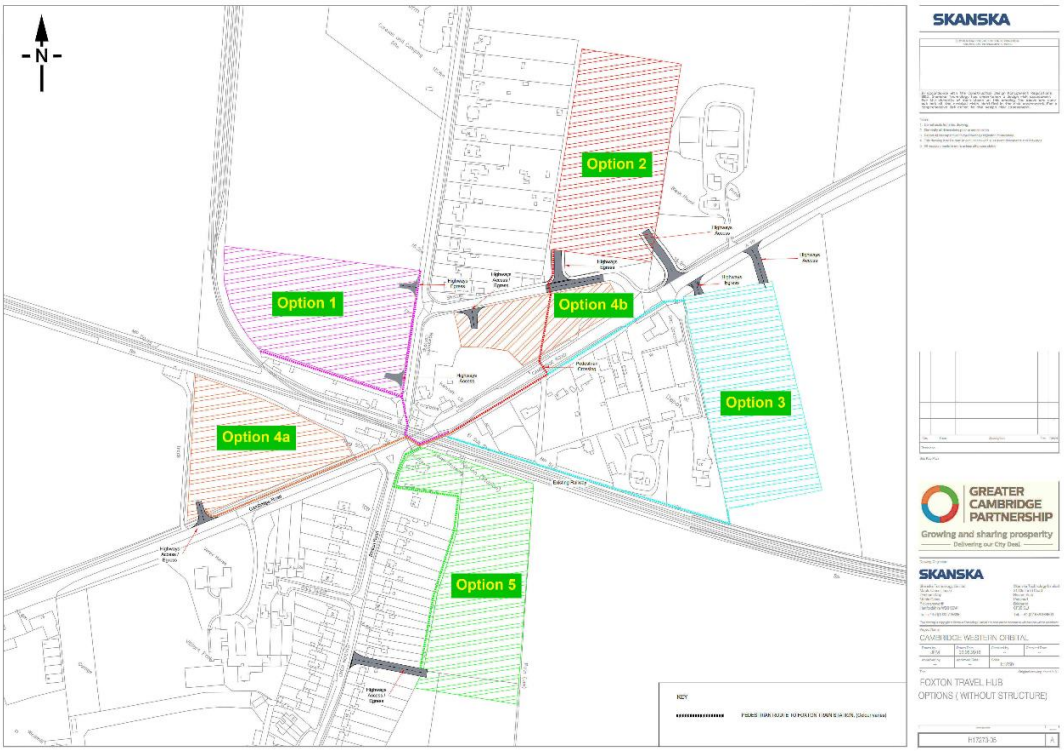
Table 2.27 lists the longlist of options, and Figure 2.35 and Figure 2.36 provide the indicative location plans of each option. Figure 2.35 shows the options without the level crossing bypass, and Figure 2.36 shows the options with the bypass structure in place.

Table 2.27: Location Specific Options Descriptions

No.	Option Name	Option Description
1	Option 1 without bypass	Option is situated northwest of Foxton train station without the level crossing bypass.
2	Option 1 with bypass	Option is situated northwest of Foxton train station with the level crossing bypass.
3	Option 2	Option is situated northeast of Foxton train station. This option is unchanged where the level crossing bypass is and isn't present.
4	Option 3	Option is situated east of Foxton train station. This option is unchanged where the level crossing bypass is and isn't present.
5	Option 4a without bypass	Option is situation west of Foxton train station without level crossing bypass.
6	Option 4a with bypass	Option is situation west of Foxton train station with level crossing bypass.
7	Option 4b with bypass	Option is located north of Foxton train station within council owned land without the level crossing bypass.
8	Option 4b without bypass	Option is located north of Foxton train station within council owned land with the level crossing bypass.
9	Option 5 without bypass	Option is situated south of Foxton train station without the level crossing bypass.
10	Option 5 with bypass	Option is situated south of Foxton train station with the level crossing bypass.

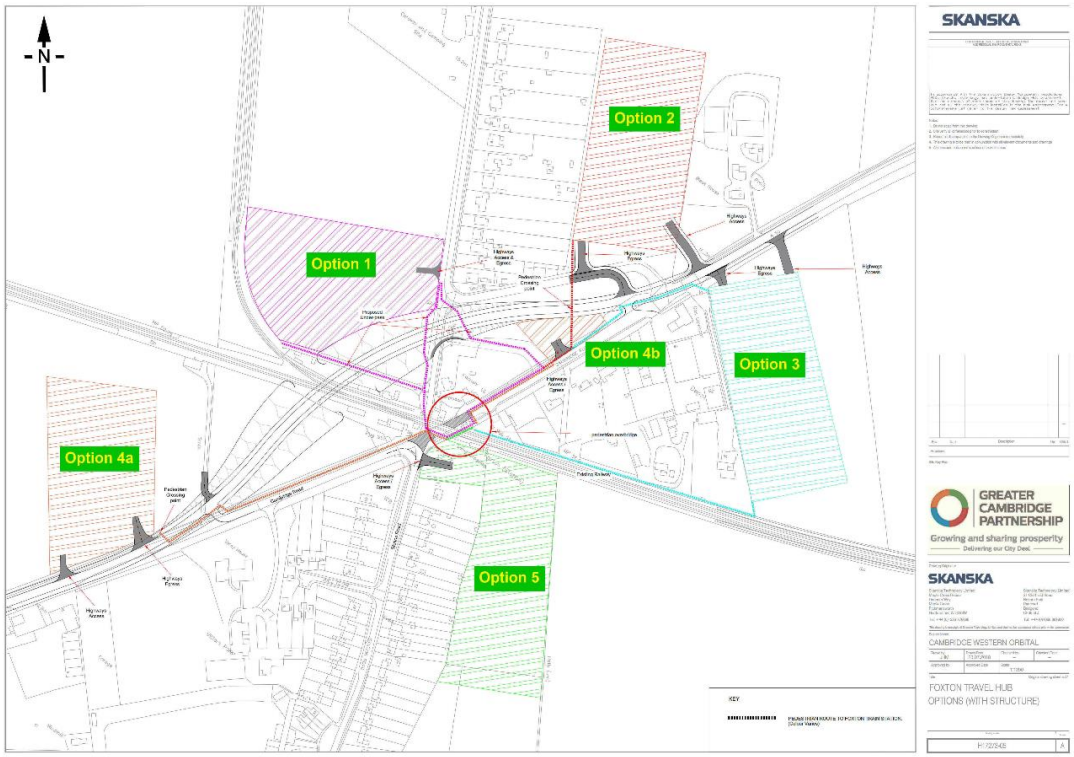
Source: Mott MacDonald

Figure 2.35: Foxton Travel Hub options without Level Crossing Bypass



Source: Skanska

Figure 2.36: Foxton Travel Hub options with Level Crossing Bypass



Source: Skanska

2.7.5.2 Step 2 Options Assessment Results

The results of the location specific options from the INSET assessment are summarised in Table 2.28, with the options ranked by their final score. As with the Strategic Corridor options, Table 2.28 provides an overall score against each of the selected themes based on the appraisal of the criteria and sub-criteria.

The higher scores for each theme have been shaded in dark green, the lower scores are shaded in lighter green and the lowest are shaded yellow.

Step 2 of the option assessment process placed a greater emphasis on the affordability of each site, and most importantly whether the proposed location was technically feasible. To reflect the importance of scheme delivery, the weighting of the 'Deliverability theme' was changed to be double that of the other themes as agreed with the GCP project manager.

Each scheme scored an overall output score of between 0 and 1 and were ranked accordingly. The result of this process is shown below.

Table 2.28: INSET results – Location specific options assessment

Rank	Option	Sustainable Travel	Economic Growth	Congestion Theme	Quality of Life	Deliverability	TOTAL SCORE
1st	Option 1 - without bypass	1.00	n/a	n/a	0.69	0.73	0.81
2nd	Option 1 - with bypass	0.75	n/a	n/a	0.71	0.63	0.70
3rd	Option 4a - without bypass	0.75	n/a	n/a	0.68	0.62	0.68
4th	Option 5 - without bypass	1.00	n/a	n/a	0.56	0.49	0.68
5th	Option 5 - with bypass	1.00	n/a	n/a	0.56	0.49	0.68
6th	Option 4a - without bypass	0.50	n/a	n/a	0.68	0.62	0.60
7th	Option 3	0.50	n/a	n/a	0.67	0.43	0.53
8th	Option 4b - with bypass	0.25	n/a	n/a	0.54	0.70	0.50
9th	Option 4b - without bypass	0.25	n/a	n/a	0.53	0.70	0.49
10th	Option 2	0.50	n/a	n/a	0.53	0.43	0.49

Source: Mott MacDonald

Overall, the results show that the highest scoring option is Option 1 - without bypass, with a score of 0.81, and the second highest is Option 1 - with bypass, with a score of 0.70. Both variations of the Option 1 site are located to the north of Foxton station and are bound to the west by the Barrington Light Railway.

The next three highest scoring options are evenly matched, all scoring 0.68. These options include Option 5 – with bypass and Option 5 without the bypass to the south of the station, and Option 4a – without bypass to the west of the station. The following table provides a ranked list of the options.

Table 2.29: Location Specific Options Assessment results, With and Without Bypass

Option	Score (out of 1)
Options without the level crossing bypass	
Option 1 – north of the station	0.81
Option 4a – west of the station	0.68
Option 5 – south of the station	0.68
Option 4b – north of the station	0.60
Options with the level crossing bypass	
Option 1 – north of the station	0.70
Option 5 – south of the station	0.68
Option 4a – west of the station	0.62
Option 4b – north of the station	0.50
Options with & without the level crossing bypass	
Option 3 – northeast of the station	0.53
Option 2 – east of the station	0.49

Source: Mott MacDonald

Of the 10 options originally identified, 4 were recommended for further development and assessment. The other 6 were discounted primarily on the grounds that they were located in Green Belt land or did not provide sufficient land to accommodate the forecasted number of car parking spaces. Here, Option 2 and Option 3 and both variations of Option 5 are located in the Green Belt, meaning the technical feasibility of delivering these sites was complex, and Option 4b did provide enough land to accommodate the site.

Therefore, the recommended options short list to be considered in greater detail at the OBC stage, and to be taken forward for public consultation were as follows:

Without the bypass:

- Option 1 – north of Foxton train station (0.81 out of 1)
- Option 4a – west of Foxton train station (0.68 out of 1)

With the bypass:

- Option 1 – north of Foxton train station (0.70 out of 1)
- Option 4a – west of Foxton train station (0.60 out of 1)

For further details of the options assessment process undertaken to identify these options, please refer to the Options Assessment Report (OAR) in Appendix A of this report.

2.7.6 Step 3: Post consultation options

In March 2019, the GCP Executive Board decided to progress the Foxton Travel Hub to the OBC stage, and refer the A10 Level Crossing Bypass to the Cambridgeshire and Peterborough Combined Authority for its consideration.

The decoupling of the schemes meant that, in agreement with the GCP, the shortlist of four options that scored most highly in Table 2.29, was reduced to the two options without the bypass. Hence, the two options taken forward for public consultation were as follows:

- **Northern option** – formally Option 1; and,
- **Southern option** – formally Option 4a.

The feedback received during the public consultation period and from key stakeholders, recommended the additional assessment of a split-site solution, a decked parking solution, and a decked split-site solution, as listed below:

1. Split site option – two land parcels one in the north, and one in the south;
2. Decking – north of the Foxton level crossing;
3. Decking – south of the level crossing; and,
4. Split site with decking.

In addition to assessing these sensitivity options, it was agreed to assess the current short-listed options alongside them to provide a comparison. To facilitate this comparative assessment, high-level design drawings of the sensitivity options were developed by the project design team; these drawings are enclosed in Appendix J. All options were designed to accommodate 950 car parking spaces to reflect the modelled demand for the scheme.

2.7.6.1 Scoring of the options

The scoring of the options was based on a combination of qualitive and quantitative assessment. This facilitated a comparison and ranking of the options. The assessment criteria used in assessing the options during both steps were grouped into themes which aligned to the scheme objectives. The thematic grouping process enables the options to be assessed and weighted differently, depending on the focus of the objective being considered and the aims of the scheme. The themes used for this stage of the Foxton Travel Hub options assessment are set out below:

1. Sustainable Travel;
2. Congestion;
3. Quality of Life; and,
4. Deliverability

Under each theme a series of main criteria were identified, with further measurable sub-criteria grouped under each one. The sub-criteria enable the options to be compared and differentiated. Here, each option was scored and rated based on their compliance with specific themes and overall performance. An appropriate grading scale was considered when scoring each question. Due to the use of different scoring scales, all scores were normalised to allow for an overall scoring average to be derived for each option.

The full list of main criteria and related sub-criteria is provided in Appendix K, along with the method used to assign each score. A summary of these criteria is shown in Table 2.30 below.

Table 2.30: Assessment criteria

Theme	Main Criteria	Sub Criteria
A. Sustainable Travel	**A-1** To increase sustainable transport mode share for trips into the city centre, the North Fringe East and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.	**A-1i** How long is the walking distance between the potential Travel Hub and the platforms at Foxton Station (and corresponding resting points)?
	A-2 To increase Park and Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.	**A-2i** Does the P&R site provide the required space to deliver required car parking spaces to meet forecasted demand?
		A-2ii Does the P&R site have the potential for future increase in capacity to meet growth beyond what is forecasted?
B. Economic Growth	Not used at this stage of options assessment – this theme was used when selecting the strategic location for the travel hub along the corridor at SOBC stage of development	
C. Congestion	**C-1** No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.	**C-1i** What is the impact on AM traffic flows along the A10 north of travel hub option in the direction of Cambridge?
		C-1ii What is the impact on delays at the level crossing as a result of travel hub traffic?
D. Quality of Life	**D-1** Improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.	**D-1i** What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).
		D-1ii What is the potential visual impact on landscape?
		D-1iii What is the potential impact on the historic environment?
		D-1iv What is the potential impact on biodiversity?
		D-1v What is the potential impact on water environment and flooding?
	D-2 An increase in cycling and walking along the Royston to Cambridge A10 corridor.	**D-2i** How does the potential Travel Hub site interface with existing walking networks?
		D-2ii How does the potential Travel Hub site interface with existing cycling networks?
	D-3 A safer highway environment for cycling and walking the Royston to Cambridge A10 corridor.	**D-3i** Does Travel Hub site increase the number of 'conflict points' for pedestrians and cyclists?
E. Deliverability	**E-1** To deliver a technically feasible Park and Ride solution.	**E-1i** How much land take does each potential site require in sqm?
		E-1ii What is the level of construction risk (engineering feasibility)?
		E-1iii What is the expected impact of construction on the existing network (level of disruption to road users)?
	E-2 To deliver an affordable Park and Ride solution.	**E-2i** What are the associated capital costs of delivering the Travel Hub solution?
		E-2ii What are the land acquisition requirements (extent & complexity of acquisition)?
		E-2iii What level of complexity is associated with the infrastructure maintenance and renewals (risk)?
		E-2iv What are the ongoing cost implications - maintenance and site operations?

Source: Mott MacDonald

These criteria were agreed with the GCP project team prior to scoring, although some minor adjustments were made once the data was sourced, as well as during the scoring period. All changes to the assessment method during the scoring period were checked and confirmed by the GCP project team.

Based on the assigned sub-criteria scores, the INSET tool creates an average score for each criterion. The score for each theme is based on the averages of its constituent criteria, and the average score across all themes is calculated to provide an overall score.

The following section presents the results of the INSET assessment process.

2.7.6.2 Assessment Results

This section summarises the results of the OBC stage options assessment process. Two sets of results are provided in this section, and are described as follows:

- **Unweighted results**: all themes are weighted equally, with a weighting of '1'. This approach reflects the weightings applied in the OBC stage options assessment for the Cambridge South West Travel Hub (CSWTH) scheme;
- **Cost adjusted results**: the cost adjusted results provide an INSET cost benefit metric, by dividing the cost of each option by the net INSET score. Here, all themes and criteria are weighted equally; however, deliverability (E2) sub-criteria (i), which scores the options based on their associated capital costs, has been removed to prevent double counting.

The result scenarios described above have the same scores for each criterion.

2.7.6.3 Results Summary

Table 2.31 shows the INSET results. The table summarises how the options perform against each theme, and ranks the options based on their net INSET scores. The scoring for each measurement criteria was checked by members of the project team in a multi-disciplinary scrutiny meeting, and then verified by the GCP project team.

Table 2.31: Unweighted results

Rank	Scheme	Sustainable Travel	Congestion	Quality of Life	Deliverability	Total Score
1	Southern	0.80	0.50	0.58	0.68	0.64
2	Southern with decking	0.80	0.50	0.58	0.43	0.58
3	Northern	0.70	0.33	0.46	0.71	0.55
4	Split site	0.80	0.33	0.35	0.54	0.51
5	Northern with decking	0.70	0.33	0.46	0.49	0.50
6	Split site with decking	0.80	0.33	0.35	0.29	0.44

Source: Mott MacDonald

The unweighted results clearly show that variations of the southern option locations have the highest net INSET score, with the southern option with and without decking scoring 0.64 and 0.58 respectively.

The two southern options score equally on the sustainable travel, congestion and quality of life themes, with the key differentiator between the sites being the deliverability theme. Here, the southern option outperforms the southern option with decking on all criteria, apart from those criteria related to site land take. Here, the southern option with decking requires a smaller footprint, which reduces the extent and complexity of land acquisition.

A comparison of the southern option with and without decking is provided in Table 2.31, with the third highest scoring option, the northern site, included as a comparator. Table 2.32 provides a red, amber and green analysis, known as a RAG analysis. Here, green text indicates the best performing option, amber the second best and red the worst.

Table 2.32: Deliverability theme

Sub Criteria	Southern	Southern with decking	Northern
Site land take (sqm)[66]	50,000sqm to 60,000sqm	40,000sqm to 50,000sqm	40,000sqm to 50,000sqm
Impact of construction on the existing highway network	High	Very high	Acceptable
Construction risk (engineering feasibility)	Low	High	Low
Capital costs of delivery	Medium	Very high	Low
Land acquisition requirements (extent and complexity of acquisition)	Medium	Low	Medium
Level of complexity associated with infrastructure and maintenance renewals	Very low	High	Very Low
Ongoing maintenance and site operations	Low	High	Low

Source: Mott MacDonald

The southern decked option scores lower on the deliverability theme, because of the complexity and costs associated with the design, build, funding and operation of a decked structure. Here, the southern and northern options present a lower level of construction risk, a lower anticipated construction impact on the existing highway network, and lower capital costs. Furthermore, the additional complexity of infrastructure and maintenance renewals, and the higher ongoing and maintenance costs associated with the southern decked option, further exacerbate the difference between the scores. Further analysis regarding the scoring of the deliverability theme is provided in Section 2.7.6.6.

The northern option has the third highest score of 0.55. Although the northern option has the highest score for the deliverability theme, due to it having the lowest anticipated capital cost of all the tested options, and the lowest impact on the existing highway during construction, it scores lower than the southern option on the sustainable travel, congestion and quality of life themes.

The split site option, the northern decked option and the decked split site option have net INSET scores of between 0.44 and 0.51 respectively. The primary reason for the low ranking of the two

[66] Based on Bruton Knowles Property Cost Estimates, March 2020

split site options is that they score the lowest on the quality of life theme, and joint lowest on the congestion theme.

The northern site with decking scores the same as the northern option on the sustainable travel, congestion and quality of life themes, but, as with the southern decked option, scores less well on the deliverability theme.

Sections 2.7.6.4 through to Section 2.7.6.6 provide a thematic analysis of the INSET results.

2.7.6.4 Sustainable travel

The sustainable travel theme sought to assess the potential of each site to increase sustainable transport mode share and accommodate future growth at the site.

The sub-criteria for the sustainable travel theme consider walking distance between the site and the station (A-1i), the ability of the site to provide for a 950-space car park (A-2i), and the potential for the site to accommodate future expansion (A-2ii).

The scores for the sustainable travel theme are summarised in Table 2.33 below.

Table 2.33: Scores for the sustainable travel theme

Rank	Scheme	Sustainable Travel
1 =	Southern	0.80
1 =	Southern with decking	0.80
1 =	Split site	0.80
1 =	Split site with decking	0.80
5 =	Northern	0.70
5=	Northern with decking	0.70

Source: Mott MacDonald

Table 2.33 shows that the southern site with and without decking and the split site solution with and without decking, score 0.8 on the sustainable travel theme, whereas the northern site with and without decking scores 0.7 out of a possible 1.0.

Given that all sites can accommodate 950 car parking spaces, and have the potential to accommodate future growth, the differentiating factor regarded walking distances to the site.

Against this sub-criterion (A-1i), the southern site with and without decking, and the split site with and without decking are between a 300m and 400m walk of Foxton station. By comparison, the northern site with and without decking is between a 400m and 500m walk of Foxton station.

2.7.6.5 Congestion

The congestion theme assessed the impact of the site options on traffic flows along the A10, and the impact on delays at the Foxton level crossing. Specifically, the sub-criteria for the congestion theme considered the impact of the site options on Cambridge-bound AM traffic flows along the A10 to the north of the Travel Hub (C-1i), and the impact of each option on the level of delays at the Foxton level crossing (C-1ii).

The site scores for the congestion theme are summarised in Table 2.34 below.

Table 2.34: Scores for the congestion theme

Rank	Scheme	Congestion
1	Southern	0.50
1 =	Southern with decking	0.50
3 =	Northern	0.33
3 =	Split site	0.33
3 =	Northern with decking	0.33
3 =	Split site with decking	0.33

Source: Mott MacDonald

Table 2.34 shows that the southern site with and without decking scores 0.5, and the split site solution with and without decking and the northern site with and without decking scores 0.33, out of a possible 1.0.

Overall, the southern sites (with and without decking) score more highly on the congestion theme, because both sites score highly on the sub-criteria that consider the level of impact on the Foxton level crossing (C-1ii). Here, the southern sites (with and without decking) reduce delays by more than 1 minute, compared to the split sites (with and without decking) which reduce delays by less than 1 minute, and the northern sites (with and without decking) that lead to an increase in delays at the level crossing. In terms of traffic flows, all sites reduce Cambridge bound traffic flows by between 0 and 20%.

2.7.6.6 Quality of life

The quality of life theme sought to assess the potential of each site option to minimise potential environmental impacts, and also considered how the sites could increase participation in walking and cycling and the quality of associated infrastructure.

The first criteria (D-1) was used to assess impact on the environment. Criteria D-1 considered each option's potential impact on air quality (D-1i), the historic environment (D-1iii), biodiversity (D-1iv), the water environment and flooding (D-1v), and their visual impact on the landscape (D-1ii).

The second criteria (D-2) was used to assess the potential of each option to cater for, and engender an increase in, cycling and walking. Sub criteria D-2i and D-2ii assessed how the proposed site options would interact with existing walking and cycling infrastructure respectively.

The third criteria (D-3) had one sub criteria (D-3i), which was used to assess whether the Travel Hub options would change the number of conflict points for pedestrians and cyclists.

The site scores for the quality of life theme are summarised in Table 2.35 below. Table 2.35 shows that the site options are grouped into three pairs. The southern site, with and without decking, scores highest with 0.58, the northern site, with and without decking, scores 0.46, and the split site, with and without decking, scores 0.35.

Table 2.35: Scores for the quality of life theme

Rank	Scheme	Quality of Life
1 =	Southern	0.58
1 =	Southern with decking	0.58
3 =	Northern	0.46
3 =	Northern with decking	0.46
5 =	Split site	0.35
5 =	Split site with decking	0.35

Source: Mott MacDonald

With Regard to Criteria D-1, the southern sites score marginally higher than the other options across the 5 sub-criteria, as shown below in Table 2.36.

Table 2.36: Scores for Criteria D-1

Improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.		
Rank	Scheme	Quality of Life
1 =	Southern	0.40
1 =	Southern with decking	0.40
3 =	Northern	0.37
3 =	Northern with decking	0.37
5 =	Split site	0.37
5 =	Split site with decking	0.37

Source: Mott MacDonald

The differences between the 6 site options are marginal on Criteria D-1. Here, all of the sites were judged to have a 'moderate adverse' impact on the historic environment, a 'neutral' impact' on the water environment and flooding, and a 'minor adverse' impact on the local community in terms of air quality and noise.

The difference between the sites was determined by their visual impact on the landscape, and their potential impact on biodiversity. The location of the southern site has a 'minor adverse' visual impact on the landscape, whereas the northern site has a 'moderate adverse' impact due to its proximity to residential receptors on Barrington Road, and the current absence of natural screening surrounding the land parcel. The split site is also considered to have a moderate visual impact, which reflects the potential impact of the northern land parcel on Barrington Road.

The visual impact of all sites is exacerbated by the addition of decking, with the decked northern and split sites having a major adverse visual impact, and the decked southern site having a moderate adverse impact. The visual impact of the decked southern site is mitigated by the presence of natural screening and its relative distance from residential receptors.

The southern sites (with and without decking) also score highest on Criteria D-2 and D-3, as shown in Table 2.37.

Table 2.37: Scores for Criteria D-2 (left) and D-3 (right)

An increase in cycling and walking along the Royston to Cambridge A10 corridor.		
Rank	Scheme	Quality of Life D-2
1 =	Southern	0.33
1 =	Southern with decking	0.33
3 =	Northern	0.00
3 =	Northern with decking	0.00
5 =	Split site	0.17
5 =	Split site with decking	0.17

A safer highway environment for cycling and walking the Royston to Cambridge A10 corridor.		
Rank	Scheme	Quality of Life D-2
1 =	Southern	1.00
1 =	Southern with decking	1.00
1 =	Northern	1.00
1 =	Northern with decking	1.00
5 =	Split site	0.50
5 =	Split site with decking	0.50

Source: Mott MacDonald

The southern sites would connect directly with the existing high quality A10 multi-user path and would lead to a 'minimal' increase in conflict points associated with the addition of 1 new junction.

The northern sites would only lead to a 'minimal' increase in conflict points. In terms of walking and cycle infrastructure, however, the northern sites only connect with the existing footway on Barrington Road, which is less than 2m wide, and does not connect with any formal cycle infrastructure.

The split site, with and without decking, falls between the northern and southern options regarding connectivity to existing walking and cycle infrastructure. Here, only the southern part of the site connects with the A10 multi-user path. A split solution would also lead to a 'moderate' increase in conflict points, because developing two sites would require the addition of two new junctions onto the local highway network.

2.7.7 Deliverability

The deliverability theme first assessed whether the options were technically feasible (criteria E-1), followed by the affordability of each site in terms of capital, operational and maintenance costs (E-2).

Broken down into sub-criteria, criteria E-1 assessed land take (E-1i), engineering feasibility (E-1ii), and the expected impact of the construction phase on the existing highway network (E-1iii). The second criteria (E-2) was used to assess the capital costs of delivering the site (E-2i), the land acquisition requirements (E-2ii), the complexity of maintenance and renewals (E-2iii) and the ongoing cost implications associated with maintenance and site operations (E-2iv).

The site scores for the deliverability theme are summarised in Table 2.38 below.

Table 2.38: Scores for the deliverability theme

Rank	Scheme	Deliverability
1	Northern	0.71
2	Southern	0.68
3	Split site	0.54
4	Northern with decking	0.49
5	Southern with decking	0.43
6	Split site with decking	0.29

Source: Mott MacDonald

In terms of deliverability, Table 2.39 shows that the northern and southern site options had the highest score by a clear margin, with 0.71 and 0.68 out of 1.0 respectively. The split site was the only other site that scored above 0.50, with 0.54.

The northern site option scores the highest against criteria E-1, which focuses on technical feasibility, scoring 0.58. The southern site and the northern with decking were the next highest scoring options with 0.51 and 0.49 respectively. All other sites scored less than 0.40.

The northern site scores highest against criteria E-1, because, like the southern site, it presents a low level of construction risk. However, the northern site is also deemed to have an 'acceptable' construction impact on the existing highway network, compared to the southern site that has a 'medium' impact and a 'high' or 'very high' impact for all other options.

Although the decked options score well against sub-criteria E-1i because they have a smaller footprint, they score poorly on the level of construction risk (E-1ii) and the expected construction stage impact on the highway network (E-1iii); this is due to the physical structure that would be required on-site. By comparison, the split site is deemed to have an 'acceptable' level of construction risk but has a 'very high' construction stage impact on the highway network and also has the largest site footprint.

A similar pattern of scores are observed for criteria E-2. Here, the northern and southern site both score highest with 0.85, the split site scores 0.70, the decked northern and decked southern site score 0.50 and the split site with decking scores lowest with 0.40.

The southern and northern sites both score 'very low' regarding the level of complexity associated with infrastructure and maintenance renewals and their associated capital costs, 'low' regarding ongoing maintenance and operational costs, and score 'medium' with regard to the extent and complexity of land acquisition.

Despite scoring 'very low' with regard to the extent and complexity of land acquisition, the decked southern and decked northern site are judged to have a 'high' level of complexity associated with infrastructure and maintenance renewals, 'high' ongoing maintenance and operation costs and 'very high' associated capital costs; this, again, is due to the physical structure that would be required on-site.

Conversely the extent and complexity of land acquisition is scored as 'high' for the split site, because it would involve purchasing a greater number of plots of land. The split site does, however, present a 'low' level of complexity associated with infrastructure and maintenance renewals, and scores 'medium' against ongoing maintenance and operational costs.

The split site with decking scores poorly with regard to capital costs, infrastructure and maintenance renewals and ongoing operational and maintenance costs, because the option

would involve providing two physical structures across two sites. The split site with decking also scored 'high' against the extent and complexity of land acquisition sub-criteria because it would involve purchasing two plots of land.

2.7.7.1 Cost adjusted INSET results

The following section presents the cost adjusted INSET results. All themes and criteria are weighted equally under the cost adjust INSET results, and the answers to each sub-criterion are the same as the weighted and unweighted INSET results presented in Section 4.2 and 4.3.

The purpose of the cost adjusted INSET calculation is to provide an INSET cost benefit metric, by dividing the cost of each option by the corresponding net INSET score. As a result, deliverability sub-criteria E-2i, which scores the options based on their associated capital costs, has been removed to prevent double counting.

Firstly, the estimated capital costs of each option are presented in Table 2.39:

Table 2.39: Capital costs of each site (Q2 2019 - excluding land costs).

Scheme option	Cost (millions)
Northern	£7.57
Southern	£8.00
Split site	£10.13
Northern with decking	£21.96
Southern with decking	£19.14
Split site with decking	£22.36

Source: Mott MacDonald

Table 2.39 demonstrates that the capital cost of developing a decked option is significantly higher than developing an option without decking. Here, the northern option is approximately 34% of the cost of the decked northern site, whilst the southern site is 42% of the cost of the decked southern site, and the split site is 45% of the cost of the decked split site.

The cost adjusted results are presented in Table 2.40. Here, the cost per point column provides a spreadsheet-based cost benefit metric that was calculated by dividing the cost of each option against the net INSET score.

Table 2.40: Cost adjusted INSET results

Scheme	Sustainable Travel	Congestion	Quality of Life	Deliverability	Inset Score	Cost per Point	Rank
Southern	0.80	0.50	0.58	0.66	0.63	£12.64	1
Northern	0.70	0.33	0.46	0.69	0.54	£13.89	2
Split site	0.80	0.33	0.35	0.49	0.49	£20.54	3
Southern with decking	0.80	0.50	0.58	0.48	0.59	£32.42	4
Northern with decking	0.70	0.33	0.46	0.54	0.51	£43.17	5
Split site with decking	0.80	0.33	0.35	0.33	0.45	£49.48	6

Source: Mott MacDonald

The cost adjusted INSET results show, at a high-level, that the Southern and Northern Options deliver the highest value when the cost per point metric is added to the analysis. The results also demonstrate that the cost of delivering the equivalent level of benefit for the decked southern site, would be over 2.5 times greater in comparison to the southern site without decking. Similarly, the benefit adjusted cost would be 3 times greater for the decked northern site, and 2.5 times greater for the split site, when compared to the sites without decking.

The outcome of the cost adjusted INSET assessment suggests that the three decked options should be discounted from further assessment, due to the capital costs associated with developing multi-storey car parks outweighing the anticipated benefits.

2.7.7.2 Options Short List

The results of the assessment concluded that the southern option scored most highly as a location for the proposed new travel hub, with a net score of 0.64 out of a possible 1.00. The southern option had the highest score in terms of sustainable travel, congestion, quality of life, and the second highest score in terms of deliverability.

The decked southern option was the second highest scoring option with 0.58. The southern decked option scores the same as the southern option on the sustainable travel, congestion and quality of life themes, but scores lower on the deliverability theme. Here, the complexity and costs associated with the design, build, funding and operation of a physical decked structure means the decked southern options has the second lowest score for deliverability.

One of the sub-criteria on which the decked options scored least well was on the capital costs of delivering the site (E-2i). Here, the northern option costs approximately 34% of the decked northern site, the southern site costs approximately 42% of the decked southern site, and the split site costs approximately 45% of the decked split site.

To further draw out the differences in capital costs between the sites, a cost adjusted INSET assessment was undertaken. The cost adjusted INSET scores showed that the cost of delivering the equivalent level of benefit would be over 2.5 times greater for the decked southern site in comparison to the southern site without decking. Therefore, despite the decked southern site having the second highest net INSET score, it is recommended that the site is discounted from any further assessment due to the preclusive capital costs associated with developing a multi-storey car park.

The discounting of the decked options leaves the southern and northern options as the two highest ranked options, with the southern site clearly having the highest score. Therefore, based on this options assessment, it is recommended that the southern and northern sites should be progressed for further detailed appraisal in order to select the preferred site option.

3. Economic Case

The purpose of the Economic Case is to set out the assessment of the economic impacts for the identified options and demonstrate the resulting Value for Money (VfM). This requirement aligns with GCP's and Treasury's specification for the appraisal and demonstration of the VfM in the use of taxpayers' money. The Economic Case identifies what economic, environmental, social and distributional impacts the scheme is expected to deliver.

3.1 Introduction

The Economic Case for the Foxton Travel Hub project has been developed to ensure that it proportionally follows the requirements of the DfT's 'The Transport Business Case: Economic Case'. Table 3.1 shows where the relevant information, in accordance with DfT requirements, can be found in the subsequent sections that make up the Economic Case.

Table 3.1: Compliance with DfT requirements for the Economic Case

Content	DfT requirements	Reference
Introduction	Outline approach to assessing value for money.	Section 3.2
Options appraised	A list of the options (set out in the Strategic Case) that have been appraised.	Section 3.3
Assumptions	TAG sets out assumptions that should be used in the conduct of transport studies. List any further assumptions supporting the analysis.	Section 3.4
Sensitivity and risk profile	Set out how changes in different variables affect the Net Present Value/Net Present Cost. The risk profile should show how likely it is that these changes will happen.	Section 3.16
Appraisal Summary Table	See TAG for detailed guidance on producing the Appraisal Summary Table.	Section 3.15
Value for Money Statement	See Value for Money guidance on producing the VfM statement.	Section 3.14

Source: DfT - The Transport Business Case

3.2 Approach to economic appraisal

The economic appraisal has been carried out in line with Department for Transport (DfT) guidance to produce robust Value for Money (VfM) assessments for the project.

The Economic Case for the project concludes with a VfM assessment that incorporates both the monetised impacts and the non-monetised assessment of the project (including qualitative and non-monetised quantitative assessment where available). This has been carried out for the two shortlisted options set out in Section 2.7.8 to allow for a direct comparison of the two options and a final conclusion and recommendation for a preferred option.

The HM Treasury (HMT) Green Book provides central government guidance on how to appraise and evaluate public policies, projects and programmes (the Five Case Model), which is based on the principles of welfare economics. The Department for Transport (DfT) Transport Appraisal Guidance (TAG) is the Department's internal guidance on business case making, which the OBC for this scheme is consistent with.

The Economic Case for the scheme includes Cost-Benefit Analysis of user and non-user impacts (from changes in travel costs and times, including decongestion), changes in the externalities associated with car use (e.g. emissions and accidents), and changes in operating

costs and revenue to the public and private sector. These, under an assumption of no changes in land use, are all termed Level 1 impacts. When set against a scheme's projected capital and operating expenditure, these result in an Initial Benefit-Cost Ratio (BCR). User benefits (in the form of monetised travel time savings) are typically the principal effect of a transport improvement and form the core of an economic appraisal but there is wide agreement that they fail to capture the full impact of major projects.

The DfT's latest guidance on WEIs (published in May 2018) identifies three 'levels' of impact that can be incorporated into the VfM assessment. These include:

- **Level 1 (User benefits):** These are direct effects and comprise the savings in time, vehicle operating costs and other elements of 'generalised travel cost' associated with better transport. The Level 1 BCR also includes some monetised externalities to society and the environment. These are also termed 'established' monetised economic impacts of transport investment (as they have long been the mainstay of economic appraisal).

- **Level 2 (Productivity effects):** these are productivity gains accruing to firms and workers, including those that are not themselves necessarily users of the transport improvement. These arise because of the economic benefits of scale and economic density, both of which are known to lead to higher productivity. These are also termed 'evolving' monetised economic impacts and are initially (for Level 2) considered in terms of fixed land use scenarios, i.e. no interaction between transport supply and land use patterns.

- **Level 3 (Investment and employment effects):** these result from the potential for transport to alter patterns of private sector investment and employment, and thereby land use. This is a complex area of debate given transport links are but one factor shaping the location decisions for firm's investment. The concepts of additionality, displacement and the social value of investment are important here. These effects are also 'indicative' monetised impacts and can involve dynamic land use scenarios (in response to changes in transport supply).

Level 3 benefits are not considered to be relevant for this scheme, however a qualitative assessment of the scheme's wider economic impacts has been carried out to support the Strategic Case. This has been used to inform the case for change within Section 2.4 and is reported in Appendix D – Strategic Economic Narrative.

3.3 Options assessed

For the detailed appraisal of the scheme, two options have been considered:

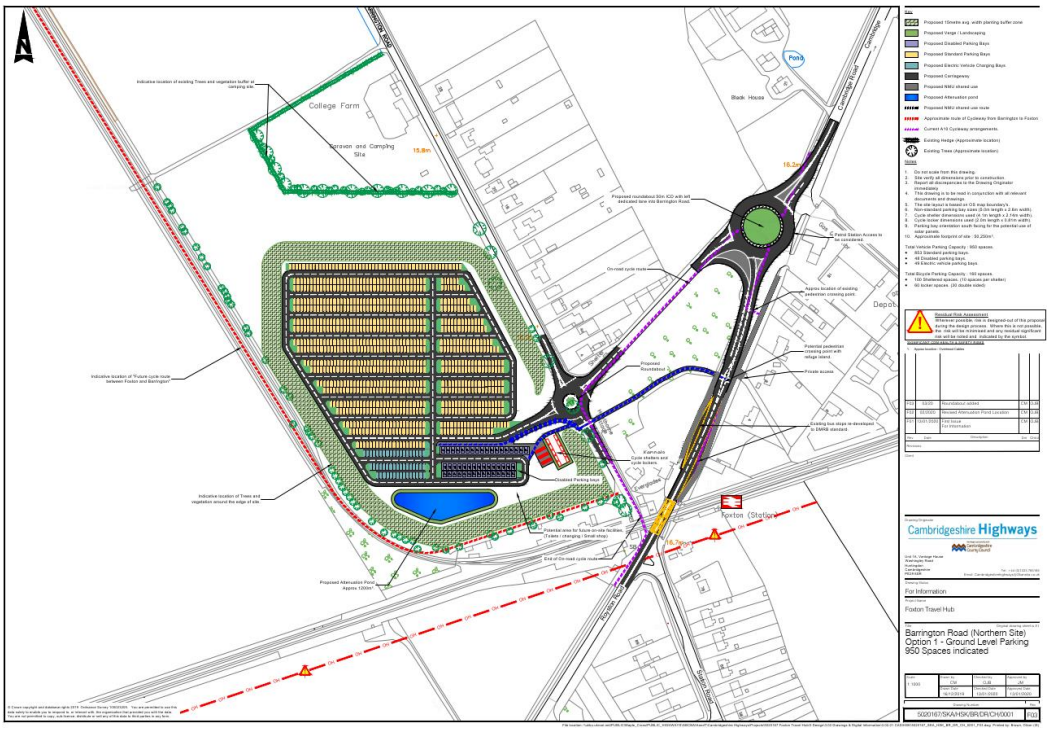
- Option 1 – Northern Option
- Option 2 – Southern Option

These options were identified through the optioneering process summarised in Section 2.7 of the Strategic Case, the Options Assessment Report (Appendix A), and the OBC Options Assessment Technical Note (Appendix K).

Each of the shortlisted options went through further design changes relating to the access junction arrangements from the A10. Each option was modelled with two different junction arrangements providing access from the A10 to the Travel Hub, namely a roundabout and a priority junction. Flows from the SATURN modelling for each option were used to feed into local junction models. The results from these suggest that a roundabout access junction would likely provide more capacity for vehicles entering and leaving the Travel Hub for both options but the form of junction will continue to be developed as the project progresses through its design phases.

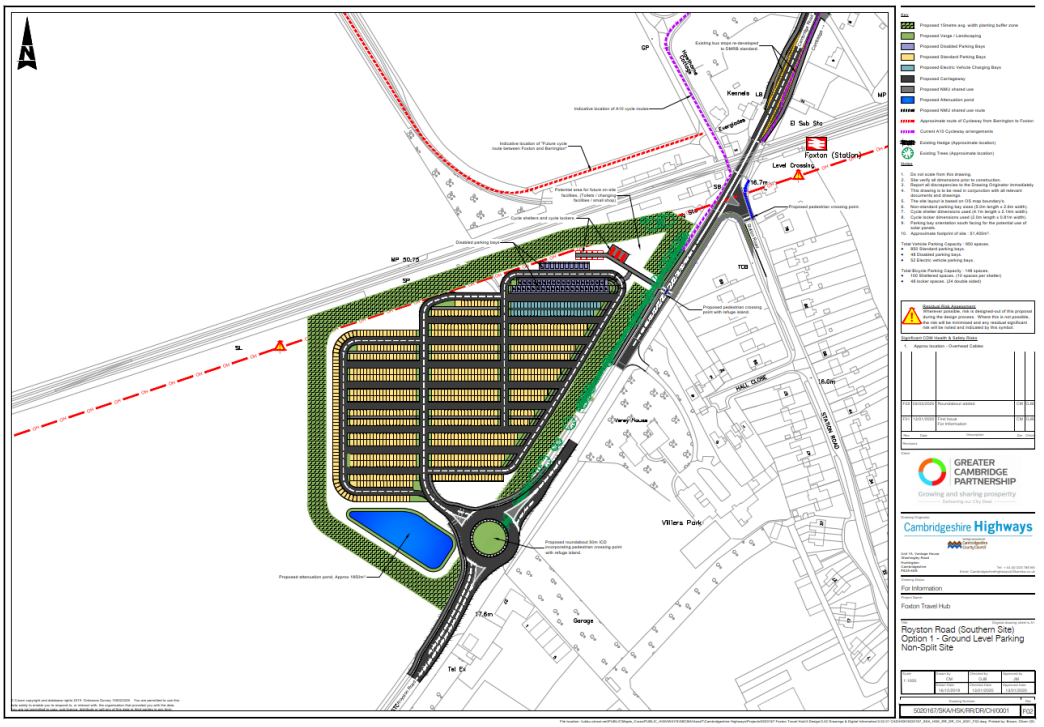
Initial design layouts for the shortlisted sites, assuming provision of a roundabout as the site access junction, are show in Figure 3.1 and Figure 3.2 and included in Appendix J.

Figure 3.1: Option 1 – Northern Option



Source: Skanska

Figure 3.2: Option 1 – Southern Option



Source: Skanska

3.4 Transport modelling framework

On most major schemes being promoted by the GCP and funded through the City Deal, the standard approach is to use the Cambridge Sub-Regional Model 2 (CSRM2) transport model. The full CSRM2 demand model has not been used for the modelling assessment of the Foxton Travel Hub as it was not considered proportionate for a scheme with a value less than £9m, and for which the scale of demand responses associated with the scheme is expected to be more limited. This approach was agreed with Cambridgeshire County Council as being appropriate and proportionate.

The scheme user impacts have been calculated by taking the Do Minimum (DM) SATURN highway model from the D-series CSWTH scheme modelling (undertaken in parallel to the preparation of the Foxton Travel Hub OBC) and adding in a direct pseudo rail link from Foxton station to each of the three Cambridge stations (Central, North and the proposed South). This approach was previously adopted in the modelling carried out in preparation of the Foxton Travel Hub SOBC.

Traffic forecasts have been prepared for the two CSRM2 forecast years of 2026 and 2036 and for two different levels of growth, namely the:

- Foundation Case; and,
- High Growth.

The **Foundation Case (FC)** represents a scenario which is consistent with the currently proposed Local Plans for the four Local Authority Districts represented in CSRM2 (Cambridge City, South Cambridgeshire, Huntingdonshire and East Cambridgeshire). This includes local assumptions on housing, employment and other developments, along with transport schemes which are either committed or expected to be required to support development.

The **High Growth (HG)** scenario takes account of the latest actual growth in terms of rate and locations since the Local Plans were produced. In addition, there is the potential for overall employment growth to be greater in the period to 2031 than projected in the Local Plans, particularly in the Cambridge area, as noted in the Cambridgeshire and Peterborough Independent Economic Review (CPIER) report. This revised pattern and rate of growth across the modelled area has been used for the High Growth with academies and other private schools also included.

The assessment considers key impacts during the peak hours only, in order to capture the key commuter journeys, these being:

- AM (0800-0900); and,
- PM (1700-1800).

It is acknowledged that the scheme is likely to produce additional benefits outside of these periods. Therefore, the economic assessment is likely to underestimate the overall net transport benefits for the scheme and associated BCRs. This additional benefit would be consistent across the assessed options and therefore its omission does not influence the selection of the preferred option.

3.5 Transport economic appraisal

3.5.1 Travel hub demand

The tables below show the predicted number of car trips in the AM peak hour (0800-0900) which transfer to rail services for each option. In each case the Southern Option results in more

traffic transferring to rail. Vehicles travelling northbound to the Northern Option still have to travel through the level crossing, which adds delay and makes this site less attractive.

Overall, the Southern Option attracts 8% more demand than the Northern Option in 2026 in the Foundation Case. The scale of variance between the options diminishes over time as the wider network becomes more congested.

The correlation between the options remains consistent within the High Growth scenario, with the Southern Option attracting a noticeably higher proportion of demand in the latter forecast year (6%).

Table 3.2: AM Peak (0800-0900) inbound car trips transferring to rail

Growth Scenario	Option	Number of cars transferring		
		2026	2036	% growth
Foundation Case	Northern	280	325	16%
	Southern	303	330	9%
	% difference	***8%***	***2%***	
High Growth	Northern	333	376	13%
	Southern	368	399	8%
	% difference	***11%***	***6%***	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.5.2 Journey time benefits

The journey time benefits accruing to users who transfer to rail from car-based trips, has been calculated by monetising the journey time savings for their entire trip length from both travel hub options; these calculations have been made in line with May 2019 TAG Databook economic parameters by trip purpose.

The tables below detail the average journey time saving per car by for each site option, growth scenario and forecast year. In each case the average journey time saving is over 6 minutes.

The Southern Option generates a noticeably higher journey time saving, based on the reduced interaction with the rail level crossing; this equates to an additional saving of 1½ to 2 minutes in the Foundation Case and up to 3 minutes in the High Growth scenario.

Table 3.3: 2026 & 2036 AM Peak journey time savings

Growth Scenario	Option	2026 Time saved (mm:ss)	2036 Time saved (mm:ss)	% difference
Foundation Case	Northern	06:46	07:11	6%
	Southern	08:15	09:24	14%
	% difference	***22%***	***31%***	
High Growth	Northern	07:34	08:16	9%
	Southern	10:11	11:34	14%
	% difference	***35%***	***40%***	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.5.3 Marginal External Cost benefits

The Marginal External Costs (MEC) method outlined in TAG unit A5-4 has been used for the Level 1 economic assessment of the shortlisted options

TAG unit 5.4 suggests that MEC can be applied in the absence of a suitable multi-modal model. This external cost calculation includes congestion, air pollution, noise, infrastructure and accident costs. The benefits calculated are based on the reduction of vehicle kilometres on the network due to the scheme, while also considering different road types, areas types and congestion levels.

The MEC method provides a quantified assessment of congestion, infrastructure, accident, air quality, greenhouse gases, and noise benefits as well as indirect taxes. Further details on the MEC method can be found in the Modelling and Economic Assessment Report in Appendix L.

3.5.4 Present Value Benefits

The results of the economic assessment for each of the shortlisted options are presented below.

The overall Level 1 benefits assessment demonstrates that the Southern Option outperforms the Northern Option with an additional 48-58% in total PVB. The de-congestion benefits associated with the Southern Option are around 70% greater than the Northern Option in the Foundation Case, and nearly twice as high in the High Growth scenario.

Based on the increase in wider congestion within the High Growth scenario, a minor reduction is observed for the total benefit. However, the overall scale of benefit remains comparable.

Table 3.4: Level 1 benefits (£000's, 2010 prices discounted to 2010, over a 60 year appraisal period)

Impact	Foundation Case			High Growth		
	Northern	Southern	%diff	Northern	Southern	%diff
Journey Time	£3,590	£5,498	53%	£5,540	£7,152	29%
Congestion	£3,828	£6,468	69%	£2,509	£5,006	99%
Infrastructure	-£543	-£758	40%	-£1,402	-£2,274	62%
Accidents	£1,181	£1,684	43%	£864	£1,412	63%
Air Quality	£3	£10	272%	-£11	-£10	-9%
Noise	-£69	-£47	-32%	-£228	-£321	41%
Greenhouse Gases	-£126	-£101	-19%	-£233	-£242	4%
Indirect Taxes	£413	£349	-15%	£753	£820	9%
Level 1 Total PVB	**£8,277**	**£13,103**	**58%**	**£7,793**	**£11,543**	**48%**
		% difference High Growth		**-6%**	**-12%**	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.5.5 Transport Economic Efficiency

Table 3.4 below provides the Level 1 congestion benefits split across consumer user benefits and business user benefits as would be shown in a transport economic efficiency (TEE) table.

Table 3.5: Benefits by purpose (£'000s, 2010 prices discounted to 2010, over a 60 year appraisal period)

Purpose	Foundation Case			High Growth		
	Northern	Southern	% diff	Northern	Southern	% diff
Consumer – Commuting user benefits	£3,674	£5,934	62%	£4,355	£6,249	43%
Consumer - Other user benefits	£3,562	£5,491	54%	£2,640	£3,985	51%
Business	£1,040	£1,677	61%	£798	£1,308	64%
TOTAL	**£8,277**	**£13,103**	**58%**	**£7,793**	**£11,543**	**48%**
		% difference High Growth		**-6%**	**-12%**	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.6 Wider economic impacts – fixed land use

The following Level 2 benefits have been assessed:

- Agglomeration
- Tax revenues arising from labour market impacts
- Output change in imperfectly competitive markets

Due to the proportionate method used to model the scheme and calculate Level 1 benefits, a simplified approach to the estimation of these wider impacts has been used. An uplift of 14% has been applied to user benefits in line with other Cambridge projects such as Cambourne to Cambridge Better Bus Journeys scheme.

Output change in imperfectly competitive markets has been estimated as 10% of Level 1 business user benefits, as per the advice provided in TAG Unit A2.2.

Overall, it is estimated that the Level 2 impacts lead to up to approximately to £2m in additional benefit. The Southern Option generates an additional benefit of between 50-60%, when compared to the Northern Option.

Consistent with the Level 1 benefits, the High Growth demonstrates a minor reduction in Level 2 benefits, due to the influence of wider congestion.

Table 3.6: Level 2 PVB results (£000's, 2010 prices discounted to 2010, over a 60 year appraisal period)

Impact	Foundation Case			High Growth		
	Northern	Southern	% Diff	Northern	Southern	% Diff
Agglomeration and labour supply	£1,159	£1,834	58%	£1,091	£1,616	48%
Output change in imperfectly competitive markets	£104	£168	61%	£80	£131	64%
TOTAL	**£1,263**	**£2,002**	**59%**	**£1,171**	**£1,747**	**49%**
		% Difference High Growth		**-7%**	**-13%**	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.7 Reliability benefits

Reliability benefits can be an important contributor to the economic performance of some transport schemes. However, as the Foxton Travel Hub is a relatively small-scale investment compared to others in the GCP portfolio, a full detailed assessment of reliability benefits, and the monetisation of any associated benefits or disbenefits, has not formally been carried out in full, as to do so is unlikely to be proportionate.

In determining the proportionality of whether to carry out a detailed appraisal of reliability impacts, an initial statistical analysis of the standard deviation of observed travel times for both rail and car trips on the A10 corridor was carried out (reported in Appendix L Modelling and Economic Assessment Report). This illustrated that there is a degree of existing journey time variability for both modes, suggesting that there was limited difference in levels of reliability. As such there is not a significant enough difference between the highway and rail reliability to warrant further detail appraisal, with reliability impacts being monetised for inclusion in the scheme's overall economic appraisal.

3.8 Environmental impacts

An Environmental Appraisal Report (EAR) has been prepared to accompany the OBC report and is presented in Appendix M. The EAR summarises the assessments undertaken on the key environmental disciplines as required by the Department for Transport's (DfT) appraisal guidance, specifically as set out in WebTAG Unit A3. This guidance focuses on the following environmental topics;

- Air quality;
- Biodiversity;
- Greenhouse gases;
- Historic environment;
- Landscape;
- Noise; and,
- Water.

Those environmental impacts that are able to be monetised as part of the economic appraisal for the preferred option are air quality, greenhouse gases and noise. The description of the MEC approach is described in Section 3.5.3 of this Economic Case. The other environmental impacts that feed into the VfM statement have been assessed in a qualitative and non-monetised manner using TAG appraisal worksheets.

3.8.1 Air quality

A high-level assessment of traffic associated with each option was carried out to accompany the OBC, which has been used to underpin a qualitative assessment of air quality impacts.

The air quality assessment of the likely changes in air quality and risk of future exceedances of the air quality objectives has been undertaken based on likely changes in traffic flows and existing baseline conditions.

The baseline data used for the preparation of the EAR was obtained from Defra's Air Information Resource website[67] and from South Cambridgeshire District Council (SCDC). The most recent year of monitoring data available for SCDC was for 2018.

It is not anticipated that there would be changes in traffic flows or speeds that would trigger the criteria for assessment. These criteria are changes in annual average daily traffic (AADT) flows of 1,000 or more; change in Heavy Duty Vehicles AADT of 200 or more; a change in speed band; and/or a change in carriageway alignment by 5m or more.

Based on the existing air quality and the fact that the expected changes in traffic would be negligible compared with the current situation, it was concluded that neither of the Southern Option nor the Northern Option would result in exceedances of the air quality objectives at sensitive receptors within Foxton or the surrounding area. Both options would result in a **neutral effect** on the local air quality due to the options being unlikely to have significant effect on current traffic levels.

3.8.2 Biodiversity

The biodiversity assessment was based on a preliminary site walkover of the potential sites (8 August 2018), the biological records obtained from the Cambridgeshire & Peterborough Environmental Records Centre, the Multi-Agency Geographic Information for the Countryside, the Joint Nature Conservation Committee and Cambridgeshire and Peterborough Biodiversity Group.

Both options would be located on fields used for arable farming. The area has broadleaved semi-natural woodland, species rich and species poor hedgerows, semi-improved grassland field margins and scattered trees around the periphery of the fields and the village environment adjacent to the potential sites.

There are two non-statutory sites for nature conservation within 2km of the options: Hoffer Brook Pollard Willows (North) County Wildlife Site (CWS) approximately 850m east of both options and River Rhee CWS, which is located approximately 630m north of the Northern Option and 940m north of the Southern Option.

Both options have the potential to result in a **slight adverse effect** on broadleaved woodland, hedgerows and on some species (badgers, bats, birds, brown hares, great crested newts, hedgehogs, reptiles and terrestrial invertebrates).

3.8.3 Greenhouse Gases (GHG)

A high-level assessment of traffic associated with each option was carried out to accompany the OBC and the effects of this on GHG have been considered qualitatively. This considered the effects the options would likely have on traffic flows and GHG emissions.

The anticipated changes in traffic as a result of either of the two options are not considered likely to differ significantly. Thus, the expected changes in GHG emissions from either option are not expected to be significantly different to one and other; both the Northern Option and the Southern Option are considered likely to have a **neutral effect** on GHG emissions.

[67] Department for Environment Food and Rural Affairs. Air Quality Information Resource (Air) Website, available at: http://uk-air.defra.gov.uk

3.8.4 Historic Environment

The historic environment assessment was undertaken using data from the National Heritage List for England, Cambridgeshire Historic Environment Record, Archaeology Data Service and relevant planning applications held by South Cambridgeshire District Council. The assessment considered designated and non-designated heritage assets.

Within 500m of the Northern Option, there are designated heritage assets which include the Foxton Conservation Area (320m south of the option) and four Grade II listed buildings (between 390m and 490m from the option). There are also 48 archaeological monuments and events recorded within 250m of the proposed site for the option (Iron Age to Roman enclosures, Roman occupation complex, Anglo-Saxon inhumation burials and medieval or post-medieval embanked field system).

Within 500m of the Southern Option, there are designated heritage assets which include one scheduled monument (500m west of the option), Foxton Conservation Area (within 100m of the option) and 21 Grade II listed buildings (between 260m to 500m from the option). There are also 39 archaeological monuments and events recorded within 250m of the proposed site for the option (Iron Age to Roman cultivation marks, Iron Age to Roman enclosures, Roman double-ditched trackway and enclosures, Roman objects recovered and medieval or post-medieval embanked field system).

While the proposed scheme could result in a change to the historic setting of the designated heritage assets, it is not expected these would be physically impacted. However, as there is regionally and nationally significant archaeology within the vicinity of the proposed scheme, there is a potential for major adverse impact on buried archaeological remains. Overall, it was concluded that both the Northern Option and the Southern Option would result in a **moderate adverse effect** on historic environment for this reason.

3.8.5 Landscape

The landscape assessment considered the significance of effects of the impacts of the proposed scheme options on landscape character. A site visit was undertaken in summer 2019 to identify the landscape character and the potential visibility of Scheme from the surrounding area.

The study area is located predominantly within National Character Area (NCA) 87: East Anglian Chalk. The NCA is characterised by the narrow continuation of the chalk ridge that runs south-west/north-east across southern England. The vast majority of its landscape is open countryside, under cereal production. The area is characterised by three landscape character areas (LCA): Foxton Farmlands LCA, Foxton Village LCA, and Rhee Valley and Tributaries LCA.

Both options would result in adverse impacts due to the introduction of a Travel Hub into an arable field, the addition of a new junction/roundabout and the installation of solar panels above car ports. The proposed scheme would introduce lighting to a previously unlit area. While the proposed landscape mitigation (planting) would in time screen and integrate the proposed scheme into its landscape setting, the Northern Option would be visible from the residential dwellings along Barrington Road while the Southern Option would be largely screened from view from residential properties and public rights of way in Foxton. Based on the likely impact of the scheme on nearby sensitive receptors, it was concluded that the Northern Option would result in a **moderate adverse effect** on landscape. The Southern Option would result in a **slight adverse effect** on landscape.

3.8.6 Noise

A high-level assessment of traffic associated with each option was carried out to accompany the OBC with a qualitative assessment of these changes used to assess potential noise impacts.

The assessment considered the site locations and proximity to nearby noise sensitive receptors, likely changes in vehicle flows, percentage of heavy goods vehicles or speeds, and consideration of the existing ambient noise environment and potential ambient noise level increases due to the changes in road traffic or noise sources associated with the proposed scheme. Baseline conditions were reviewed through a desktop study of the Extrium noise map[68].

There are no noise important areas within 600m of the options. However, in the areas around the potential sites there are noise sensitive residential properties. The closest receptors to the Northern Option site include those adjoining Barrington Road and to the Southern Option site include those adjoining Royston Road (A10).

Based on the expected changes in road traffic on the surrounding road network and the operation of the car parking facility, it was concluded that both options would have a **slight adverse effect** on noise.

3.8.7 Water

The water assessment considered the value of water resource features within the study area, based on quality, scale, rarity and substitutability. The assessment considered both surface water and groundwater.

For both options, the potential impact on surface water were considered insignificant as there are no watercourses running through or immediately adjacent to either option. As for the potential for the options to impact on groundwater, it is considered negligible as the proposed options present a low risk to groundwater quality and are not expected to impact on groundwater flow. It is assumed that the drainage design and discharges would be based on SuDS principles to minimise flood risk and risks to water quality to acceptable levels agreed with the lead local flood authority.

As the options are not expected to result in direct impacts on any water features, it was concluded that both options would result in a **neutral effect** on water resources.

3.9 Social impacts

Social impact (SI) appraisal covers the human experience of the transport project and its impact on social factors. Guidance is included in TAG Unit 4.1.

A full Social Impacts appraisal summary report can be found in Appendix N. The appraisal has sought to best represent the anticipated positive and negative changes for users, relating to the human experience of the scheme.

The initial qualitative appraisal has found that the scheme will deliver broadly positive benefits within relevant impacts for both options, with only personal affordability having a neutral impact. The anticipated assessment scores for the social appraisal can be seen in Table 3.7 below.

[68] England Noise and Air Quality Viewer. Available online at: http://extrium.co.uk/

Table 3.7: Social impacts summary scores

Impact area	Score		Assessment Comments
	Northern Option	Southern Option	
Accidents	Neutral	Neutral	The design of the proposed scheme may have an impact on the number of accidents and casualties. New junctions are required to provide entry points to the proposed scheme (for both options) which will introduce new conflict points on the network. Additionally, too facilitate access to the southern option there may be a slight change in the alignment. However, as detailed modelling has not been undertaken the assessment score is the same for both options as new conflict points are introduced at both locations. A more detailed assessment will be required to fully understand the impacts on accidents as a result of the locations of the junctions.
Physical activity	Slight beneficial	Moderate beneficial	As the proposed scheme is part of a larger strategy to make public and active transport more attractive in comparison to driving, beneficial health outcomes are expected due to more people cycling to and from the proposed scheme. As the Southern Site directly integrates with the cycling network, the assessment assumes that the Southern Site will benefit physical activity levels more than the Northern Site.
Security	Slight beneficial	Slight beneficial	Both sites will be designed in accordance with best practice standards and are expected to slightly benefit the security of transport users.
Severance	Slight beneficial	Slight beneficial	Both sites are expected to deliver improvements to pedestrian movement through delivering additional pedestrian crossings.
Journey quality	Moderate beneficial	Moderate beneficial	As the proposed scheme aims to improve the integration of different modes of transport, journey improvements are anticipated with the operation of the scheme. As the proposed scheme will also increase the capacity of public transport network, this could help relieve congestion on roads – and decrease the travel times between Royston and Cambridge. As the design of both options will both provide the same numbers of parking spaces and other components of the design and access to railway services at Foxton railway station, traveller stress, travellers' views and traveller stress (including fear of potential accidents and route uncertainty) are predicted to be the same for both options
Option values and non-use values	Scoped out	Scoped out	The proposed scheme is not expected to substantially change the availability of transport services in the study area. Therefore, this indicator has been scoped out.
Accessibility	Moderate beneficial	Moderate beneficial	It is expected that the proposed scheme will improve the accessibility of people to existing interchange facilities. It will also improve the accessibility of people to rail, cycling and pedestrian networks, whilst decreasing

			average journey times. The physical accessibility to different modes will particularly benefit overall access to goods, services and employment opportunities.
Personal affordability	Neutral	Neutral	No significant changes to personal affordability are expected with both options. Currently it is proposed that car parking at the Travel Hub will be free of charge. However, it is currently neither appropriate nor possible at this stage to comment on the specific price breakdowns of any proposed changes to train services.

Source: Mott MacDonald – Social Impact Appraisal Report – Appendix N

3.10 Distributional impacts

Distributional impact (DI) appraisals build on the SI appraisal and transport modelling outputs to assess the variance of a project's impact across different social groups. Guidance is included in TAG Unit 4.2. Both beneficial and/or adverse impacts of the proposed interventions are considered, along with the identification of social groups likely to be affected.

A full Distributional Impacts appraisal summary report can be found in Appendix O.

Table 3.8: Scope of socio-economic analysis

Social group (tick indicated analysis required for each impact)	Distributional impacts							
	User benefits	Noise	Air quality	Accidents	Security	Severance	Accessibility	Affordability
Income distribution	✓	✓	✓				✓	✓
Children: proportion of population aged under 16		✓	✓	✓	✓	✓	✓	
Young people: proportion of population aged between 16 and 25				✓			✓	
Older people: proportion of population aged 70 and over		✓		✓	✓	✓	✓	
Proportion of population with a disability					✓	✓	✓	
Proportion of population of Black, Asian and Minority Ethnic (BAME) origin					✓		✓	
Proportion of households without access to a car						✓	✓	
Carers: proportion of households with dependent children							✓	

Source: DfT (Dec 2015) WebTAG Unit A4.2 Distributional Impact Appraisal

From the initial screening which assessed whether there is potential impact across the impacts listed above, it was established that all areas warranted further assessment and appraisal.

The following sections summarise the findings for each impact across the identified social groups.

3.10.1 User benefits

User benefits impacts are assessed against income groups to determine the proportionality across social groups, specifically across the income distribution as per scope of socio-economic

analysis. A proxy study area has been used for user benefits which includes Cambridge and South Cambridgeshire.

In terms of the distributional impact, Table 3.9 below shows there will be beneficial impacts felt in larger proportion by the least deprived quintiles due to the proportionately larger presence of lower deprivation groups across the study area. The distributional impact is the same for both sites as the same study area has been used.

Table 3.9: Summary assessment scores – user benefits

Option	Social group	Distributional impact (seven-point scale)
Northern Site	Most deprived quintile	Slight beneficial
	Second most deprived quintile	Slight beneficial
	Third most deprived quintile	Moderate beneficial
	Second least deprived quintile	Moderate beneficial
	Least deprived quintile	Large beneficial
Southern Site	Most deprived quintile	Slight beneficial
	Second most deprived quintile	Slight beneficial
	Third most deprived quintile	Moderate beneficial
	Second least deprived quintile	Moderate beneficial
	Least deprived quintile	Large beneficial

Source: Mott MacDonald

3.10.2 Noise

Noise impacts are likely to occur where an intervention results in changes to traffic flows, speeds or where physical gap between people and traffic is altered. Noise impacts are assessed against the proportions of social groups relevant to noise across the study area. A proxy study area of approximately 1km has been used associated with each of the options and their potential noise impacts. This study area is shown in appendices of the DI appraisal.

In terms of distributional impacts, Table 3.10 below shows that although the overall noise impact is deemed to be slight adverse, where those occur there will be adverse noise impacts for children, older people and people in the least deprived income quintiles. Neutral impacts are predicted for the most deprived, second most deprived and third deprived quintile as no residents live in the most deprived, second and third most deprived quintiles.

Table 3.10: Summary assessment scores – noise

Option	Social group	Distributional impact (seven-point scale)
Northern Site	Children	Moderate adverse
	Older People	Large adverse
	Most deprived quintile	Neutral
	Second most deprived quintile	Neutral
	Third most deprived quintile	Neutral
	Fourth most deprived quintile	Slight adverse
	Least deprived quintile	Large adverse
Southern Site	Children	Moderate adverse
	Older People	Large adverse
	Most deprived quintile	Neutral
	Second most deprived quintile	Neutral

	Third most deprived quintile	Neutral
	Fourth most deprived quintile	Slight adverse
	Least deprived quintile	Large adverse

Source: Mott MacDonald

3.10.3 Air Quality

Based on initial assessments from Mott MacDonald environment team returning a judgement showing no significant changes to air quality, the distributional impacts have been deemed neutral and this indicator has been scoped out.

3.10.4 Accidents

A qualitative accident assessment approach, building on the SI appraisal, has been used in assessing the distributional impacts of accidents. At present, there is a concentration of accidents at the junctions between Royston and Cambridge. The risk of accidents for the wider network are likely to be reduced because of fewer cars on the road and improved integration of different public and active transport modes around Foxton Travel Hub and railway station.

Table 3.11 below sets out the summary appraisal score for each option and each relevant social group for accidents impact area. Given the larger proportion of older people in the study area, the distributional accidents impact will large beneficial. Children and young people will experience moderate beneficial distributional impacts as the proportions of these social groups is consistent with the national average. The distributional impact for accidents is the same for both sites as the same study area has been used.

Table 3.11: Summary assessment scores – accidents

Option	Expected overall impact (derived from SI appraisal)	Social group	Distributional impact (seven-point scale)
Northern Site	Slight beneficial	Children	Moderate beneficial
		Young People	Moderate beneficial
		Older People	Large beneficial
Southern Site	Slight beneficial	Children	Moderate beneficial
		Young People	Moderate beneficial
		Older People	Large beneficial

Source: Mott MacDonald

3.10.5 Security

The qualitative assessment in the DI appraisal identified that both options are likely to increase public perceptions of safety, as the design and operation of the proposed scheme will be consistent with best practice security standards.

Table 3.12 below shows the summary appraisal score for each option and relevant social group with personal safety concerns. As the study area has a larger proportion of people older people the proposed scheme will largely benefit older people. Children and those with a long-term limiting illness or disability (LTHD) will experience a moderate beneficial distributional impact, while BAME residents are expected to slightly benefit from the proposed scheme. The distributional impact in relation to security effects is the same for both sites as the same study area has been used.

Table 3.12: Summary assessment scores – security

Option	Expected overall impact (derived from SI appraisal)	Social group	Distributional impact (seven-point scale)
Northern Site	Moderate beneficial	Children	Moderate beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial
Southern Site	Moderate beneficial	Children	Moderate beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial

Source: Mott MacDonald

3.10.6 Severance

The Royston to Cambridge section of the A10 suffers regular peak-time congestion, which impacts pedestrians attempting to cross the A10 to reach Foxton railway station. Additionally, stakeholder engagement identified concerns over pedestrian access due to an absence of formal pedestrian crossing facilities across the A10 to the south of the level crossing.

The current design of the proposed scheme for both options provides designated routes for walking and cycling within the Travel Hub. This means that cars will be separated from non-motorised users and pedestrian movements will not be significantly impeded.

The proposed scheme connects with existing NMU paths to Foxton railway station. Both options are likely to make pedestrian and cycling journeys more attractive by removing physical barriers and/or providing designated routes. Existing and proposed NMU routes are likely to encourage people to cycle, providing another transport mode which enhances connectivity between residents and facilities.

Table 3.14 below shows the summary appraisal score for each option and relevant social groups. Older people will experience large beneficial distributional impact, while children and those with LTHD will both experience moderate beneficial impact. The distributional impact of severance is the same for both sites as the same study area has been used.

Table 3.13: Summary assessment scores - severance

Option	Expected overall impact (derived from SI appraisal)	Social group	Distributional impact (seven-point scale)
Northern Site	Moderate beneficial	Children	Moderate beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial
Southern Site	Moderate beneficial	Children	Moderate beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial

Source: Mott MacDonald

3.10.7 Accessibility

The proposed scheme will make it easier for people to travel by rail, cycle or on foot and improve average journey times due to the shift from vehicular transport to public and active transport modes. The proposed scheme is complimentary to the existing walking and cycling network, so people are more likely to use the proposed scheme and train services from Foxton Station to access goods, services and employment in nearby towns, particularly in Cambridge.

Table 3.14 below shows the summary appraisal score for each option and relevant social groups to the accessibility impact area. Older people and people in the least deprived quintile will experience large beneficial distributional impacts as proportions in the study area are greater than the national average. Children and those with a LTHD will experience moderate beneficial impact as the proportion in the study area is consistent with the national average.

The distributional impact is the same for both sites as the same study area has been used.

Table 3.14: Summary assessment scores

Option	Expected overall impact (derived from SI appraisal)	Social group	Distributional impact (seven-point scale)
Northern Site	Moderate beneficial	Most deprived quintile	Neutral
		Second most deprived quintile	Neutral
		Third most deprived quintile	Neutral
		Fourth least deprived quintile	Slight beneficial
		Least deprived quintile	Large beneficial
		Children	Moderate beneficial
		Young people	Slight beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial
		Households with no car access	Slight beneficial
		Households with dependent children	Moderate beneficial
Southern Site	Moderate beneficial	Most deprived quintile	Neutral
		Second most deprived quintile	Neutral
		Third most deprived quintile	Neutral
		Fourth least deprived quintile	Slight beneficial
		Least deprived quintile	Large beneficial
		Children	Moderate beneficial
		Young people	Slight beneficial
		Older people	Large beneficial
		Those with a LTHD	Moderate beneficial
		BAME residents	Slight beneficial
		Households with no car access	Slight beneficial
		Households with dependent children	Moderate beneficial

Source: Mott MacDonald

3.10.8 Personal affordability

The Social Impact appraisal did not identify any affordability impacts of the proposed scheme. Personal affordability impact area is therefore not scoped in the distributional impact appraisal.

3.11 Impact on public accounts

The cost estimate for each option is presented below. This details the capital costs associated with each option divided into construction, design, testing and commissioning, management, land and statutory undertakers' costs. The costs include a P80 risk allowance. The detailed breakdown of construction cost estimation is presented in the Financial Case within Section 5 of this OBC. All costs forecast to have been incurred up to Q2 2020 have been treated as sunk costs for the purpose of the PVC calculations for the OBC submission and BCR calculations and are excluded from the following tables.

The following table presents the breakdown of the capital cost for the assessed options, which clearly identifies that the Southern Option requires an additional cost of approximately £0.5m (5%), which is reflective of the additional work required to deliver the design (these are mainly related to additional construction costs associated with the Southern Option related to elements such as earthworks, footways and paving costs).

Table 3.15: Capital costs (£'s)

Item	Price Basis	Northern	Southern	Diff (S-N)	% Diff S/N
Construction	2018 Q4	£5,870,581	£6,209,291	£338,710	6%
Land	2019 Q4	£650,740	£670,180	£19,440	3%
Preparation	2018 Q4	£722,628	£764,321	£41,693	6%
Supervision	2018 Q4	£308,978	£326,805	£17,827	6%
TOTAL		**£7,552,927**	**£7,970,597**	**£417,670**	**6%**

Source: Mott MacDonald Cost Estimators – Land cost estimates produced by Bruton Knowles

A 15% optimism bias has been applied in addition to the capital costs in Table 3.15, in line with TAG A1-2 (Table 8 – equivalent level to a park and ride scheme at Stage 2 (OBC)), to the capital costs.

The costs outlined above have been converted to Present Value Costs (PVC), using default discount factors from the May 2019 TAG databook. The overall PVC for the preferred option is shown in Table 3.16.

Table 3.16: Present Value Costs (£000's, 2010 market prices, discounted to 2010)

	Northern	Southern	Diff (S-N)	% diff (S/N)
Investment PVC	£4,800	£5,081	£281	6%

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.12 Benefit Cost Ratio

3.12.1 Initial Benefit Cost Ratio

Table 3.17 presents an Analysis of Monetised Costs and Benefits (AMCB) for each shortlisted option. This is based on the monetised Level 1 MEC transport user benefits (established monetised impacts) presented in Section 3.4.

The overall assessment demonstrates that both short listed options present a viable Value for Money (VfM) return with BCR's exceeding 1. Based on VfM criteria the Southern Option would

be classed as High VfM, which is reflective of noticeable additional benefits at marginal additional cost. The Northern Option would be classed as Medium VfM.

Table 3.17: AMCB – Level 1 benefits (£'000s, 2010 prices discounted to 2010)

	Foundation Case			High Growth		
Impact	**North**	**South**	**% diff**	**North**	**South**	**% diff**
Journey Time	£3,590	£5,498	53%	£5,540	£7,152	29%
Congestion	£3,828	£6,468	69%	£2,509	£5,006	99%
Infrastructure	-£543	-£758	40%	-£1,402	-£2,274	62%
Accidents	£1,181	£1,684	43%	£864	£1,412	63%
Air Quality	£3	£10	272%	-£11	-£10	-9%
Noise	-£69	-£47	-32%	-£228	-£321	41%
Greenhouse Gases	-£126	-£101	-19%	-£233	-£242	4%
Indirect Taxes	£413	£349	-15%	£753	£820	9%
TOTAL PVB	**£8,277**	**£13,103**	**58%**	**£7,793**	**£11,543**	**48%**
PVC	**£4,800**	**£5,081**	**6%**	**£4,800**	**£5,081**	**6%**
NPV	**£3,477**	**£8,023**	**131%**	**£2,993**	**£6,462**	**116%**
Initial BCR	**1.72**	**2.58**	**50%**	**1.62**	**2.27**	**40%**
VfM Category	**Medium**	**High**		**Medium**	**High**	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.12.2 Adjusted Benefit Cost Ratio

Additional Level 2 benefits of the project related to the Wider Economic Impacts (evolving monetised impacts) are included in an adjusted economic assessment as the realisation of these benefits is less certain. These Wider Economic Impacts include agglomeration, output change in imperfectly competitive markets and tax revenues arising from labour market impacts. These impacts have been assessed as described in Section 3.5. Table 3.18 presents an AMCB for each shortlisted option informing the Adjusted BCR.

The overall Level 2 benefits equate to an increase in the BCR of circa 15% across all options.

Table 3.18: AMCB – Level 1 and 2 benefits (£'000s, 2010 prices discounted to 2010)

Impact	Foundation Case			High Growth		
	Northern	**Southern**	**%diff**	**Northern**	**Southern**	**%diff**
Level 1 PVB	£8,277	£13,103	58%	£7,793	£11,543	48%
Agglomeration and labour supply	£1,159	£1,834	58%	£1,091	£1,616	48%
Output change in imperfectly competitive markets	£104	£168	61%	£80	£131	64%
TOTAL PVB	**£9,540**	**£15,105**	**58%**	**£8,964**	**£13,289**	**48%**
PVC	**£4,800**	**£5,081**	**6%**	**£4,803**	**£5,060**	**6%**
Adjusted BCR	**1.99**	**2.97**	**50%**	**1.87**	**2.63**	**40%**
% Level 2 Uplift	**16%**	**15%**		**15%**	**15%**	

Source: Mott MacDonald – Modelling and Economic Assessment Report (Appendix L)

3.13 Value for Money

The Value for Money (VfM) statement for the Foxton Travel Hub project takes into consideration all appraisal and assessment work undertaken to date to arrive at the emerging scheme that is

shown to present the best VfM. This takes into account the monetised impacts and the project costs presented as a Benefit to Cost Ratio (BCR), as well as the findings from any qualitative and non-monetised assessments.

The approach to the assessment of VfM of City Deal schemes, as set out in the City Deal Assurance Framework, reflects this by stating that projects scoring a BCR less than 2:1 may still be considered for funding if they can demonstrate a compelling case for investment based on meeting the objectives of the City Deal. These include, for example, unlocking barriers to growth, delivering wider economic benefits, environmental and social benefits. As long as the project provides a robust evidence base with a proportionate level of quantitative and qualitative analysis to demonstrate that the project represents good VfM and can meet the policy objectives of the City Deal, these do not need to be included in the central benefit-cost analysis.[69]

The VfM categories defined by the DfT Value for Money Framework and used by GCP are set out in Table 3.19.

Table 3.19: Department for Transport VfM Categories

VfM Category	Implied by…*
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

Source: Department for Transport Value for Money Framework

The monetised Level 1 economic benefits (based on transport modelling outcomes) show that the Southern Option falls into the High VfM category, and the Northern Option falls into a Medium VfM category. The sites sit in the same VfM categories (ie: high and medium for the Southern and Northern Options respectively) when the Level 2 benefits are also included.

3.14 Preferred option

A robust evidenced based process has been used to determine the preferred option for the Foxton Travel Hub scheme drawing on results from stakeholder consultation, multi-criteria assessment that assessed options against a series of criteria linked to the scheme objectives, detailed economic appraisal, environmental impacts assessment and social and distributional impact assessments. The following sections draws on the results of these assessments to arrive at the recommended preferred option.

3.14.1 Summary of the OBC stage consultation results

The OBC stage stakeholder engagement process built on the meetings and engagement that took place for the SOBC. The focus of the OBC stakeholder engagement process centred on the public consultation exercise, which took place in autumn 2019.

The public consultation period generated 217 individual and 4 stakeholder responses through the consultation survey. An additional 66 written responses were received. In addition to the

[69] City Deal Assurance Framework

public consultation, meetings with key stakeholders were convened; these meetings focused on particular aspects of the scheme concept and design, as well as interaction with other projects and workstreams.

The public consultation results showed that 42% of respondents preferred neither site option, 41% of respondents preferred the Southern Option, 13% of respondents preferred the Northern Option, and 7% of respondents had no preference. Although the public consultation results do not show clear support for the proposed Travel Hub overall, they do show a preference for the Southern Option over the Northern Option.

Therefore, the headline outcome of the consultation process was that the Southern Option was preferred over the Northern Option, but that a large proportion of respondents would prefer neither site to be built. However, written feedback also recommended the assessment of alternative site configurations including a split site solution, a decked parking solution, and a decked split site solution. These were carried forward as part of the OBC options assessment as presented in Appendix K.

3.14.2 Summary of the OBC options assessment

In line with the feedback received during the consultation period, the alternative site configurations, referenced above, were assessed against the previously shortlisted options, using the options assessment methodology developed during the SOBC process. This used the Green Book-compliant INSET multi-criteria assessment framework.

As discussed in Section 2.7.6, the OBC options appraisal considered a wide range of assessment criteria that were aligned to the scheme objectives. These were grouped by four key themes; namely, sustainable travel, congestion, quality of life, and deliverability.

The results of the assessment concluded that the Southern Option scored most highly as a potential location for the proposed new Travel Hub, with a net score of 0.64 out of a possible 1.00. The Decked Southern Option was the second highest scoring option with 0.58, and the Northern Option was the third highest scoring option with 0.54. The Southern Option scored highest against the sustainable travel, congestion and quality of life themes, and had the second highest score in terms of deliverability.

A cost adjusted INSET calculation was also completed to provide an INSET cost benefit metric; this was achieved by dividing the cost of each option by the corresponding net INSET score. The cost adjusted INSET calculation showed that the capital costs associated with developing a decked option, would be significantly higher than developing an option without decking. For example, the cost of delivering the equivalent level of benefit for the Decked Southern Site, would be over 2.5 times greater in comparison to the Southern Option (without decking). The complexity and costs associated with the design, build, funding and operation of a physical decked structure, meant that the decked options were discounted from further assessment.

In summary, the options appraisal process recommended that the Southern and Northern Options be subject to further detailed appraisal, in order to select the preferred site option, but did show that the Southern Option performed best overall against the assessment criteria, and therefore in meeting the scheme objectives.

3.14.3 Summary of economic appraisal

The purpose of the economic appraisals is to present the scheme options with the best Value for Money (VfM), according to the DfT Value for Money Framework used by GCP.

The economic appraisals take into account the monetised impacts and project costs, alongside the findings from the qualitative and non-monetised assessments and present a Benefit to Cost Ratio (BCR) via the VfM statement provided in Section 3.12.

The initial BCRs for the Northern and Southern Options are presented in Table 3.20 below. The initial BCRs are based on the monetised Level 1 MEC transport user benefits (established monetised impacts) presented in Section 3.5 and are considered to represent the 'core BCRs' of the scheme.

Table 3.20: Initial Benefit to Cost Ratio results

	North		South	
Impact	**Foundation Case**	**High Growth**	**Foundation Case**	**High Growth**
Initial BCR	1.72	1.62	2.58	2.27

Source: Mott MacDonald

Table 3.20 shows that the Southern Option has the highest initial BCR scores in both the Foundation Case and High Growth scenarios. Here, the Southern Option has a BCR of 2.58 in the Foundation Case scenario and 2.27 in the High Growth scenario, compared to 1.72 and 1.62 for the Northern Option respectively.

The BCR scores of the Southern Option thus fall into the 'high' VfM category (BCR between 2 and 4) in the DfT's Value for Money Framework, whereas the Northern Option falls into the 'medium' VfM category (BCR between 1.5 and 2).

The adjusted BCRs for the Northern and Southern Options are presented in Table 3.21 below. The adjusted BCRs include additional Level 2 benefits, related to the Wider Economic Impacts (evolving monetised impacts), in an adjusted economic assessment, because the realisation of these benefits is less certain.

Table 3.21: Adjusted Benefit to Cost Ratio results

	North		South	
Impact	**Foundation Case**	**High Growth**	**Foundation Case**	**High Growth**
Adjusted BCR	1.99	1.87	2.97	2.63

Source: Mott MacDonald

Table 3.21 shows that the Northern Option has the lowest adjusted BCR scores in both the Foundation Case and High Growth scenarios. Here, the Northern Option has a BCR of 1.99 in the Foundation Case scenario and 1.87 in the High Growth scenario, compared to 2.97 and 2.63 for the Southern Option respectively.

For the Northern Option, the adjusted BCR scores fall into the 'medium' VfM category (BCR between 1.5 and 2) in both the Foundation Case and High Growth scenarios whilst, for the Southern Option, the adjusted BCR scores falls into the 'high' VfM category (BCR between 2 and 4) in both scenarios.

In summary, the initial and adjusted BCRs for the scheme, show that the Southern Option has a high VfM BCR, whilst the Northern Option has a medium VfM BCR.

3.14.4 Summary of environmental assessment work

The Environmental Appraisal Report (EAR), prepared to accompany this OBC report, describes the assessments undertaken on the key environmental disciplines set out in WebTAG Unit A3.

A summary of the assessed environmental topics is provided in Table 3.22 below, and the EAR is included in Appendix M.

Table 3.22: Summary of the assessed environmental topics

Environmental topic	Classification of effect	Notes
Air Quality	Both have a neutral effect.	Both options are unlikely to have significant effect on current traffic levels.
Biodiversity	Both have a slight adverse effect.	Both options have the potential to impact upon on broadleaved woodland, hedgerows and some species (badgers, bats, birds, brown hares, great crested newts, hedgehogs, reptiles and terrestrial invertebrates).
Greenhouse Gases	Both have a neutral effect.	The anticipated changes in traffic as a result of either of the two options is not considered likely to differ significantly.
Historic Environment	Both have a moderate adverse effect.	The proposed scheme would change the historic setting of designated heritage assets, but not physically impact them.
Landscape	Northern site - moderate adverse effect.	The Northern Option would be visible from the residential dwellings along Barrington Road.
	Southern site - slight adverse effect.	The Southern Option would be largely screened from the residential properties and public rights of way in Foxton.
Noise	Both have a slight adverse effect.	No noise important areas are located within 600m of either option, but there are noise sensitive residential properties proximate to both sites.
Water	Both have a neutral effect.	Both options are not expected to result in direct impacts on any water features.

Source: Mott MacDonald

Table 3.22 shows that both sites are judged to have the same impact across all environmental topics, with the exception of landscape impacts. For the landscape topic, the impact of the Southern Site is judged to be slight adverse, compared to the moderate adverse impact of the Northern Site; this is because the Northern Site would be visible from the residential dwellings along Barrington Road, whereas the Southern Option would be largely screened from view.

In summary, the environmental appraisals show that both sites largely fall within the same classification of effect, but that the Southern Site has a lesser impact on the landscape of the Foxton area.

3.14.5 Summary of SI/DI work

The Social Impact (SI) and Distributional Impact (DI) appraisals for the Foxton Travel Hub scheme have been carried out at a high level; this is considered to be proportionate to the size of the proposed scheme, the availability of data, and the stage of the appraisal. The high-level nature of the SI and DI appraisals, and the similarity of the preferred site options in terms of location and design, meant the two sites had the same scores across all criteria.

With regard to the SI appraisal, the proposed scheme had either a neutral or beneficial impact on all criteria apart from the ‘option and non-use values’ impact area. The option and non-use values impact area were scoped out because the scheme does not “substantially change the availability of transport services within the study area”.

With regard to the DI appraisal, the proposed scheme was judged to have either a neutral or beneficial impact for the following criteria: user benefits, security, severance and accessibility. The only area where on a distributional level, there may be an adverse impact for particular social groups as a result of the scheme is noise. Here, the assessment concluded that the DI impact of noise is 'moderate adverse' on children, and large adverse on older people; this is because the proportion of children in the study area is consistent with the national average, and the proportion of older people is higher than the national average. However, it should be noted that the overall impact from the noise assessment concluded that there is only potential for a slight adverse effect on noise overall from the scheme, so whilst those who fall under the children and older people social groups may experience any noise impact the most, this is still only slight adverse impact. The air quality, accidents and affordability impact areas were scoped out at this stage due to the absence of the requisite level of data.

A more detailed SI and DI appraisal will be undertaken for the preferred option at Full Business Case (FBC) stage, if deemed appropriate.

3.14.6 Conclusion

The purpose of the Economic Case has been to undertake a Treasury-compliant assessment of the shortlisted options, in order to establish their VfM, and identify what economic, environmental, social and distributional impacts the scheme is expected to deliver.

- The body of evidence presented in this sub section is summarised as follows:
- The options appraisal process, which weighted all themes equally, identified the Southern Option as the best performing option in all but one theme;
- The consultation feedback showed that the Southern Option was preferred over the Northern Option;
- The VfM assessments, show that the Southern Option has a high VfM BCR for the monetised Level 1 economic benefits, whilst the northern option has a medium VfM BCR. In comparison, both site options sit in the same VFM categories when the Level 2 benefits are included;
- The environmental appraisals concluded that both sites largely fall within the same classification of environmental effect, but that the Southern Site has a lesser impact on the landscape of the Foxton area; and,
- Finally, the SI and DI appraisals for the scheme showed that both sites scored the same across all criteria due to the high-level nature of OBC stage appraisals.

In light of the evidence presented in this report, it is recommended that the Southern Option should be taken forward for further development and assessment at the FBC stage as the preferred option.

3.15 Appraisal Summary Table

The Appraisal Summary Table (AST) presented is included in Appendix P provides details of the overall impacts of the scheme. These include both qualitative and quantitative benefits.

3.16 Sensitivity tests

A number of sensitivity tests have been carried out around the preferred option. The purpose of the sensitivity tests is to understand if the intervention being proposed is still value for money given alterative assumptions and scenarios. As sensitivity tests around alternative growth scenarios have been incorporated into the main appraisal of the short-listed options, with a

Foundation Case and High Growth scenario, the sensitivity tests carried out have focused on changes to scheme costs for the preferred option.

Five sensitivity tests have been carried out to assess the sensitivity of the scheme to different assumptions surrounding scheme costs. These relate to:

- The level of optimism bias
- The treatment of risk
- Inclusion of Solar Photovoltaic (PV) and Battery Storage
- Inclusion of Pedestrian Footbridge and Ramp over the railway line
- Inclusion of both a PV and Battery Storage solution and a Pedestrian Footbridge and Ramp

3.16.1 Optimism bias

TAG A1-2 presents guidance on determine the appropriate level of optimism bias to apply to scheme costs. This is dependent on the nature of the scheme and its status in the scheme development process. The preferred scheme has been assessed based on the guidance included in TAG A1-2, which results in optimism bias of 15% being applied, commensurate with a local authority scheme at OBC stage.

It is important to examine the impact of a range of other possible levels of optimism bias on the cost estimates. To address this a sensitivity has been carried out assuming an optimism bias level of 44%, which is the appropriate level for a local authority scheme at SOBC stage. The scheme costs with an optimism bias of 44% are shown in Table 3.23, with corresponding impact on the BCR being a -15% reduction.

3.16.2 Treatment of risk

Risk in this context refers to identifiable factors that may impact on scheme costs, leading to over- or under-spends. The risk adjusted costs used in the economic appraisal for the preferred option. For the core base costs, a risk value based on P80 was applied. For the purpose of this sensitivity test the P90 costs have been used. The P90 cost estimate represents an 90% likelihood that the project will be delivered within budget. The scheme costs based on a P90 estimate are shown in Table 3.23, with corresponding impact on the BCR being a minor -3% reduction.

3.16.3 Solar Photovoltaic (PV) and Battery Storage

One aspiration for the Foxton Travel Hub scheme is to investigate the incorporation of Solar Photovoltaic and Battery Storage solution to contribute to the environmental benefits the scheme can offer. Any PV and Battery Storage solution would have an impact on costs due to their higher purchase value (this is discussed further in Section 5.4.2 where the cost estimates are presented). The possible impact any inclusion of PV and Battery Solution could have on the scheme's VfM are shown in Table 3.23 with the increase in cost equating to a -29% reduction in the BCR. For reference optimism bias of 15% has been added to these additional costs.

3.16.4 Pedestrian Footbridge and Ramp over the railway line

Whilst not part of the core scope of the scheme, discussions are also ongoing with Network Rail about options around the introduction of pedestrian footbridge with a ramp over the railway line to improve connections for pedestrians travelling between the Travel Hub and Foxton Station (this is discussed further in Section 5.4.1 where the cost estimates are presented). The possible impact any inclusion of a pedestrian footbridge and ramp over the railway line could have on the

scheme's VfM are shown in Table 3.23 with a -27% reduction due to the increased capital cost. Optimism bias of 15% has been added to the footbridge costs.

3.16.5 Sensitivity test results

The initial VfM category remains high for the first two sensitivity tests and is medium when additional costs are included for PV and battery solution and a pedestrian footbridge and ramp. The combination of the additional costs for PV and battery solution and a pedestrian footbridge and ramp reduces the initial VfM category for the scheme to low, due to the inclusion of additional costs 80% increase in PVC with no monetised benefit.

The adjusted VfM category for all sensitivity test except the last is high.

Table 3.23: Foxton Travel Hub Preferred Option – Economic appraisal sensitivity tests (£'000s, 2010 prices discounted to 2010)

	Core	Sensitivity Test 1	Sensitivity Test 2	Sensitivity Test 3	Sensitivity Test 4	Sensitivity Test 3+4
		Optimism Bias 44%	**Risk P90**	**PV and Battery Solution**	**Pedestrian Footbridge and Ramp**	**PV and Battery Solution & Pedestrian Footbridge and Ramp**
Level 1 PVB	**13,103**	13,103	13,103	13,103	13,103	13,103
Level 2 PVB	**2,002**	2,002	2,002	2,002	2,002	2,002
PVC	**5,081**	6,010	5,242	7,163	6,931	9,185
Initial BCR	**2.58**	2.18	2.50	1.83	1.89	1.43
VFM Category	**High**	High	High	Medium	Medium	Low
Adjusted BCR	**2.97**	2.51	2.88	2.11	2.18	1.64
VFM Category	**High**	High	High	High	High	Medium

Source: Mott MacDonald

4. Commercial Case

The purpose of the Commercial Case is to provide evidence on the commercial viability of the proposal and the procurement strategy that will be used to engage the market. The Commercial Case is prepared in line with DfT Guidance.

4.1 Introduction

This section sets out the emerging Commercial Case for the Foxton Travel Hub project and provides evidence on the commercial viability of the proposal and the procurement strategy that will be used to engage the market.

Here, risk allocation and transfer, contract timescales and implementation timescales, capability and skills of the team delivering the project and the resource implications of the approach are all considered.

The DfT's guidance document, 'The Transport Business Case: Commercial Case' (2013), outlines the areas that should be covered as part of the Commercial Case. Table 4.1 shows where the relevant information, in accordance with DfT requirements, can be found in the subsequent sections that make up this Commercial Case.

Table 4.1: Compliance with DfT requirements for the Commercial Case

Content	DfT requirements	OBC section
Introduction	Outline the approach taken to assess commercial viability.	Section 4.1
Output based specification	Summarise the requirement in terms of outcomes and outputs.	Section 4.2
Procurement strategy	Detail procurement/purchasing options including how they will secure the economic, social and environmental factors outlined in the economic case.	Section 4.3
Sourcing options	Explain the options for sources of provision of services to meet the business need e.g. partnerships, framework, existing supplier arrangements, with rationale for selecting preferred sourcing option.	Section 4.6
Payment mechanisms	Set out the proposed payment mechanisms that will be negotiated with the providers e.g. linked to performance and availability, providing incentives for alternative revenue streams. (See the Office for Government Commerce's Achieving Excellence briefing for advice on payment mechanisms for construction projects.)	Section 4.10
Pricing framework and charging mechanisms	To include incentives, deductions and performance targets.	Section 4.11
Risk allocation and transfer	Present an assessment of how the types of risk might be apportioned or shared, with risks allocated to the party best placed to manage them subject to achieving value for money.	Section 4.12
Contract length	Set out scenarios for contract length (with rationale) and proposed key contractual clauses.	Section 4.13
Human resource issues	Personnel/people management/trade union implications, where applicable, including TUPE regulations.	Section 4.14
Contract management	Provide a high-level view of implementation timescales. Detail additional support for in service management during roll-out / closure. Set out arrangements for managing contract through project / service delivery.	Section 4.15

Source: DfT - The Transport Business Case, 2013

4.2 Output based specification

The Commercial Case shows how the procurement and commercial viability of the project will help to enable scheme delivery. The following outputs/deliverables are required:

- Scheme design and associated preparatory works;
- Travel Hub site main works at the new site; and,
- Any associated main works beyond Travel Hub site boundary.

Separate procurement exercises might also be required for operation and maintenance activities:

- Site operation and maintenance of the new site.

In order to deliver the scheme outputs, a procurement strategy and methodology are required that deliver the following:

- **Cost Certainty**- Achieve cost certainty, or certainty that the Foxton Travel Hub can be delivered within the funding constraints;
- **Minimise Costs**- Minimise preparation costs in regard to scheme design and minimise construction delivery costs;
- **Programme**- Achieve an efficient delivery programme that would ensure the proposed opening year for the scheme of 2024 is achievable;
- **Quality**- Achieve appropriate quality of design and end produce;
- **Continuity of Project Knowledge**- Maintain project knowledge to support scheme design and successful rebuttal of any project challenge. The knowledge of the scheme and associated issues and constraints, generated through the development of the OBC, is seen as an asset and will help enhance quality of delivery and achievement of programme;
- **Risk**- Obtain contactor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk and improve outturn certainty thereby reducing risks to a level that is as low as reasonably practicable; and,
- **Deliverability**- Engagement with contractors and stakeholders, throughout planning to scheme delivery, to support the development of buildable and deliverable proposals. These are the criteria by which procurement strategies and methods have been assessed and the subsequent sections in this chapter detail the results of this assessment.

4.3 Procurement strategy options

A number of procurement strategy options have been considered for the preferred option for the Foxton Travel Hub scheme. These options are set out in Table 4.2 below alongside the advantages and disadvantages of each.

Table 4.2: Foxton Travel Hub alternative procurement strategy options

Option	Advantages	Disadvantages
Design & Build (D&B) Contract Appointment of a Contractor	• Established form of contract. • Single stage tender process may reduce overall programme compared with other options. • Early collaboration between Contractor & Designer may reduce construction cost. • Contract tender price agreed at an early stage. • All liabilities (design and construction) in one place. • Significant risk transfer to the contractor is possible. • Designer incentivised to produce a value engineered design.	• High tender cost for Contractors given design required to support tender submission. May limit range of tenderers competing. • Clear thought and planning required regarding how to define the Client's requirements in the tender documents. • Longer tender period required to allow Contractors to undertake design to support their submission. • Contractor risks are higher and may raise the price of the contract. • Quality of final product can be compromised as contractor is incentivised to minimise scheme costs post award to maximise their return.
Novated Design & Build Appointment of a Consultant to progress the design, following by procurement of a Design & Build Contract with the Consultant novated to the successful Contractor	• Reduced tender period compared with a traditional Design and Build tender. • Employer will retain control of the design until novation to the Design & Build contractor. • Employer's Consultant can further develop design during the Design & Build procurement process so long as clear information is provided regarding pricing. • Contract tender price agreed at an early stage. • All liabilities (design and construction) in one place. • Designer incentivised to produce a value engineered design. • Significant risk transfer to the contractor is possible.	• Two stage tender process with resulting cost to the Employer. • No early collaboration between Contractor & Designer. • Contractor risks are higher and may raise the price of the contract. • Consultants may be reluctant to novate to a Contractor though this can be written into the contract with the Consultant. • As design will continue to be developed in parallel with the D&B tender process, the Employer will have to negotiate with the successful Contractor to reach a final agreement on price. LGSS Procurement has advised that such a process might be subject to legal challenge.
Traditional 'Design' stage followed by 'Build' stage. (Two stage tender process) Appointment of a Consultant in stage 1 with a requirement to obtain ECI advice from a Contractor Appointment of a Contractor in stage 2.	• Established form of contract for both Consultant and Contractor procurement. • Option of either stage 1 Design becoming 'Employer's Design', or transfer risk by novating stage 1 Consultant to the stage 2 Contractor. • Maintains competitive tension in both the stage 1 (design) and stage 2 (construction) tenders thereby offering excellent value for money. • Clear roles and lines of communication.	• Two stage tender process may increase overall programme compared to single stage tender. • May prove difficult to procure ECI advice from contractors as earlier input may exclude them from the construction tender. • If a different works Contractor is procured compared to the ECI Contractor, approach to build may vary and ECI input may be discarded/ abortive. • Liabilities for construction methodology/ phasing may become blurred between the main works contractor and the ECI Contractor/ Client. • Design and Construction liabilities sit in different contracts • Less opportunity for risk transfer to Contractor – Client carries the design risk during construction
Two stage ECI Developed Design then D&B (akin to Ely Bypass)	• Single stage tender process may reduce overall programme compared with other options. • Break point provides an opportunity to mitigate risk in advance of D&B stage.	• Pressure to deliver can result in shorter stage 1 period and commencement of D&B stage 'too early'. This may mean that the agreed Target Cost may not be robust.

Option	Advantages	Disadvantages
Appointment of a Contractor Single stage tender process with a 'Developed Design' stage to develop/ agree a Target Cost prior to proceeding to 'D&B' stage	• Employer does not have to award D&B stage if tender price is too high and could go back to the market. • Same contractor involved in both phases thereby maintaining continuity. • Requires a longer first stage to allow the design to be developed sufficiently for a robust price to be agreed. • The Employer has the option of terminating the contract on completion of Developed Design (i.e. 'break point').	• No incentive for Contractor to collaborate with Consultant in the Developed Design stage to reduce construction cost given that Target Cost is not defined until end of this stage. • No competitive tension at the point where the Target Cost is agreed. The Contractor may raise the price in the knowledge that the Employer does not want to go back to the market. • If "break" clause is enacted, significant delays to programme as a new procurement process will be required. • Lack of competitive tension when Target costs are agreed. Works Information must be carefully compiled to negate ambiguity/ potential for claims from the Contractor.
Detailed Design then Build (akin to Kings Dyke) Appointment of a Contractor Single stage tender process with a 'Detailed Design' stage to develop/ agree a Target Cost price prior to proceeding to 'Build' stage. The Employer has the option of terminating the contract on completion of Design (i.e. 'break point')	• Single stage tender process may reduce overall programme compared with other options. • Break point provides an opportunity to mitigate risk in advance of Build stage. • Employer does not have to award Build stage if tender price is too high and could go back to the market. • Same contractor involved in both phases thereby maintaining continuity. • Requires a longer first stage to allow the detailed design to be developed. • Target Price based on a completed design so risks should be minimal. • Risk profile can be agreed with the Contractor during the design phase.	• Potential for political pressure to commence Build 'too early'. • No incentive for Contractor to collaborate with Consultant in the Design stage to reduce construction cost given that Target Cost is not defined until end of this stage. • Contractor may raise the price in the knowledge that the Employer does not want to go back to the market. • Carefully worded contract required to ensure that Contractor's liability for any defects in the 'Design' stage is carried forward to the 'Build' stage. • If "break" clause is enacted, significant delays to programme as a new procurement process will be required. • Lack of competitive tension when Target costs are agreed. • Works Information must be carefully compiled to negate ambiguity/ potential for claims from the Contractor.

Source: WYG

4.3.1 Preferred procurement strategy option

The current preferred procurement strategy option is a traditional two-stage tender process ('Design' stage followed by 'Build' stage) for the following reasons:

- Maintains competitive tension in both the stage 1 (design) and stage 2 (construction) tenders thereby offering excellent value for money;
- The design of the Travel Hub scheme (Southern Option) may be considered to be non-complex and as such the benefits of early collaboration between Contractor and Designer, which might be achieved in a D&B contract, would be limited compared with a more complex project;
- Lower tender cost for Contractors compared with a D&B contract;
- Less Contractor risk could result in reduced construction cost compared with a D&B contract; and,
- It is considered the most cost-effective procurement method for the Employer.

The other options are currently not preferred to avoid the higher tender costs and Contractor risk associated with Design & Build Contracts given the non-complex nature of the project.

4.4 Procurement mechanism

The design and construction services for delivery of the preferred option can be procured as a combined or independent series of activities. There are several industry recognised generic procurement mechanisms in current use, each used to differing degrees dependent on the situation and these are set out, alongside the advantages and disadvantages of each, in Table 4.3 below.

Table 4.3: Advantages and disadvantages of types of contract

Option ref	Type of contract	Advantages	Disadvantages
CT1	Negotiated	• Both Employer and Service Provider are content to work together where a high level of trust and collaboration exists. • The negotiated tender cost can be independently checked against market rates to demonstrate value for money. • Could be a relatively quick process once negotiating partner is selected.	• Selection of negotiating partners is arbitrary and subject to challenge. • There is strong potential for successful challenge from unsuccessful Service Providers not included in the negotiation process. • This approach could alienate a section of the supply chain. Some Service Providers will be excluded from the procurement process. • The wider stakeholders that are not included in procurement process of a negotiated contract can sometimes perceive that the cost does not demonstrate value for money given that they will not have full transparency of the specific contract details. • Demonstration of value for money would be difficult and could prove a challenge during audit.
CT2	Competitive tender	• Transparent and clear process. • Open to all qualifying contractors. • Value for money can be fully demonstrated and costs are dictated by market forces. • There is clarity on what is included in the cost for the given scope of works. The cost can be fixed for a fixed amount of work.	• The cost cannot be fixed if the scope of works is not fully defined at the time of tender process. • A competitive tender process is unlikely to give a fully fixed out-turn cost as change generally occurs, especially if the design is not fully complete.at the time of tender. • The lowest cost does not always indicate value for money. Due diligence checks on quality and experience should be carried out to make sure that service quality and competence are included in the offer.
CT3	**Managed** The Employer either acts as Contract Manager or appoints a Management Contractor to undertake this role. They would then coordinate the inputs of a series of sub-contractors to deliver the Work	• Client maintains control of the works either directly or through the Managing Contractor. • Increases use of local SME contractors by splitting the Works into smaller packages.	• The Employer must have a well-defined scope of works. • The employer retains most of the risk for programme and quality issues and risk transfer is minimal. • A managed contract should only be used when the project is complex requiring several specialists. • Projects often managed by non-specialist staff leading to poor control and coordination.

Option ref	Type of contract	Advantages	Disadvantages
CT4	**Design, Build, Finance & Operate (DBFO) by Train Operating Company**	• GTR (Govia Thameslink Railway) has confirmed that they would be interested in the option of operating the car park under a DBFO arrangement. • All or most risks will be carried by GTR.	• This would be a negotiated arrangement and would therefore involve no competitive tension. • LGSS Procurement has advised that the direct award of a DBFO to GTR is unlikely to be acceptable, the main reason being that value for money could not be demonstrated as there would be no market testing or competition involved. • GTR's franchise with Network Rail is due to expire in September 2021.

Source: WYG

4.4.1 Preferred procurement mechanism

The current preferred procurement mechanism for delivery of the preferred option is competitive tender (**CT2**) for the following reasons:

1. Value for Money can be demonstrated;
2. Clarity regarding what is included in the tendered cost;
3. Fully transparent tender process; and
4. Less potential for 'challenge' from unsuccessful Service Providers.

CT1 is currently not preferred because of the risk potential challenge from unsuccessful Service Providers.

CT3 is currently not preferred because the non-complex nature of the project. (A managed contract should only be used when the project is complex requiring several specialists).

CT4 is currently not preferred because value for money is harder to demonstrate.

4.5 Selection of procurement method

The highways industry uses a number of recognised procurement methods for appointing Contractors and Consultants to provide construction and design services for delivering civil engineering and highway schemes. Each procurement method can used for selecting a Service Provider and several alternatives have been considered for the Southern option for the Foxton Travel Hub scheme. These options are set out in Table 4.4 below alongside the advantages and disadvantages of each.

Table 4.4: Advantages and disadvantages of procurement methods for appointing contractors and consultants

Option ref	Procurement method	Advantages	Disadvantages
PM1	**Direct Award through competitive dialogue** Restricted or Open tender procedure (as per PM3 or PM4 below) with competitive dialogue undertaken with the preferred bidder or	• The Employer has a reduction in procurement administration costs when compared to other procurement methods. • The Employer can use a direct award procedure to appoint a Service Provider without the need for a formal procedure.	• Competitive Dialogue procedure is unlikely to be justified. Procedure must be justified in accordance with Regulation 26(4) of the Public Contracts Regulations 2015. • It is difficult for the Employer to demonstrate value for money as there is no market testing or competition involved with the direct award method.

Option ref	Procurement method	Advantages	Disadvantages
	bidders to agree a price for the works	• The Employer usually uses this approach for low cost and short duration works. • The Employer has an existing working relationship with the workforce contracted to deliver the works.	• The Employer has a lack of transparency on selection of sub-contractors and supply chain. • Direct award does not provide a fixed and final cost.
PM2	**Existing Framework Contract** Scheme specific award uses existing pre-qualified Service Provider	• The framework Service Provider has already been through a suitability exercise based on a quality and price submission. • Framework Service Providers have been financially checked and many have a track record on the framework which can form part of the selection process. • The Employer has confidence in the quality and competency of the Service Provider. • The Employer can demonstrate compliance with procurement regulations that are applied to local government organisations. • The Employer will have expended cost in setting up the framework that can be recouped through reduced procurement and administration costs for each scheme that is procured through the framework. • The Employer will be able to demonstrate efficiency saving through working with the Service Providers over an extended period beyond the current scheme. • The Employer and the Service Providers have established working practices and relationships. • The Employer can monitor performance of Service Providers through outcome targets and benchmarking.	• Local Authority Direct Labour Organisation (DLO) are potentially excluded from the procurement process. The DLO will need to be treated the same as the other tendering Service Providers. • Framework contracts for Service Providers need to be renewed at pre-determined intervals. The framework appointment is for a pre-determined service period. • Framework contracts are usually awarded for period of three years with options for extension through mutual agreement. • May need to operate a “mini competition” to select a contractor from the Framework panel. • Demonstration of value for money may be difficult if there is only one service provider on the framework list.
PM3	**Open Tender Procedure** All tendering organisations responding to the Official Journal of the European Union (OJEU) notice as an invitation to bid for the scheme in an open tender procedure	• The open tender procedure is fair and transparent. • The open tender procedure can be a shorter tendering programme than other procurement methods as there is no separate pre-qualification process. • The Employer will receive tenders that reflect the market costs for the scheme as there is open and competitive competition. • The Employer can weigh the evaluation process by quality and cost to represent value for money. • The open tender procedure allows the quality and competency of the tenderers to be established at the time of tender.	• The Employer may have many tender submissions to evaluate. The evaluation process can be time consuming. Longer evaluation process that other procurement methods. • There is a risk that some bidders will be put off by the open nature of the tender process as they may view the level of competition as outweighing the chances of winning. • The Employer attracts the risk that an unknown/ untested tenderer could be successful. This can be viewed as both an opportunity or a threat depending on the scope of works and the risks associated with the scheme construction methods.

Option ref	Procurement method	Advantages	Disadvantages
		• The open tender procedure provides an opportunity to expand the approved suppliers list and develop new partnerships.	• There is a cooling off period when using the OJEU procedure. This period introduces a potential risk for the Employer. A challenge to the tender process can be made by the non-preferred Service Provider and can lead to legal proceedings.
PM4	**Restricted or Closed Tender Procedure.** Pre-qualification process with only short-listed candidates being invited to tender	• The closed tender procedure is a restricted process. Only shortlisted tenderers will submit a tender for the scheme. • The Employer can select suitable tenderers from a pre-known list of preferred Service Providers. Selection of the list is based on previous experience, approach, demonstrated competencies and resources (CVs and specific personnel) of the Service Providers. • The Employer has transparency on the number of tender submissions that will require evaluation.	• All tender documents must be made available to all candidates at the start of the pre-qualification process. • The Employer has a longer procurement process when compared to other procurement method options. The two-stage process steps are often run in series protracting the procurement process. Attempts to run the two-stage steps in parallel can often lead to confusion, making the procurement process longer than intended.

Source: WYG

4.5.1 Preferred procurement method

An existing Framework Contract (PM2) is the current preferred procurement method for appointing Contractors and Consultants. This option is considered the quickest and most cost-effective procurement method for the Employer. In addition, Service Providers can be put to work as soon their contract terms and conditions have been agreed.

PM1 is currently not preferred because of the difficulty in demonstrating value for money in the absence of market testing or competition.

PM3 is currently not preferred because it has the potential to attract multiple submissions with a protracted length of time required to evaluate tenders.

PM4 is currently not preferred because of the potential for a time-consuming evaluation process.

In the event that there is not an appropriate Framework Contract, the second preference is for a restricted tender procedure (PM4).

4.6 Contract and payment mechanisms

4.6.1 Existing Frameworks for appointment of contractors

Given the recommendations in section 4.5 for delivery of the preferred option for the Foxton Travel Hub scheme using an existing Framework Contract, various Framework Contracts available for appointment of Contractors have been considered. These options are set out in Table 4.5 below alongside the advantages and disadvantages of each.

Table 4.5: Advantages and disadvantages of existing Framework Contracts for appointment of Contractors

Option ref	Procurement method	Advantages	Disadvantages
C1	**Eastern Highways Alliance (EHA)**	• CCC is a member of the EHA. • Framework is tried and tested in Cambridgeshire. • The framework has been designed to meet the requirements of current and potential future Alliance members for project delivery specifically in terms of cost, quality, and timescales.	• Current Framework Contract (EHA2) due to expire on 31/03/20, but CCC has advised that a new framework Contract (EHA3) is being prepared and is currently programme for award in June 2020. • The EHA2 framework is designed to deliver construction projects costing between £2m and £20m. It is anticipated that the EHA3 framework will have similar values. (Estimated construction cost of the Southern option is circa £6.1m).
C2	**Crown Commercial Services (CCS) Framework** **Construction Works and Associated Services** Not known whether Framework is based on direct award or mini- competition	• The framework will be available to local authorities and other public sector bodies. • Framework is designed to deliver all construction projects of all values including those costing £80m plus. • Framework Contract would not expire before December 2026.	• This is a very new framework (awarded on 01/11/19 and due to go live in December 2019) and as such is not tried and tested. • Uncertainty in the appointment process.
C3	**SCAPE Civil Engineering Construction Framework**	• The framework is available to local authorities and other public sector bodies. • Framework is designed to deliver construction projects costing between £50k and £100m plus. • Framework free to Employers. • Framework Contract would not expire before February 2023.	• Framework based on a single source direct appointment (Balfour Beatty), i.e. no competitive tender. (The framework includes rates for 'preliminaries' costs with construction rates 'market tested'). • Based on the above, there would be a negotiation regarding price with little or no consideration of quality elements of delivery.
C4	**Cambridgeshire Highways NEC3 Term Service Contract**	• Contract designed specifically for work in Cambridgeshire. • Current Contract not to expire until 2027	• Framework based on a single source direct appointment (Skanska), i.e. no competitive tender. (The Contract includes a 'Price List'. Rates for items not included on the Price List are developed from first principles, then subject to negotiation). • The Contract does not have minimum or maximum contract values, and CCC has confirmed that award of 'high value' commissions would be dependent on how Skanska have performed on other commissions. (The cost of the highest value project awarded to date under the Contract is circa £1.5m, and the estimated construction cost of the preferred option is circa £6.1m. The total spend under the Contract as of 06/12/19 was circa £10.8m across 807 Orders).

Source: WYG

4.6.1.1 Preferred Framework for appointment of Contractors

The current preferred framework for appointment of a Contractor for delivery of the preferred option is the EHA3 Framework (C1) for the following reasons:

- The current version of the framework (EHA2) is tried and tested and it is anticipated that the EHA3 framework will be very similar to EHA2.
- The EHA framework has been designed to meet the requirements of current and potential future Alliance members for project delivery specifically in terms of cost, quality, and timescales.

The CCS framework is currently not recommended because it is a very new framework and as such is not tried and tested.

The SCAPE framework is currently not recommended because it is based on a single source direct appointment and as such it may be difficult to demonstrate to value for money and there would be no quality element to any award process.

The potential use of the Cambridgeshire Highways NEC3 Term Contract as an alternative procurement route would need to be reviewed and considered by CCC.

4.6.2 Existing frameworks for appointment of Consultants

GCP may also wish to appoint a Consultant or Consultants to undertake detailed design of the preferred option, provide them with design advice, undertake the role of project manager during construction of the scheme or act as Technical Approval Authority. Given this, various Framework Contracts currently available for appointment of Consultants have been considered. These options are set out in Table 4.6 below alongside the advantages and disadvantages of each.

Table 4.6: Advantages and disadvantages of existing Framework Contracts for appointment of Consultants

Option ref	Procurement method	Advantages	Disadvantages
D1	**ESPO Consultancy Services Framework**	• The ESPO framework is compliant with UK/EU procurement legislation. • The Employer does not need to run a full EU procurement process. • The Service Providers on the framework have been assessed during the procurement process for their financial stability, track record, experience and technical & professional ability. • The Employer and the Service Providers have pre-agreed terms & conditions. • ESPO framework tenders have been scored taking into account price and quality factors to determine the most economically advantageous bid. This gives Service Providers providing high quality services with an opportunity to be awarded a contract even though they may not be the lowest price.	• The framework is due to expire in 18/04/21. However, it is likely to be replaced by another framework as and when it expires. • The Employer is restricted in the value of any direct award by their own financial standing orders when using the direct award approach. • Challenging terms and conditions for Consultants. (The standard terms and conditions of the ESPO framework are disproportionate to the scale of the fee for services procured on some projects). • Suppliers pay a levy of 1.0% of fees to ESPO to manage the framework. • Lack of competitive tension if direct award. • There are 25 suppliers on the framework. It may therefore be necessary to hold some form of pre-qualification exercise to encourage key suppliers to compete. If this is not done, key suppliers may not

Option ref	Procurement method	Advantages	Disadvantages
		• The Employer can award a professional services contract direct (i.e. without further competition) to a member of the ESPO framework with no limit on value. • The Employer can create competition between suitable framework service providers to create competitive tension via the use of a mini-competition. • The Employer and the Service Provider are able to collaboratively negotiate project specific terms and conditions by the inclusion of replacement clauses.	compete due to the significant level of competition.
D2	**Homes England Framework**	• The Employer can award a professional services contract direct to a member of the Homes England framework up to the value of £15k. • Framework free to Employers. • 20 multi-disciplinary consultants on the approved supplier list. Advice it to reduce the number of tenderers for mini-competitions by using a prequalification process. • The Employer can create a mini-competition between suitable framework service providers. • The day rates for a Professional Services supplier are pre-agreed between the Employer and the Services Provider. • The Employer and the Service Provider are able to collaboratively negotiate project specific terms and conditions by the inclusion of replacement clauses. • No cost for using the framework to either the supplier or client.	• The framework is due to expire in February 2022. However, it is likely to be replaced by another framework as and when it expires. • The Employer is restricted to £15k fee limit when using the direct award approach. • Challenging terms and conditions for Consultants. • Lack of competitive tension if direct award. • There are 20 suppliers on the framework. It may therefore be necessary to hold some form of pre-qualification exercise to encourage key suppliers to compete. If this is not done, key suppliers may not compete due to the significant level of competition.
D3	**Cambridgeshire and Peterborough Joint Professional Service (JPS) Framework**	• Bespoke GCP/CCC/CPCA/Peterborough City Council (PCC) framework in process of being procured at the time of writing. • Local knowledge and experience. • Framework free to GCP. • Framework procured through competitive process. • Two suppliers will be appointed to the framework, which includes options for both direct award and secondary competition. • Framework award will be based on an agreed cost model. • No fee cap for commissions under the framework. • The initial framework will last for a period of 3 years, with the option of	• Framework not yet in place. However, prequalification documents for the framework were issued in December 2019, and the current programme for award is May 2020.

Option ref	Procurement method	Advantages	Disadvantages
		two 1-year extensions (making a potential total of 5 years). • Estimated value of services over the life of the framework is estimated to between £80m to £100m. • Likely to offer the best social value solution as the framework is tailored for use in Cambridgeshire.	
D4	**Crown Commercial Services (CCS) Project Management and Full Design Team Services (PMFDTS) Framework**	• The framework is the recommended route for all central government departments and is available to local authorities and other public sector bodies. • Framework free to Employers. • The Employer can award a professional services contract direct to a member of the framework with no cap on fees. • The Employer can create competition between suitable framework service providers to create competitive tension. • The lot structures and the ability to tailor further competitions will ensure this supports customers own delivery considerations such as SMEs and social value. • Maximum standard rates are fixed for the first two years of the framework and may be reduced further by suppliers. • Saving is embedded in the pricing models through competitive rates and continuous improvement measures. Savings results will be shared with customers regularly.	• The framework is due to expire in 02/05/21. • Challenging terms and conditions for Consultants. • Lack of competitive tension if direct award. • There are 16 suppliers on the framework. It may therefore be necessary to hold some form of pre-qualification exercise to encourage key suppliers to compete. If this is not done, key suppliers may not compete due to the significant level of competition.
D5	**Framework Agreement for the Provision of Consultancy and Project Management Services**	• CCC specific framework. • Local knowledge and experience. • Framework free to employers. • Single supplier with agreed rates so no competition necessary. • Framework procured through competitive process.	• Framework Contract due to expire on 01/10/20. (Being replaced by the CCC Framework - D3 above).

Source: WYG

4.6.2.1 Preferred Framework for appointment of Consultants

The current preferred framework for appointment of a Consultant is under the Cambridgeshire and Peterborough Joint Professional Service Framework (D3) for the following reasons:

- Bespoke framework for use by Cambridgeshire County Council, the Greater Cambridge Partnership, the Cambridgeshire & Peterborough Combined Authority and Peterborough City Council;
- Local suppliers with local knowledge;

- Framework procured through competitive process and includes options for both direct award and secondary competition based on an agreed cost model;
- No fee cap for commissions under the framework; and,
- The framework is not due to expire until at least May 2023, with the option of two 1 year extensions (making a potential total of 5 years).

The other frameworks are currently not preferred given that they are due to expire before detailed design of the Southern Option is undertaken, and no details are currently available regarding potential replacement frameworks. In addition, none of the other options (other than option D5 which is being replaced) are dedicated frameworks for CCC.

4.7 Selection of Form of Contract to be Employed

There are three forms of contract that have been widely used in UK for major civil and highway engineering schemes over the last 20 years. These are commonly known as:

- Infrastructure Conditions of Contract (ICC);
- Joint Contracts Tribunal (JCT); and,
- New Engineering Contract (NEC) published by the Institution of Civil Engineers.

4.7.1 Infrastructure Conditions of Contract (ICC)

The ICC Conditions of Contract is a re-badged version of the Institution of Civil Engineers (ICE) 7th Edition Conditions of Contract which is sponsored by the Association of Consultancy and Engineering (ACE) and Civil Engineering and Contractors Association (CECA).

The ICE 7th edition has now been updated, ICC 2011 and is based on the traditional pattern of Employer designed works constructed by the Contractor and paid through re-measurement.

4.7.2 Joint Contracts Tribunal (JCT)

The JCT produces a range of contracts for construction, guidance notes and other standard documentation for use in the construction industry. The JCT contracts comprise a suite of mutually consistent contracts which enable them to be used together to include:

- Designer agreements;
- Main contracts between the Employer and the main Contractor;
- Sub-contracts between the main Contractor and their sub-contractors. Includes both for Sub-contractors selected by the Employer and for other sub-contractors;
- Standard forms of sub-sub-contract between a subcontractor and such sub-contractor's sub-sub-contractors;
- Design agreements between an Employer and a specialist designer;
- Forms of tender for issue by an Employer to prospective main Contractors and for issue by a main Contractor to prospective sub-contractors and for issue by a sub-contractor to prospective sub-sub-contractors;
- Form of contracts for the supply of goods; and,
- Forms of bond, including performance bonds and collateral warranties.

JCT contracts tend to be used for building contracts rather than civil engineering and highways contracts. However, some Local Authorities favour this suite of contracts due to a lack of in-house expertise in other forms of contract.

4.7.3 New Engineering Contract (NEC)

The NEC is a family of contracts that facilitates the implementation of sound project management principles and practices as well as defining legal relationships. It is suitable for procuring a diverse range of works, services and supply, spanning major framework projects through to minor works and purchasing of supplies and goods. The implementation of NEC contracts has resulted in major benefits for projects both nationally and internationally in terms of time, cost savings and improved quality.

The NEC was developed to offer an improvement on traditional forms of contracts. The strengths of the NEC can be summarised as following:

- Flexibility - the NEC Professional Services Contract (PSC) can be applied to a 'design only' contract. the NEC Engineering Construction Contract (ECC) can be applied to all engineering disciplines and includes the option for Contractor design with a variety of options for financial arrangements for arranging for payment to the Contractor;
- Clarity and simplicity - the NEC uses words that are commonly used. It reduces the number of clauses compared with other forms of contract. It uses shorter sentences and does not cross reference clauses;
- Stimulus to good management – the concept of the ECC is that its implementation contributes to the effective management of the Work. It promotes cooperative management of the interactions between the parties and can reduce the risks for all parties that are inherent in the work;
- Sub-contracts – the ECC has been designed so that works can be sub-contracted and provides separate contracts for construction and design services;
- Nominated subcontractors – the ECC precludes nominated subcontractors to eliminate the clouding of responsibility that the process of nomination causes. This approach reduces disputes and strengthens the motivation for the parties to manage their activities; and,
- Financial Control – both the PSC and the ECC use the activity schedule or bill of quantities as a mechanism for payment to the Contractor for works done.

The NEC ECC form of contract has been recommended by the Office of Government and Commerce (OGC), the Cabinet Office UK and is Highways England's contract of choice on prestigious construction projects.

The relative advantages and disadvantages of the three forms of Contract are summarised in Table 4.7 below.

Table 4.7: Comparison of forms of contract

Option ref	Form of contract	Advantages	Disadvantages
FC1	**ICC**	• Encourages co-operation between parties. • Contractor takes full responsibility for nominated sub-contractors.	• Lump sum terms can result in Contractors allowing for costs for risks that do not arise. • No Early Warnings - retrospective approach to risk mitigation. • Does not encourage co-operation between parties.
FC2	**JCT**	• Potentially more familiar to Local Authority officers. • Ground risk rests with the Contractor. • Clear payment section. • Comprehensive detail regarding insurances.	• Emphasis on the obligations of the parties under the contract. • Programme – not a contractual document and updates of the initial programme are not mandatory.

Option ref	Form of contract	Advantages	Disadvantages
			• Time and financial aspects of claims are dealt with separately. • No Early Warnings – retrospective approach to risk mitigation. • Contractor only obliged to make a claim after the risk event has occurred. • No obligation to notify regarding defects. • Contractors may include costs for risks that do not arise due to risk transfer. • Does not encourage co-operation between parties.
FC3	**NEC**	• Clarity and simplicity – written in plain English. • Flexibility – adaptable to various forms of construction. • Stimulus to proactive management. • Encourages co-operation between parties. • The programme – a key contractual document which must be regularly updated. • Early Warnings – promotes proactive approach to problem resolution. • Obligation on both parties to notify each other regarding defects.	• Requires substantial administration with higher administration costs as a consequence. • Processes are prescriptive. • Significantly less case law to provide guidance in dispute resolution compared with other forms of contract. • Employer has a wider ownership of risk.

Source: WYG

4.7.4 Preferred form of contract

The current recommended preferred Form of Contract for delivery of the preferred option is NEC for the following reasons:

- Recommended by the Office of Government and Commerce and written in plain English;
- Encourages co-operation between parties. (Other forms of contract more liable to create confrontation);
- Early Warning promotes a proactive approach to risk resolution. (Other forms of contract do not include Early Warning); and,
- Allows flexible payment options.

The ICC form of Contract is currently not preferred because it does not encourage co-operation between parties and has a retrospective approach to risk mitigation (i.e. no Early Warnings). In addition, the ICC only provides for payment through re-measurement thus it is less flexible than the NEC.

The JCT form of Contract is also currently not preferred because it does not encourage co-operation between parties and has a retrospective approach to risk mitigation. In addition, JCT contracts tend to be used for building contracts rather than civil engineering and highways contracts.

4.8 Selection of NEC Conditions of Contract

The NEC ECC is packaged into six main options to suit the scope of works and appetite for risk between the Employer and Contractor. These are divided into two types, ‘Priced’ and ‘Cost

Reimbursable' type contracts with the payment mechanism based on activity schedule, Bill of Quantities (BoQ) or actual work undertaken.

In the Priced Options, traditionally known as lump sum or priced BoQ, the Contractor is paid for the works they have completed based on their tendered price. In the Cost option, the Contractor's actual costs are reimbursed with a fee percentage for overheads and profit for the works that he has completed. The Cost options are divided between Target Cost and Cost Reimbursable. The Target Cost options introduce a pain/gain mechanism which provides the Contractor financial incentive/gain to complete the works for less than the Target Cost and dis-benefit/pain for completion over the Target Cost. Savings for underspend or costs of overspend are shared with the Employer.

The ethos of the ECC is to apportion the risk fairly between the Employer and the Contractor and this is reflected in each option which uses different arrangement for payment to the Contractor as the allocation of risk between the Employer and Contractor is different.

The incentives and main risks for the various Options of the NEC EEC Conditions of Contract are set out in Table 4.8 below.

Table 4.8: NEC EEC conditions of contract - incentives and risks

NEC option	Incentives	Financial risk	Other risks
Option A Priced Contract with Activity Schedule	Payment on completion of activities encourages progress. Contractor motivated to keep within his tendered price.	Contractor under pressure to complete with in the tendered price.	Completeness & accuracy of activity schedule is the Contractors risk. Employer pays a premium for Contractor's risk.
Option B Priced Contract with BoQ	Employer has responsibility for design and re-measuring the works for payment.	Contractor bears the risk on undertaking the works within the tendered priced rates. Employers bears the risk if the BoQ is inaccurate.	Completeness & accuracy of BoQ is the Employer's risk.
Option C Target Cost with Activity Schedule	Shared financial pain/gain encourages collaborative working, early finish and control costs. ECI provides best value and has option for Employer to appoint consultant or Contractor to design in stage 1 though open book accounting. (Build in Stage 2).	Shared between parties on pain/gain on late/early finish.	Completeness & accuracy of activity schedule is the Contractor's risk.
Option D Target Cost with BoQ	Shared financial pain/gain encourages collaborative working though open book accounting. Employer has responsibility for design and re-measuring the works for payment.	Shared between parties on pain/gain on late/early finish. Employers bears the risk on inaccurate BoQ.	Completeness & accuracy of BoQ is the Employers risk.
Option E Cost Reimbursable Contract	Employer has a quick start. Contractor incentivised on ECI by sharing savings on Employers Budget by providing cost effective solution.	Employer.	Project outturn cost uncertain.
Option F Management Contract	No real incentive.	Employer.	Project outturn cost uncertain.

Source: WYG

Options A and B place the main financial risks on the Contractor, and cost reimbursable Options E and F place the main risks with the Employer. These risks are shared between the Contractor and Employer in the target cost Options C and D where the Contractor is incentivised to finish early.

The Employer's appetite for risk, programme pressures, control over design and price/cost will provide the basis in defining the most desirable procurement route. The incentives and penalties for early or late completion are managed through the secondary clauses and therefore are not considered part of the deciding factors. These are detailed below:

Option A

This option can be used when the Employer has a well-defined scope of works and the works can be influenced by buildability. The Employer appoints the Contractor to Build the works within the tendered Price. This approach is particularly relevant where Price is the overriding factor for the Employer.

Option B

This option can be used when the Employer has well-defined scope of works and wants full control over the design. The Employer appoints the Contractor to price the works for construction only based on the Employer's design. However, the Option B procurement route is not recommended given that the accuracy of the BoQ is the Employers risk.

Option C

This option can be used when the Employer has adequately defined the scope of works and potentially wants to further develop the scope through design before construction. The Employer appoints the Contractor and manages the cost through pain/gain incentive on the target cost with open book accounting.

Option D

Should be used when the Employer has adequately defined the scope of works and potentially wants to further develop the scope through its own designer. The Employer appoints the Contractor to construct only but incentivises through pain/gain share on the target cost through open book accounting. The Option D procurement route is not recommended given that the accuracy of the BoQ is the Employers risk.

Option E

Should be used when the Employer has a loosely defined scope of the works and wants the Contractor to develop it without delay. The Employer is uncertain of the project outturn cost but is prepared to appoint a contractor on a Design and Build arrangement and manages the cost through open book accounting with incentive on sharing the savings on the Employers Budget. This option is not appropriate given that there will be a well-defined scope of works for the preferred Southern option.

Option F

Should be used when the project is complex requiring several specialists and the Employer has a well-defined scope of the works. The Employer appoints the Contractor to manage the specialists through separate sub-contracts.

4.8.1 Preferred NEC ECC Conditions of Contract

The current recommended preferred NEC ECC Conditions of Contract for appointing a Contractor to deliver the Southern Option is Option A (priced contract with activity schedule) for the following reasons:

- It provides the greatest level of certainty over the final out-turn price (although not truly a "fixed" price);
- Places the majority of the commercial risk onto the Contractor;
- Payment on completion of activities encourages progress; and,
- The main financial risk is placed on the Contractor.

Options B & D are currently not preferred because completeness & accuracy of the BoQ is the Employer's risk.

Option C (and D) are currently not preferred given uncertainty that an accurate Target Cost can be agreed.

Option E is currently not preferred given difficulty in forecast the final out-turn costs on award.

Option F is not unnecessary and currently not preferred given that the scheme that the works are not complex.

4.8.2 Preferred NEC Professional Services Contract

Section 4.5.1 included a preference for the Employer to appoint a Consultant to undertake detailed design the works, provide them with design advice, undertake the role of project manager during construction of the scheme, or act as Technical Approval Authority by direct award under the Cambridgeshire and Peterborough Joint Professional Service Framework.

The current recommended NEC Professional Service Agreement Contract for appointing a Consultant is either Option A (priced contract with activity schedule) or Option E (cost reimbursable). Option A is recommended when the scope of work to be undertaken is well defined (e.g. preparation of contract documents as part of the procurement process), or Option E when the amount of work required is unknown (e.g. Technical Approval Authority role).

4.9 Preferred Procurement Options

The current preferred 'procurement options' at OBC stage that have been detailed above are summarised in the table below:

Table 4.9: Foxton Travel Hub preferred procurement options

Preferred procurement mechanism	Preferred option
Procurement strategy option	Two stage tender process ('Design' stage followed by 'Build' stage)
Type of contract	Competitive tender
Procurement method	Existing Framework
Framework for appointing Contractors	Eastern Highways Alliance EHA3 Framework.
Framework for appointing Consultants	Cambridgeshire and Peterborough Joint Professional Service Framework
Form of contract	New Engineering Contract (NEC)
NEC Engineering Construction Contract conditions of contract	Option A
NEC Professional Services Contract conditions of contract	Option A or Option E depending on whether the scope of work to be undertaken is 'well defined'

Source: WYG

4.10 Payment mechanisms

4.10.1 Contractor appointed to deliver the preferred option

The current preferred option for appointing a Contractor to deliver the scheme is an NEC EEC Option A (priced contract with activity schedule) Contract procured under a restricted competitive tender process.

The Contractor would be paid for each individual construction item included on the scheme activity schedule following completion of said item; this is in accordance with the Contract on the basis of monthly valuations unless otherwise agreed between the NEC Project Manager and Contractor.

The contract clearly defines payment mechanisms including payment periods and mechanisms for withholding payments for incomplete or non-conforming work.

Dispute resolution procedures are also clearly defined with the first point of resolution, should the issue not be resolved within the team, generally being adjudication.

4.10.2 Consultant appointed to undertake Detailed Design and support the promoter

The recommended preferred option for appointing a Consultant to undertake detailed design the works, provide them with design advice, undertake the role of project manager during construction of the scheme, or act as Technical Approval Authority is the Cambridgeshire and Peterborough Joint Professional Service Framework.

4.11 Pricing Frameworks and Charging Mechanisms

4.11.1 Build only contract

The Contractor submits a tendered lump sum for a Build only Contract. (The Contractor would develop their lump sum based on their estimated cost of constructing the works plus a percentage for overheads and profit). A specific ‘pricing framework’ is not applicable to a NEC EEC Option A Contract.

The Contractor will charge the Employer their tendered lump sum for the works in accordance with the NEC Contract EEC on the basis of monthly valuations (unless otherwise agreed). However, the final out-turn cost of the Contract will differ from the tendered lump sum in the event of variations to the contract, i.e. Compensation Events. The client should therefore maintain a risk allowance in their budget to allow for any changes that do occur during the construction process.

Incentives, deduction and performance targets are not relevant to NEC EEC Option A.

4.11.2 Professional services contract

The Consultant submits a tendered lump sum under Option A of the Professional Services Contract. The Consultant would develop their lump sum based on their estimated cost of providing support to the Employer plus a percentage for overheads and profit). A specific ‘pricing framework’ is not applicable to the Professional Services Contract.

Under Option A the Consultant will charge the Employer their tendered lump sum for the works in accordance with the Professional Services Contract on the basis of monthly valuations (unless otherwise agreed). However, the final outturn cost of the Contract will differ from the tendered lump sum in the event of variations to the contract. The client should therefore

maintain a risk allowance in their budget to allow for any changes that do occur during the construction process.

Incentives, deduction and performance targets are not relevant to the Option A or E of the Professional Services Contract.

4.12 Risk allocation and transfer

At this stage in the development of the project, prior to any procurement process, all liabilities and risks rest with the Employer.

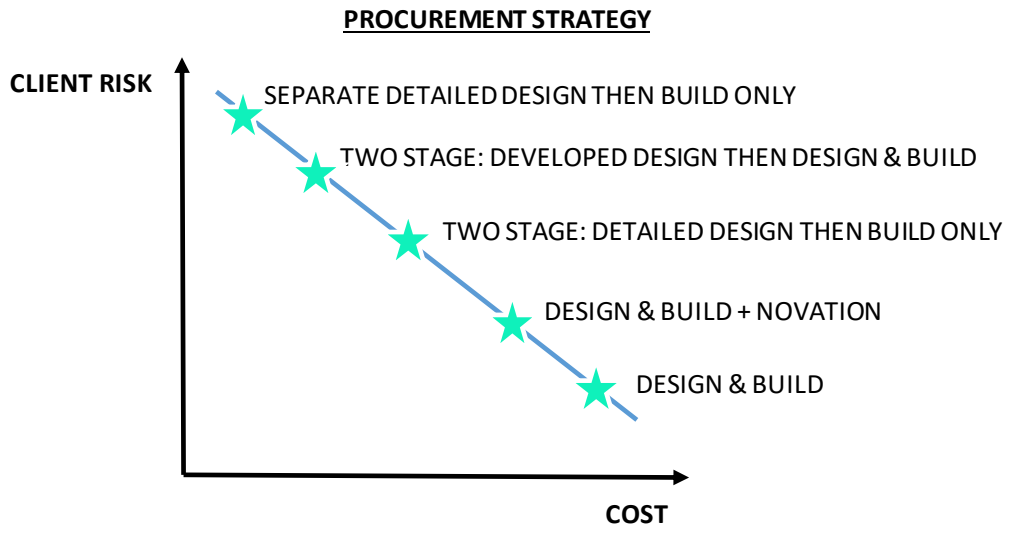
One of the key issues in assessing which procurement methodology to follow is the Employer's appetite for risk; if the Employer prefers to accept a degree of risk, they can potentially achieve a lower tender price. However, should the Employer be risk averse, they can transfer a higher degree of risk to the contractor, but this is likely to be reflected in a higher tender price. It should be noted that although the Employer may obtain a lower tender price by accepting a higher degree of risk, this is not guaranteed to result in a lower out-turn cost.

In terms of the procurement strategy, Figure 4.1indicates the risk vs cost profile of each of the options considered.

The preferred option of a Build only Contract provides the lowest risk option and most of the commercial risk is transferred to the contractor. However, it is likely that this will result in a higher tender price as tenderers will allocate financial value to the risks that they are asked to accept.

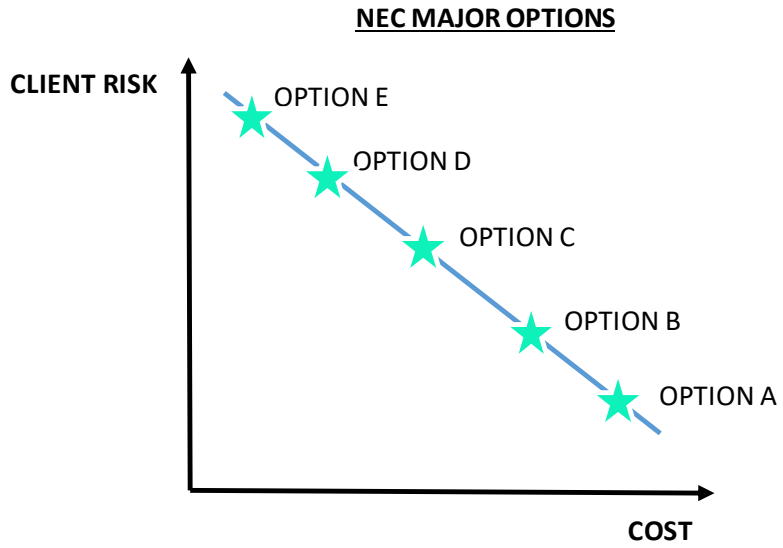
Figure 4.2 provides a high-level indication of the risk vs cost profile of the NEC major options. Again, the level of risk that the Employer is prepared to accept impacts on the likely tender costs.

Figure 4.1: Risk v. cost profile



Source: WYG

Figure 4.2: Risk v. cost profile



Source: WYG

The preferred option, Option A Priced Contract with Activity Schedule, provides the Employer with the lowest levels of risk but is likely to lead to a higher tender price. It gives a greater level of certainty that the tendered price will closely resemble the final out-turn construction cost of the project.

At contract award, the contractor will be assigned risks that encompass appropriate planning conditions, estimations of the quantities, mitigation measures and resources to construct the works. The Employer will continue to take responsibility for risks that encompass design, land, residual planning and environmental permissions. In addition, all risks on cost overruns remain with the Employer as there is no pain-share mechanism.

4.13 Contract lengths

It is currently recommended that a tender period of 4-6 weeks is allowed within the procurement programme for Contractors to prepare and submit tenders. It is also recommended that the programme includes a period of between 16 and 20 weeks (4-5 months) to construct Phase 1 of the preferred option.

4.14 Human resource issues

GCP will be responsible for oversight of the project on the client side of the delivery arrangement. The relevant professional activities to appropriately resource this aspect (procurement and delivery) of the project include a Programme Manager who will provide technical and procedural oversight of programme level benefit management, and a Project Manager who will oversee day to day management of each of the work stream leads as well as providing liaison between GCP, technical and design consultants, and contractors that will be appointed in line with the process and recommendations outlined in sections 4.6.1 to 4.6.2.

There are no trade union or TUPE implications arising from this contract.

4.15 Contract management

Under the NEC Contract the Employer must appoint an NEC Project Manager and Supervisor. This could be an internal appointment from the Employing Organisation, or the Employer could appoint a NEC Project Manager and Supervisor using the Cambridgeshire and Peterborough Joint Professional Service Framework.

The NEC Project Manager and Supervisor would undertake the following tasks during the construction of the scheme:

- The NEC Project Manager would be responsible for;
  - Coordination and liaison with the main works contractor and provision of any support and background information required;
  - Establishment of procedures and protocols for the administration of the contract;
  - Provision of a permanent site presence to manage the NEC contract communications, (RFIs, Early Warnings and Compensation events etc.);
  - Liaison with key stakeholders including adjacent landowners throughout construction; and,
  - Assessment and report on payment certificates and compensation events.
- The Supervisor would be responsible for;
  - Establishment of procedures and protocols for the management and review of the ongoing site work;
  - Liaison with the Contractor to monitor that the construction works are being executed generally in accordance with the contract documents and with good engineering practice; and,
  - Maintenance of site records (including photographic record).
- In addition, the NEC Project Manager would:
  - Liaise with and advise GCP on current contractual, commercial, programme and risk activities;
  - Represent the GCP as required at meetings and be a core member of the management team;
  - Liaise with and advise on changes or additions to the contract, current contractual, commercial, programme and risk activities;
  - Manage the Supervisor's site and office teams;
  - Ensure that Health & Safety, legal and site-specific requirements for safe operating and duty of care procedures are implemented throughout.

5. Financial Case

The Financial Case outlines the affordability of the Foxton Travel Hub preferred option, its funding arrangements and technical accounting issues. The case presents the financial profile of the preferred scheme option and an overview of how the scheme will be funded.

5.1 Introduction

The DfT's guidance document, 'The Transport Business Case: Financial Case' (2013), outlines the areas that should be covered as part of the Financial Case. This has been used as a guide in developing the structure and content of the Financial Case. Table 5.1 shows where the relevant information, in accordance with DfT requirements, can be found in the subsequent sections that make up the Financial Case.

Table 5.1: Compliance with DfT requirements for the Financial Case

Content	DfT requirements	OBC section
Introduction	Outline the approach taken to assess affordability	Section 5.1
Costs	Provide details of: • Expected whole life costs • When they will occur • Breakdown and profile of costs by those parties on whom they fall Any risk allowance that maybe needed (in the event of things going wrong)	Section 5.2 Section 5.3 Section 5.4 Section 5.6 Section 5.7
Budget/ Funding Cover	Provide analysis of the budget/ funding cover for the project. Set out, if relevant, details of other funding sources (e.g. third-party contributions, fees)	Section 5.5 Section 5.8 Section 5.9
Accounting Implications	Describe expected impact on organisation's balance sheet	Section 5.10

Source: DfT - The Transport Business Case (2013)

Scheme costs for the preferred option have been developed based upon the designs set out in Appendix J. The detailed breakdown of costs is included in Appendix Q and covers preparation, design, construction, land acquisition, inflation and other costs. Land cost estimates have been prepared separately and included within overall scheme costs. The level of detail in the scheme costings is considered proportionate to the current stage of scheme development at OBC stage.

5.2 Base costs

Indicative base costs (Appendix Q – Project Costs Breakdown) of the Foxton Travel Hub project and the preferred scheme option have been produced by Mott MacDonald cost estimators, whilst the land cost estimates have been produced by Bruton Knowles property cost estimators. The base costs exclude any allowance for risk.

The base cost estimates include the following:

- **Construction costs**: These consist of:
  - Main works contract (preliminaries, structures, road works, general works, earthworks)

  - Ancillary work contracts (maintenance compounds, lighting, communications, landscaping, noise insulation)
- **Design Costs**: This accounts for design fees, on-site supervision and testing of scheme elements prior to scheme opening.
- **Project Management costs**: This consists of all project management, public consultation, public inquiry, and the costs of obtaining statutory orders.
- **Other:** Including allowance for fees to provide environmental mitigation and costs to divert or protect existing Statutory Undertakers' equipment affected by the works.
- **Land costs:** This includes the acquisition and legal transaction costs for all the required private and commercial land, and additionally accounts for property management costs and compensation.
- **Inflation costs**: This accounts for inflation above the base cost estimates in accordance with the Retail Price Index (RPI).

Key assumptions made with regards to deriving estimated scheme costs include:

- The project began in 2018 (in terms of scheme development work) and is expected to be completed by 2024;
- An opening year of 2024;
- Unit prices as at Q4 2018;
- Inflation added from base date of Q4 2018 to Q4 2019
- Prelims estimates at 25% of construction costs;
- Overheads estimates at 11% of construction costs;
- Design cost estimates at 16% of construction costs;
- Project management cost estimates at 10% of construction costs; and,
- Environmental mitigation measures at 2.5% of construction costs.

Land purchase costs have been estimated separately to the construction cost estimates. These are based on cost estimates from March 2020 provided by Bruton Knowles property land assembly consultants. Land cost estimates have been included in the total construction cost estimates.

Table 5.2 shows the breakdown of costs for the preferred scheme option.

Table 5.2: Preferred Option base costs Q4 2019 (exclusive of any risk allowance)

Cost Item	Preferred Option (£,000)
Construction	£4,815
Design	£770
Project Management	£571
Other	£120
Inflation (4Q 2018 to 4Q 2019)	£128
Land Costs	£670
TOTAL	**£7,074**

Source: Mott MacDonald

5.3 Risk adjusted costs

As the scheme design for the preferred option is at an early stage of progression, there is significant development work required to be undertaken to progress the design to the point where the scheme can be constructed. It is therefore important to recognise that there is

uncertainty in the design and assumptions upon which the costs are based and to reflect this an uplift is applied to the base costs. Therefore, at the current stage of development (OBC), a confidence level of P80 risk has been applied to calculate the overall project cost estimate (this is the base costs plus the risk value); P80 means that there is an 80% chance of the estimate being within that stated amount. The value that has been applied is 25%. A cost range has also been calculated based on P50 (19%) and P90 (29%) contingency allowances. Table 5.3 provides a breakdown of costs adjusted for risk for the preferred option.

To reach the risk adjusted costs of the preferred option we took the capital costs (£6.404m), then added the respective risk values of 19%, 25% and 29%. The land costs (£0.670m) were then added to the risk adjusted capital costs to give the total risk adjust cost.

The cost of the preferred option adjusted for risk is therefore £8.675m, with a likely range of £8.291m to £8.931m. The risk adjusted cost of **£8.675m** constitutes the capital funding ask for the Foxton Travel Hub scheme.

Table 5.3: Preferred Option base costs adjusted for risk

Cost Item	Preferred Option (£,000)
Construction	£4,815
Design	£770
Project Management	£571
Other	£120
Inflation (4Q 2018 to 4Q 2019)	£128
Land Costs	£670
TOTAL inc. risk (25%)	**£8,675**
Range	***£8,291-£8,931***

Source: Mott MacDonald

At the next stage of development (FBC), the designs and details of the preferred option and project will be of a higher maturity, with unspecified uncertainties reduced further. All known areas of uncertainty will be documented on the Risk Register. The Risk Register will be used to identify, quantify and value the known uncertainties of the Foxton Travel Hub project. It will identify who owns each uncertainty, provide an assessment of the likelihood of occurrence (risk percentage) and an estimate of the impact on project outcomes (cost and duration).

Based on this, a Quantitative Cost Risk Assessment (QCRA) process will be followed, using the project cost estimation, Risk Register data and Monte Carlo simulation software to determine the contingency allowance for inclusion at FBC stage.

5.4 Cost sensitivity tests

The following section presents the cost sensitivity tests for the provision of a new pedestrian footbridge at Foxton station, and the provision of solar panels at the proposed Foxton Travel Hub site. At this stage in the scheme design, the estimated pedestrian footbridge and solar panels costs are considered to be equal for both the Northern and Southern Options.

5.4.1 Pedestrian footbridge costs

As part of the development of the Foxton Travel Hub scheme, considerations have been given to the potential cost implications of including new pedestrian crossing facilities at Foxton station, in order to further enhance the connections between the station platforms and the new Travel Hub site. At this stage of the scheme development, the inclusion of any grade-separated pedestrian crossing facilities are not within the scheme's scope. However, based on feedback

from the Sep-Oct 2019 public consultation and ongoing discussions with the Project Manager of Network Rail's Cambridge Re-Signalling project, the potential inclusion of a pedestrian footbridge either as a core part of the scheme, or to be delivered in parallel, has been considered within this OBC. The pedestrian footbridge could potentially connect the Travel Hub site directly to the station and remove the need to cross the A10 and the level crossing at-grade.

The costs implications of delivering a pedestrian footbridge have been considered by taking cost estimates from the Foxton Level Crossing Closure GRIP2 Feasibility Study Report (May 2013). These costs are in Q1 2013 prices. The structure option is assumed to be a footbridge with ramps that would span the rail line over the station. The cost is estimated at £3 million. It should be noted that this is a very broad-brush initial cost estimate to understand what the potential additional costs could be on the project's capital costs. The impact on the overall cost of the delivery of Foxton Travel Hub with a pedestrian footbridge are presented in Table 5.4.

Table 5.4: Foxton Travel Hub high-level cost estimates (Q4 2019 prices after inflation added) including pedestrian footbridge crossing with ramps (Q1 2013 prices)

Cost Item	Preferred Option (£,000)
Travel Hub cost estimate	£8,675
Pedestrian Footbridge cost estimate	£3,000
TOTAL	**£11,675**

Source: Mott MacDonald

Preliminary discussions regarding the funding of the proposed pedestrian footbridge have been held with the Project Manager for Network Rail's Cambridge Re-Signalling project, and a Liability Negotiations Manager from Network Rail.

The discussions explored the potential to joint fund the pedestrian bridge as a separate scheme that has interdependencies with the delivery of the Travel Hub. One model might include the potential for the GCP to secure the required land and pay the land purchase costs, whilst Network Rail could potentially fund/deliver the main structure and cover associated project delivery and maintenance costs. However, it should be noted that the Business Development team at Network Rail would need to be consulted, in order to establish which party would be best placed to fund and deliver the proposed pedestrian footbridge if this were to be taken forward.

Whilst discussions with Network Rail are ongoing, if the potential approach, or similar approach to jointly delivering the pedestrian footbridge as set out above were not adopted, the cost implication to the GCP in providing a footbridge could be in the region of an additional £3m to cover land purchase, development and delivery costs (it should be noted that this is a high level cost estimated taken from historical work, and is likely to change subject to any design work for a potential pedestrian footbridge being progressed and updated detailed costing estimates being carried out). As well as having a large impact on the overall scheme costs, the inclusion of any grade-separated pedestrian crossing facilities within the scope of this scheme, would also impact on its overall Value for Money. This has been considered as a sensitivity test within the Economic Case (Section 3.16).

5.4.2 Solar panel costs

As part of the development of the Foxton Travel Hub scheme, considerations have been given to the potential cost implications of integrating a Solar Photovoltaic (PV) and Battery Storage solution for covering the energy demands of the Travel Hub.

To facilitate an understanding of the feasibility of providing a PV solution at the Travel Hub a Solar PV and Battery Storage Solution Investigation was commissioned. The purpose of the investigation was to assess the following criteria:

- Potential on-site power demand;
- Potential power generation at the site; and,
- Potential solar/storage systems to meet the energy demand of the site

At this stage of the scheme development, the cost implications of providing a PV solution are yet to be calculated in detail. Further design work is required in order to fully determine where PV could be incorporated into the scheme designs in order to carry out any detailed cost estimates. Therefore, for the purposes of understanding the cost implications of providing a PV solution at this stage, an estimate has been derived from the CSWTH scheme and the associated costs of providing necessary PV equipment across the full site.

As the size of CSWTH is roughly double that of Foxton, the cost estimate has simply been halved (the high-end cost estimate for full coverage of CSWTH with battery storage included is £7.408m (estimate as of February 2020)). Assuming a similar level of equipment requirement for Foxton but for half the number of spaces, the cost is estimated in the region of £3.704 million. It should be noted that this is a very preliminary initial cost estimate to understand what the potential additional costs could be on the project's capital costs. The impact on the overall cost of the delivery of Foxton Travel Hub with a PV solution are presented in Table 5.5.

Table 5.5: Foxton Travel Hub high-level cost estimates (Q4 2019 prices after inflation applied) including PV solution with storage batteries (Q4 2019 prices)

Cost Item	Preferred Option (£,000)
Travel Hub cost estimate	£8,675
PV Solution cost estimate	£3,704
TOTAL	**£12,433**

Source: Mott MacDonald

5.4.3 Cost sensitivity tests summary

A summary of the potential cost implications of including a pedestrian footbridge at Foxton station, and integrating a PV solution for covering the energy demands of the Travel Hub, is provided in Table 5.6 below

Table 5.6: Foxton Travel Hub base costs with pedestrian footbridge and solar panels included - adjusted for risk (£,000's)

Cost Item	Preferred Option (£,000)
Travel Hub cost estimates	£8,675
Pedestrian footbridge cost estimates	£3,000
PV solution cost estimates	£3,704
TOTAL	**£15,433**

Source: Mott MacDonald

Table 5.6 shows that the expected capital cost of providing both a new pedestrian footbridge and a PV and Battery Storage solution could increase the overall capital cost of the project to around £15.433 million; this could represent an estimated 57% increase in total capital spend if the GCP were to fund this additional infrastructure.

5.5 Spend profile

Table 5.7 shows the annual spend profile for the preferred option including risk. The amount for risk has been proportionally allocated in accordance with the level of spend on works each year.

Table 5.7: Annual spend profile – preferred option (£,000)

	2017	2018	2019	2020	2021	2022	2023	2024
Annual costs	£9	£36	£323	£386	£330	£257	£3,667	£3,667
Cumulative TOTAL	£9	£45	£368	£754	£1,084	£1,341	£5,008	£8,675

Source: Mott MacDonald

5.6 Maintenance and renewals costs

Maintenance costs for the delivery of the preferred option would likely include those shown in Table 5.8. For annual maintenance costs it is typically assumed that payments will be incurred in instalments across a 25-year period and will commence once year after the scheme opens, which is assumed to be 2024. At this stage of scheme development, the maintenance costs will likely be a privately negotiated sum paid to CCC, as the proposed operating organisation, and so would have commercial sensitivities. Greater clarity on these costs will be established at the FBC stage and published at that time.

Table 5.8: Maintenance and renewal cost estimates (estimate base date Q2 2024, covering 25 year period)

Maintenance Item	Years Over Which Cost is Incurred	Quantity	Total (£,000)
Resurfacing Car Park	Once, 25 years post opening	1	£1,224
Resurfacing Footpath	Once, 25 years post opening	1	£33
Landscaping Maintenance	Annually for 25 years	25	£72
Street Cleaning	Annually for 25 years	25	£13
Gully Cleansing / Emptying	Annually for 25 years	25	£283
Street Lighting - Travel Hub site	Once, 25 years post opening	1	£13
CCTV - Travel Hub site	Once, 25 years post opening	1	£24
Cycle Parking - Travel Hub site	Once, 15 years post opening	1	£40
Electric vehicle charging points	Once, 25 years post opening	1	£269
			£1,971

Source: Mott MacDonald

5.7 Operating costs

In addition to maintenance cost items, there are also operating cost items associated with the Travel Hub site itself. These are noted in Table 5.9 along with assumptions and estimated quantities. Figures provided show the estimated costs of operating the site of a 25 year period.

As with maintenance costs, accurate operating costs are only estimated at this stage of the scheme. Furthermore, the operating costs are likely to be funded through a privately negotiated

sum paid to CCC, as the proposed operating organisation. Greater clarity on these costs will be established at the FBC stage and published at that time.

Table 5.9: Operating cost estimates (estimate base date Q2 2024, covering 25 year period)

Operating Cost Item	Assumptions	Quantity	Total (£,000)
Monitor CCTV cameras	Allow 1 person hour per day to monitor the cameras (overtime paid to cover additional requirement)	365 hr	£137
Power Consumption - Lighting (Luma 3)	19nr lights x 254w = 4,826w per hour = 4.83kW x 4,380 hours year = 21,155kW (as advised by DW Windsor)	21,155 kW	£63
Power Consumption - CCTV Cameras	Allow 25% of the above	5,289 kW	£16
			£216

Source: Mott MacDonald

A key aim of the GCP, working within the CPCA as the local transport authority, is to make sustainable travel an attractive option for more people in order to reduce congestion and improve air quality. As a result, the GCP, in agreement with CCC as the proposed operating organisation, have agreed to make parking at the Travel Hub site free. The subsidy required to support free parking at the Travel Hub will form an additional part of the privately negotiated sum paid to CCC.

5.8 Funding arrangements

5.8.1 Capital costs

It is intended that funding for the capital costs for the Foxton Travel Hub project is sourced primarily through the GCP's City Deal fund.

5.8.2 Revenue costs

GCP have advised that CCC are likely to maintain the Travel Hub site after it is built. Whilst indicative operating and maintenance cost estimates have been calculated for this OBC to provide a scale of likely cost, further detailed work on estimating the full maintenance and operating costs will be carried out for the preferred option at FBC, that will be used in agreeing a commuted sum.

At this stage of scheme development, it is also proposed that the travel hub is free of charge for those using it. This would mean there would be no revenue stream arising from parking charges to cover maintenance and operating costs.

5.9 Funding profile

It is expected that the scheme will be funded primarily via GCP's City Deal allocation but with some additional contributions potentially secured via planning obligations with developers. Table 5-10 shows the current working assumptions which will be refined further as the project moves into the FBC stage.

Table 5.10: Foxton Travel Hub funding profile – preferred option (£,000s)

Funding source	2017-19	2020	2021	2022	2023	2024	Total
City Deal	£368	£386	£330	£257	£3,667	£3,667	**£8,675**

Source: Mott MacDonald

5.10 Accounting implications

The total scheme costs for the Foxton Travel Hub project of £8.675m are deemed affordable based on successfully securing funding from GCP's City Deal allocation. This has been confirmed as the case by CCC as accountable body for the GCP, with the West of Cambridge Package which includes Foxton, having been allocated overall funding after being presented to the GCP Executive Board in February 2020.

If costs increase, or funding from the City Deal is not secured in full or in part, then the GCP as scheme promoters will explore other options through the GCP Future Investment Strategy to underwrite these costs. This may involve funding directly or by sourcing additional third-party funding. In any event, as the scheme proceeds, value engineering exercises will be undertaken to review the costs and reduce these where possible. Should a financial shortfall be identified then a further value engineering process may need to be undertaken to reduce costs whilst minimising any reduction in the ability of the scheme to achieve its objectives.

The proposed scheme will also incur revenue costs in order to operate and maintain the new assets. Arrangements for meeting these costs are being explored as part of the scheme's Commercial Case, and considerations of the varying operating and maintenance options. A preferred option for operating and maintenance strategy will be selected at the next phase of scheme development and reported in the FBC, with any financial implications reflected within the Financial Case.

Options to fund any revenue cost shortfalls required to operate and maintain the new Travel Hub will be explored and reported in the FBC.

5.10.1 State aid

The GCP, as scheme promoters, will be using any funding it receives in furtherance of its statutory functions to provide public infrastructure which will not be commercially exploited. In addition, the infrastructure is unlikely to specifically benefit any single particular organisation. Therefore, it is not anticipated that the Foxton Travel Hub project has any State Aid implications. However, a full State Aid check will be carried out as part of the FBC.

6 Management case

The Management Case assesses whether adequate resources are in place to ensure the proposal can be delivered on time, on budget and in accordance with the project specifications to deliver a new Travel Hub facility. Therefore, this section of the report considers the project planning, governance structures, risk management, communications and stakeholder management processes of the scheme.

6.1 Introduction

The Department for Transport (DfT) guidance document, 'The Transport Business Cases: Management Case' (2013), outlines the areas that should be covered in the Management Case. These have been used as a guide to structure the development of the Management Case for the Foxton Travel Hub project. Table 6.1 shows where relevant information, in accordance with DfT requirements, can be found in the subsequent sections that make up the Management Case.

Table 6.1: Compliance with DfT requirements for the Management Case

Content	DfT Requirements	Management Case Section
Introduction	Outline the approach taken to assess if the proposal is deliverable.	Section 6.1
Evidence of similar projects	Provide evidence of similar projects that have been successful, to support the recommended project approach.	Section 6.2
Project dependencies	Set out deliverables and decisions that are provided/received, including from other projects.	Section 6.3
Governance, organisational structures & roles	Describe key roles, lines of accountability and how they are resourced.	Section 6.4 and Section 6.6
Assurance & approvals plan	Plan with key assurance and approval milestones.	Section 6.10
Project plan	Plan with key milestones and progress, including critical plan.	Section 6.9
Risk management strategy	Arrangements for risk management and its effectiveness so far.	Section 6.11.1
Communications and stakeholder management	Development communications strategy for the project.	Section 6.15
Project reporting	Describe reporting arrangements.	Section 6.6
Implementation of workstreams	Summary of key workstreams for executing the work.	Section 6.16
Key issues for implementation	Issues likely to affect delivery and implementation.	Section 6.13
Contract management	Summarise outline arrangements. Confirm arrangements for continuity between those involved in developing the contract and those who will subsequently manage it.	Section 6.17
Benefits realisation plan	Set out approach to managing the realisation of benefits.	Section 6.18
Monitoring and evaluation	Summarise outline arrangements for monitoring and evaluating the intervention.	Section 6.19
Contingency Plan	Summarise outline arrangements for contingency management such as fallback plans if service implementation is delayed.	Section 6.14

Source: DfT – The Transport Business Cases (2013)

6.2 Evidence of similar projects

Cambridgeshire County Council (CCC), a key partner in the GCP, and the likely operating organisation of the Foxton Travel Hub, has delivered, and now operates, a number of large-scale transport projects across Cambridgeshire in recent years. Relevant projects delivered by CCC are described below in Table 6.2. The successful delivery and operation of these projects demonstrates CCC's ability and experience in relation to major infrastructure projects.

As with any infrastructure delivery projects, this experience has not been without challenges, but these challenges have provided valuable learning opportunities for the planning and delivery of future projects.

Table 6.2: Evidence of similar projects

Project	Description	Approximate Cost
Milton Park & Ride	This site was constructed by Cambridgeshire County Council to replace the now closed Cowley Road Park & Ride Site. The opening of the new site at Milton was therefore an immediate success. This site has approximately 800 parking spaces and a heated waiting area building with toilet and baby changing facilities. The scheme was completed within just 2 years from the planning application being submitted in October 2006.The construction period which began in Summer 2007 and ended in Spring 2008 when the site opened. The above timescale was for a 531-space car park and building. Due to the success of the scheme, the scale of the site has increased beyond its first built capacity and now provides 792 car parking spaces to cater for the high level of continued demand.	£3m in 2007
Longstanton Park & Ride/ St Ives Park & Ride	A further two Park & Ride sites were constructed in 2011 alongside the Cambridgeshire Guided Busway providing connectivity to Cambridge and Huntingdon. These sites have been a success in intercepting traffic and have both also increased beyond their first built capacity. The Longstanton Park & Ride Site now provides 350 parking spaces. St Ives Park & Ride has capacity for 1000 vehicles. Both sites are also provided with covered cycle parking. In addition to the number of spaces being increased as a result of the schemes success, the number of bus services serving these sites has also been increased to cater for the increased demand; buses now run into Cambridge from both sites every 7 minutes, or 8 per hour.	Estimated at £9m for both sites in 2011[70]
The Cambridge Core Traffic Scheme	This scheme delivered improved access for pedestrians, cyclists and public transport through traffic management and priority measures in the area bounded by the inner ring road. The measures were implemented in phases from 1997, promoting sustainable travel modes to further improve the city centre environment. Between 1993 and 2003 the number of private vehicles in the city centre fell by 15%. Public transport patronage on routes into Cambridge also increased.	£7m[71]

[70] This is an estimate as the costs were part of a wider package of Busway costs.

[71] This is an estimate as the costs were part of a wider package of Busway costs.

Project	Description	Approximate Cost
The Addenbrooke's Access Road	This access road is a single carriageway route with a number of junctions and structures that connects Hauxton Road in Trumpington on the south side of the city, to Addenbrooke's Hospital. The route provides access to the expanding hospital and Bio Medical Campus, together with development on the Cambridge Southern Fringe, and reduces traffic in the Trumpington area, and on Long Road. The scheme was completed in October 2010.	£24m
The Cambridgeshire Guided Busway	This busway provides a high quality public transport connection between Huntingdon and St Ives, to the north west of Cambridge, and Addenbrooke's Hospital and Trumpington Park & Ride to the south of Cambridge. Access to Cambridge City Centre is provided via on-street running. The overall route is 42km long with 25km of that being guided busway and 17km of on-street provision including bus priority measures. Construction began in July 2006 with the busway opened in August 2011. Although there were challenges during the delivery of the scheme, learning from this can benefit the delivery of future significant transport measures in the County.	£150m[72]
The Ely Southern Bypass	This bypass is a single carriageway highway, connecting the A142 at Angel Drove to Stuntney Causeway and was opened to traffic in 2018. The scheme includes bridges over the railway line and the River Great Ouse and its floodplains and,-reduces traffic around Ely station, removes the need for heavy goods vehicles to use the railway level crossing, and allows them to avoid an accident-prone low-bridge which was susceptible to bridge-strikes.	£43m

Source: Cambridgeshire County Council

6.3 Project dependencies

The success and financial viability of the Foxton Travel Hub scheme will be dependent on a number of factors. Scheme design and delivery will therefore need to consider the following dependencies outlined in Table 6.3.

Table 6.3: Foxton Travel Hub project dependencies

Dependency	How it may impact the development of the scheme
Rail capacity	The forecast increase in rail passengers associated with the Foxton Travel Hub (outlined in Section 2.4.6) shows that all services in both the FC and HG traffic modelling scenarios would theoretically have available capacity to accommodate the potential additional passenger demand. Despite this, the Travel Hub would place additional demand on rail services; therefore, the incumbent TOC will be updated regularly on the progression of the scheme.
Planning approval	Timescales in relation to statutory processes that must be followed in order to deliver the scheme, for example the need to obtain planning permission.

[72] This is the total cost of the Cambridgeshire Guided Busway, and included a £109m contribution from Cambridgeshire County Council.

Dependency	How it may impact the development of the scheme
Securing land	If the landowners of the location where the Travel Hub is proposed do not express support for the scheme, a CPO may be required to obtain the land.
The delivery of Cambridge South Station	Cambridge South station could make the CBC and Southern Fringe easier to reach for those living along the Cambridge to Royston corridor via direct services from Foxton station. The delivery of Cambridge South would thus change the potential demand for parking spaces at the proposed Travel Hub. The delivery of Cambridge South is not committed but has been considered in terms of potential future interdependency issues.
Extent and rate of development at the Cambridge Biomedical Campus (CBC)	The CBC is expected to provide a proportion of the demand for the proposed Travel Hub along the A10, which will be greater if the proposed Cambridge South Station is delivered.
Additional Travel Hubs	Travel hubs in other locations that serve trips into Cambridge, including CSWTH. CSWTH proposes to intercept a proportion of Cambridge-bound trips from the A10 and M11. The CSWTH will be attractive to commuters whose place of work is better served by bus stops within Cambridge City Centre.

Source: Mott MacDonald

6.4 Project governance

The delivery of the Foxton Travel Hub is overseen by the GCP, who are the scheme promoters. As discussed in Section 2.2.1, the GCP is the local delivery body for the City Deal with central Government, and is responsible for overseeing the delivery of all schemes funded through the City Deal.

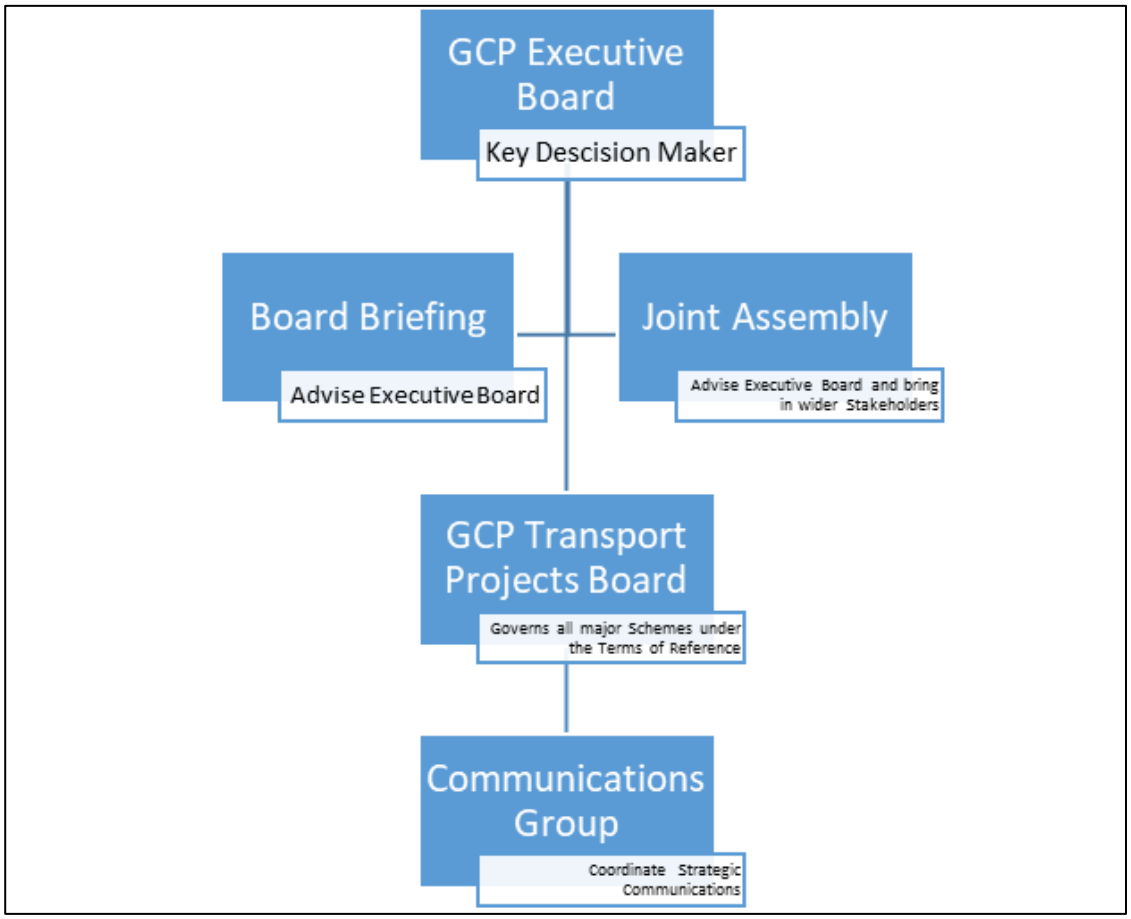
The GCP operates as a Joint Committee, under powers delegated by its three local authority partners (Cambridgeshire County Council, Cambridge City Council and South Cambridgeshire District Council). The GCP is led by a decision-making Executive Board which coordinates the overall strategic vision, and drives forward the partnership's programme of work. The GCP is run in accordance with a clear governance structure, agreed by all partners.

Both the GCP Executive Board and the Joint Assembly (the body that scrutinises and provides advice to the Executive Board) meet at least four times per year. Papers relating to public meetings are published online and members of the public have the opportunity to participate in meetings of the GCP Executive Board by posing questions to be discussed in public.

The GCP Executive Board is made up of one representative from each of the City Deal partners. While the rules governing the Executive Board only allows the three local authority representatives voting rights, they consider the advice of the other representatives to make sure decisions also represent the business and academic sectors.

The Joint Assembly scrutinises and provides advice to the Executive Board, drawing on the broad expertise of its 15 members. The Assembly's membership is made up of three elected councillors from each of the three councils in the Greater Cambridge area, and reflects the political composition of their council. The other City Deal partners each nominate three representatives, as stakeholders from a range of organisations within the fields of business and academia. As shown in Figure 6.1, the GCP Projects Board and the Communications Group sit beneath the Executive Board and the Joint Assembly.

Figure 6.1: Foxton Travel Hub project governance structure



Source: GCP

6.5 Project Board

The GCP Transport Projects Board is responsible for overseeing all major transport schemes being delivered as part of the City Deal.

The purpose of the Project Board is to:

- Provide visible governance;
- Advise on programme wide level decisions before they go to the GCP Executive Board;
- Guide the project manager in developing proposals to meet the agreed objectives;
- Review the proposals and challenging solutions on impact, benefits and value for money; and,
- Act as a sounding board for concepts and ideas.

The membership of the Project Board is set out below:

Table 6.4: Project Board membership

Role	Organisation
Executive	GCP
Senior Supplier	Mott MacDonald
Senior User	CCC
Financial Lead	GCP
Programme Manager	GCP
Project Managers	For projects in scope For Foxton Travel Hub GCP

Source: GCP

6.6 Project management

The project management and development of the Foxton Travel Hub scheme uses the following methodologies:

- Good practice project governance, management principles and processes in line with PRINCE2 methodology; and
- DfT major scheme development methodology.

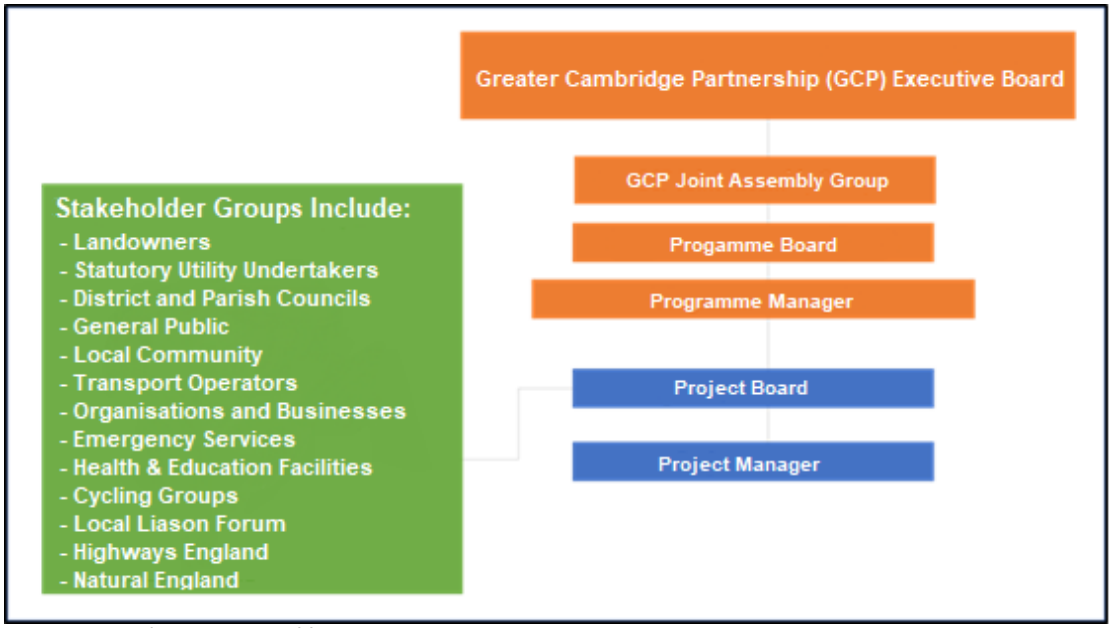
The project's aims, management processes and resources have been set out in a separate Project Initiation Document (PID) (Appendix R) which has been agreed by the Project Board.

The key principles set out in the PID are as follows:

- The overall scope of the project is set by the GCP Executive Board;
- The project is governed by a Project Board that will receive reports on project activity including spend, quality and risks;
- The Project Board can request from the Project Manager all information required for it to perform its governing role;
- The Project Manager must present all information to the Project Board that he/she considers is required for the Board to perform their governing role; and,
- The Project Manager has full day to day responsibility for delivery of technical work streams and is employed by GCP.

Scheme delivery is being managed in accordance with the structure outlined in Figure 6.2. The organogram outlines the structure and reporting relationships of the various groups. Their respective roles are then detailed in Table 6.5.

Figure 6.2: Principal governance structure



Source: GCP / Mott MacDonald

The upper management levels, highlighted in orange, focus on key strategic issues at a programme and project level, while issues of a more technical nature are addressed by the Project Board and appointed Project Manager, highlighted in blue. The roles and responsibilities of these management levels are outlined in further detail in Table 6.5.

Table 6.5: Roles and responsibilities

Management Level	Function
Greater Cambridge Partnership (GCP) Executive Board	This is the key decision-making group and will ensure overall strategic direction of the City Deal programme and overall scope of projects aligned with GCP aims and local and national policy. Includes leaders from each partner organisation and members of the public can participate in meetings, posing questions to be discussed.
GCP Joint Assembly	Strategic, local advisory, and scrutiny body for GCP Executive Board. Elected members from the constituent local authorities and representatives from other constituent organisations – 15 members in total.
Programme Board	Key officers and stakeholders, prioritising schemes, managing programme level risks and capturing shared benefits.
Programme Manager	Technical and procedural oversight of projects and programme level benefit management. Reports to the Project Boards.
Transport Projects Board	Overall control of each GCP transport project. Senior representatives in line with PRINCE2 requirements.
Project Manager	Day to day management of the project and delivery of technical work streams on behalf of GCP.

Source: GCP

The GCP Executive Board and Joint Assembly oversees issues of key risks and issues at both the programme and project level.

At the programme level an officer technical group (GCP Transport Programme Board) made up of key officers and stakeholders develops the overall scheme prioritisation and seeks to manage programme level risks and capture shared benefits.

At the project level a Project Team works up scheme details and reports to the Project Board which guides the overall development of the project at the technical level. At the project gateways, reports are made to the GCP Executive Board on progress, and to seek decisions on key matters which are related to project delivery and funding.

6.6.1 Project management team

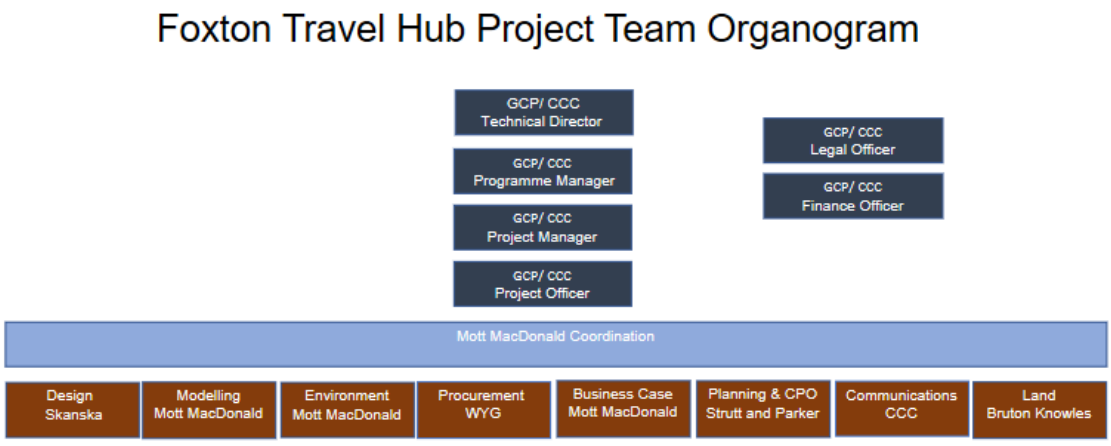
The project management team is accountable to the Project Board and ultimately the GCP Executive Board. It is the project management team who will manage the delivery of Foxton Travel Hub. The project management team is responsible for the day to day delivery of the scheme and ensure technical and financial control.

The project management team coordinates inputs from technical advisors responsible for the delivery of the key workstreams in pursuit of the agreed programme, including:

- Design development;
- Transport modelling;
- Environment assessment;
- Procurement;
- Business Case development;
- Planning;
- Communications; and,
- Land and Compulsory Purchase Orders.

The project management team structure is illustrated in Figure 6.3

Figure 6.3: Foxton Travel Hub delivery team structure



Source: Mott MacDonald

6.7 Decision making and change control

For the varying level of project decisions that are made in relation to the scheme, the Project Manager has authority to determine which category a decision falls under, of which there are 4 types:

1. **Key decisions**: these decisions are as defined in the GCP paper agreed in January 2015, and are the major 'gateway' decisions to allow the overall project to progress. These key decisions form the outer scope of the project and define the 'project parameters'. Key decisions are the sole responsibility of the GCP Executive Board with advice from the GCP Joint Assembly and Chief Executives.
2. **Scope change decisions**: these decisions are those which will take the project out of scope of the project parameters agreed at the key decision-making stage. These decisions will impact cost/quality or time. As such these decisions are the sole responsibility of the GCP Executive Board with advice from the GCP Joint Assembly and Chief Executives' Group (subject to 1 and 2 above).
3. **Major decisions within scope**: These decisions are within the agreed project parameters but are still considered 'major decisions' because they have an impact on cost/quality/time and/or will require a change of the PID. A major decision is the sole responsibility of the Project Board.
4. **Project management decisions**: These are decisions which do not impact cost/quality or time (an example may be technical decisions on detailed options). These decisions include moving budget between work streams. These are the responsibility of the Project Manager.

6.8 Project status report

The fundamental process of capturing change in the project is through the Project Status Report. The Project Status Report is presented at the regular meetings of the Project Board and if necessary, can be submitted separately between Project Boards at the Project Manager's discretion. The Project Status Report is the main input to the Project Board and summarises progress and change on the project.

The following list sets out the format of the Project Status Report:

- Key activities and achievements in report period;
- Serious issues and actions required by governance body;
- Key activities in the forthcoming period;
- Key milestones update ‐ including RAG rating;
- Key issues;
- Key risks; and,
- Budget update.

6.9 Project delivery plan

In line with good project management principles a phased approach to the delivery of the Foxton Travel Hub project has been adopted. These phases have been aligned with the City Deal Assurance Process that requires all City Deal funded schemes to progress through a number of Key Decision points. As such the project is divided into 6 phases that broadly approximate to the 5 Key Decisions and the construction phase. However, additional decision

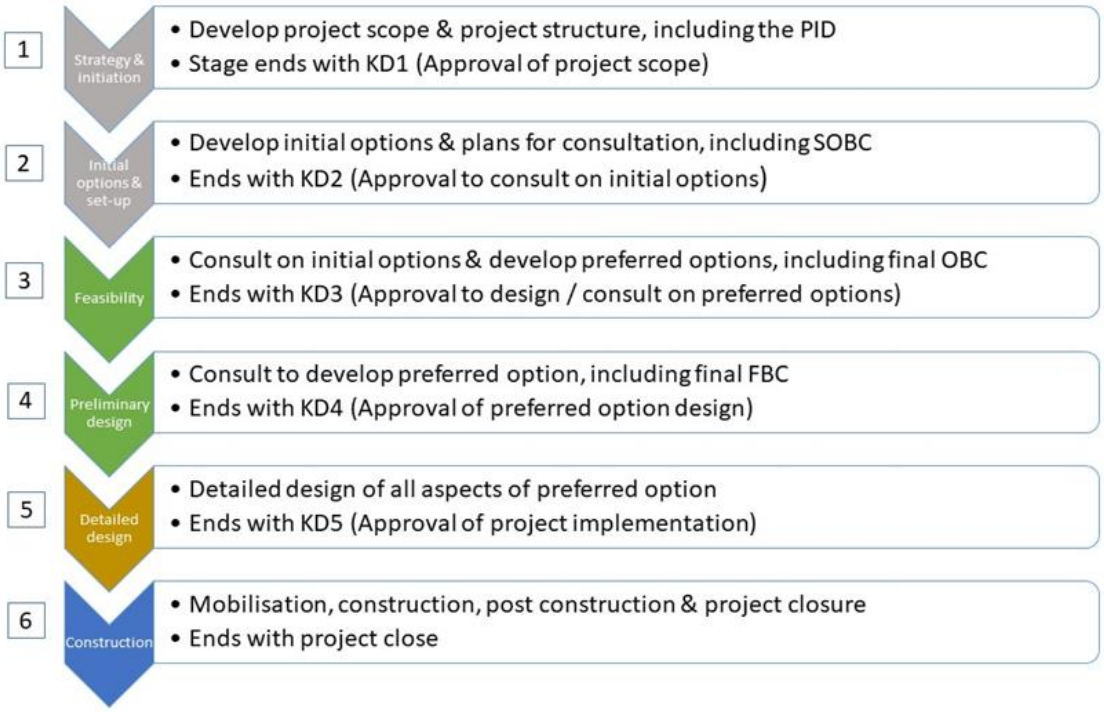
points may be created if it is considered necessary for the effective governance and delivery of the project.

The 6 phases are:

- **Phase 1** – Work needed to establish project (leading to Key Decision 1);
- **Phase 2** – Work needed to identify outline concepts (leading to Key Decision 2);
- **Phase 3** – Work needed to identify an emerging scheme (leading to Key Decision 3);
- **Phase 4** – Work needed to achieve FBC and Statutory Approvals (leading to Key Decision 4);
- **Phase 5** – Work needed to achieve final design scheme for approval (leading to Key Decision 5); and,
- **Phase 6** – Work needed to construct the scheme and hand over to a final operator.

Figure 6.4 illustrates the framework process for the six phases of scheme development and delivery leading up to each Key Decision.

Figure 6.4: Foxton Travel Hub project development alignment with Key Decision phase



Source: Mott MacDonald

The phased delivery of the Foxton Travel Hub scheme has also been designed to reflect HM Treasury Green Book Guidance and the DfT's 'The Transport Business Cases' guidance (2013) for the development and delivery of a major scheme, including the development of the scheme's business case. As such the scheme will pass through three business cases stages as part of the overall development and approvals process. Approval to progress to the next business case stage is a key decision taken by the GCP Executive Board. The three stages are:

- **Strategic Outline Business Case (SOBC),** consisting of high-level analyses which establishes the need for the project and identifies the options to be short listed.

- **Outline Business Case (OBC),** containing more detailed analysis of short list options to identify a preferred option, and setting out the financial, commercial, and management strategies.
- **Full Business Case (FBC),** updating the preferred option analysis and confirming the final financial, commercial, and management strategies.

The first stage of the business case process has been approved by the GCP Executive Board, progressing the scheme to OBC stage. The outstanding two stages will require approval by the GCP Executive Board to release funding for this scheme. This document, circled in red below, fulfils the requirements of Phase 2 of the process.

Figure 6.5: Business case approval process

Source: Mott MacDonald

6.10 Assurance and approvals

The scheme is progressing through the GCP's standard approval processes, with all decisions made by management with the appropriate level of authority depending on the type of decision being made.

There are a number of key milestones in the Project Programme (see Table 6.6) where internal and/or external approvals will be required in order for the project to progress. As part of the approval process at each stage, assurance will be carried out to review the project against standards to allow it to be approved and progress to the next phase of work.

The assurance process Foxton Travel Hub project is set out in the Draft Assurance Framework for the City Deal. The Draft Assurance Framework sets out the role of the GCP Joint Assembly in scrutinising GCP Executive Board decisions; the varied membership of the GCP Joint Assembly helps to ensure that it is both independent and sufficiently representative of a variety of viewpoints and stakeholder groups, in order to provide effective scrutiny.

The assurance process also includes the involvement of independent advisors who are appointed to provide independent scrutiny of the business case, and the scheme as a whole, at each key decision point. They provide robust and independent scrutiny of the scheme in line with DfT requirements. They are responsible for scrutinising the scheme appraisal and reviewing whether the scheme represents good value for money.

The role of the independent advisor includes providing advice to the scheme promoters, the GCP Joint Assembly and the GCP Executive Board on whether or not the Foxton Travel Hub project should be approved to progress to the next stage of assessment, as well as suggest any conditions that must be met by the scheme promoter. In summary, the GCP Executive Board

need to approve the promoter's business case submission before the subsequent stage of work can be commenced.

6.11 Project programme

The programme is set out in the Project Initiation Document (PID) (Appendix R) and has been approved by the GCP Executive Board. If the programme should change, this would be reported through the Project Mangers Report. If the programme changes this would be reported to the GCP Executive Board for approval with a recommendation as a key decision. Table 6.6 provides the key milestones and associated delivery dates as of April 2020.

Table 6.6: Foxton Travel Hub indicative key milestones

Stage	Est. Completion
Stage 0 - Inception	
Agree project inception	Q4 2017 (Mar 2018) **COMPLETED**
Stage 1 – Initial Options Development & Assessment	
Develop initial options and assess	Q2 2018 (Oct 2018) **COMPLETED**
Stage 2 – SOBC	
Initial key stakeholder engagement	Q4 2018 (Jan 2019) **COMPLETED**
SOBC – case for investment & short-listed options	Q4 2018 (Mar 2019) **COMPLETED**
Key Decision - Phase 1&2	Q1 2019 (Apr 2019) **COMPLETED**
Stage 3 – OBC	
Public consultation	Q3 2019 (Sep-Oct 2019) **COMPLETED**
Short list options assessment & preferred option selection	Q1 2020 (Jan 2020) **COMPLETED**
OBC - preferred option	Q1 2020 (Feb 2020) **COMPLETED**
Key Decision - Phase 3	Q2 2020 (Jun 2020) **CURRENT**
Stage 4 - Statutory Approvals	
Completion of preliminary scheme design	Q1 2021 (Jan 2021)
Engagement on preferred option	Q1 2021 (Jan-Feb 2021)
Planning application submission	Q2 2021 (Apr 2021)
Key Decision - Phase 4 (approval to submit Planning Application)	Q2 2021 (Apr 2021)
Planning approval granted	Q2 2021(Jun 2021)
Stage 5 - Procurement inc. FBC	
Design procurement	Q3-Q4 2021 (Jul-Oct 2021)
Detailed design	Q3 2021-Q2 2022 (Oct 2021-Jun 2022)
Construction procurement	Q3-Q4 2022 (Jun-Nov 2022)
Completed FBC	Q4 2022 (Nov 2022)
Key Decision - Phase 4 (FBC)	Q1 2023 (Mar 2023)
Stage 6 – Construct	
Scheme Construction	2023-24
Scheme Opening	2024
Monitoring & Evaluation / Benefits Realisation	2024+

Source: Mott MacDonald

6.11.1 Potential phasing of the scheme

The outline programme provided above, does not reference the potential of phasing the delivery of the Foxton Travel Hub Scheme. A phased approach to delivering the full 950 space site may,

however, be required or advisable depending on a number of circumstances; these circumstances include, but are not limited to, the planning status of key dependent schemes, the local policy context and the chosen route to planning.

The preferred southern location for a travel hub in Foxton is to provide 950 spaces, as set out in the Economic Case. This is based on demand forecasts where it is assumed that there is greater growth than that which is currently accounted for in the Cambridge and South Cambridgeshire Local Plans (as supported by the CPIER published in 2018 which suggests that if 2010-2015 growth trends continue that future growth rates are likely to be much greater than those set out in the Cambridge and South Cambridgeshire Local Plans), and that the proposed Cambridge South Station will be delivered. Although the UK Government's March 2020 Budget announcements included a Government commitment to building Cambridge South Station, subject to planning consents, at the point of this OBC submission, it does not have a formal planning status. The emerging Greater Cambridge Local Plan is also at an early stage of development. Therefore, the approach to the delivery of the Foxton Travel Hub site may be best done in a phased manner to reflect the evolving position of Cambridge South and the future Local Plan.

A phased approach to delivering the Foxton Travel Hub may, therefore, enhance the progression of the scheme through future statutory approvals by providing a more robust case to justify land take.

As such it is recommended that the project continue to develop the phasing opportunities for the 950 spaces to meet modelled demand. A possible scenario being an initial delivery of 500 spaces in 2024, in line with the level of provision forecast for adopted Local Plan growth projections, followed by a further 450 spaces at a time to be determined when there is greater certainty on the Greater Cambridge Local Plan and the planning status of Cambridge South station, taking the total to 950.

However, as the scheme develops through detailed design and its statutory approvals, the local policy context is likely to change. Here, schemes such as Cambridge South may gain formal planning status and the projected Local Plan growth trajectories are likely to gain a greater degree of certainty. This change in local policy context could justify the delivery of a larger initial provision of parking spaces.

6.12 Risk management

The management of risk and uncertainty is key to the successful delivery of the scheme, as it identifies threats to project delivery and enables effective risk management actions to be assigned. A risk management strategy has been developed and is reviewed regularly during project development. An effective risk management strategy should include:

- A continuous approach;
- Thorough identifications of risks;
- Active risk avoidance and mitigation;
- Effective communication of the risks to the project team; and,
- The delivery of scheme objectives to cost, quality and time indicators.

6.12.1 Risk management strategy

The GCP has adopted a robust Risk Management Framework to ensure effective management of risks in order to enable the successful delivery of all City Deal funded projects, including the Foxton Travel Hub.

As such, the risk management strategy for this project is based on the core principles for risk management contained within the Office of Government Commerce (OGC) PRINCE2 guidance and applied proportionally to the value of the scheme. The procedure for identifying key risks aligns with the following process:

- **Identify:** Complete the risk register (as appropriate to the area of the project and/or the producing organisation) and identify risks, opportunities and threats.
- **Assess:** Assess the risks in terms of their probability and impact on the project objectives.
- **Plan:** Prepare the specific response to the threats (e.g. to help reduce or avoid the threat), and/or plan to maximise opportunity in the case that these threats do occur.
- **Implement:** Carry out the above in response to an identified threat if one occurs.
- **Communicate:** Report and communicate the above to relevant project team members and stakeholders.

Risk management must be an ongoing process, as illustrated by the GCP risk management process in Figure 6.6.

Figure 6.6: GCP Risk Management Process

Source: GCP Risk Management Framework

To facilitate the effective management of risks associated with the scheme's delivery, risks have been organised into two overarching categories:

- **Strategic Risks** – these are presented in the Project Managers report and are those risks which impact the overall delivery of the project scope; and
- **Technical Risks** – these are associated with specific work streams and are managed by the Project Manager.

The Project Manager has responsibility for overseeing the Risk Management process. In accordance with the GCP Risk Management Framework, the roles, responsibilities and reporting lines for risk management should be clearly defined within the project team.

6.12.2 Risk register

A risk register has been developed and is being updated throughout the development of the OBC, in order to continually manage risks and mitigate impacts on the delivery of the scheme. Risks have been grouped into categories and scored based on their likelihood of occurring and expected impact on the scheme.

At this stage of the business case process the identified risks have not been estimated and quantified in monetary terms to provide equivalent likelihood values; this process will be undertaken should the scheme receive approval at Gateway Review Point 3 and progress to Stage 4 of the project.

In order to quantify the level of risk, each risk has been given a number on a scale of 1 to 5 for both likelihood and impact; these two scores have then been multiplied together to give an overall score for both inherent risk and residual risk. The likelihood and impact ratings and descriptions are summarised in Table 6.7 and Table 6.8 respectively.

Table 6.7: Risk likelihood ratings

Description	Descriptor	Scale
May only occur in exceptional circumstances, highly unlikely	Very Low	1
Is unlikely to occur in normal circumstances, but could occur at some point	Low	2
Likely to occur in some circumstances or at some time	Moderate	3
Is likely to occur at some time in normal circumstances	High	4
Is highly likely to occur at some time in normal circumstances	Very High	5

Source: GCP Risk Management Framework

Table 6.8: Risk impact rating

Description	Descriptor	Scale
• Insignificant disruption to internal business or corporate objectives • Little or no loss of front-line service • No environmental impact • No reputational impact • Low financial loss (proportionate to budget involved)	Negligible	1
• Minor disruption to internal business or corporate objectives • Minor disruption to front line service • Minor environmental impact • Minor reputational impact • Moderate financial loss (proportionate to budget involved)	Marginal	2
• Noticeable disruption to internal business and corporate objectives • Moderate direct effect on front line services • Moderate damage to environment • Extensive reputational impact due to press coverage • Regulatory criticism • High financial impact (proportionate to budget involved)	Significant	3
• Major disruption to corporate objectives or front-line services • High reputational impact – national press and TV coverage • Major detriment to environment • Minor regulatory enforcement • Major financial impact (proportionate to budget involved)	Critical	4
• Critical long-term disruption to corporate objectives and front-line services • Critical reputational impact • Regulatory intervention by Central Government • Significant damage to environment • Huge financial impact (proportionate to budget involved)	Catastrophic	5

Source: GCP Risk Management Framework

Based on the scoring of each risk, a RAG (Red, Amber, Green) rating has been calculated for each inherent and residual risk; the average of these two risk elements was also taken so that

they could be categorised as High, Medium or Low as specified in Table 6.9. This provides a robust way to easily identify the risks which may need to be considered in more detail.

Table 6.9: RAG appraisal ratings

RAG Appraisal Rating	Description
Red	High Risk (Average score >10)
Amber	Medium Risk (Average score 6-10)
Green	Low Risk (Average score 0-5)

Source: GCP Risk Management Framework

The 'highest risk' project risks identified at this stage in the projects evolution are listed in Table 6.10; these risks all fall into the Red 'High Risk' category, and are ranked in order of severity.

Table 6.10: Strategic RAG risk register

Risk	Impact	Rating	Mitigation Measure	Post Mitigation
The construction phase of the scheme could impact upon traffic flows on the A10 and other local roads, potentially causing delays and diversions.	• Cost to the project. • Wider economic impacts. • Journey time delays.	20	• The project team will prepare a Construction Logistics Plan (CLP) and Construction Environment Travel Plan (CETP); these reports will consider the scheme's construction phase impacts on the highway network and propose appropriate mitigations.	15
Landowners object to the preferred option.	• May require a CPO/public inquiry leading to programme delays and potential scheme failure.	20	• Regular engagement with landowners' and land agents.	12
Covid-19 halts the progression of environmental and traffic surveys. Here, social distancing measures may impact on the workforce and normal commuting/travel patterns will be disrupted.	• Time delay to individual surveys and the broader programme • Cost to the project.	16	• Individual consultancy firms carrying out surveys to develop and share corporate risk assessments. • Assessment of which surveys are most at risk and which will have the greatest impact on the overall programme. • Investigate the possible use of historical data.	12
The land for the Travel Hub has to be purchased by CPO. As a result, a site of 500 or 750 car parking spaces is the largest achievable footprint, meaning the 'full' scheme isn't deliverable.	• Full scheme is not delivered which has an impact on the scheme BCR.	16	• Continue to seek the advice of Strutt & Parker CPO specialist. • Monitor planning policy relevant to Cambridge South Station. • Undertake sensitivity tests to understand BCR implications.	12
Covid-19 leads to cancellation of GCP June Board.	• Time delays.	16	• GCP are looking to carry out the Board meeting remotely. • If cancelled, appropriately adapt the resourcing strategy for the project team.	9
Different LPA officers are assigned to the project at the development and regulatory stages; this lack of continuity may cause delays.	• Delay to project.	15	• Liaise with the LPA to confirm the list of officers who will advise on scheme development, and those who will review the planning application at the regulatory stage.	9

Risk	Impact	Rating	Mitigation Measure	Post Mitigation
The East-West Rail (EWR) Company has chosen Route E (via Cambourne) as the preferred route for EWR, which does not route via Foxton.	• Impact on the demand for the Travel Hub and timetabling of services into Cambridge.	12	• Although the preferred EWR route does not route through the Foxton area, the project team will be in regular liaison with the EWR Company (and other stakeholders including relevant TOCs) to assess the implications for the scheme, and rail services routing between Foxton and Cambridge.	12
Lack of Combined Authority (CA) support for the preferred scheme option.	• May reduce the likelihood of scheme approval at the Executive Board meeting.	12	• Ensure alignment of the scheme to CA policy. • Monitor political and planning situation and regularly engage with CA to update on plans.	9
Street works restrictions regarding other planned A10 works or level crossing works cause conflict with planned construction phase.	• Delay to project. • Increased costs.	12	• Early discussion with CCC street works team to acquire the correct permits. • Coordinate with other schemes/ projects in the area to prevent disruptive overlap.	9
Unable to secure access to non-NR land to undertake surveys due to permissions/time of year.	• Causes delays to the detailed design stage of the project if surveys cannot be undertaken.	12	• Continue to liaise with developers 'Axis' regarding their surveys for the proposed Station Fields site. • Serve a written notice to the landowners in order to undertake surveys in a timely manner.	9
Covid-19 causes illness amongst members of the project team across all disciplines resulting in delays to deliverables.	• Resource implications. • Time delays.	12	• The project team will monitor the situation and appropriately adapt its resourcing strategy. • Each discipline to identify how work can be picked up in case of other staff members being off sick.	8
A compliant A10 crossing solution for non-motorised users cannot be delivered at the detailed design phase.	• Threatens scheme approval in terms of LPA and public opinion.	12	• Ensure the design team is engaged to find an effective solution for crossing the A10. • Design team to flag any issues that arise with the project team. • Review speed limit on the A10. • Liaise with NR regarding the delivery of a pedestrian bridge.	8
Land contamination issues arising from the presence of a former coal yard on the northern site option.	• Ground instability and contamination increase costs and delay scheme delivery.	12	• Liaise with MM land contamination team to assess risk. • As the proposed scheme is to develop a carpark, it is assumed that the ground would be covered; this would create a barrier between potentially contaminated ground and site users. • The project team will assess historic plans from the County Council to assess the extent of the coal yard.	8
Axis (Station Fields developers) stated that they will probably	• Potential delay to planning application.	12	• Continue to liaise with Axis to ensure they are informed about the project. • Review SCDC review procedures.	6

Risk	Impact	Rating	Mitigation Measure	Post Mitigation
object to the southern option if it is progressed to planning.	• CPO process required to purchase land causing programme delays.			
LPA object to preferred option.	Delay to project	12	• Effective and ongoing scoping/meetings and maintaining regular communication with LPA.	6

Source: Mott MacDonald

6.13 Key issues for implementation

Key issues for implementation usually arise when identified risks to the project materialise and develop into issues. In order to prevent delays to the project, where key issues are identified, it is assumed that project work will progress while they are being considered by the Project Board and that the issues will be resolved promptly or escalated to the Joint Assembly and Executive Board, as deemed necessary. Issues are recorded alongside risks in the project Risk Register which is regularly reviewed and updated. Each issue is assigned an impact level, in line with the criteria set out in the risk register, a corresponding mitigation measure and an owner. The subsequent sections outline a detailed strategy for managing and identifying risks to prevent these issues arising.

6.14 Contingency plan

When reviewing risk, as outlined here, it is also important to consider what might happen to the project should there be a threat to delivery. Given that delivery of the Foxton Travel Hub project will primarily be funded through City Deal funding, a Contingency Plan has not been deemed necessary at this stage in the scheme's development. GCP have advocated their support for the scheme in advance of this OBC through the approval of the SOBC.

6.15 Communication and stakeholder management

Public and stakeholder consultation is essential to ensure that the various aspirations of the general public and key stakeholders are taken into account throughout development and delivery of the project, and to manage the communication and flow of information relating to the scheme.

The following sections outline the key stakeholders who are involved in the Foxton Travel Hub project and the approach undertaken by the GCP in engaging with them.

6.15.1 Stakeholder engagement and communication plan

The Stakeholder Engagement and Communication Plan (Appendix S) is guided by the principles of the GCP's City Deal wide communication strategy. The strategy outlines how the project will keep internal and external stakeholders informed about relevant project information. The purpose of the strategy is to ensure that accurate and timely messages about the project are disseminated to a range of identified stakeholder groups.

Project communication is governed through the Stakeholder Engagement and Communication Plan as set out in Table 6.11.

Table 6.11: Foxton Travel Hub project communication

Audience	Type of communication	Frequency	Process / Responsibility
General public	• Formal public consultation • Informal public consultation • Regular website updates on project progress	• Formal public consultations when required by the adopted approvals process • Informal public consultation during each stage of scheme development	• Communication Team
Statutory consultees	• Formal consultation • Informal consultation	• Formal consultations when required by the adopted approvals process • Informal consultation during each stage of scheme development	• Project Manager / Communications Team
Other key stakeholders	• Ad hoc meetings	• Quarterly	• Project Manager
Contractors	• Meetings / briefings • Procurement frameworks and contracts • Website • Collateral	• As required	• Project Manager / Communications Team
Members	• Reports • Briefing sessions • Single issue workshops • Community events and public consultations • Internal manager/staff/member meetings and briefings • Networking events • Intranet, email and staff newsletter	• As required	• Project Manager
UK Government	• Meetings and presentations civil servants and MPs • Independent Economic Assessment Panel • Conferences and events • Independent research • Telephone / email briefings • Media • E-newsletter	• As required on key milestones	• Project Manager
General correspondence	• Letter, email in standard format	• As required	• Project Manager

Source: Stakeholder Engagement and Communication Plan (Appendix S)

The Project Manager maintains a Communications Log for the lifetime of the project. The Communications Log includes the following headings:

- Date;
- Attendees;
- Subject matter/Title of meeting; and
- Organisations represented.

6.15.2 Key stakeholders

Key stakeholders will be identified and involved in the delivery of the project in a number of ways. Public and stakeholder engagement is an important means of solving problems and making decisions that directly impact upon living, working, using services and doing business in the local area. Such engagement may include informing, consulting with, involving, collaborating with and empowering stakeholders to understand the issues to enable them to make informed choices.

The key objectives of the scheme's stakeholder management are to:

- Keep stakeholders aware of the schemes progression and give an opportunity for feedback to refine scheme development and help gain approval;
- Give an opportunity for stakeholders to provide views and suggestions for improvements so that the scheme meets stakeholder requirements as far as is practical;
- Meet statutory requirements;
- Increase public and stakeholder awareness of the scheme;
- Provide consistent, clear and regular information to those affected by the scheme, including the nature of any scheme-related impacts and when and how it will impact upon people both during delivery and once the scheme operational; and
- Address perceptions of the scheme where these are inconsistent with the scheme objectives and forecast outcomes.

6.15.3 Stakeholder engagement programme

Whilst engagement with stakeholders is an on-going process, the Foxton Travel Hub project went through one formal stage of public consultation in 2019.

Feedback on the project proposals during the public consultation period was obtained through several mechanisms:

- Online feedback forms available on the project website;
- Paper feedback forms available at each exhibition or on request;
- Comments and enquiries via the project mailbox or via other Council mailboxes;
- Face to face conversations with members of the project team at the public exhibitions;
- Comments received during one-to-one meetings with stakeholders; and
- Comments following presentations.

6.15.4 2019 Public consultation summary

As set out in the Communications Plan, a public consultation was undertaken to gather feedback from the public on the two shortlisted options. This consultation was undertaken between the 9th September and 21st October 2019. The consultation aimed to inform the public of the proposals and gather feedback on the proposals that would inform the decision-making process.

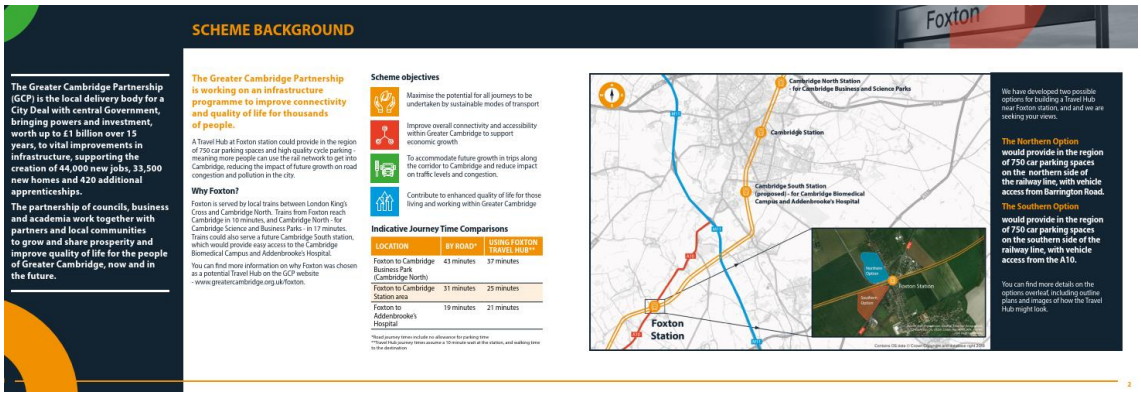
The consultation was directed at local residents and businesses who may be affected by the scheme, people who already travel through the area, and those who may do so in the future as potential users of the Travel Hub.

A consultation leaflet and accompanying questionnaire were produced, providing information on the proposals, including;

- Background to the scheme – setting out the need for improved transport infrastructure in the Greater Cambridge area;
- Maps of the proposed site locations and links to local transport networks – including the proposed Cambridge South railway station;
- Provisional information on access arrangements for pedestrians, cyclists and cars;
- Information on the differences between the two options in terms of traffic, construction and environmental impacts – how the two sites might work differently, in particular in relation to access from the A10 and proximity to residential property;
- Artist's impressions of how both options might look;
- Indicative timescales for GCP decision-making and construction;
- Details of consultation events and contact details for GCP.

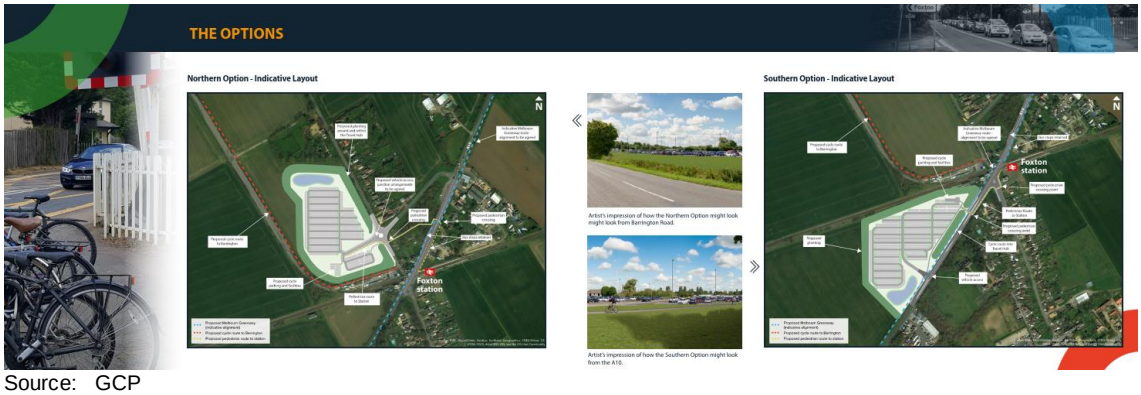
Figure 6.7 to Figure 6.9 show images of the leaflet.

Figure 6.7: Leaflet - Background and Scheme Location



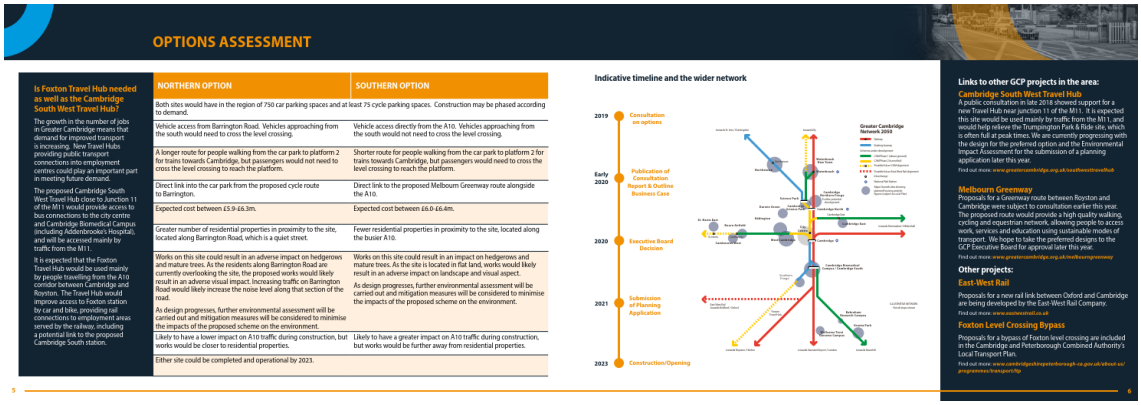
Source: GCP

Figure 6.8: Leaflet - Option Plans



Source: GCP

Figure 6.9: Leaflet - Options Assessment and Wider Network



Source: GCP

The consultation leaflet was distributed to residents and businesses in the local area, with 6,634 leaflets sent to local addresses. The leaflet was also made available digitally.

Consultation materials were primarily provided online, with all materials held on a dedicated website. A questionnaire on the proposals was available as an online survey as well as in printed format upon request.

A video showing computer-generated images of how each site might look was made available on the dedicated website, allowing people to view the two options both via a 3D 'flyover' and from viewpoints on the A10 and Barrington Road.

Four public events were held during the consultation period. These events were widely advertised to stakeholders, and though local Parish Councils and Residents' Associations. The events provided interested stakeholders with the opportunity to speak to the client and project teams and find out more information about the proposals Table 6.12 provides details of the events held in support of the consultation.

Table 6.12 Consultation Events

Location	Date	Time	Attendees
Foxton Railway Station	Tuesday 17th September 2019	7am – 8.30am	15
Addenbrooke's Concourse	Wednesday 2nd October 2019	11am – 1pm	40
Foxton Village Hall	Tuesday 8th October	6pm – 8pm	75
Melbourn Community Hub	Tuesday 15th October	6pm – 8pm	40

Source: Mott MacDonald

The consultation was publicised through the GCP's regular communication channels; this included emails to stakeholders, social media promotion and regular online promotional pushes during the consultation period.

Details of the consultation outcomes can be found in the Consultation Report.

6.16 Work breakdown structure

The work breakdown structure for the Foxton Travel Hub scheme is set out in Table 6.13 below. No activities or spend of project resources will take place outside the defined workstreams as together they define the entirety of the scope of the project. Under some workstreams there are

likely to be further sub workstreams. Each workstream has a name to define it and a reference which assists in the organisation of project files.

Table 6.13: Workstream breakdown descriptions

Workstream Name	Workstream ID	Description
Project Management	WP0	All activities related to the management of technical work streams throughout the project and general day to day communication and engagement.
Design Development	WP1	The preparation of design drawings and the provision of engineering advice, to ensure the scheme is feasible and deliverable.
Traffic Modelling	WP2	The evaluation of existing and future traffic conditions, including the impact of the proposed scheme on the local transport network, and the modelling of the likely demand for the Travel Hub.
Environment	WP3	The examination of the environmental impacts of the proposed Travel Hub.
Procurement	WP4	Engagement and negotiations with potential service providers. The preparation of procurement documents in order to achieve a viable procurement, with consideration given to the financial consequences over the lifespan of the contract and service.
Land	WP5	The management of the land acquisition process.
Business Case	WP6	Work related to the production and management of the Business Case and documents that support it.
Communications	WP7	The management of stakeholder engagement and the public consultation, and the production of consultation materials.
Planning	WP8	The provision of planning advice, including the identification of the most appropriate route to planning.
Costs	WP9	The assessment of the likely costs of the core scheme and the associated sensitivities.

Source: Mott MacDonald

6.17 Contract management

The existing contracts in place for the Foxton Travel Hub project have been established through existing frameworks and specific commercial arrangements and are all managed by the GCP working with CCC. These include contacts with the following advisors for technical services:

- Mott MacDonald - scheme coordination, transport modelling, environmental advisors, business case development, and communications advisors;
- Skanska – Design management;
- WYG – Procurement advisors;
- Strutt & Parker – Planning advisors; and,
- Bruton Knowles – Land agents.

The future contracts for the scheme are yet to be determined. The options being considered for possible future contract arrangements for the design and build of the scheme, as well as the operation and maintenance, are set out in the Commercial Case.

6.18 Benefits realisation

The justification for intervention is based on the benefits that will be achieved. Therefore, identification of the benefits of the Foxton Travel Hub project, and how they will be delivered and measured, is required.

The benefits realisation plan (BRP) provides a framework to help realise the forecast benefits and scheme objectives. The benefits are planned for, tracked and will hopefully be realised through scheme implementation.

As such the Benefits Realisation Plan must:

- Define the benefits;
- Outline the beneficiaries;
- Name responsible parties;
- Outline the requirements to achieve the benefits; and,
- Provide propose timescales for benefit realisation.

A detailed BRP has been produced to define how the benefits of the Foxton Travel Hub project will be identified and measured; the BRP is provided in Appendix I. Table 6.14 provides an overview of the key benefits.

Table 6.14: Foxton Travel Hub Benefits Realisation Plan – overview of key benefits

Benefit title	Expected level of benefit	Links to objectives	Dependencies	How will it be measured?
Reduction in traffic along the A10 between Foxton and Cambridge	• An increase in average speeds along corridor. • A reduction in journey time variability during peak times. • A reduction in noise and an increase in air quality along route due to lower levels of traffic.	• **A-1, C-1**	• Reliance on completion of scheme. • Uptake of sustainable travel methods, including use of Foxton Travel Hub, rather than private car. • Effective marketing campaigns to encourage use of the Travel Hub amongst local stakeholders and businesses.	• Traffic Surveys (ATCs) on the A10.
Improved access to sustainable travel modes along the A10.	• Up to 950 vehicles will be able to park at the Travel Hub and transfer to another mode of transport (bus, rail or walking/cycling) to complete their journey.	• **A-2**	• Reliance on completion of scheme. • Available rail capacity from Foxton. • People willing to complete park and rail trips, over private car trips. • The integration of cycling and walking routes into the Foxton Travel Hub. • The development of the Barrington to Foxton cycle path. • Pedestrian Improvements associated with the Melbourn Greenway.	• Utilisation surveys of travel hub and travel behaviour surveys. • Rail passenger counts from Foxton.
Improved accessibility to key employment and education sites within and around Cambridge City Centre from the south west of Cambridge.	• An increase in the number of key employment centres within 30 minutes of settlements along the A10 corridor using the rail network.	• **A-3, B-1**	• Reliance on completion of Cambridge South Station for access to Cambridge Biomedical Campus. • Rail timetabling allowing convenient access to Cambridge station (for CB1 and the city centre) and Cambridge North station (for Cambridge Science Park and St Johns innovation park).	• Travel to work surveys.

Source: Mott MacDonald

6.19 Monitoring and evaluation

Monitoring and evaluation are essential parts of any infrastructure project. The process provides an opportunity to improve performance by reviewing past and current activities, with the aim of replicating good practice and eliminating mistakes in the future. This section outlines the monitoring and evaluation plan for the Foxton Travel Hub project.

The GCP has a responsibility to report on how funding is being utilised for Foxton Travel Hub project, how its expenditure represents value for money to the taxpayer and how spending aligns with the GCP's main objectives.

The DfT's '*Monitoring and Evaluation Framework for Local Authority Major Schemes'* guidance document forms the basis of the monitoring strategy alongside the GCP's Assurance Framework.

The DfT guidance has been produced to provide a consistent approach to reporting a scheme's value for money and conducting review in a proportionate and targeted approach. The document sets out the requirements for the monitoring of schemes and outlines three tiers of monitoring and evaluation, these are:

- Standard monitoring;
- Enhanced monitoring; and
- Fuller evaluation.

The Foxton Travel Hub project follows the standard monitoring practice as the scheme is less than £50m in value. The project will be monitored against a set of standard measures. These can be found in Table 6.15. The various monitoring measures are considered in terms of the key stages of the scheme. These are:

- **Inputs** (i.e. what is being invested in terms of resources, equipment, skills and activities undertaken to deliver the scheme);
- **Outputs** (i.e. what has been delivered and how it is being used);
- **Outcomes** (i.e. intermediate effects, such as changes in traffic flows, modal shifts) and,
- **Impacts** (i.e. longer-term effects on wider social and economic outcomes, such as supporting economic growth).

Table 6.15: Components of enhanced monitoring

Item	Stage	Type of Information Provided	Data Collection Timing	Rationale
Scheme build	Input	• Programme / project plan assessment • Stakeholder management approaches • A review of the risk register and assessment of the impacts • Assessment to determine whether the scheme is on track to deliver anticipated benefits	During delivery	Knowledge
Delivered scheme	Output	• Full description of scheme outputs • Identification of any changes to the scheme since funding approval • Identification of any changes to assumptions • Assessment of whether the scheme has reached the intended beneficiaries • Identification of changes to mitigation measures	During delivery / post opening	Accountability

Item	Stage	Type of Information Provided	Data Collection Timing	Rationale
Costs	Input	• Outturn investment costs • Analysis of risk in the elements of investment costs • Identification of cost elements with savings • Analysis for cost elements with overruns • Outturn operating costs • Outturn maintenance or other capital costs	During delivery / post opening	Accountability
Scheme Objectives	Output/ Outcome/ Impact	• Identification of the main objectives	Pre or during delivery / post opening (up to 5 years)	Accountability
Travel demand	Outcome	• Road traffic flows on corridors of interest • Patronage of the public transport system in the area • Counts of pedestrians and cyclists	Pre or during delivery / post opening (up to 5 years)	Knowledge / Accountability
Travel times and reliability	Outcome	• Travel times in the corridors of interest • Variability in travel times in the corridors of interest	Pre or during delivery / post opening (up to 5 years)	Knowledge / Accountability
Impact on the economy	Impact	• Travel times / accountability changes to businesses • Employment levels and • Rental values	Pre or during delivery / post opening (up to 5 years)	Knowledge / Accountability
Carbon	Impact	• Effect of the scheme on carbon in the area of interest	Pre or during delivery / post opening (up to 5 years)	Knowledge / Accountability

Source: DfT - 'Monitoring and Evaluation Framework for Local Authority Major Schemes'

To evaluate the impact and understand the effectiveness of the scheme, data will be collected to measure the success of the scheme against the themed assessment criteria which were identified as measures of success. To this extent, the approach to monitoring and evaluation goes beyond the basic requirements of the DfT's standard monitoring guidance, and is also closely aligned with the Benefits Realisation Plan.

Monitoring and evaluation activities also need to be undertaken during scheme delivery to ensure the scheme is delivered on time, on budget and to specification. To this extent monitoring and evaluation has been split into two categories which align with both the themes of the appraisal criteria and DfT guidance:

- Monitoring of project delivery (deliverability theme, covering inputs and outputs); and,
- Monitoring the achievement of scheme objectives (themes of reducing traffic levels and congestion).

6.19.1 Reporting

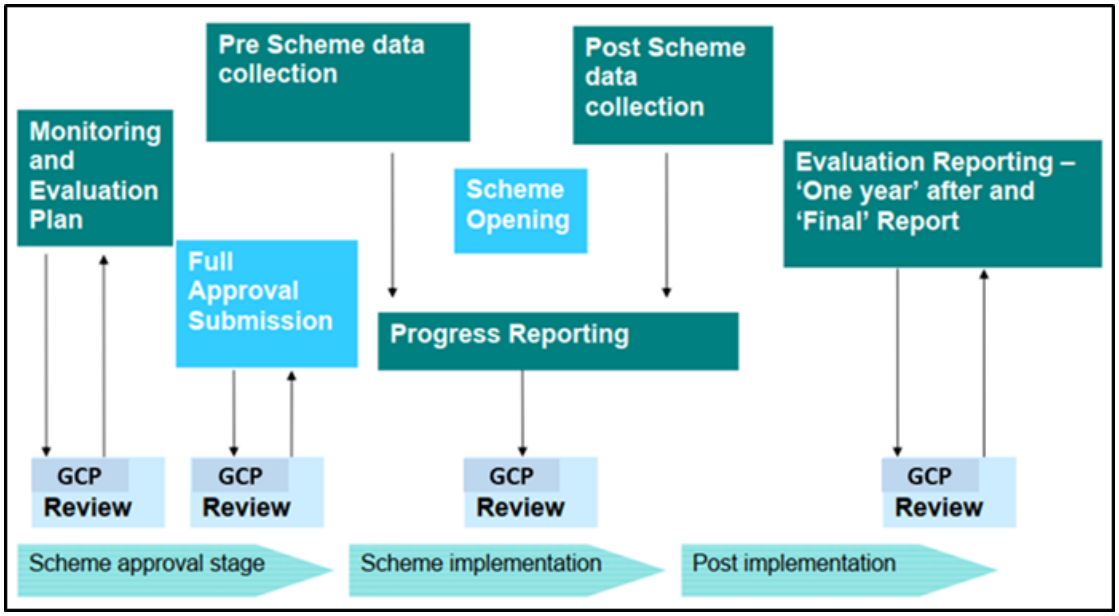
The GCP will also follow the DfT monitoring guidance for the reporting process. Therefore, the project will:

- Submit a detailed monitoring and evaluation plan 3-6 months prior to the submission of the FBC for approval;
- Publish monitoring and evaluation plans publicly on the GCP website;
- Provide progress reports on the evaluation process to the GCP Executive Board;

- Provide an initial report based on data collection at least one per year following the opening of the Foxton Travel Hub.
- Provide a final report based on one year after data and data collected approximately after five years of the Foxton Travel Hub project opening and publish within six years of opening.

The reporting and approvals process is illustrated in Figure 6.10 below.

Figure 6.10: Monitoring and evaluation engagement process



Source: Mott MacDonald – adapted based on DfT monitoring and evaluation engagement process

6.19.2 Resourcing

The GCP will arrange to collect and publish relevant data, comparing the conditions before and after scheme opening. A project assurance team has been included within the project structure to ensure that independent officers/consultants are available to provide scrutiny on project activities. The team will provide expert advice and scrutiny on key decisions and undertake project auditing activities on behalf of the Project Board. The assurance team will also be responsible for ensuring monitoring and auditing occurs at key project management stages.

The budget outlined for the monitoring and evaluation activities at the OBC stage for the Foxton Travel Hub project is included in the capital cost estimations in the Financial Case, and forms part of the future project management costs for the scheme. A detailed breakdown of the budget for monitoring and evaluation activity will be prepared in advance of the project's FBC submission.

6.19.3 Evaluation

To evaluate the success of the scheme, and whether the objectives defined for the Foxton Travel Hub project have been met, a comprehensive structured monitoring and evaluation plan will be developed in advance of the project progressing to FBC stage, should this occur. For this OBC submission, an outline monitoring and evaluation plan has been prepared, as presented in Table 6.16 and Table 6.17.

The monitoring and evaluation process has been divided into two parts, as follows:

5. Monitoring of project delivery: which focuses on scheme inputs and outputs; and,
6. Monitoring of the achievement of the scheme objectives: which focuses on impacts and outcomes.

The monitoring and evaluation of the project's construction and delivery is set out in Table 6.16.

Table 6.16: Monitoring of project delivery (inputs and outputs)

Aspect of project delivery	Method of monitoring	Timeframe	Responsibility
Delivery of Foxton Travel Hub to timeframe	• Programme/project plan assessment • Review of risk register and assessment of impacts • Project review during scheme design and build. • Site inspections	Ongoing throughout delivery and construction	GCP
Delivery of Foxton Travel Hub to budget	• Programme/project plan assessment • Identification of any changes to assumptions • Analysis of risk in the elements of costs. • Project review during scheme design and build • Site inspections	Ongoing throughout delivery and construction	GCP
Delivery of Foxton Travel Hub to specification	• Programme/project plan assessment • Review of risk register and assessment of impacts • Project review during scheme design and build • Site inspections	Ongoing throughout delivery and construction	GCP

Source: Mott MacDonald

Table 6.17 shows how the scheme objectives and related enabling objectives (which are effectively non-target based outcomes) will be measured. Each enabling objective has a performance indicator which acts as a proxy for the success of the scheme. The methodology that will inform the associated data collection is also provided in the methodology column.

Table 6.17: Monitoring and evaluation plan (outcomes and impacts)

Objective	Enabling objective/outcome	Performance indicator	Methodology	Timing
Sustainable transport	To increase sustainable transport mode share for trips into Cambridge from settlements in the Royston to Cambridge A10 corridor	• Traffic flows on the A10 • Rail patronage • Car parking utilisation	• Traffic master data analysis • ATC counters • Entries and exits to Foxton Station	• Prior to delivery to assess baseline. • Post opening of Foxton Travel Hub and 5 years after opening.
	To increase travel hub capacity along the Royston to Cambridge A10 corridor	• Number of available park and ride type spaces between Royston and Cambridge.	• Utilisation surveys	• Prior to delivery to assess baseline. • Post opening of Foxton Travel Hub and 5 years after opening

	To reduce journey times to key employment destinations	• Quicker journey times for those switching to rail	• Traffic master data analysis • Analysis of bus journey times between Royston and Cambridge	• Prior to delivery to assess baseline. • Post opening of Foxton Travel Hub and 5 years after opening
Congestion	No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.	• Traffic flows on A10 • Delay along A10	• Traffic master data analysis • ATC counters • Analysis of junction capacity and queue lengths	• Prior to delivery to assess baseline. • Post opening of Foxton Travel Hub and 5
Quality of life and environment	To improve quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor	• Noise • Air Quality	EIA to identify requirements (if any)	
	To increase cycling and walking along the Royston to Cambridge A10 corridor.	• Uptake of walking and cycling to/from Travel Hub	• Non-motorised user counts • Active travel surveys	• Prior to delivery to assess baseline. • Post opening of Foxton Travel Hub and 5 years after opening.

Source: Mott MacDonald

Appendices

A. Options Assessment Report

B. Record of Stakeholder Engagement

C. Consultation Report

D. Strategic Economic Narrative

E. Barrington CEMEX Development Technical Note

F. Travel Hub Demand Forecasting Technical Note

G. Foxton Rail Passenger Surveys and Capacity Assessment Technical Note

H. Air Quality Technical Note

I. Benefits Realisation Plan

J. Scheme Drawings

K. Options Assessment Technical Note (OBC - post consultation)

L. Modelling and Economic Assessment Report

M. Environmental Appraisal Report

N. Social Impact Appraisal

O. Distributional Impact Appraisal

P. Appraisal Summary Table

Q. Project Cost Breakdown

R. Project Initiation Document

S. Stakeholder Engagement and Communications Plan

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