



Foxton Park and Rail Transport Hub

Options Assessment Report

February 2019

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Executive summary

Introduction

In 2013, options to deliver potential new parking facilities at Foxton Rail Station were first identified in the GRIP 2 Feasibility Study Report for the Foxton Level Crossing Closure project.

In March 2018, Mott MacDonald were commissioned to investigate the potential for a Park & Rail transport hub at Foxton station, and establish the benefits this may bring in contributing towards the aims and objectives of the Greater Cambridge Partnership (GCP) and wider transport policy and strategies.

The purpose of this Options Assessment Report (OAR), which informs the wider business case process, is to summarise initial work into the problems and opportunities underpinning the need for investment in a new transport interchange facility. The report seeks to answer several questions put forward by the GCP, which concerned how the site might interface with the parallel development of the proposed M11 Junction 11 Park & Ride site.

Need for Investment

This OAR Report evaluates how proposals for a new transport interchange site along the Royston to Cambridge corridor would support continued growth in and around Cambridge. Considering Greater Cambridgeshire's rapid growth, the report sets out how the scheme might alleviate pressure on Cambridge's already constrained transport infrastructure and how the proposed scheme aligns to the city's ambitious growth proposals and spatial development strategy that are encapsulated in the GCP's City Deal and Local Plans.

At present, Cambridge's transport network suffers regular peak time congestion on key corridors such as the A10, and commuter routes into the city. For example, the M11 Junction 11 is a critical pinch point where two main corridors (M11 and A10) join, leading to significant delays including on the M11 J11 off-slip roads. The A1309 Hauxton Road west of M11 J11 is also heavily congested in the morning peak travelling northbound towards Cambridge, which is reversed in the PM peak. Likewise, frequent rail barrier closings at the Foxton level crossing on the A10 cause delays and journey time variabilities throughout the day.

This report examines why investments in transport infrastructure are critical to relieve pressure on the existing network, improve labour market access to new and established employment sites and reduce the impact that congestion and capacity issues might have on future economic growth.

Scheme Objectives

In order to guide the scheme options development and assessment process, a series of four scheme objectives have been established. The objectives, which consider the opportunities, aspirations and challenges of the proposed scheme, as well as existing policy and strategy, are set out in Figure 1 below:

Figure 1: 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

Six measurable sub-objectives have also been developed as assessment criteria to test the options and identify the best performing solution. The primary purpose of the objectives at this stage in the scheme's development is to guide solution and option selection, so that the option short list is targeted towards meeting the needs of Greater Cambridge.

Options Assessment

Since the project's inception, the scheme has progressed through a series of optioneering steps to identify and assess options that address these objectives, and ultimately to determine the ideal location for the proposed transport interchange.

For the options assessment, we applied Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET) to assess options against criteria developed to establish how well each option aligned with a set of assessment criteria, or 'themes', derived from the scheme objectives. INSET is based on the DfT's approved Early Assessment and Sifting Tool (EAST) approach to the early sifting and assessment of proposed transport schemes.

The options assessment was undertaken as a two-step process. The first step focused on eight strategic corridor options between Royston and Cambridge along the A10 corridor. The primary purpose of this step was to establish where the most suitable location for a new Park & Ride site along the Royston to Cambridge A10 route could be i.e. ***Which strategic location works best as a potential transport interchange?***

The second step within the options assessment, involved the assessment of ten site specific options around the preferred strategic corridor location. This included options based around the existence of a new level crossing bypass, which is being developed as a parallel scheme, as well as options without the level crossing bypass. The bypass alignment used was derived from the GRIP2 Feasibility Study Report (May 2013).

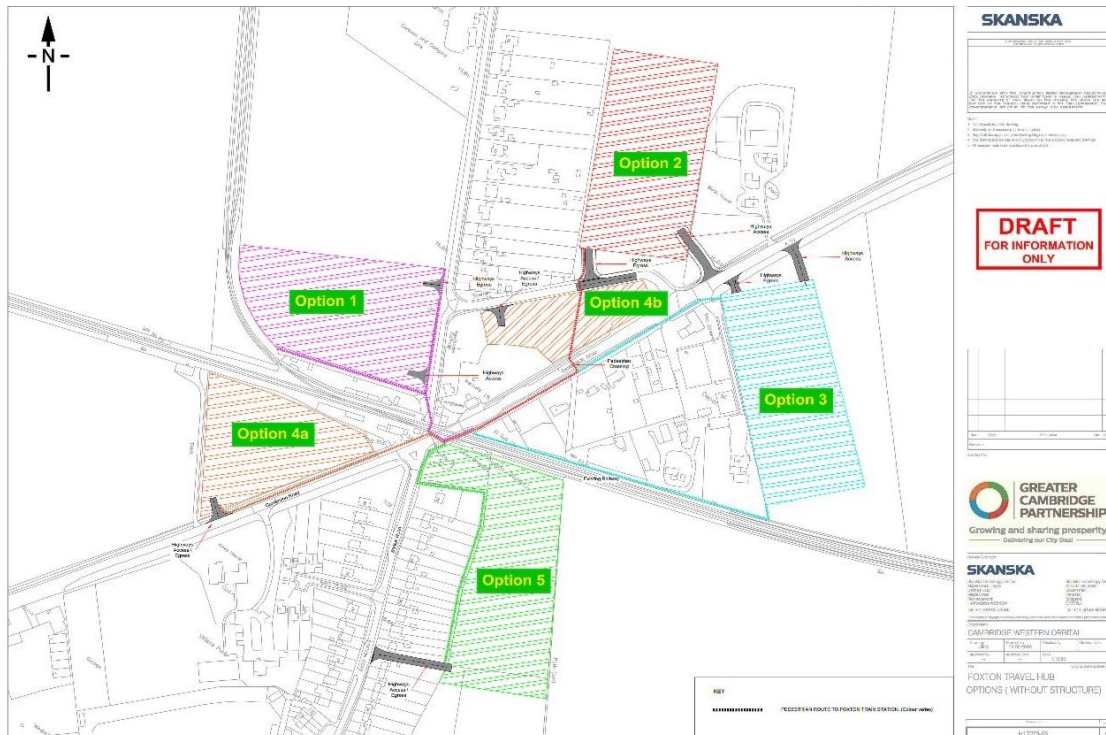
The options assessed at Stage 1 are shown in Figure 2, whilst the Foxton specific options assessed at Stage 2 are shown in Figure 3 (without the proposed potential level crossing bypass) and Figure 4 (with the level crossing bypass).

Figure 2: Royston to Cambridge Corridor – Strategic Park & Ride Options



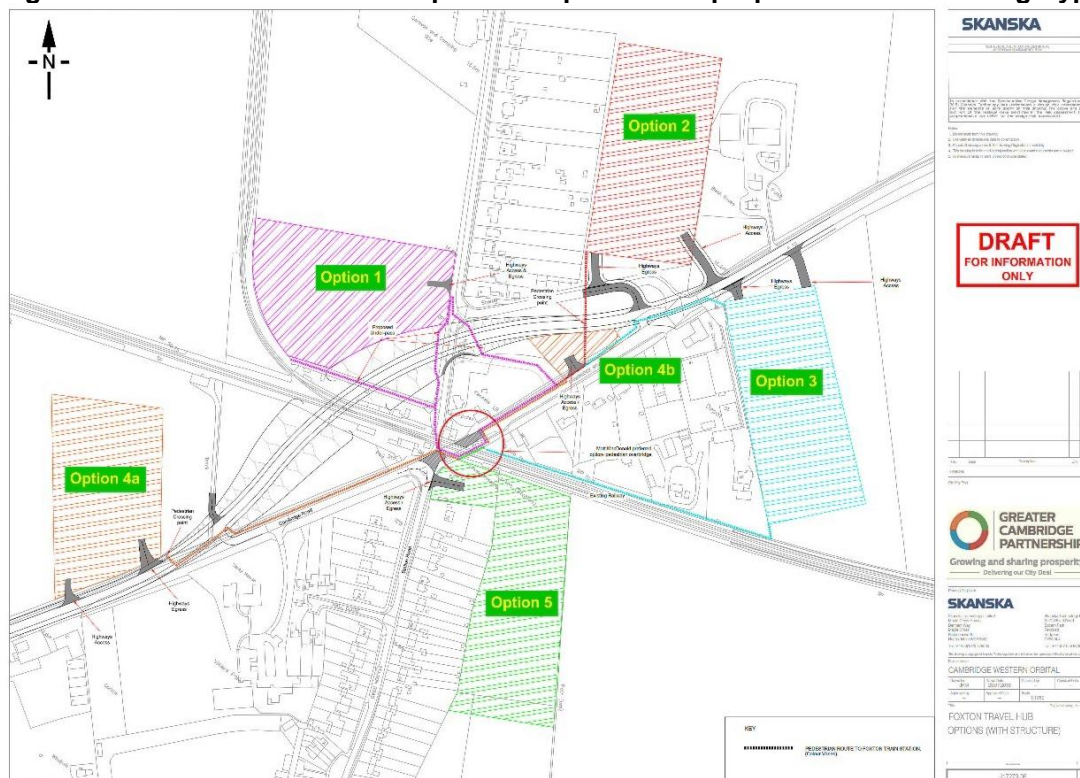
Source: Mott MacDonald

Figure 3: Foxton Park & Rail transport hub options without proposed Level Crossing Bypass



Source: Skanska. Note: these are indicative site footprints for the purposes of initial option assessment only and will require refinement should the proposals be taken forward for further development

Figure 4: Foxton Park & Rail transport hub options with proposed Level Crossing Bypass



Source: Skanska. Note: these are indicative site footprints for the purposes of initial option assessment only and will require refinement should the proposals be taken forward for further development

The assessment criteria used in assessing the options during both steps were grouped into themes which aligned to the scheme objectives. The themes used for each step are set out in Table 1.

Table 1: Themes Used for the Options Assessment Steps

Stage	Economic Growth	Congestion Relief	Sustainable Travel	Quality of life	Deliverability
Step 1 (Corridor)	✓	✓	✓	✓	✓
Step 2 (Location Specific)	✗	✗	✓	✓	✓

Source: Mott MacDonald

Based on the results of step 1 in the options assessment, the best performing location (disregarding those options included for comparison where separate projects are in development or under consideration i.e. Trumpington Expansion and M11 Junction 11) was shown as Foxton. **The option scored 0.78 out of a possible 1.00.**

Based on the results of step 2 in the options assessment, the best performing location at Foxton is located to the north of Foxton station without the bypass. **The option scored 0.81 out of a possible 1.00.**

A brief summary of the overall results from step 2 is shown in Table 2 below, with the options status at the conclusion of the assessment:

Table 2: Options Assessment Summary

Option	Score (out of 1)	Status	Primary Reason for Discounting
Options <u>without</u> the level crossing bypass			
Option 1 – north of the station	0.81	Further assessment	
Option 4a – west of the station	0.68	Further assessment	
Option 5 – south of the station	0.68	Discounted	Located within Green Belt land
Option 4b – north of the station	0.60	Discounted	Area of land not adequate for indicative number of spaces.
Options <u>with</u> the level crossing bypass			
Option 1 – north of the station	0.70	Further assessment	
Option 5 – south of the station	0.68	Discounted	Located within Green Belt land
Option 4a – west of the station	0.62	Further assessment	
Option 4b – north of the station	0.50	Discounted	Area of land not adequate for indicative number of spaces.
Options <u>with & without</u> the level crossing bypass			
Option 3 – northeast of the station	0.53	Discounted	Located within Green Belt land
Option 2 – east of the station	0.49	Discounted	Located within Green Belt land

Source: Mott MacDonald

Next Steps

The options assessment carried out as part of the current stage of appraisal, forms the basis of this report. The next steps following the completion of this OAR will be to undertake more detailed options assessment and engage with key stakeholders on those options identified as best meeting the scheme objectives.

The more detailed stage of options assessment and engagement with key stakeholders will provide the final results for the Strategic Outline Business Case (SOBC) and will be reported in an updated SOBC Option Assessment Report. The main purpose of the SOBC will be to establish the need for investment; to appraise the main options for service delivery; and to provide a recommended way forward for further analysis.

Following the completion of the SOBC, the shortlisted options will be presented to the GCP Executive board for their consideration. The response of the GCP Executive Board will guide the next steps of the project, which may include wider public consultation.

The final stage of the scheme development process, should it be endorsed by the GCP Executive Board, will be to provide a full detailed assessment of this option across the five cases (Strategic, Economic, Financial, Commercial and Management), to produce an Outline Business Case (OBC).

1 Introduction

This section outlines the context underpinning this report, including the background to the scheme and its linkages to other existing schemes in development within Cambridge. It goes on to set out the report structure.

1.1 Overview

As part of the options development process for the Foxton Level Crossing Bypass project, reported in the GRIP 2 Feasibility Study Report in May 2013¹, options to develop and deliver potential new parking facilities at Foxton Rail Station were also identified. Whilst the Greater Cambridge Partnership (GCP) now wishes to progress the Foxton Level Crossing Bypass scheme, it also wishes to investigate further the possibility of new transport interchange facilities along the A10 between Royston and Cambridge. The GCP wish to consider this as a separate scheme to the Level Crossing Bypass scheme and establish the benefits this may bring in contributing towards the aims and objectives of the Greater Cambridge City Deal (City Deal) and wider transport policy and strategies.

As well as understanding the direct benefits of a Park & Rail transport hub along the A10 between Royston and Cambridge, the GCP wish to understand how any new transport interchange site beyond the M11 to the south west of Cambridge may interplay with the parallel development of the proposed M11 Junction 11 Park & Ride site. In particular the GCP wish to understand the potential reduction in size and scale of the Junction 11 site through the introduction of a transport interchange further south along the A10 may have.

Mott MacDonald were therefore commissioned in March 2018 to progress with the necessary work required to answer the questions put forward by the GCP and to investigate the potential for a Park & Rail transport hub in the corridor, including carrying out the necessary demand modelling to understand the scale for any new transport interchange site, and to develop the options in advance of any stakeholder engagement and the development of a Strategic Outline Business Case (SOBC).

The purpose of this Options Assessment Report (OAR), which is an integral part of the business case process, is to:

- Provide a review of evidence produced thus far to establish a need for the project;
- Present the scheme's emerging scheme objectives;
- Summaries the options generation process, and;
- Present the options assessment process and results.

The evidence base itself draws from multiple sources in order to ensure problems and opportunities are appropriately captured. These have been set out in separate Technical Notes and include:

- 1. Transport Evidence Review (Appendix A):** that provides a comprehensive review of the evidence collected regarding the current transport and traffic conditions within the study area. This draws on multiple sources in order to ensure all issues and opportunities are appropriately captured and includes a review of current and emerging policy and strategy in order to examine how the scheme aligns.
- 2. Strategic Economic Case (Appendix B):** that helps to understand how the scheme may facilitate the sustainable economic growth of Greater Cambridge, providing an economic

¹ Mott MacDonald – GRIP2 Feasibility Study Report (May 2013)

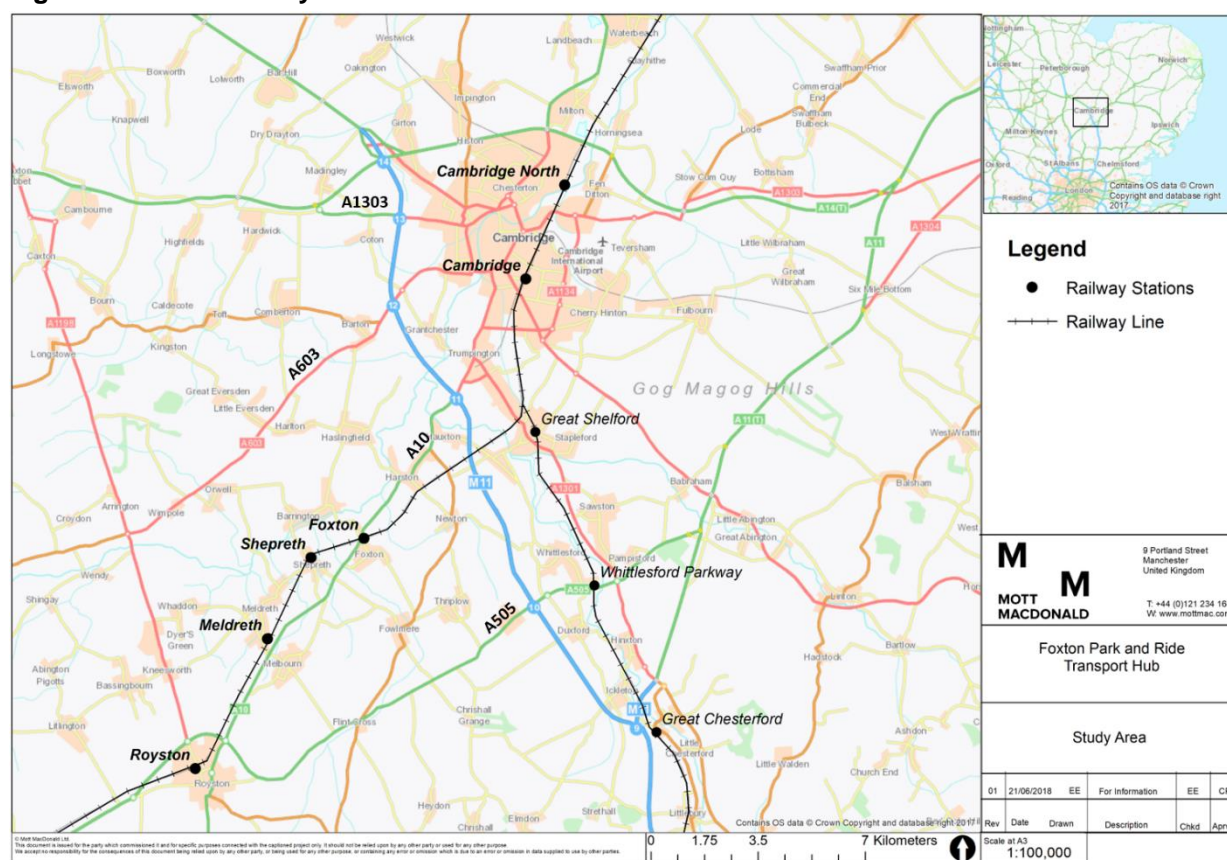
context for the scheme, an overview of the relevant adopted Local Plans and a spatial analysis of key developments.

3. **Park & Ride Demand Forecasting (Appendix C):** that sets out the demand forecasts and sensitivity tests for the proposed Park & Rail transport hub, including the impact this has on the Junction 11 Park & Ride site proposals.

1.2 Scheme Background

A potential Park & Rail transport hub facility is one of several proposed transport schemes along the Royston to Cambridge corridor that is looking to address the issues associated with high levels of highway congestion and provide infrastructure to support economic growth, both current and future.

Figure 5: Scheme Study Area



Source: Mott MacDonald

The original scheme concept comprises a new Park & Rail transport hub on the Cambridge to Kings Cross rail line. Together with the other infrastructure investments proposed along the corridor – including the closure of the Foxton level crossing and construction of a under/overpass, the M11 Junction 11 Park & Ride scheme and proposed South Cambridge train station – the creation of a new Park & Ride facility aims to enhance overall connectivity to Cambridge from surrounding areas to the south west of Cambridge and beyond.

This, in turn, should help address the issue of high levels of peak-time congestion currently experienced along the A10 and within Cambridge itself by reducing private car trips from the road network. Details of existing delays and journey time variation are provided in Section 5.

With significant employment and economic growth planned in Cambridge, particularly along the Southern Fringe, such schemes will also play an important role in accommodating the growing demand on the corridor's already constrained transport infrastructure by increasing overall capacity within the transport network and providing direct transport links to key employment locations. This will remove a key barrier to growth and enable Cambridge's economy to grow sustainably.

1.3 Report Structure

This OAR has been structured to align with the Department for Transport's (DfT) transport appraisal model, which is detailed in Section 2. Table 3 shows how this report has been aligned with the DfT process.

Table 3: Approach to Options Assessment Covered in this OAR

Section	Contents	Description	Alignment with WebTAG Stage 1 option appraisal development steps
2	Options Assessment Methodology	Outlines the overall approach taken from examining the evidence base, through to option generation and appraisal	n/a
3	Strategic Context	Summarises the strategic context of the A10 transport route to help identify the need for intervention.	1,2 & 3
4	Local Context	Summarises the local context of the A10 transport route to help identify the need for intervention.	1,2 & 3
5	Current and Future Issues and Opportunities	Discusses the key issues and opportunities that have arisen from the review of existing transport issues, demand and reassignment modelling, and the development of the strategic economic case.	1,2 & 3
6	Emerging Scheme Objectives	Provides a vision for the scheme and sets out a series of emerging scheme objectives based on the need for investment as highlighted by the evidence base.	4
7	Options Generation	Summarises the options development process, including how an initial list of strategic options along the corridor were identified, before a long list of location specific options were identified.	5
8 & 9	Options Assessment	Summarises the assessment of both the strategic corridor and location specific options, including the assessment criteria applied and the results.	6 & 7
10	Summary	Provides an overview of the options assessment process and sets out the next steps in the development of a Park & Rail transport hub.	n/a

Source: Mott MacDonald

2 Options Assessment Methodology

This section outlines the approach to appraising options to provide a clear and structured process to identify issues and opportunities, enable scheme objectives to be set, and assess options based on these objectives.

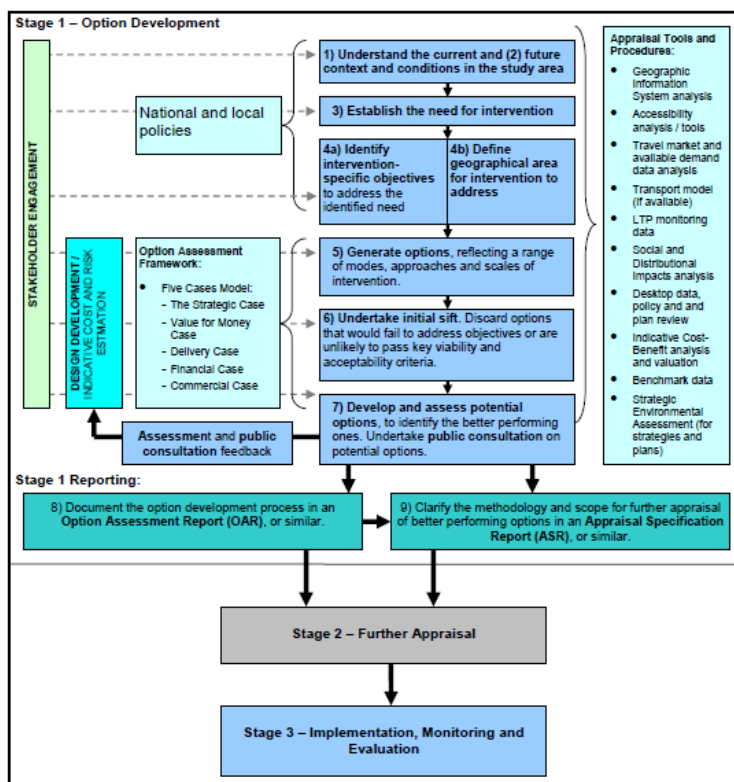
2.1 WebTAG Guidance on the Transport Appraisal process

This OAR follows 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 the detailed appraisal that supports preparation of business or investment cases to subsequent approval stages and post implementation evaluation (see Figure 6 and Figure 7 which illustrate the DfT process).

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

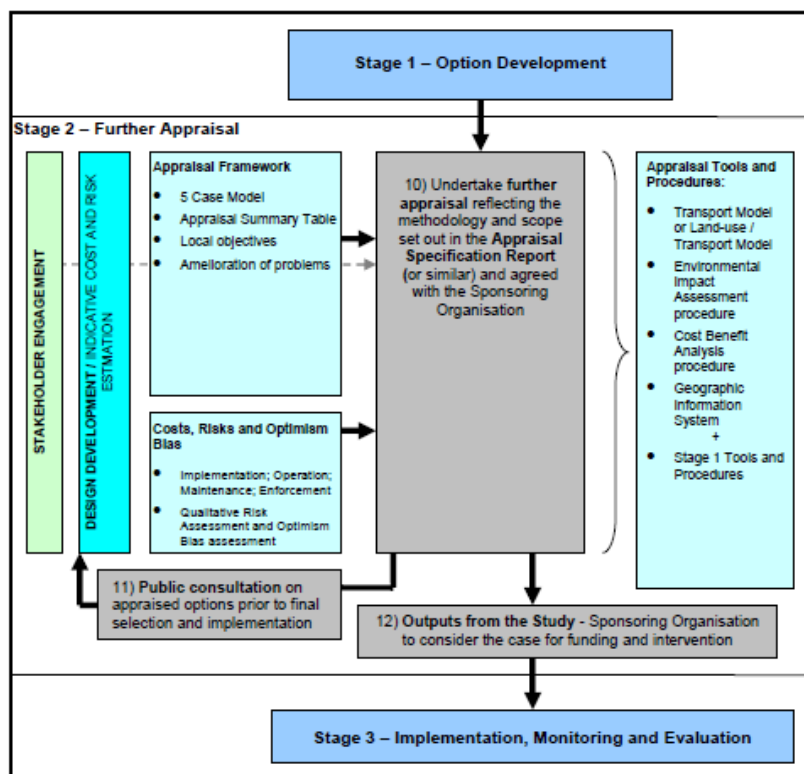
- **Stage 1** – Option Development. This involves identifying the need for intervention and developing options to address a clear set of locally developed objectives which express desired outcomes. These are then sifted for the better performing options to be taken on to further detailed appraisal in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

Figure 6: Stage 1 of the Transport Appraisal Process ('Option Development')



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

Figure 7: Stage 2 of the Transport Appraisal Process ('Further Appraisal')

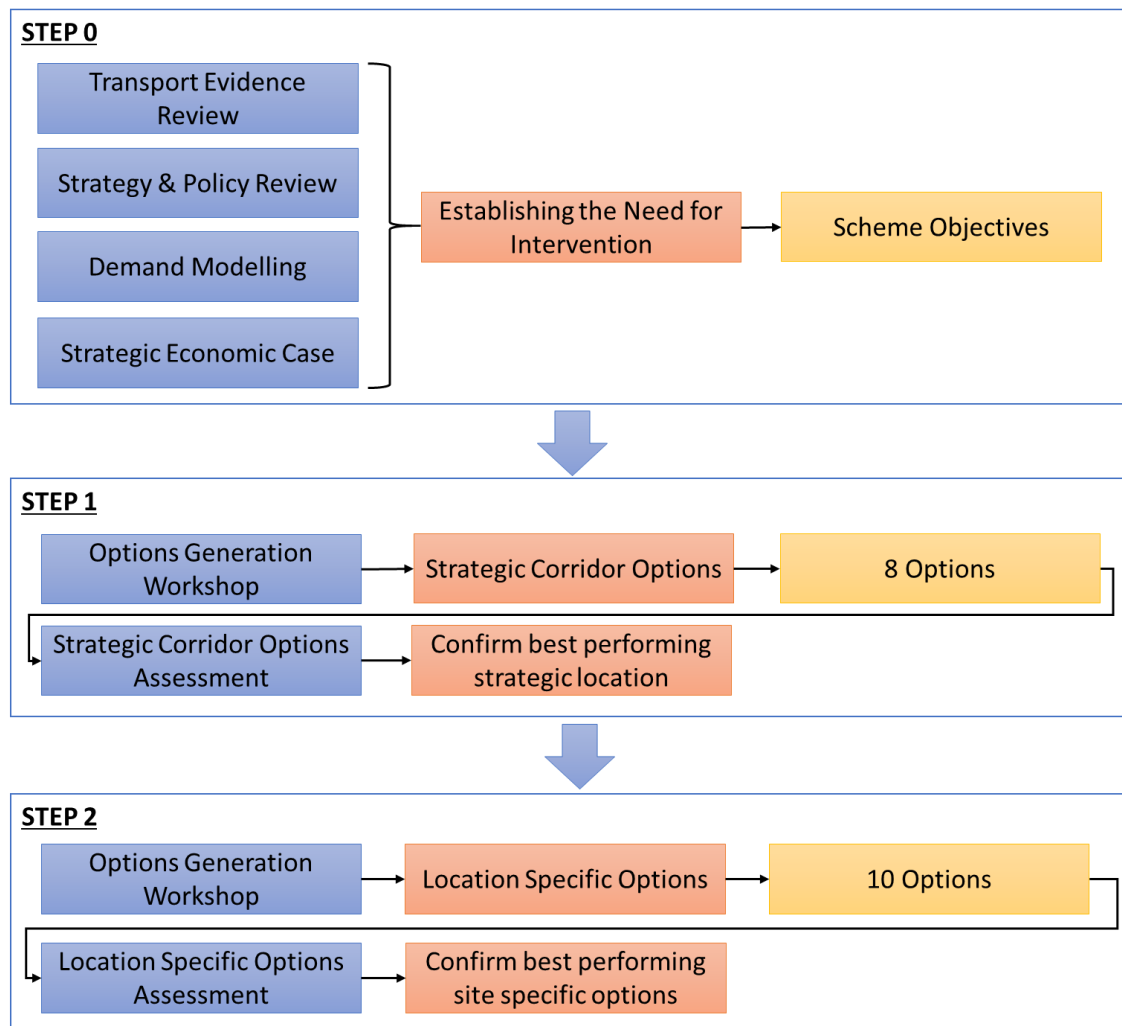


Source: DfT (2014), Transport Analysis Guidance: The Transport Appraisal Process

2.2 Methodology Summary

The options appraisal process carried out to date for the proposed Park & Rail transport hub scheme and reported on in this OAR was structured to align with Stage 1 of the DfT's transport appraisal model outlined in Section 2.1. Our tailored approach to the process is illustrated in Figure 8.

Figure 8: Options Assessment Framework Three Step Approach²



Source: Mott MacDonald

2.2.1 Step 0 – Establishing the need for intervention

Step 0 includes identifying the need for intervention and investment in a Park & Ride transport hub along the A10 Royston to 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 will be established to guide the option assessment for investment in Park & Ride facilities along the A10 corridor between Royston and Cambridge. These objectives will also be aligned to existing policy and strategy to guide solutions and options selection, so that the options short list is targeted towards meeting the needs of Greater Cambridge.

² Whilst there are three steps in this process, the numbering of the steps as 0-2 reflects the 2 steps involved in the actual options generation and assessment process. For consistency, these have therefore been labelled the same throughout the report.

2.2.2 Step 1 – Strategic Corridor Options Generation and Assessment

Step 1 involved the identification of a series of strategic corridor options that could address the scheme objectives derived from evidence-based issues and opportunities through a workshop approach.

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

2.2.3 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 is 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 have been applied, with additional criteria included where necessary to differentiate the options. Assessment criteria used during the first step 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 as not meeting the scheme objectives and discounted from further assessment or appraisal as part of Stage 2 of the DfT's Transport Appraisal Process. These will not be included in any stakeholder consultation or further business case development.

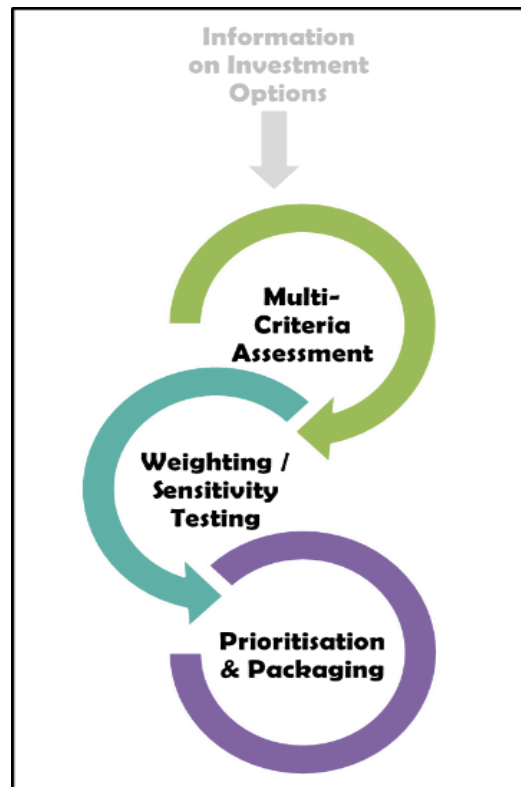
2.2.4 INSET Methodology

For the options assessment, we applied Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET) 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.

2.2.4.1 INSET

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 (see Figure 9). INSET is designed to be simple, flexible, replicable and transparent. It is based on Green Book compliant Multi-Criteria Decision Analysis (MCDA).

Figure 9: Mott MacDonald's Investment Sifting and Evaluation Tool (INSET)



Source: Mott MacDonald

INSET draws upon standard tools for comparing scheme options, primarily DfT's EAST (Early Assessment and Sifting Tool) and adds additional functionality to these existing tools. Mott MacDonald has developed INSET as an enhancement of EAST to support the evaluation of different options for large-scale investments and investment programmes. Crucially it enables:

- 'Active' sifting of options in real-time, supporting meetings, workshops and face-to-face engagement with a tool that can be used to facilitate discussions;
- The consideration of multiple economic scenarios as sifting and evaluation progresses, through manipulation of criteria weighting, to enable project teams to discuss 'what if' issues as options are developed; and
- The assessment of potential scheme packaging. INSET can assess one option against another and can also explore the merits of options being developed in isolation or as part of a package.

3 Strategic Context

This chapter sets out the Strategic Context for investment in public transport and Park & Ride along the A10 corridor to the south west of Cambridge, including a review of local and national strategy and policy documents.

3.1 Cambridge Phenomenon

One of the UK's most successful and productive cities, Cambridge is home to a thriving hi-tech and biotech industry and is a hotspot for UK and regional job creation. Cambridge is projected to be the UK's fastest growing city in terms of Gross Value Added (GVA) in 2018, and the tenth fastest growing city by employment. Its economic success, high quality of life and quality of place go hand in hand to make Cambridge not only a good place to do business, but also an attractive place for highly-skilled knowledge-intensive workers, business leaders and their families to live.

With the University of Cambridge at its heart, the area's scale and connectedness enables overlapping networks to develop and facilitates a culture of co-operation and cross-fertilisation between entrepreneurs and academics. This entrepreneurial environment and concentration of people focused on science and engineering is attracting international businesses to invest in the area. More than 25 of the world's largest corporations have established operations in Cambridge, including Amazon, Apple, HP, Illumina, Microsoft, Sanofi, Siemens and Qualcomm. AstraZeneca has chosen Cambridge for its global research headquarters for 2,000 staff. Cambridge has transformed from a city characterised by a high rate of start-ups to a city which major companies class worthy of establishing their headquarters.

The roots of the 'Cambridge Phenomenon' date back to the 1960s. The Greater Cambridge Partnership's (GCP) vision is to now:

"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'"³

3.2 Greater Cambridge City Deal

The Greater Cambridge City Deal (City Deal) was signed between government and the Greater Cambridge Partnership (GCP) in 2014. The City Deal is overseen by the GCP, which is the local delivery body set up to oversee the delivery of the City Deal and to promote local economic growth and development. The GCP aims to enable a new wave of innovation-led growth in the Greater Cambridge area by investing in infrastructure, housing and skills thereby addressing housing shortages and transport congestion network capacity problems that will facilitate its continued growth and a continuation of the "Cambridge Phenomenon".

The City Deal funding arrangements are as follows. Firstly, an initial £100 million will be 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 tranches of £200 million; the first investment will be available from April 2020, while the second will be from April 2025.

When government funding is combined with the additional commitment of £500m from local partners such as developer contributions, a potential investment of £1 billion in local infrastructure is achievable⁴.

³ Greater Cambridge Partnership Website, <https://www.gretercambridge.org.uk/>

⁴ Local Plan Examination Cambridge City & South Cambridgeshire, CCC 5102 / SCDC 20801.

This investment fund offers funding towards proposed infrastructure in the region 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**
- **Transport infrastructure improvements** to support this housing and employment growth while retaining the high quality of life in the region.

In order to achieve these outcomes, the GCP Assurance Framework sets out four strategic objectives that all schemes being promoted by the Greater Cambridge authorities 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.
- **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.

3.3 Strategic Economic Case

The section evaluates how proposals for a new Park & Rail transport hub along the Royston to Cambridge corridor would support continued growth in and around Cambridge (further detail can be found in Appendix B). This includes consideration of how the proposed scheme aligns to the city's ambitious growth proposals and spatial development strategy that are encapsulated in the GCP's City Deal and Local Plans.

Greater Cambridge has a thriving economy and is a key driver of the Cambridgeshire and Peterborough Combined Authority (CPCA) economy, representing⁵:

- 34% of the total population;
- 41% of total employees, and;
- 42% of all GVA.

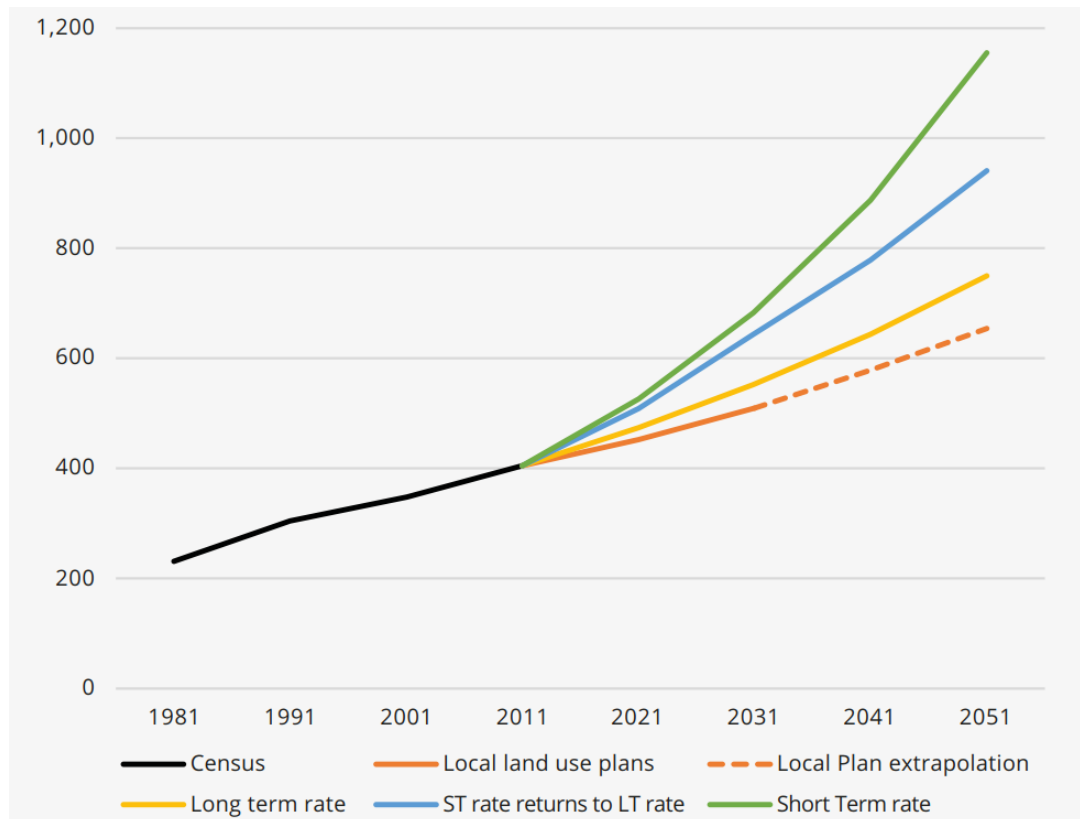
Greater Cambridge is one of the most successful and fastest growing economies in the UK driven by the thriving high-tech and biotech industry and given recent economic performance there is no sign of the demand to locate and invest in Cambridge weakening.

The city holds significant potential to grow further, but future growth will rely on investment in transport and infrastructure to provide sustainable links between housing and jobs.

The Local Plans for Cambridge and South Cambridgeshire set out the growth targets incorporated in the City Deal for an additional 33,500 homes and 44,100 jobs between 2011-2031. A report by the Cambridgeshire and Peterborough Independent Economic Review (CPIER) has argued growth rates are likely to be much greater than those set out in the Local Plans, particularly if 2010-2015 growth trends continue.

⁵ Figures calculated from Population Estimates, Business Register and Employment Survey (BRES), Regional Accounts, Workforce Jobs and Annual Population Survey (APS), all ONS.

Chart 1: Employment projections for Cambridgeshire and Peterborough – 000's of people



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

The Local Plans, which set out the development strategy for Cambridge and South Cambridgeshire, show that rapid growth is planned for Cambridge's Southern Fringe, including the Biomedical Campus, significantly increasing the area's employment opportunities. The number of people working at the Biomedical Campus is expected to increase by more than 50% by 2031.

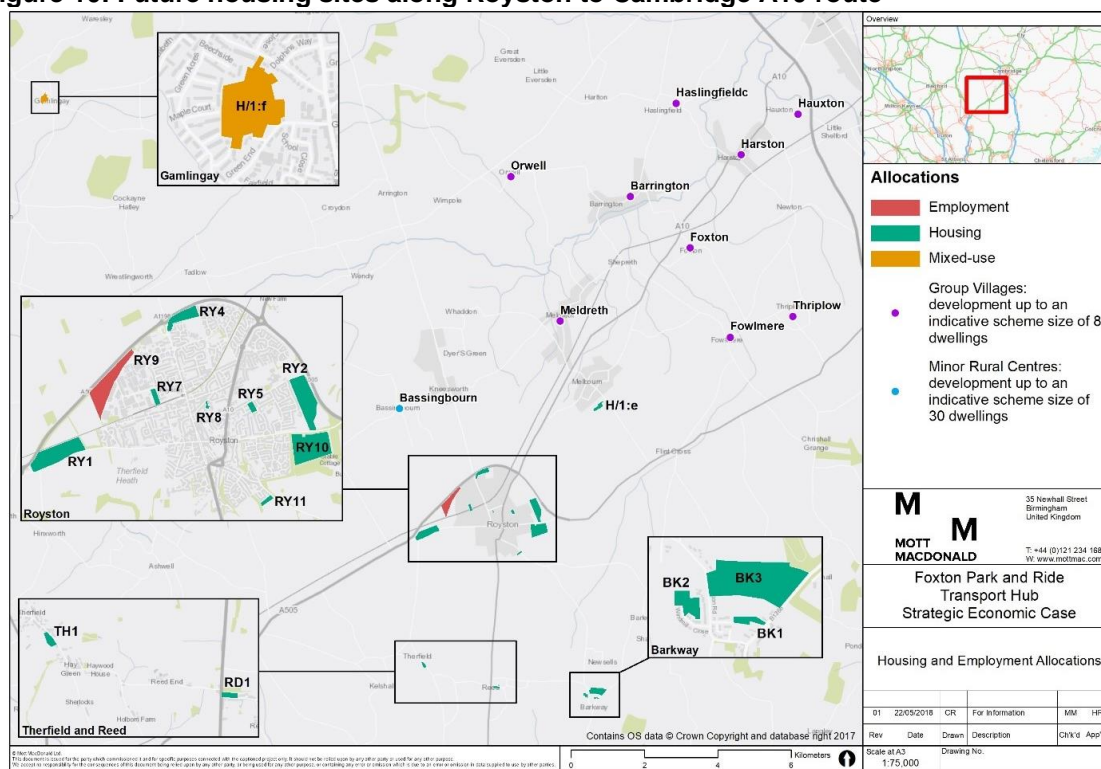
Cambridge is, however, already facing negative impacts of its success, with house prices increasing faster than wages, thereby pushing more people out of the city towards surrounding towns and villages. The ambitious economic growth proposals are also adding extra pressures to the already constrained transport infrastructure, which suffers regular peak time congestion on key corridors and commuter routes into and out of the city.

Investment in infrastructure and the provision of additional and affordable housing will play an important role in supporting Cambridge's anticipated growth and ensuring that the spatial development strategy can succeed, thereby enabling the continued growth of fringe sites such as the Biomedical Campus.

Any proposals for a new Park & Ride scheme along the Cambridge to Royston route, following the A10 and Cambridge rail line from North Hertfordshire, has the potential, in combination with the proposed Cambridge South station, to serve the new developments on Cambridge's Southern Fringe and Biomedical Campus by boosting the Park & Ride provision to access Cambridge south and the city centre by rail, as well as Cambridge's northern fringe area via Cambridge North station, thereby supporting employment growth at key Greater Cambridge locations.

Future growth along Royston to Cambridge A10 focuses on Royston (over 1,000 new homes) and Bassingbourn (65 new homes) which could add to the significant existing travel demand on this corridor (see Figure 10).⁶

Figure 10: Future housing sites along Royston to Cambridge A10 route



Source: Mott MacDonald

Investments in transport infrastructure are critical to ensure high congestion levels are addressed in Cambridge and will potentially play an important part in facilitating economic growth. The provision of a Park & Rail transport hub in this corridor could contribute by intercepting vehicular traffic on the A10 and through improving station accessibility and rail connectivity between towns and villages to the southwest of the city with jobs in the city centre, Cambridge Science Park (via Cambridge North Station) and Southern Fringe developments.

A scheme that promotes interchange between car and public transport, improving connectivity to employment sites and increasing overall capacity on the transport network, should clearly complement other infrastructure investments proposed for the South of the city, including the Foxton Level Crossing Bypass, new Cambridge South Station, Junction 11 M11 Park & Ride site and the A1307 Cambridge South East Transport Study.

3.4 Strategy and Policy Review

This section provides a review of relevant national, regional, and local policy to provide the policy backdrop against which any investment in transport infrastructure in Cambridge City and South Cambridgeshire needs to align. This includes the emerging policy from the recently established Cambridgeshire and Peterborough Combined Authority (CPCA).

⁶ The land use review focused on the three districts areas that the A10 corridor intercepts; namely, North Hertfordshire, South Cambridgeshire and Cambridge City.

3.4.1 National Policy and Strategy

The following section provides a review of relevant national policy. The key points identified in the policy and strategy documents are set out in Table 4 below.

Table 4: Alignment with national policy and strategy

Policy / Strategy	
Road Investment Strategy 2015-2020 ⁷	
Description	<ul style="list-style-type: none"> The first Road Investment Strategy (RIS1) was published by Highways England (HE) in 2014 and covers the long-term programme for investment by HE on the Strategic Road Network (SRN) between 2015-2020.
Relevance to the corridor	<ul style="list-style-type: none"> RIS1 includes investment improvements to the Oxford to Cambridge corridor, including the Oxford to Cambridge Expressway. RIS1 also identifies the need for technology upgrades between M11 Junctions 8 to 14. Here, the addition of several elements of the Smart Motorway package on the M11 between Stansted Airport and the Giron interchange is proposed to help deal with existing congestion. Although the A10 is not a Trunk Road it intersects with M11 at J11 and so there are important wider linkages.
Wider points of relevance	<ul style="list-style-type: none"> Addressing transport demand at an earlier point along the A10 corridor could improve the flow at M11 J11.
Transport Investment Strategy ⁸	
Description	<ul style="list-style-type: none"> In July 2017, the DfT published its Transport Investment Strategy (TIS). The TIS sets out the Government's objectives and priorities for investment in transport, this includes propositions to guide future decision-making and guidance for those seeking investment
Relevance to the corridor	<ul style="list-style-type: none"> There are four TIS objectives that align with key issues in the study area: <ol style="list-style-type: none"> 1. Create a transport network that works for users, wherever they live; 2. Improve productivity and rebalance growth across the UK; 3. Enhance our global competitiveness by making Britain a more attractive place to invest, and; 4. Support the creation of new housing.
Wider points of relevance	<ul style="list-style-type: none"> Investment in this corridor should align with TIS objectives.
Cambridge-Milton Keynes-Oxford Arc ⁹	
Description	<ul style="list-style-type: none"> The Cambridge – Milton Keynes – Oxford corridor is a conceptual arc of agricultural and urban land that runs between Oxford and Cambridge via Milton Keynes, touching the northern rim of the London commuter belt. The Cambridge-Milton Keynes-Oxford arc is considered a national priority due to its geographical scope, which encompasses world leading research, innovation and technology centres. The areas within the arc are competing with locations across the globe, therefore attracting talent and bringing investment into the UK.
Relevance to the corridor	<ul style="list-style-type: none"> The National Infrastructure Commission (NIC) identified the opening of a new rail station in South Cambridge by 2022 as a key measure to maximise the potential of Cambridge – Milton Keynes – Oxford corridor and address the shortages in homes and adequate labour supply. Proposals for East-West Rail in the Arc could also impact this corridor by (depending on alignment) increasing rail services along parts of the Cambridge Line.
Wider points of relevance	<ul style="list-style-type: none"> Exploiting the opportunities offered by rail connections into Cambridge South, and wider linkages via the proposed East-West Rail, could potentially help meet future transport demand associated with job growth and addressing capacity issues and congestion along the A10 and other corridors.
National Planning Policy Framework (NPPF) ¹⁰ - 2012	
Description	<ul style="list-style-type: none"> The revised NPPF presumes in favour of sustainable development, which is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (NPPF 2012:2). Paragraph 9 specifically highlights how pursuing sustainable development should focus on fostering improvements to the built, natural and historic environment, and people's quality of life.

⁷ Department for Transport and Highways Agency - Road Investment Strategy 2015-2020 (2015)

⁸ Department for Transport – Transport Investment Strategy (2017)

⁹ National Infrastructure Commission – Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc (2017)

¹⁰ Communities and Local Government - National Planning Policy Framework (2012)

Policy / Strategy

Relevance to the corridor	<ul style="list-style-type: none"> The NPPF states that developments set to generate a significant amount of movement (those occurring within the Southern Fringe might be an example) should be in areas that reduce the need to travel and are easily accessible via sustainable modes of transport.
Wider points of relevance	<ul style="list-style-type: none"> The NPPF states that “Encouragement should be given to solutions that support reductions in greenhouse gas emissions and reduce congestion” (NPPF: Paragraph 32). One of the 12 core planning principles states that patterns of growth should be managed to make the full use out of public transport and significant development should be located in areas that are or can be made sustainable.
Revised National Planning Policy Framework (NPPF)¹¹ - 2018	
Description	<ul style="list-style-type: none"> The revised National Planning Policy Framework (NPPF) was published in July 2018. The revised NPPF incorporates policy proposals previously consulted on in the Housing White Paper and the Planning for the right homes in the right places consultation.
Relevance to the corridor	<ul style="list-style-type: none"> Paragraph 103 of the NPPF states that significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. A Park & Rail or Park & Ride site along the A10 corridor would make sustainable modes of travel more attractive to those wishing to access the Cambridge Southern Fringe area from the south west of Cambridge
Wider points of relevance	<ul style="list-style-type: none"> Paragraph 32 in the previous NPPF has been replaced by paragraphs 108-110 placing more emphasis on highway safety impacts on the road network, in addition to capacity and congestion. The highest priority remains with sustainable modes, firstly pedestrians and cyclists, followed by public transport. However, there is still no clarity on what is considered to be severe. Paragraph 34 is also replaced by paragraph 104 that states “significant development should be focused on locations which are or can be made sustainable through limiting the need to travel and offering a genuine choice of transport modes”.

3.4.2 Local Policy and Strategy

The following section provides a review of relevant local policy. The key points identified in the policy and strategy documents are set out in Table 5 below.

Table 5: Alignment with local policy and strategy

Policy / Strategy

Greater Cambridge Partnership – City Deal (2014)¹²	
Description	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 straight forward, 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 accommodate growth in this area and ensure economic growth is delivered to its full potential.
Wider points of relevance	<ul style="list-style-type: none"> Intercepting, or replacing, car trips before they enter the City can support these aspirations Park & Ride is one potential intervention that can help with this.
Cambridgeshire Long Term Transport Strategy (2015)¹³	
Description	<ul style="list-style-type: none"> There are 8 key objectives of this strategy which include supporting sustainable growth and economic prosperity, improving accessibility to employment and services and minimise 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.

¹¹ Communities and Local Government - National Planning Policy Framework (2012)

¹² Greater Cambridge Partnership - Greater Cambridge City Deal (2014)

¹³ Cambridge County Council – Long Term Transport Strategy (2015)

Policy / Strategy

Relevance to the corridor	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> The strategy looks to provide or enhance integrated high quality public transport services on the main corridors into Cambridge, and states that Park & Ride services will continue to be an important travel option for people in rural areas in particular. The strategy states the aim of encouraging a modal shift onto public transport at an earlier stage in journeys, by intercepting car traffic at rural travel hubs or Park & Ride sites.
Cambridgeshire Local Transport Plan 3 (2015)¹⁴	
Description	<ul style="list-style-type: none"> The third Local Transport Plan (LTP3) addresses Cambridgeshire County Council's (CCC) 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	<ul style="list-style-type: none"> The LTP3 refers to the A10 Foxton level crossing closure scheme. This 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	<ul style="list-style-type: none"> Any transport interventions in the A10 corridor will need to be compliant with policy set out in the LTP. However, the Combined Authority has a duty to prepare a revised LTP and has set a target completion date of Spring 2019. This will provide the revised local transport planning policy backdrop for schemes promoted for the A10 corridor.
Transport Strategy for Cambridge and South Cambridgeshire (2014)¹⁵	
Description	<ul style="list-style-type: none"> 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. Many of the measures 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	<ul style="list-style-type: none"> The A10 is identified within the TSCSC as one of the main corridors in need of improvement. The TSCSC plans for vehicular trips to be intercepted further along the A10 through the provision of a new Park & 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 the city centre to use rural hubs or Park & Ride hubs, to allow for the strategic and local road network to be accessible and operate efficiently and reliably. The document specifically outlines the need for "New, replacement or improved Park & Ride capacity and facilities at or near to the existing ring of five sites serving the city will be delivered" (Pg. 19). <ul style="list-style-type: none"> Park & Rail 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". <ul style="list-style-type: none"> 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 HQPT services more easily.

¹⁴ Cambridge County Council – The Local Transport Plan 3 (2015)

¹⁵ Cambridge County Council – Cambridge City and South Cambridgeshire Transport Strategy (2014)

Policy / Strategy

Wider points of relevance	<ul style="list-style-type: none"> The TSCSC contains 21 policies, many of which point towards Park & Ride solutions such as: <ul style="list-style-type: none"> 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 & Ride sites will be introduced, and existing 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 & Ride will reduce carbon emissions per person, helping reduce the transport related carbon emissions and achieve targets. The relevance of these policies will need to be monitored and reviewed as the replacement CA-led LTP is developed and published in Spring 2019.
Greater Cambridge Greater Peterborough Strategic Economic Plan (2015)¹⁶	
Description	<ul style="list-style-type: none"> The key goal of the Greater Cambridge Greater Peterborough Strategic Economic Plan (SEP), prepared by the Local Enterprise Partnership (LEP) is to develop their internationally competitive, nationally significant economy bringing together the diverse strengths of the area to ensure economic growth that benefits the whole area.
Relevance to the corridor	<ul style="list-style-type: none"> The A10 is identified as a key strategic route to move goods and people within and through the area.
Wider points of relevance	<ul style="list-style-type: none"> The SEP states that high-quality Park & Ride services must be provided in order to encourage people to use it.
Cambridge Local Plan (2018)¹⁷	
Description	<ul style="list-style-type: none"> The Cambridge City Local Plan was adopted in 2018. The plan 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	<ul style="list-style-type: none"> The Local Plan highlights the Southern Fringe as an area of major change and states that proposals in this area should create distinctive gateways to the City when approached by road and rail. The corridor leads towards the Southern Fringe and therefore provides a key route into this area of development. Policy 80 sets out the Plan's ambition to prioritise access by sustainable modes of travel. Policy 80 sets out 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 surrounding area". A Park & Rail transport hub in this corridor could intercept Cambridge-bound traffic on the A10 and should potentially 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 proposed transport interchange site is likely to alleviate congestion on the A10 and on Cambridge's highway network by reducing the 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 CNFE and Cambridge Biomedical Campus; thus, supporting the growth directive of the local plan.
Wider points of relevance	<ul style="list-style-type: none"> The Local Plan includes the provision for extension of Park & Ride services to Addenbrooke's Hospital and other 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, improving accessibility to jobs and services through the sustainable transport network. However, there is no mention of a further Park & Ride site in the wider A10 southern corridor.

¹⁶ Greater Cambridge Greater Peterborough Enterprise Partnership – Strategic Economic Plan (2014)

¹⁷ Cambridge City Council – Cambridge Local Plan 2014: Proposed Submission, July 2013

Policy / Strategy

South Cambridgeshire Local Plan (2018) ¹⁸	
Description	<ul style="list-style-type: none"> The 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	<ul style="list-style-type: none"> The Local Plan defines Foxton as a 'Group Village' and therefore only some of the basic day-to-day requirements of residents can be met without the need to travel outside the village therefore sustainable transport links are key to connecting residents with employment and services. Acknowledgment that high levels of congestion exist on radial routes into Cambridge at peak times.
Wider points of relevance	<ul style="list-style-type: none"> At the time of writing the Plan has been recently adopted.

3.4.3 Emerging Policy

3.4.3.1 Combined Authority

The Cambridgeshire and Peterborough Combined Authority (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 across Cambridgeshire and Peterborough and is led by an elected Mayor. As part of the devolution deal, the Mayor and CPCA were given power over certain transport functions. These include:

- Duty to produce a Local Transport Plan;
- 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;
- Role of Travel Concession Authority;
- Financial powers to enable the funding of community transport, and;
- Powers to support bus services.

3.4.3.2 Mayoral Interim Transport Strategy Statement

A key component of the CPCA and Mayor's transport powers is to produce a Local Transport Plan (LTP). An interim LTP was approved by the Combined Authority Board in June 2017. This was followed up by a Mayoral Interim Transport Strategy Statement (MITSS) from the Mayor in May 2018. This 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.
- Environmental responsiveness by encouraging active and sustainable travel choices.

¹⁸ South Cambridgeshire District Council – South Cambridgeshire Local Plan 2018

The key primary goals and targets relevant to investment in this 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.
- **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*”.

Following the publication of the MITSS, the CPCA and the Mayor 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 it. The GCP is now working to the CPCA agreed transport plan and is pursuing schemes that can demonstrably provide building blocks towards the Mayor’s future vision.

In terms of Park & Ride, the MITSS proposed that the Park & 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. This aspiration 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”*.

3.4.3.3 This scheme and the MITTS

This scheme as a Park & Rail transport hub proposal is considered to be aligned with the primary goals set out in the MITTS and is adaptable to the proposition of a CAM Metro network.

Firstly, although the scheme initially aims to intercept private car trips, the potential site options sit outside of the M11, approximately 8 miles to the south west of central Cambridge. Therefore, the scheme has the potential to intercept longer distance northbound journeys on the A10 at an earlier point during the morning peak, benefiting A10 northbound congestion and encouraging the use of public transport.

This scheme is also based around the potential use of the existing rail network i.e. Park & Rail, and therefore has the potential to integrate into existing rail services with spare capacity as well as future rail schemes such as Cambridge South station.

The study area to the south west of Cambridge along the A10 also serves the more sparsely populated west of South Cambridgeshire. Here, there is a relative paucity of travel links to the west of the A10 corridor. Hence, those inhabiting the villages to the west of the M11 are more reliant on the private car for commuting and would particularly benefit from the provision of a Park & Rail transport hub in order to access high quality rail services.

At present it is not clear whether the aspiration of the CPCA to make Park & Ride elements of GCP projects temporary applies to rail-based parking schemes. However, if stations along the

A10 between Royston and Cambridge are to be included in the CPCA's network of demand responsive transport infrastructure, elements of any new Park & Rail transport hub may have to be designed and constructed as temporary features.

The construction of all or part of the site with temporary materials could allow parking spaces to be progressively removed as alternate travel solutions are delivered for different types of customer groups. Regardless of the sites connection to the demand responsive transportation system, the GCP are likely to put in place measures that support greater use of cycle and footpaths to access any interchange. In the long term, this approach will support the CPCA vision of moving away from a reliance on private cars for short distance and commuter journeys.

4 Local Context

This chapter sets out the local context for the development of a new Park & Ride site along the A10 to the south west of Cambridge and sets out a brief description of the corridor and parallel schemes in development.

4.1 A10 Corridor

The focus of this study centres on the Cambridge Line railway line and the A10, which routes southwest between Cambridge and Royston.

The A10 study corridor forms part of the A10 route from King's Lynn to London, via Downham Market, Ely, Cambridge and Royston. The A10 forms part of the Primary Route Network and is therefore an important strategic highway link. Within the study area the A10 is a single carriageway route characterised by priority junctions and a level crossing, with 30 – 60 mph speed limits along its length.

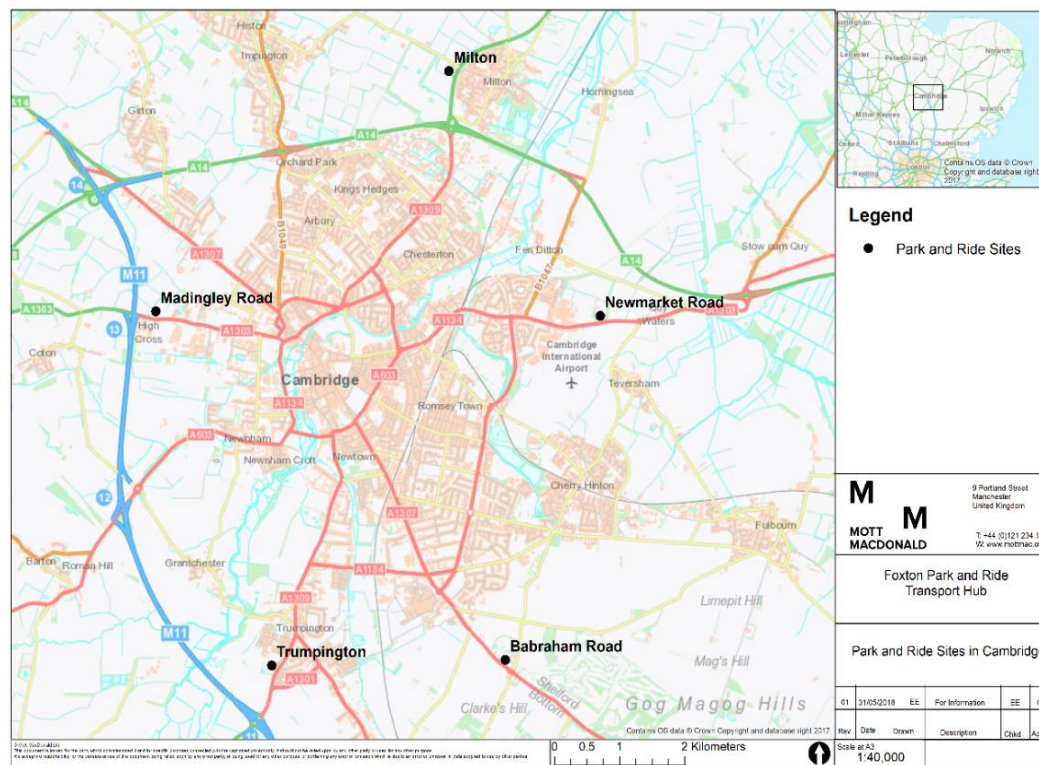
The Cambridge Line runs from Cambridge junction on the East Coast Main Line to Shepreth Branch Junction on the West Anglia Main Line. Services on the Cambridge Line are run by Govia Thameslink Railway as part of their Great Northern Route. A mix of Express, Fast and Stopping services are provided on the line as well as services via the Hertford loop to Moorgate which start and terminate from Letchworth Garden City.

4.2 Cambridge Park & Ride

Park & Ride is a form of integrated transport that allows private transport users to park their vehicles at a car park and travel into a city centre using a public transport mode or cycle. Park & Ride services have the potential to reduce congestion within city centres and along city centre approach roads, increase public transport usage and reduce the environmental externalities that accompany increasing levels of traffic.

There are currently five bus-based Park & Ride sites in Cambridge, which are mapped in Figure 11. All Park & Rides are served by regular bus services towards Cambridge City Centre. A summary of each site is shown in Table 6.

Figure 11: Cambridge Park & Ride Sites



Source: Mott MacDonald

Table 6: Cambridge Park & Ride parking and service details

Park & Ride Site	Car spaces	Bicycle spaces	Service times	Service frequency
Babraham Road	1,458	250	Mon-Sat, 07:06 – 20:20 Sun, 09:00 – 18:15	Mon-Sat, 10 mins Sun, 15 mins
Madingley Road	930	40	Mon-Sat, 07:00-20:18 Sun, 09:00 – 18:00	Mon-Sat, 10 mins Sun, 15 mins
Milton	792	50	Mon-Sat, 06:21 – 20:01 Sun, 09:00 – 17:45	Mon-Sat, 10 mins Sun, 15 mins
Newmarket Road	873	60	Mon-Sat, 07:00 – 20:05 Sun, 08:53 – 18:08	Mon-Sat, 10 mins Sun, 15 mins
Trumpington	1,340	250	Mon-Fri, 07:00-20:10 Sat, 08:00-20:10 Sun, 09:00-17:45	Mon-Fri, 10 mins Sat, 10 mins Sun, 15 mins

Source: Mott MacDonald - Cambridge Access Study (2015)

4.3 Trumpington Park & Ride

Trumpington Park & Ride is an established and well used Park & Ride site, which is located in close proximity to the Cambridge Southern Fringe. Its strategic location means it is well placed to intercept vehicular trips that travel on Hauxton Road, coming from the South and South West of Cambridge. The site currently consists of **1,340 car spaces**, and **250 spaces for bicycles**.

The Park & Ride site is accessible by sustainable modes with direct walk, cycle and bus connections to key employment destinations at Cambridge Biomedical Campus, Cambridge Rail Station and Cambridge city centre. All are committed to or are planned to experience future growth, resulting in additional trips on the strategic network including the Hauxton Road corridor.

4.4 M11 Junction 11 Park & Ride

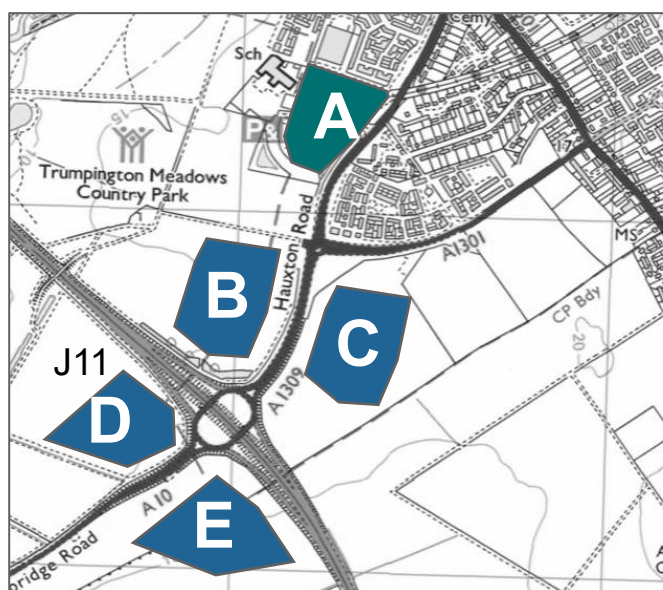
The proposed Park & Ride scheme at the M11 Junction 11 (J11) forms part of the GCP's West of Cambridge package that aims to provide improved Park & Ride, cycling and pedestrian facilities from the west of the city.

M11 J11 forms part of a wider programme of Park & Ride (bus and rail) scheme development in Cambridgeshire. The scheme will help ensure transport network capacity constraints, high congestion levels and poor reliability issues are addressed to unlock the city's growth potential.

M11 J11 is located in close proximity to Cambridge's Southern Fringe. The Southern Fringe is undergoing substantial employment development, primarily driven by Cambridge Biomedical Campus, which is expected to employ 30,000 people by 2030. Therefore, further transport measures will need to be introduced to address the forecast transport demand associated with this growth.

To address the future demand for Park & Ride spaces to the south west of Cambridge, a proposal for a new Park & Ride site of at least 1,000 spaces located at the M11 Junction 11 is being promoted. Current options for Junction 11, as presented in the scheme's SOBC, are illustrated in Figure 12¹⁹.

Figure 12: Proposed Park & Ride locations for M11 Junction 11



Source: M11 Junction 11 Park & Ride SOBC – September 2018

4.5 Foxton Level Crossing Closure

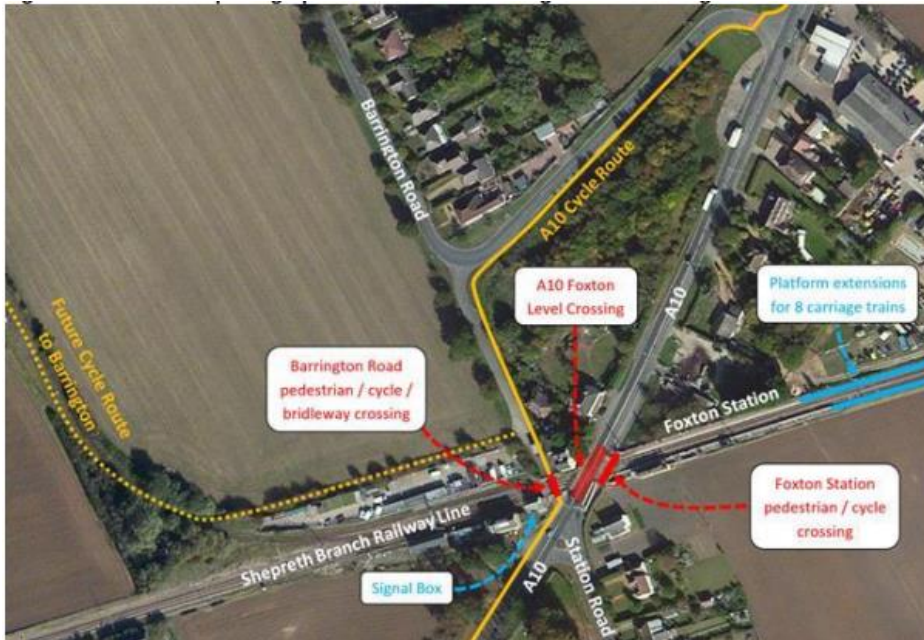
As part of the national programme to close level crossings Network Rail have committed to a risk reduction programme. The objective of the programme is to close and upgrade crossings across the network, which will improve safety for everyone and reduce the risk that level crossings present to the national rail network. Network Rail has identified the level crossing on the A10 at Foxton as a suitable site for evaluation.

The GCP's A10 Foxton level crossing bypass scheme involves provision of infrastructure to enable the closure of the level crossing on the A10 to the immediate south of Foxton Station. At the intersection of the A10 and Cambridge to Royston railway line, there are currently three at-

¹⁹ Mott MacDonald - M11 Junction 11 Park & Ride Strategic Outline Business Case (Draft) – April 2018

grade crossings of the track provided. Figure 13 shows that one crossing is for the road and two are pedestrian / cycle / bridleway crossings.

Figure 13: Location of A10 Crossing Point in Foxton



Source: Greater Cambridge Partnership

4.6 Rural Travel Hubs Feasibility Study Report

In November 2017, the Rural Travel Hubs Feasibility Study Report was published on behalf of Cambridgeshire County Council. The report develops the concept of the Rural Travel Hub and sets out the feasibility of creating Rural Travel Hubs within South Cambridgeshire.

The Rural Travel Hubs Feasibility Study Report identified Rural Travel Hubs as bespoke rural transport interchanges, which aim to connect residents in South Cambridgeshire with high quality public transport (HQPT) and cycling/walking routes to Cambridge²⁰. The full definition is provided below:

'a transport facility that serves as an interchange, close to existing transport corridors (that are served by a reliable and relatively frequent public transport service), where residents in rural areas can walk, cycle or drive to and continue their onward journey using a sustainable mode of travel'.

The aim of Rural Travel Hubs is to reduce the levels of private car journeys into Cambridge from the surrounding villages by providing sustainable transport options and also provide connections between neighbouring villages and towns.

As a part of the Rural Travel Hubs Feasibility Study, ninety-six Parish Councils in South Cambridgeshire were contacted to contribute toward the development of the Rural Travel Hub concept. Following the consultation exercise, six locations were identified as potentially feasible and requiring further investigation; the selected sites included Shepreth, Meldreth, Whittlesford, Oakington, Swavesey and Foxton.

²⁰ Cambridge County Council. (2017), Rural Travel Hubs Feasibility Study Report.

4.7 Summary

The A10 and Cambridge Rail Line serve a key corridor linking residential areas in South Cambridgeshire, and beyond, with Cambridge. Due to their proximity and travel links to Royston and London, the corridor is also viewed as an attractive residential area for commuters.

The relative paucity of travel links to the west of the corridor means that the attractiveness of a potential Park & Rail transport hub is likely to be particularly high for those inhabiting the villages to the west of the M11.

In addition to providing connections to existing key employment sites within Central Cambridge and the Northern Fringe, the proposed Park & Rail transport hub has the potential to compliment the M11 J11 Park & Ride and Trumpington Park & Ride proposals, as well as the proposed Cambridge South station. Hence, the proposals present an opportunity for the existing rail network to be used to greater effect, as well as connecting the residents of South Cambridgeshire to destinations such as the Cambridge Biomedical Campus.

5 Current and Future Issues and Opportunities

This section highlights the key findings from the transport evidence review focussing on issues and opportunities that have been identified within the study area.

5.1 Introduction

This section provides a summary of the current issues and opportunities pertinent to the A10 corridor between Royston and Cambridge; along with the strategic and local context set out in Sections 3 and 4, these have guided the development of the scheme objectives outlined in Section 6. The current and future issues which are reported in this OAR under the following topic themes:

- Strategic socio-economic overview
- Economy and business
- Park & Ride
- Highway network, traffic and safety
- Wider transport network provision
- How people travel
- Environmental issues

A full analysis and detailed background of this review can be found in the following technical notes presented as appendices to this OAR:

- **Appendix A:** Transport Evidence Review
- **Appendix B:** Strategic Economic Case
- **Appendix C:** Park & Ride Demand Forecasting

5.2 Strategic socio-economic overview

This section summarises the socio-economic trends in Cambridge as identified in Appendix B: - Strategic Economic Case and highlights the issues and opportunities in relation to the population, employment, unemployment, education and health factors in Table 7. It includes sources from the Office of National statistics census 2011, NOMIS, OS mapping and the English Indices of Deprivation.

Table 7: Summary of socio-economic issues and opportunities

Strategic socio-economic	Issues	Opportunities
Population	<ul style="list-style-type: none"> • The total combined population of Cambridge and South Cambridgeshire is approximately 275,000.²¹ • The population projected to increase by a further 70,000 by 2031. • Forecast population growth will create a greater demand to travel in and around Cambridge which could exacerbate existing congestion issues, including on routes such as the A10 between Royston and Cambridge. 	<ul style="list-style-type: none"> • Improve transport infrastructure to influence and encourage future residents to use alternatives to car journeys to work. • Support the introduction of sustainable transport modes linking to new housing and employment developments. to capture new trips resulting from the growth in population. • A greater number of people living and working within Greater Cambridge can increase the workforce supply to take up

²¹ ONS 2011

	<ul style="list-style-type: none"> The corridor has a relatively low population density, interspersed between towns and villages. This makes connecting the population to High Quality Public Transport (HQPT) challenging. 	new jobs and improve prosperity for residents.
Employment	<ul style="list-style-type: none"> 44,000 new jobs are forecasted in Greater Cambridge between 2011-2031.²² To accommodate the growth in forecasted jobs, significant areas of land will need to be developed for employment use. New employment sites will create greater commuter flows within Greater Cambridge, including along the A10. This will require the necessary transport infrastructure to support development, including increasing network capacity. 	<ul style="list-style-type: none"> The corridor has the potential to facilitate enhanced employment growth in the knowledge intensive sectors that are growing rapidly in Cambridge. A greater spread of commutable employment will facilitate the economic viability of new routes. These could link up communities where routes previously weren't feasible. New employment sites including the Bio-medical campus can provide a range of highly skilled jobs for Greater Cambridge residents providing they are accessible.
Unemployment / deprivation	<ul style="list-style-type: none"> Cambridge has a relatively low unemployment figure of 2.4%, that compares favourably against the national average of 4.9%²³. The Cambridge employment mix has a focus on highly skilled occupations. Maintaining highly skilled labour is essential to Cambridge's continued growth. 	<ul style="list-style-type: none"> Achieving the economic growth forecasted in Greater Cambridge could achieve further reductions in unemployment. Greater Cambridge has potential to target employment growth in its specialist sectors, such as hi-tech and bio-tech industries. An increase in jobs and highly skilled jobs in particular can benefit residents in the most deprived areas providing the surrounding transport network is supportive of growth.
Education	<ul style="list-style-type: none"> 5% of the working population have no qualifications.²⁴ 	<ul style="list-style-type: none"> 66% of the population of Greater Cambridge area hold NVQ4 and above qualifications, this is higher than the East of England average (34.9%) and national average (37.7%).²⁵ Cambridge is globally renowned for its university and provides some of the best schools in the East of England.

Source: Mott MacDonald

5.2.1 Strategic Socio-Economic Review Conclusions

The Greater Cambridge area is expected to experience significant continued growth in both population and levels of employment. Whilst this growth is supportive of the UK's continued prosperity and in enabling Greater Cambridge to compete on a global stage, such growth will place additional pressures on existing transport infrastructure.

Greater Cambridge also outperforms many other areas of the country in terms of its low levels of unemployment and percentage of the population holding higher qualifications.

Whilst Greater Cambridge's level of unemployment, education and economic growth is a positive position, future investment in public transport enhancements are essential to providing the required level of additional capacity to keep people connected to sites of employment and education.

Transport improvements along the A10 corridor will thus help to address these socio-economic issues by increasing the capacity of the network and improving access to opportunities in order to support the growing population and facilitate economic growth and job creation.

²² East of England Forecasting Model (EEFM)

²³ ONS 2016

²⁴ NOMIS 2018

²⁵ ONS 2011

What does this mean for the project?

- Cambridge's population is set to continue growing. The highway network will have to cope with a greater demand to travel in and out of Cambridge, presenting a risk that the highways network will become overloaded and congested on routes to the city centre.
- This scheme presents an opportunity to support Cambridge's growing population and workforce to the south west of the city, whilst managing the growing travel demand.
- A Park & Rail travel hub scheme to the west of the M11 would help to connect people to the increasing number of jobs and opportunities in the city and on its periphery. As such, the scheme should support Cambridge's key employment industries such as technology and innovation.

5.3 Economy and Business

This section summarises the performance of businesses and the economy of Cambridgeshire and covers key economic growth indicators, issues and opportunities in Table 8. Data in this subsection is primarily sourced from the Local Plan and ONS data.

Table 8: Economy and business issues and opportunities

Issues	Opportunities
<ul style="list-style-type: none"> • The annual workplace wages in South Cambridgeshire is £41,119 and £39,947 in Cambridge. This is higher than the East of England figure (£23,970) and national figure as a whole (£35,808).²⁶ • GVA per head in Cambridge is £45,200 and £28,111 in South Cambridgeshire, significantly ahead of the national average of £25,722.²⁷ • The above statistics could potentially be improved if the region continues to attract highly-skilled workers through good access to employment and homes. 	<ul style="list-style-type: none"> • Digital and life science businesses make Cambridge a major centre for employment in the technology sector across the UK and Europe - high value business is key to achieving higher average pay and attracting highly skilled workers to Cambridgeshire. • Beyond science and technology, Cambridge has a strong business and management sector which has grown up around the universities and the cluster businesses.

Source: Mott MacDonald

5.3.1 Economic and Business Review Conclusions

The Cambridgeshire area is outperforming the UK and East of England average in terms of GVA but regional disparities exist between South Cambridgeshire and the City. Transport investment can help to distribute economic growth more evenly across the region to reach the greatest number of people.

What does this mean for the project?

- The scheme presents the opportunity to support Cambridge's diverse and successful business base, by providing more efficient access from residential areas to employment zones which are currently developing rapidly in technology and life-science industries.
- A Park & Rail site to the west of the M11 could provide journey time savings for Cambridge's residents and workers, helping to raise the overall productivity and increase the success of the business and enterprise in Cambridge.
- The scheme provides an opportunity to increase capacity on the transport network whilst providing greater East West connectivity.

²⁶ NOMIS 2018

²⁷ NOMIS 2018

5.4 Park & Ride

The following section summarises the issues and opportunities relating to the existing and proposed network of Park & Ride sites in Cambridge.

The issues highlighted in this section can be viewed in further detail in Appendix A: Transport Evidence Review. The data summarised below takes its sources from the Office of National Statistics Census 2011, NOMIS, the Cambridgeshire and Peterborough Combined Authority and Cambridgeshire County Council.

Table 9: Park & Ride issues and opportunities

Issues	Opportunities
<ul style="list-style-type: none"> The existing Trumpington Park & Ride site is running at 80-85% capacity. CCC's optimal maximum occupancy for a car park is set at 85%. 600-700 additional spaces will be required at Trumpington by 2031 to accommodate future demand. Planning constraints means this is not achievable on-site; therefore, additional Park & Ride provision is required elsewhere. Proposals have been put forward for the M11 J11 Park & Ride site and the expansion of the existing Trumpington Park & Ride. These sites aim to intercept trips routing north-south along the M11, and west along the A10. The Mayoral Interim Transport Strategy Statement (MITSS) proposed that GCP Park & Ride schemes 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". The MITSS states that Park & Ride sites should be designed and constructed as temporary features, which will be progressively removed as alternate travel solutions are delivered for different types of customer groups. 	<ul style="list-style-type: none"> There is an opportunity to provide Park & Ride facilities further out from Cambridge that complement Trumpington and M11 Junction 11. The M11 J11 Park & Ride SOBC Addendum concluded that a Park & Ride located along the A10 corridor would complement the M11 J11 scheme by reducing overall demand for Park & Ride facilities, and the land take required at Junction 11. At present it is unclear whether the CA's aspiration to make Park & Ride elements of GCP projects temporary applies to rail-based schemes. However, as a transport interchange to the west of South Cambridgeshire, a Park & Rail transport hub to the west of the M11 has the potential to be adaptable to the proposition of a CAM Metro network. The suite of GCP Park & Ride schemes is expected to be a net economic benefit for road users, as mode shift decisions will reduce traffic flows and delay in an area where significant congestion is experienced. A potential reduction in the volume of traffic entering Cambridge will have a positive impact in terms of air pollution and reducing carbon emissions in the city.

Source: Mott MacDonald

5.4.1 Park & Ride Review Conclusions

Within the A10 study corridor, public transport currently offers little to no competitive advantage over private cars. Consequently, car use is the corridor's dominant transport mode despite the high congestion levels and poor reliability issues that restrict Cambridge's growth potential.

Park & Ride schemes have, however, achieved considerable success in Cambridge with both sites to the south and west of Cambridge (Maddingley and Trumpington) showing consistent growth in patronage. Notably, Trumpington Park & Ride is running at 80-85% capacity which is around the level that Cambridge County Council (CCC) have advised is approaching practical capacity (85%).

Accordingly, demand modelling using the Cambridgeshire Sub-Regional Model (CSRM) has shown that based on future growth forecasts there could be a need for an additional 600-700 spaces by 2031 (high growth scenario) to accommodate average daily demand.²⁸

To accommodate forecast growth, options for expansion have been investigated centred on ground level expansion, temporary single-story decking and underground parking at the

²⁸ Mott MacDonald - Trumpington Park & Ride Assessment Report (2017)

Trumpington site. Due to land availability and planning constraints the existing site can only cater for an additional 274 spaces, which only accommodates demand up to 2022.

The TSCSC acknowledges that in the more sparsely populated or remote areas of South Cambridgeshire the car will be the mode of choice for all or part of many trips. Hence, the provision of new and upgraded transport interchanges such as Park & Rail have the potential to encourage more car trips to transfer to the passenger transport network at an earlier stage in the journey; thus, alleviating pressure on the existing and proposed Park & Ride sites on the fringes of Cambridge.

The CA's vision for Park & Ride, set out in the MITSS, suggests that future GCP Park & Ride schemes be "implemented as temporary solutions". As a result, future Park & Ride schemes may need to be designed and constructed as temporary features; this will allow for their removal as alternate travel solutions are delivered for different types of customer groups.

What does this mean for the project?

- At present there are few attractive alternatives to travel by car from areas to the west of M11 Junction 11. Therefore, a Park & Rail transport hub scheme to the west of the M11 could provide a key node for rural communities to access an existing high quality public transport network. This, in turn, will support the economic growth of Cambridge and South Cambridgeshire.
- The scheme presents an opportunity to ease congestion on the corridor. The scheme could contribute to the relieving the pressure on current pinch points along the corridor.
- In light of the MITSS, this transport interchange scheme should be adaptable to the CA's ambition to implement Park & Ride schemes as temporary pieces of infrastructure. Furthermore, the site would need to be amenable to sustainable travel solutions for

5.5 Highway & Traffic

This section summarises issues and opportunities associated with the current highway network and traffic conditions along the A10 corridor. Issues and opportunities have been reviewed from a variety of sources such as local traffic data, congestion data and the Office of National Statistics (ONS).

Table 10: Highways network and traffic issues and opportunities

Highways Network and Traffic	Issues	Opportunities
Congestion	<ul style="list-style-type: none"> • High levels of congestion occur during peak periods, particularly towards Cambridge City Centre along A1309 Hauxton Road and M11 J11 where the motorway joins with the A10. • Congestion also occurs on the A10 on the approaches to the villages of Hauxton and Harston and in particular at the level crossing at Foxton station. • Traffic count data shows that the amount of vehicle traffic on A10 increased by 6% between 2012 and 2015. 	<ul style="list-style-type: none"> • Opportunity to reduce congestion through modal shift. • Reduction in congestion will improve efficiency and reliability of journey time. • The A10 Foxton level crossing bypass scheme involves the closure of the Foxton level crossing on the A10 and the provision of a bridge for the A10 on a bypass alignment to the north west of the existing road.

Highways Network and Traffic	Issues	Opportunities
Pinch Points	<ul style="list-style-type: none"> One of the main highway pinch point on the corridor is through Foxton on the A10. The Foxton level crossing causes significant delays to car-based commuters on the A10 in peak periods. 	<ul style="list-style-type: none"> The closure of the Foxton level crossing is expected to ease congestion making it easier for people to travel by rail, cycle or on foot to improve average journey times. Congestion can be reduced through modal shift away from private car use in favour of public transport and more sustainable options. This will decrease the impacts of pinch points on the local road network.
Road Safety	<ul style="list-style-type: none"> There was a total of 62 collisions, of which 48 were slight, 12 serious and 2 fatal, between Royston and M11 J11 between 2011 and 2015.²⁹ Many of these collisions occur near junctions and creating new junctions into the transport interchange site has potential to affect road safety. There was a high number of pedal cyclist collisions (13) on A1309 Hauxton Road between 2011 and 2015.³⁰ 	<ul style="list-style-type: none"> A Park & Rail transport hub will provide alternatives to the private car for the full length of some journeys, this could help reduce further growth in car use, therefore helping to reduce the number of road traffic collisions. Reducing the number of private cars on the A10 (through modal shift), will potentially improve road safety. The level crossing closure scheme could remove the conflict between trains and vehicular traffic, cyclists and pedestrians' as long as a suitable alternative crossing is provided.

Source: Mott MacDonald

5.5.1 Highways Network and Traffic Review Conclusions

The A10 corridor provides an important highway corridor for those wishing to access Cambridge from the south-west of the city. The corridor currently experiences high volumes of traffic during peak hours, with a pinch-point at Foxton level crossing, caused by between 6 and 9 barrier downtimes per hour, causing significant delays northbound in the AM peak, and southbound during the inter-peak and evening peak periods.

The opportunity to capture private car trips at an earlier point on the A10, and for those people to transfer onto sustainable modes of travel for the rest of their journey, will mitigate the impact of predicted future growth in car traffic. In addition, the proposed Foxton level crossing closure scheme has the potential to significantly reduce delays at this pinch point.

Lower private car numbers combined with the provision of high quality segregated cycle routes on the A10 between Royston and Cambridge and the proposed Melbourn Greenway, could also potentially contribute to reducing the number of collisions on the corridor.

²⁹ Crash Map - www.crashmap.co.uk

³⁰ Crash Map - www.crashmap.co.uk

What does this mean for the project?

- This scheme has the potential to enhance access to existing high-quality rail services for rural residents of South Cambridgeshire. The scheme could provide an attractive alternative to the congested A10 corridor, whilst improving the efficiency and reliability of journey times on the A10 itself.
- The A10 Foxton level crossing bypass project has the potential to significantly reduce delays at a key pinch point on the corridor and remove the conflict between trains and vehicular traffic.
- Combined with the anticipated modal shift associated with the transport interchange site, both schemes have the potential to reduce the number of traffic collisions along the corridor.

5.6 Wider Transport Network Provision

This section summarises the wider transport network provision in the study area, looking at accessibility on a mode by mode basis in the table below. The majority of data has been sourced from the Office of National Statistics, the Department of Transport, the Office of Road and Rail, Stagecoach, Network Rail, GCP and CCC.

Table 11: Wider transport network provision issues and opportunities

Wider Transport Network Provision	Issues	Opportunities
Rail	<ul style="list-style-type: none"> • At present Foxton, Meldreth and Shepreth are served by 2 trains per hour in the direction of Cambridge station and 2 trains per hour in the direction of London Kings Cross. • Station passenger entries and exits in the corridor have grown above the national average. • Future capacity on the east coast mainline has been estimated and shows that by 2043, AM peak hour capacity is likely to be over 100% between London Kings Cross and Hitchin³¹. 	<ul style="list-style-type: none"> • The provision of rail services is good throughout the study area with the Great Northern Line, the West Anglia Main Line, Thameslink, the Breckland Line, the Hitchin to Cambridge Line and the Ely to Ipswich Line providing regular services to a variety of destinations. • The recently opened Cambridge North station will provide access to future employment and mixed land use developments at the proposed Cambridge Northern Fringe Development. • The proposed Cambridge South station could afford rail access from stations between Royston and Cambridge to key employment area in the south of the city including CBC. • Stations in the corridor currently provide direct access to Cambridge via the Great Northern Route (London Kings Cross to Kings Lynn). • Cambridge is on the London to King's Lynn railway line, with London accessible within 45 minutes. Direct services are also available to London. • The majority of peak stopping services experience no issues with over capacity. Foxton for example has average load factors for on peak departures of 37% and arrivals 35%.³² • Recent increase in rail capacity along has provided 1,100 spaces per train (trains now formed of 8 carriages rather than 4).

³¹ Network Rail - East Coast Main Line Route Study: Technical Appendix (2018)

³² Govia Thameslink passenger counts Autumn 2017 (Sep – Dec 2017). Note that since this period the capacity of trains serving this line have been significantly increased.

Wider Transport Network Provision	Issues	Opportunities
Bus	<ul style="list-style-type: none"> There is a very limited bus service along the corridor and no bus priority is provided. The Busway A Route is the only available service running at least one bus per hour between Royston and Trumpington Park & Ride site, which costs £7.00 for a day return. Passengers must change at Trumpington Park & Ride to reach Cambridge City Centre. In the absence of substantial bus priority along the route, the congestion and delays experienced by existing bus services mean that buses offer minimal competitive advantage over private cars in terms of journey times and reliability. 	<ul style="list-style-type: none"> The absence of frequent services or bus priority along the study corridor, coupled with long journey times and high travel costs, means there is an opportunity to provide an attractive and viable HQPT alternative.
Cycling	<ul style="list-style-type: none"> On the approach to the M11, no cycle lanes are provided on the main carriageway, although shared pedestrian and cycle paths are provided by the side of the road. Although the A10 itself can be intimidating for cyclists, completion of GCP's proposed A10 Royston to Cambridge foot and cycleway will improve conditions for pedestrians and cyclists 	<ul style="list-style-type: none"> The A10 Royston to Cambridge Foot and Cycleway currently under construction will provide a high quality, consistent and segregated foot and cycle link from Cambridge to Royston, aligning with the A10 route. A car-free route across the M11 is provided via the Trumpington-Hauxton Cycle Link and a bridleway connecting Barton and Grantchester. From here cyclists can access wider cycle routes from Hauxton Road, such as the Cambridge Guided Busway cycle track, which connects to Cambridge Biomedical Campus and Cambridge Station. The Greater Cambridge Greenway Plan highlights the Melbourn Greenway which is within the study area. Greenways are expected to be attractive linear corridors away from traffic and suitable for cycling, walking and horse-riding.³³ Melbourn Greenway includes part of the A10 therefore if these plans are implemented, cycling provision will be improved along the corridor as part of the project. More people in Cambridge cycle than anywhere else in the UK and are also more likely to use sustainable modes of transport to travel to work.

Source: Mott MacDonald

5.6.1 Wider Transport Network Provision Review Conclusions

Within the study corridor public transport offers limited competitive advantage over private cars, primarily due to barriers to accessing the Cambridge Rail Line, poor bus provision, and the destinations directly served. Consequently, car use has become the dominant transport mode and as a result has caused congestion on the wider transport network.

The proposed scheme could provide enhanced access to existing rail services, which offer an attractive public transport alternative for trips into Cambridge. In addition, recent and future improvements in frequency and capacity on the rail network provide an opportunity for the residents of South Cambridgeshire to further utilise existing services to travel sustainably.

³³ Cambridge Area Greenways Review (2016)

Recent and planned improvements to cycling provision along the corridor also enhances the opportunity to increase the level of cycle usage further out from Cambridge by tying the cycle network into a transport interchange site.

What does this mean for the project?

- The frequency and reliability of road-based public transport is poor along the A10 corridor. This scheme could present an opportunity to increase access to an existing high quality public transport route.
- Stations between Royston and Cambridge provide direct services to Cambridge and Cambridge North stations and may form a potential link to the proposed Cambridge South station. These links could provide access to future employment and mixed land use developments in the Cambridge Northern Fringe and Cambridge Biomedical Campus.
- Better connections could also support other growth and development along the corridor since good transport links are key when developing new housing or employment sites.

5.7 How People Travel

This section summarises the key issues relative to how people travel within the corridor. The travel behaviour of both those living and/or working within Cambridgeshire has been explored and the key findings that shaped the objectives setting and subsequent options development in this OAR are noted below in Table 12. Data was sourced mainly from the Office of National Statistics and Census 2011 such as journey to work trip origins and destinations.

Table 12: How people travel issues and opportunities

How people Travel	Issues	Opportunities
Travel To Work Patterns	<ul style="list-style-type: none"> • 50% of South Cambridgeshire residents travel by car to work, only 3% take the train.³⁴ • Private car trips make up 83% of mode share for trips coming from the south and south-west via the A10.³⁵ • Forecast of 22,100 new jobs in Cambridge by 2031. The challenge is that many of these jobs will be created on a range of sites outside of the traditional City Centre area of Cambridge. This means that catering for travel demand from radial corridors into Cambridge City Centre becomes more of a challenge. 	<ul style="list-style-type: none"> • To introduce sustainable transport solutions serving new housing and employment sites. • To support the take up of alternative modes for travelling to work as Greater Cambridge grows and alleviate congestion accordingly. • At present the use of sustainable modes on the A10 corridor is low.
Car and Public Transport Accessibility	<ul style="list-style-type: none"> • At present Royston is the only station that has some provision for Park & Rail on the corridor. Therefore, opportunities to interchange from private cars to rail are limited. • Bus services on the A10 corridor do not provide an attractive alternative to car travel. 	<ul style="list-style-type: none"> • To deliver enhanced transport accessibility through the introduction of a new transport interchange.

³⁴ Census 2011

³⁵ Census 2011

How people Travel	Issues	Opportunities
Car Ownership	<ul style="list-style-type: none"> Car ownership levels are very high in the corridor. Less than 15% of households within the study area have no car. Car ownership is significantly higher than the national average, where 26% of households have no car.³⁶ 	<ul style="list-style-type: none"> Improving access to the rail network and introducing new interchange facilities could increase the opportunity for bus/rail interchange (should suitable services be provided) for those who do not have access to a car.

Source: Mott MacDonald

5.7.1 How People Travel Review Conclusions

Car ownership is high along the corridor and the private car is the dominant mode of transport for commuters. The reliance on the private car reflects the rural characteristics of the corridor, including its low-density population and limited opportunities to access of HQPT.

Despite the provision of existing rail services there is a relatively low take-up of rail travel amongst commuters. The low rail mode share potentially indicates that access, due to a lack of interchange opportunities, is a key issue in the corridor. As a result, there is the opportunity to provide these rural residents with greater access to alternative sustainable modes via the established rail network.

Walking and cycling is however, becoming an increasingly popular travel method in South Cambridgeshire, but is still low when compared to private car use. The growing numbers of people engaging in active travel is an indicator of the potential opportunities of shifting people from cars to other modes.

In light of the above, improving access to an existing HQPT route will help public transport to become a more attractive option and support the viability of future expansion of alternative modes to the car.

What does this mean for the project?

- This scheme could provide an opportunity to increase the percentage of people who regularly use public transport for commuting or leisure trips, by providing improved access to an existing rail network.
- The popularity of walking and cycling in South Cambridgeshire and the ongoing improvements to walking and cycling infrastructure along the A10 corridor, means this scheme has the potential to support end to end sustainable travel trips. Thereby, assisting in removing single occupancy vehicles off the roads and improve overall access via sustainable modes into Cambridge and surrounding areas.

³⁶ Census 2011

5.8 Environmental Issues

This section seeks to address some of the specific environmental issues and opportunities effecting the study area.

Table 13: Environmental issues and opportunities

Environment	Issues	Opportunities
Air Quality	<ul style="list-style-type: none"> For vehicle movements the most significant impacts relate to air quality from fossil-fuel powered units. Overall air pollution along the A10 corridor is currently considered to be low (Index 2),³⁷ however increasing levels of traffic may contribute to the deterioration of this figure although progressive improvements in vehicle technology may provide mitigation. There are air quality issues within Cambridge City Centre as evident by the presence of an AQMA. 	<ul style="list-style-type: none"> Public Transport schemes are considered to have lower environmental impacts because they are able to move a greater number of people per unit of pollutant emitted. There is an opportunity to either reduce further growth in car trips or reduce the existing number of car trips to help maintain or reduce air quality issues within Cambridge city centre by encouraging the use of sustainable modes along the radial corridors such as between Royston and Cambridge along the A10.

Source: Mott MacDonald

5.8.1 Environmental Review Conclusions

The most significant environmental issue along the A10 corridor is the degradation of air quality by fossil fuel powered vehicles; the issue is most pronounced within Cambridge city centre, where an AQMA is established. In addition to this, other context specific examples can stem from infrastructure developments which harm biodiversity and water quality. The easiest fix for these issues is encouraging mode shift to public transport. Relative to the private car, trains emit less pollution as well as potentially freeing up highway capacity. Hence, a modal shift toward rail as part of a multi-modal trip could potentially reduce the need for new highway infrastructure.

What does this mean for the project?

- The scheme presents an opportunity to continue to maintain the low levels of pollution currently present along the corridor and reducing the air quality degradation within the Cambridge City AQMA, thus improving the quality of life experienced in the area.

³⁷ Air Quality England 2018

5.9 Underlying Drivers - The Need for Intervention

Based on the review of evidence and in line with existing strategies as summarised in Section 4 of this report, the key underlying drivers for the need for investment in transport interchange along the A10 between Royston to Cambridge are:

- **Lack of Park & Ride capacity:**
 - The success of the Park & Ride at Trumpington demonstrates that there is a demand for Park & Ride along the Royston to Cambridge route. However, Trumpington is now reaching 80-85% capacity, and would potentially require 600-700 additional spaces by 2031 to accommodate future demand. This may not be achievable and additional Park & Ride provision is required.
 - There is an opportunity to provide transport interchange facilities further out from Cambridge that complement existing and proposed provision at M11 Junction 11.
 - Demand modelling indicates that there is the potential demand for up to 715 car parking spaces at a Park & Ride site in this corridor by 2031.
- **High levels of congestion:**
 - High levels of delay at key points along the Royston to Cambridge route indicate that future growth in trips cannot be accommodated without having a further detrimental impact on congestion.
 - In particular, to reduce the impact of further traffic delay along the A10 to the west of the M11, along the A1309 Hauxton Road to the east of the M11 and along the A1134, there is therefore a need to remove vehicle trips from the road.
- **High levels of car mode share and ownership:**
 - Currently, private car trips make up 83% of mode share for trips coming from the south and south-west via the A10. This is forecasted to significantly increase as result of further growth.
 - Car ownership levels are also very high with less than 15% of study area households not owning a car which is significantly lower than the national average of 26%.
- **Lack of alternative sustainable modes:**
 - Current transport network leaves few attractive alternatives to travel by car from areas to the west of the M11 Junction 11.
 - Current stations do not provide adequate Park & Ride facilities, whilst the absence of frequent bus services (1bph) and bus priority along the route, coupled with long journey times and high travel costs, mean travelling by bus is not a viable or attractive option of travel. Bus mode share is just 0.3% based on traffic counts along A10 Melbourn Bypass.
- **High number of road collisions:**
 - Opportunity to have a positive impact on the number of road traffic collisions along the Royston to Cambridge corridor by encouraging a mode shift to public transport for some of the journey, and therefore reducing or maintaining the number of cars using this route.
- **Air quality issues in Cambridge:**
 - Poor air quality in Cambridge city centre due to the high number of vehicles, many of which use the A10 to enter the city centre which is an AQMA. By reducing the number of private vehicles entering the AQMA and encouraging use of public transport, air quality issues can be improved.
- **Growth in rail passengers:**
 - Cambridge has seen above national average growth in rail passengers over the past decade including along the Cambridge line between Royston and Cambridge. With 62% growth at Cambridge station, and 47% at Foxton for example, demand is continuing to grow on the rail network.

- Forecast future growth indicates that by better utilising the rail network, future growth in trips can be accommodated by rail instead of by cars.
- **Opportunity to utilise existing rail network:**
 - The success of Park & Ride, the rail network and the location of the rail stations along the Royston to Cambridge route indicates that there is an opportunity to intercept existing and future car trips before they arrive within Cambridge city centre.
 - Recent and future capacity and frequency improvements also provide opportunity to utilise the existing network.
 - There is an opportunity for the existing rail network to be used to greater effect to connect people to key employment sites within Cambridge, thereby increasing sustainable travel from areas to the south west of Cambridge. In particular to the Northern Fringe areas, the city centre and the Southern Fringe developments that include the Cambridge Biomedical Campus.
 - There is also an opportunity to introduce infrastructure that complements existing and proposed cycling network along the route, to encourage end to end trips to being solely undertaken by sustainable modes.

6 Scheme Objectives

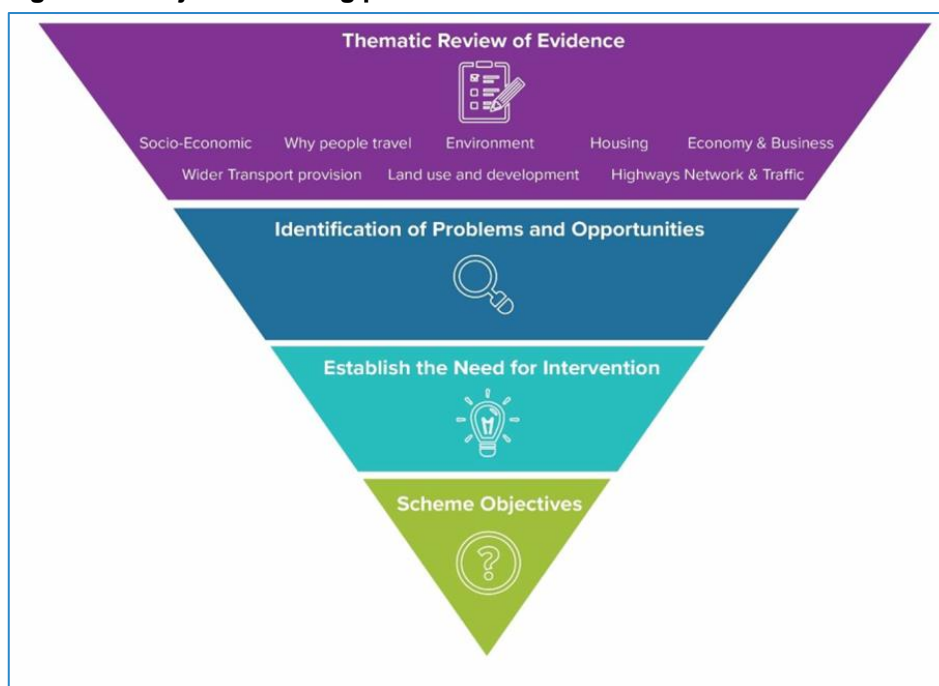
A set of scheme objectives has been established to guide option assessment for investment in Park & Ride along the A10 between Royston and the M11. The objectives take account of the opportunities, aspirations and problems identified that underpin the need for investment, as well as being aligned to existing local policy and strategy and the GCP programme objectives, which are set out in 6.2.1.

6.1 Scheme Objectives

The objectives identified for this scheme have been established to guide the options development and assessment, so that the option short list is targeted towards meeting the needs of Greater Cambridge. The objectives take into account the opportunities, aspirations and problems identified in Section 4 that underpin the need for investment, as well as being aligned to existing policy and strategy.

The objectives generation process is detailed in Figure 14.

Figure 14: Objective setting process



Source: Mott MacDonald

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

Figure 15: 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

For each scheme objective a series of measurable sub-objectives have been identified that inform the assessment criteria used to test the options and identify the best performing solution (set out in Section 7). These sub-objectives are set out below:

Table 14: Scheme Sub-Objectives

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

Source: Mott MacDonald

6.2 Alignment to Policy

6.2.1 City Deal

The scheme objectives for the scheme also reflect the City Deal aims and objectives for Greater Cambridge area.

The main aims of the City Deal include:

1. Accelerating the delivery of 33,500 new homes;
2. Supporting jobs and apprenticeship growths in the region, delivering 44,000 new jobs;
3. Building better greener transport infrastructure that connects people to homes, jobs, study and opportunity;
4. Improving quality of life for existing and new communities, and;
5. Improving air quality by addressing the damaging effects of air pollution.

Table 15: Scheme Objectives Alignment to City Deal Objectives

		City Deal Aims and Objectives				
		1	2	3	4	5
Scheme Objectives	1			✓		
	2	✓	✓			
	3	✓	✓			✓
	4				✓	✓

Source: Mott MacDonald

6.2.2 Transport Strategy for Cambridge and South Cambridgeshire

In addition to the City Deal, the scheme objectives have been aligned to more specific transport policy and strategic objectives from the Transport Strategy for Cambridge and South Cambridgeshire (TSCSC), which forms part of the Third Cambridgeshire Local Transport Plan and supports the sustainable growth aspiration of the Greater Cambridge area and the Cambridge and South Cambridgeshire Local Plan.

The 8 strategic objectives of the TSCSC include:

1. To ensure that the transport network supports the economy and acts as a catalyst for sustainable growth.
2. To enhance accessibility to, from and within Cambridge and South Cambridgeshire (and beyond the strategy area).
3. To ensure good transport links between new and existing communities, and the jobs and services people wish to access.
4. To prioritise sustainable alternatives to the private car in the strategy area, and reduce the impacts of congestion on sustainable modes of transport.
5. To meet air quality objectives and carbon reduction targets, and preserve the natural environment.
6. To ensure that changes to the transport network respect and conserve the distinctive character of the area and people's quality of life.
7. To ensure the strategy encourages healthy and active travel, supporting improved well-being.
8. To manage the transport network effectively and efficiently.

Table 16: Scheme Objectives Alignment to TSCSC Objectives

		TSCSC Aims and Objectives							
		1	2	3	4	5	6	7	8
Scheme Objectives	1	✓			✓				✓
	2	✓	✓	✓					
	3				✓				✓
	4			✓		✓	✓	✓	

Source: Mott MacDonald

6.2.3 CPCA Emerging Mayoral Transport Strategy Statement

Whilst the CA is yet to publish a new full LTP beyond that which combined the extant Peterborough City and Cambridgeshire County Council plans, the Mayoral Interim Transport Strategy Statement includes key primary goals related to the A10 corridor. These include:

- 1. 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.
- 2. 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.
- 3. Effective travel choice** - providing residents and businesses with a public transport system that is the automatic choice for residents and businesses.
- 4. 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.

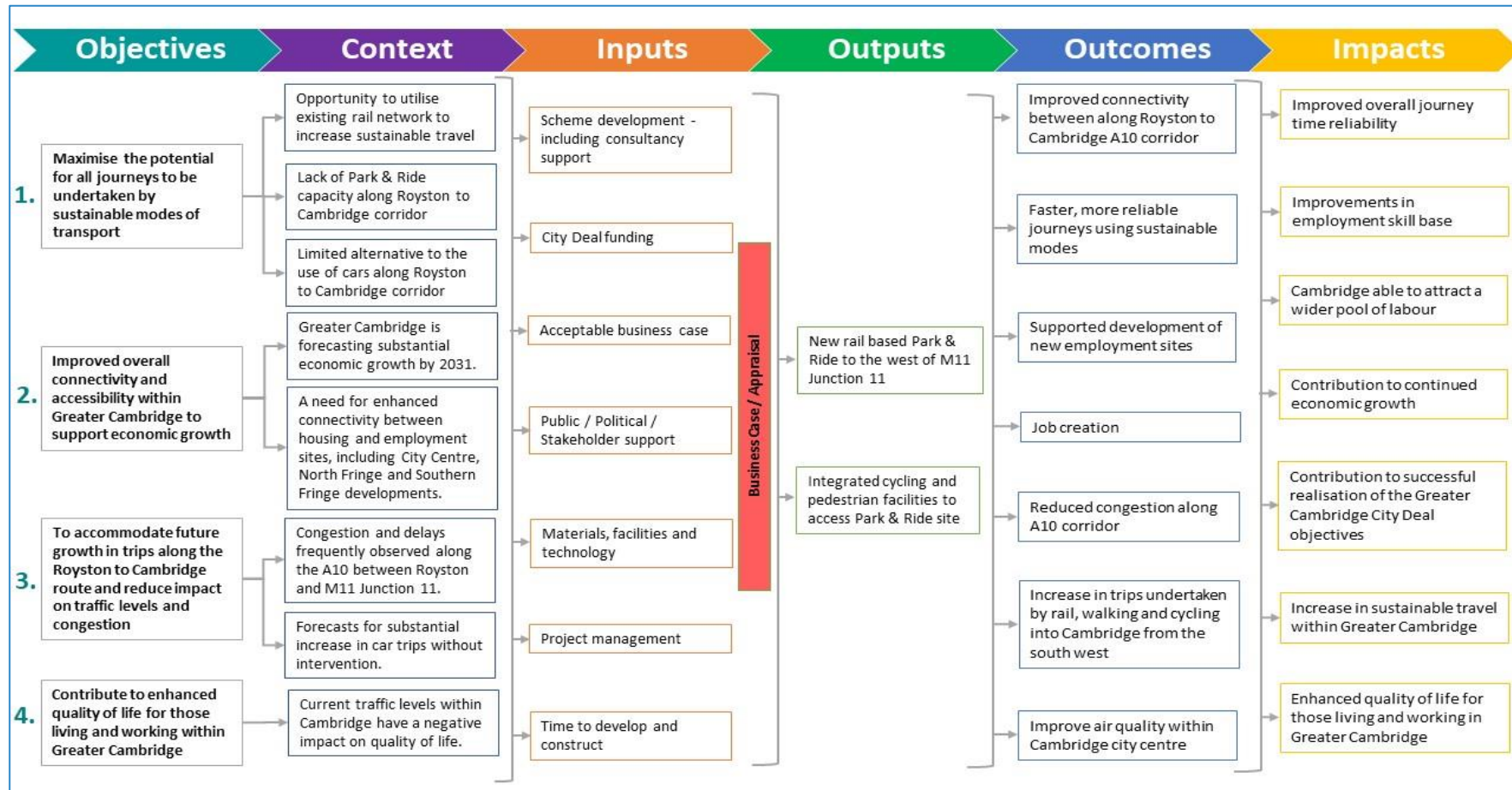
Table 17: Scheme Objectives Alignment to CPCA Mayoral Interim Transport Strategy

		CPCA MITSS Aims and Objectives			
		1	2	3	4
Scheme Objectives	1	✓			
	2		✓	✓	✓
	3			✓	✓
	4	✓	✓		

Source: Mott MacDonald

6.3 Scheme Logic Map

Figure 16: Scheme Logic Map



Source: Mott MacDonald

7 Options Generation and Assessment

The following section outlines the details of the appraisal and sifting processes used during both stages of optioneering.

The first stage of optioneering assessed potential sites along the study corridor. Once the preferred strategic site had been selected, a second location-specific assessment was undertaken. The details of the option generation and assessment process are listed and analysed for both stages.

7.1 Option Development

The development of a long list of options is a crucial step in scheme development to ensure that a wide range of options are considered and assessed. The long list optioneering process thus demonstrates that a robust decision-making process has been carried out in arriving at a long list of appropriate and suitable options

The strategic corridor options assessment is followed by a location specific options assessment, which focuses on sites in and around the preferred strategic location.

The options generation process took place in July 2018 in a workshop attended by CCC officers, Skanska design consultants and Mott MacDonald transport consultants.

7.2 Summary of workshop

The workshop was split into two parts, with the first focusing on the strategic corridor options between Royston and Cambridge along the A10, and the second part focusing on location specific options.

The workshop also included discussions around the option assessment criteria, including how the criteria should be amended to reflect the difference between the strategic options and location specific options.

7.3 Strategic Corridor Options

As mentioned in the Methodology Summary (Section 2.2), it was agreed that an initial phase of optioneering was required to establish whether Foxton was the right location for a Park & Ride site along the A10 study corridor.

As such 8 strategic options were identified along the corridor, including bus based and rail-based Park & Ride locations. The primary factor for identifying each option was if they were located between Royston and the M11 Junction 11. Options for Trumpington Park & Ride expansion and M11 Junction 11 Park & Ride were also discussed, with agreement to include them as options to allow for a comparison within the options assessment.

The list of sites identified included the following:

- 1) Trumpington Expansion
- 2) M11 Junction 11
- 3) Hauxton
- 4) Harston
- 5) Foxton
- 6) Shepreth
- 7) Meldreth
- 8) Royston

7.3.1 Strategic Corridor Site Option Descriptions

The descriptions in Table 18 were used for the strategic corridor options. As the purpose of this stage of assessment is to determine which location is the most suitable for a Park & Ride site, the level of detail for each option does not go beyond a high-level description of a possible location i.e. there are no detailed option drawings.

Table 18: Strategic Corridor Options Descriptions

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

Source: Mott MacDonald

Figure 17: Royston to Cambridge Corridor – Strategic Park & Ride Options



Source: Mott MacDonald

7.4 Step 1: Strategic Corridor Options Assessment

This section sets out the first step of the options assessment process, which focuses on the sites along the corridor. The section describes how the assessment criteria were determined and how the scoring system was used to assess the options. Following this, the outputs from the INSET assessment are set out, and the final overall ranking of the options is provided based on their ability to address the scheme objectives.

The purpose of the strategic corridor options assessment using INSET was to determine the most suitable location for a potential Park & Ride site along the A10 corridor between Royston and Junction 11 of the M11.

The determination process involved applying Mott MacDonald's in-house Investment Sifting and Evaluation Tool (INSET). INSET utilises overarching themes, which are aligned to the scheme objectives, with objective specific assessment criteria. The process is designed to systematically and objectively test and appraise each corridor option.

In order to assess the corridor options, a hierarchy of assessment criteria have been established. These include:

- **Themes:** Themes are aligned to the scheme objectives and represent broad policy or strategy categories that enable the main package or scheme criteria to be classified and weighted differently, depending on priorities.
- **Main Criteria:** Correspond to specific package or scheme objectives, classified into themes.
- **Sub-Criteria:** Comprises measurable metrics that can be used to appraise the degree to which each package or scheme objective/main criterion has been met.

7.4.1 Assessment Themes

For the assessment of the strategic corridor options, five assessment themes were identified. Four of these were aligned to the scheme objectives, with an additional theme based around deliverability (see Table 7).

Table 7: Strategic Corridor Options - Assessment Themes aligned to Scheme Objectives

Objective	Theme
Objective 1: Maximise the potential for all journeys to be undertaken by sustainable modes of transport	Sustainable Travel
Objective 2: Improved overall connectivity and accessibility within Greater Cambridge to support economic growth	Economic Growth
Objective 3: To accommodate future growth in trips along the Royston to Cambridge route and reduce impact on traffic levels and congestion	Congestion Relief
Objective 4: Contribute to enhanced quality of life for those living and working within Greater Cambridge	Quality of Life
N/A	Deliverability

Source: Mott MacDonald

7.4.2 Assessment Criteria

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.

The main assessment criteria and sub-criteria used for assessing the strategic corridor options are set out in Table 20 to 24 below.

Table 20: Sustainable Travel Theme - Assessment Criteria for Strategic Corridor Options

Objective **Maximise the potential for all journeys to be undertaken by sustainable modes of transport**

Theme	A - Sustainable Travel
Assessment Criteria	A-1 To increase sustainable transport mode share for trips into the city centre, the Northern and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.
	Sub-Criteria
	A-1 i What is the potential for Park & Ride site to capture car trips based on location of site along corridor?
	A-1 ii What is the potential for Park & Ride site to capture car trips based on key employment locations within Cambridge being served by current public transport services?
	A-1 iii Does the potential Park & Ride location have good levels of accessibility to the Public Transport network?
	A-1 iv What is the potential for Park & Ride site to link with future transport improvements - including South Cambridge Station/Western Package?
	A-2 To increase Park & Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.
	Sub-Criteria
	A-2 i Does the Park & Ride site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand?
	A-3 To reduce journey times from Park & Ride site to key employment areas to enable public transport journeys to compete more effectively with the private car.
	Sub-Criteria
	A-3 i What are journey times from Park & Ride site to Cambridge City Centre using currently available public transport compared to journey times undertaken by car?
	A-3 ii What are journey times from Park & Ride site to Northern Fringe Area using currently available public transport compared to journey times undertaken by car?
	A-3 iii What are journey times from Park & Ride site to Southern Fringe Area using currently available public transport compared to journey times undertaken by car?
	A-3 iv What is the access time to the Park & Ride site from the A10?

Source: Mott MacDonald

Table 21: Economic Growth Theme - Assessment Criteria for Strategic Corridor Options

Objective **Improved overall connectivity and accessibility within Greater Cambridge to support its economic growth.**

Theme	B - Economic Growth
Assessment Criteria	B-1 To increase connectivity between settlements along the Royston to Cambridge route and the city centre, the Northern and Southern Fringe areas
	Sub-Criteria
	B-1 i How many households West of the M11 are within a 75min end to end journey time of Cambridge City Centre from Park & Ride site?
	B-1 ii How many households West of the M11 are within a 75min end to end journey time of Cambridge North Station from Park & Ride site?
	B-1 iii How many households West of the M11 are within a 75min end to end journey time of proposed location for Cambridge South Station from Park & Ride site?

Source: Mott MacDonald

Table 22: Congestion Theme – Assessment Criteria for Strategic Corridor Options

Objective To accommodate future growth in trips along the Royston to Cambridge route and reduce impact on traffic levels and congestion

Theme	C - Congestion
Assessment Criteria	C-1 No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.
	Sub-Criteria
	C-1 i What level of increase or decrease in traffic flows is there along the A10 between Royston and M11 Junction 11?

Source: Mott MacDonald

Table 23: Quality of Life Theme – Assessment Criteria for Strategic Corridor Options

Objective Contribute to enhanced quality of life for those living and working within Greater Cambridge

Theme	D - Quality of Life
Assessment Criteria	D-1 To improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.
	Sub-Criteria
	D-1 i What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).
	D-1 ii What is the potential visual impact on landscape?
	D-1 iii What is the potential impact on the historic environment?
	D-1 iv What is the potential impact on biodiversity?
	D-1 v What is the potential impact on water environment and flooding?
	D-2 To increase cycling and walking along the Royston to Cambridge A10 corridor.
	Sub-Criteria
	D-2 i Does the location of the Park & Ride site offer the potential to integrate with cycling and walking facilities?

Source: Mott MacDonald

Table 24: Deliverability Theme – Assessment Criteria for Strategic Corridor Options

Objective n/a

Theme	E - Deliverability
Assessment Criteria	E-1 To deliver a technically feasible Park & Ride solution
	Sub-Criteria
	E-1 i What land allocations exist within the area of proposed Park & Ride site?
	E-1 ii Does the Park & Ride location require investment in supporting public transport infrastructure in order to provide adequate connectivity?
	E-1 iii Does the Park & Ride location require investment in supporting public transport services in order to provide adequate connectivity?

Source: Mott MacDonald

7.4.3 Scoring

The sub-criteria form the basis of the scoring for the strategic corridor options, as well as the scoring of the location specific options (set out in Section 9.1).

Each sub-criteria score was standardised to produce a score between 0.00 and 1.00; meaning that:

- Sub-criteria with 6 scoring categories are factored by 0.17
- Sub-criteria with 5 scoring categories are factored by 0.20
- Sub-criteria with 4 scoring categories are factored by 0.25
- Sub-criteria with 3 scoring categories are factored by 0.33
- Sub-criteria with 2 scoring categories are factored by 0.50

INSET also enables individual sub criteria, main criteria and themes to be weighted according to local priorities. This enables the calculation of weighted averages for each main criteria and theme. However, for the strategic corridor options assessment and location specific options assessment, no additional weightings were applied.

Sub-criteria scores were collated for each main criterion and a weighted average was derived to provide a main criterion score between 0.00 and 1.00. The main criteria scores were then collated for each theme and a weighted average was derived to provide a thematic score between 0.00 and 1.00.

The thematic scores are presented in Table 25 on the following page. This includes the methodology applied in assessing each sub-criterion.

Table 25: Foxton Park & Ride Travel Hub Strategic Corridor Options Assessment Criteria

Theme	Main Criteria	Sub Criteria	Methodology	Scoring				
				0	1	2	3	4
A. Sustainable Travel	A1. To increase sustainable transport mode share for trips into the city centre, the Northern Fringe East and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.	A1i. What is the potential for P&R site to capture car trips based on location of site along corridor?	Spatial Analysis: - Sites situated on the A10 have a greater potential to intercept car trips than those set away from the A10. - Sites closer to the M11 Junction 11 have the potential to intercept a greater number of car trips originating from settlements between Royston and the M11, as well as beyond Royston.	Site not close to J11 (beyond 1 mile) and set back from A10	Site close to J11 (within 1 miles) but set back from A10	Site on the A10 but not close to J11 (beyond 1 miles)	Site on the A10 and close to J11 (within 1 miles)	
		A1ii. What is the potential for P&R site to capture car trips based on key employment locations within Cambridge being served by current public transport services?	Spatial Analysis: - Examines whether the city centre (Market Street), North East Fringe area (Napp Pharmaceutical) and Southern Fringe area (CBC) be accessed	No direct access to any employment area	Direct access to one of the three named employment areas	Direct access to two of the three named employment areas	Direct access to City Centre, North East Fringe Area and Southern Fringe Area	
		A1iii. Does the potential P&R location have good levels of accessibility to the Public Transport network?	Spatial analysis: - Examines current level of public transport service in close proximity to P&R location, including whether there are rail or/and bus connections, the level of service frequency and the level of priority	Site not within 400m of bus route or 800m of train station	Site within 400m of bus route served by low bus frequency (2ph) AND/OR 800m of rail station serviced by low frequency (1ph).	Site within 400m of bus route served by high bus frequency (5ph) OR 800m of rail station serviced by high frequency (4ph).	Site within 400m of bus route served by high bus frequency (5ph) AND 800m of rail station serviced by high frequency (4ph).	
		A1iv. What is the potential for P&R site to link with future transport improvements - including South Cambridge Station/Western Package?	Spatial analysis: - Examines whether or not the option links to future transport improvements	Site doesn't link to any future transport improvements	Site links to other transport improvements	Site links to Western Package OR Cambridge South	Site links to Western Package AND Cambridge South	
	A2. To increase Park & Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.	A2i. Does the P&R site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand?	Spatial Analysis: - Examines if there is an obvious place for a site that can offer the required land for a 715 car park	No obvious location	Yes			

Theme	Main Criteria	Sub Criteria	Methodology	Scoring				
				0	1	2	3	4
			<ul style="list-style-type: none"> - Does not take into account land allocations or ownership, picked up by assessment criteria E1i. - Does not consider the possibility of using platforms where there is a land constraint. 					
	A3. To reduce journey times from Park & Ride site to key employment areas to enable public transport journeys to compete more effectively with the private car.	A3i. What are journey times from P&R site to Cambridge City Centre using currently available public transport compared to journey times undertaken by car?	Spatial analysis: <ul style="list-style-type: none"> - Compares car journey times against public transport journey times - take the median time for car trips in AM Peak (8am) and compared against timetabled public transport times, including walking access times and interchange times. 	Journey times are significantly slower - 41mins+	Journey times are 11-40mins slower	Journey times are no different +/- 10mins	Journey times are 11-40mins faster	Journey times are significantly faster - 41mins+
		A3ii. What are journey times from P&R site to North East Fringe Area using currently available public transport compared to journey times undertaken by car?						
		A3iii. What are journey times from P&R site to Southern Fringe Area using currently available public transport compared to journey times undertaken by car?						
		A3iv. What is the access time to the P&R site from the A10?	Spatial analysis: <ul style="list-style-type: none"> - Examines access time from A10 to each P&R location using a car - Journey time taken from closest point from A10 to P&R site. 	4+mins	3-4mins	2-3mins	0-1min	
B. Economic Growth	B1. Increased connectivity between settlements along the Royston to Cambridge route and the city centre, the	B1i. How many households West of the M11 are within a 75min end to end journey time of Cambridge City Centre from P&R site?	TRACC analysis ³⁸ . <ul style="list-style-type: none"> - For each option a public transport journey time is calculated - An interchange time at the P&R (10mins) and walk time to 	Low number of houses would be within 75mins using P&R (Less than 20,000)	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)		

³⁸ TRACC is a multi-modal transport travel time tool that is used to evaluate journey times from a set of origin points to a single, or series of destination points.

Theme	Main Criteria	Sub Criteria	Methodology	Scoring				
				0	1	2	3	4
	Northern Fringe East and Southern Fringe areas	<p>B1ii. How many households West of the M11 are within a 75min end to end journey time of Cambridge North Station from P&R site?</p> <p>B1iii. How many households West of the M11 are within a 75min end to end journey time of proposed location for Cambridge South Station from P&R site?</p>	<p>employment location (25mins) is then added on.</p> <p>- A TRACC run for each option with a car catchment area equal to 75mins minus the public transport journey time + interchange time + walk time then carried out</p> <p>- Outputs used to calculate how many households fall with resulting isochrones.</p>					
C. Congestion	C1. No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.	C1i. What level of increase or decrease in traffic flows is there along the A10 between Royston and M11 Junction 11?	<p>Traffic Modelling:</p> <p>- Examines the changes traffic in flows along A10 between Royston and M11 Junction 11 for each option.</p>	Increase in traffic flows	No change in traffic flows	Decrease in traffic flows		
D. Quality of Life	D1. Improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.	D1i. What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).	<p>Considers change in traffic relative to normal traffic levels within 1km of the location under consideration</p> <p>- Is there a likely increase or decrease in traffic in the local area.</p> <p>- Considers the relative traffic normally in the area and what the potential future traffic will be.</p> <p>- More than doubling or halving of traffic seen as major change, 50% change is moderate, 25% or less seen as not substantive.</p>	Major / Adverse	Moderate / Adverse	Neutral / Minor	Moderate / Positive	Major / Positive
		D1ii. What is the potential visual impact on landscape?	<p>Use of MAGIC³⁹ to identify AONB⁴⁰ and Green Belt, and Local Plan for sensitive landscape areas.</p>	Major / Adverse	Moderate / Adverse	Neutral / Minor	Moderate / Positive	Major / Positive

³⁹ MAGIC is an accessible online mapping tool that provides base information on environmental constraints

⁴⁰ Area Of Natural Beauty.

Theme	Main Criteria	Sub Criteria	Methodology	Scoring				
				0	1	2	3	4
		D1iii. What is the potential impact on the historic environment?	Use of MAGIC to determine presence of SAMs and Listed buildings within 250m of centre of village or station (depending on whether P&R is bus only, or train)	Major / Adverse	Moderate / Adverse	Neutral / Minor	Moderate / Positive	Major / Positive
		Div. What is the potential impact on biodiversity?	Use of MAGIC to identify SSSI ⁴¹ or international sites and locally important sites within specific distance from centre of village / or station ((depending on whether P&R is bus only, or train)	Major / Adverse	Moderate / Adverse	Neutral / Minor	Moderate / Positive	Major / Positive
		Dv. What is the potential impact on water environment and flooding?	Use MAGIC to identify flood zones and SPZ ⁴² and vulnerability (off BGS if not on Magic) and presence of SPZs within distance of centre of village or station (depending on whether P&R is bus only, or train)	Major / Adverse	Moderate / Adverse	Neutral / Minor	Moderate / Positive	Major / Positive
	D2. An increase in cycling and walking along the Royston to Cambridge A10 corridor.	D2i. Does the location of the P&R site offer the potential to integrate with cycling and walking facilities?	Spatial Analysis: - Examines what cycling and walking infrastructure intercepts each P&R option.	Site location worsens cycle infrastructure	Site location offers no integration	Site location offers little integration	Site location offers some integration	Site location offers good integration
E. Deliverability	E1. To deliver a technically feasible Park & Ride solution.	E1i. What land allocations exist within the area of proposed P&R site?	Spatial Analysis: - Examination of land use plans around each P&R site to determine if land allocations limit the use of land.	Mainly Green Belt and/or Safeguarded land	Limited land availability	Potential land available	Designated land for P&R	
		E1ii. Does the P&R location require investment in supporting public transport infrastructure in order to provide adequate connectivity?	Spatial Analysis: - Examines whether the P&R site require investment in supporting infrastructure to make site viable as P&R site.	Yes - significant investment in infrastructure required	Yes - some minor investment in infrastructure required	Yes - investment in infrastructure required but already planned/funded as separate scheme.	No - location linked to Cambridge City Centre via rail line and/or bus priority	

⁴¹ Site of Special Scientific Interest

⁴² Source Protection Zone

Theme	Main Criteria	Sub Criteria	Methodology	Scoring				
				0	1	2	3	4
		Eiii. Does the P&R location require investment in supporting public transport services in order to provide adequate connectivity?	Spatial Analysis: - Examines whether the P&R site requires investment in supporting services to make site viable as P&R site.	Yes - significant investment in new PT services required	Yes - some minor investment in PT services	Yes - investment to enhance PT services to provide high frequency and direct services to Cambridge City Centre required but already planned/funded through separate scheme.	No - site location currently well served by frequent public transport services.	

Source: Mott MacDonald

7.4.4 Results

The INSET results of the strategic corridor options assessment are summarised in Table 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 and sub-criteria detailed in Table 20 to 24.

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 26: INSET Results – Strategic Corridor Options Assessment

Rank	Option	Sustainable Travel	Economic Growth	Congestion Theme	Quality of Life	Deliverability	Total Score
1 st	Trumpington Expansion	0.87	0.67	1.00	0.70	1.00	0.85
2 nd	Foxton	0.81	0.50	1.00	0.70	0.89	0.78
3 rd	M11 Junction 11	0.78	0.67	1.00	0.70	0.67	0.76
4 th	Meldreth	0.74	0.50	1.00	0.65	0.89	0.76
5 th	Shepreth	0.68	0.50	1.00	0.50	0.89	0.71
6 th	Royston	0.35	0.83	1.00	0.50	0.78	0.69
7 th	Hauxton	0.65	0.33	0.50	0.68	0.11	0.45
8 th	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 options impact on the A10 Royston to Cambridge corridor. Hence, benefits derived from improvements to the M11 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 next group of potential sites scored 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, 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 likely reliance on the highway network for any proposed public transport services. A combination of poor journey time reliability and accessibility to the existing housing stock also resulted in a poor score on economic growth.

7.4.5 Theme Analysis

7.4.5.1 Sustainable Travel

The sustainable travel theme sought to assess the potential of each site to increase sustainable transport mode share for trips into Cambridge City Centre, and other key employment destinations, from the study corridor.

The differentiating factor for this theme was the level of existing transport infrastructure proximate to the site, and the feasibility of accessing key existing and proposed employment destinations in Cambridge.

The Foxton and Trumpington sites score well on sustainable travel because they are well placed to capture car trips travelling toward Cambridge from the south west. Both sites also provide access to existing HQPT services that link well into employment locations and future transport improvement schemes. These services include Cambridgeshire Guided Busway services at Trumpington, and Great Northern/Thameslink rail services at Foxton.

Despite being positioned well to capture car trips, the M11 J11 site scores slightly lower than Trumpington and Foxton because the assessment of sustainable travel potential is based on existing conditions. Hence, improved bus priority and bus services proposed as part of the M11 J11 package are not considered.

With the exception of Royston, all rail station sites score highly on the sustainability theme, because they provide access to existing rail services. The Royston site scored lower because it is located in the extreme south of the corridor, and thus has a reduced likelihood of capturing Cambridge-bound car trips along the A10 corridor. In addition, the Royston site is located in the densest urban environment of all proposed sites; consequently, there is limited space to locate the proposed Park & Rail site.

The Harston and Hauxton sites score poorly because they provide limited access to HQPT services and, like Royston, there are constraints and sensitivities regarding available land.

7.4.5.2 Economic Growth

The economic growth theme sought to assess the potential of each site to increase connectivity between settlements along the Royston to Cambridge corridor and key employment destinations into Cambridge.

The differentiating factor for this theme was the varying ability of each site to connect the greatest number of households to key employment destinations in Cambridge. Crucially, only households west of M11 Junction 11 were included in the assessment. Here, the TRACC analysis (public transport accessibility analysis) involved applying an isochrone around an option location, which creates a catchment; however, the TRACC analysis did not consider that people may not choose to travel back on themselves to use a park & ride site. For example, people living in Queen Edith's, Cambridge, are unlikely to travel to M11 J11 site in order to travel to Cambridge City Centre.

In terms of economic growth, the Foxton, Trumpington and M11 J11 sites all perform relatively well in offering a large catchment of household's access to employment locations via the use of a Park & Ride or Rail site. However, Royston stands out as the highest scoring option.

The Royston site scores highly because it lies furthest to the west of the corridor, meaning no households along the corridor are discounted from its catchment area. Royston rail station also provides more frequent and faster services to Cambridge and London than the other rail-based sites. Hence, people may travel away from their destination to access these higher-quality services.

7.4.5.3 Congestion Relief

The congestion theme sought to assess the potential of each site to accommodate a future growth in trips along the A10 corridor, and thus mitigate or reduce the impact of congestion. Notably, congestion on the A10 deteriorates at the eastern end of the study corridor on the approach to M11 J11 and Hauxton Road

The differentiating factor for this theme was proximity to Cambridge. Here, sites that required users to travel further along the A10 corridor and particularly onto the congested sections of the A10 through, and to west of, the villages of Harston and Hauxton, scored poorly. Hence, for the users of these sites time spent in the private car is likely to account for a greater proportion of total commuting journey time to Cambridge, than sites to the west of Harston and Hauxton.

The Trumpington and M11 J11 sites score particularly poorly on congestion because the criteria used to assess congestion does not consider the impact on congestion on the M11. Instead, the assessment examines the impact on congestion on the A10, upon which the Trumpington and M11 J11 sites result in a slight increase in traffic flows.

7.4.5.4 Quality of Life

The Quality of Life theme sought to assess the potential of each scheme to improve the quality of life for those living and working within Greater Cambridge.

The INSET assessment showed that the sites at Trumpington, the M11 J11 and Foxton had the greatest potential to enhance quality of life along the corridor, all scoring 0.70.

The range of scores across sites is however, very narrow. To illustrate, six of the eight sites scored between 0.65 - 0.70, with the remaining two sites (Shepreth and Royston) scoring 0.50.

In terms of noise and air quality, the locations nearest the A10 (those between Trumpington and Foxton) score most favourably. This is due to their close proximity to the existing main road, which reduces the likelihood of drawing environmental impacts associated with traffic toward less busy areas.

The location of the site in Green Belt sub-category was found to be the differentiating characteristic in the landscape and visual impact category due to the absence of any Areas of Outstanding Natural Beauty or National Parks, and the same landscape character description being shared by each location. Sites from Trumpington to Harston all record adverse impacts because they are located within the Green Belt, whilst Foxton straddles the Green Belt boundary and other sites are further outside with consequently no impact to it.

With regard to heritage, Trumpington and the M11 J11 are generally located away from historic assets so development on these sites will have negligible impacts. However, the other sites all have listed buildings of various grades, scheduled monuments or conservation areas within 500m of the proposed site. Royston and Shepreth both host the highest numbers of such assets combined and so expert opinion assessed them as potentially having the most significant impacts compared with other sites.

Potential impacts relating to biodiversity or the water environment were deemed broadly minimal. No location is close enough to a statutory designation or flood zone to be of concern. Shepreth, Meldreth and Royston score marginally higher than other sites due to slightly elevated groundwater vulnerability (all three) or location on the periphery of the recharge catchment for a source protection zone (Royston).

7.4.5.5 Deliverability

The deliverability theme sought to assess the feasibility of locating a Park & Ride at each site. The differentiating factor for this theme was primarily whether the site is located in the Greenbelt, and secondarily whether there is available space to physically accommodate the proposed Park & Ride site.

With regards to deliverability the Trumpington site scored highest. The Trumpington site is an existing Park & Ride that requires expansion; hence, the site already provides HQPT services and requires little investment in transport infrastructure. In comparison, M11 J11 scores poorly because it requires investment in both transport infrastructure and new services.

Similarly, the proposed bus-based options at Hauxton and Harston score poorly because they also require investment in priority measures to link the sites to destinations and new bus services.

All rail-based options score highly because they provide access to the existing rail network, and thus require little investment in linking public transport services.

7.4.6 Summary

Step 1 of the INSET process indicates that the Trumpington, Foxton and M11 J11 sites provide the most suitable locations for a potential Park & Ride site along the A10 corridor.

Therefore, the results from the INSET assessment support the parallel development of the Trumpington Park & Ride Expansion and M11 Junction 11 Park & Ride site and indicate that Foxton is the best performing location of the remaining strategic locations along the A10 corridor.

Whilst the Meldreth site scored (scoring 0.76 out of 1.00) similarly to the Foxton site, Foxton is shown to be the best performing rail station-based option (scoring 0.78 out of 1) based on comparative assessment work. In terms of distinguishing between the two sites, Meldreth did not score as highly for Sustainable Travel (0.74 vs 0.81) as access time to the Park & Ride site from the A10 is estimated to take longer. The Meldreth site also scores less well on Quality of Life (0.65 vs 0.70) because it was assessed as having a greater impact on water environment and flooding, as well as having a greater impact on the local community.

A Foxton Park & Rail site could also form a complementary interface with the proposed M11 J11 Park & Ride and/or the expansion of Trumpington Park & Ride. For example, improvements to station accessibility and rail connectivity at the 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 destination. In comparison, the proposed expansion of Trumpington Park & Ride and the proposed new Park & Ride at Junction 11 of the M11 would primarily intercept traffic accessing and egressing Cambridge via the M11.

In this sense, the location of a Park & Ride site further south on the A10 corridor at Foxton, has the potential to reduce the size and scale of a new Park & Ride facility at Junction 11 site, whilst maintaining the benefits of enhanced connectivity to jobs in Cambridge City Centre, Cambridge Science Park (via Cambridge North Station) and Southern Fringe developments, from villages to the southwest of the city.

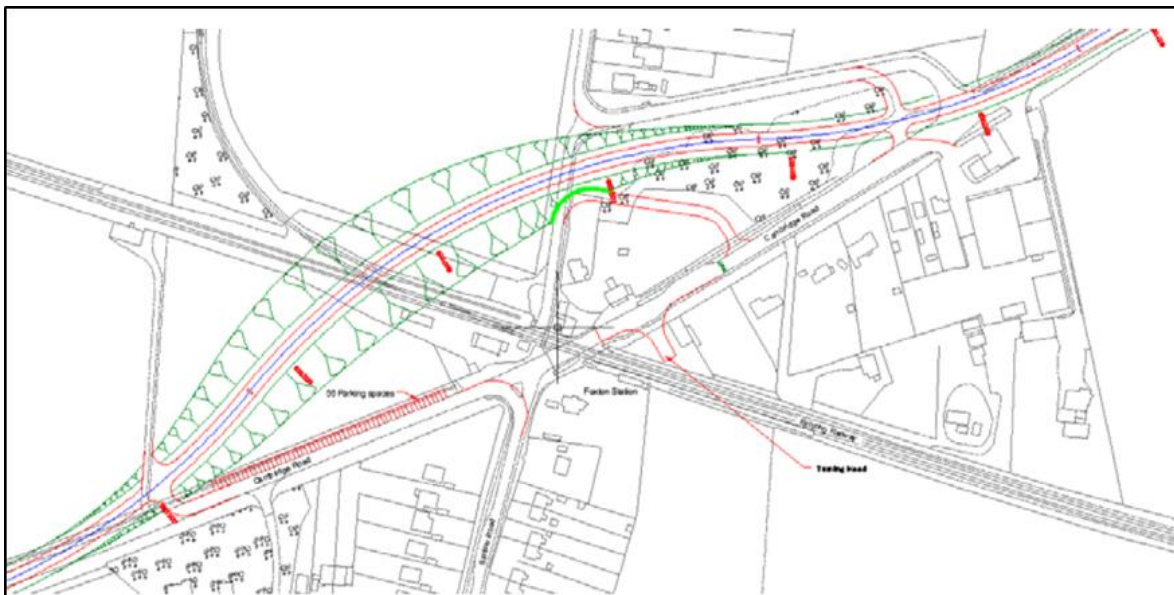
7.5 Step 2: Location Specific Option Assessment

Following the strategic corridor analysis, initial options identified by Skanska were presented for Foxton as the highest scoring site. Foxton specific options were developed with and without the Level Crossing Bypass. In total there were 4 options without the Level Crossing Bypass and 5 options with the Level Crossing Bypass.

At first, options were identified on the basis of their ability to provide sufficient land to accommodate the estimated number of required parking spaces (715 spaces – demand forecasts were calculated using CSRM and are reported in **Appendix C: Park & Ride Demand Forecasting**. This reflects current demand and future growth). However, additional options were identified that included an option to utilise land already in the ownership of CCC (option 4b) as well as an option to the south of Foxton Station (option 5).

It should be noted that the basis of the options that included the bypass for the closed level crossing is derived from the GRIP2 Feasibility Study Report (May 2013). This concluded that Route C was the preferred alignment (see Figure 18 below). As the options for the level crossing bypass are being reassessed as part of the development of SOBC for the closure of the level crossing, the potential alignment may change. In turn, this may have an impact on the options for a new transport interchange and what is feasible. In order to ensure that the options assessment for the transport interchange reflect inter-dependant schemes such as the level crossing closure, this options assessment will need to be revisited at the appropriate time.

Figure 18: Level Crossing Bypass Emerging Preferred Highway Route Alignment - Route C4



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

7.5.1 Location Specific Options Descriptions

At the conclusion of the workshop, a total number of 10 options had been identified. These options are described in Table 8 and shown in Figure 19 and Figure 20 below.

Table 8: 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 without bypass	Option is located north of Foxton train station within council owned land without the level crossing bypass.
8	Option 4b with 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

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2. CONSULTATION WITH THE LOCAL AUTHORITY (MILTON KEYNES COUNCIL) HAS TAKEN PLACE AND THE LOCAL AUTHORITY HAS AGREED TO THE PROPOSED DEVELOPMENT. THE LOCAL AUTHORITY HAS AGREED TO THE PROPOSED DEVELOPMENT ON THE CONDITION THAT THE DEVELOPER SHALL COMPLY WITH THE FOLLOWING CONDITIONS:

1. The development shall be in accordance with the planning permission granted by the Local Planning Authority.

2. The development shall be in accordance with the conditions of the planning permission granted by the Local Planning Authority.

3. The development shall be in accordance with the conditions of the planning permission granted by the Local Planning Authority.

4. The development shall be in accordance with the conditions of the planning permission granted by the Local Planning Authority.

5. The development shall be in accordance with the conditions of the planning permission granted by the Local Planning Authority.

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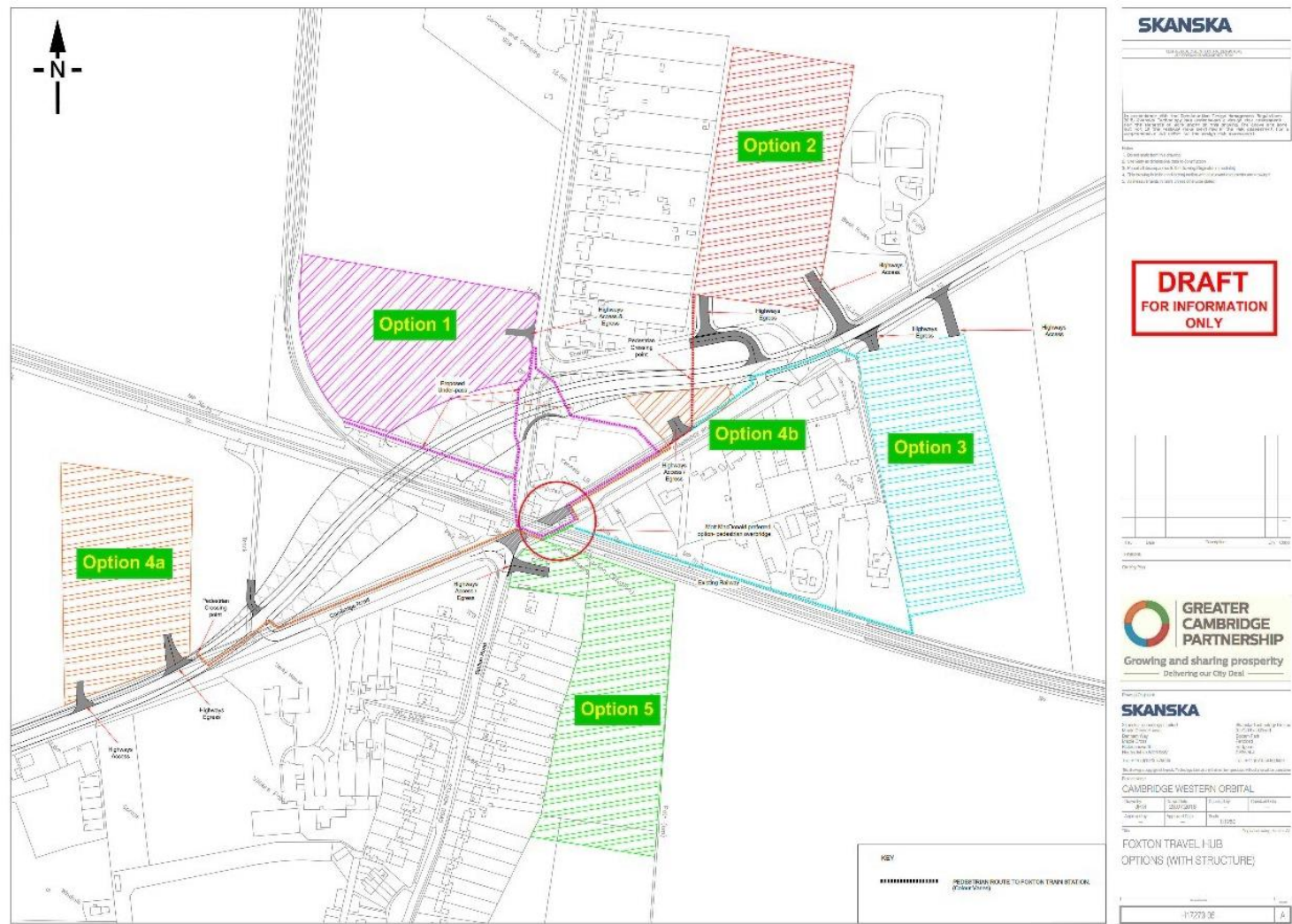
CAMBRIDGE WESTERN ORBITAL
Phase 1
Foxton Travel Hub
Options (With/Without Structure)

KEY
EASTWAY ROUTE TO FOXTON TOWN STATION (Close to the)

H17273-05

396964-MMD-BCA-XX-RP-BC-0002 | February 2019

Figure 20: Foxton Park & Rail transport hub options with Level Crossing Bypass



Source: Skanska Note: site footprints are indicative and for initial assessment purposes only

7.5.2 Assessment Themes

For the location specific options assessment three themes were applied in the INSET process; these are shown below in Table 28. The Sustainable Travel Theme and Quality of Life themes relate to the scheme objectives, whilst the Deliverability theme focuses on the practicalities of locating a Park & Ride on the site, in terms of land take and constructing infrastructure.

Table 28: Location Specific Options - Assessment Themes aligned to Scheme Objectives

Objective	Theme
Objective 1: Maximise the potential for all journeys to be undertaken by sustainable modes of transport	Sustainable Travel
Objective 4: Contribute to enhanced quality of life for those living and working within Greater Cambridge	Quality of Life
N/A	Deliverability

Source: Mott MacDonald

The Economic Growth and Congestion themes were not included at this stage because there was not a clear way of differentiating between the options based on any measurable criteria linked to these themes. Therefore, all options are considered to score equally on these themes, based on the results from the Strategic Corridor options assessment.

The assessment of Economic Growth and Congestion themes against the location specific sites may however, be reviewed in further detail at a later stage in the options assessment process.

7.5.3 Assessment Criteria

The main assessment criteria used for assessing the location specific options are set out in Table 29 to 31 below. The tables highlight which sub-criteria have been carried forward from the Strategic Corridor Options Assessment and which are additional.

Table 29: Sustainable Travel Theme - Assessment Criteria for Foxton Options

Objective	Maximise the potential for all journeys to be undertaken by sustainable modes of transport	
Theme	A - Sustainable Travel	
Assessment Criteria	A-1	To increase sustainable transport mode share for trips into the city centre, the Northern Fringe East and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.
	Sub-Criteria	Foxton Options Assessment
	A-1 iii	Does the potential P&R location have good levels of accessibility to the Public Transport network? <u>Carried Forward & Amended</u>
	A-2	To increase Park & Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.
	Sub-Criteria	Foxton Options Assessment
	A-2 i	Does the Park & Ride site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand? <u>Carried Forward</u>
	A-2 ii	Does the Park & Ride site have the potential for future increase in capacity to meet growth beyond what is forecasted? <u>Additional</u>
	A-3	To reduce journey times from Park & Ride site to key employment areas to enable public transport journeys to compete more effectively with the private car.

Objective **Maximise the potential for all journeys to be undertaken by sustainable modes of transport**

	Sub-Criteria	Foxton Options Assessment
	A-3 i What are journey times from Park & Ride site to Cambridge City Centre using currently available public transport compared to journey times undertaken by car?	<u>Carried Forward</u>
	A-3 ii What is the access time to the Park & Ride site from the A10?	<u>Carried Forward</u>

Source: Mott MacDonald

Table 30: Quality of Life Theme – Assessment Criteria for Foxton Options

Objective **Contribute to enhanced quality of life for those living and working within Cambridge**

Theme	D - Quality of Life	
Assessment Criteria	D-1 Improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.	
	Sub-Criteria	Foxton Options Assessment
	D-1 i What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).	<u>Carried Forward</u>
	D-1 ii What is the potential visual impact on landscape?	<u>Carried Forward</u>
	D-1 iii What is the potential impact on the historic environment?	<u>Carried Forward</u>
	D-1 iv What is the potential impact on biodiversity?	<u>Carried Forward</u>
	D-1 v What is the potential impact on water environment and flooding?	<u>Carried Forward</u>
	D-2 An increase in cycling and walking along the Royston to Cambridge A10 corridor.	
	Sub-Criteria	Foxton Options Assessment
	D-2 i Does the location of the Park & Ride site offer the potential to integrate with cycling and walking facilities?	<u>Carried Forward</u>
	D-3 A safer highway environment for cycling and walking the Royston to Cambridge A10 corridor.	
	Sub-Criteria	Foxton Options Assessment
	D-3 i Does Park & Ride site increase the number of 'conflict points' for pedestrians and cyclists?	<u>Additional</u>

Source: Mott MacDonald

Table 31 Deliverability Theme – Assessment Criteria for Foxton Options

Objective **n/a**

Theme	E - Deliverability	
Assessment Criteria	E-1 To deliver a technically feasible Park & Ride solution	
	Sub-Criteria	Foxton Options Assessment
	E-1 i What land allocations exist within the area of proposed Park & Ride site?	<u>Carried Forward</u>
	E-1 ii Does the Park & Ride location require investment in supporting public transport infrastructure in order to provide adequate connectivity?	<u>Carried Forward</u>
	E-1 iii Does the Park & Ride location require investment in supporting public transport services in order to provide adequate connectivity?	<u>Carried Forward</u>

Objective	n/a																
	<table> <tr> <td>E-1 iv What is the level of construction risk (engineering feasibility)?</td><td><u>Additional</u></td></tr> <tr> <td>E-1 v What is the expected impact of construction on the existing network (level of disruption to road users)?</td><td><u>Additional</u></td></tr> <tr> <td colspan="2">E-2 To deliver an affordable Park & Ride solution.</td></tr> <tr> <td>Sub-Criteria</td><td>Foxton Options Assessment</td></tr> <tr> <td>E-2 i What are the associated capital costs of delivering the Park & Ride solution?</td><td><u>Additional</u></td></tr> <tr> <td>E-2 ii What are the land acquisition requirements (extent & complexity of acquisition)?</td><td><u>Additional</u></td></tr> <tr> <td>E-2 iii What level of complexity is associated with the infrastructure maintenance and renewals (risk)?</td><td><u>Additional</u></td></tr> <tr> <td>E-2 iv What are the ongoing cost implications - maintenance and site operations?</td><td><u>Additional</u></td></tr> </table>	E-1 iv What is the level of construction risk (engineering feasibility)?	<u>Additional</u>	E-1 v What is the expected impact of construction on the existing network (level of disruption to road users)?	<u>Additional</u>	E-2 To deliver an affordable Park & Ride solution.		Sub-Criteria	Foxton Options Assessment	E-2 i What are the associated capital costs of delivering the Park & Ride solution?	<u>Additional</u>	E-2 ii What are the land acquisition requirements (extent & complexity of acquisition)?	<u>Additional</u>	E-2 iii What level of complexity is associated with the infrastructure maintenance and renewals (risk)?	<u>Additional</u>	E-2 iv What are the ongoing cost implications - maintenance and site operations?	<u>Additional</u>
E-1 iv What is the level of construction risk (engineering feasibility)?	<u>Additional</u>																
E-1 v What is the expected impact of construction on the existing network (level of disruption to road users)?	<u>Additional</u>																
E-2 To deliver an affordable Park & Ride solution.																	
Sub-Criteria	Foxton Options Assessment																
E-2 i What are the associated capital costs of delivering the Park & Ride solution?	<u>Additional</u>																
E-2 ii What are the land acquisition requirements (extent & complexity of acquisition)?	<u>Additional</u>																
E-2 iii What level of complexity is associated with the infrastructure maintenance and renewals (risk)?	<u>Additional</u>																
E-2 iv What are the ongoing cost implications - maintenance and site operations?	<u>Additional</u>																

Source: Mott MacDonald

7.5.4 Scoring

The same scoring principles applied for the Strategic Corridor options assessment were applied for the location specific options assessment.

All weightings were kept equal except for the main assessment criteria **E-1**, where a weighting of 2 was applied. Criteria E-1 regards the ability of the option to deliver a technically feasible Park & Rail transport hub solution.

The weighting was applied to criteria E-1 because the location of the site and its current land allocation, is the key factor in determining its deliverability. For example, delivering a Park & Rail transport hub on Green Belt land is not technically viable in most circumstances.

The thematic scores are presented in Table 32 below.

Table 32: Foxton Park & Ride Travel Hub – Location Specific Options Assessment Criteria

Theme	Main Criteria	Sub Criteria	Methodology	Score						
				0	1	2	3	4	5	6
A. Sustainable Travel	A1. To increase sustainable transport mode share for trips into the city centre, the Northern Fringe East and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.	A1iii. Does the potential P&R location have good levels of accessibility to the Public Transport network?	Spatial analysis: - what is the estimated walking distance from the centroid point of P&R option to Foxton Station Cambridge bound platform?	Bottom three options by closest walking access distance	Middle four options by closest walking access distance	Top three options by closest walking access distance				
	A2. To increase Park & Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.	A2i. Does the P&R site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand?	Spatial Analysis: - Examines if there is an obvious place for a site that can offer the required land for a 715 car park - Does not take into account land allocations or ownership, picked up by assessment criteria E1i. - Does not consider the possibility of using platforms where there is a land constraint.	No obvious location	Yes					
		A2ii. Does the P&R site have the potential for future increase in capacity to meet growth beyond what is forecasted?	Spatial analysis: - Examines if there is land for future expansion.	No obvious location	Yes					
D. Quality of Life	E1. Improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.	D1i. What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).	Considers change in traffic relative to normal traffic levels within 1km of the location under consideration - Is there a likely increase or decrease in traffic in the local area. - Considers the relative traffic normally in the area and what the potential future traffic will be.	Major beneficial	Moderate beneficial	Minor beneficial	Neutral	Minor adverse	Moderate adverse	Major adverse

Theme	Main Criteria	Sub Criteria	Methodology	Score						
				0	1	2	3	4	5	6
		D1ii. What is the potential visual impact on landscape?	Use of MAGIC ⁴³ to identify AONB ⁴⁴ and Green Belt, and Local Plan for sensitive landscape areas.	Major beneficial	Moderate beneficial	Minor beneficial	Neutral	Minor adverse	Moderate adverse	Major adverse
		D1iii. What is the potential impact on the historic environment?	Use of MAGIC to determine presence of SAMs and Listed buildings within 250m of centre of village or station (depending on whether P&R is bus only, or train)	Major beneficial	Moderate beneficial	Minor beneficial	Neutral	Minor adverse	Moderate adverse	Major adverse
		Div. What is the potential impact on biodiversity?	Use of MAGIC to identify SSSI ⁴⁵ or international sites and locally important sites within specific distance from centre of village / or station ((depending on whether P&R is bus only, or train)	Major beneficial	Moderate beneficial	Minor beneficial	Neutral	Minor adverse	Moderate adverse	Major adverse
		Dv. What is the potential impact on water environment and flooding?	Use MAGIC to identify flood zones and SPZ ⁴⁶ and vulnerability (off BGS if not on Magic) and presence of SPZs within distance of centre of village or station (depending on whether P&R is bus only, or train)	Major beneficial	Moderate beneficial	Minor beneficial	Neutral	Minor adverse	Moderate adverse	Major adverse
	D2. An increase in cycling and walking along the Royston to Cambridge A10 corridor.	D2i. Does the location of the P&R site offer the potential to integrate with cycling and walking facilities?	Spatial Analysis: - Examines what cycling and walking infrastructure intercepts each P&R option.	Site location worsens cycle infrastructure	Site location offers no integration	Site location offers little integration	Site location offers some integration	Site location offers good integration		
	D3. A safer highway environment for cycling and walking the Royston to Cambridge A10 corridor.	D3i. Does P&R site increase the number of 'conflict points' for pedestrians and cyclists?	Spatial Analysis: - How many new conflict points may be introduced by P&R site. - More junctions could equate to greater risk of traffic related collisions for pedestrians and cyclists.	Significant increase in conflict points - 5+ junctions	Moderate increase in conflict points- 2-4 new junctions	Minimal increase in conflict points - 1 new junction	No increase in conflict points - 0 new junctions			

⁴³ MAGIC is an accessible online mapping tool that provides base information on environmental constraints

⁴⁴ Area Of Natural Beauty.

⁴⁵ Site of Special Scientific Interest

⁴⁶ Source Protection Zone

Theme	Main Criteria	Sub Criteria	Methodology	Score						
				0	1	2	3	4	5	6
E. Deliverability	E1. To deliver a technically feasible Park & Ride solution.	E1i. What land allocations exist within the area of proposed P&R site?	Spatial Analysis: - Examination of land use plans around each P&R site to determine if land allocations limit the use of land.	Mainly Green Belt and/or Safeguarded land	Limited land availability	Potential land available	Designated land for P&R			
		E1ii. What is the level of construction risk (engineering feasibility)?	Professional judgement based on comparing options against each other.	Very High	High	Acceptable	Low	Very Low		
		E1iii. What is the expected impact of construction on the existing network (level of disruption to road users)?		Very High	High	Acceptable	Low	Very Low		
	E2. To deliver an affordable Park & Ride solution.	E2i. What are the associated capital costs of delivering the P&R solution?		Very High	High	Acceptable	Low	Very Low		
		E2ii. What are the land acquisition requirements (extent & complexity of acquisition)?		Very High	High	Acceptable	Low	Very Low		
		E2iii. What level of complexity is associated with the infrastructure maintenance and renewals (risk)?		Very High	High	Acceptable	Low	Very Low		
		E2iv. What are the ongoing cost implications - maintenance and site operations?		Very High	High	Acceptable	Low	Very Low		

Source: Mott MacDonald

7.5.5 Results

The results of the location specific options within INSET are summarised in Table 33, with the options ranked by their final score. As with the Strategic Corridor options, Table 33 provides an overall score against each of the selected themes based on the appraisal of the criteria and sub-criteria.

The main assessment criteria used for assessing the location specific options are set out in Table 29 to 31.

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

Step 2 of the option assessment process placed an emphasis on the affordability of each site, and most importantly whether the proposed location was technically feasible. Accordingly, the Deliverability theme weighting was changed to 2, meaning the overall score for the Deliverability theme is greater than 1. To account for this, the overall scores were standardised to ensure a comparable output of between 0 and 1 was scored.

Table 33: INSET Results – Location Specific Options Assessment

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

Source: Mott MacDonald

Step 2 of the options assessment process considers 6 potential sites in the village of Foxton.

Each site has a variation, with the exception of Sites 2 and 3, one site with the proposed level crossing bypass in place, and one without. Accordingly, there are 10 options to consider.

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 to the south of the station
- Option 5 without the bypass to the south of the station; and,
- Option 4a – without bypass to the west of the station.

The options ranked by with and without the bypass is present below:

Table 34: Options Assessment Summary

Option	Score (out of 1)
Options <u>without</u> 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 4a – north of the station	0.60
Options <u>with</u> 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 4a – north of the station	0.50
Options <u>with & without</u> the level crossing bypass	
Option 3 – northeast of the station	0.53
Option 2 – east of the station	0.49

Source: Mott MacDonald

Whilst the results indicate that some options score relatively highly overall, they are not necessarily deliverable. For example, Option 5 with and without the Level crossing scores well primarily due to its close proximity to the station i.e. it has the shortest walking distance to Foxton station. However, as it is located in the Green Belt it is not deemed 'deliverable'. Similarly, Options 2 and 3 are located within the Green Belt so can be discounted due to the potential complexity of delivery.

The following sections provide a brief commentary on the results broken down by theme.

7.5.6 Theme Analysis

7.5.6.1 Sustainability Theme

The sustainable travel theme sought to assess the potential of each site to increase sustainable transport mode share and reduce journey times for trips into Cambridge City Centre and other key employment destinations.

The determining factors for the sustainable travel themes primarily concerned whether the site could spatially accommodate a 1.8ha Park & Ride site, and secondarily the proximity of each site to Foxton station in terms of walking distance.

All options assessed, provided enough land to accommodate the proposed Park & Rail transport hub, with the exception of both variations of Option 4b. Therefore, although Option 4b is proximate to Foxton station, it is not capable of meeting the scheme objectives. Despite this, it should be noted that Option 4b is located within council owned land and may provide the opportunity for future explanation of another site with low capital costs. Alternatively, the site could form part of a split site to serve different destinations. For example, one site could provide parking for London-bound trips, and the other for Cambridge-bound trips.

The ranking of the other eight options was subsequently determined by sub criteria A1iii, which concerned their proximity to Foxton station on foot.

In terms of the spatial location of each site, Options 1 and 5 (with and without the bypass) registered the highest scores. These sites are the closest options to the train station on foot that also provide enough land to deliver 715 car parking spaces.

7.5.6.2 Quality of Life Theme

The quality of life theme primarily sought to assess the potential of each site to minimise the environmental impact of congestion along the corridor. The assessment also considered how each site could engender increasing participation in walking and cycling and the quality of associated infrastructure.

Noise / Air Quality

Assessment considered the anticipated change to traffic flow on roads near the site options and the resultant noise and air quality impacts. Options that encourage vehicles to follow new routes away from the A10 along local roads to access the proposed site will increase noise and reduce air quality for residents close to the new routes. Properties adjacent the new car park may also experience noise disturbance from vehicle movement within.

Considering options without a bypass, residents of Barrington Road (for Options 1, 2 and 4b) or Station Road (for Option 5) will be affected, whereas site Options 4a and 3 include direct access to the A10 with relatively few sensitive receptors so are not anticipated to cause significant change. The removal of a copse of trees for Option 4b would mean additional impacts due to loss of a natural noise barrier between current A10 traffic and Barrington Road residents.

For options with the bypass, residents around Barrington Road (Options 1, 2 and 4b) will experience increased traffic flow nearby but impacts to noise and air quality will be of low significance due to the already elevated baseline resulting from close proximity to the new bypass. Impacts caused by site Options 3 and 4a are not substantially changed by the bypass and remain negligible due to a relative lack of receptors. Site access for Option 5 will be moved if the bypass is constructed and the new location reduces the number of houses affected. However, residences on the east side of Station Road will still experience a minor increase in noise disturbance resulting from vehicle movement around a new car park.

Landscape

The landscape specialist's assessment evaluates anticipated impacts to the visual environment, in-part using information gathered in the site walkover on 8th August 2018. Key landscape considerations relate to how site options are likely to affect character and setting in this rural village. Option 2 is well screened from the landscape, but views would be affected for properties either side, particularly when leaves are shed during winter. Options 3 and 5 are more exposed to the countryside and, although mitigation planting could reduce landscape impacts, properties adjacent would still experience an adverse impact to their views and the car park would extend the built-up area of Foxton. Significantly, Options 2, 3 and 5 are all located within Green Belt land which would be lost if they were to be constructed.

Considering options without the bypass, land at Options 1 and 4a is already partially screened by existing vegetation and new mitigation planting would further help screen a new car park. For Option 4b, residents on Barrington Road and parts of the A10 would experience a change in views from greenfield to new infrastructure due to removal of the existing vegetation copse.

Construction of a bypass already introduces a prominent new feature to the landscape. Mitigation planting would help screen views of the car park at either Option 1 or 4a and if the 4a car park were built as close as possible to the bypass this would further mitigate overall impact

to the landscape. Option 4b would likely lead to the removal of any vegetation remaining in the copse after bypass construction, and so removal of this would change the character of views for properties overlooking the site.

Historic Environment

The Heritage Assessment (Appendix F) reviewed local records to identify likely impacts to the historic environment. The area is known to be home to multi-period archaeological remains of varying value and any that are present in the site option locations would likely be subject to moderate adverse impacts during construction.

The presence of a car park at Options 1, 2, 3, 4a & 4b is unlikely to have any impact on the setting or heritage value of nearby statutory designated heritage assets, whether the bypass is constructed or not. However, the signal box adjacent the level crossing is locally significant – a building of merit in the Foxton Conservation Area Appraisal – and its setting might be impacted by construction of a car park nearby at Option 1 (with or without the bypass) or Option 4a (without bypass). The former railway tavern is another local building of merit situated adjacent both the railway and Option 4b, but proposals are not expected to detract from the viewer's ability to understand the asset within its overall context.

Conversely, Option 5 is likely to significantly impact on a number of designated and locally significant heritage assets. The Green Belt setting informs Foxton Conservation Area and the Grade 1 listed Church of St Laurence, so loss of this open rural landscape would detract from the historic context of Foxton village and impact many of its listed assets and those of local significance.

Biodiversity

The Biodiversity Scoping assessment (Appendix G) combines information from a desk study of local environmental records with field evaluation of species potential on each site. The site walkover was conducted on 8th August 2018 and access was restricted to public rights of way which limited the opportunity to assess all areas of the site. Site variants with and without the bypass usually share ecological constraints so are considered as such unless specified.

Each site option is currently used for arable land apart from Option 4b, which is primarily a semi-mature broadleaved woodland plantation copse with some dense scrub and tall ruderal. Arable land has low biodiversity value and so only minor or negligible impacts are anticipated to the main site areas, with the most significant impacts constrained to vegetation around the perimeter or features in the periphery of these sites. All sites except Option 3 have the potential for a neighbouring hedgerow to be a Habitat of Principal Importance (HPI), and Sites 4 & 5 already have a species-rich hedgerow confirmed.

A common constraint is that some habitat in all sites has the potential to support birds and reptiles, so their presence would have to be assessed and clearance managed sensitively prior to any construction. Similarly, whilst no badger setts were found on the walkover survey, each option still has the potential for them to be identified during more detailed investigation with improved access to all areas of the site.

The pond adjacent Bleak House, to the west of Option 2, has the potential to be a breeding pond for Great Crested Newt (GCN), a European Protect Species (EPS). Cambridgeshire has many known populations of GCN and parts of Options 2,3 and 4b lie within a 250m radius of the pond, so these sites would require further investigation to confirm presence and assess any work that would need to be done under license. Bats are another EPS and multiple species are known to have been found in the area. The site walkover noted that the perimeter of Options 1, 2 and 4 a&b contain mature trees with bat potential that would require further assessment. Both of the with/without bypass site variants for Option 4a are within close proximity to a disused

building (next to the railway line) that could support roosting bats or barn owls (another EPS). Furthermore, the building(s) that would likely be demolished to provide access/egress for Option 5, either with or without the bypass, would also need further assessment for bat potential if these options were progressed.

Other species of interest found in the region, such as two notable plant species, otter, water vole, and white-clawed crayfish, are not thought to have suitable habitat in close enough proximity to these site options to be of concern. Habitats for two notable terrestrial invertebrates were found - the blood vein moth (Option 4b) and the dark-barred twin-spot carpet moth (Option 5) - but these species should be considered under the guidance of the National Planning Policy Framework rather than having specific legal protection.

Water environment

Each of the proposed sites share very similar water and flooding environment and all options were assessed as having neutral or negligible impact. Hoffer Brook is located approximately 430m to the east of the south-east corner of options 3 and 5, and the River Rhee is located approximately 550m west from the north-west corner of site 4a (the variant with a bypass), both beyond the distance where you are likely to find direct impacts to surface water features. As no surface watercourses flow in close proximity to the sites, consequently none of the sites are within or immediately adjacent to a flood zone either.

The Environment Agency's groundwater vulnerability assessment uses hydrological, geological, hydrogeological and soil properties to estimate the vulnerability of groundwater to a pollutant discharged at ground level. All Foxton site options are underlain by River Terrace Deposits (Secondary A aquifer) and West Melbury Marly Chalk bedrock (Principal aquifer). They all also have free-draining lime-rich loamy soils and are currently predominantly used for agriculture. When checked for groundwater vulnerability, these factors combine so that all sites are classified as 'Major Aquifer Intermediate'. Given the likely nature of construction for the proposed car park it is unlikely to cause any permanent impacts.

In addition to the above criteria, sites were also checked for Water Framework Directive Protected Areas, Habitat Sensitivity designations, or known historical landfill sites and none were found nearby.

7.5.6.3 Deliverability Theme

The deliverability theme assessed the affordability of each site and crucially whether its location was technically feasible.

The primary determining factor for the deliverability theme concerns whether the proposed site is located in the Green Belt.

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 is complex, leading to a low overall score.

Distinguishing between the remaining options was not possible in terms of the capital costs of delivering the Park & Rail transport hub solution, with all options being determined as 'low' and thus scoring equally.

The ranking of the most deliverable sites outside of the Green Belt with adequate available land, was thus determined by scores on affordability and the potential impact of construction.

Option 1 – without bypass scores highly across criteria relating to technical feasibility and affordability, and crucially the impact of its construction is deemed to be low.

Option 4b - with bypass, and Option 4b - without bypass scored the joint second highest score (0.70). Uniquely Option 4b is located on council owned land; hence, it scores highest in terms of

land acquisition and also scores well on affordability. Both variations of Option 4b also score highly on the technical feasibility theme. However, the sites proximity to the centre of Foxton village, means the impact of construction is only deemed 'acceptable', and crucially both variations of Option 4b cannot accommodate a 1.8ha transport interchange.

7.5.7 Summary

The overall findings from this assessment are summarised in Table 35 below. Of the 10 options originally identified, 4 are recommended for further development and assessment. The other 6 have been discounted primarily on the grounds that they either fall within Green Belt land or do not provide sufficient land to provide enough spaces for forecasted levels of demand.

Table 35: Options Assessment Summary

Option	Score (out of 1)	Status	Primary Reason for Discounting
Options <u>without</u> the level crossing bypass			
Option 1 – north of the station	0.81	Further assessment	
Option 4a – west of the station	0.68	Further assessment	
Option 5 – south of the station	0.68	Discounted	Located within Green Belt land
Option 4a – north of the station	0.60	Discounted	Area of land not adequate for indicative number of spaces.
Options <u>with</u> the level crossing bypass			
Option 1 – north of the station	0.70	Further assessment	
Option 5 – south of the station	0.68	Discounted	Located within Green Belt land
Option 4a – west of the station	0.62	Further assessment	
Option 4a – north of the station	0.50	Discounted	Area of land not adequate for indicative number of spaces.
Options <u>with & without</u> the level crossing bypass			
Option 3 – northeast of the station	0.53	Discounted	Located within Green Belt land
Option 2 – east of the station	0.49	Discounted	Located within Green Belt land

Source: Mott MacDonald

8 Summary & Conclusions

Issues of congestion along the A10 corridor between Royston and Cambridge are a major issue for Greater Cambridge and the wider sub-region in terms of network performance, local and strategic connectivity, economic growth and the environment.

The anticipated growth in trips along the corridor is likely to worsen existing congestion, which has the potential to restrict the growth of key employment areas such as the CBC, Cambridge Northern Fringe and Cambridge City Centre. Opportunities to accommodate current and future transport demand are also becoming increasingly impacted by Park & Ride capacity along the corridor, with the existing Park & Ride at Trumpington being consistently between 80-85% full. In order to accommodate future demand, assist in the mitigation of future traffic growth, and enable sustainable travel, additional capacity is now required.

As such the GCP wish to explore the opportunity to utilise the existing rail network to accommodate future growth in trips between Royston and Cambridge by providing a new Park & Rail transport hub that will link into the established rail network. In particular, there is the opportunity to increase sustainable travel from areas to the south west of Cambridge by providing a direct connection to new developments accessed via the new Cambridge North station and proposed Cambridge South station, as well as via the existing Cambridge station.

This report documents the options identification and assessment process carried out in order to design and select a scheme that aims to address issues and opportunities along the A10 between Royston and Cambridge.

The assessment process involved two steps. The first step examined an initial list of 8 strategic corridor options to establish the most suitable location for a new Park & Rail transport hub along the A10 corridor between Royston and Cambridge. The second step examined a list of 10 specific site locations, resulting in a short list of options being identified to take forward for consultation and further consideration.

The assessment of the options at both steps considered a wide range of assessment criteria that were aligned to the scheme objectives. These were grouped by 5 key themes, sustainable travel, economic growth, congestion, quality of life, and deliverability.

The results of the first step of the assessment concluded that Foxton scored highly as a location for a new Park & Rail transport hub, scoring a total of 0.78 out of a possible 1.00 across all themes. Foxton scored well in terms of sustainable travel, congestion, quality of life and deliverability.

The location specific options assessment for Foxton resulted in 4 options being discounted from further assessment due to their location on Green Belt land, and a further 2 options being discounted due to land constraints. The spatially constrained options, which are located on council owned land (with and without the bypass), cannot provide the 715 parking spaces identified in the demand modelling process. The remaining 4 options can be split into two distinct groups, those with the Level Crossing Bypass and those without.

The short-listed options recommended for further development and assessment through the Strategic Outline Business Case process, together with their scores, are summarised below:

Without the bypass:

- Option 1 – north of Foxton train station (0.81 out of 1.00)
- Option 4a – west of Foxton train station (0.68 out of 1.00)

With the bypass:

- Option 1 – north of Foxton train station (0.70 out of 1.00)
- Option 4a – west of Foxton train station (0.60 out of 1.00)

8.1 Answering Key Questions

A series of key questions were also identified to help steer the development of the scheme and provide answers for the purpose of reporting to GCP Executive Board.

Table 36: Key questions

No.	Question	Answer
1	How many spaces might be required at the Foxton site?	715 required by 2031. ⁴⁷
2	If the Foxton scheme goes ahead, what potential is there for a reduction in parking spaces at M11 Junction 11 Park & Ride?	A reduction of spaces at M11 Junction 11 in the region of 405. ⁴⁸
3	Could Foxton be taken forward as a larger Park & Ride site instead of M11 Junction 11?	No, Foxton does not intercept traffic from the M11; therefore, the scheme is not strategically well located to replace M11 Junction 11.
4	Is there demand for a Foxton Park & Rail transport hub scheme without South Cambridge Station?	Yes, there would be a demand in the region of 540 spaces without South Cambridge Station. ⁴⁹
5	What impact would the Foxton Park & Rail transport hub scheme have on two-way traffic flows through Harston/Haupton?	Forecasting suggests there could be up to an 18% reduction in morning peak (8-9am) traffic flows heading north between Royston and M11 Junction 11 (approximate reduction of 190 trips). ⁵⁰
6	What impact would the Foxton level crossing closure have on two-way traffic flows through Harston/Haupton?	Forecasts suggest that removing the Foxton level crossing will result in an increase in traffic flows along the A10 of approximately 50 vehicles in morning peak (8-9am). ⁵¹
7	What strategic diversion from competing highway routes might occur with the removal of Foxton level crossing?	There are forecast to be minor reassignment impacts as a result of removing the level crossing. The reduced delays, although beneficial to existing/future users on the corridor itself, are not sufficient to make the route significantly more attractive. There are other constraints through Harston and at Junction 11 which continue to provide a deterrent.
8	Will local junctions be able to cope with any changes in traffic flow?	Yes, changes in traffic flows would be minimal, requiring little changes to local junctions except to enable access to the Park & Rail transport hub site.

⁴⁷ Results taken from Appendix C of OAR

⁴⁸ Results taken from Appendix C of OAR

⁴⁹ Results taken from Appendix C of OAR

⁵⁰ Results taken from Appendix C of OAR

⁵¹ Results taken from the Foxton Level Crossing Modelled Traffic Flows Tests reported in Mott MacDonald Technical Note – 396964-MMD-XX-TN-BC-0008

No.	Question	Answer
9	Will there be increased rat-running through local communities?	<p>Traffic reassignment modelling indicates there would be a reduction of approximately 190 trips on the A10 northbound between Foxton and the M11 during the AM peak (8-9am).</p> <p>Furthermore, the traffic reassignment modelling indicates that impact on traffic flows along local road links to the south of Foxton train station would be minimal.⁵²</p> <p>However, there would be an increase in traffic flows between Royston and Foxton with approximately 170 additional trips northbound during the AM peak, as well as a small increase through the village of Meldreth (around 40 additional trips).</p>
10	Is there enough capacity on the trains to cope with an increase in passengers from Foxton? i.e. what is existing capacity and demand vs future capacity and demand, with and without a Foxton Park & Rail transport hub?	<p>Yes, recent increases in rail capacity has provided 1,100 spaces per train (trains now formed of 8 carriages rather than 4).</p> <p>Further, service levels are also expected to be enhanced through the completion of the Thameslink Project which will see peak period London services increase from 4 to 6 trains per hour.⁵³</p>
11	Will Park & Rail provision at Foxton (and M11 J11) reduce demand for local bus services and so make those unviable?	It is not envisaged that a Park & Rail transport hub located at Foxton would have an impact on local bus services as they would be serving different trip purposes and destinations.
12	How much cycle parking will be provided?	At this stage in scheme development the exact number of cycle parking spaces is yet to be determined, but appropriate levels of cycle parking would be integrated into any scheme
13	Will other rail stations lose patronage and to what extent?	There is the potential for some existing stations to lose patronage. At present it is not possible to definitively assess the extent of this on a station-by-station basis. The issue of station patronage will be assessed in more detail later on in the scheme development and assessment process.
14	Will Park & Ride sites other than Trumpington lose customers?	It is not anticipated that demand at other Park & Ride sites beyond Trumpington would substantially be affected by a rail-based Park & Ride site at Foxton. Foxton would serve a different geographical catchment to other sites such as Madingley Road, Milton, Babraham and Newmarket Road.
15	Could Foxton just become a parkway station for London – how many people would use this for out-commuting?	Initial forecasts indicate a potential demand for around 150 spaces for London-bound trips. This would increase to around 200 by 2031. ⁵⁴
16	Why Foxton and not another station e.g.: Meldreth?	<p>See Section 4 for more detail on Options Assessment Results.</p> <p>Foxton is the best performing rail station-based option (scoring 0.78 out of 1) based on comparative assessment work. However, Meldreth placed 4th in the Strategic Corridor options assessment (scoring 0.76 out of 1). Whilst the Meldreth site scored equally across many of the themes, the site did not score as</p>

⁵² Results taken from Appendix C of OAR

⁵³ Cambridge Biomedical Campus Transport Needs Review - Atkins (2018)

⁵⁴ Results taken from Appendix C of OAR

No.	Question	Answer
		highly for Sustainable Travel (0.74 vs 0.81). Here, access time to the Park & Ride site from the A10 is estimated to be take longer. The Meldreth site also scored less well on Quality of Life (0.65 vs 0.70) because it was assessed as having a greater impact on water environment and flooding, as well as having a greater impact on local community ⁵⁵
17	What would journey time be from Foxton? Compared to driving to the new J11 Park & Ride?	<p>Assuming a person spends 10 minutes on average at the Park & Rail transport hub before departing, the journey time estimate from Foxton Rail Station to Cambridge Station is 21mins (10-minute wait time and 11-minute rail journey time)⁵⁶.</p> <p>If someone were to drive from Foxton to Junction 11, this would take 6mins on average.⁵⁷ Applying the wait time used at Foxton of 10 minutes, and an estimated 12 minute bus journey time to the city centre (assumed 3 mins longer than the current bus journey time from Trumpington), their total journey time with Foxton as the starting point would be approximately 28mins.</p>
18	Will the current train frequencies impact on local traffic flows by leading to 'lumpy' demand? i.e. 2 trains per hour resulting in a peak in cars arriving at the station every half hour.	Based on current train frequencies being 2 per hour, it is not envisaged that this would generate significant peaks in demand arrivals. Further micro-simulation modelling would be required to establish the detailed impact and, if there are significant demand peaks, consideration given at the design stage as to how these should best be addressed

Source: Mott MacDonald

8.2 Next Steps

The next steps in the development of the Foxton Park & Rail transport hub scheme is to develop a Strategic Outline Business Case (SOBC) that will consider the scheme across the five cases in line with HM Treasury Green Book Guidance (Strategic, Economic, Financial, Commercial and Management). This business case will be informed by this options assessment.

A key aspect in the development of the SOBC will be engagement with key stakeholders, the initial list of which includes:

- The East West Rail Consortium
- Cambridge Biomedical Campus
- Hertfordshire County Council
- Environment Agency
- Natural England
- Land owners
- Lead Local Flood Authority
- Cambridge City Council
- South Cambridgeshire District Council
- Cambridgeshire and Peterborough Combined Authority

⁵⁵ Air quality and noise impacts from increase traffic at local level.

⁵⁶ Taken from journey time assessment carried out as part of the corridor options assessment – see supporting Options Assessment Report for more detail.

⁵⁷ Google Maps – accessed on 18th September 2018

- Cambridgeshire County Council
- Network Rail
- Rail operator - Thameslink
- Bus operator - Stagecoach
- Parish council - Foxton
- User groups - bus & rail
- Emergency Services

The options will also undergo further development based on feedback from the key stakeholder engagement process, and the parallel development of the Level Crossing Bypass scheme. The options assessment will be updated to reflect any changes to the options in light of key stakeholder feedback, with the updated results being reported as part of the SOBC. Following this, the shortlist will be further developed and assessed with a view to selecting a preferred option for development.

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A. Transport Evidence Review

See separate report

B. Strategic Economic Case

See separate report

C. Park & Ride Demand Forecasting Technical Note

See separate report

D. Strategic Corridor Options – INSET Score Sheets

Table 37: INSET Scoring – Strategic Corridor Options Assessment – Sustainable Theme

#	Scheme	Sustainable Travel																				Theme Score		
		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.										To increase Park and Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.			To reduce journey times from Park and Ride site to key employment areas to enable public transport journeys to compete more effectively with the private car.									
		What is the potential for P&R site to capture car trips based on location of site along corridor?		What is the potential for P&R site to capture car trips based on key employment locations within Cambridge being served by current public transport services?		Does the potential P&R location have good levels of accessibility to the Public Transport network?		What is the potential for P&R site to link with future transport improvements - including South Cambridge Station/Western Package?		Sub-Criteria Score	Does the P&R site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand?		Sub-Criteria Score	What are journey times from P&R site to Cambridge City Centre using currently available public transport compared to journey times undertaken by car?		What are journey times from P&R site to North East Fringe Area using currently available public transport compared to journey times undertaken by car?		What are journey times from P&R site to Southern Fringe Area using currently available public transport compared to journey times undertaken by car?		What is the access time to the P&R site from the A10?			Sub-Criteria Score	
1	Trumpington Expansion	Site on the A10 and close to J11 (within 1 miles)	3	Direct access to City Centre, North East Fringe Area and Southern Fringe Area	3	Site within 400m of bus route served by high bus frequency (5ph) AND 800m of rail station serviced by high frequency (4ph).	3	Site links to Western Package OR Cambridge South	2	0.92	Yes	1	1.00	Journey times are 11-40mins slower	1	Journey times are 11-40mins faster	3	Journey times are no different -/+ 10mins	2	0-1min	3	0.69	0.87	
2	M11 Junction 11	Site on the A10 and close to J11 (within 1 miles)	3	Direct access to City Centre, North East Fringe Area and Southern Fringe Area	3	Site not within 400m of bus route or 800m of train station	0	Site links to Western Package OR Cambridge South	2	0.67	Yes	1	1.00	Journey times are 11-40mins slower	1	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	0-1min	3	0.69	0.78	
3	Hauxton	Site on the A10 and close to J11 (within 1 miles)	3	No direct access to any employment area	0	Site within 400m of bus route served by low bus frequency (2ph) AND/OR 800m of rail station serviced by low frequency (1ph).	1	Site doesn't link to any future transport improvements	0	0.33	Yes	1	1.00	Journey times are significantly slower - 41mins+	0	Journey times are 11-40mins slower	1	Journey times are no different -/+ 10mins	2	0-1min	3	0.63	0.65	
4	Harston	Site on the A10 but not close to J11 (beyond 1 miles)	2	Direct access to one of the three named employment areas	1	Site within 400m of bus route served by low bus frequency (2ph) AND/OR 800m of rail station serviced by low frequency (1ph).	1	Site doesn't link to any future transport improvements	0	0.33	Yes	1	1.00	Journey times are 11-40mins slower	1	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	0-1min	3	0.69	0.67	
5	Foxton	Site on the A10 but not close to J11 (beyond 1 miles)	2	Direct access to two of the three named employment areas	2	Site within 400m of bus route served by high bus frequency (5ph) OR 800m of rail station serviced by high frequency (4ph).	2	Site links to Western Package OR Cambridge South	2	0.67	Yes	1	1.00	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	0-1min	3	0.75	0.81	
6	Shepreth	Site not close to J11 (beyond 1 miles) and set back from A10	0	Direct access to two of the three named employment areas	2	Site within 400m of bus route served by high bus frequency (5ph) OR 800m of rail station serviced by high frequency (4ph).	2	Site links to Western Package OR Cambridge South	2	0.50	Yes	1	1.00	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	2-3mins	2	0.54	0.68	
7	Meldreth	Site on the A10 but not close to J11 (beyond 1 miles)	2	Direct access to two of the three named employment areas	2	Site within 400m of bus route served by high bus frequency (5ph) OR 800m of rail station serviced by high frequency (4ph).	2	Site links to Western Package OR Cambridge South	2	0.67	Yes	1	1.00	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	Journey times are no different -/+ 10mins	2	2-3mins	2	0.54	0.74	
8	Royston	Site not close to J11 (beyond 1 miles) and set back from A10	0	Direct access to two of the three named employment areas	2	Site within 400m of bus route served by high bus frequency (5ph) OR 800m of rail station serviced by high frequency (4ph).	2	Site links to Western Package OR Cambridge South	2	0.50	No obvious location	0	0.00	Journey times are no different -/+ 10mins	2	Journey times are 11-40mins faster	3	Journey times are no different -/+ 10mins	2	2-3mins	2	0.54	0.35	

Source: Mott MacDonald

Table 38: INSET Scoring – Strategic Corridor Options Assessment – Congestion Theme

#	Scheme	Congestion			Theme Score
		No significant increase in traffic flows along the A10 between Royston and the M11 Junction 11.			
		What level of increase or decrease in traffic flows is there along the A10 between Royston and M11 Junction 11?		Sub-Criteria Score	
1	Trumpington Expansion	Decrease in traffic flows	2	1.00	1.00
2	M11 Junction 11	Decrease in traffic flows	2	1.00	1.00
3	Hauxton	No change in traffic flows	1	0.50	0.50
4	Harston	No change in traffic flows	1	0.50	0.50
5	Foxton	Decrease in traffic flows	2	1.00	1.00
6	Shepreth	Decrease in traffic flows	2	1.00	1.00
7	Meldreth	Decrease in traffic flows	2	1.00	1.00
8	Royston	Decrease in traffic flows	2	1.00	1.00

Source: Mott MacDonald

Table 39: INSET Scoring – Strategic Corridor Options Assessment – Economic Growth Theme

#	Scheme	Economic Growth									Theme Score
		To increased connectivity between settlements along the Royston to Cambridge route and the city centre, the North Fringe East and Southern Fringe areas									
		How many households West of the M11 are within a 75min end to end journey time of Cambridge City Centre from P&R site?		Sub-Criteria Score	How many households West of the M11 are within a 75min end to end journey time of Cambridge North Station from P&R site?		Sub-Criteria Score	How many households West of the M11 are within a 75min end to end journey time of proposed location for Cambridge South Station from P&R site?		Sub-Criteria Score	
1	Trumpington Expansion	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	Low number of houses would be within 75mins using P&R (Less than 20,000)	0	0.00	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	0.67
2	M11 Junction 11	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	Low number of houses would be within 75mins using P&R (Less than 20,000)	0	0.00	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	0.67
3	Hauxton	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	Low number of houses would be within 75mins using P&R (Less than 20,000)	0	0.00	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	0.33
4	Harston	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	Low number of houses would be within 75mins using P&R (Less than 20,000)	0	0.00	Low number of houses would be within 75mins using P&R (Less than 20,000)	0	0.00	0.17
5	Foxton	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	0.50
6	Shepreth	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	0.50
7	Meldreth	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	0.50
8	Royston	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	High number of houses would be within 75mins using P&R (Between 20,000 and 65,000)	1	0.50	Significantly high number of houses would be within 75mins using P&R (Greater than 65,000)	2	1.00	0.83

Source: Mott MacDonald

Table 40: INSET Scoring – Strategic Corridor Options Assessment – Quality of Life Theme

#	Scheme	Quality of Life														Theme Score
		To improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.											To increase cycling and walking along the Royston to Cambridge A10 corridor.			
		What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).		What is the potential visual impact on landscape?		What is the potential impact on the historic environment?		What is the potential impact on biodiversity?		What is the potential impact on water environment and flooding?		Sub-Criteria Score	Does the location of the P&R site offer the potential to integrate with cycling and walking facilities?		Sub-Criteria Score	
1	Trumpington Expansion	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Neutral/Minor	2	Neutral/Minor	2	0.40	Site location offers good integration	4	1.00	0.70
2	M11 Junction 11	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Neutral/Minor	2	Neutral/Minor	2	0.40	Site location offers good integration	4	1.00	0.70
3	Hauxton	Neutral/Minor	2	Major/Adverse	0	Moderate/Adverse	1	Neutral/Minor	2	Neutral/Minor	2	0.35	Site location offers good integration	4	1.00	0.68
4	Harston	Neutral/Minor	2	Major/Adverse	0	Major/Adverse	0	Neutral/Minor	2	Neutral/Minor	2	0.30	Site location offers good integration	4	1.00	0.65
5	Foxton	Neutral/Minor	2	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Neutral/Minor	2	0.40	Site location offers good integration	4	1.00	0.70
6	Shepreth	Major/Adverse	0	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Moderate/Adverse	1	0.25	Site location offers some integration	3	0.75	0.50
7	Meldreth	Moderate/Adverse	1	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Moderate/Adverse	1	0.30	Site location offers good integration	4	1.00	0.65
8	Royston	Major/Adverse	0	Neutral/Minor	2	Major/Adverse	0	Neutral/Minor	2	Moderate/Adverse	1	0.25	Site location offers some integration	3	0.75	0.50

Source: Mott MacDonald

Table 41: INSET Scoring – Strategic Corridor Options Assessment – Deliverability Theme

#	Scheme	Deliverability							Theme Score
		To deliver a technically feasible Park and Ride solution.							
		What land allocations exist within the area of proposed P&R site?		Does the P&R location require investment in supporting public transport infrastructure in order to provide adequate connectivity?		Does the P&R location require investment in supporting public transport services in order to provide adequate connectivity?		Sub-Criteria Score	
1	Trumpington Expansion	Designated land for P&R	3	No - locaiton linked to Cambridge City Centre via rail line and/or bus priority	3	No - site location currently well served by frequent public transport services.	3	1.00	1.00
2	M11 Junction 11	Potential land available	2	Yes - invesment in infrastructure required but already planned/funded as separate scheme.	2	Yes investment to enhance PT services to provide high frequency and direct services to Cambridge City Centre required but already planned/funded through separate scheme.	2	0.67	0.67
3	Hauxton	Mainly Green Belt and/or Safeguarded land	0	Yes - significant invesment in infrastructure required	0	Yes - some minor invesment in PT services	1	0.11	0.11
4	Harston	Mainly Green Belt and/or Safeguarded land	0	Yes - significant invesment in infrastructure required	0	Yes - some minor invesment in PT services	1	0.11	0.11
5	Foxton	Potential land available	2	No - locaiton linked to Cambridge City Centre via rail line and/or bus priority	3	No - site location currently well served by frequent public transport services.	3	0.89	0.89
6	Shepreth	Potential land available	2	No - locaiton linked to Cambridge City Centre via rail line and/or bus priority	3	No - site location currently well served by frequent public transport services.	3	0.89	0.89
7	Meldreth	Potential land available	2	No - locaiton linked to Cambridge City Centre via rail line and/or bus priority	3	No - site location currently well served by frequent public transport services.	3	0.89	0.89
8	Royston	Limited land availability	1	No - locaiton linked to Cambridge City Centre via rail line and/or bus priority	3	No - site location currently well served by frequent public transport services.	3	0.78	0.78

Source: Mott MacDonald

E. Location Specific Options – INSET Score Sheets

Table 42: INSET Scoring – Location Specific Options Assessment – Sustainable Travel Theme

#	Scheme										Theme Score
		To increase sustainable transport mode share for trips into the city centre, the Northern Fringe East and Southern Fringe areas, from trips originating from the south and south west along the Royston to Cambridge route.			To increase Park & Ride capacity along the Royston to Cambridge A10 corridor directly serving key areas of employment.						
		Does the potential P&R location have good levels of accessibility to the Public Transport network?		Sub-Criteria Score	Does the P&R site provide the required 1.8ha of space to deliver required car parking spaces to meet forecasted demand?		Does the P&R site have the potential for future increase in capacity to meet growth beyond what is forecasted?		Sub-Criteria Score		
1	Option 1 - without bypass	Top three options by closest walking access distance	2	1.00	Yes	1	Yes	1	1.00	1.00	
2	Option 1 - with bypass	Middle four options by closest walking access distance	1	0.50	Yes	1	Yes	1	1.00	0.75	
3	Option 2	Bottom three options by closest walking access distance	0	0.00	Yes	1	Yes	1	1.00	0.50	
4	Option 3	Bottom three options by closest walking access distance	0	0.00	Yes	1	Yes	1	1.00	0.50	
5	Option 4a - without bypass	Middle four options by closest walking access distance	1	0.50	Yes	1	Yes	1	1.00	0.75	
6	Option 4a - with bypass	Bottom three options by closest walking access distance	0	0.00	Yes	1	Yes	1	1.00	0.50	
7	Option 4b - without bypass	Middle four options by closest walking access distance	1	0.50	No obvious location	0	No obvious location	0	0.00	0.25	
8	Option 4b - with bypass	Middle four options by closest walking access distance	1	0.50	No obvious location	0	No obvious location	0	0.00	0.25	
9	Option 5 - without bypass	Top three options by closest walking access distance	2	1.00	Yes	1	Yes	1	1.00	1.00	
10	Option 5 - with bypass	Top three options by closest walking access distance	2	1.00	Yes	1	Yes	1	1.00	1.00	

Source: Mott MacDonald

Table 43: INSET Scoring – Location Specific Options Assessment – Quality of Life Theme

#	Scheme	Quality of Life																	Theme Score
		To improved quality of life within Greater Cambridge by minimising traffic impacts on the environment along the Royston to Cambridge A10 corridor.											To increase cycling and walking along the Royston to Cambridge A10 corridor.			To create a safer highway environment for cycling and walking the Royston to Cambridge A10 corridor.			
		What is the potential impact on local community (air quality and noise impacts from increased traffic at local level).		What is the potential visual impact on landscape?		What is the potential impact on the historic environment?		What is the potential impact on biodiversity?		What is the potential impact on water environment and flooding?		Sub-Criteria Score	Does the location of the P&R site offer the potential to integrate with cycling and walking facilities?		Sub-Criteria Score	Does P&R site increase the number of 'conflict points' for pedestrians and cyclists?		Sub-Criteria Score	
1	Option 1 - without bypass	Minor adverse	2	Minor adverse	2	Moderate adverse	1	Minor adverse	2	Neutral	3	0.33	Site location offers some integration	3	0.75	No increase in conflict points - 0 new junctions	3	1.00	0.69
2	Option 1 - with bypass	Neutral	3	Minor adverse	2	Moderate adverse	1	Minor adverse	2	Neutral	3	0.37	Site location offers some integration	3	0.75	No increase in conflict points - 0 new junctions	3	1.00	0.71
3	Option 2	Minor adverse	2	Moderate adverse	1	Moderate adverse	1	Moderate adverse	1	Neutral	3	0.27	Site location offers good integration	4	1.00	Moderate increase in conflict points- 2-4 new junctions	1	0.33	0.53
4	Option 3	Neutral	3	Moderate adverse	1	Moderate adverse	1	Minor adverse	2	Neutral	3	0.33	Site location offers good integration	4	1.00	Minimal increase in conflict points - 1 new junction	2	0.67	0.67
5	Option 4a - without bypass	Neutral	3	Minor adverse	2	Moderate adverse	1	Minor adverse	2	Neutral	3	0.37	Site location offers good integration	4	1.00	Minimal increase in conflict points - 1 new junction	2	0.67	0.68
6	Option 4a - with bypass	Neutral	3	Minor adverse	2	Moderate adverse	1	Minor adverse	2	Neutral	3	0.37	Site location offers good integration	4	1.00	Minimal increase in conflict points - 1 new junction	2	0.67	0.68
7	Option 4b - without bypass	Moderate adverse	1	Moderate adverse	1	Moderate adverse	1	Minor adverse	2	Neutral	3	0.27	Site location offers good integration	4	1.00	Moderate increase in conflict points- 2-4 new junctions	1	0.33	0.53
8	Option 4b - with bypass	Minor adverse	2	Moderate adverse	1	Moderate adverse	1	Minor adverse	2	Neutral	3	0.30	Site location offers good integration	4	1.00	Moderate increase in conflict points- 2-4 new junctions	1	0.33	0.54
9	Option 5 - without bypass	Minor adverse	2	Moderate adverse	1	Major adverse	0	Minor adverse	2	Neutral	3	0.27	Site location offers some integration	3	0.75	Minimal increase in conflict points - 1 new junction	2	0.67	0.56
10	Option 5 - with bypass	Minor adverse	2	Moderate adverse	1	Major adverse	0	Minor adverse	2	Neutral	3	0.27	Site location offers some integration	3	0.75	Minimal increase in conflict points - 1 new junction	2	0.67	0.56

Source: Mott MacDonald

Table 44: INSET Scoring – Location Specific Options Assessment – Deliverability Theme

#	Scheme	Deliverability																	Theme Score
		To deliver a technically feasible Park and Ride solution.							To deliver an affordable Park and Ride solution.										
		What land allocations exist within the area of proposed P&R site?		What is the level of construction risk (engineering feasibility)?		What is the expected impact of construction on the existing network (level of disruption to road users)?		Sub-Criteria Score	What are the associated capital costs of delivering the P&R solution?		What are the land acquisition requirements (extent & complexity of acquisition)?		What level of complexity is associated with the infrastructure maintenance and renewals (risk)?		What are the ongoing cost implications - maintenance and site operations?		Sub-Criteria Score		
1	Option 1 - without bypass	Potential land available	2	Low	3	Low	3	0.72	Low	3	Low	3	Low	3	Low	3	0.75	1.10	
2	Option 1 - with bypass	Potential land available	2	Acceptable	2	Low	3	0.64	Low	3	Low	3	Medium	2	Medium	2	0.63	0.95	
3	Option 2	Mainly Green Belt and/or Safeguarded land	0	Acceptable	2	Acceptable	2	0.33	Low	3	High	1	Low	3	Low	3	0.63	0.65	
4	Option 3	Mainly Green Belt and/or Safeguarded land	0	Acceptable	2	Acceptable	2	0.33	Low	3	High	1	Low	3	Low	3	0.63	0.65	
5	Option 4a - without bypass	Potential land available	2	Acceptable	2	Acceptable	2	0.56	Low	3	Low	3	Low	3	Low	3	0.75	0.93	
6	Option 4a - with bypass	Potential land available	2	Acceptable	2	Acceptable	2	0.56	Low	3	Low	3	Low	3	Low	3	0.75	0.93	
7	Option 4b - without bypass	Potential land available	2	Low	3	Acceptable	2	0.64	Low	3	Very low	4	Low	3	Low	3	0.81	1.05	
8	Option 4b - with bypass	Potential land available	2	Low	3	Acceptable	2	0.64	Low	3	Very low	4	Low	3	Low	3	0.81	1.05	
9	Option 5 - without bypass	Mainly Green Belt and/or Safeguarded land	0	Low	3	Acceptable	2	0.42	Low	3	High	1	Low	3	Low	3	0.63	0.73	
10	Option 5 - with bypass	Mainly Green Belt and/or Safeguarded land	0	Low	3	Acceptable	2	0.42	Low	3	High	1	Low	3	Low	3	0.63	0.73	

Source: Mott MacDonald

F. Heritage Assessment

See separate report

G. Biodiversity Scoping Assessment

See separate report

