Cambridge South West Park & Ride

Non-Technical Summary

13 November 2018

Greater Cambridge Partnership

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Contents

1 Introduction

1.1 Purpose of this report

This document accompanies the public consultation materials for the Cambridge South West Park & Ride Project.

This document summarises information that has been used to develop the project to this point, particularly from the Strategic Outline Business Case (SOBC).

1.2 Background

The scheme is being promoted by the Greater Cambridge Partnership (GCP) which is the local delivery body for a City Deal with central Government, bringing powers and investment to Cambridge and Greater Cambridgeshire, worth up to £1 billion over 15 years. Through investment in transport and infrastructure, the GCP wants to connect people to places of employment and allow communities to grow sustainably in the coming years, by creating better and greener transport networks, reducing congestion and making better use of limited road space by prioritising sustainable transport.

To address congestion and facilitate sustained economic growth, £100m of government funding has been made available to the GCP for transport improvements until 2020.

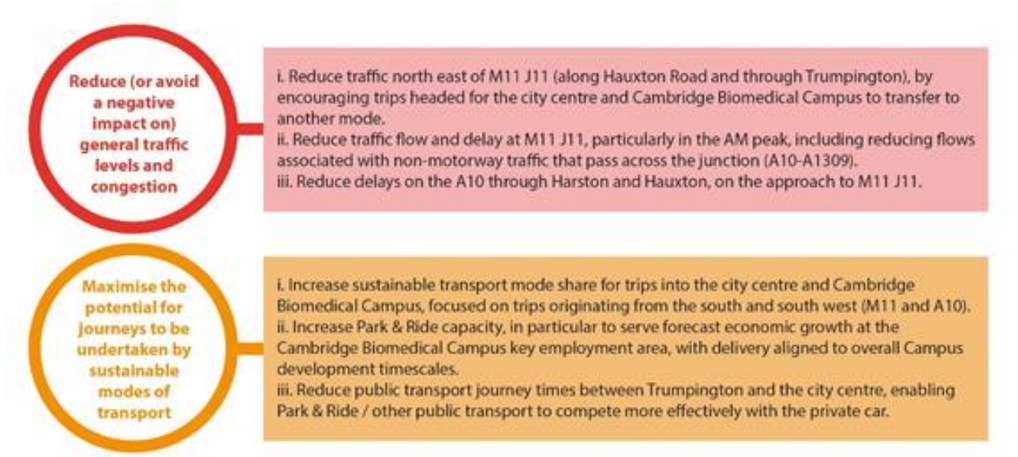
1.3 The Scheme

The scheme forms part of the West of Cambridge Package and was initially titled the Western Orbital. The South West Cambridge scheme is seeking to review of the capacity of the Park & Ride facilities in the study area. This scheme is made up of three core elements:

- An increase in Park & Ride capacity, close to J11 of the M11.
- Improvements to access Park & Ride facilities at J11 of the M11 for both public transport and private vehicles.
- Measures to improve public transport journey times from the existing Trumpington Park & Ride site into Cambridge city centre.

A set of objectives has been established to guide the assessment of the options for increasing Park & Ride provision in the area;

Figure 1: Scheme objectives



Source: SOBC

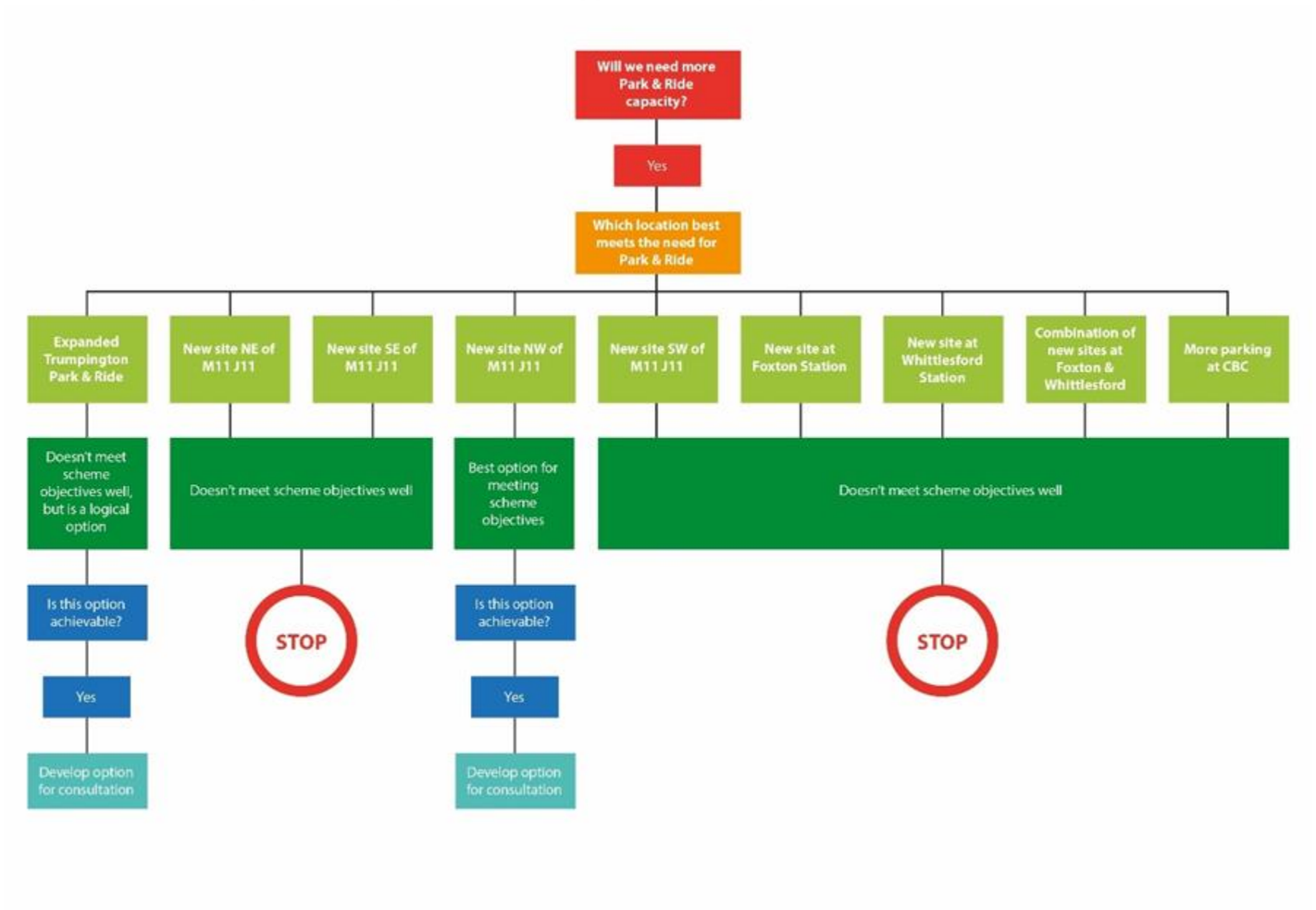
A range of ‘packages’ of different Park & Ride locations and access options that would deliver the scheme objectives have progressed through a series of assessments and refinements. The short-listed, packaged options were presented in the SOBC, which is available on the GCP website.

The packaged options in the SOBC comprise of various components, such as different Private Vehicle and Public Transport access arrangements, which can be combined in a variety of ways to form the overall scheme. Other packaged options could be created by using different combinations of these components.

For consultation, the individual elements of the most effective packaged options have been separated out, allowing stakeholders to comment on each individual element.

The Logic Map in Appendix B shows the assessment and decision-making process followed and is summarised in figure 2.

Figure 2: Summary of decision-making process to identify Park & Ride sites for consultation

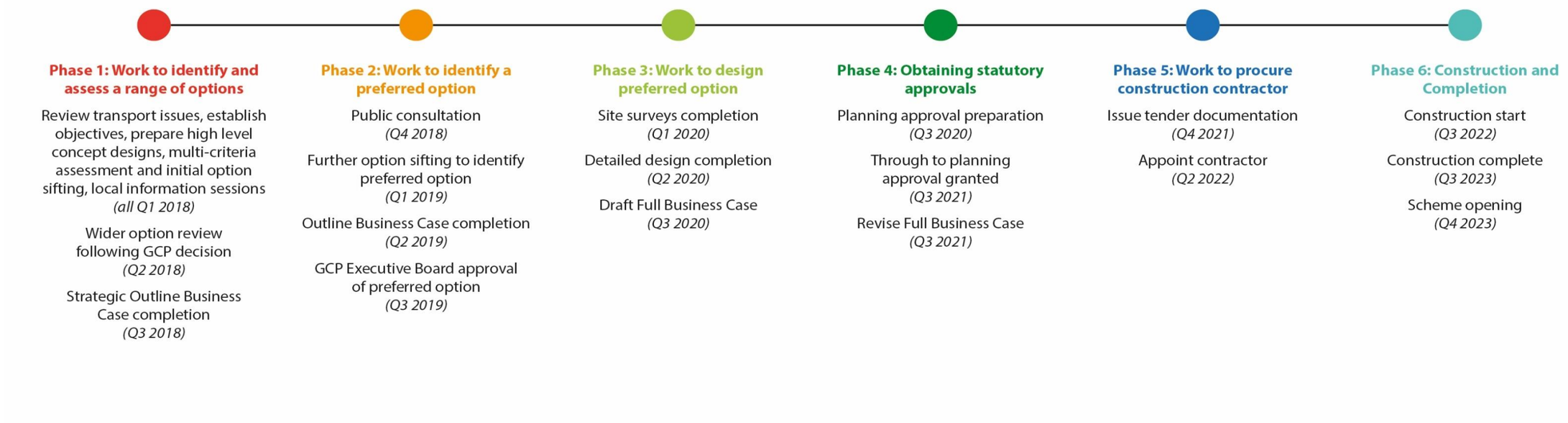


1.4 Scheme Delivery

Funding for the entire scheme is expected to come from the £1 billion Greater Cambridge City Deal investment.

An indicative programme has been prepared, with the Outline Business Case due for completion in July 2019 (following public consultation late 2018), followed by final option approval and then detailed design completion by the middle of 2020. Construction is anticipated for 2022/23.

Figure 3: Scheme Delivery Timeline



Source: SOBC

2 Need for the scheme

Cambridge is one of the most successful, fastest growing and productive cities in the UK. It has a world-leading University, one of the most significant technology clusters in Europe, a very strong knowledge-based sector and is attracting both start-up and relocating businesses.

This economic success is, however, contributing to a shortage of housing and considerable congestion. These problems threaten to choke further economic growth and compromise the high quality of life that has existed up until now.

2.1 Future Sustainable Growth

The GCP has a mandate to maintain and grow Greater Cambridge. It aims to deliver 33,500 new homes and 44,000 new jobs by 2031 with 'better greener transport connecting people to homes, jobs, study and opportunity'.

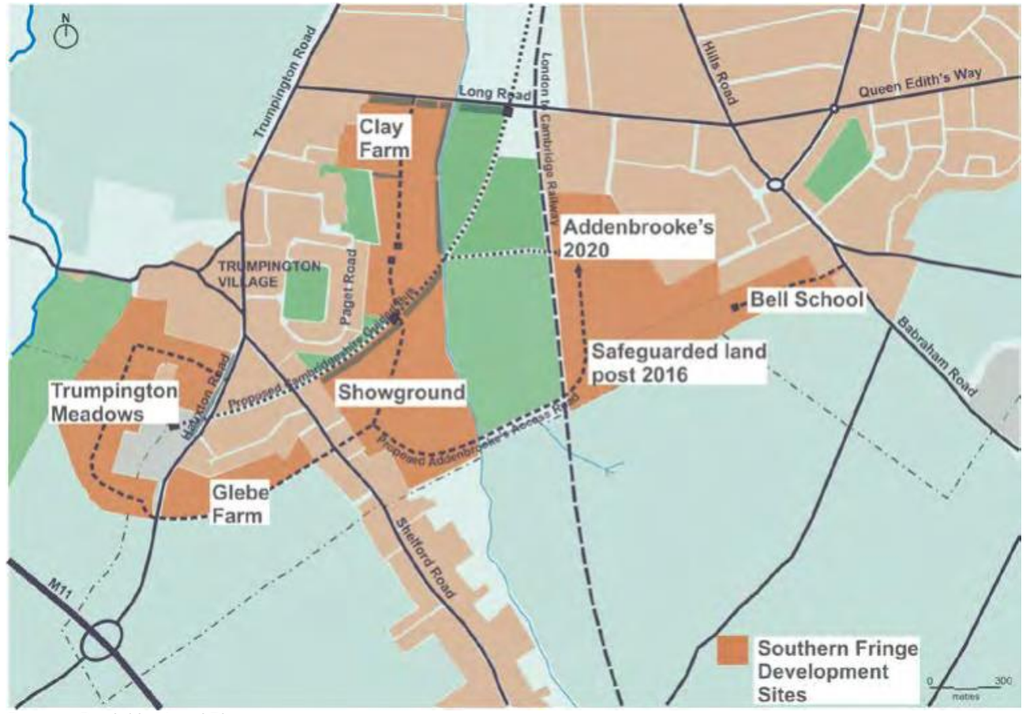
The city helps the UK economy to compete internationally, attracting high calibre knowledge-based individuals to fill skills gaps and increase economic growth.

Growth is occurring all around Greater Cambridgeshire including developments at Cambridge North West, Cambridge Southern Fringe, Cambourne, Bourn Airfield and employment hubs at West Cambridge and the Cambridge Biomedical Campus (CBC). As these developments come to fruition, they will add pressure to the already congested transport network. To ensure continued economic growth, the GCP must deliver an enhanced network of infrastructure to sustainably facilitate additional trips made by new and existing employers and employees.

A significant proportion of the development in Greater Cambridge is taking place in the Southern Fringe. This area, shown in figure 4 incorporates major residential and employment development, including the rapidly growing CBC. The CBC alone is expected to employ 30,000 people by 2031, almost double the 17,250 employed in 2017, which will contribute approximately 15-20% of the total employment in Cambridge. The development will include the new Royal Papworth Hospital site – expected to open in 2019 – and the global headquarters of AstraZeneca.

A number of large residential developments are also planned, or are already under construction in the Southern Fringe area, with approximately 2250 homes planned for the Clay Farm site and a total of 1000 homes planned for the Trumpington Meadows and Glebe Farm sites.

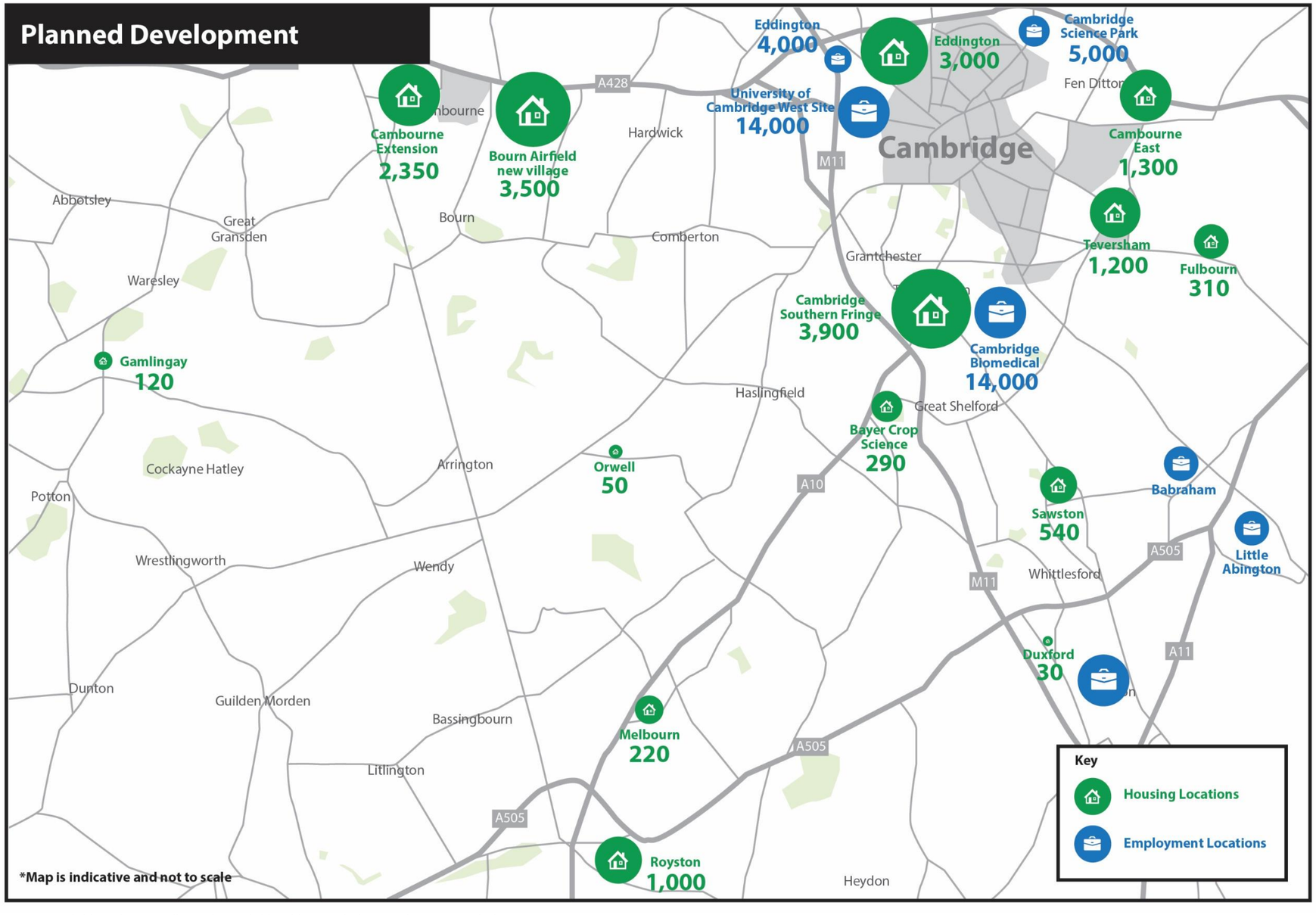
Figure 4: Southern Fringe Development



Source: Cambridge Local Plan

The Local Plan sets out the growth proposals for the wider region which will increase demand for transport in the area. Proposals include significant housebuilding aspirations including new towns and villages to the north and west of Cambridge, as well as supporting housing development in rural centres including Great Shelford and Stapleford, and Sawston – all to the south of Cambridge. Figure 5 shows planned development in the wider area.

Figure 5: Planned development in the wider area



Source: Cambridge City Council, South Cambridgeshire Local Plan, North Herts Local Plan

2.2 Network Constraints

Investment in transport infrastructure is critical for accommodating demand and ensuring that congestion, capacity constraints and poor journey time reliability are addressed to unlock the city's growth potential.

The range of existing and future transport problems that have the potential to constrain economic growth are:

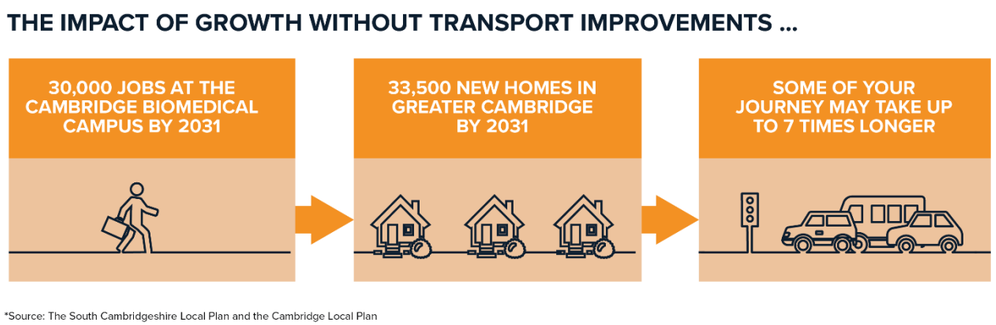
Figure 6: Network constraints

Issue identified	Effect on the network
Congestion along the A1309 Hauxton Rd, which connects the Biomedical Campus to the M11 at Junction 11 and the A1309 High Street / Trumpington Road corridor. Park & Ride vehicles, and other public transport services, are caught in congestion along the A1309 into the city centre.	SLOW Currently the A1309 is congested, with 24,000 vehicles using the road every day. Average speeds on the road are less than 10mph on some sections during the morning and evening peaks. The A1309 is the most congested of the three main routes that connect the M11 into central Cambridge.
Congestion at M11 Junction 11, particularly in the AM peak, including the A10 approach through Harston and Hauxton.	Junction 11 is a critical pinch point on the road network where the M11 and A10 meet. High levels of car-commuting into Cambridge from surrounding areas, and the growth of the CBC means that congestion here is likely to impact on economic growth if not addressed.
Higher private car mode share for journeys from the south and south-west via the M11 and A10.	Commuters from areas to the south and west of Cambridge are more likely to commute by car than those coming from the north and east of the city.
Significant increase in private car trips forecast as a result of rapid growth.	The CBC alone (excluding Addenbrooke's Hospital) is expected to generate an additional 8,000 daily trips by employees by the time it is fully operational. The current assumption is that at least 30% (2,400) of these additional trips are expected to be made by private car. The increased demand for the 70% of additional trips made by non-car modes will mean that investment in public transport and active travel infrastructure will be required.
The existing Trumpington Park & Ride has insufficient capacity to cater for employment growth at Cambridge Biomedical Campus.	Parking at the Trumpington Park & Ride site is estimated to be 80-85% full – close to operational capacity – and anecdotal evidence suggests that the site is regularly operating at greater than 90% occupancy. Growth forecasts suggest that even under a 'medium' growth scenario, a major expansion of up to 900 spaces would be required by 2031 to accommodate demand

Source: SOBC

A key challenge to ensuring sustainable development will be the need to address the problems on the transport network experienced today. Left unchecked, this will hinder GCP's ability to cater for more people wanting to travel in the future, as shown in figure 7.

Figure 7: Graphic of the impact of growth without transport improvements



*Source: The South Cambridgeshire Local Plan and the Cambridge Local Plan

2.3 Alignment with Local and Regional Policies

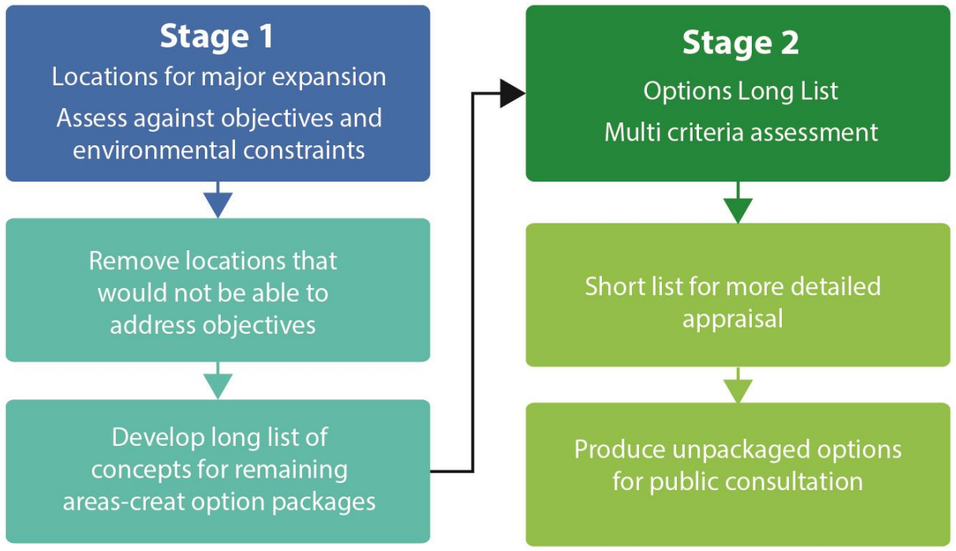
A full policy review has been conducted as part of the SOBC to ensure that the scheme objectives align with national, regional and local policies. The review included:

- Transport Investment Strategy 2017
- Greater Cambridge Greater Peterborough SEP (Strategic Economic Plan)
- Greater Cambridge City Deal (GCCD)
- Cambridge Local Plan
- South Cambridgeshire Local Plan
- Cambridgeshire Local Transport Plan (2011-2031) and Cambridgeshire Long Term Transport Strategy
- Transport Strategy for Cambridge & South Cambridgeshire

3 The Options Appraisal Process

The potential options for addressing the need for a scheme are assessed through the options appraisal process. The assessment has been undertaken in two stages:

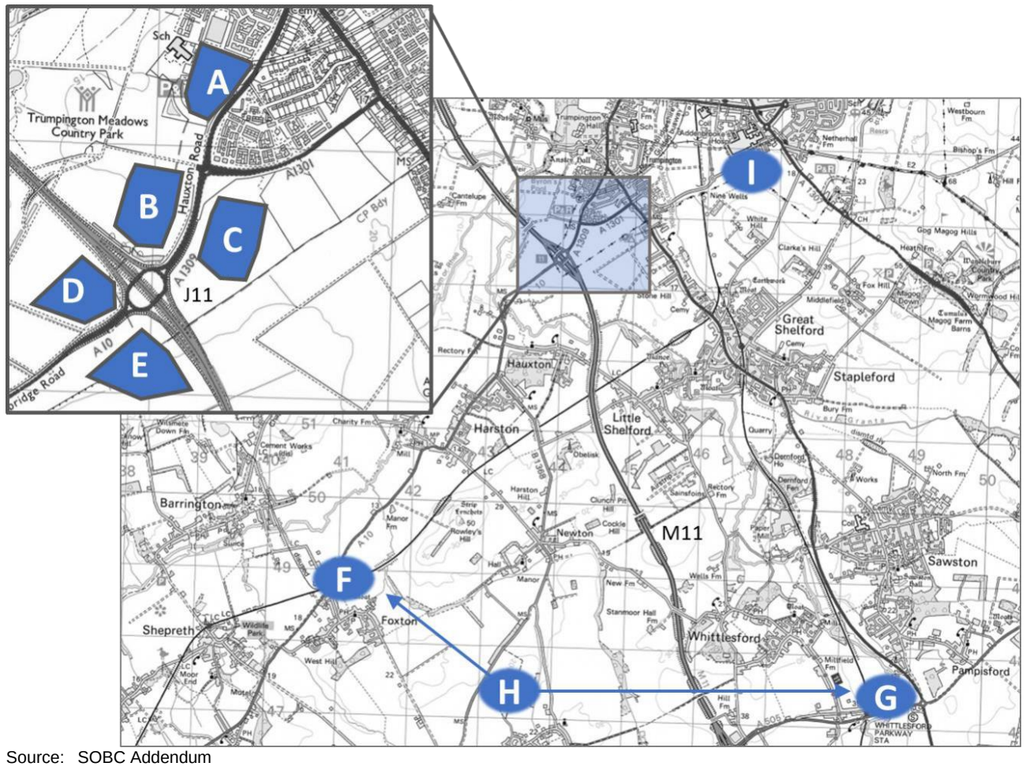
Figure 8: Stages of option appraisal



3.1 Stage 1

A long list of nine potential locations for increasing the capacity of Park & Ride provision at J11 of the M11 was sifted by assessing each location against its ability to meet the scheme objectives, and on environmental constraints. These locations are shown in figure 9.

Figure 9: Locations considered for Park & Ride Expansion



Source: SOBC Addendum

A. Expand Trumpington Park & Ride
B. New site at J11 NE Quadrant
C. New site at J11 SE Quadrant
D. New site at J11 NW Quadrant
E. New site at J11 SW Quadrant
F. Park & Ride at Foxton Station
G. Park & Ride at Whittlesford Station
H. Combination of Park & Ride at Foxton and Whittlesford Stations
I. Additional parking at the Cambridge Biomedical Campus

The assessment found:

- Location D, to the west of J11 was considered to most effectively meet the scheme objectives, having a slight or moderately beneficial impact on five of the six objectives and have the least environmental impact, of all the options.

- Location A, an expansion of the existing Park & Ride site at Trumpington, was assessed as not meeting the scheme objectives particularly well, and having some moderately adverse environmental impacts, but was taken forward as a logical alternative to a new site.

3.2 Access Components

As part of Stage 1, a series of potential access components were developed for Locations D and A, as summarised in table 1.

Theme	Location A – Access Option Components	Location D – Access Option Components
Suitable access / egress arrangements for light vehicles	• Existing junction arrangements • Dedicated slip road off the M11 northbound bypassing Jcn11 and tying in to existing Park & Ride lane	• One or two new junctions on the A10 for Park & Ride access • Dedicated slip road off the M11 northbound passing under the A10 for access to the Park & Ride • Additional capacity for traffic turning off the A10 into the site
M11 Junction 11 improvements (capacity enhancements)	• Additional lanes for Park & Ride access • free-flow left turn lanes on off-slips • Enlarged roundabout to provide extra capacity	• Additional lanes for Park & Ride access • Free-flow left turn lanes on off-slips • Enlarged roundabout to provide extra capacity
Public transport access measures	• Existing arrangements	• Public transport vehicles in general traffic from a new site • Widening the existing junction to provide a public transport lane • Providing a new bridge through the middle of the junction for public transport • Using an existing bridge to the north of the site

Table 1: Access Components for Potential Park & Ride locations

3.3 Establishing Demand for Park & Ride at J11

To determine the number of spaces required to serve additional demand for Park & Ride at J11, analysis of the forecasted growth in demand for Park & Ride at J11 was undertaken using the Cambridgeshire Sub-Regional Model (CSRM). Local Plan Demand and Local Plan plus City Access Demand scenarios were analysed based on:

- The Local Plan Demand assumption taking account of forecast levels of development in the Local Plan in conjunction with an increase in parking restrictions at the CBC.
- The Local Plan plus City Access Demand assumption accounts for the Local Plan Demand combined with additional demand associated with further restrictions on car usage in the city centre, due to City Access – see Q&A Box.

A lower demand scenario was initially developed, but work led by the Cambridgeshire and Peterborough Independent Economic Commission suggests that this level of demand is already being exceeded and was therefore discounted from further analysis.

Table 2 summarises the expected demand for Park & Ride spaces in the M11 Junction 11 area.

Year	Local Plan Demand	Local Plan plus City Access Demand
2022	1825	2194
2027	2049	3034
2031	2274	3874

Table 2: Forecast demand for Park & Ride

Figure 10: City Access Explained

Q&A - What is City Access?

The City Access project aims to improve travel within Cambridge by tackling congestion and significantly improving public transport, cycling and walking trips, as well as air quality. It looks to achieve reduction in peak-time traffic levels in Cambridge by 10-15% by 2031 and, in doing so, improve the flow of bus services around the city centre through the real location of road space.

Our proposal to increase the number of Park & Ride spaces within the vicinity of J11 of the M11 will play a key part in delivering the aspirations of the City Access project, by providing an attractive alternative to driving into Cambridge.

3.4 Option Packages

Utilising the potential access option components for locations A and D, ten option packages were developed and taken forward to assessment. These include:

- Eight potential options for a new site at Location D comprising of 2,260 spaces;
- One option for the expansion of the existing site (Location A) increasing the total number of spaces to 2,560; and
- A 'do nothing' option, which would take place without a major increase of Park & Ride capacity at J11 of the M11.

The 'packaging' of the options was a requirement to allow for the appraisal of the two sites and the various components, as the individual components cannot be appraised in isolation.

All option packages:

- Retain the existing Park & Ride site at Trumpington.
- Include complementary public transport priority measures, such as public transport priority at signals or additional public transport lanes between Trumpington and the city centre.

All option packages, with the exception of the Do Nothing, include enhanced public transport services between the Park & Ride site(s) and Cambridge city centre / CBC.

An option to phase the increase in Park & Ride capacity over several years was considered. This consisted of a significant expansion at the current Trumpington site followed by the introduction of a new site west of the M11 once the existing site was full. This option was rejected due to the cost of providing both a significant expansion at Trumpington and a new site.

This long list of ten option packages were taken forward to Stage 2, for wider appraisal, and are described in Appendix B of this report. These options – each assigned a colour - range from a 'do nothing' option, where no improvement beyond what is already committed takes place, to improvements for an expanded Trumpington site and a range of options for improving public and private vehicle access to a new Park & Ride site.

3.5 Stage 2

To enable a comparison of the ten different option packages, an assessment was undertaken utilising a criteria framework, referred to as a Multi-Criteria Assessment Framework (MCAF). The MCAF, derived from the Department for Transport's WebTAG guidance, was used to undertake an appraisal of each option package against four themes which were linked to the scheme objectives;

- Theme 1 – reducing traffic levels and congestion
- Theme 2 – maximising potential for journeys to be undertaken by sustainable modes
- Theme 3 – quality of life and environment
- Theme 4 – scheme deliverability

The assessment found that three options (named Cyan, Purple and White) were the highest scoring and these were therefore taken forward to shortlisting.

As the highest scoring options all include a tunnel under the A10 and are expected to be higher cost, the next highest scoring option – named Yellow – was also shortlisted as a lower cost alternative option.

A fifth option – named Magenta – was also shortlisted as a means of improving access to the Trumpington Park & Ride, should this be expanded.

The shortlisted packages will be assessed and further developed, utilising the consultation findings, in the Outline Business Case, to determine an emerging preferred option.

4 Options for Consultation

While the various access options for private and public transport vehicles were packaged for appraisal purposes, in reality there are several ways in which the various components can be combined. To allow stakeholders to comment on the different aspects of the scheme, the packaged options have been split into three separate components for consultation, covering;

- A site location for increasing Park & Ride capacity
- Private vehicle access
- Public transport access

Figure 11 summarises which packaged options have been used for the basis of each aspect of the consultation options.

Figure 11: Relationship between packaged options and consultation options

		Packaged option elements				
		Cyan	Purple	White	Yellow	Magenta
Location Options for consultation	Option 1 – Expand Trumpington Park & Ride	X	X	X	X	✓
	Option 2 – Construct New Park & Ride west of M11 J11	✓	✓	✓	✓	X
Private Vehicle Access Options for consultation	Private Vehicle Access to Expanded Trumping-ton site	X	X	X	X	✓
	Private Vehicle Access Option A	X	X	X	✓	X
	Private Vehicle Access Option B	X	X	✓	X	X
	Private Vehicle Access Option C	✓	X	X	X	X
Public Transport Vehicle Access Options for consultation	Public Transport Vehicle Access Option A	✓	X	✓	✓	X
	Public Transport Vehicle Access Option B	X	✓	X	X	X

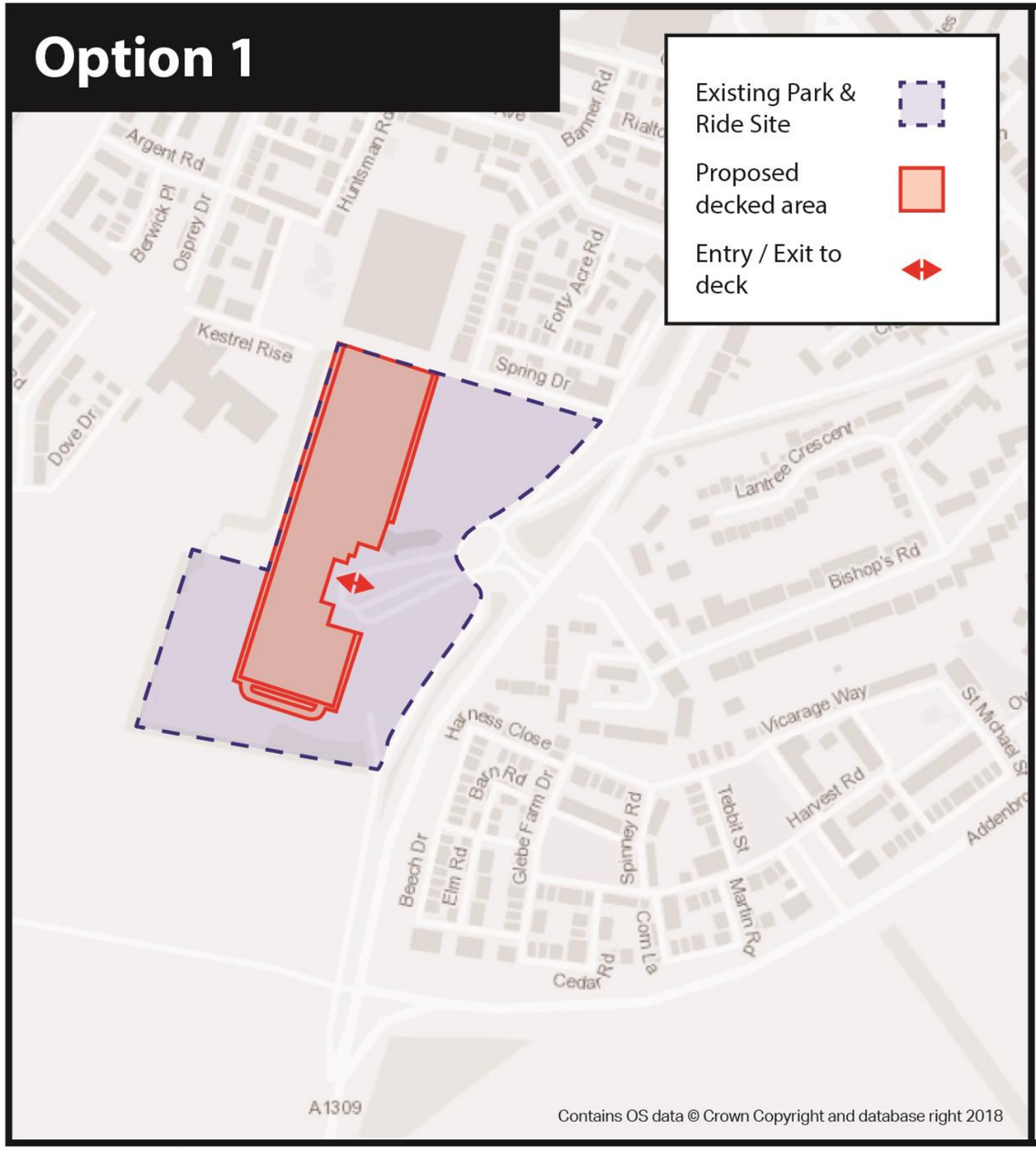
4.1 Site Location

Two potential locations for increasing Park & Ride capacity at J11 of the M11 are being put forward for public consultation.

Option 1 is an expansion to the existing Trumpington site, whilst Option 2 is a new site, to the west of J11.

Both options are based upon the existing Park & Ride site at Trumpington remaining open and are compatible with proposals for improving public transport journeys between J11 and the city centre.

Figure 12: Site Location Option 1



Option 1 would provide additional space at the existing Park & Ride site at Trumpington by building two additional decks over part of the site, increasing the number of spaces from 1,614 (this number includes the current planning application) to 2,560.

This option would accommodate the expected Local Plan demand up to 2031, but would not be large enough to cater for the higher estimates of demand up to 2031 that would be expected with the City Access targets to reduce peak time congestion.

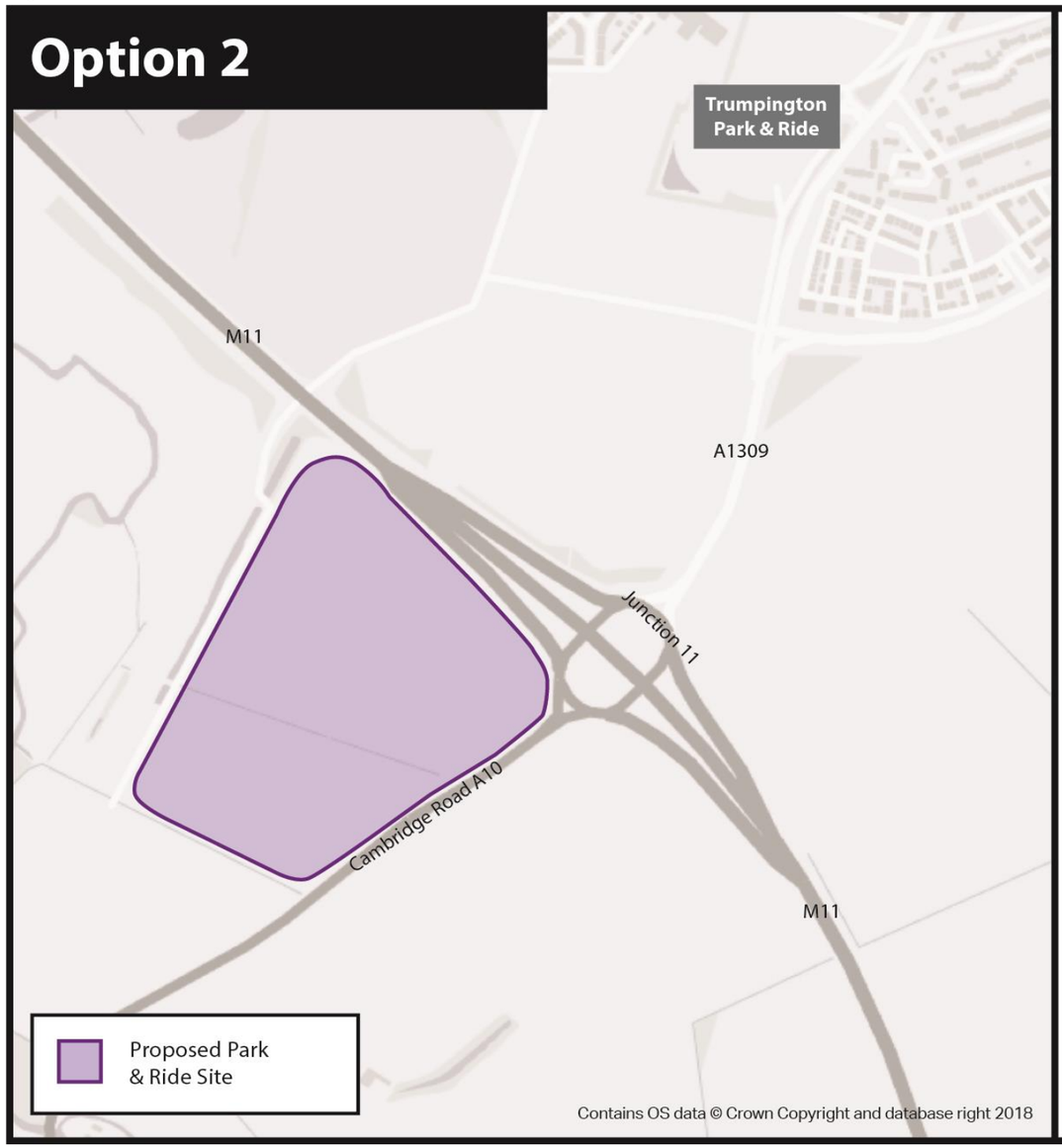
Option 1 would not need any more land but would cause some visual impact as the decks would be taller than existing buildings at the Trumpington site and would cover a larger area. Options for cladding the decking structure to reduce its visual impact would be considered as part of the detailed design. This option would also likely result in an adverse impact on local noise and air quality, from increasing capacity at the site and at an elevated level above the ground, in close proximity to residential properties adjacent to the site. Mitigation measures will be put in place to minimise the impacts.

As the decks would be built on top of the existing parking spaces, there would be a reduction in the number of spaces available during construction. This is expected to reduce the number of parking spaces available by approximately 700 – 900 for up to 18 months.

The cost of option 1 – excluding access works - would be approximately £9 million and the site could be constructed by the end of 2023.

Note: Q1, 2018 Cost Estimates

Figure 13: Location option 2



Option 2 would provide a completely new Park & Ride site west of M11 Junction 11 consisting of 2,260 new parking spaces in a single storey car park.

The location was chosen from a long list of options as it most effectively addressed the scheme objectives through reduced traffic and journey delays, as well as being attractive to new users. This location means that car trips bound for the Park & Ride would turn off the A10 before they reach junction 11, reducing traffic going through the junction. Option 2 assumes that the existing Trumpington Park & Ride site will remain open.

This option would fully meet the higher Local Plan plus City Access demand aspirations set out within the South Cambridgeshire Local Plan and support the City Access target to reduce peak time congestion.

This option would likely result in an adverse impact on landscape (visual) from the introduction of an urbanised facility in a rural environment. As the proposed site is currently an arable field within the Green Belt, the design would be landscaped to ensure the Park and Ride facility included hedges, planting schemes and sustainable drainage systems to minimise the impact of the site on the landscape. The proposed site is located next to Trumpington Meadows Country Park and provides potential habitat for reptiles in the field boundaries and a good habitat for wintering birds. There is potential to include land in the scheme to extend the country park. Depending on the access routes selected for development, this option could have a minor adverse impact on the country park.

The cost of constructing option 2 – excluding access works - would be approximately £11m and the site could be constructed by the end of 2023.

Note: Q1, 2018 Cost Estimates:

4.2 Private Vehicle Access Options

Both Options 1 and 2 would include changes to the road network to allow or improve access for private vehicles entering the sites to manage the increased number of Park & Ride trips within the local area. If Option 1 is chosen, there is one arrangement for how Private Vehicles would enter the Trumpington Park & Ride site from the M11 and the A10. If Option 2 is chosen, there are three possible arrangements for how Private Vehicles will enter and leave the new Park & Ride site from the M11 and the A10.

Figure 14: Private Vehicle Access to an Expanded Trumpington Park & Ride

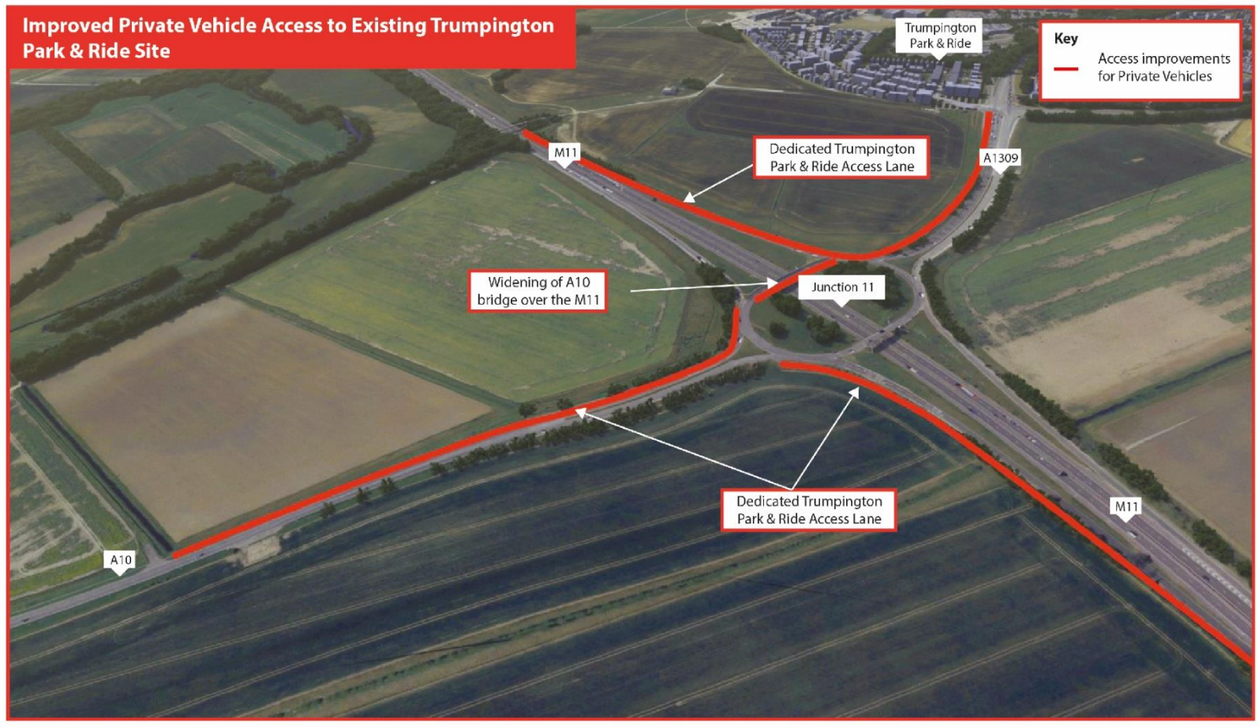
Private Vehicle Access to an Extension at the Trumpington Park & Ride Site

Approximate Construction Cost: £13.5million

Based on the Magenta package option, changes to the highway network to accommodate the increase in traffic accessing an expanded Park & Ride at the Trumpington site would be required.

These changes would provide dedicated lanes on the main approaches to the Park & Ride from the A10 and M11, to separate Park & Ride traffic from general traffic, allowing the junction to operate effectively. A new bypass lane off the M11 southbound would allow traffic accessing the Park & Ride to avoid the junction altogether.

Widening of the A10 bridge over the M11 would be required to accommodate an extra lane, which is likely to increase costs and disruption during construction.



Note: Q1, 2018 Cost Estimates

Figure 15: Private Vehicle Access Options

Vehicles Access Options for Site Option 2, New Park & Ride Site

Private Vehicle Access Option A
Approximate Construction Cost: £4million

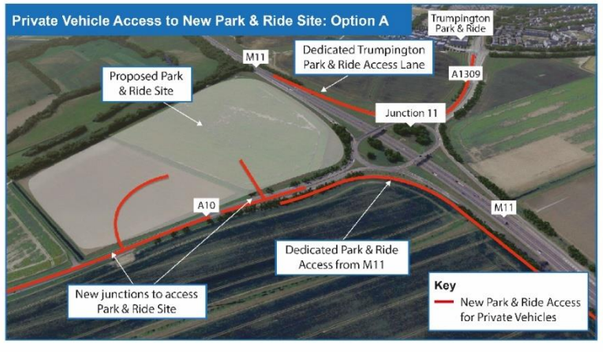
This option would provide private vehicle access to the new Park & Ride site via signalised junctions on the A10, allowing access and exit to all directions.

A dedicated lane for the Park & Ride from the M11 northbound would provide extra capacity for traffic approaching from this direction, and an extra lane could be added to the A10 to provide greater capacity for traffic approaching the site from the Hauxton direction.

A bypass lane into the existing Trumpington site, similar to that presented in the Option 1 Trumpington Park & Ride Extension access option, could also be added to the M11 southbound sliproad.

This option is much lower in cost than access options B and C, and is simpler to build, meaning less disruption during construction. The option would have some impact on the local highway network during construction, and may require temporary traffic signals on the A10, and some overnight closures for resurfacing.

It should be noted that the introduction of new junctions on the A10 would have an impact on traffic flow and would be least effective option for getting vehicles in and out of the new site.



Private Vehicle Access Option B
Approximate Construction Cost: £12million

This option would provide a single signalised junction on the A10 providing access and exit to all directions.

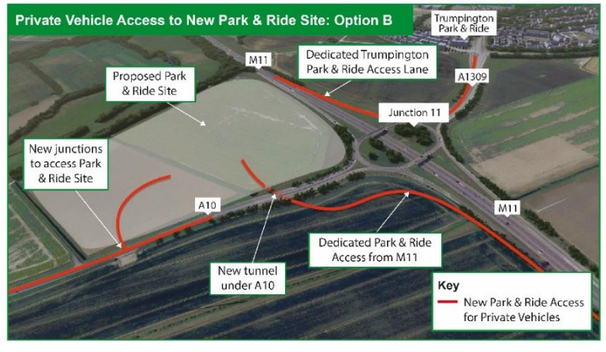
A new tunnel under the A10 would provide access from the M11 northbound directly into the new site meaning that traffic entering from this direction would not have to use the main junction.

Traffic leaving the site would use a signalised junction on the A10. As with Option A, a dedicated left turn lane could be added to the A10 to give extra capacity for traffic approaching the site from the Hauxton direction, and a bypass lane into the existing Trumpington Park & Ride site could also be added to the M11 southbound sliproad.

The tunnel under the A10 makes this option more expensive than access option A, and it would be more disruptive during construction. The free-flowing access for traffic entering the site from the M11 northbound would however be effective at getting vehicles into the site, reducing congestion on junction 11 and the A10.

The construction of the tunnel may require a temporary contraflow on the A10 as well as temporary traffic signals and overnight closures for resurfacing work. Disruption would be experienced on both the A10 and M11 (Northbound) during the works.

This option provides the quickest way to access the site from the M11 but is likely to have a larger impact on the highway network during construction, and take longer to build than Option A.



Private Vehicle Access Option C
Approximate Construction Cost: £11million

This option would provide a dedicated slip road from the M11 into the site via a tunnel under the A10 which removes the need for any right-turns into the site. Traffic on the A10 from the Hauxton direction would access the site via a free flow lane. Traffic exiting the site onto the A10 towards Hauxton would use a free flow lane through the same tunnel, removing a need for a signalised junction on the A10.

As with Option A, a dedicated left turn lane could be added to the A10 to give extra capacity for traffic approaching the site from the Hauxton direction, and a bypass lane into the existing Trumpington Park & Ride site could be added to the M11 southbound sliproad.

As Option C includes the construction of a tunnel, this option is more expensive than access option A, and would probably be the most disruptive option to construct.

The dedicated sliproads in and out of the site would be effective at getting vehicles in and out of the site, therefore this option is expected to perform well once completed.
This option would provide similar benefits to Option B, and would have similar impacts during construction, with a temporary contraflow, traffic signals and overnight closures likely to be required.

During construction there is likely to be more impact on Junction 11 than with Option B.

Note: Q1, 2018 Cost Estimates

Figure 16: Public Transport Access Options

Public Transport Access Options

Public Transport Access Option A

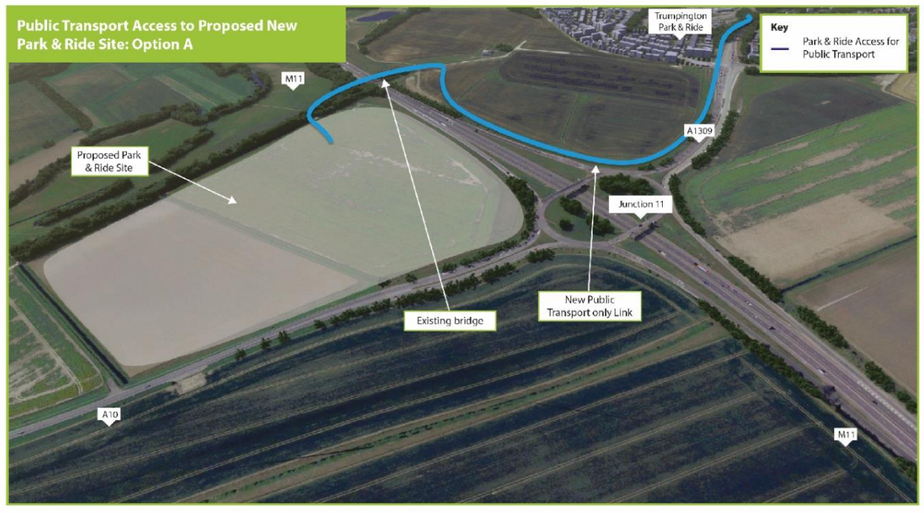
Approximate Construction Cost £4.5m

Based on the public transport access included in the Cyan packaged option, this option would involve Public Transport Vehicles accessing the new site via the existing farm bridge to the north of Junction 11. Public Transport Vehicles leaving the site would remain separate from general traffic all the way from the new site to the existing site at Trumpington. Work to the bridge would be needed to make it suitable for Public Transport Vehicles, and to provide a pedestrian and cycle route alongside the Public Transport Vehicles route. Some limited works would fall within the boundary of the Trumpington Meadow Country Park.

This option is less expensive than Public Transport Access Option B, as it would not require work to bridge the M11, but it would require construction of a new public transport link alongside a short length of the M11.

The construction of this access option would require traffic management on the A1309, M11 and the junction of the A10/M11. Bridge works will require some overnight closures of the M11.

The fastest bus journey from the Park & RIde to Downing Street John Lewis stop would take just over 17 minutes.



Public Transport Access Option B

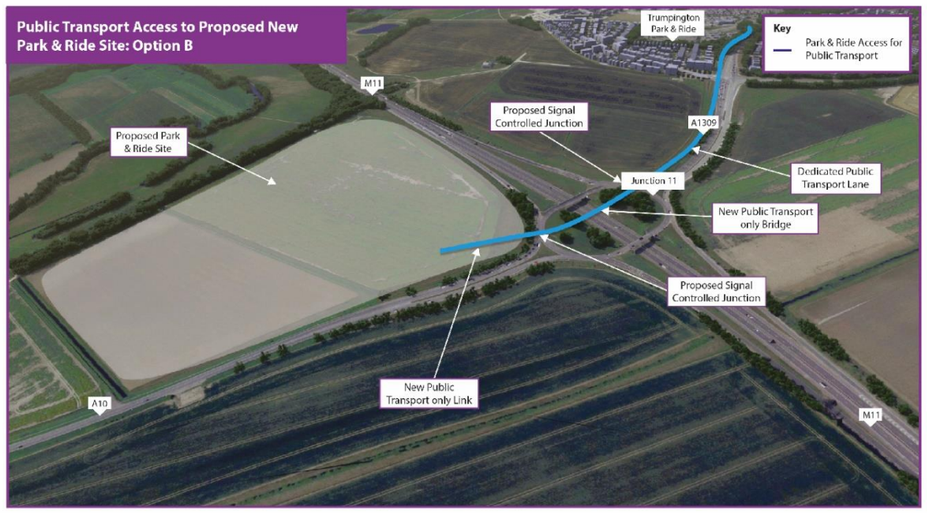
Approximate Construction Cost £11.5m

Based on the public transport access in the Purple packaged option, this option would involve public transport vehicles entering and leaving the new site via a new public transport only bridge through the middle of Junction 11. Traffic signals would be adjusted to allow public transport vehicles to pass through the middle of the junction with priority, which will have some impact on how the junction operates.

This option would keep public transport vehicles on the A1309 but requires significant work to Junction 11 to construct and would therefore be more disruptive and expensive to build.

The construction of this access option would require traffic management on the A1309, M11 and the junction of the A10/M11. Bridge works will require some overnight closures of the M11, and as the work is more complex, there is likely to be some reduction in traffic capacity at the junction. Work may take longer than expected if the existing bridge is found to be in a poor condition.

The fastest bus journey from the Park & RIde to Downing Street John Lewis stop would take just over 18 minutes.



Note: Q1, 2018 Cost Estimates

5 A Comparison of the Consultation Options

Through the SOBC process, the packaged options were assessed using a multi-criteria assessment framework, outlined earlier in this summary. The option components in the consultation are slightly modified to allow stakeholders to comment on different aspects of the proposals. This section summarises, in simple terms, the differences between the different component options presented at the consultation.

	Option 1 Extension at Trumpington Park & Ride	**Option 2 New Park & Ride Site**
Number of additional spaces	946	2,260
Expected Cost – Excluding Access Improvements (Q1, 2018 estimates)[1]	£9million	£11million
Expected Impacts During Construction	A reduction in the number of spaces available at Trumpington Park & Ride by approximately 700 – 900 for up to 18 months. Noise and disturbance to local residents and neighbouring school.	None associated with the site itself.
Potential Environmental Impact	Increased noise from increased vehicle movements at levels similar to neighbouring properties second floors. Partially in Green Belt. Lighting impact from new, elevated structure.	New site in Green Belt. Could have minor direct impact on Trumpington Meadows Country Park, but there are significant opportunities to increase overall size of the countryside park and increasing biodiversity through habitat creation as part of landscape led design.
Potential Visual Impact	Additional visual impact within this urban area – potential impression of greater intrusion on immediate neighbouring residential properties.	Urbanised feature in rural landscape in Green Belt.
Expected Completion Date	2023	2023

[1] Cost estimates include 5% Traffic Management, 2.5% Environmental Mitigation, 10% Out of Hours working. Cost estimates do not include Preliminaries, Overhead & Profit, Design, Testing & Commissioning, Project Management, Risk. Costs are based on Q1 2018 estimates

	Access Arrangements for Option 1 Extension at Trumpington Park & Ride	Option 2 New Park & Ride Site		
		Access Option A	**Access Option B**	**Access Option C**
Features	• New dedicated Park & Ride access lanes on the exit slip roads of the M11 and on the A10. • A southbound M11 Park & Ride exit slip road that will bypass J11 and tie into the existing Park & Ride lane on the A1309. • Widening of the A10 bridge over the M11.	i. Signalised junctions on the A10 allowing access into the site from all directions and exit to all directions. ii. A new left turn filter lane onto the A10 for traffic approaching the site from the M11 northbound.	i. A signalised junction on the A10 (allowing access into the site from all directions and exit to all directions). ii. A new dedicated northbound slip road exiting the M11 at J11, passing under the A10 and directly into the site.	i. Dedicated slip roads to access/exit the site so that cars do not need to turn right across the A10. ii. A junction on the A10 for left in and left out turns only.
Optional Features	N/A	iii. A southbound M11 Park & Ride exit slip road bypassing J11 and tying into the existing Park & Ride lane to Trumpington. iv. An additional dedicated left turn lane, extending along the A10 towards Hauxton.	iii. A southbound M11 Park & Ride exit slip road bypassing J11 and tying into the existing Park & Ride lane to Trumpington. iv. An additional dedicated left turn lane, extending along the A10 towards Hauxton.	iii. A southbound M11 Park & Ride exit slip road bypassing J11 and tying into the existing Park & Ride lane to Trumpington. iv. An additional dedicated left turn lane, extending along the A10 towards Hauxton.
Expected Cost including optional features (Q1, 2018 estimates)[2]	£13.5million	£4million	£12million	£11million
Possible Issues During Construction	• Traffic management on the A10, M11 slips and M11 mainline, which will lead to disruption and increased journey times. • Night closures will be required for bridge works and may be required for surfacing and enabling works. • Works required on the strategic road network may be more onerous in agreeing working methods. Will increase project duration. • The extension of an existing structure poses a programme risk as the condition is yet to be confirmed. If it is found to be in a poor condition, this will lead to an increased construction programme.	• Temporary traffic signals on the A10 during construction which will have an impact on traffic flows. • Night closures for surfacing works. • Statutory diversion works may be required.	• A temporary contra-flow system and temporary re-alignment of the carriageway as well as temporary traffic lights while the tunnel is constructed. This will impact traffic flows on the A10 and M11 (N). • Night closures for surfacing and other works • Works required on strategic road network, therefore more onerous in agreeing working methods. Will increase project duration • Statutory diversion may be required. They will also need to be supported in place/temporarily diverted while the tunnel is constructed. • Ground water may be an issue for the tunnel and pumping may be required. • High Complexity, including temporary works, therefore numerous construction risks.	• A temporary contra-flow system and temporary re-alignment of the carriageway as well as temporary traffic lights while the tunnel is constructed. This will impact traffic flows on the A10 and M11 (N). Additional works on the gyratory will affect the junction. • Night closures for surfacing and other works • Works required on strategic road network, therefore more onerous in agreeing working methods. Will increase project duration. • Statutory diversion may be required. They will also need to be supported in place/temporarily diverted while the tunnel is constructed. • Ground water may be an issue for the tunnel and pumping may be required. • High Complexity, including temporary works, therefore numerous construction risks.

[2] Cost estimates include 5% Traffic Management, 2.5% Environmental Mitigation, 10% Out of Hours working. Cost estimates do not include Preliminaries, Overhead & Profit, Design, Testing & Commissioning, Project Management, Risk. Costs are based on Q1 2018 estimates

	Option 2 New Park & Ride Site	
	Public Transport Access Option A	Public Transport Access Option B
Features	• Public transport vehicles to use a dedicated roadway, leaving from the north of the site, crossing the motorway using an existing farm bridge north of J11. • Public transport vehicles then run alongside the M11 southbound exit slip road using a dedicated public transport only lane. • Dedicated public transport only lane continues alongside the A10 to the existing Trumpington Park & Ride. • Public transport option A would be available for public transport vehicles both accessing and exiting the site.	• Public transport vehicles to pass through Junction 11 over a new dedicated public transport bridge. • Public transport vehicles then run alongside the A10 on a dedicated lane to the existing Trumpington Park & Ride. • Public transport option B would be available for public transport vehicles both accessing and exiting the site.
Public transport Journey Time from Park & Ride to Downing St (AM Peak)	Approximately 17 minutes	Approximately 18 Minutes
Expected Cost (Q1, 2018 estimates)[3]	£4.5million	£11.5million
Expected Impacts During Construction	• Traffic Management on the A1309 and gyratory will lead to disruption and increased journey times. • Installation of the pedestrian bridge will require traffic management on the M11 mainline and night closures, again leading to disruption and increased journey times. • Works required on strategic road network, therefore more onerous in agreeing working methods. Will increase project duration. • Medium complexity, risks associated with pedestrian/cycle bridge (although it could mostly be pre-fabricated) and numerous traffic management phases.	• Traffic management on the A1309 and gyratory will lead to disruption and increased journey times. • Installation of the new bridge will require traffic management on the M11 mainline and night closures, again leading to disruption and increased journey times. • Plant crossing of the gyratory will be required to access the works area for the bridge construction, reducing the capacity of the gyratory. • Works required on strategic road network, therefore more onerous in agreeing working methods. Will increase project duration. • Medium/High complexity, risks associated with new structure and numerous traffic management phases.

[3] [3] Cost estimates include 5% Traffic Management, 2.5% Environmental Mitigation, 10% Out of Hours working. Cost estimates do not include Preliminaries, Overhead & Profit, Design, Testing & Commissioning, Project Management, Risk. Costs are based on Q1 2018 estimates

6 Improvements to Public Transport Journey Times

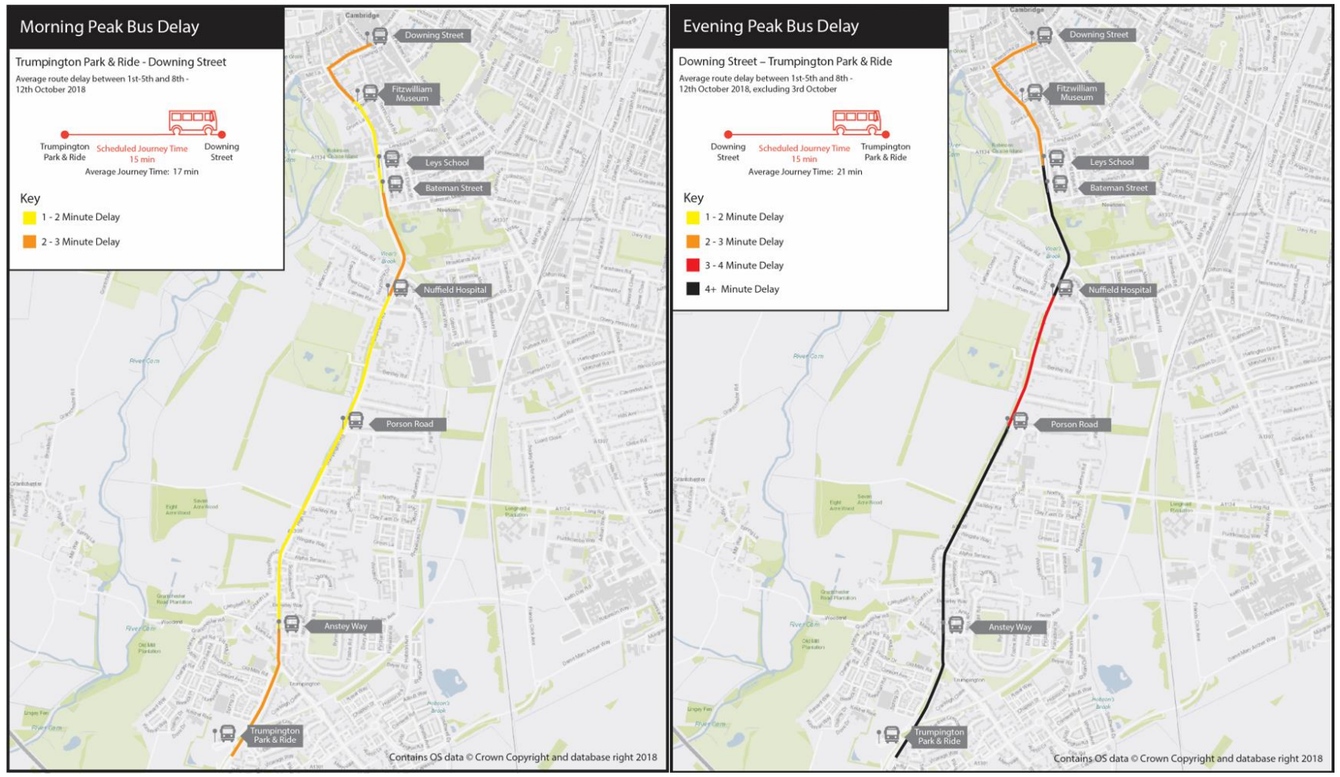
Improvements to Park & Ride capacity in the M11 Junction 11 area will encourage drivers to use the Park & Ride facility rather than driving into the city centre or to the CBC. This will have a positive impact on congestion along Routes to the city centre. However, the provision of a fast and frequent public transport service between the Park & Ride and employment destinations is required to ensure that Park & Ride users have suitable and appealing options to complete their journey.

Currently public transport vehicles travelling from the Trumpington Park & Ride site are affected by congestion on Hauxton Road, Trumpington Road and Trumpington High Street, making journey times unreliable. This unreliability means that public transport vehicles are timetabled to account for possible delays, making journeys from the Park & Ride longer than necessary even if there is little traffic.

Analysis of the Real Time Passenger Information data has identified the key locations on the route where significant delay occurs, and this is presented in figure 17. The analysis found there is a need to consider measures to improve public transport journey times on outbound services, from the city centre to the Trumpington Park & Ride site, between Downing Street and Leys School, and between Porson Road and Anstey Way. For inbound services, into the city centre, the sections of the route between Trumpington Park & Ride and Anstey Way, and between Nuffield Hospital and Bateman Street would benefit the most from measures to improve journey times. A range of different measures could be provided to improve public transport journey times and are at an early stage of development. Measures could include new public transport lanes and priority for public transport vehicles at traffic signals. Changes to parking arrangements could also improve public transport journey times, so that public transport vehicles do not need to weave between parked cars.

Costs for the improvements have not yet been calculated but would depend on the mix of measures selected.

Figure 17: Delay to public transport between Trumpington Park & Ride and Cambridge city centre in AM and PM peaks



Source: Cambridgeshire RTPI

7 Next Steps

The public consultation on the options outlined in this non-technical summary will take place in late 2018 and will inform the decision of the GCP Executive Board on which Park & Ride location option, and associated access options will be taken forward. Work is ongoing to produce the next stage of the business case – the Outline Business Case – which is expected to be finalised in summer 2019.

Appendices

A. Glossary

Access: The means of entering a site by private or public transport.

Context: The setting of a site or area, including factors such as traffic, activities and land uses as well as landscape and built form.

Do Nothing: A scenario that envisages no improvements beyond what is already committed.

Effect: The consequence of the scale of any change to the baseline environment, i.e. impact, on the environmental receptor, taking account of its particular value or sensitivity.

Egress: The means of leaving a site by private or public transport.

Element: A component part of the landscape (for example, roads, hedges, woods).

Environment: Our physical surroundings including air, water and land.

Full Business Case (FBC): The culmination of the final phase is the Full or Final Business Case which updates the preferred option analysis and confirms the final financial, commercial and management strategies.

Green Belt: A statutory designation made for the purposes of: checking the unrestricted sprawl of large built-up areas; preventing neighbouring towns from merging into each other, assisting in safeguarding the countryside from encroachment; preserving the setting and special character of historic towns and assisting in urban regeneration by encouraging the recycling of derelict and other urban land.

Landscape: The character and appearance of land, including its shape, form, ecology, natural features, colours and elements and the way these components combine. Landscape character can be expressed through landscape appraisal, and maps or plans. In towns, 'townscape' describes the same concept.

Local Plan: A statutory document produced by the local planning authority setting out planning policies and land allocations. In this project, the local plan areas of particular relevance are Cambridge City Council and South Cambridgeshire District Council's Local Plans.

Multi Criteria Assessment Framework (MCAF): An optioneering process with a number of different factors used to produce a score, allowing comparison between options.

Mitigation: Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse effects of a development project.

Option Appraisal Report (OAR): A report capturing the process undertaken to identify and assesses options, leading to the selection of the recommended option.

Outline Business Case (OBC): Is the second phase of the business case process which reviews and refines the conclusions of set out in the Strategic Outline Business Case (SOBC). This case focuses on the detailed assessment of the options to find the best solution.

Private Vehicles: Vehicles not run as part of the public transport system. Includes private cars, vans and commercial vehicles not associated with the public transport system.

Public Transport Vehicles: Vehicles operated as part of a public transport system, including those operating as part of a Park & Ride operation. Includes buses, trains, metros and taxis.

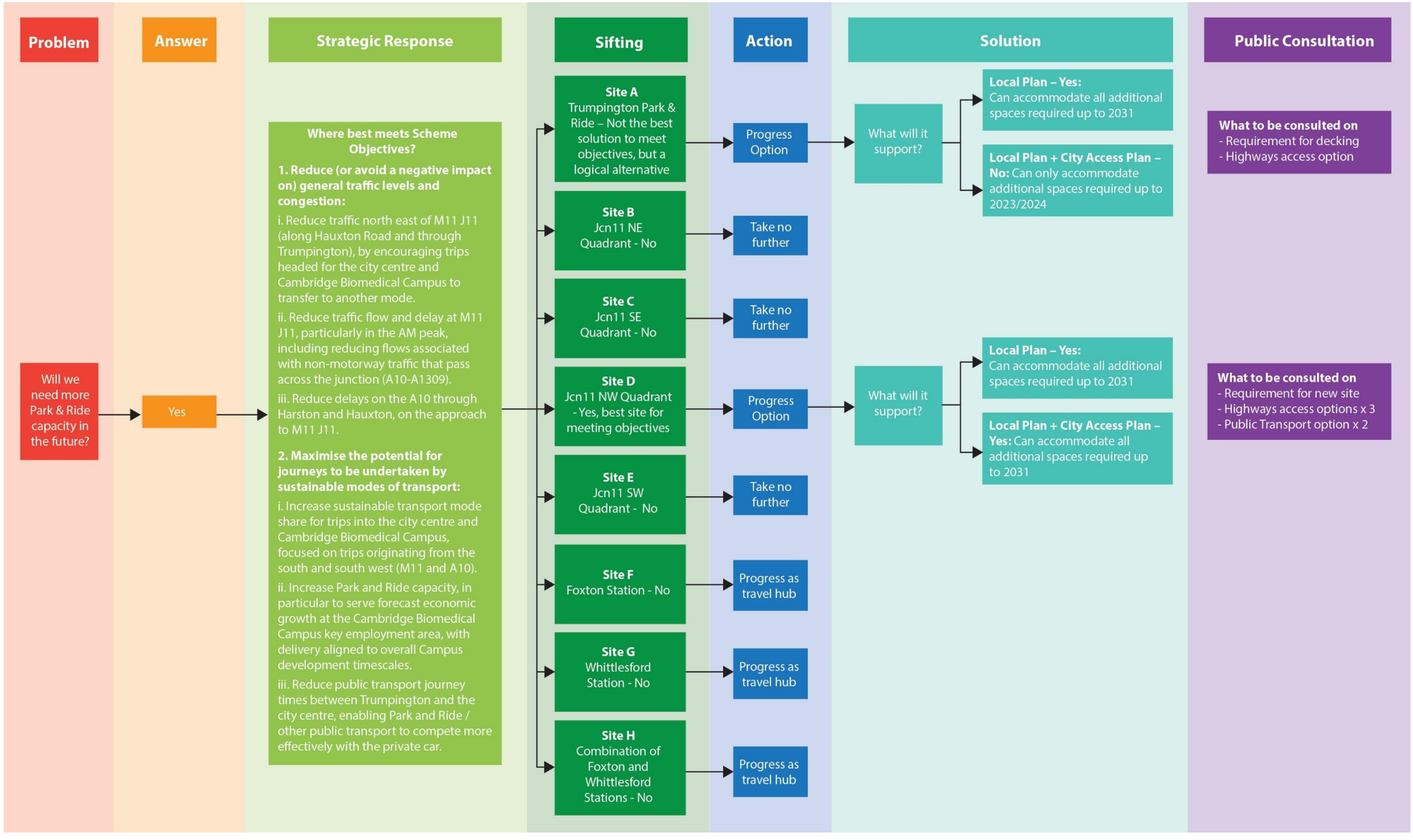
Strategic Outline Business Case (SOBC): This sets out the need for intervention (the case for change) and how this will further ministers' aims and objectives (the strategic fit). It provides suggested or preferred ways forward and presents the evidence for a decision.

Sustainability: The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Visual Impact: Change in the appearance of the landscape as a result of development. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).

WebTAG: The Department for Transport's Transport Appraisal Guidance.

B. Logic Map


Problem
Answer
Strategic Response
Sifting
Action
Solution
Public Consultation
Will we need more Park & Ride capacity in the future?
Yes
Where best meets Scheme Objectives?
1. Reduce (or avoid a negative impact on) general traffic levels and congestion:
i. Reduce traffic north east of M11 J11 (along Hauxton Road and through Trumpington), by encouraging trips headed for the city centre and Cambridge Biomedical Campus to transfer to another mode.
ii. Reduce traffic flow and delay at M11 J11, particularly in the AM peak, including reducing flows associated with non-motorway traffic that pass across the junction (A10-A1309).
iii. Reduce delays on the A10 through Harston and Hauxton, on the approach to M11 J11.
2. Maximise the potential for journeys to be undertaken by sustainable modes of transport:
i. Increase sustainable transport mode share for trips into the city centre and Cambridge Biomedical Campus, focused on trips originating from the south and south west (M11 and A10).
ii. Increase Park and Ride capacity, in particular to serve forecast economic growth at the Cambridge Biomedical Campus key employment area, with delivery aligned to overall Campus development timescales.
iii. Reduce public transport journey times between Trumpington and the city centre, enabling Park and Ride / other public transport to compete more effectively with the private car.
Site A Trumpington Park & Ride – Not the best solution to meet objectives, but a logical alternative
Site B Jcn11 NE Quadrant - No
Site C Jcn11 SE Quadrant - No
Site D Jcn11 NW Quadrant - Yes, best site for meeting objectives
Site E Jcn11 SW Quadrant - No
Site F Foxton Station - No
Site G Whittlesford Station - No
Site H Combination of Foxton and Whittlesford Stations - No
Progress Option
Take no further
Progress Option
Take no further
Progress as travel hub
Progress as travel hub
Progress as travel hub
What will it support?
What will it support?
Local Plan – Yes: Can accommodate all additional spaces required up to 2031
Local Plan + City Access Plan – No: Can only accommodate additional spaces required up to 2023/2024
Local Plan – Yes: Can accommodate all additional spaces required up to 2031
Local Plan + City Access Plan – Yes: Can accommodate all additional spaces required up to 2031
What to be consulted on
- Requirement for decking
- Highways access option
What to be consulted on
- Requirement for new site
- Highways access options x 3
- Public Transport option x 2

C. Long List of Appraisal Options

Option Package	Description
Do Nothing	No major expansion of Park & Ride provision in close proximity to Junction 11. Minimal surface level expansion of existing Trumpington site only, currently being developed as part of a separate planning application and will be in place when this scheme is implemented.
Magenta	Major Park & Ride expansion at Trumpington, likely to involve adding a new deck[4] above the existing site (as there is no available land for expansion immediately surrounding the site). New dedicated Park & Ride access lanes for general traffic extended back to the motorway off-slips and A10. Likely to involve overbridge widening at J11.
Red	New site with general traffic and public transport access/egress at a single new junction on the A10. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Public transport vehicles to pass across Junction 11 with general traffic.
Blue	New site with general traffic and public transport vehicle access / egress at two new junctions on the A10. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Additional free-flow left turn lanes from both motorway off-slips. Widening the existing J11 overbridges to provide a public transport vehicle lane in each direction
Purple	New site with dedicated northbound off-slip from the M11, passing below the A10 through a tunnel, and a new junction on the A10. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Free-flow left turn lane from southbound motorway off-slip to A1309 for Trumpington Park & Ride. Public transport vehicles pass directly through the centre of J11 using new bridge structure across M11.
Orange	New site with dedicated northbound off-slip from the M11, passing below the A10 through a tunnel, and a new junction on the A10. Reconfigured J11 with larger circulatory and realigned slip roads, allowing greater stacking capacity on the roundabout. Includes new bridge structure to the southern side. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Public transport vehicles pass directly through the centre of J11 using former circulatory alignment.
Yellow	New site with general traffic and public transport vehicle access/egress at two new junctions on the A10. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Additional free-flow left turn lanes from both motorway off-slips. Public transport vehicles cross motorway using existing farm bridge to the north, then run alongside southbound off-slip.
Black	As Yellow option, but with public transport vehicles crossing motorway using existing accommodation bridge and then running directly across existing open land to the Trumpington Meadows development.
White	New site with dedicated northbound off-slip from the M11, passing below the A10 through a tunnel, and a new junction on the A10. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Free-flow left turn lane from southbound motorway off-slip to A1309 for Trumpington Park & Ride. Public transport vehicles cross motorway using existing farm bridge to the north, then run alongside southbound off-slip.

[4] The design put forward for consultation comprises two decks for expansion.

Cyan	New site with dedicated northbound off-slip from the M11, passing below the A10 through a tunnel. Dedicated left-turn lane from the A10 at Hauxton into the Park & Ride site. Dedicated slip road for southbound A10 traffic to access the site without needing to turn right across the A10, using the same tunnel as for the dedicated M11 northbound off-slip. Dedicated exit slip from the Park & Ride site onto the A10 southbound, avoiding the need for vehicles leaving the site to turn right across the A10, again using the same tunnel. Free-flow left turn lane from southbound motorway off-slip to A1309 for Trumpington Park & Ride. Public transport vehicles cross motorway using existing farm bridge to the north, then run alongside southbound off-slip.